

Book Reviews

Editorial Policy. Recently published books and journals (one copy) are invited by the Editorial Office for announcement and review in ANTICANCER RESEARCH (no fee). Each announcement should include the full title of the publication, authors or editors, the number of pages, price, year of publication, ISBN and publisher. Publishers will be notified upon receipt of books and tear sheets of reviews will be sent after publication. Books will be returned to the sender only if the announcement is rejected. Reviews will be objective and clear regarding the content, quality and usefulness of the publication.

CRC Handbook of Organic Photochemistry and Photobiology, Third Edition - Two Volume Set.

Edited by A. Griesbeck, M. Oelgemöller, F. Ghetti.

2012, pp. 1600, £ 254.00, ISBN: 978-1-4398-1181-8 and ISBN: 978-1-4398-9936-6.

CRC Press, Taylor & Francis Group, Boca Raton, FL, USA.

As spectroscopic, synthetic and biological tools become more and more sophisticated, photochemistry and photobiology are merging – making interdisciplinary research essential. This two-volume CRC handbook presents 67 topical reviews by leading experts, providing cutting-edge information on the applications of photochemical and photobiological principles, techniques and methodologies.

New and updated topics in this edition include: Industrial photochemistry; Photocatalytic water splitting; Photocatalysis; Photostability of drugs; Photochemistry in microreactors; Photochemical key-steps in organic synthesis; Photochirogenesis; Photolabile protecting groups; Solar photochemistry; Computational photochemistry and photobiology; Sustainable photochemistry; Artificial photosynthetic systems; Biology of UV-A radiation; UV radiation and vitamin D; Photodynamic drug delivery; Photoimmunology; Photodermatology; Endogenous antioxidant photoprotection and its enhancement in human skin; Phototoxicity of drugs; Photodynamic approaches to water disinfection; Spin-center shift reactions.

This high-quality and concise collection bridges traditional topics, current trends, and future directions to provide the most authoritative and complete resource available on the subject. The IUPAC glossary of photochemistry is included as a CD-ROM.

Renal Cell Carcinoma. Translational Biology. Personalized Medicine and Novel Therapeutic Targets.

Edited by R.A. Figlin, W.K. Rathmell, B.I. Rini.

2012, pp. 327, Eur 139.95, ISBN: 978-1-4614-2399-7.

Springer Science + Business Media, New York, NY, USA.

This volume examines every major topic area in the modern era of renal carcinoma biology and treatment. The unique and intricate genetics of this cancer are highly distinct from most other tumors, and the advances made in this cancer beyond VHL biology have been intrinsically driven by discoveries from familial

renal cell carcinomas linked with newer large scale genomic efforts in sporadic disease. These genetic findings fuel strategies to analyze and define sporadic tumors for greater accuracy in prognosis and prediction of response to therapy.

Additional topics include major new therapeutic strategies that harness these biological discoveries, in particular angiogenic, energy metabolism, chromatin remodeling, tumor microenvironment, and classical signaling pathways. This text will bring all of these avenues of investigation together for readers interested in understanding the dynamics of this field in the last decade and anticipating a continued steep trajectory in advancements toward the cure of this disease in its many manifestations.

Energy Balance and Gastrointestinal Cancer.

Edited by S.D. Markowitz, N.A. Berger.

2012, pp. 184, Eur 139.95, ISBN: 978-1-4614-2366-9.

Springer Science + Business Media, New York, NY, USA.

The gastrointestinal tract provides one of the distinct systems where multiple malignancies, including adenocarcinoma of the pancreas, esophagus and colon are each associated with obesity. This unique association is covered in this volume of Energy Balance and Cancer from the epidemiologic, biologic and potential etiologic viewpoint. The focus on possible dietary contribution as well as the role of exercise in prevention and therapy is presented in both animal model and patient based studies. Special focus is provided also on the role of genetic mutations and inflammatory pathways as drivers of these obesity related gastrointestinal malignancies. This volume is valuable to Epidemiologists, Gastroenterologists and Oncologists, as well as to students and researchers from multiple disciplines interested in understanding and disrupting the association between obesity and cancer.

Energy Balance and Hematologic Malignancies.

Edited by S.D. Mittelman, N.A. Berger.

2012, pp. 184, Eur 99.95, ISBN: 978-1-4614-2402-4.

Springer Science + Business Media, New York, NY, USA.

The obesity pandemic continues to increase on a world-wide basis with over 70% of the United States population being either overweight or obese. Hematologic malignancies have recently been identified among the obesity associated malignancies spanning the lifespan from childhood to the elderly and include leukemia, myeloma, lymphoma and others. In addition to the potential etiologic association between obesity and hematologic malignancies, the presence of obesity has profound effects on therapy by impacting pharmacokinetics of chemotherapeutic agents, dose, adipocyte metabolism and drug distribution. These may be particularly important in hematopoietic stem cell transplantation. Another important aspect of the association of obesity with hematologic malignancies is the increased incidence of obesity in children who successfully complete therapy for acute lymphoblastic leukemia. This and other observations indicate important relations between the hematopoietic systems and adipose tissue metabolism.

Energy Balance in Hematologic Malignancies will provide an important volume in the series on Energy Balance and Cancer and serve as a basis for better understanding etiology, mechanisms, therapeutic implications and experimental approaches. While this book should be of specific interest and utility to all pediatric and adult hematologists and oncologists dealing with hematologic malignancies, it should also provide an important resource for all investigators concerned, from a clinical or research basis, with the impact of obesity and exercise on hematologic malignancies.

Prophylaxis and Early Detection of HPV-Related Neoplasia.

Edited by H. Pfister.

2012, pp. 139, Eur 99.00, ISBN: 978-3-8055-9964-1.
S. Karger AG, Basel, Switzerland.

Human papillomaviruses (HPV) are a heterogeneous and still growing virus family. Topical research results on the replication cycle and carcinogenic mechanisms allow a better understanding of current prevention strategies. Written by leading experts, this volume of *Monographs in Virology* provides up-to-date information on the prevention of papillomavirus-induced cancers by prophylactic antiviral vaccines and early detection of precancerous lesions.

A major section covers the tremendous clinical burden due to HPV infections: genital warts and laryngeal papillomas, the most notorious cervical cancer, but also further anogenital and tonsillar cancer, the incidence of which increased steeply during the last decades. Additionally, a section on prevention addresses the subject cytology - new concepts of biomarker development, detection of HPV DNA and RNA as well as their use in primary screening for early detection of precancerous lesions. Finally the book closes with a topical discussion of the most intriguing primary prevention of HPV infection by vaccination.

As new perspectives for the prevention of HPV-related neoplasia raised great public interest, this book will be of value to clinicians and practitioners in gynecology, dermatology, urology and ENT, to pathologists, laboratory physicians, medical students, and public health authorities.

Cancer Associated Viruses.

Edited by E.S. Robertson.

2012, pp. 866, Eur 213.95, ISBN: 978-1-4419-9999-3.
Springer Science + Business Media, New York, NY, USA.

This volume constitutes a comprehensive review of tumor virology since the discovery of the Rous-sarcoma virus over a hundred years ago. It encourages a greater focus on the contributions of viral agents to the development of cancer, and to create an up to date compendium of the general molecular biology of these viruses, their gene products, and targeted functions. The book explores many aspects of cancer-related viruses, how they contribute to cell proliferation, the genes that are responsible for driving these cancers, and their mechanisms of transmission.

The book also reviews the current advances in research on the molecular biology of large DNA viruses and the various pathways

through which they contribute to cell proliferation. In addition, Papilloma and Polyoma viruses, well known to be associated with invasive carcinomas, as well as hepatitis viruses, HTLV and retroviruses are also discussed.

This volume is dedicated to Baruch Blumberg, a contributing author to this book and an outstanding scientist and recipient of the Nobel Prize for the discovery of the hepatitis B virus.

Cancer Epigenetics. Methods and Protocols.

Edited by R.G. Dumitrescu, M. Verma.

2012, pp. 492, Eur 133.70, ISBN: 978-1-61779-611-1.
Springer Science + Business Media, New York, NY, USA.

The epigenetic regulation plays an important role in normal development and maintenance of tissue specific genes expression in humans and the disturbance of these patterns lead to changes involved in tumor formation. More recently, epigenetic changes have been observed in early stages of tumor development and together with the genetic alterations have been defined as abnormalities, necessary for cancer initiation and progression. In *Cancer Epigenetics: Methods and Protocols*, expert researchers reviewed these epigenetics changes in different tumor types and described several technologies that are currently available to detect epigenetic changes. These technologies have lead to a better understanding of the processes in normal and cancerous cells. Written in the highly successful *Methods in Molecular Biology™* series format, the chapters include the kind of detailed description and implementation advice that is crucial for getting optimal results in the laboratory.

Thorough and intuitive, this volume aids scientists in continuing to study epigenetic alterations used in clinical practice as biomarkers of early cancerous lesions or markers of progression and prognosis.

HPV and Cervical Cancer. Achievements in Prevention and Future Prospects.

Edited by F. Borruto, M. De Ridder.

2012, pp. 401, Eur 160.45, ISBN: 978-1-4614-1987-7.
Springer Science + Business Media, New York, NY, USA.

HPV infections and their clinical consequences are a major disease burden. This book aims to provide an updated comprehensive summary of the available data in this multidisciplinary field. The different contributing experts, using the most recent information, provide updated in depth reviews on different aspects of HPV infections.

The reader will discover how quickly interesting new data has been generated, not only on the immune-biology of this infection, but also on the more clinical aspects like the diagnostic approaches and techniques, the success of primary and secondary prevention, the follow-up in vaccinated cohorts or individuals, and the various treatment options.

Bio-Nanotechnology. Concepts and Applications.

By Maheshwar Sharon, Madhuri Sharon, S. Pandey, G. Oza.

2012, pp. 389, £79.95, ISBN: 978-1-4398-5214-9.
CRC Press, Boca Raton, FL, USA.

This book is an attempt towards sharpening the knowledge of undergraduates, postgraduates and all researchers who are interested in pursuing their research in the field of Bio-Nanotechnology. It focuses on fundamental Bionanomachines and their applications.

The book begins with the explanations that Nanotechnologies fall between the usual daily macrophysics and the quantum mechanics and covers their unique properties. Then it encompasses the domain of biological system that efficiently functions at nano-scale using various biological nano-machines and custom made molecules. Fundamentals and applications of noble metal nanoparticles nano-engineered by different living systems and an up-to-date review of how DNA, RNA and proteins are so stable in a milieu fully crowded with other smaller organic and inorganic molecules, how molecular crowding endorses self assembly are presented in detail. The book also covers various aspects of carbon nanomaterials.

The highlight of the book is the fundamental philosophy in manoeuvring artificial intelligent machines capable of following electronic instruction. Birth of nanorobots using natural spare parts and their organization into a functional machine is main attribute of this book. It is an all embracing introduction to use of nanoscale architecture in medicine environmental remediation, utilization of food agriculture cosmetics and synthetic nano-implants.

Disposable Bioprocessing Systems.

By S.K. Niazi.

2012, pp. 300, £149.95, ISBN: 978-1-4398-6670-2.

CRC Press, Boca Raton, FL, USA.

Because of many misconceptions, the biological drug manufacturing industry does not fully utilize disposable components, despite their wide availability. These misconceptions include concerns for the quality of materials, running costs, scalability, the level of automation possible, and the training of staff needed to include these components in existing bioprocessing systems. Not fully realizing the long-term benefits, many manufacturers are unwilling to discard investments made in fixed equipment and traditional stainless steel systems. Regulatory and environmental concerns, however, will eventually compel manufacturers to adopt disposable systems. Making a strong case for disposables, this volume demonstrates the true potential of these systems.

Written by a researcher and professor with hands-on experience in designing, establishing, and validating biological manufacturing facilities worldwide, and creating model facilities using maximum disposable technology, this book is the first comprehensive introduction to understanding disposable systems. It gives an overview of the current state of the disposable bioprocessing industry, resolves all controversial issues, and guides readers in choosing disposable components that meet their needs. An important chapter on safety addresses facts and myths about the use of plastics and elastomers—including the issue of leaching—and how to ensure regulatory compliance.

Helping readers understand their choices, the book describes the equipment and systems available to prepare the starting

materials for the manufacturing of biological drugs—from disposable containers to filters. The author also discusses costs, regulations, and concerns about waste disposal, and shares his predictions for the future of the disposable bioprocessing industry.

A practical manual for those interested in the transition to disposable systems, this book will also interest students of bioprocessing. It offers a timely view of disposable bioprocessing technology as a "game changer" that will facilitate developing new drugs and conducting research in the emerging field of stem cells and gene therapy.

ICF Core Sets. Manual for Clinical Practice.

Edited by J. E. Bickenbach, A. Cieza, A. Rauch, G. Stucki.

2012, pp. 141, Eur 34.95, ISBN: 978-0-88937-431-7.

Hogrefe Publishing, Göttingen, Germany.

This volume describes practical, standardized tools to assess and document functioning, disability, and health according to the WHO ICF in a variety of health conditions and settings. WHO's International Classification of Functioning, Disability and Health (ICF) is the accepted common framework for understanding and documenting functioning and disability.

The ICF Core Sets selected for this book have now been developed to facilitate the standardized use of the ICF in real-life clinical practice and thus improve quality of care. By using this collection of clear checklists, definitions, and forms, clinicians will quickly and easily be able to assess clients with a range of typical health conditions at different stages and in a variety of health care contexts.

This manual: Introduces the concepts of functioning and disability; Describes how and why the ICF Core Sets have been developed; Shows, step-by-step, how to apply the ICF Core Sets in clinical practice; Includes all 31 ICF Core Sets plus documentation forms (1,400 pages of printable PDFs) on a CD-ROM.

This manual is inherently multi-professional and will be of benefit not only for practitioners working in various health care contexts but also for students and teachers.

The Evolution of the Use of Mathematics in Cancer Research.

Edited by P.J. Gutiérrez Diez, I.H. Russo, J. Russo.

2012, pp. 401, Eur 149.75, ISBN: 978-1-4614-2396-6.

Springer Science + Business Media, New York, NY, USA.

This book is designed for advanced students and researchers pursuing the use of biostatistics and biomathematics in their investigations in biology and medicine in general, and in cancer in particular. Each chapter has been conceived as a part in the whole in such a way that information flows easily, explaining in a concise and clear way a particular subject, and connecting its results with those in the previous and following chapters. State-of-the-art biostatistics and biomathematics methods and techniques are explained in detail through illustrative and capital examples taken from cancer research work already published, and the result is a self-contained book on medicine, statistics and mathematics which illustrates the potential of biostatistics and biomathematics

in biomedical research. Focusing on the achievements that biostatistics and biomathematics have already obtained, researchers can perceive the high returns that the use of statistics and mathematics yield in biomedical research, and thanks to the detailed discussion of the applied statistical and mathematical techniques, they can deduce the criteria and motif for finding the appropriate use of these formal disciplines.

Nanobiomaterials Handbook.

Edited by B. Sitharaman.

2012, US\$ 169.95, ISBN: 978-1-4200-9466-4.

CRC Press, Boca Raton, FL, USA.

Nanobiomaterials exhibit distinctive characteristics, including mechanical, electrical, and optical properties, which make them suitable for a variety of biological applications. Because of their versatility, they are poised to play a central role in nanobiotechnology and make significant contributions to biomedical research and healthcare. *Nanobiomaterials Handbook* provides a comprehensive overview of the field, offering a broad introduction for those new to the subject and serves as a useful reference for advanced professionals.

Analyzing major topics and disciplines in this arena, this volume: Defines the field of nanobiomaterials and discusses its scope, current status, and future prospects; Presents an in-depth survey of nanobiomaterials and examines various synthesis and processing techniques important for developing nanobiomaterials; Explores the unique nanoscopic physicochemical properties of nanobiomaterials; Discusses potential applications, emphasizing unique challenges in the design, fabrication, and evaluation of biomaterials for a particular application or field; Provides a detailed overview of the interactions between bionanomaterials/biological systems and the biocompatibility issues associated with bionanomaterials.

Advances in nanobiomaterials requires a multidisciplinary approach spanning major fields in physical and biological sciences, engineering, and medicine with considerable collaboration between ethicists, regulatory bodies, and industry. This volume brings together the work of a team of world-renowned experts from various fields who discuss the vast potential for nanobiomaterials in myriad applications.

Bacteria and Cancer.

Edited by A.A. Khan.

2012, pp. 278, Eur 149.75, ISBN: 978-94-007-2584-3.

Springer Science + Business Media, New York, NY, USA.

Bacterial infections cause substantial morbidity and mortality in cancer patients. These infections always remained enigmatic due to initial reluctance of cancer researchers in understanding their etiologic potential. Etiological association of bacteria with cancer gained credibility after discovery of carcinogenic potential of *Helicobacter pylori*. Moreover, other suspected associations including *Salmonella typhi* and gallbladder cancer, *Streptococcus bovis* and colon cancer, Chlamydia psittaci and ocular adnexal lymphoma and *Chlamydia pneumoniae* with lung cancer, etc. are looking for a legitimate appraisal to unravel their etiologic potential without prejudice.

In contrary, bacteria also show protective role in certain types of cancer. Certain agents derived from bacteria are successfully in practice for the management of cancer. The integrate association of bacteria and cancer is evident in both positive and negative aspects. The role of bacteria in cancer etiology and treatment is vigorously studied since last few years. Present book tries to provide current status of research undergoing in above direction, with the glimpses of future possibility for using microbiological knowledge in the management of this deadly killer.

This book will interest specialists dealing with cancer associated infectious complications, researchers working in the field of cancer biology, teachers and scientists in the field of microbiology, biotechnology, medicine and oncology. The unique coverage of bacteriology and cancer association in both positive and negative way can usher into development of novel thrust area for microbiology students and experts.

Nutraceuticals and Cancer.

Edited by F.H. Sarkar.

2012, pp. 379, Eur 160.45, ISBN: 978-94-007-2629-1.

Springer Science + Business Media, New York, NY, USA.

This book is about Nutraceuticals in cancer therapy, specifically targeted and adjuvant therapy. It shows several approaches for possibly reducing systemic toxicity. This book illustrates the role of several dietary agents, collectively called nutraceuticals or natural agents in the prevention and/or treatment of human malignancies known to be mediated through alterations in multiple molecular targets. The book contains sixteen chapters which begin with historical perspective on the value of natural agents in the prevention of human malignancies followed by a series of current topics on multiple nutraceuticals targeting multiple cancers. This collection would likely be useful for bringing newer generations with broader perspectives in launching cutting-edge innovative molecular research, which would certainly help in designing targeted clinical trials in order to realize the dream of customize strategies for the prevention and/or treatment of human malignancies without causing any systemic toxicity. Moreover, the knowledge gained would allow novel utilization of nutraceuticals as adjunct to both conventional chemotherapy and radiation therapy in order to improve the overall quality of life and survival of patients diagnosed with cancers.

Stem Cells and Revascularization Therapies.

Edited by H. Kong, A.J. Putnam, L.B. Schook.

2012, pp. 296, £95.00, ISBN: 978-1-4398-0323-3.

CRC Press, Boca Raton, FL, USA.

In the last few decades, significant advancements in the biology and engineering of stem cells have enabled progress in their clinical application to revascularization therapies. Some strategies involve the mobilization of endogenous stem cell populations, and others employ cell transplantation. However, both techniques have benefited from multidisciplinary efforts to create biomaterials and other biomedical tools that can improve and control the fate of stem cells, and advance our understanding of them.

Stem Cells and Revascularization Therapies focuses on the fundamentals and applied studies in stem cell biology, and provides perspectives associated with the development of revascularization strategies. To help readers understand the multidisciplinary issues associated with this topic, this book has been divided into four sections:

Section 1: Explores how to define, isolate, and characterize various stem and progenitor cell populations for neovascularization.

Section 2: Summarizes some especially useful model systems and approaches used to regulate angiogenesis, vasculogenesis, and arteriogenesis, and explores their impact on formation of functional vessels *in vivo*.

Section 3: Focuses on stem cell homing to sites of injury and inflammation, as well as strategies to exploit this mobilization phenomenon.

Section 4: Covers stem cell transplantation topics, including recreating features of endogenous stem cell niches to maintain the multipotency of transplanted cells and combinatorial delivery of cells and molecular factors.

Intended to inspire new contributions to improve the therapeutic efficacy, this volume outlines emergent findings and challenges regarding the use of stem cells in revascularization therapies. Overcoming the significant hurdles to our understanding of stem cell biology will enhance their utility in promoting new blood vessel formation.

Biotargets of Cancer in Current Clinical Practice.

Edited by M. Bologna.

2012, pp. 563, Eur 192.55, ISBN: 978-1-61779-614-2.

Springer Science + Business Media, New York, NY, USA.

This volume presents an updated and reasoned review of the current status of knowledge concerning the major cancer types with a special focus on the current biomarkers, genes involved and the potential future targets of innovative therapies. The volume includes for each major cancer type, a comprehensive although concise discussion of epidemiology, affirmed and innovative biomarkers for diagnosis, and descriptions of the relevant genes for prognosis and (individualized) therapy through biotarget-specific new molecular treatments, with the latest information on the validation status of each novel biomarker. Individual chapters are dedicated to the major cancer types, plus a special chapter on metastasis. The present debate on patentability of genetic information applied to diagnostics and therapeutics of cancer is also discussed.

Methods for Studying Nucleic Acid/Drug Interactions.

Edited by M. Wanunu, Y. Tor.

2012, pp. 373, £76.99, ISBN: 978-1-4398-3973-7.

CRC Press, Boca Raton, FL, USA.

Since most therapeutic efforts have been predominantly focused on pharmaceuticals that target proteins, there is an unmet need to develop drugs that intercept cellular pathways that critically involve nucleic acids. Progress in the discovery

of nucleic acid binding drugs naturally relies on the availability of analytical methods that assess the efficacy and nature of interactions between nucleic acids and their putative ligands. This progress can benefit tremendously from new methods that probe nucleic acid/ligand interactions both rapidly and quantitatively.

This volume highlights new and non-conventional methods for exploring nucleic acid/ligand interactions. Designed to present drug-developing companies with a survey of possible future techniques, the book compares their drawbacks and advantages with respect to commonly used tools. Perhaps more importantly, this book was written to inspire young scientists to continue to advance these methods into fruition, especially in light of current capabilities for assay miniaturization and enhanced sensitivity using microfluidics and nanomaterials.

Handbook of Nanoscience, Engineering and Technology. Third Edition.

Edited by W.A. Goddard III, D.W. Bremner, S.E. Lyshevski, G.J. Iafrate.

2012, pp. 1071, US\$149.95, ISBN: 978-1-4398-6015-1.

CRC Press, Boca Raton, FL, USA.

In his 1959 address, "There is Plenty of Room at the Bottom," Richard P. Feynman speculated about manipulating materials atom by atom and challenged the technical community "to find ways of manipulating and controlling things on a small scale". This visionary challenge has now become a reality, with recent advances enabling atomistic-level tailoring and control of materials.

Exemplifying Feynman's vision, *Handbook of Nanoscience, Engineering, and Technology, Third Edition* continues to explore innovative nanoscience, engineering, and technology areas. Along with updating all chapters, this third edition extends the coverage of emerging nano areas even further. Two entirely new sections on energy and biology cover nanomaterials for energy storage devices, photovoltaics, DNA devices and assembly, digital microfluidic lab-on-a-chip, and much more. This edition also includes new chapters on nanomagnet logic, quantum transport at the nanoscale, terahertz emission from Bloch oscillator systems, molecular logic, electronic optics in graphene, and electromagnetic metamaterials.

Features of the book include: Examination of the use of state-of-the-art materials, such as nanodiamond particles, graphene, and electromagnetic metamaterials, in industrial and biomedical applications; Description of experimental advances in the synthesis, fabrication, and processing of nanostructures; Exploration of tools that allow characterization at the nanoscale; Theory and simulation based on first principles.

With contributions from top scientists and researchers from around the globe, this color handbook presents a unified, up-to-date account of the most promising technologies and developments in the nano field. It sets the stage for the next revolution of nanoscale manufacturing—where scalable technologies are used to manufacture large numbers of devices with complex functionalities.

Materials Science of DNA.*Edited by Jung-II Jin, J. Grote.*

2012, pp. 326, £76.99, ISBN: 978-1-4398-2741-3.

CRC Press, Boca Raton, FL, USA.

The field of materials science and technology has undergone revolutionary advances due to the development of novel analytical tools, functional materials, and multidisciplinary approaches to engineering. Additionally, theoretical predictions combined with increasingly improved models and computational capabilities are making impressive contributions to the progress of materials science and technology. In particular, the materials science of DNA has emerged as a vital area of research and is expected to immensely broaden the horizon of material science and nanotechnology in this century.

Materials Science of DNA highlights the most important subjects and perspectives in the field, with the aim of stimulating the interdisciplinary community and bringing this intensively interesting, emerging field of molecular-scale materials science to maturation. The editors have not only been involved in the research of materials science of DNA for the past decade, but also lead the series of International Biotronics Workshops supported by the US Air Force Research Laboratory.

Biotechnology and DNA-based biopolymers are not only applicable for genomic sequencing and clinical diagnosis and treatment, but can also have a major impact on nonbiotech applications—such as electronics and photonics— opening up a whole new field for bioengineering. New concepts and insights gained from DNA research are expected to prove genuinely useful in a variety of devices in nano, micro, and macro dimensions in the future. Where silicon has been the building block of inorganic electronics and photonics, DNA holds promise to become the building block for organic electronics and photonics.

Process Validation in Manufacturing of Biopharmaceuticals. Third Edition*Edited by A.S. Rathore, G. Sofer.*

2012, pp. 513, £108.00, ISBN: 978-1-4398-5093-0.

CRC Press, Boca Raton, FL, USA.

This volume delves into the key aspects and current practices of process validation. It includes discussion on the final version of the FDA 2011 Guidance for Industry on Process Validation Principles and Practices, commonly referred to as the Process Validation Guidance or PVG, issued in final form on January 24, 2011. The book also provides guidelines and current practices, as well as industrial case studies illustrating the different approaches that can be taken for successful validation of biopharmaceutical processes.

Case studies include: Process validation for membrane chromatography; Leveraging multivariate analysis tools to qualify scale-down models; A matrix approach for process validation of a multivalent bacterial vaccine; Purification validation for a therapeutic monoclonal antibody expressed and secreted by Chinese Hamster Ovary (CHO) cells; Viral clearance validation studies for a product produced in a human cell line

A much-needed resource, this book presents process characterization techniques for scaling down unit operations in biopharmaceutical manufacturing, including chromatography, chemical modification reactions, ultrafiltration, and microfiltration. It also provides practical methods to test raw materials and in-process samples. Stressing the importance of taking a risk-based approach towards computerized system compliance, this book will help you and your team ascertain process validation is carried out and exceeds expectations.

The Metabolic Pathway Engineering Handbook.**Volume 1: Fundamentals;****Volume 2: Tools and Applications.***Edited by C.D. Smolke.*

2012, US\$269.95, ISBN: 978-4398-0296-0 (Vol. 1); 978-1-4200-7765-0 (Vol. 2).

CRC Press, Boca Raton, FL, USA.

(Vol. 1) *The Metabolic Pathway Engineering Handbook: Fundamentals* provides an overview of metabolic pathway engineering with a look towards the future. It discusses cellular metabolism, including transport processes inside the cell and energy generating reactions, as well as rare metabolic conversions. This book also explores balances and reaction models, the regulation of metabolic pathways, and genome scale and multiscale modeling tools. In addition, it covers development of appropriate hosts for metabolic engineering including the use of *Escherichia coli*, *Bacillus subtilis*, *Streptomyces*, yeast, filamentous fungi, and mammalian cells using cell culture.

(Vol. 2) *The Metabolic Pathway Engineering Handbook: Tools and Applications* delves into evolutionary tools, including those associated with gene expression for metabolic pathway engineering. It covers applications of emerging technologies, including research on genome-wide technologies, DNA and phenotypic microarrays, and proteomics tools for experimentally determining flux through pathways. This book also looks at emerging applications for producing fine chemicals, drugs, and alternative fuels.