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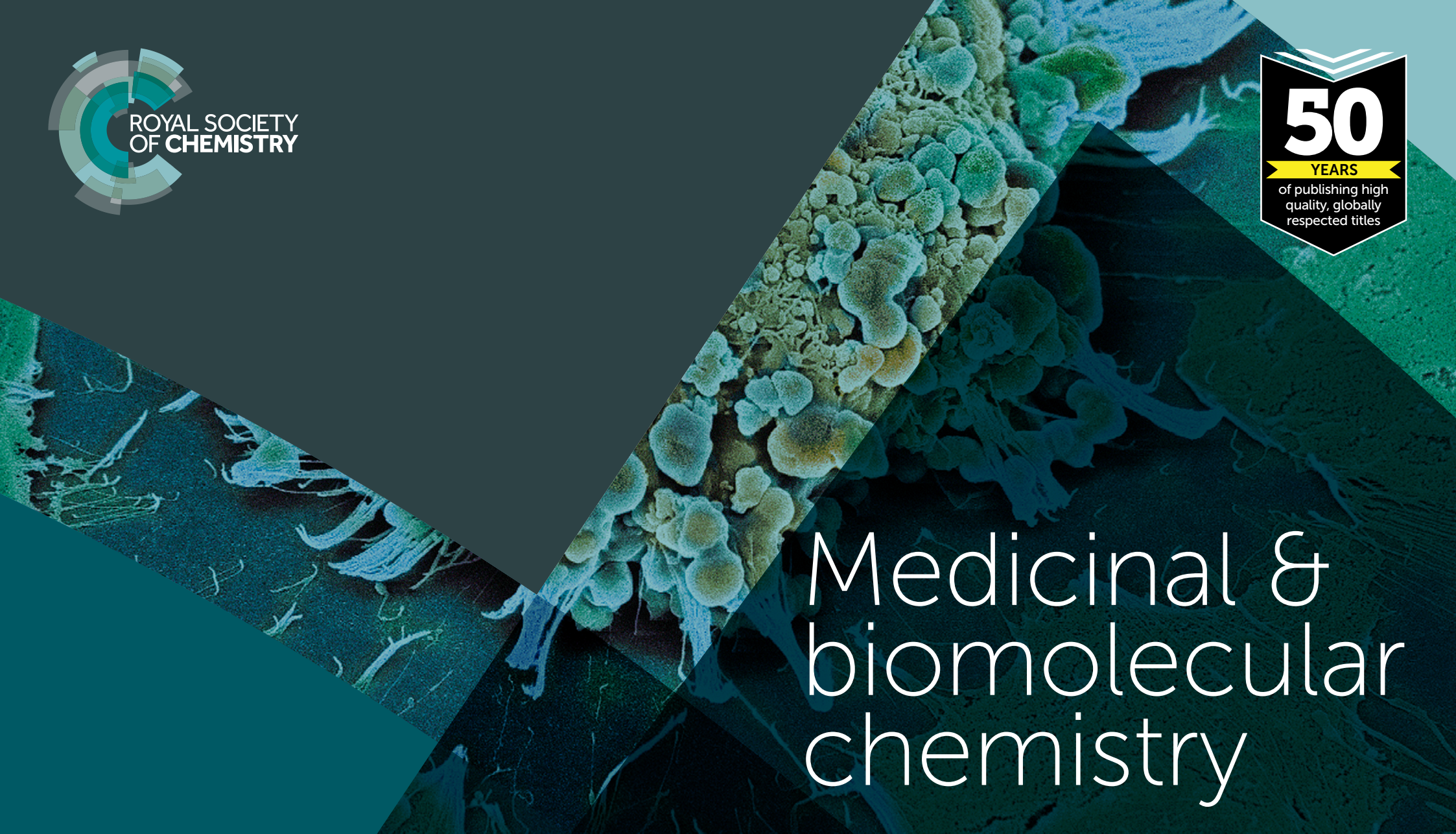

Medicinal & biomolecular chemistry

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New in medicinal & biomolecular chemistry

This year's portfolio sees us further expanding our chemical biology, drug discovery, metallobiology, toxicology and photoscience series. Exciting new titles join a portfolio already full of high quality research from some of the leading minds in the field.

Five minutes with...

Name Nathan Brown

Affiliation Benevolent AI, London, UK

Editor of *Artificial Intelligence in Drug Discovery*

Book publication date February 2019

ISBN 9781788015479

Tell us about your book

While the fields of AI and Drug Discovery have had significant overlap for many years, there has been renewed and concerted efforts to combine the strengths of both to make significant leaps forward. This book will cover the history and fundamentals of artificial intelligence and machine learning, with case studies from the literature that demonstrate their potential and their impact in the field. The book will then look at the wealth of chemistry data and the potential to learn from these data, before moving straight into predictive modelling and its impact in molecular design. These methods take advantage of both chemical and protein structural data to make better predictions and designs. The later sections of the book cover synthesis planning, in my opinion the holy grail of computational chemistry methods, and using AI in molecular simulations.

Which drug that has been discovered do you feel has had the most impact? e.g. improving people's lives?

Having been involved in many drug discovery projects myself that have reached the clinic, I am acutely aware of the contributions that these efforts from large teams make. I once met V. Craig Jordan, who discussed his work on Tamoxifen in the 1970s. His research led to improving the health of millions of women, and is estimated to have saved the lives of 500,000. It is astounding to think that relatively small groups of people can have such a positive impact on society.

How did you get into your field?

I had a somewhat atypical route into Chemoinformatics, but was fundamentally interdisciplinary before this was really a thing. I started out as a Computer Scientist, working on artificial life simulations, which got me interested in a certain class of evolutionary algorithms to optimise solutions using analogues of natural evolution. This research led me onto a PhD applying these algorithms to challenges in drug discovery. I found this research incredibly interesting and I could clearly see potential benefits to humanity. Roll on twenty years and I am now leading a team of Chemoinformatics Data Scientists working on challenges in Drug Discovery using Artificial Intelligence.

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Five minutes with...

Name Angela Casini

Affiliation Cardiff University, UK

Co-editor of *Metal-based Anticancer Agents*

Book publication date February 2019

ISBN 9781788014069

Tell us about your book

Within the RSC Metallobiology book series, "Metal-based Anticancer Agents" aims to emphasise the most significant experimental and conceptual progresses made during the last few years in the areas of inorganic medicinal chemistry and metallodrug discovery and development with a focus on cancer therapy. The content of the book is arranged according to (i) Main classes of anticancer metallodrugs, (ii) emerging concepts in metallodrugs discovery, (iii) method development and (iv) preclinical and clinical development. The book covers much of the vast spectrum of inorganic drug discovery and development, from synthetic approaches and novel supramolecular scaffolds to clinical evaluations. It's a unique overview of this exciting and highly interdisciplinary area of research and provides an overview/update of the pre-clinical and clinical evaluation of novel metal-based anticancer agents. It would be a valuable resource for experts, but also for people new to the field.

What do you think will be the next big breakthrough in your subject area?

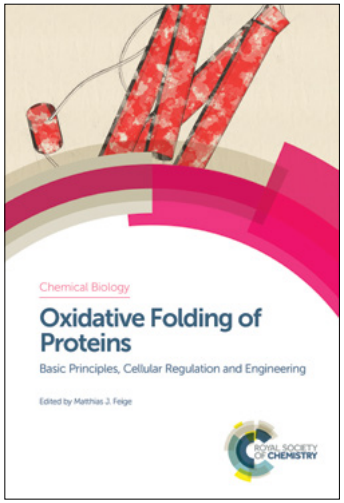
I am particularly intrigued by the new examples of metal-based radiopharmaceutical as ' theranostic' agents for both therapy and imaging of cancer. The field of supramolecular coordination complexes for biomedical applications is still in its infancy, but the latest examples hold promise for future advancements in drug discovery, as well as for the development of novel anticancer drug delivery systems.

You were listed as one of the world's most influential scientific minds of 2014 in pharmacology by Thomson Reuters, who would you say has been the biggest influence during your career?

The chance to collaborate over the years with colleagues from different areas in the drug discovery field, from chemistry, chemical biology, pharmacology and medicine. Instrumental to my academic career has been my participation in several EU COST (European Cooperation in Science and Technology) Actions. COST Actions are bottom-up science and technology networks, open to researchers and stakeholders with a duration of four years. They are active through a range of networking tools, such as workshops, conferences, training schools, short-term scientific missions (STSMs), and dissemination activities. These Actions are invaluable for early carer researchers to build up their international network of collaborations so as to achieve academic independence. Several of the contributors to my book (including the two co-editors) were also COST participants I met over the years.

What was the biggest challenge you faced when writing your book?

I did not write the entire book myself, so a challenge was to inspire the contributors to provide not only a chemistry perspective, but to combine it with a translational point of view in each chapter. So far the various authors have done a great job, and it was a real pleasure working with them on this volume.



About the series

ISSN: 2055-1975

The Chemical Biology Series is a new venture that aims to provide a comprehensive suite of reference books on developing areas at the interface of chemistry and biology. Chapters written and edited by experts worldwide will introduce practical aspects and best methods, will explain the fundamental chemistry knowledge, and will provide forward-looking perspectives. Ultimately, the series aims to aid postgraduate students and researchers apply chemical tools and understand current challenges in the field. The books will provide a valuable reference for scientists working outside their own area of current expertise or looking to engage in chemical biology research. Coverage will include topics such as analytical and computational tools, chemical probes, imaging, glycosciences, genomics and transcriptomics, chemical genetics and gene editing tools, and aspects of synthetic biology.

NMR in Chemical Biology

Advances and Applications

Sofia Pauleta Universidade Nova de Lisboa, Portugal | **Eurico J Cabrita** Universidade Nova de Lisboa, Portugal

NMR is an important tool for achiving molecular reasoning of biological systems at the interface between chemistry and biology. NMR in Chemical Biology focuses on the use of small molecules as tools for chemical biology, the latest advances in structure elucidation of small molecules and their interactions with biomolecules, modern approaches to structure determination of lipids, proteins, glycans and nucleic acids as well as the NMR approaches to characterize complex protein dynamics in folustion. Illustrated with examples of the application of NMR to tackle important problems in chemical biology, this book is ideal for a wide range of chemical biologists from medicinal and organic chemists to biochemists in academia and industry working in a range of disciplines.

Hardback | 450 pages | 9781788011723 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-172-3
9 781788 011723

Synthetic Glycomes

Peng George Wang Georgia State University, USA | **Wanyi Guan** Hebei Normal University, China | **Lei Li** Georgia State University, USA

Glycans play essential roles in diverse biological and aetiological processes. Developments of the glycan microarray our knowledge of the function of glycans has increased, however the accessibility of glycans is a major obstacle to further study. To circumvent this limitation many synthetic strategies including chemical, enzymatic and chemo-enzymatic have been developed to produce libraries of structurally defined complex glycans. The objective of this book is to provide a comprehensive review of the current state of the synthetic glycome and introduce the application of synthetic glycomes in the glycan microarray. Synthetic glycomes is an ideal reference for students and chemical biologists interested in the development of synthetic glycomes and the study of glycans.

Hardback | 350 pages | 9781788011648 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-164-8
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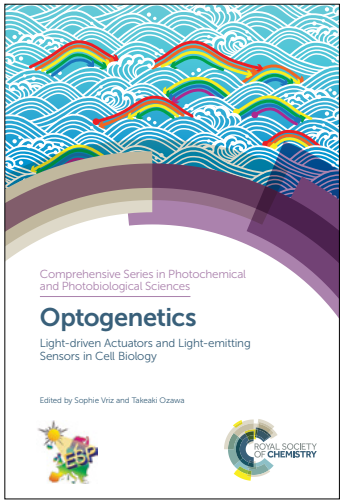

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ISSN: 2041-9716

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Evelyne Sage, Institut Curie, France |
Lesley Rhodes, University of Manchester, UK |
Massimo Trotta, Istituto per i Processi Chimico Fisici-CNR, Italy

Initiated by the European Society for Photobiology this series provides comprehensive overviews on specific areas of photoscience, giving in-depth coverage of the very different fields related to light effects. It embraces both well-established and emerging fields and allows investigators, physicians, industrialists and postgraduate students to obtain an updated account in specific areas and a ready access to the recent literature. Importantly, books in this series provide a critical evaluation of the directions that the field is taking.

Cutaneous Photoaging

Rachel E B Watson University of Manchester, UK | **Christopher E M Griffiths** University of Manchester, UK

Photoaging results from chronic exposure to UV radiation and is an increasingly common clinical feature, with an aging population the clinical burden is likely to increase despite advances in our understanding of the pathology and development of improved treatments. This book will present and review the latest progress from the forefront of translational research in cutaneous photoaging. With a global team of authors Cutaneous Photoaging provides an international perspective on the causes, consequences, pathophysiology and treatment of photoaging, ideal for dermatologists, students and professionals in photoscience.

Hardback | 350 pages | 9781788011266 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-126-6

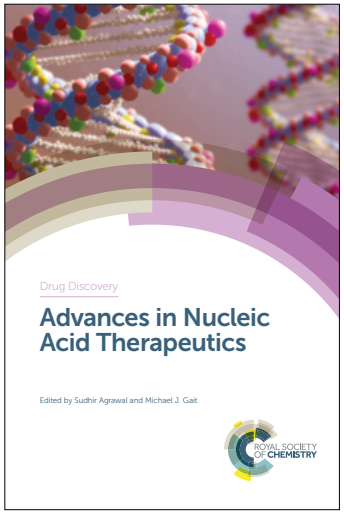
Optical Techniques in Biomedical and Biophysical Sciences

Franco Fusi Universita degli Studi di Firenze, Italy | **Giovanni Romano** University of Florence, Italy

Optical Techniques in Biomedical and Biophysical Sciences aims to provide an overview of light sources, together with an extensive and authoritative description of the optical techniques in bio-medicine. This book is designed to give biomedical researchers a strong feel for the capability of physical approaches, promote new interdisciplinary interests and persuade more practitioners to take advantage of optical techniques. Supplemented with videos providing a hands-on description of the techniques and procedures, this book has a technique focused approach ideal for anyone working in this interdisciplinary field.

Hardback | 350 pages | 9781788015295 | 2020 | £169.00 | $235.00

ISBN 978-1-78801-529-5



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ISSN: 2041-3203

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The Drug Discovery Series covers all aspects of drug discovery and medicinal chemistry and contains over sixty books published since 2010. Providing comprehensive coverage of this important and far-reaching area, the books encourage learning in a range of different topics and provide valuable reference for scientists working outside their own areas of expertise. Books feature case studies to bring different aspects of the drug discovery process alive and they detail the fundamental science necessary for understanding through to the most up-to-date discoveries and cutting-edge technology. Chapters are written and edited by experienced researchers from both industry and academia. This series will be of particular interest to postgraduate students and medicinal chemists and biochemists working in academia or industry.

Advances in Nucleic Acid Therapeutics

Sudhir Agrawal Idera Pharmaceuticals, USA | **Michael J Gait** MRC Laboratory of Molecular Biology (LMB), UK

The sequencing of the human genome and subsequent elucidation of the molecular pathways that are important in the pathology of disease have provided unprecedented opportunities for the development of new therapeutics. Nucleic acid-based drugs have emerged in recent years to yield extremely promising candidates for drug therapy to a wide range of diseases. Advances in Nucleic Acid Therapeutics is a comprehensive review of the latest advances in the field, covering the background of the development of nucleic acids for therapeutic purposes to the array of drug development approaches currently being pursued. Bringing contributions together from leaders at the forefront of progress, this book depicts the many approaches currently being pursued in both academia and industry.

Hardback | 600 pages | 9781788012096 | 2019 | £199.00 | $275.00

ISBN 978-1-78801-209-6
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Anti-fibrotic Drug Discovery

Jehrod Brenneman KSQ Therapeutics, USA | **Malliga Iyer** National Institutes of Health, USA

Fibrosis is a condition with globally high unmet medical need and as such is a highly active area of academic and pharmaceutical research covering multiple treatment targets, organs tissues and therapeutic approaches. Anti-Fibrotic Drug Discovery is a single source reference for the latest drug-discovery approaches to tackle fibrosis in various tissues, comprehensively covering recent success and future perspectives on emerging therapeutic intervention points. This book is ideal for practitioners in fibrosis drug discovery and research as well as clinicians specialising in liver, kidney, heart and lung disease in which fibrosis plays a key role in pathology.

Hardback | 450 pages | 9781788015103 | 2020 | £179.00 | $250.00

ISBN 978-1-78801-510-3
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Artificial Intelligence in Drug Discovery

Nathan Brown Benevolent AI, London, UK

Due to significant advances in Deep Learning and related areas, artificial intelligence methods are increasingly utilised in drug discovery to tackle challenges that have hitherto been difficult to solve, such as predicting properties, designing molecules, and optimising synthetic routes. Artificial Intelligence in Drug Discovery comprehensively covers artificial intelligence and machine learning tools and techniques; covering specific challenges such as learning from chemical data, designing new molecular structures, predictive modelling in both ligand and structure-space, synthesis planning, and molecular simulations. The book tackles real-world challenges in drug discovery ensuring context of application is preserved and disseminated by world leaders in the field.

Hardback | 500 pages | 9781788015479 | 2020 | £179.00 | $250.00

ISBN 978-1-78801-547-9

Drug Discovery for Emerging Viruses

César Muñoz-Fontela Bernhard Nocht Institute for Tropical Medicine, Germany | **Rafael Delgado** Hospital Universitario 12 de Octubre, Spain

New antivirals are urgently needed. Recent outbreaks caused by viruses with great epidemiological impact such as Zika, or extraordinary virulence such as Ebola, Nipah, Lassa, Crimean-Congo Haemorrhagic fever highlight the current lack of clinically proven vaccines and treatments for these potentially catastrophic agents. Drug Discovery for Emerging Viruses will comprehensively outline the state of the art in antiviral drug discovery including identification of targets, screening, strategies, and the current pipeline of candidate antivirals. The book will also address the challenges faced in proceeding from pre-clinical studies to animal models and clinical trials with these highly pathogenic agents.

Hardback | 340 pages | 9781788015646 | 2020 | £159.00 | $220.00

ISBN 978-1-78801-564-6

Cytotoxic Payloads for Antibody–Drug Conjugates

David E Thurston King's College London, UK | **Paul J M Jackson** FemtoGenix Ltd, UK

The antibody–drug conjugates (ADCs) field is one of the fastest growing areas of drug discovery and represents a large body of research. ADCs deliver a cytotoxic payload, a key component of the overall ADC design, specifically to cancer cells by attaching it to an antibody targeted to antigens on the cell surface. This book discusses the range of payloads used to date along with their advantages and disadvantages, and describes novel payloads at the research stage that may be used clinically in the near future.

Hardback | 500 pages | 9781788010771 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-077-1

Medicinal Chemistry Optimization

A Guide to ADMET Challenges

Sarah Skerratt Vertex Pharmaceuticals, UK | **Patrick Schnider** Roche Switzerland

Medicinal chemistry is a complex science that lies at the very heart of drug discovery. Poor solubility, complex metabolism, tissue retention and slow elimination are just some of the properties of investigational compounds that present a challenge to the design and conduct of ADMET studies. Medicinal chemistry experience and knowledge relating to how a lead structure was modified to solve a specific problem is generally very challenging to retrieve. Presented in a visual and accessible style Medicinal Chemistry Optimization intends to provide rapid solutions to overcome the universal challenges to optimizing ADMET.

Hardback | 350 pages | 9781788012270 | 2019 | £110.00 | $150.00

ISBN 978-1-78801-227-0

MicroRNAs in Diseases and Disorders

Emerging Therapeutic Targets

Philip V Peplow University of Otago, New Zealand | **Bridget Martinez** University of California, USA | **George A Calin** University of Texas MD Anderson Cancer Center, USA | **Aurora E Kerscher** East Virginia Medical School, USA

MicroRNAs have a distinct role in the development and progression of a variety of diseases including cancer, neurological disease and metabolic disease amongst others. As such, there is considerable interest in the potential utilisation of microRNAs in precision and personalised medicine, by increasing our understanding of the role of microRNA in the pathology of disease it allows an opportunity to identify potential therapeutic targets. With an international team of authors this book covers the global perspective from pathology to treatment with a comprehensive review of how drugs can be designed to target microRNAs in a variety of diseases.

Hardback | 500 pages | 9781788013949 | 2019 | £179.00 | $250.00

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Peptide Therapeutics

Strategy and Tactics for Chemistry, Manufacturing, and Controls

Ved Srivastava Intarcia Therapeutics, USA

Peptide therapy has become a key strategy of innovative drug development, however one of the potential barriers for approval of novel peptide drugs in the clinic is their deficiencies in clearly defined CMC strategy from the beginning of the clinical development plan. Peptide Therapeutics comprehensively outlines the critical process parameters for efficient manufacturing processes for the peptide drug substances and peptide drug products, the key challenges in quality control, emerging analytical tools, aligning chemistry manufacture and control with clinical trials and current regulatory guidelines. This book will be an asset not only as a reference book for peptide researchers engaged in the pharmaceutical manufacturing setting but also a valuable resource to research and development scientists and graduate students to understand the development and manufacturing process of peptide based medicine.

Hardback | 400 pages | 9781788014335 | 2020 | £179.00 | $250.00

ISBN 978-1-78801-433-5

Precision Medicine

James W A Ritchie Cancer Research UK, UK | **Wendy Alderton** Precision Medicine Catapult, UK

Also referred to as personalised or stratified medicine, precision medicine has the potential to revolutionise medicine and healthcare through improved diagnoses, rational disease prevention and more effective, efficient treatment based on an understanding of genetic, environmental, and lifestyle factors. This book gives an overview of the importance, challenges and successes of personalised medicine from a drug discovery perspective. This is timely due to recent technological developments that have led to demonstrable successes, bringing the vision for personalised medicine closer to reality.

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Protein-Protein Interaction Regulators

Siddhartha Roy Bose Institute, India | **Haian Fu** Emory University School of Medicine, USA

Molecular interations, Protein-Protein interactions play a crucial role in regulating many cellular functions. In many diseases, abberant forms of these interactions play central roles. Thus, they have emerged as critical drug targets. This book includes a survey of recent advances in the structural understanding of protein-protein interactions as well as recent developments in modulator discovery.

Hardback | 350 pages | 9781788011877 | 2019 | £169.00 | $235.00

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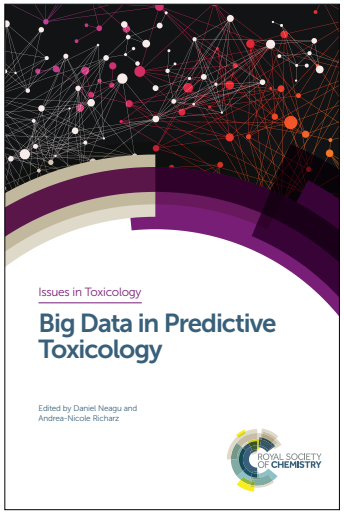

About the series

ISSN: 1757-7179

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The field of toxicological research is continually expanding and diversifying, driven by the need to understand the human and ecological risks of exposure to chemicals and other toxicants. This Series is devoted to coverage of modern toxicology and assessment of risk. Written by expert scientists from academia, government and industry, each book will serve as a guide to investigations in toxicology, biomedicine, biochemistry, forensics and environmental and pollution sciences.

Big Data in Predictive Toxicology

Daniel Neagu University of Bradford, UK | **Andrea-Nicole Richarz,** European Commission - Joint Research Centre, Italy

The rate and volume of toxicological data generation is continually growing due to novel techniques and software. The amplified pace and capacity of data generation has repercussions for organising and analysing data output. This book discusses these challenges as well as the nature, storage, analysis and interpretation of toxicological big data. It details how these data are applied in toxicity prediction, modelling and risk assessment. This title is relevant for researchers and postgraduates in the fields of computational methods, applied and physical chemistry, cheminformatics, biological sciences, predictive toxicology, and safety and hazard assessment.

Hardback | 300 pages | 9781782622987 | 2019 | £159.00 | $220.00

ISBN 978-1-78262-298-7

Nanoparticle–Protein Corona

Biophysics to Biology

Ashutosh Kumar Ahmedabad Univeristy, India | **Alok Dhawan** Indian Institute of Toxicology Research (CSIR-IITR), India

Any nanomaterial is always covered by proteins immediately upon contact with a physiological environment, this phenomenon may be the key to understanding much of bionanoscience. This formation of the nanoparticle protein corona changes the behaviour of the nanoparticle and translates to issues in their transport and fate in the environment, animals and humans; this however, also offers a new route to study protein interactions. Ideal for toxicologists and researchers in nanoscience, this book provides a detailed understanding of the formation and biological significance of the corona, as well as the impact on biological assays, exotoxicity studies and proteomics research.

Hardback | 350 pages | 9781788013918 | 2019 | £169.00 | $235.00

ISBN 978-1-78801-391-8

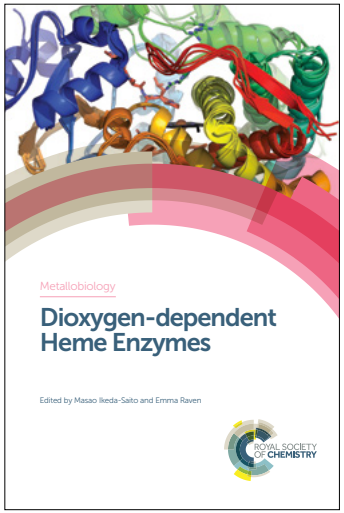
The Micronucleus Assay in Toxicology

Siegfried Knasmüller Medical University of Vienna, Austria | **Michael Fenech**
CSIRO Food and Nutrition, Australia, HUMN Project Coordinating Group, Australia

The micronucleus assay is one of the most widely used method in genetic toxicology and human biomonitoring. This book covers the detection of selected important genotoxic carcinogens, such as heavy metals, pesticides and radionuclides, using micronucleus assays and details the methods currently used for the analyses of different types of cells in studies. It will explains the molecular mechanisms of micronucleus formation, and provides advice on analysis of data. This will be a useful resource for postgraduate students and researchers in toxicology, oncology, chemical and environmental safety, DNA damage, nutrition, genetics, nutrigenomics, nutrigenetics and mutation research.

Hardback | 400 pages | 9781788011341 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-134-1



About the series

ISSN: 2045-547X

The Metallobiology Series is a collection of professional reference books covering all aspects of the roles of metals in biological systems. The scope includes metalloenzymes, metalloproteins, storage and transport of metal ions, bio-organometallic chemistry and interaction of metal ions with biomolecules. Books in this series provide authoritative perspectives from international experts and will be of interest to both academics and those working in industry in a wide range of disciplines, including medicinal chemistry, pharmaceutical science, biochemistry, metallomics and inorganic biochemistry.

Metal-based Anticancer Agents

Angela Casini Cardiff University, UK | **Anne Vessières** Pierre et Marie Curie Univeristy, France | **Samuel M Meier-Menches** University of Vienna, Austria

Metal-based anticancer drugs, notably platinum-based such as cisplatin, have a tremendous clinical impact: it is estimated that at least half of all cancer patients are treated with a platinum-based drug. Metal-based Anticancer Agents introduces the main classes of metallodrugs, their possible different biological targets, the major and concepts and methods. The book also provides an overview of the most significant experimental and conceptual progresses made during the last years in the areas of inorganic medicinal chemistry and metallodrug discovery and development. This book will be a valuable resource for experts in the field but also for those wishing to extend their expertise to metal-based cancer drugs.

Hardback | 500 pages | 9781788014069 | 2019 | £179.00 | $250.00

ISBN 978-1-78801-406-9

Amino Acids, Peptides and Proteins

Volume 44

Maxim Ryadnov National Physical Laboratory, UK | **Ferenc Hudecz Eötvös** Loránd University, Hungary

Amino Acids, Peptides and Proteins comprises a comprehensive and critical review of significant developments at the biology/chemistry interface. Compiled by leading researchers in their subject, this volume incorporates current trends and emerging areas. Appealing broadly to researchers in academia and industry, it will be of great benefit to any researcher wanting a succinct reference in the field.

Hardback | 250 pages | 9781788016896 | 2020 | £314.95 | $440.00

ISBN 978-1-78801-689-6

Carbohydrate Chemistry

Chemical and Biological Approaches Volume 44

Amelia Pilar Rauter Universidade de Lisboa, Portugal | **Thisbe K. Lindhorst** Kiel University, Germany | **Yves Queneau** INSA Lyon, France

This invaluable volume contains analysed, evaluated and distilled information on the latest in carbohydrate research.The discovery and synthesis of novel carbohydrates and mimetics with diverse applications continues to be a major challenge for carbohydrate chemists. The understanding of the structure and function of carbohydrates and glycoconjugates remains vital in medicine and molecular biology. Covering both chemical and biological science related to the particular volume topic, this series demonstrates the interdisciplinary nature of modern carbohydrate research, and benefits any researcher who wishes to learn about the latest developments in the carbohydrate field.

Hardback | 300 pages | 9781788013680 | 2019 | £314.95 | $440.00

ISBN 978-1-78801-368-0

Organophosphorus Chemistry

Volume 48

David W Allen Sheffield Hallam University, UK | **David Loakes** University of Cambridge, UK |
John C Tebby Sheffield Hallam University, UK

This annual review of the literature presents a comprehensive and critical survey of the vast field of study involving organophosphorus compounds, from phosphines and related P-C bonded compounds to phosphorus acids, phosphine chalcognides and nucleotides. The Editors have added to the content with a timely chapter on the recent developments in green synthetic approaches in organophosphorus chemistry to reflect current interests in the area.

Hardback | 350 pages | 9781788014991 | 2019 | £314.95 | $440.00

ISBN 978-1-78801-499-1

Synthetic Biology

Volume 3

Maxim Ryadnov National Physical Laboratory, UK | **Luc Brunsveld** Eindhoven University of Technology, The Netherlands

Synthetic biology enables the design of biological systems in a rational and systematic way. This volume captures the expanding primary literature in the form of critical and comprehensive reviews, providing the reader with an authoritative digest of the latest developments in this emerging field. Leading researchers draw on the recent literature, from both dedicated journals and broader sources, making this an essential reference to any library supporting this research.

Hardback | 300 pages | 9781788010078 | 2019 | £314.95 | $440.00

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