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NPQ345 - GWENDOLYN GWENDOLYN

This volume looks at modern approaches to catalysis and reviews the extensive literature which bridges the gap from academic studies in the laboratory to practical applications in industry not only for catalysis field but also for environmental protection.

This authored monograph presents the state-of-the-art improvements in 2D materials, focusing on their most significant achievements, as well as recent emergence and potential applications. The book discusses synthetic protocols as well as the structural chemistry and physical properties of various 2D materials and explores their energy-related utilization. The main energy harvesting applications such as piezoelectric generators, solar cells and hydrogen evolution reactions are analyzed, while special focus is also given to the related energy storage technologies such as rechargeable batteries, supercapacitors and wearable energy storage devices. This volume sheds new light on 2D materials and their applications and will be a useful tool for graduates and academics working in the fields of materials science, materials physics and chemistry.

Studies in Natural Products Chemistry, Volume 63, covers the rapid developments in spectroscopic techniques and accompanying advances in high-throughput screening techniques that have made it possible to rapidly isolate and determine the structures and biological activity of natural products. The book highlights these new and exciting opportunities in the field of new drug development to the pharmaceutical industry. As natural products in the plant and animal kingdom offer a huge diversity of chemical structures that are the result of biosynthetic processes that have been modulated over the millennia through genetic effects, this book is an ideal resource on the material presented. Focuses on the chemistry of bioactive natural products Contains contributions by leading authorities in the field Presents sources of new pharmacophores

Medicinal plants are used to treat diseases and provide health benefits, and their applications are increasing around the world. A huge array of phytochemicals have been identified from medicinal plants, belonging to carotenoids, flavonoids, lignans, and phenolic acids, and so on, with a wide range of biological activities. In order to explore our knowledge of phytochemicals with the assistance of modern molecular tools and high-throughput technologies, this book collects recent innovative original research and review articles on subtopics of mechanistic insights into bioactivities, treatment of diseases, profiling, extraction and identification, and biotechnology.

State of the Art in Neural Networks and Their Applications, Volume Two presents the latest advances in artificial neural networks and their applications across a wide range of clinical diagnoses. The book provides over views and case studies of advances in the role of machine learning, artificial intelligence, deep learning, cognitive image processing, and suitable data analytics useful for clinical diagnosis and research applications. The application of neural network, artificial intelligence and machine learning methods in biomedical image analysis have resulted in the development of computer-aided diagnostic (CAD) systems that aim towards the automatic early detection of several severe diseases. State of the Art in Neural Networks and Their Applications is presented in two volumes. Volume One: Neural Networks in Oncology Imaging covers lung cancer, prostate cancer, and bladder cancer. Volume Two: Neural Networks in Brain Disorders and Other Diseases covers autism spectrum disorder, Alzheimer's disease, attention deficit hyperactivity disorder, hypertension, and other diseases. Written by experienced engineers in the field, these two volumes will help engineers, computer scientists, researchers, and clinicians understand the technology and applications of artificial neural networks. Includes applications of neural networks, AI, machine learning, and deep learning techniques to a variety of oncology imaging technologies Provides in-depth technical coverage of computer-aided diagnosis (CAD), including coverage of computer-aided classification, unified deep learning frameworks, 3D MRI, PET/CT, and more Covers deep learning cancer identification from histopathological images, medical image analysis, detection, segmentation and classification via AI

The second of a four-volume set, this book covers oral cavity and oropharynx pathology. It's goal is to become a "go-to" sign-out resource for head and neck pathology, incorporating anatomy, staging, diagnostic, and prognostic information. This richly illustrated volume has a bullet point format, where appropriate, allowing information to be easily located. This book is aimed at trainee and practicing pathologists in the USA and worldwide, and is also of interest to oral pathologists and oral pathology trainees.

This book shows how a small toolbox of experimental techniques,

physical chemistry concepts as well as quantum/classical mechanics and statistical methods can be used to understand, explain and even predict extraordinary applications of these advanced engineering materials and biomolecules. It highlights how improving the material foresight by design, including the fundamental understanding of their physical and chemical properties, can provide new technological levels in the future.

This book provides a comprehensive overview on the long-term care systems in 12 EU member states and Norway. Focusing on the legal background and its main principles, it includes a comparative analysis which highlights the principal dissimilarities between European long term care benefits, but at the same time also a variety of features in common. It also discusses the increasingly transnational dimension of long-term as a result of migrants returning to their country of origin in old age, and the still-unresolved legal problem of entitlement to long-term care benefits in another EU-member state.

Microbial Cell Factories Engineering for Production of Biomolecules presents a compilation of chapters written by eminent scientists worldwide. Sections cover major tools and technologies for DNA synthesis, design of biosynthetic pathways, synthetic biology tools, biosensors, cell-free systems, computer-aided design, OMICS tools, CRISPR/Cas systems, and many more. Although it is not easy to find relevant information collated in a single volume, the book covers the production of a wide range of biomolecules from several MCFs, including *Escherichia coli*, *Bacillus subtilis*, *Pseudomonas putida*, *Streptomyces*, *Corynebacterium*, *Cyanobacteria*, *Saccharomyces cerevisiae*, *Pichia pastoris* and *Yarrowia lipolytica*, and algae, among many others. This will be an excellent platform from which scientific knowledge can grow and widen in MCF engineering research for the production of biomolecules. Needless to say, the book is a valuable source of information not only for researchers designing cell factories, but also for students, metabolic engineers, synthetic biologists, genome engineers, industrialists, stakeholders and policymakers interested in harnessing the potential of MCFs in several fields. Offers basic understanding and a clear picture of various MCFs Explains several tools and technologies, including DNA synthesis, synthetic biology tools, genome editing, biosensors, computer-aided design, and OMICS tools, among others Harnesses the potential of engineered MCFs to produce a wide range of biomolecules for industrial, therapeutic, pharmaceutical, nutraceutical and biotechnological applications Highlights the advances, challenges, and future opportunities in designing MCFs

This book provides a contemporary research-led overview of the applications of inorganic materials in biomedicine. It begins with a short introduction summarising key concepts in inorganic materials (layered materials, framework materials etc.), and explaining the need for new materials in medicine. It then discusses the key areas in which inorganic materials have been applied, considering: drug delivery; imaging; diagnostics and theranostics; hard matter restoration; and vaccines. Each chapter gives an overview of the major extant challenges in the research area, before presenting a systematic review of how inorganic materials have been applied to gain traction in the field. A clear focus is maintained on the fate of the applied materials in vivo, clinical considerations, and the path to translation from lab to clinic. With contributions from leading researchers, Biomedical Applications of Inorganic Materials will provide a comprehensive introduction for advanced undergraduates, postgraduates and researchers wishing to learn about the topic.

The Springer Handbook of Augmented Reality presents a comprehensive and authoritative guide to augmented reality (AR) technology, its numerous applications, and its intersection with emerging technologies. This book traces the history of AR from its early development, discussing the fundamentals of AR and its associated science. The handbook begins by presenting the development of AR over the last few years, mentioning the key pioneers and important milestones. It then moves to the fundamentals and principles of AR, such as photogrammetry, optics, motion and objects tracking, and marker-based and marker-less registration. The book discusses both software toolkits and techniques and hardware related to AR, before presenting the applications of AR. This includes both end-user applications like education and cultural heritage, and professional applications within engineering fields, medicine and architecture, amongst others. The book concludes with the convergence of AR with other emerging technologies, such as Industrial Internet of Things and Digital Twins. The handbook presents a comprehensive reference on AR technology from an academic, industrial and commercial perspective, making it an invaluable resource for audiences from a variety of backgrounds.

The eight-volume set LNCS 12901, 12902, 12903, 12904, 12905,

12906, 12907, and 12908 constitutes the refereed proceedings of the 24th International Conference on Medical Image Computing and Computer-Assisted Intervention, MICCAI 2021, held in Strasbourg, France, in September/October 2021.* The 531 revised full papers presented were carefully reviewed and selected from 1630 submissions in a double-blind review process. The papers are organized in the following topical sections: Part I: image segmentation Part II: machine learning - self-supervised learning; machine learning - semi-supervised learning; and machine learning - weakly supervised learning Part III: machine learning - advances in machine learning theory; machine learning - attention models; machine learning - domain adaptation; machine learning - federated learning; machine learning - interpretability / explainability; and machine learning - uncertainty Part IV: image registration; image-guided interventions and surgery; surgical data science; surgical planning and simulation; surgical skill and work flow analysis; and surgical visualization and mixed, augmented and virtual reality Part V: computer aided diagnosis; integration of imaging with non-imaging biomarkers; and outcome/disease prediction Part VI: image reconstruction; clinical applications - cardiac; and clinical applications - vascular Part VII: clinical applications - abdomen; clinical applications - breast; clinical applications - dermatology; clinical applications - fetal imaging; clinical applications - lung; clinical applications - neuroimaging - brain development; clinical applications - neuroimaging - DWI and tractography; clinical applications - neuroimaging - functional brain networks; clinical applications - neuroimaging - others; and clinical applications - oncology Part VIII: clinical applications - ophthalmology; computational (integrative) pathology; modalities - microscopy; modalities - histopathology; and modalities - ultrasound *The conference was held virtually.

Recent Advances in Natural Products Analysis is a thorough guide to the latest analytical methods used for identifying and studying bioactive phytochemicals and other natural products. Chemical compounds, such as flavonoids, alkaloids, carotenoids and saponins are examined, highlighting the many techniques for studying their properties. Each chapter is devoted to a compound category, beginning with the underlying chemical properties of the main components followed by techniques of extraction, purification and fractionation, and then techniques of identification and quantification. Biological activities, possible interactions, levels found in plants, the effects of processing, and current and potential industrial applications are also included. Focuses on the latest analytical techniques used for studying phytochemical and other biological compounds Authored and edited by the top worldwide experts in their field Discusses the current and potential applications and predicts future trends of each compound group

This volume studies the challenges of climate change in South Asia and examines the role of the South Asian Association for Regional Cooperation (SAARC) in addressing them. It highlights the dangers posed by climate change in South Asia and underlines the need to strengthen and intensify regional cooperation to preserve, protect and manage the diverse and fragile eco-systems of the region. The book examines policies and initiatives of the SAARC in tackling these issues and also analyzes their implementation by member countries. Comprehensive and topical, this volume will be useful for scholars and researchers of South Asian Studies, environmental studies, climate change studies, public policy and governance, development studies, international relations, regional cooperation, and political studies. It will also be of importance to policymakers and NGOs working in this field.

Biomass is widely considered as a potential alternative to dwindling fossil fuel reserves. There is a large variety of biomass sources (oleaginous, lignocellulosic, algae, etc.), with many possible conversion routes and products. Currently, biomass is not just viewed as a source of biofuels, but also as an interesting feedstock for the production of bio-based chemicals that could largely replace petrochemicals. In this context, the search for new sustainable and efficient alternatives to fossil sources is gaining increasing relevance within the chemical industry. There, the role of catalysis is often critical for the development of clean and sustainable processes, aiming to produce commodity chemicals or liquid fuels with a high efficiency and atom economy. This book gathers works at the cutting edge of investigation in the application of catalysis, for the sustainable conversion of biomass into biofuels and bio-based chemicals.

This book describes the key printing technologies for printed electronics.

Medicinal Chemistry, Volume 75, the latest release in the Advances in Inorganic Chemistry series, presents timely and informative summaries on current progress in a variety of subject areas. This acclaimed serial features reviews written by experts in the

field, serving as an indispensable reference to advanced researchers that empowers readers to pursue new developments in each field. Users will find this to be a comprehensive overview of recent findings and trends from the last decade that covers various kinds of inorganic topics, from theoretical oriented supramolecular chemistry, to the quest for accurate calculations of spin states in transition metals. Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in the *Advances in Inorganic Chemistry* series Includes the latest information on medicinal chemistry

BIODEGRADABLE MATERIALS AND THEIR APPLICATIONS Biodegradable materials have ascended in importance in recent years and this book comprehensively discusses all facets and applications in 29 chapters making it a one-stop shop. Biodegradable materials have today become more compulsory because of increased environmental concerns and the growing demand for polymeric and plastic materials. Despite our sincere efforts to recycle used plastic materials, they ultimately tend to enter the oceans, which has led to grave pollution. It is necessary, therefore, to ensure that these wastes do not produce any hazards in the future. This has made an urgency to replace the synthetic material with green material in almost all possible areas of application. *Biodegradable Materials and Their Applications* covers a wide range of subjects and approaches, starting with an introduction to biodegradable material applications. Chapters focus on the development of various types of biodegradable materials with their applications in electronics, medicine, packaging, thermoelectric generators, protective equipment, films/coatings, 3D printing, disposable bioplastics, agriculture, and other commercial sectors. In biomedical applications, their use in the advancement of therapeutic devices like temporary implants, tissue engineering, and drug delivery vehicles are summarized. Audience Materials scientists, environmental and sustainability engineers, and any other researchers and graduate students associated with biodegradable materials.

Nucleic Acids in Medicinal Chemistry and Chemical Biology An up-to-date and comprehensive exploration of nucleic acid medicinal chemistry and its applications In *Nucleic Acids in Medicinal Chemistry and Chemical Biology: Drug Development and Clinical Applications*, a team of distinguished researchers delivers a comprehensive overview of the chemistry and biology of nucleic acids and their therapeutic applications. The book emphasizes the latest research in the field, including new technologies like CRISPR that create novel possibilities to edit mutated genes at the genomic DNA level and to treat inherited diseases and cancers. The authors explore the application of modified nucleosides and nucleotides in medicinal chemistry, a variety of current topics on nucleic acid chemistry and biology, nucleic acid drugs used to treat disease, and more. They also probe new domains of pharmaceutical research, offering the reader a wealth of new drug discovery opportunities emerging in this dynamic field. Readers will also find: A thorough introduction to the basic terminology and knowledge of the field of nucleic acid medicinal chemistry Comprehensive explorations of the methods used to determine the development of nucleic acid drugs Practical discussions of new technologies, like CRISPR, nanotechnology-based delivery systems, synthetic biology, and DNA-encoded chemical libraries In-depth examinations of the latest, cutting-edge developments in nucleic acid medicinal chemistry Perfect for medicinal and nucleic acid chemists, *Nucleic Acids in Medicinal Chemistry and Chemical Biology* will also earn a place in the libraries of biochemists, chemical biologists, and pharmaceutical researchers.

Biodegradable thermogels are a promising class of stimuli-responsive polymers. This book summarizes recent developments in thermogel research with a focus on synthesis and self-assembly mechanisms, gel biodegradability, and applications for drug delivery, cell encapsulation and tissue engineering. A closing chapter on commercialisation shows the challenges faced bringing this new material to market. Edited by leading authorities on the subject, this book offers a comprehensive overview for academics and professionals across polymer science, materials science and biomedical and chemical engineering.

Systems of Nanovesicular Drug Delivery provides a thorough insight into the complete and up-to-date discussions about the preparation, properties and drug delivery applications of various nanovesicles. This volume discusses cubosomes, proniosomes and niosomes, dendrimerosomes and other new and effective approaches for drug delivery. It will be a valuable title and resource for academics and pharmaceutical scientists, including industrial pharmacists, analytical scientists, health care professionals and regulatory scientists actively involved in pharmaceutical products and process development of tailor-made polysaccharides in drug delivery applications. Recently, there have been a number of outstanding nanosystems in nanovesicular carrier-forms (such as nanoemulsions, self-nanoemulsifying systems, nanoliposomes, nanotransferrosomes, etc.), that have been researched and developed for efficient drug delivery by many formulators, researchers and scientists. However, no previously published books have covered all these drug delivery nanovesicles collectively in a single resource. Provides thorough insights and up-to-date discussions about the various systems of nanovesicular drug delivery Covers advanced trigger-assisted systems (such as iontophoresis, ultrasound triggering, etc.) and how they have been used for improved

drug delivery by nanovesicles Presents recent advances in drug delivery fields by global leaders and experts from academia, research, industry and regulatory agencies Includes an updated literature review of relevant key topics, good quality illustrations, chemical structures, attractive flow charts and well-organized tables

Sensors are the eyes or/and ears of an intelligent system, such as UAV, AGV and robots. With the development of material, signal processing, and multidisciplinary interactions, more and more smart sensors are proposed and fabricated under increasing demands for homes, the industry, and military fields. Networks of sensors will be able to enhance the ability to obtain huge amounts of information (big data) and improve precision, which also mirrors the developmental tendency of modern sensors. Moreover, artificial intelligence is a novel impetus for sensors and networks, which gets sensors to learn and think and feed more efficient results back. This book includes new research results from academia and industry, on the subject of "Smart Sensors and Networks", especially sensing technologies utilizing Artificial Intelligence. The topics include: smart sensors biosensors sensor network sensor data fusion artificial intelligence deep learning mechatronics devices for sensors applications of sensors for robotics and mechatronics devices

This book presents the proceedings of the 24th European Conference on Artificial Intelligence (ECAI 2020), held in Santiago de Compostela, Spain, from 29 August to 8 September 2020. The conference was postponed from June, and much of it conducted online due to the COVID-19 restrictions. The conference is one of the principal occasions for researchers and practitioners of AI to meet and discuss the latest trends and challenges in all fields of AI and to demonstrate innovative applications and uses of advanced AI technology. The book also includes the proceedings of the 10th Conference on Prestigious Applications of Artificial Intelligence (PAIS 2020) held at the same time. A record number of more than 1,700 submissions was received for ECAI 2020, of which 1,443 were reviewed. Of these, 361 full-papers and 36 highlight papers were accepted (an acceptance rate of 25% for full-papers and 45% for highlight papers). The book is divided into three sections: ECAI full papers; ECAI highlight papers; and PAIS papers. The topics of these papers cover all aspects of AI, including Agent-based and Multi-agent Systems; Computational Intelligence; Constraints and Satisfiability; Games and Virtual Environments; Heuristic Search; Human Aspects in AI; Information Retrieval and Filtering; Knowledge Representation and Reasoning; Machine Learning; Multidisciplinary Topics and Applications; Natural Language Processing; Planning and Scheduling; Robotics; Safe, Explainable, and Trustworthy AI; Semantic Technologies; Uncertainty in AI; and Vision. The book will be of interest to all those whose work involves the use of AI technology.

This eBook is a collection of articles from a *Frontiers Research Topic*. *Frontiers Research Topics* are very popular trademarks of the *Frontiers Journals Series*: they are collections of at least ten articles, all centered on a particular subject. With their unique mix of varied contributions from Original Research to Review Articles, *Frontiers Research Topics* unify the most influential researchers, the latest key findings and historical advances in a hot research area! Find out more on how to host your own *Frontiers Research Topic* or contribute to one as an author by contacting the *Frontiers Editorial Office*: frontiersin.org/about/contact.

Master the tools of design thinking using Neuroprosthetics: Principles and Applications. Developed from successfully tested material used in an undergraduate and graduate level course taught to biomedical engineering and neuroscience students, this book focuses on the use of direct neural sensing and stimulation as a therapeutic intervention for complex disorders of the brain. It covers the theory and applications behind neuroprosthetics and explores how neuroprosthetic design thinking can enhance value for users of a direct neural interface. The book explains the fundamentals of design thinking, introduces essential concepts from neuroscience and engineering illustrating the major components of neuroprosthetics, and presents practical applications. In addition to describing the approach of design thinking (based on facts about the user's needs, desires, habits, attitudes, and experiences with neuroprosthetics), it also examines how effectively "human centered" neuroprosthetics can address people's needs and interactions in their daily lives. Identifying concepts and features of devices that work well with users of a direct neural interface, this book: Outlines the signal sensing capabilities and trade-offs for common electrode designs, and determines the most appropriate electrode for any neuroprosthetic application Specifies neurosurgical techniques and how electronics should be tailored to capture neural signals Provides an understanding of the mechanisms of neural-electrode performance and information contained in neural signals Provides understanding of neural decoding in neuroprosthetic applications Describes the strategies that can be used to promote long-term therapeutic interventions for humans through the use of neuroprosthetics The first true primary text for undergraduate and graduate students in departments of neuroscience and bioengineering that covers the theory and applications behind this science, *Neuroprosthetics: Principles and Applications* provides the fundamental knowledge needed to understand how

electrodes translate neural activity into signals that are useable by machines and enables readers to master the tools of design thinking and apply them to any neuroprosthetic application.

The revised edition of the renowned and bestselling title is the most comprehensive single text on all aspects of biomaterials science from principles to applications. *Biomaterials Science*, fourth edition, provides a balanced, insightful approach to both the learning of the science and technology of biomaterials and acts as the key reference for practitioners who are involved in the applications of materials in medicine. This new edition incorporates key updates to reflect the latest relevant research in the field, particularly in the applications section, which includes the latest in topics such as nanotechnology, robotic implantation, and biomaterials utilized in cancer research detection and therapy. Other additions include regenerative engineering, 3D printing, personalized medicine and organs on a chip. Translation from the lab to commercial products is emphasized with new content dedicated to medical device development, global issues related to translation, and issues of quality assurance and reimbursement. In response to customer feedback, the new edition also features consolidation of redundant material to ensure clarity and focus. *Biomaterials Science*, 4th edition is an important update to the best-selling text, vital to the biomaterials' community. The most comprehensive coverage of principles and applications of all classes of biomaterials Edited and contributed by the best-known figures in the biomaterials field today; fully endorsed and supported by the Society for Biomaterials Fully revised and updated to address issues of translation, nanotechnology, additive manufacturing, organs on chip, precision medicine and much more. Online chapter exercises available for most chapters

Nasopharyngeal Carcinoma: From Etiology to Clinical Practice discusses NPC from basic science, to clinical management through the perspective of members of the Centre for Nasopharyngeal Carcinoma Research in Hong Kong. It encompasses not only the most detailed information about multiple aspects of NPC, but also the modern day research model of scientist-clinician collaboration, focusing on bench-to-bedside approach. Basic science is covered, discussing genetics and genomics in NPC and its epidemiology and the role of Epstein-Barr Virus (EBV). Translational research is also covered, presenting topics such as animal models, plasma EBV DNA, molecular imaging and immunotherapy, amongst other topics. This book is a valuable source for cancer researchers, oncologists, medical oncologists and several members of the biomedical field who are interested in learning more about NPC management from both clinical and research perspectives. Written by members of the Centre for Nasopharyngeal Carcinoma Research Extensively covers various aspects of NPC, including basic science and the clinical advances of both scientists and clinicians Discusses the molecular information gained through laboratory studies to stimulate research on new treatment strategies

Balancing basic science with information on everyday clinical practice, *Blumgart's Surgery of the Liver, Biliary Tract and Pancreas*, 7th Edition, provides you with expert guidance and advances in the field so you can offer patients the most optimal diagnostic and surgical care. In two convenient volumes, Dr. William Jarnagin and his team of internationally recognized surgeons cover exactly what you need to know, including advances in diagnostic and surgical techniques, minimally invasive surgeries, new interventional diagnostic techniques, and all relevant diseases. This comprehensive, practical reference is designed to help you choose and perform the most appropriate procedures that will minimize inpatient hospital time, curtail costs, and reduce overall recovery time for your patients. Presents cutting-edge guidance on pathology, diagnostics, surgery and non-operative intervention of the liver, biliary tract, and pancreas in one highly regarded, authoritative reference. Covers all surgical approaches, both open and minimally invasive. Considers all worldwide opinions and approaches to management, and includes key data on surgical outcomes to better inform clinical decision-making. Contains 161 chapters with updated references and additional figures—more than 1,500 illustrations in all. The imaging section has been reorganized to reflect a disease-based approach. Includes new and expanded sections on advances in molecular characterization of benign and malignant HPB diseases, perioperative management, interventional techniques, minimally invasive surgery and robotics, and therapeutic advances for malignant disease. Features a section dedicated entirely to operative technique, plus a new historical chapter authored by Professor Jacques Belghitti: "Hepatobiliary and Pancreatic Surgery: Historical Perspective."

Arguing for life, moral and values education as a bedrock for the original goals of school education, this monograph explores how life and values education is conceptualised and imparted in Greater China. Under a globalized, transnational, and technological world, where there has been an increase in people's mobility, in information and cultural exchanges, there is also a growing emphasis on personal and professional ethics. Against this context, life, moral and values education has gained attention for its impact on shaping students' characters as future citizens. However, the cultivation of these values is made deeply diversified and complex by varying interpretations of "life education" and "values education" across societies, given that different societies are influenced by different socio-cultural traditions, educational ideolo-

gies and religious beliefs. The means and approaches towards life education also vary vastly from formal school subjects, school-based programmes as well as teachers and peers' role modelling, community services, extra-curricular activities, school discipline, charity work, pastoral care, and school ethos. Recognising this inherent diversity and complexity in the approach to and the dissemination of life education, the contributors to this volume survey the practice of life education in Greater China so far, suggesting that life education is most effective when it is "diversified, dynamic and developmental across contexts". This book will provide the opportunity for engaging in important and serious debates about the future and the values that will underpin it and will prove of special interest to scholars and practitioners working on education policies curriculum development and teacher education in Greater China.

Since the publication of the first edition of this book in 2010, an explosion of spectacular discoveries in the field of regenerative Nephrology. This second edition features subjects as diverse as age and gender influencing regenerative processes; mechanisms and pathways of premature cell senescence affecting kidney regeneration; the ways intrinsic regenerative processes can become subverted by noxious stressors eventuating in disease progression; novel mechanistic and engineering efforts to recreate functional kidney or its component parts; cell reprogramming and reconditioning as emerging tools of future regenerative efforts; and effects of various biologicals on kidney regeneration. These newer additions to the armamentarium of Regenerative Medicine and Nephrology have become an integral part of the second edition of

the book. Cutting-edge investigations are summarized by the constellation of the most experienced contributing authors coming together from around the world under the umbrella of the second edition. A significant expansion of section on induced pluripotent cells and trajectories of their differentiation. This will be followed by mechanisms and modalities of cell reprogramming for therapeutic purposes A new section on tissue engineering of the kidney of interest to nephrologists and urologists An entire section dedicated to causes of regenerative failure with the emphasis on recent discoveries of senescent cells in kidney disease, pathologic effects of senescent cells, advents in senotherapies and rejuvenation therapies A vastly expanded section on pharmacotherapies promoting kidney regeneration, trials of engineered organs, manufacturing in regenerative medicine and smooth transition to the clinical trials, with an update on some ethical issues