

### March 2014 Life Sciences Paper Caps

Tailoring of biomolecules using protein engineering technology, and host cells culture techniques are among the most sophisticated and elegant achievements of modern applied life sciences in which the basic fundamentals biotechnology are applicable for the development and manufacturing of biologics and other related bio-molecules for a hurdle free life with good health. A majority of biologics derived from genetically modified host cells in the current market are bio-formulation such as antibodies, nucleic acid products and vaccines. Such bio-formulations are developed mainly in two steps i.e. upstream process and downstream process. The first volume of this series begins with the latest information on how the classical stepwise host cells culture (mammals, animals, plants, and bacteria) methodology has been changed to fully continuous or partially continuous host cells culture process in order to economise the biopharmaceutical products manufacturing process. In addition this volume narrates a brief history on conceptual development of new thoughts in designing biotechnology industries for commercial production of variety of therapeutic proteins with structural modification on the basis of clinical requirements. The readers will feel exited by going through the latest discovery and development in applied life sciences for designing innovative biomolecules for health care with utmost safe. The most interesting part of this volume is newly developed concept on bioprinting. It explains how to design and fabricate animate objects by fusing or depositing material of interest in the form of powders, solid dusts, metal, liquid or even living cells or tissues by layers to produce 3D objectives. The first volume ends with the latest information on the current trend in biologics market, market dynamic, drives, and opportunities with challenges.

This new edition presents practising and trainee anaesthesiologists with the latest advances and guidelines in their field. Beginning with an introduction to the history of anaesthesia, basic physics, and medical gases, the following sections cover the anaesthesia machine, airway and monitoring equipment, and apparatus for central neuraxial and regional blocks. The final chapters discuss interpretation of radiological images, simulators in anaesthesia, maintenance, safety and cleaning; and more. The second edition has been fully revised to provide up to date information and a clear understanding of practices and techniques for anaesthesia. The book features clinical photographs and diagrams and includes two interactive DVD ROMs demonstrating and explain day to day anaesthetic procedures. Key points Fully revised, new edition presenting latest techniques and information in anaesthesia Covers all different aspects of equipment in depth Includes DVD ROMs demonstrating anaesthetic procedures Previous edition (9789351521242) published in 2014 Major account of the fourteenth-century crisis which saw a series of famines, revolts and epidemics transform the medieval world.

Citizen science, the active participation of the public in scientific research projects, is a rapidly expanding field in open science and open innovation. It provides an integrated model of public knowledge production and engagement with science. As a growing worldwide phenomenon, it is invigorated by evolving new technologies that connect people easily and effectively with the scientific community. Catalysed by citizens’ wishes to be actively involved in scientific processes, as a result of recent societal trends, it also offers contributions to the rise in tertiary education. In addition, citizen science provides a valuable tool for citizens to play a more active role in sustainable development. This book identifies and explains the role of citizen science within innovation in science and society, and as a vibrant and productive science-policy interface. The scope of this volume is global, geared towards identifying solutions and lessons to be applied across science, practice and policy. The chapters consider the role of citizen science in the context of the wider agenda of open science and open innovation, and discuss progress towards responsible research and innovation, two of the most critical aspects of science today.

Competitive Strategies in Life Sciences

How Information Technology Can Change Our Lives in a Globalized World

UNESCO science report

Sociological, Theological, and Philosophical Perspectives

Data Management and Analytics for Medicine and Healthcare

**Biodegradation mediated by indigenous microbial communities is the ultimate fate of the majority of oil hydrocarbon that enters the marine environment. The aim of this Research Topic is to highlight recent advances in our knowledge of the pathways and controls of microbially-catalyzed hydrocarbon degradation in marine ecosystems, with emphasis on the response of microbial communities to the Deepwater Horizon oil spill in the Gulf of Mexico. In this Research Topic, we encouraged original research and reviews on the ecology of hydrocarbon-degrading bacteria, the rates and mechanisms of biodegradation, and the bioremediation of discharged oil under situ as well as near in situ conditions. This book examines the impact of economic reforms in India on the pharmaceutical industry and access to medicines. It traces the changing production and trade pattern of the industry, research and development (R&D) preferences and strategies of Indian pharmaceutical firms, patent system alongside pricing policy measures and their shortcomings. It also analyses the public health financing system in India driven largely by out-of-pocket expenditure — about 60 per cent — and characterised by very high share of medicines in total health expenditure. A masterful insight into a topical area, the work will be indispensable to those working on pharmaceutical industry and public policy. It will be of interest to researchers, scholars, students, and policy-makers of economics, industrial policy, public policy, intellectual property rights and health financing.**

**Table of Contents: Of Cows and Women: Gendered Human-Animal Relationships in Finnish Agriculture, Taina Kaarlenkaski - Alpha: the Figure in the Cage, Juliet MacDonald - The Living in Lucretius’ De rerum natura. Animals’ ataraxia and Humans’ Distress, Alma Massaro - “Low down Dirty Rat”: Popular and Moral Responses to Possums and Rats in Melbourne, Siobhan O’Sullivan, Barbara Creed, Jenny Gray - Animal Perceptions in Animal Transport Regulations in the EU and in Finland, Outi Ratamäki - Boundary Transgressions: the Human-Animal Chimera in Science Fiction, Evelyn Tsitas - Animal Music, Jessica Ullrich - The Inspiring Journey of SIUA through Animal Lives, Eleonora Adorni - Animal Theology, Gianfranco Nicora, Alma Massaro - A Bestiary in Five Fingers, Seán McCorry - A Pig Doesn’t Make the Revolution, Valentina Sonzogni**

**Controlled natural languages (CNLs) are based on natural language and apply restrictions on vocabulary, grammar, and/or semantics. They fall broadly into 3 groups. Some are designed to improve communication for non-native speakers of the respective natural language; in others, the restrictions are to facilitate the use of computers to analyze texts, for example, to improve computer-aided translation; and a third group of CNLs are designed to enable reliable automated reasoning and formal knowledge representation from seemingly natural texts. This book presents the 11 papers, selected from 14 submitted, and delivered at the sixth in the series of workshops on Controlled Natural Language, (CNL 2018), held in Maynooth, Ireland, in August 2018. The papers cover a full spectrum of controlled natural languages, ranging from human oriented to machine-processable controlled languages and from more theoretical results to interfaces, reasoning engines, and the real-life application of CNLs. The book will be of interest to all those working with controlled natural language, whatever their approach.**

**International Workshops, BIRTE 2015, Kohala Coast, HI, USA, August 31, 2015, BIRTE 2016, New Delhi, India, September 5, 2016, BIRTE 2017, Munich, Germany, August 28, 2017, Revised Selected Papers**

**Recent Discoveries in Evolutionary and Genomic Microbiology**

**Super Fly**

**Proceedings of the Sixth International Workshop, CNL 2018, Maynooth, Co. Kildare, Ireland, August 27-28, 2018**

**Digital DNA**

**Controlled Natural Language**

The rise of digital health technologies is, for some, a panacea to many of the medical and public health challenges we face today. This is the first book to articulate a critical response to the techno-utopian and entrepreneurial vision of the digital health phenomenon. Deborah Lupton, internationally renowned for her scholarship on the sociocultural and political aspects of medicine and health as well as digital technologies, addresses a range of compelling issues about the interests digital health represents, and its unintended effects on patients, doctors and how we conceive of public health and healthcare delivery. Bringing together social and cultural theory with empirical research, the book challenges apolitical approaches to examine the impact new technologies have on social justice, and the implication for social and economic inequalities.

Lupton considers how self-tracking devices change the patient-doctor relationship, and how the digitisation and gamification of healthcare through apps and other software affects the way we perceive and respond to our bodies. She asks which commercial interests enable different groups to communicate more widely, and how the personal data generated from digital encounters are exploited. Considering the lived experience of digital health technologies, including their emotional and sensory dimensions, the book also assesses their broader impact on medical and public health knowledges, power relations and work practices. Relevant to students and researchers interested in medicine and public health across sociology, psychology, anthropology, new media and cultural studies, as well as policy makers and professionals in the field, this is a timely contribution on an important issue.

The huge volume of multi-modal neuroimaging data across different neuroscience communities has posed a daunting challenge to traditional methods of data sharing, data archiving, data processing and data analysis. Neuroinformatics plays a crucial role in creating advanced methodologies and tools for the handling of varied and heterogeneous datasets in order to better understand the structure and function of the brain. These tools and methodologies not only enhance data collection, analysis, integration, interpretation, modeling, and dissemination of data, but also promote data sharing and collaboration. This Neuroinformatics Research Topic aims to summarize the state-of-art of the current achievements and explores the directions for the future generation of neuroinformatics infrastructure. The publications present solutions for data archiving, data processing and workflow, data mining, and system integration methodologies. Some of the systems presented are large in scale, geographically distributed, and already have a well-established user community. Some discuss opportunities and methodologies that facilitate large-scale parallel data processing tasks under a heterogeneous computational environment. We wish to stimulate on-going discussions at the level of the neuroinformatics infrastructure including the common challenges, new technologies of maximum benefit, key features of next generation infrastructure, etc. We have asked leading research groups from different research areas of neuroscience/neuroimaging to provide their thoughts on the development of a state of the art and highly-efficient neuroinformatics infrastructure. Such discussions will inspire and help guide the development of a state of the art, highly-efficient neuroinformatics infrastructure.

Mitochondrial biogenesis is an extremely complex process. A hint of this complexity is clearly indicated by the many steps and factors required to assemble the respiratory complexes involved in oxidative phosphorylation. These steps include the expression of genes present in both the nucleus and the organelle, intricate post-transcriptional RNA processing events, the coordinated synthesis, transport and assembly of the different subunits, the synthesis and assembly of co-factors and, finally, the formation of supercomplexes or respirasomes. It can be envisaged, and current knowledge supports this view, that plants have evolved specific mechanisms for the biogenesis of respiratory complexes. For example, expression of the mitochondrial genome in plants has special features, not present in other groups of eukaryotes. Moreover, plant mitochondrial biogenesis and function should be considered in the context of the presence of the chloroplast, a second organelle involved in energetic and redox metabolism. It implies the necessity to discriminate between proteins destined for each organelle and requires the establishment of functional interconnections between photosynthesis and respiration. In recent years, our knowledge of the mechanisms involved in these different processes in plants has considerably increased. As a result, the many events and factors necessary for the correct expression of proteins encoded in the mitochondrial genome, the cis acting elements and factors responsible for the expression of nuclear genes encoding respiratory chain components, the signals and mechanisms involved in the import of proteins synthesized in the cytosol and the many factors required for the synthesis and assembly of the different redox co-factors (heme groups, iron-sulfur clusters, copper centers) are beginning to be recognized at the molecular level. However, detailed knowledge of these processes is still not complete and, especially, little is known about how these processes are interconnected. Questions such as how the proteins, once synthesized in the mitochondrial matrix, are inserted into the membrane and assembled with other components, including those imported from the cytosol, how the expression of both genomes is coordinated and responds to changes in mitochondrial function, cellular requirements or environmental cues, or which factors and conditions influence the assembly of complexes and supercomplexes are still open and will receive much attention in the near future. This Research Topic is aimed at establishing a collection of articles that focus on the different processes involved in the biogenesis of respiratory complexes in plants as a means to highlight recent advances. In this way, it intends to help to construct a picture of the whole process and, not less important, to expose the existing gaps that need to be addressed to fully understand how plant cells build and modulate the complex structures involved in respiration.

The Handbook of Healthcare Management is a comprehensive examination of key management practices for global healthcare organizations, arguing that insight into and implementation of these practices is essential for success and sustainability.

Chemistry and Technology of Natural and Synthetic Dyes and Pigments

Innovation in Open Science, Society and Policy

Citizen Science

Critical and Cross-Disciplinary Perspectives

Guide to Programming for the Digital Humanities

towards 2030

**The SAA Series on International Arbitration contains the best graduation papers of all participants who successfully completed the post graduate studies in international arbitration of the SAA Swiss Arbitration Academy. The papers cover different aspects of international arbitration. The SAA Series is published on a yearly basis. The Swiss Arbitration Academy is a private institution founded and managed by the editors. Each year, the SAA offers and conducts an intensive and practical course in international arbitration. The training is designed for lawyers, in-house counsel, and other professionals interested in cutting edge international dispute resolution education. All participants, who successfully complete the course, which includes the submission of the final paper, are awarded the SAA Certificate and the title Arbitration Practitioner ArbP.**

**This open access book provides a broad context for the understanding of current problems of science and of the different movements aiming to improve the societal impact of science and research. The author offers insights with regard to ideas, old and new, about science, and their historical origins in philosophy and sociology of science, which is of interest to a broad readership. The book shows that scientifically grounded knowledge is required and helpful in understanding intellectual and political positions in various discussions on the grand challenges of our time and how science makes impact on society. The book reveals why interventions that look good or even obvious, are often met with resistance and are hard to realize in practice. Based on a thorough analysis, as well as personal experiences in aids research, university administration and as a science observer, the author provides - while being totally open regarding science's limitations- a realistic narrative about how research is conducted, and how reliable ‘objective’ knowledge is produced. His idea of science, which draws heavily on American pragmatism, fits in with the global Open Science movement. It is argued that Open Science is a truly and historically unique movement in that it translates the analysis of the problems of science into major institutional actions of system change in order to improve academic culture and the impact of science, engaging all actors in the field of science and academia.**

**This book on ‘Chemistry and Technology of Natural and Synthetic Dyes and Pigments’ is a priority publication by IntechOpen publisher and it relates to sustainable approaches towards green chemical processing of textiles, specifically on dyeing with natural dyes and pigments as well as dyeing with eco-safe synthetic dyes and chemicals. This book includes the following chapters: an introductory editorial chapter on bio-mordants, bio-dyes and bio-finishes, a review of natural dyes and pigments and its application, pantone-like shade generation with natural colorants, colour-based natural dyes and pigments, printing with natural dyes and pigments, functional finishes with natural dyes and pigments, eco-safe synthetic dyes and chemicals, and a miscellaneous review on dyed textiles and clothing including natural dye-based herbal textiles.This new book is expected to be useful for dyers of the textile industry as well as to the future researchers in this field.**

**This book constitutes the thoroughly refereed post-conference proceedings of the Second International Workshop on Data Management and Analytics for Medicine and Healthcare, DMAH 2016, in New Delhi, India, in September 2016, held in conjunction with the 42nd International Conference on Very Large Data Bases, VLDB 2016. The 7 revised full papers presented together with 2 invited papers and 3 keynote abstracts were carefully reviewed and selected from 11 initial submissions. The papers are organized in topical sections on knowledge discovery of biomedical data; managing, querying and processing of medical image data; information extraction and their new data integration for biomedical data; and health information systems.**

**Selected Papers on International Arbitration Volume 4**

**Genetic and Genome-Wide Insights into Microbes Studied for Bioenergy**

**Curiosity And Passion For Science And Art**

**The Study of Science and Religion**

**The Theatrical Professoriate**

**My Knowledge and My Memories of My Family**

*Global Health Informatics: How Information Technology Can Change Our Lives in a Globalized World discusses the critical role of information and communication technologies in health practice, health systems management and research in increasingly interconnected societies. In a global interconnected world the old standalone institutional information systems have proved to be inadequate for patient-centered care provided by multiple providers, for the early detection and response to emerging and re-emerging diseases, and to guide population-oriented public health interventions. The book reviews pertinent aspects and successful current experiences related to standards for health information systems; digital systems as a support for decision making, diagnosis and therapy; professional and client education and training; health systems operation; and intergovernmental collaboration. Discusses how standalone systems can compromise health care in globalized world Provides information on how information and communication technologies (ICT) can support diagnose, treatment, and prevention of emerging and re-emerging diseases Presents case studies about integrated information and how and why to share data can facilitate governance and strategies to improve life conditions*

*“My favorite book of the year.”—Doug McMillon, CEO, Wal-Mart Stores Harvard Business School Professor of Strategy Bharat Anand presents an incisive new approach to digital transformation that favors fostering connectivity over focusing exclusively on content. NAMED ONE OF THE BEST BOOKS OF THE YEAR BY BLOOMBERG Companies everywhere face two major challenges today: getting noticed and getting paid. To confront these obstacles, Bharat Anand examines a range of businesses around the world, from The New York Times to The Economist, from Chinese Internet giant Tencent to Scandinavian digital trailblazer Schibsted, and from talent management to the future of education. Drawing on these stories and on the latest research in economics, strategy, and marketing, this refreshingly engaging book reveals important lessons, smashes celebrated myths, and reorients strategy. Success for flourishing companies comes not from making the best content but from recognizing how content enables customers’ connectivity; it comes not from protecting the value of content at all costs but from unearthing related opportunities close by; and it comes not from mimicking competitors’ best practices but from seeing choices as part of a connected whole. Digital change means that everyone today can reach and interact with others directly. We are all in the content business. But that comes with risks that Bharat Anand teaches us how to recognize and navigate. Filled with conversations with key players and in-depth dispatches from the front lines of digital change, The Content Trap is an essential new playbook for navigating the turbulent waters in which we find ourselves. Praise for The Content Trap “A masterful and thought-provoking book that has reshaped my understanding of content in the digital landscape.”—Ariel Emanuel, co-CEO, WME | IMG “The Content Trap is a book filled with stories of businesses, from music companies to magazine publishers, that missed connections and could never escape the narrow views that had brought them past success. But it is also filled with stories of those who made strategic choices to strengthen the links between content and returns in their new master plans. . . . The book is a call to clear thinking and reassessing why things are the way they are.”—The Wall Street Journal*

*The iron element (Fe) is strictly required for the survival of most forms of life, including bacteria, plants and humans. Fine-tuned regulatory mechanisms for Fe absorpction, mobilization and recycling operate to maintain Fe homeostasis, the disruption of which leads to Fe overload or Fe depletion. Whereas the deleterious effect of Fe deficiency relies on reduced oxygen transport and diminished activity of Fe-dependent enzymes, the cytotoxicity induced by Fe overload is due to the ability of this metal to act as a pro-oxidant and catalyze the formation of highly reactive hydroxyl radicals via the Fenton chemistry. This results in unfettered oxidative stress generation that, by inducing protein, lipid and DNA oxidation, leads to Fe-mediated*

*programmed cell death and organ dysfunction. Major and systemic Fe overloads occurring in hemochromatosis and Fe-loading anemias have been extensively studied. However, localized tissue Fe overload was recently associated to a variety of pathologies, such as infection, inflammation, cancer, cardiovascular and neurodegenerative disorders. In keeping with the existence of cross-regulatory interactions between Fe homeostasis and the pathophysiology of these diseases, further investigations on the mechanisms that provide cellular and systemic adaptation to tissue Fe overload are instrumental for future therapeutic approaches. Thus, we encourage our colleagues to submit original research papers, reviews, perspectives, methods and technology reports to contribute their findings to a current state of the art on a comprehensive overview of the importance of iron metabolism in pathophysiologic conditions.*

*This book constitutes the thoroughly refereed conference proceedings of the BIRTE workshops listed below, which were held in in conjunction with VLDB, the International Conference on Very Large Data Bases: 9th International Workshop on Business Intelligence for the Real-Time Enterprise, BIRTE 2015, held in Kohala Coast, Hawaii, in August 2015, 10th International Workshop on Enabling Real-Time Business Intelligence, BIRTE 2016, held in New Delhi, India, in September 2016, 11th International Workshop on Real-Time Business Intelligence and Analytics, BIRTE 2017, held in Munich, Germany, in August 2017. The BIRTE workshop series provides a forum for the discussion and advancement of the science and engineering enabling real-time business intelligence and the novel applications that build on these foundational techniques. The book includes five selected papers from BIRTE 2015; five selected papers from BIRTE 2016; and three selected papers from BIRTE 2017.*

*Understanding Anesthetic Equipment & Procedures*

*Endoplasmic reticulum - shape and function in stress translation*

*National Security, Public Health: Exceptions to Human Rights?*

*The Content Trap*

*Recent Advances and the Future Generation of Neuroinformatics Infrastructure*

*The Unexpected Lives of the World's Most Successful Insects*

***This collection represents certain discoveries that were made in evolutionary and genomic microbiology during the recent ten years. We attempted to shed light on topical issues of microbial evolution and microbiome biology. In our eyes, these articles are of an excellent quality and may be helpful both for casual readers and for specialists in the field.***

***It is time for a new conversation. Amid the biggest economic transformation in a century, the challenge of our time is to make sure that all Americans benefit from the wave of digital revolutions around the world that have permeated and upended modern life. Yet today's economic arguments seem stuck. We need a new vision of a hopeful future and a new action agenda. So many Americans are uncertain about the future. How can there be so many paths to opportunity with so few people traveling them? As a nation, we have to understand what is required to help Americans succeed now, and how to prepare our country for what comes next. We have been here before. A hundred years ago, America experienced the greatest economic transformation and technological revolution in its history. The transformation of the past twenty years—as the world has moved through the information era into the digital age—has turned our life and work upside down once again. It is a time of tremendous change but also of tremendous possibility. Rework America is a group of American leaders who know from experience the challenges we face—and the potential solutions. In America's Moment they suggest a practical agenda for an exciting future. It is illustrated by people who are already showing the way and includes actions Americans can take today in their own communities: preparing people to succeed, using the reach of the Internet and data to innovate jobs and to reach new markets all over the world, using technology to match employers and workers, and transitioning to a "no-collar" working world— neither blue collar nor white collar. Set against the history of how Americans succeeded once before in remaking their country, America's Moment is about the future. It describes how the same forces of change—technology and a networked world—can become tools that can open opportunity to everyone. Winner of the National Outdoor Book Award for Natural History and a New York Times Editors Choice Pick "After reading Super Fly, you will never take a fly for granted again. Thank you, Jonathan Balcombe, for reminding us of the infinite marvels of everyday creatures." —Sy Montgomery, Author of How to Be a Good Creature From an expert in animal consciousness, a book that will turn the fly on the wall into the elephant in the room. For most of us, the only thing we know about flies is that they're annoying, and our usual reaction is to try to kill them. In Super Fly, the myth-busting biologist Jonathan Balcombe shows the order Diptera in all of its diversity, illustrating the essential role that flies play in every ecosystem in the world as pollinators, waste-disposers, predators, and food source; and how flies continue to reshape our understanding of evolution. Along the way, he reintroduces us to familiar foes like the fruit fly and mosquito, and gives us the chance to meet their lesser-known cousins like the Petroleum Fly (the only animal in the world that breeds in crude oil) and the Chocolate Midge (the sole pollinator of the Cacao tree). No matter your outlook on our tiny buzzing neighbors, Super Fly will change the way you look at flies forever. Jonathan Balcombe is the author of four books on animal sentience, including the New York Times bestselling What A Fish Knows, which was nominated for the PEN/E.O. Wilson Award for Science Writing. He has worked for years as a researcher and educator with the Humane society to show us the consciousness of other creatures, and here he takes us to the farthest reaches of the animal kingdom.***

***This book argues that today's professoriate has become increasingly theatrical, largely as a result of neoliberal policies in higher education, but also in response to an anti-intellectual scrutiny that has become pervasive throughout the Western world. The Theatrical Professoriate: Contemporary Higher Education and Its Academic Dramas examines how the Western professoriate increasingly finds itself enacting command performances that utilize scripting, characterization, surrogation, and spectacle—the hallmarks of theatricality—toward neoliberal ends. Roxworthy explores how the theatrical nature of today's professoriate and the resultant glut of performances about academia on stage and screen have contributed to a highly ambivalent public fascination with academia. She further documents the "theatrical turn" witnessed in American higher education, as academic institutions use performance to intervene in the diversity issues and disciplinary disparities fueled by neoliberalism. By analyzing academic dramas and their audience reception alongside theoretical approaches, the author reveals how contemporary academia drives the professoriate to perform in what seem like increasingly artificial ways. Ideal for practitioners and students of education, ethnic, and science studies, The Theatrical Professoriate deftly intervenes in Performance Studies’ still-unsettled debates over the differential impact of live versus mediated performances.***

***Minding Animals: Part II***

***Real-Time Business Intelligence and Analytics***

***Plant cell wall in pathogenesis, parasitism and symbiosis***

***Transfer Cells***

***Open Science: the Very Idea***

***Relations 2.2 - November 2014***

This book constitutes the refereed proceedings of the 5th International Conference on Well-Being in the Information Society, WIS 2014, held in Turku, Finland, in September 2014. The 24 revised full papers presented were carefully reviewed and selected from 64 submissions. The core topic is livability and quality of (urban) living with safety and security. The papers address topics such as secure and equal use of information resources, safe and secure work environments and education institutions, cyberaggression and cybersecurity as well as impact of culture on urban safety and security.

Transfer cells are anatomically specialized cells optimized to support high levels of nutrient transport in plants. These cells trans-differentiate from existing cell types by developing extensive and localized wall ingrowth labyrinths to amplify plasma membrane surface area which in turn supports high densities of membrane transporters. Unsurprisingly, therefore, transfer cells are found at key anatomical sites for nutrient acquisition, distribution and exchange. Transfer cells are involved in delivery of nutrients between generations and in the development of reproductive organs and also facilitate the exchange of nutrients that characterize symbiotic associations. Transfer cells occur across all taxonomic groups in higher plants and also in algae and fungi. Deposition of wall ingrowth-like structures are also seen in “ syncytia ” and “ giant cells ” which function as feeding sites for cyst and root-knot nematodes, respectively, following their infection of roots. Consequently, the formation of highly localized wall ingrowth structures in diverse cell types appears to be an ancient anatomical adaption to facilitate enhanced rates of apoplasmic transport of nutrients in plants. In some systems a role for transfer cells in the formation of an anti-pathogen protective barrier at these symplastic discontinuities has been inferred. Remarkably, the extent of cell wall ingrowth development at a particular site can show high plasticity, suggesting that transfer cell differentiation might be a dynamic process adapted to the transport requirements of each physiological condition. Recent studies exploiting different experimental systems to investigate transfer cell biology have identified signaling pathways inducing transfer cell development and genes/gene networks that define transfer cell identity and/or are involved in building the wall ingrowth labyrinths themselves. Further studies have defined the structure and composition of wall ingrowths in different systems, leading in many instances to the conclusion that this process may involve previously uncharacterized mechanisms for localized wall deposition in plants. Since transfer cells play important roles in plant development and productivity, the latter being relevant to crop yield, especially so in major agricultural species such as wheat, barley, soybean and maize, understanding the molecular and cellular events leading to wall ingrowth deposition holds exciting promise to develop new strategies to improve plant performance, a key imperative in addressing global food security. This Research Topic presents a timely and comprehensive treatise on transfer cell biology to help define critical questions for future research and thereby generating a deeper understanding of these fascinating and important cells in plant biology.

There are fewer grounds today than in the past to deplore a North South divide in research and innovation. This is one of the key findings of the UNESCO Science Report: towards 2030. A large number of countries are now incorporating science, technology and innovation in their national development agenda, in order to make their economies less reliant on raw materials and more rooted in knowledge. Most research and development (R&D) is taking place in high-income countries, but innovation of some kind is now occurring across the full spectrum of income levels according to the first survey of manufacturing companies in 65 countries conducted by the UNESCO Institute for Statistics and summarized in this report. For many lower-income countries, sustainable development has become an integral part of their national development plans for the next 10–20 years. Among higher-income countries, a firm commitment to sustainable development is often coupled with the desire to maintain competitiveness in global markets that are increasingly leaning towards ‘ green ’ technologies. The quest for clean energy and greater energy efficiency now figures among the research priorities of numerous countries. Written by more than 50 experts who are each covering the country or region from which they hail, the UNESCO Science Report: towards 2030 provides more country-level information than ever before. The trends and developments in science, technology and innovation policy and governance between 2009 and mid-2015 described here provide essential baseline information on the concerns and priorities of countries that could orient the implementation and drive the assessment of the 2030 Agenda for Sustainable Development in the years to come.

This book describes the accomplishments of a curious and imaginative scientist, and his endeavours to translate or even to extrapolate scientific insights into the world of art.The science section in this volume concerns studies on S-layers, a very important class of proteins found on the surface of numerous Bacteria and nearly all Archaea. S-layer proteins are one of the most abundant biopolymers on our planet, and assemble into the simplest type of biological membrane. Moreover, they are unique building blocks and patterning elements for the production of complex supramolecular structures and nanoscale devices in nanobiotechnology, molecular nanotechnology, synthetic biology, biomimetics and nanomedicine.In the second part of this book the author goes on to passionately describe how his scientific activities stimulated his art work, which in particular concerns the visualization of results and the potential of synthetic biology and evolutionary events induced by genetic manipulations. Most importantly, the engagement in art allowed him to leave the rather curtailed canon of science and reach a mental state of unlimited freedom of thoughts. Mask-like sculptures are used as examples to visualize the intersection between science and art, and in particular the unpredictability and mystery of scientific visions.

Handbook of Healthcare Management

The metabolic pathways and environmental controls of hydrocarbon biodegradation in marine ecosystems

A Practical Approach

The Oxford Handbook of Law, Regulation and Technology

Biogenesis of the oxidative phosphorylation machinery in plants. From gene expression to complex assembly

Digital Health

Intellectual property (IP) is a key component of the life sciences, one of the most dynamic and innovative fields of technology today. At the same time, the relationship between IP and the life sciences raises new public policy dilemmas. The Research Handbook on Intellectual Property and the Life Sciences comprises contributions by leading experts from academia and industry to provide in-depth analyses of key topics including pharmaceuticals, diagnostics and genes, plant innovations, stem cells, the role of competition law and access to medicines. The Research Handbook focuses on the relationship between IP and the life sciences in Europe and the United States, complemented by country-specific case studies on Australia, Brazil, China, India, Japan, Kenya, South Africa and Thailand to provide a truly international perspective. The book deals with the complicated relationships between national security and human rights, and between public health and human rights. Its premise is the fact that national security and public health are both included in human rights instruments as ‘exceptions’ to the human rights therein sanctioned, yet they can arguably be considered as human rights themselves and be equally valuable. The book therefore asks to what extent the protection of the individual could – or should – be overridden to enable the protection of the national security or public health of the general public. Both practice and case law have shown that human rights risk being set aside when they clash with the protection of national security or public health. Through theoretical analysis and practical examples, the book addresses the conflicts that arise when the concepts of national security and public health are used – and abused – and other rights, including freedom of speech, procedural freedoms, individual health, are violated as a consequence. It provides many interesting findings on the values that states are ready to protect – and forego – to ensure their safety, which can contribute to the ongoing debate on the protection of human rights. This book was originally published as a special issue of The International Journal of Human Rights.

Entrepreneurship is widely embraced today in political discourse, popular culture, and economic policy prescriptions. Several groups actively promote entrepreneurial thinking and practices in higher education. This book examines how this 'Entrepreneurship Movement' impacts higher education in Canada and the United States.

The endoplasmic reticulum (ER) is a manufacturing unit in eukaryotic cells required for the synthesis of proteins, lipids, metabolites and hormones. Besides supporting cellular signalling networks by its anabolic function, the ER on its own or in communication with other organelles directly initiates signalling processes of physiological significance. Based on the intimate and immediate involvement in stress signalling the ER is considered as sensory organelle on which cells strongly rely to effectively translate environmental cues into adaptive stress responses. The transcellular distribution of the ER providing comprehensive cell-to-cell connections in multicellular organisms probably allows a concerted action of cell alliances and tissue areas towards environmental constraints. At the cellular level, stress adaptation correlates with the capability of the ER machinery to synthesise proteins participating in stress signalling as well as in the activation of ER membrane localised proteins to start cell-protective signalling processes. Importantly, depending on the stress insult, the ER either supports protective strategies or initiates cell death programmes. Recent, genetic, molecular and cell biological studies have drawn an initial picture of underlying signalling events activated by ER membrane localised proteins. In this Research Topic, we provided a platform for articles describing research on ER morphology and metabolism with a focus on stress translation. The Research Topic is sub-divided into the following sections: 1. ER in stress signalling and adaptation 2. ER structure and biosynthetic functions 3. Regulation of protein processing 4. Regulation of programmed cell death

5th International Conference on Well-Being in the Information Society, WIS 2014, Turku, Finland, August 18-20, 2014. Proceedings

Pharmaceutical Industry and Public Policy in Post-reform India

Toward a Sustainable Future

Safe and Secure Cities

Contemporary Higher Education and Its Academic Dramas

The Entrepreneurship Movement and the University

***The main aim of this book is to contribute to the relationship between science and religion. This book aims to do constructive theological work out of a particular cultural context. The point of departure is contemporary Swedish religion and worldviews. One focus is the process of biologization (i.e., how the worldviews of the general public in Sweden are shaped by biological science). Is there a gap between Swedes in general and the perceptions of Swedish clergy? The answer is based on sociological studies on science and religion in Sweden and the United States. Furthermore, the book contains a study of Swedish theologians, from Nathan Soderblom to the present Archbishop Antje Jackelen, and their shifting understanding of the relation between science and religion. The philosophical aspects of this relation are given special consideration. What models of the relation inform the contemporary scholarly discussion? Are science and religion in conflict, separate, or in mutual creative interaction?***

***Innovation in information and production technologies is creating benefits and disruption, profoundly altering how firms and markets perform. Digital DNA provides an in depth examination of the opportunities and challenges in the fast-changing global economy and lays out strategies that countries and the international community should embrace to promote robust growth while addressing the risks of this digital upheaval. Wisely guiding the transformation in innovation is a major challenge for global prosperity that affects everyone. Peter Cowhey and Jonathan Aronson demonstrate how the digital revolution is transforming the business models of high tech industries but also of traditional agricultural, manufacturing, and service sector firms. The rapidity of change combines with the uncertainty of winners and losers to create political and economic tensions over how to adapt public policies to new technological and market surprises. The logic of the policy trade-offs confronting society, and the political economy of practical decision-making is explored through three developments: The rise of Cloud Computing and trans-border data flows; international collaboration to reduce cybersecurity risks; and the consequences of different national standards of digital privacy protection. The most appropriate global strategies will recognize that a significant diversity in individual national policies is inevitable. However, because digital technologies operate across national boundaries there is also a need for a common international baseline of policy fundamentals to facilitate "quasi-convergence" of these national policies. Cowhey and Aronson's examination of these dynamic developments lead to a measured proposal for authoritative "soft rules" that requires governments to create policies that achieve certain objectives, but leaves the specific design to national discretion. These rules should embrace mechanisms to work with expert multi-stakeholder organizations to facilitate the implementation of formal agreements, enhance their political legitimacy and technical expertise, and build flexible learning into the governance regime. The result will be greater convergence of national policies and the space for the new innovation system to flourish. The global mandate for safer, cleaner and renewable energy has accelerated research on microbes that convert carbon sources to end-products serving as biofuels of the so-called first, second or third generation - e.g., bioethanol or biodiesel derived from starchy, sugar-rich or oily crops; bioethanol derived from composite lignocellulosic biomass; and biodiesels extracted from oil-producing algae and cyanobacteria, respectively. Recent advances in 'omics' applications are beginning to cast light on the biological mechanisms underlying biofuel production. They also unravel mechanisms important for organic solvent or high-added-value chemical production, which, along with those for fuel chemicals, are significant to the broader field of Bioenergy. The Frontiers in Microbial Physiology Research Topic that led to the current e-book publication,***

**operated from 2013 to 2014 and welcomed articles aiming to better understand the genetic basis behind Bioenergy production. It invited genetic studies of microbes already used or carrying the potential to be used for bioethanol, biobutanol, biodiesel, and fuel gas production, as also of microbes posing as promising new catalysts for alternative bioproducts. Any research focusing on the systems biology of such microbes, gene function and regulation, genetic and/or genomic tool development, metabolic engineering, and synthetic biology leading to strain optimization, was considered highly relevant to the topic. Likewise, bioinformatic analyses and modeling pertaining to gene network prediction and function were also desirable and therefore invited in the thematic forum. Upon e-book development today, we, at the editorial, strongly believe that all articles presented herein - original research papers, reviews, perspectives and a technology report - significantly contribute to the emerging insights regarding microbial-derived energy production. Katherine M. Pappas, 2016**

**As an introduction to programming for the Digital Humanities (DH), this book presents six key assignments oriented on DH topics. The topics include Computing Change Over Time (calculating burials at a historic cemetery), Visualizing Change Over Time (visualizing the burials at the historic cemetery), Textual Analysis (finding word frequencies and “stop words” in public domain texts), XML Transformation (transforming a simplified version of XML into HTML styled with CSS), Stylometry (comparing the measured features of graphic images), and Social Network Analysis (analyzing extended relationships in historic circles). The book focuses on the practical application of these assignments in the classroom, providing a range of variations for each assignment, which can be selected on the basis of students’ specific programming background and skills; “atomic” assignments, which can be used to give students the experience they need to successfully complete the main assignments; and some common pitfalls and gotchas to manage in the classroom. The book’s chief goals are to introduce novice computer science (CS) students to programming for DH, and to offer them valuable hands-on experience with core programming concepts.**

**A Strategist’s Guide to Digital Change**

**Lessons for Introductory Python**

**Global Health Informatics**

**Geoscience for the Public Good and Global Development**

**The Great Transition**

**Research Handbook on Intellectual Property and the Life Sciences**

*This book is about what I remember about many members of my family and about the knowledge I obtained about them through various interviews and written sources, e.g., obituaries, newspapers, and articles I found on the Internet. The book follows a certain order. I describe what I remember about my immediate family members. I start off with my father then my mother and then my brother—the only sibling I ever had. I then discuss my life with my ex-wife and her family and then the only child we ever had. I go on to another chapter, or maybe the third chapter, and talk about my paternal grandfather’s family and as much of what I could remember about my maternal grandmother’s family. I know and discovered more about the former than the latter. I enhanced my discussion throughout the book with as many pictures as I could gather. The book has pictures anywhere from one to about eighty years old. This, I thought, would make the book more interesting and lively. The book is replete with explanatory footnotes for those of certain generations or knowledge who may not understand or know of certain places, celebrities, cultural practices, and events. The entire book was prepared to relate to all who might read it in terms of family connections, their interest(s) in travel, history, sports, genealogy, and biography. I then talk about my maternal grandmother’s family. It is relatively short because I did not know too many of them that well. The book covers mostly what I know and found out about my maternal grandfather’s family. That is because it is the largest segment of my entire family. My father had no siblings, whereas my mother had about ten or eleven siblings, and all of them had children and grandchildren. I discovered a great deal more accomplishments in life on my mother’s side as opposed to my father’s side of the family. I do not think the book is boring or particularly too long or too short. The book is a description of the life of the people whom I discuss and how I might have fitted into those lives.*

*The cell wall is a complex structure mainly composed of cellulose microfibrils embedded in a cohesive hemicellulose and pectin matrix. Cell wall structural proteins, enzymes and their inhibitors are also essential components of plant cell walls. They are involved in the cross-link of cell wall polysaccharides, wall structure, and the perception and signaling of defense-related elicitors at the cell surface. In the outer part of the epidermal cells, the polysaccharides are coated by the cuticle, consisting of hydrophobic cutin, suberin and wax layers. Lignin, a macromolecule composed of highly cross-linked phenolic molecules, is a major component of the secondary cell wall. The cell wall is the first cell structure on which interactions between plants and a wide range of other organisms, including insects, nematodes, pathogenic or symbiotic micro-organisms take place. It not only represents a barrier that limits access to the cellular contents that provide a rich nutrient source for pathogens but serves as a source of elicitors of plant defense responses released upon partial enzymatic degradation of wall polysaccharides during infection. Modification of the plant cell wall can also occur at the level of plasmodesmata during virus infection as well as during abiotic stresses. The fine structure and composition of the plant cell wall as well as the regulation of its biosynthesis can thus strongly influence resistance and susceptibility to pathogens. This Research Topic provides novel insights and detailed overviews on the dynamics of the plant cell wall in plant defence, parasitism and symbiosis and describes experimental approaches to study plant cell wall modifications occurring during interaction of plants with different organisms.*

*The variety, pace, and power of technological innovations that have emerged in the 21st Century have been breathtaking. These technological developments, which include advances in networked information and communications, biotechnology, neurotechnology, nanotechnology, robotics, and environmental engineering technology, have raised a number of vital and complex questions. Although these technologies have the potential to generate positive transformation and help address 'grand societal challenges', the novelty associated with technological innovation has also been accompanied by anxieties about their risks and destabilizing effects. Is there a potential harm to human health or the environment? What are the ethical implications? Do this innovations erode or antagonize values such as human dignity, privacy, democracy, or other norms underpinning existing bodies of law and regulation? These technological developments have therefore spawned a nascent but growing body of 'law and technology' scholarship, broadly concerned with exploring the legal, social and ethical dimensions of technological innovation. This handbook collates the many and varied strands of this scholarship, focusing broadly across a range of new and emerging technology and a vast array of social and policy sectors, through which leading scholars in the field interrogate the interfaces between law, emerging technology, and regulation. Structured in five parts, the handbook (I) establishes the collection of essays within existing scholarship concerned with law and technology as well as regulatory governance; (II) explores the relationship between technology development by focusing on core concepts and values which technological developments implicate; (III) studies the challenges for law in responding to the emergence of new technologies, examining how legal norms, doctrine and institutions have been shaped, challenged and destabilized by technology, and even how technologies have been shaped by legal regimes; (IV) provides a critical exploration of the implications of technological innovation, examining the ways in which technological innovation has generated challenges for regulators in the governance of technological development, and the implications of employing new technologies as an instrument of regulatory governance; (V) explores various interfaces between law, regulatory governance, and new technologies across a range of key social domains.*

*Second International Workshop, DMAH 2016, Held at VLDB 2016, New Delhi, India, September 9, 2016, Revised Selected Papers*

*America’s Moment: Creating Opportunity in the Connected Age*

*The Importance Of Iron In Pathophysiologic Conditions*

*Disruption and the Challenges for Global Governance*