Book Reviews

Genomics: Applications in Human Biology

Sandy B. Primrose, Richard M. Twyman
Blackwell Publishing, Malden, MA, USA; 2004;
ISBN: 1-4051-0819-3; 204 pp.; Hardback
UK £29.99/US$62.95

Genomics has revolutionised the theory and practice of medicine. The impact of genomics on diagnostics, disease management and risk assessment has been felt by the medical community and the public in general. Indeed, the era of personalised medicine has come upon us, and with it, a revolution in every aspect of medicine and drug development. 'Genomics: Applications in Human Biology' is a refreshing, light and insightful examination of the emerging field of genomics and its applications in human biology, medicine and drug development. The book is written for advanced undergraduates, but its coverage can be regarded as a wonderful resource for practising clinicians, public health officials and students searching for 'real world' applications of genomics. Primrose and Twyman navigate complex subjects effortlessly and make superb use of graphics and tabular presentations to emphasise important points throughout the individual chapters.

The book includes a well-organised compilation of technological developments and their applications, giving broad treatment to varying subjects in the areas of infectious disease, genetic disease, cancer, biopharmaceuticals, new chemical entities and gene and cell-based therapies. The book achieves an excellent balance of scientific breadth and depth and provides an uplifting perspective into ethical considerations. The use of boxed text and highlights are excellent aids, which, coupled with easy flow and smooth transitions, provide a seamless and effective learning tool for the reader.

The conspicuous absence of coloured illustrations is at times disappointing, and future editions of the book should correct the few typographical errors. That being said, the entire book can easily be read in a couple of sittings, quite an accomplishment for a subject that requires adequate treatment. All together, the book addresses complex subjects with clarity and provides insightful views about how genomics will shape our views of the world. The book serves as an excellent introduction for the novice and a valuable resource for the advanced reader. I expect that this edition will earn a place in many collections throughout the world.

Kenneth S. Ramos
University of Louisville
Health Sciences Center
Louisville, KY40292, USA

Hypertension: Methods and Protocols

Jerome P. Fennell and Andrew H. Baker (Editors)
Humana Press, Totowa, NJ, USA; 2005;
ISBN: 1-58829-323-8; 520 pp.;
US$135.00

Historically, hypertension research was the realm of physiologists and, latterly, biochemists. In the past 20 years, however, molecular biology has relentlessly influenced the way in which hypertension research is carried out. Acquiring these new techniques and other 'cutting edge' technologies has been essential to maintaining research momentum, but it is often not a straightforward process. This book attempts to address this, with a collection of methods that are topical in the main and presented as protocols that can be applied directly at the bench. Overall, I think it is an approach that works well.
The book has five sections. Section I focuses on rodent models of hypertension, although there is no overview of the 30-odd inbred rat strains available. The exception is the spontaneous hypertensive rat (SHR) — and its stroke-prone derivative — which is the model used in Chapter 1, detailing the production of congenic/consomic strains. The following chapters on the production of knock-out and transgenic models are very useful introductions. Section 1 concludes with a discussion of the methods available for measuring blood pressure in rodents.

Section II deals with assessment of vessel wall function and is curiously limited to the detection of reactive oxygen species from cells or tissues. This presumably reflects the interest of the editors, but it is a pity it does not extend, at least, to the detection of nitrogen oxide (NOx) species. A chapter on the use of the wire myograph to study the responses of isolated resistance vessels is also included here. This technique obviously has a place in the *in vitro* assessment of endothelial function, but it has had its heyday and should not, in the opinion of this reviewer, have been included to the exclusion of a discussion of the human forearm. Forearm plethysmography and flow-mediated vasodilator responses in the brachial artery have become widely adopted methods over the past decade. Their omission in a section assessing endothelial function seems a missed opportunity.

Section III is entitled 'Nucleic acid techniques' and is comprehensive, including chapters covering basic RNA extraction, mutation detection, genotyping with single nucleotide polymorphisms and microsatellites, microarraying and real-time polymerase chain reaction (PCR) quantification. The sequence in which they appear seems random, with the first chapter actually being an overview of candidate gene selection. They are mostly up to date, although there are occasional inconsistencies. For example, the microarraying chapter oddly recommends using semi-quantitative PCR

to verify hits from first-round hybridisation, although this follows a chapter extolling (quite rightly, in this reviewer's opinion) the virtues of the TaqMan system and real-time PCR.

Section IV is short and includes a chapter on the asymmetric dimethylarginine (ADMA) assay and a long chapter on proteomics. Prioritising ADMA is curious, given the lack of priority to nitric oxide elsewhere. The proteomics section also seems incomplete without descriptions of other conventional techniques for protein–protein interaction, such as phage display and the yeast two-hybrid. Phage display does appear, but, inexplicably, under the reverse guise of *in vivo* biopanning at the end of Section V (gene transfer). This section on gene transfer is otherwise very good, and the book concludes with a chapter on stem cells and a sub-section on bioinformatics. My only comment in this section is the appropriateness of a whole chapter devoted to motifs for nuclear matrix attachment.

Humana Press's 'Methods in Molecular Medicine' series works well as a concept. This edition is no exception and the methods detailed will actually appeal to a much wider audience of vascular biologists than those working specifically on hypertension. I would certainly recommend it to my graduate students and, indeed, have done so. My only (minor) criticisms are in the choice of some the chapters included, at the expense of others to which I would, perhaps, have given priority. But that, after all, is an editor's prerogative.

Kevin O'Shaughnessy
Clinical Pharmacology Unit
Addenbrooke's Hospital
Cambridge, UK

Arterial hypertension (hypertension) - a determination of elevated systolic blood pressure (more than 139 mm Hg) and / or diastolic (over 89 mm Hg) for a long time. It can occur without a visible cause or against other diseases (kidney pathologies). It often develops after myocardial infarction, stroke. "The boundary between normal and elevated BP is determined by its level, above which intervention, as experience shows, reduces the risk of adverse health effects."WHO Expert Committee on Arterial Hypertension Control, 1999. During the examination of patients with suspicion of hyperte... Hypertension: Methods and Protocols guides readers through chapters on genetics and mmics of hypertension; the Renin-Angiotensin-Aldosterone System; vasoactive agents and hypertension; signal transduction and reactive oxygen species; novel cell models and approaches to study molecular mechanisms of hypertension; vascular physiology; and new approaches to manipulate mouse models to study molecular mechanisms of hypertension. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and Hypertension is the most common medical problem encountered in pregnancy and is a leading cause of perinatal and maternal morbidity and mortality worldwide.3. Table 1. Prevalence in Australia. Aspect.Â â€¢ Quantify by laboratory methods if: o Greater than or equal to 2+ proteinuria or o Persistent 1+ proteinuria or o Pre-eclampsia is suspected. â€¢ In an uncontaminated sample, a urine protein to creatinine ratio greater than 30 mg/mmol is diagnostic of proteinuria in pregnancy6,8,14.Â â€¢ Develop local protocols that include recognition of magnesium sulfate risks, and assessment of maternal and fetal outcomes6. â€¢ If not using standard pre-mixed 20% magnesium sulfate preparations, develop local dilution/preparation protocols. 6.2 HELLP syndrome. Hypertension - Overview (causes, pathophysiology, investigations, treatment. What is Hypertension? Cardiovascular Medicine | Pathophysiology and Diagnosis of Hypertension. Hypertension | Clinical Presentation. Transcription. Contents. 1 Signs and symptoms. 1.1 Secondary hypertension. 1.2 Hypertensive crisis.