Part one is covering culture techniques and grafting methods for human and mouse keratinocytes, three-dimensional skin equivalents and specialised keratinocyte cultures. The second part is in particular concerned with keratinocyte adhesion techniques, determination of proliferation and growth factor production in epithelial cells. Part three provides protocols for studying different subpopulations of keratinocytes. Part four is concerned with the detection of terminal differentiation markers and the final part provides in 3 sections methods and background for the introduction of foreign genes into keratinocytes. This booklet is written by 39 authors, mostly overlapping with the contributors to 'The Keratinocyte Handbook', who show their expertise in a very practically minded experimental cookbook like style.

Given the different aspects of keratinocyte functions in skin, the keratinocyte handbook was certainly an overdue endeavour to integrate the different aspects of keratinocyte biology and function in one comprehensive reference. It is the strength of the editors to have chosen experts in the field, combining their contributions in such a way that the reader is never left with a puzzled aggregation of single entities, rather the reader is provided with the impression that structural and functional aspects of keratinocyte biology are interrelated and cannot be separated from each other. Especially helpful is the format of a handbook and an accompanying description of the methods involved in studying keratinocyte functions. Thus, 'The Keratinocyte Handbook' and 'Keratinocyte Methods' can be recommended to any scientist who is interested in entering the field of keratinocyte biology, but also to those already engaged as a reference providing an overview and detailed information on whichever aspect of keratinocyte biology.

Hans Smola
Thomas Krieg

ELISA, Theory and Practice; Edited by John R. Crowther. (A volume of Methods in Molecular Biology); Humana Press, Totowa, New Jersey, 1995; xi + 223 pp. $ 59.50. ISN 0-896-032795.

This is a book for the beginner. The question that comes up with such a handbook is: 'Can one safely hand this book over to a new student and expect him/her to do successful experiments?' – The answer for this book is 'probably', it may even be handed to a very inexperienced student. Surprisingly, there have been few handbooks on ELISA, so this may fill a certain void on the laboratory shelf.

The purpose of this book and the best about it is the practical treatment of the theory and practice of ELISA. Chapter 2 describes the basic principles of various types of ELISA, chapter 3 gives practical hints to the various steps in an assay such as washing, reducing non-specific background, the pros and cons of various enzymes, etc. Chapter 3 is particularly good; every recipee in one place. Chapter 4 discusses the best way of setting up an assay given particular limitations in terms of reagents and biological circumstances. Chapter 5–8 give simple practice assays, some of which could be used as laboratory exercises for immunology/serology courses. The author goes to great length to describe every possible assay situation, including those that may never be encountered in practice. Perhaps there is even too much for the beginner. In general, the figures are very informative, and as they are so descriptive, perhaps fewer words could have been used to say the same thing in the text.

The basic science parts of the book are not as good as the practical parts. Chapter 1 deals with basic immunology, and I would prefer that my students and associates would read a more accurate account of where immunology stands today. The final chapter 9 gives protocols for the purification of antibodies and immunoglobulins and conjugating them to enzymes. The author may expect the students to be advanced laboratory workers by the time they come to the end of the book. The protocols are very brief and not all that accurate, and I would not let an inexperienced student loose with these protocols as the only guide.

In the final analysis, this book has merits, but I would recommend to my students to use a more sophisticated book, such as the Cold Spring Harbor Laboratory, 'Antibodies, A Laboratory Manual' (1988). On the other hand, the format of this ELISA book is such that one can carry it around.

This book might be given to introduce ELISA to non-experts, for example science fiction authors. Except to Robin Cook, who already knows all about ELISA and a lot more. In the film 'Outbreak' based on Robin Cook's book, the heroine runs back to the lab ever so often to run an ELISA to try to identify the lethal virus, and in Cook's book 'Terminal', the hero, a medical student, runs some 50 ELISAs and 100 PCR assays every night before he is able to solve the mystery with the cancer patients.

Eva Engvall

Clinical Biochemistry; Edited by Allan Gaw, Robert A. Cowan, Denis St. J. O'Reilly, Michael J. Stewart, James Shepherd; Churchill Livingstone, Southport, 1995. 156 pp. £ 17.50 (pb). ISBN 0-443-044813.

In modules of two pages the book covers four themes: introducing clinical biochemistry, core biochemistry, endocrinology and specialised investigations. Each module consists of a concise text combined with brilliant diagrams and illustrations. A resumé box focuses the attention to the core information given, and a clinical note continuously ensures that this textbook focuses on the user of clinical biochemistry rather than the provider. Finally case stories give the reader a chance not only for self testing, but also for getting acquainted with 'typical' values for clinical biochemical tests in the diseased state.

The concise style has asked for some sacrifices. Virtually no attention is paid to the methodology employed in clinical biochemistry, even though a basic knowledge is essential also for the user. Numerous abbreviations are employed, but explained only when mentioned the first time. A list of abbreviations would have eased the use of the book, especially for those wanting to read the modules out of order. Finally the book contains no references and no suggestions for further readings.

The first section covering just 9 pages presents an excellent introduction to clinical biochemistry, covering subjects such as how to use clinical biochemistry as compared to other laboratory investigations, the collection of samples, the interpretation of results and the use of outside laboratory testing.

The second section gives a thorough review on clinical biochemistry in connection with fluid and electrolyte disturbances including renal diseases. The section also covers myocardial infarction, diabetes, liver diseases and mineral metabolism. Haematology including coagulation is not covered, properly because haematology in some countries is considered to be a subject not belonging till clinical biochemistry. The missing coverage of haematology and coagulation is unfortunate since diseases such as anemia and coagulation disturbances involve the use of numerous clinical biochemical analyses. In fact haemoglobin and leucocytes are amongst the 'top ten' clinical biochemical analyses.

The section covering endocrinology deals on just 20 pages with the pituitary glands, the thyroid, the adrenal gland and gonadal function,

and the final section on specialized investigations covers amongst other subjects hypertension, lipid metabolism, nutritional assessment, toxicology and therapeutic drug monitoring.

Clinical biochemistry is but a minor subject in the curriculum of the medical student. Yet almost every medical doctor dealing with patients will use clinical biochemistry on a daily base. This brief textbook written for persons with a thorough knowledge on medicine is highly recommended for clinicians, who want to refresh their knowledge and for medical students, who want a brief repetition just prior to their final exams. Most of all, the book is likely to be a helpful source of inspiration for those teaching clinical biochemistry both on pre and postgraduate level.

Ebba Nexø

RNA–Protein Interactions; Edited by K. Nagai and I.W. Mattaj, IRL Press, Oxford, New York, Tokyo, 1995. xviii + 272 pp. £ 29.50. ISBN 0-199-635048

The editors have commissioned chapters on a small number of protein–RNA systems selected for their biological interest and for the insight they yield into how proteins recognize RNA. They include the RNase P complex, aminoacyl–tRNA–synthetase complexes, the rev and tat interactions on HIV RNA, the nuclear proteins complexed with eukaryotic pre-mRNA's, spliceosome complexes, the transcription factor IIIA-5S rRNA complex, an overview of ribosomal protein-RNA interactions and concluding with an in vitro genetics approach to investigating protein-RNA interactions.

Studies of protein–RNA interactions have a long and interesting history going back to the 1960's, and extending into the 1970's, where major protein–RNA complexes including the ribosome and tobacco mosaic virus, and smaller ones including 5S rRNA–protein complexes, the aminoacyl–tRNA ternary complex and the R17 viral RNA–coat-protein interaction were confronted with abandon. These early studies spawned a plethora of methods for examining protein-RNA interactions including the gel-shift method for detecting binding, filter binding assays, immunological purification, various footprinting methods, damage selection procedures, covalent cross-linking methods, and the phylogenetic sequence comparison approach applied to RNA structure which were later avidly (and generally with little credit) adapted for studying protein–DNA complexes. The overwhelming lesson from this period, particularly for the ribosomal protein–RNA complexes, was that protein–RNA interactions were very diverse; isolated RNA binding sites varied considerably in complexity from about 20 nucleotides (the L25 site on 5S rRNA and R17 coat protein) upwards. It was generally inferred from these studies that bulged nucleotides, irregular double helices, helix–loop junctions and unknown tertiary structural features were the crucial motifs for protein recognition; later one could add pseudoknots to this list.

Reading the present book from this perspective one is impressed by the large amount of work that has been done on a variety of systems which seems to emphasize the diversity of protein–RNA interaction mechanisms with the spliceosome systems, in particular, beginning to make even the ribosome look straightforward. Moreover, there are bulged nucleotides, irregular double helices and helix–loop junctions everywhere. There has also been a general improvement in, and extension of, the RNA technology, for example the free radical footprinting methods for examining the accessibility of the RNA backbone in complexes. However, the main new methodological advances, apart from the in vitro genetics approach, have come from examining the RNA binding proteins. With the availability of many new protein gene sequences, the phylogenetic sequence comparison approach has proven particularly useful for identifying putative binding motifs. Binding studies with peptides have also been effective and suitable for NMR studies, and the recently developed (but not mentioned) protein footprinting approach has considerable potential. X-ray crystallographic results on the amino acyl synthetases, rRNA binding protein L1 (not included) and the U1A splicosome protein have also provided important additional insight into protein binding domains.

This is a timely and well presented book covering a broad field that has been previously rather neglected. It outlines a considerable success story for the biochemists and geneticists who have identified the important structural motifs for the NMR spectroscopists and X-ray crystallographers to work on. Its main limitation, the omissions, may partly reflect publication deadlines. However, the α-sarcin interaction with 23S rRNA, which uses a bulged nucleotide in a double helix as a ruler for determining the distance to its cutting site, elongation factor G's attempt to imitate a tRNA structure, and the aminoacyl–tRNA interaction with elongation factor Tu and GTP would all have enhanced the book's interest.

Roger A. Garrett

In Vitro Transcription and Translation Protocol. Methods in Molecular Biology, Volume 37; Edited by Martin J. Tymms, Humana Press, Totowa, 1995. xii + 432 pp. $ 64.50. ISBN 0-896-032884.

This text is an excellent compilation of current methods in transcription and translation investigation protocols. The various chapters are contributed by experts in their field of research, and the entire text is accordingly edited by Dr. Tymms. This volume provides an extensive catalogue of methodologies of in vitro transcription in cell-free systems and translation in extracts from various cells to *Xenopus* oocytes. In addition, specific methods are presented in several chapters that enhance studies of examining DNA expression such as microinjection in mouse oocytes and embryos, in vitro reconstitution studies, and transcriptional activation analysis by CAT assays. In general and with rare exceptions, all the chapters present brief but concise background information and rationale for the methods described. For those who see a more expansive introduction to the methods, an extensive reference list is available which provides key articles to support the presented technical information. In a manner similar to everyday laboratory preparation and experimentation, this volume provides a comprehensive list of supplies along with appropriate suppliers, and detailed description of the procedures in which the experiments are performed. What I found to be most helpful are the notes that are placed appropriately in each section which describes considerations in trouble-shooting special problems that may arise or need to be anticipated. In examining the protocols presented in the chapters of this volume, what is also evident is the effort of the contributors in providing some collective experiences and nuances with performing these methodologies. This point is illustrated in the chapter on 'In Vitro Translation Using Rabbit Reiculocyet Lysate'. The detailed discussion in the notes of the use of the coupled transcription and translation method is not published elsewhere. Moreover, some chapters provide extensive rationale and explicit protocols in an apparent effort to guide investigators who have moved into a new area of research. The chapter on 'Subtraction Hybridization' is an example of this intent where an broad discussion of the protocol, rationale, and also notes on special problems are included which would clearly assist investigators not familiar with these methodologies.