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.

The editor comments that the goal of this volume is to expand the users range of techniques and provide step by step instruction, extensive notes in trouble-shooting, and cover special topics. In my view, it is quite clear that Dr. Tymms has attained his goal with this excellent text. I would certainly recommend this volume as a reference in any molecular biology laboratory.

Richard Arakaki

Molecular Biology of Diabetes. II. Insulin Action, Effects on Gene Expression and Regulation, and Glucose Transport; Edited by B. Draznin and D. LeRoith; The Humana Press; Totowa, New Jersey, 1994. xviii + 555 pp. $ 99.50. ISBN 0-896-032868.

Part two of 'Molecular Biology of Diabetes' has the subtitle 'Insulin Action, Effects on Gene Expression and Regulation, and Glucose Transport'. The purpose of this volume is to offer the latest knowledge from research on diabetes, and particularly to present insights into the substantial progress made in the current understanding of insulin action. To achieve this, the editors received contributions from several of the top researchers in this field.

The volume is further divided into two parts: the first on 'Molecular and Cellular Aspects of Insulin Action' (Chapters 1 to 21), and the second on 'Molecular Mechanisms of the Insulin-Regulatable Glucose Transport' (Chapters 22 to 26). The book starts with two excellent reviews on already well-established topics, the first one by S.I. Taylor and his coauthors on mutations in the insulin receptor gene in humans with extreme insulin resistance, and the second review on the structure-function relationship of the insulin receptor by J.M. Olefsky and W.J. Langlois. Other receptors belonging to the insulin receptor family are also covered in the book, the IGF-I receptor, insulin/IGF-I hybrid receptors, and the insulin receptor-related receptor. Seven chapters, a quarter of the book, are devoted to the continuously growing, yet poorly understood topic of insulin signalling. These Chapters cover the role of Insulin Receptor Substrate 1, p21ras, and kinases and phosphatases in insulin action. Another issue covered is the role of insulin in the regulation of gene expression. Research illustrating this subject is presented in four chapters. It is worth mentioning Chapter 3 on the use of subtraction cloning methods by C.R. Kahn and C. Reynet, as an example of the application of new techniques to the identification of diabetes-related genes. The topic of the insulin-regulatable glucose transport is extensively covered by the five chapters that constitute the second part of the book.

In terms of the distribution of the topics in the book, while the second part is well assembled and maintains internal consistency, the first part is not so well organized. This first part of the book appears to contain three distinct areas, which might perhaps have been better presented as separate entities, in order to maintain the overall consistency: one group on insulin and related receptors, a second on signal transduction, and a third group on gene expression and regulation. The distribution of the chapters in the book attempts to reflect this organization, but it is not clear to us why the more methodological Chapter 3 on subtraction cloning is placed between a chapter on the insulin receptor, and a chapter on the insulin receptor-related receptor, in the first group. It would perhaps have been more appropriately placed in the third group of chapters on gene expression and regulation. There are some other examples of misleading locations in the book, particularly Chapters 19 to 21, which could have been placed immediately after the Chapter 4 on insulin receptor-related receptor, since they deal with IGF receptor and its relationship with the insulin receptor, and the role of its ligand in diabetes.

Although the reviews are of excellent quality, another weakness of this volume is repetition. One may admit that it is difficult to define a clear separation between topics, particularly in signal transduction pathways, without creating an artificial border that distorts the reality. However, it is obvious that part two of 'Molecular Biology of Diabetes' has reiterative chapters, ranging from overlapping issues to overt redundancies, and even between consecutive chapters. The most obvious cases are the overlap between Chapters 5 and 6 (showing partial redundancy on Insulin Receptor Substrate-1), between Chapters 13 and 18 (conceptual redundancy on genes regulated positively by insulin), and between Chapter 23 and 24 (complete redundancy on the whole topic of GLUT-4 phosphorylation, virtually a duplication). It would have been better to remove these redundancies and devote more space to issues like classic and transgenic animal models, essentially ignored in this Molecular Biology of Diabetes.

Nevertheless, the reviews are of outstanding quality for those who wish to increase their knowledge of the molecular biology of diabetes and insulin action. This book is especially useful for students, teachers and researchers who seek a relatively recent overview on insulin action.

Fatima Bosch and Alfons Valera

Tamoxifen – Molecular Basis of Use in Cancer Treatment and Prevention; Edited by Helen Wiseman, John Wileys & Sons, Chichester, 1994. x + 209 pp. $ 29.95. ISBN 0-471-943169.

Tamoxifen is an extensive review of the antiestrogen, tamoxifen, its chemistry, pharmacology, and clinical use both in treatment and prevention. It includes a description of the action of tamoxifen at the molecular level through the estrogen receptor mechanism. Actions on oncogene expression and growth factors, and on enzyme activities are given in separate chapters, and resistance to tamoxifen as well as its advantages and disadvantages compared to pure antiestrogens are briefly described.

A fascinating aspect of tamoxifen is its effect as antioxidant on cellular membranes. This is probably surprising for many readers and the subject is well described in the book. Also, the cardioprotectant action is interesting and important in the discussion of the use of tamoxifen in preventive medicine.

The various chapters cover the many facets of tamoxifen. The references are appreciably up to date and the author seems, as a principle, to have avoided references before 1990. In some instances, though, the reader misses the original references on the pioneering work in the field. The book is not easy to read due to the overwhelming bulk of information presented in a concentrated form with too little space for conclusions and speculations. However, this detailed and comprehensive description of tamoxifen will probably be helpful for clinicians as well as researchers who are working in this field.

Per Briand