

of sedimentation equilibrium experiments. Allen P. Minton presents a new algorithm for the elimination of the reference concentration as an independently variable parameter in the analysis of sedimentation equilibrium. Two other chapters discuss interactions between proteins and of proteins with nucleic acids using experimental data and rather complicated mathematical methods.

Sedimentation velocity experiments are treated in 6 chapters in Part II. Although sedimentation velocity has been used only rarely to study complex mixtures of molecules, here it is shown that much information on molecular interactions can be obtained using modern equipment and desk top computing. Two chapters deal with macromolecular interactions. One describes the use of the apparent sedimentation coefficient distribution function replacing but remotely related to the less sensitive plot of dc/dr vs r . The other deals with different interaction models. The sensitivities of modern optics are amazing. Schlieren optics requires protein concentrations higher than 1 mg/ml, the interference optical system 0.1 mg/ml and UV scanning not more than a few $\mu\text{g/ml}$. Comparison between experimental results and simulated results is discussed. Numerical methods for estimation of sedimentation coefficients, diffusion coefficients and hence molecular weights are described, and a chapter is devoted to computer simulation of macromolecular interactions. Waxman and co-workers describe how combination of data from two different techniques can lead to refined

information about the shape of macromolecules. In this case, ultracentrifugal techniques are used along with time-resolved fluorescence anisotropy decay measurements, but clearly many other possibilities are obvious.

Acquisition of and reduction of the enormous amount of data collected automatically is an important part of today's ultracentrifugation, but surprisingly part III of this book comprises only three chapters. One deals very carefully with the Rayleigh optical system recorded using a television camera. Two different approaches are described. Another discusses how to improve graphic programs for this specific purpose, and finally a graphical method for estimation of the ideality of sedimenting boundaries is given.

The last part of this book deals with the use of analytical ultracentrifuges to solve specific problems in biotechnology, drug design and in studies of heterogeneous polysaccharides.

As a whole, this is a fine and concise book. It places the main emphasis on theoretical problems and the use of computers. Unfortunately, in most cases it is not clear how to obtain the programs. It is definitely written by experts for experts and I shall strongly advise newcomers to this area to start with an introductory text before advancing to the present book and to have some handbooks of mathematics at hand while reading it.

Jens Steensgaard

The Metabotropic Glutamate Receptors; Edited by P.J. Conn and J. Patel, Humana Press; Totowa, New Jersey, 1994; x + 277 pages; \$ 99.50. ISBN 0-89603-291-4.

The Metabotropic Glutamate Receptors offers a thorough and up-to-date review of all aspects concerning the mGluRs.

The book begins with a chapter discussing cloning, expression, and pharmacology of the various mGluR subtypes. This chapter is followed by two chapters which in more detailed manner describe the agonist and antagonist pharmacology and the second messenger systems coupled to the mGluRs. Although a certain overlap exists between Chapters 1–3, these chapters give an excellent summary of the state-of-the-art in the pharmacology field. It is clear that one of the future focuses will be on the discovery of subtype selective agonists and antagonists by using cloned receptors.

Chapter 4 gives a nice and clear presentation of the anatomical distribution of the mGluRs in the mammalian brain. mRNA of the specific subtypes are detected using *in situ* hybridization in various brain regions and these data are correlated to data showing phosphoinositol turnover and cAMP formation, as well as to radioligand binding studies and immunocytochemistry. This chapter is very well written with illustrative figures.

Chapters 5–7 describe the involvement of mGluRs in modulation of

ion currents and synaptic transmission. This modulation involves activation or inhibition of various K^+ and Ca^{2+} channels and potentiation of AMPA responses and depression of GABA_A responses. The involvement of certain mGluR subtypes in regulation of glutamate release from glutamatergic synapses is discussed, as well as the role of mGluRs in long-term potentiation, long-term depression, and kindling.

In chapter 8 the involvement of mGluR in regulation of neuronal circuits is discussed. The chapter is hard to read and more illustrations would have been helpful. Finally, the last two chapters describe the role of mGluR in both neurotoxicity and neuroprotection as well as the changes in mGluR plasticity in physiological and pathological conditions.

The Metabotropic Glutamate Receptors not only gives a state-of-the-art in the field but also points out the needs for future research and thereby becomes of interest to both scientist working with the metabotropic glutamate receptors and with receptors in general.

Charlotte Klitgaard Tygesen
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Vegetables and Vegetable Products. Modern Methods of Plant Analysis; Edited by H.F. Linskens and J.F. Jackson, Springer-Verlag; Berlin, Heidelberg, New York, 1994; xv + 187 pages. DM 198.00. ISBN 0-387-55843-8.

This hands-on methods volume is one of a series aimed at the applied area of plant biology. As such, the whole series covers basic analysis of the contents of plants and quality control through to down-stream processing and analysis of a wide range of marketable products originating from plant material. It is therefore designed to fill a niche for the need for source works of methods used by workers in agriculture and horticulture, pharmaceuticals and other industries. It therefore contrasts favourably with Academic Press's Methods in Plant Biochemistry series which is more aimed at basic research. Volume 16 describes applied techniques of use in the analysis of vegetables and vegetable products. However, it is not a protocol volume *per se* and consists of commentaries on available methodologies from which the researcher can develop methods for their particular problem.

The present volume is rather more broad-based than some of the earlier titles in the series in that it deals with a wide range of materials and situations and contains chapters that could have fitted, though perhaps prevented by timing, into any of a number of earlier volumes. The result is less thematic and it is really a collection of potentially

useful articles and not an all-encompassing treatise. The authors go some way to dispel these misgivings by giving their rationale for the volume. As it is, they stress the importance and relevance of each chapter often within the socio-economic context. It is refreshing to see a methodology book on plant analysis addressing social problems particularly with respect to dietary intake. Thus the potential for plant-derived proteins and the importance of fibre intake are stressed in the chapters on their analysis. Residue analysis of xenobiotics is also dealt with thoroughly. Aspects of plant breeding are also covered both with respect to the genetics of carotenoid content of fruits and modern methods for the genetic mapping of linkage groups of the pea. The last two chapters discuss analyses relevant to problems encountered with third world crop systems that are aimed at addressing existing efforts to improve nutrition in tropical Africa.

Whether conscious or not a number of chapters are particularly timely. The fibre and antioxidant content of plant products are particularly 'hot topics' at this time. Aspects of dietary fibre are dealt from the point of view of physico-chemical and rheological analysis and