CHATER, K. F., BREWIN, N. J., CASEY, R., ROBERTS, K., WILSON, T. M. A., FLAVELL, R. B. (ed.): PROTEIN TARGETING. Proceedings of the Eighth John Innes Symposium, Norwich 1988. – J. Cell Sci. Suppl. 11. The Company of Biologists, Ltd., Cambridge 1989. 253 pp.

The Proceedings of the Eighth John Innes Symposium were published as a supplement of the Journal of Cell Science in the form of a separate book. Protein targeting has been in recent years in the focus of the interest of molecular biologists and has developed into a basis of an independent branch of membrane transport research. The aim of the symposium was to supply a survey of the present state of the understanding of targeted movement of proteins to different cell organelles and of the way of protein molecule penetration across their membranes, of the mechanism of protein molecule incorporation into cell membranes, and finally of the transport of protein molecules between the cell and the environment.

The papers of the top European and American scientists supply information on protein targeting into cell nucleus, mitochondria and chloroplasts, about the export of proteins from microorganisms, or about their import to eucaryotic cells as processes that are significant not only from the viewpoint of a normal cell, but also from the viewpoint of pathogenicity. This latter case has been illustrated with the penetration of the pathogenic organism *Salmonella*, for example, to the epithelial cells of the kidney or larynx.

It is now known that a certain spatial configuration of protein molecules must be maintained before the penetration into the membranes and that also their chemical composition can often be changed. The modification of protein molecules with lipidic substituents makes it easier for protein molecules to interact with membranes. The publication brings information about the role of the N-terminal signal sequence during the penetration of proteins across membranes and also about the fact that its initiation function is sometimes taken on by the C-terminal sequence. This occurs, for example, in the haemolysin expert from *E. coli*. The book also informs about the advances achieved in studies of the topology of membrane proteins by means of the methods used in molecular genetics, about the progress obtained in the study of membrane pits lined with clathrin in the process of endocytosis, and a lot of information which on the one hand shows the similarity of the basal principles in membrane transport of proteins, and on the other hand emphasizes the polymorphism of different membranes.

So far, bacteria have been the most frequent model systems for the investigations of protein targeting, but there already exist studies dealing with this problem in fungi, higher plants, and in animal cells. This book brings information on a very topical problematics of the transport and on targeted movement of proteins, and for this reason it can be useful not only to geneticists, microbiologists, and physiologists, but also to specialized phytopathologists or even to physicians. It can be especially useful to those who start their experimental work in this transport problematics in our country.

RENATA RYBOVÁ (*Praha*)

PROCEEDINGS OF THE XIV INTERNATIONAL CONFERENCE OF GROUPE POLYPHÈNOLS. – Brock University, St. Catharines, Ontario, Canada.

International conference of the organization Groupe Polyphènols took place on August 16–19, 1988. Voluminous Proceedings (432 pages) published by INRA, Route de St. Cyr, Versailles, appeared immediately after the conference. The wide range of topics discussed at the conference is demonstrated by the extent of the Proceedings. Apart from the introductory and concluding words of the President, Professor Macheix, it is divided into six chapters: I) Summary View of Polyphenols (12 papers); II) Polyphenols in Cereals (5 papers); III) Phenolic Substances in Food; (9 papers); IV) Biodegradation and Utilization of Lignin (5 papers); V) Phenolic Substances and Phytopathology (9 papers); VI) Biosynthesis and Production of Polyphenols (7 papers). The Proceedings also contains panel communications dealing with phytochemistry, methodology, polyphenols in food, biosynthesis, enzymology and metabolism of polyphenols. Altogether there are 65 significant communications, most of which are dedicated to polyphenols in food. J. B. Harborne (U. K.) in his introductory paper points out that until now the characteristics of many thousands of plant phenolic substances have been presented, but we are still very

far from understanding their natural function that is related to their structure. Their physiological activity is still not fully clarified with regard to their chemical character. J. B. Harborne submits a summary of our knowledge of anthocyanins and their functions, the relations between flavonoids and insects, phenols and fungitoxins (inhibition of fungi spores germination, and induction of phytoalexins induced at the spots of infection). He informs about findings that flavonoids participate in nitrogen fixation in higher plants. This fact is connected with their ability to induce the expression of NOD gene, and also with their function as the inhibitors of the nodulating genes expression. Other papers deal with the metabolism of phenols and the taxonomy in *Dactylis glomerata* and in *Helianthus annuus*, with the metabolism of the anthocyanins in *Dianthus caryophyllus* and their changes induced by γ-radiation. The activities of peroxidase, β-glucosidase and esterase, and their cooperation in the transformation of accumulated phenols into phytoalexins in the leaves of *Hordeum vulgare* is the subject of another paper.

The Proceedings offer a number of communications on polyphenols in cereals, their biochemistry, the activity of peroxidases and polyphenoloxidases, the effect of laccase in the oxidation process of phenols in malt and flour.

Many communications are significant for nutrition, because they discuss the content of phenols (especially flavonoids, quercetin, ellagic acid) in food. A review paper (B. Stavric, T. I. Matula – Canada) deals with antimutagenic and carcinogenic effects of some phenols. The paper of M. Matche (France) on the significance and transformations of flavonoids in food is also suggestive. The stability of some phenols and anthocyanins to atmospheric oxygen and light (*e.g.* browning of amylum in sago) are the subjects of other papers. The application of electrochemical methods combined with liquid chromatography indicates a possible exploitation of these methods in the chemistry of food. An extensive chapter includes communications on biodegradation of lignin by *Basidiomycetes* from different viewpoints, and oxidation of the products of its disintegration (*e.g.* in oak wood by fungi).

Another substantial chapter deals with phenol compounds and phytopathology, namely with the role of furocoumarins, the resistance to *Fusarium oxysporum* by specific phytoalexins, the effects of tannin on pathogenous fungi and the changes in phenylpropanoid metabolism in tobacco plants hypersensitive to tobacco mosaic virus. Another paper deals with the kinetics of the oxidation of phenolic acids and with the changes of anthocyanins in infected vine leaves.

The chapter "Biosynthesis and the Production of Polyphenols" includes the enzymology of phytoalexins, flavonoids, tannin, the metabolism of anthocyanins and phenols in the cellular suspensions. Several communications are devoted to the enzymatic browning of apples.

The panel communications include findings from the phytochemistry of phenols and the related research methods (spectrophotometry, HPLC, gas chromatography, TLC, NMR). The application of these methods is illustrated especially in research in food chemistry (*e.g.* the determination of flavonoids in honey, wines and white grapes). The effect of tannins on the digestibility of proteins, the antioxidizing properties of phenols in meat were also studied. Other panel communications deal with the metabolism of caffeic acid, 5-hydroxyferulic acid, their methylation by methyltransferase, biosynthesis of stilbene in *Pinus silvestris* under the effect of ozone. Communications also relate to the biochemistry of phenols in animals.

The last chapter of the panel communications concerns the phenol content in sea water, phenols in regulation of the *in vitro* processes, the role of BAP and ethylene, and the content of phenols in the embryogenic cultures of various woody plant species.

The volume is concluded by a summarizing article on lignin, its biogenesis, biodegradation and utilization (N. G. Lewis, U.S.A.). This is a survey on the biosynthesis of 1–3 monolignans, their transport in the cell, the structure of lignin in the cellular wall, biodegradation of lignin by *Phanerochaete chrysosporium*.

An interesting chapter on the utilization of lignin in timber industry is also involved.

Thus, the Proceedings offer a summary of the present knowledge, research and its trends concerning a significant group of substances, which are not merely secondary substances of plant metabolism.

F. Pospíšil (*Praha*)