Physiol. Res. 46: 77–78, 1997

INTRODUCTORY REMARKS

The minisymposium "*CNS – Recent Advances in Normal and Neoplastic Cells*" was organized as a Satellite Meeting of the International Congress of European Tissue Culture Society in Brno in April 1996. This city is associated with Johann Gregor Mendel who lived here and formulated his classical laws of heredity in a monastery. The year 1996 commemorated the 130th anniversary of the first publication of his original experiments and this Congress was devoted to Mendel's heritage and to his major contribution to biology.

A citation from Plinius can well be applied to research at the cellular level: *Natura nusquam magis est tota quam in minimis* – "Nature never reveals its secrets more than in its smallest beings". The plasma membrane is a basic structural cell component involved in cell-to-cell communication and in the action of external mediators and signals. It was first described as a semipermeable *plasma membrane* by Naegli and Cramer in 1855. The idea that the cell membrane is involved in the interaction with other cells and the environment, including the concept of specific transport, pharmacological and immunological receptors was first formulated by P. Ehrlich (1891). It was not until much later that basic information was obtained concerning membrane and metabolic characteristics of excitable cells leading to the latest discoveries in the field of cell membranology – the ubiquitous trimeric GTP-binding proteins, phylogenetically conservative structures, participating in the vertical transduction of signals across the plasmatic membrane (A. G. Gilman and M. Rodbell, Nobel Prize in 1994). It was pointed out in the introductory lecture of this minisymposium that the mechanism of functional coupling between the membrane receptors and the G-protein is far from clear. A protein cofactor can apparently participate in receptor/G-protein coupling. Alterations in cell signal transduction, including G-proteins, accompany the antidepressant effects and affective disorders in general and *in vitro* studies simulate these changes. The cell receives information which is intracellularly processed and transmitted into the cell nucleus where it determines the further fate of the cell – whether it is to live and grow, or ultimately to succumb by apoptosis, programmed death. Intercellular communications are usually impaired in pathological states and this has consequently led to a search for pharmaco-therapeutic possibilities of rescuing or eliminating damaged cells, e.g. by cytostatic drugs or irradiation.

For a very long time, the CNS was considered as an exceptional organ with highly specialized functions and this led to a persisting conviction that the brain is immunologically privileged and, according to P. B. Medawar, that it is exempt from immune reactions. In this respect, a principal reversal has taken place, especially during the last decade. At the present time, an active role in immune reactions is being ascribed to the glia, primarily as a participant in pathological processes in the CNS. On the other hand, neuroimmunoendocrine feed-back mechanisms affect the functional activity of cells in the immune system. The cytotoxic activity of NK lymphocytes (natural killers) is modulated by dopaminergic modulators, and the cholinergic system is also involved in immune reactions to infection.

All these problems are covered in the reports and concern more general phenomena in CNS and non-CNS cells of the immune system and include problems still open for research.

February 1997

H. Kovářů

Main Organizer of the Minisymposium

Acknowledgements

We are grateful to various companies listed separately for financial support of the Minisymposium and for partly covering the publication costs.

DIONE, s.r.o.
reagents and techware for biomedical research
K rovinám
252 06 Sázava, o. Praha-západ
Tel. 02/999 2030 Fax: 02/999 2030

OPAVET, s.r.o.
Jateční 23
746 00 Opava
Tel. 0653/216382 Fax: 0653/8017

PFIZER, s.r.o.
Lihovarská 14/1847
190 00 Praha 9
Tel. 02/83004111 Fax: 02/6846989

ROCHE, s.r.o.
V sadech 4
160 00 Praha 6
Tel. 02/3118214 Fax: 02/3118216

SCHLEICHER & SCHUELL
MARKETING CONSULTING, s.r.o.
Geologická 995/9
152 00 Praha 5
Tel. 02/5815250 Fax: 02/5815240

SYNTHÉLABO Pharmaceutica, s.r.o.
Chittusiho 45/2
160 00 Praha 6
Tel. 02/24319139 Fax: 02/24324142
02/24318136

ZVOS HUSTOPEČE, a.s.
S.M.L. (Sera, Media, Laboratory equipments)
691 62 Uherčice
Tel. 0626/411254-6 Fax: 0626/78203