



Nervecells, Transmitters and Behaviour

Study Week



This Study Week on Neurobiology is the sixteenth organized by the Pontifical Academy of Sciences and was held at its headquarters, the Casina Pio IV, in the beautiful Vatican Gardens. It comes at an appropriate moment when surprising new facts are described and new interpretations are given of some of the most important aspects of our biological knowledge. It is a flourishing field wherein the nerve cells, transmitters and behaviour results of the past can easily be substituted by those of the present, and may be reversed by those of tomorrow. The effervescence of this field of research can be seen in the diversity of approaches, methods and technical skills presented during this 5-day Meeting.

From the study of cells, some of them serving as special models for particular studies, to that of the specialisation in split and intact brain, the participants in the Study Week covered a lot of ground. Of course, during our Meeting it was impossible to focus on every single problems, suggestion and answer. Its purpose, however, was perfectly achieved and all the presentations show the importance of the new approaches and how much our knowledge on brain mechanisms has been extended to the molecular level. It is safe to say that during the previous Study Week on ["Brain and Conscious Experience"](#), held in 1964, also a landmark in this field, we had hoped for a more detailed scrutiny of nerve function in the future, but we would have found it difficult to imagine the progress achieved in the recognition of the intimate nature of some of the ways in which nerve cells interact. Certainly, much still has to be done and new frontiers of research will become necessary. We can safely say, however, that this Study Week repeated the success of the one held in 1964.

Programme

I. Sympathetic, Pheochromocytoma and Neuroblastoma Cells: In Vivo and in Vitro Studies
New Features of the Nerve Growth Factor-Target Cells Interaction (R. Levi-Montalcini)
Can Nerve Growth Factor (NGF) Play a Transcription-Dependent "Instructive" Role During Development? Evidence from Studies with Clonal Pheochromocytoma Cells (L. Greene)
Studies on the Mechanism of NGF-Induced Neurite Growth (P. Calissano)
Tumor Specific Surface Properties of Malignant C1300 Neuroblastoma Cells (R. Revoltella)
Synapse Plasticity (M. Nirenberg)
Synapse Formation of Continuous Cell Lines (P. Nelson)

II. Identification and Mechanisms of Neurotransmitters

y-Aminobutyric Acid (GABA): A Major Inhibitory Transmitter in the Vertebrate Nervous System (E. Roberts)
Mechanisms of GABA Release and Reuptake in Presynaptic Nerve Endings (G. Levi)
The Role of Prostaglandins and Cyclic Nucleotides in Tremors and Convulsions (R. Paoletti)
Neurotransmitters, Cotransmitters, Neuromodulators and Trophic Factors in the Autonomic Nervous System (G. Burnstock)
Histochemical Characterization of Neuron Populations: Immunocytochemical Studies on Transmitter Related Substances (T. Hökfelt)
Studies on the Mechanism of Release of Biogenic Amines from Cerebral Nerve Endings (M. Raiteri)
Dopamine Dependent Modulation of cAMP Level in the Chick Retina (F. De Mello)

III. Enkephalins: Synthesis, Function and Receptor Mechanisms

Enkephalins: Receptors, Biosynthesis and Release (H.W. Kosterlitz)
Endorphins and the Endogenous Control of Pain (L. Terenius)
Hybrid Cells as Model for Studying Opioid Action (B. Hamprecht)

IV. Specificity in Neuronal Connections and Plasticity in the Immature and Mature Nervous System

Maturational Changes in the Development of Motor Innervation in Chick Embryo (G. Filogamo)
Prespecification and Plasticity in Neurogenesis (V. Hamburger)
Biochemical Control of Synapse Formation "In Vivo" (E. Giacobini)
On the Regulation of the Number and Distribution of Acetylcholine Receptors in Skeletal Muscle (D. Fambrough)
Selective Innervation of Mammalian Sympathetic Ganglion Cells (D. Purves)
Interaction between Inactivity and Nerve Degeneration in the Origin of Denervation-Induced Changes in Skeletal Muscle (A. Cangiano)

V. Hemispheric Specialization: Studies in the Split and Intact Brain

Events-Related Potentials in the Cerebral Cortex (J. Eccles)

The Problem of Hemispheric Specialisation in Animals (L. Weiskrantz)

Complementary Functional Specializations of the Human Cerebral Hemispheres (B. Milner)

Cerebral Asymmetry and its Variations in the Human Brain (J. Levy)

Cortical and Subcortical Routes for Visual Interhemispheric Transfer in the Cat (G. Berlucchi)

List of Participants