

Editorial

In recent years, bibliographic vehicles have more or less kept pace with the explosive increase in information in the field of Neurobiology, with the introduction of many new "primary" journals covering all major aspects of Neurobiology in an increasingly specific manner. To have the temerity to launch yet another journal thus requires explanation and justification by the editors. It is our hope and belief that you, our scientific colleagues in the field, will endorse our rationale for bringing *Molecular Neurobiology* into the world, and work closely with us to sustain its growth and development into the leading intensive review journal in the field.

An attempt to define the scientific content of the term molecular neurobiology is a precondition for expounding the journal's philosophy. "Neurobiology" has been around for many years and is a portmanteau word that summarizes the many disciplines associated with study of the central and peripheral nervous systems, viz.: Neurochemistry, Neurophysiology, Neuropharmacology, Neuropathology, etc. It is our intent to maintain this broadly encompassing definition of Neurobiology in the editorial content of this journal. "Molecular" is an increasingly vague word, though of course, Molecular Biology is an established discipline with its own extensive bibliographic world. The scope of this journal will deliberately not be limited to "Molecular Neurobiology" defined as the application of molecular biological techniques to the study of the nervous system. Rather, *Molecular Neurobiology* will be oriented toward providing up-to-date understanding—at the molecular level—of all biochemical and physiological processes relevant to nervous system function and disease. This will include of course the analysis of the structural and functional expression of neuroproteins, as per molecular biology, but in addition, *Molecular Neurobiology* will cover studies of integrated functions in the nervous system, whether intraneuronal, synaptic, neuronal circuits, neuron–glia interactions, or behaviors.

Certain major areas the journal plans to cover can be more completely specified. Thus, the molecular basis of neurotransmitter function is now approachable, and not merely through the simple identification of membrane receptor proteins and the study of the kinetics of ligand–receptor interactions. We will also be treating recent advances in receptor biochemistry from the viewpoints of receptor protein structure and coding, the placement and mobility of receptor proteins in the plasma membrane, the structural and functional expression and regulation of receptors in neurons, and the biochemistry of receptor coupling to membrane effector proteins (enzymes, ion channels) and to intracellular second messengers. An allied area of interest is the role of membrane lipids in receptor function and neuronal signal transduction. The structure and coding of receptors and other proteins important for neuronal function—such as potential-dependent ion channels, transport proteins, neurotransmitter-related enzymes, effector enzymes, intraneuronal "second messenger receptors", etc.—will, as data accumulates, allow us to identify and understand the occurrence of heterology and

polymorphism in these proteins, and place this information in evolutionary and genetic contexts. These advances will be covered by *Molecular Neurobiology*, as well as their implications for pathogenesis and therapeutics.

The scope of *Molecular Neurobiology* will include advances in the understanding of synaptic function, which will arise from new electrophysiological techniques such as patch clamping, and new information on neurotransmitter production and disposition (especially for peptide neurotransmitters), the role of "neuromodulators", and the coexistence and concurrent functionality of two or more transmitters within the same neuron, combined with the likelihood of allosteric interactions between receptors for cotransmitters occurring on the same membrane. Recent data in this area suggests that trans-synaptic signaling is far more finely integrated than heretofore recognized. A major aim of the journal will be to promote the convergence of new biochemical and molecular biological knowledge of the brain attained increasingly through techniques of specific protein and gene labeling *in situ* (autoradiography, immunocytochemistry, *in situ* hybridization). *Molecular Neurobiology* will encourage realization of the admittedly distant goal of a functional neuroanatomy of the brain that is in step with biochemical and molecular biological advances using brain isolates.

The emphasis on molecular and synaptic expression, function, and regulation leads naturally to another major focus of the journal: the understanding, at the molecular level, of neuronal plasticity, of the mechanisms of learning and memory, and of the cellular and organotypic processes related to ontogenesis, development, and aging of neural and brain function. Lastly, *Molecular Neurobiology* will emphasize coverage of studies on the molecular and genetic basis of diseases of the nervous system, whether neurological or psychiatric. Indeed, this is a field in which very significant breakthroughs are now occurring, especially in the area of neurodegenerative diseases.

The field of molecular neurobiology, thus defined, is undergoing a very rapid expansion of knowledge that is sure to continue. The aim and philosophy of *Molecular Neurobiology* is to act as a forum for intensive, in-depth, and critical review of the field. The journal will solicit such review articles from distinguished scientists who are actively contributing to each of the specialty areas outlined above. Our aim is to review each area with sufficient frequency to keep pace with the expected rapid advances. To assist in the task of identifying emerging information, contributors, and editing articles for scientific content, we have been extremely fortunate to assemble an outstanding Editorial Advisory Board, and we thank each Board Member for a genuine willingness to contribute time and effort to help establish the highest possible standard of quality for papers appearing in the journal. We are prepared to accept unsolicited manuscripts after thorough editorial review. It is axiomatic that any rapidly moving scientific discipline breeds controversy, and we will not shy away from publishing controversial viewpoints that may ultimately help to clarify an emerging base of knowledge.

Molecular Neurobiology will be published on a quarterly basis initially, with the first four issues appearing before the end of 1987. Because of the extraordinary early response of our initial panel of invited authors, we are especially pleased to be beginning with this truly excellent double issue. We are grateful for the help of the community of Neurobiologists in getting the journal off to such a resounding start and solicit our colleagues' ongoing help in maintaining the journal at the forefront of quality, respected scientific publications. We thank you in advance for your support of *Molecular Neurobiology*.

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