



## Edward Herbert

(1926–1987)

For many of those who had known Edward Herbert, the announcement of his death on February 19 meant an irreplaceable loss. Ed was both a kind teacher who fostered the careers of many young scientists and a great scientist who pioneered the field of molecular neurobiology.

Ed received his bachelor's degree from the University of Connecticut and his doctorate from the University of Pennsylvania in 1953. He was a postdoctoral fellow in the laboratory of Dr. Van R. Potter at the University of Wisconsin. He then joined the faculty of the Massachusetts Institute of Technology as an instructor, became assistant professor, and finally associate professor. In 1963, he moved to the West Coast as associate professor in the Department of Chemistry at the University of Oregon where he became Professor of Chemistry in 1968. In 1983 he was named Director of the Vollum Institute for Advanced Biomedical Research at the Oregon Health Sciences University in Portland.

Many scientists remember Ed for his contributions to the field of neuroscience in the latter part of his scientific career. But Ed had already been a pioneer before, when his research interests were devoted to the study of the mechanism of protein translation. He demonstrated that the sequence CCA found at the 3' end of each tRNA is added post-transcriptionally. He was also a central figure in the development of the rabbit reticulocyte lysate as a system to study protein biosynthesis. After some fifteen years of very productive research in this field, Ed had the courage to start research in a totally different area, because he had decided that it was time for him to break new ground.

Ed took advantage of a sabbatical leave, in the laboratory of Ed Kravitz at Harvard Medical School, to become acquainted with the neurotransmitter field. Upon his return, he began to direct his research towards problems related to neuroendocrinology. One of the puzzles at that time was the mechanism of synthesis of the hormone ACTH. For a researcher who had extensive knowledge of the mechanism of protein biosynthesis, this peptide of 39 amino acid residues was smaller than most proteins known to be translated in final form by the mRNA-dependent synthesis machinery. It is therefore not surprising that his laboratory proved that ACTH is synthesized as part of a large polypeptide precursor, proopiomelanocortin (POMC). At the same time, POMC was shown to code for other biologically important peptides like lipotropin hormone, the MSHs and, most surprisingly, beta-endorphin. This discovery constituted a milestone in biology; for the first time the endocrine and the nervous systems had been related at a molecular level and for the first time also a solution to the mode of synthesis of the small bioactive peptides had been brought to light. At that time, Ed focused his research on POMC and demonstrated that this precursor is processed differently in the two lobes of the pituitary, thus providing an earlier example for tissue-specific processing of neuroendocrine precursors.

In the last part of the 70s, advances in recombinant DNA technology made it possible to clone genes coding for quantitatively predominant proteins. Ed was one of the first to apply these tech-

niques to the cloning of POMC. At the same time, increasing numbers of reports were showing the existence of other enkephalin-containing peptides not represented in beta-endorphin. At this point Ed foresaw that the opioid system would stand as a model for the multiplicity of neuropeptides and that to further our understanding of the opioids it was necessary to modulate expression of their corresponding genes. The first step was to clone the genes for the other opioid precursors. Compared to the amount of POMC in the pituitary, the other precursors (and at that time their number was still a matter of conjecture) were in low levels, thus new technical approaches had to be devised. Here too, Ed was one of the first to advocate the use of synthetic oligonucleotides to clone specific cDNAs. This approach allowed his group to clone the two remaining opioid precursor genes. These successes paved the road to the second of Ed's goals, the study of the different facets of opioid gene regulation.

Ed's successful research has been recognized by a number of awards: the Pfizer Award for Fundamental Contributions in Endocrinology, the Rosetta Briegel Award for Pioneering Work in Biochemistry, the Leslie Bennett Award in Endocrinology, the first Mark O. Hatfield Award and the McKnight Foundation Distinguished Award. He had the high honor to be posthumously elected to the National Academy of Sciences. During his career he published more than 110 original research papers in scientific journals and wrote more than 30 book chapters. He was on the editorial board of nine scientific journals, on the scientific advisory board of three research centers, and member of four societies.

In the last part of his life, as Director of the Vollum Institute for Advanced Biomedical Research, Ed built up and led a center of excellence in biomedical research. He decided to devote this center to molecular neurobiology. He gathered scientists, experts in the different areas of neuroscience, to create a core of researchers who will join forces to study the molecular mechanism that direct neurobiological responses, from the genes to the ion currents.

Although Ed was a very successful researcher, a leader in molecular neurobiology, and the director of an institute, he was first of all for those who had the privilege to work with him the kind and gentle human being who praised humaneness over competition, the well being of the researcher over the success of his work. He was a teacher who liked to help and direct students and, in return, attracted some of the best graduate students. He knew how to ask the right questions and use the most elegant technique to answer them. His commitment to humanity was also evident in his extrascientific life, with his wife, Sydney, he fought for the preservation of our environment and conservation of our natural resources. He was a humanist and a scientist, a friend for his students.

*Olivier Civelli*

Edward Herbert was on the editorial advisory board during the planning stages of *Molecular Neurobiology*. He provided enthusiastic support and invaluable contributions to the launching of the journal.

*The Editors*