

Obituary: Abraham Rosenberg (1924–2006)

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On December 23, 2006, *Dr. Abraham Rosenberg*, Professor, Psychiatry & Behavioral Science, Emory University & Adjunct Professor, Biochemistry (Medicine), Emory University passed away in Atlanta (USA) at the age of 82. His long and fruitful scientific life started with a B.Sc. (1947) in Chemistry and Mathematics from the University of Illinois. After graduation his first research was on the conversion of carotene to vitamin A in the laboratory of A.E. Sobel. He received his M.Sc. (1952) in Chemistry from Polytechnic University of Brooklyn and his Ph.D. in Biochemistry (1957) from the Columbia University College of Physicians & Surgeons. At that time Dr. Rosenberg worked in the

laboratory of Erwin Chargaff on brain glycolipids including those stored in Gaucher and Tay-Sachs disease. He also studied sialidases from brain and microorganisms including influenza viruses. He found that the binding of this virus to mammalian cells can be inhibited by (sialylated) brain glycolipids.

Dr. Rosenberg continued investigations on the structure, biosynthesis and degradation, as well as the biological and pathophysiological role of glycolipids, especially gangliosides in the nervous system. One of his main interests was the occurrence, properties and functions of brain sialidase and he published a variety of widely read publications on this enzyme. Using sialidases acting on cell membranes, he carried out first experiments on the localization of gangliosides on cell surfaces. His group also discovered a natural inhibitor of sialidases, 2-deoxy-2,3-didehydro-*N*-acetylneuraminic acid in mammalian brain. Many experiments on sialyltransferases, the antagonistic enzymes of sialidases regulation brain sialylation, also contributed much to our understanding of sialic acids in neuronal function. In this connection he described the differences in fatty acid and glycolipid composition and metabolism of nervous and other tissues in dependence on the developmental state. He was most interested in the influence of gangliosides and other glycolipids in general and of sialic acids in particular on synaptic transmission and the sprouting of neurites in chick and mammalian brain and in cell cultures. Dr. Rosenberg also studied enzymes of carbohydrate metabolism other than those responsible for sialic acids in a variety of tissues, most prominently however in glycolipid storage diseases, like Morbus Gaucher. Attempts to cure such severe hereditary diseases with enzymes such as β -glucosidase were also reported. In addition he studied fatty acid and glycolipid composition in some plants and microorganisms. The influence of neurotransmitters, hormones, ion transporters and other factors on the growth, adhesion,

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function and degeneration of mainly nerve cells was also object of studies of this versatile researcher. Although Dr. Rosenberg's scientific oeuvre shows great diversity, his main interests were focused on brain sialidases and the metabolism of gangliosides which occupied his mind during his positions as Assistant Professor, Biological Chemistry, Columbia University (1961–1968), Associate Professor and Full Professor (1968–1979) Pennsylvania State University, Professor & Chair, Biochemistry (Medicine), Loyola University of Chicago (1979–1986), Professor & Chief, Division of Molecular Biology, Kline Institute, Psychiatry, New York University (1986–1989) and Professor, Brain Research & Neuropsychiatric Institutes, Psychiatry, University of California Los Angeles (1990–1996). In California he studied the negative influence of ethanol on ganglioside sialylation and the pathophysiological effects of prenatal alcohol intake on the aberrant development of the brain. In 1996 he summarized the data from his and others' laboratories in a Science Medicine publication describing the mechanisms of these developmental disturbances especially of neuronal tissue. On this topic he also lectured during his last research stay at the University of Kiel (1998–1999). In 1996 he moved to Emory University to work on the pathobiology of sialidases from bacterial origin, which seem to aggravate AIDS, especially in the nervous system. From the observation that *Pneumococcus* sialidase is a virulence factor he proposed a new direction in neuro-AIDS research. Despite his illness he supervised attentively this project and regularly went to his laboratory. Dr. Rosenberg belongs to the few octogenarians who

received continuous competitive funding from the National Institutes of Health and National Science Foundation from 1961 until 2006.

Dr. Rosenberg's pioneering work on neurochemistry is laid down in more than 100 original papers and review articles. Furthermore, he took care to introduce his colleagues and young scientists to his field of interest and his two books "Biological Roles of Sialic Acid" (A. Rosenberg and C. Schengrund, eds. 1976) and "Biology of the Sialic Acids" (A. Rosenberg, ed., 1995) became standard reading. He was a dedicated mentor for many Ph.D. students and postdoctoral fellows from different countries. His profound knowledge of science and human nature as well as his critical service as adviser, editor and nominator for foundations, scientific journals and societies was searched for and greatly appreciated. Dr. Rosenberg received several fellowships and honors and served in a number of scientific institutions and on editorial boards of various neuroscience journals.

Dr. Rosenberg found great pleasure in studying different cultures and societies. During his stays as visiting professor in Sweden, France and Germany he not only focused on experiments and lecturing, but together with his wife he traveled extensively and he was known as a connoisseur of wines and fine food. This erudite person always surprised his company who could learn from him about arts, music, films and in particular German "lieder."

Dr. Rosenberg, our respected colleague and friend, is survived by his wife Estelle, daughter Ruth Ann, son Jonathan and grand-son Turner. We shall honor his memory.