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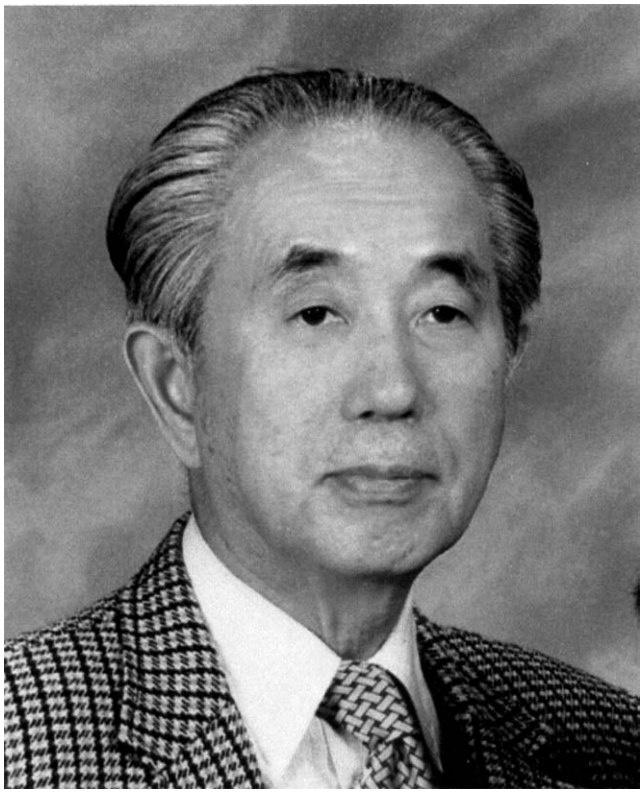
Biography of Professor Senitiroh Hakomori



Professor Senitiroh Hakomori was born in Sendai, Japan, in 1929 and presently is the Head of the Division of Biomembrane Research, Pacific Northwest Research Institute, Seattle, Washington. After receiving his doctorate degree in Medical Science in 1956 from the Tohoku University School of Medicine, he came to the United States in 1963 as a member of the Research Faculty in the laboratory of Professor Roger Jeanloz at Harvard Medical School. In 1968, he became a member of the Medical Faculty of the University of Washington. In 1971 he was appointed Full Professor in the Departments of Pathology and Microbiology. In addition to the UW positions, he became Program Head of Biochemical Oncology at the Fred Hutchinson Cancer Research Center, Northwest Research Institute, Seattle, Washington in 1968. He was elected as a member of the National Academy of Sciences in the U.S. in 2000.

In 1964, he published the most quoted paper in the field of carbohydrates on "Exhaustive Methylation" of the unknown oligosaccharides by the famous Hakomori-reagents (NaH plus DMSO and methyl iodide in anhydrous methanol). He and his colleagues have developed several basic technologies for isolation and structural characterization of cell surface glycosphingolipids (GSLs) by GC-mass spectrometric analyses. Application of these technologies resulted in establishing the structure of the Le^X (fucose-containing neolactotetraosylceramide) from human adenocarcinoma tissues in 1965. In addition to this first fucoglycolipid structure, he and his colleagues established many other new glycosphingolipids isolated from normal and leukemic blood cells and cancer cell surfaces, particularly those termed as "extended globo-series" (*e.g.* Forssman) and "extended and/or branched Lacto-series" structures (including A1, A2, B, H, SA-LeX, and I/i antigens). His laboratory published groundbreaking papers on its changes associated with ontogenic development and oncogenic transformation.

They also found that GSLs, particularly gangliosides, are modulators of signal transduction through interaction with tyrosine kinases, and they identified GSLs as adhesion molecules when clustered in GSL microdomains organized with inducer molecules. The idea of GSL to GSL and GSL to ligand interactions during cell adhesion at the microdomain (or glycosynapse) that cause activation of Src-family kinases and small *G*-proteins evolved from the series of papers published from his laboratory. Dr. Hakomori and his colleagues have published more than 500 full papers and articles in internationally recognized journals.