

# Glyco-Forum section

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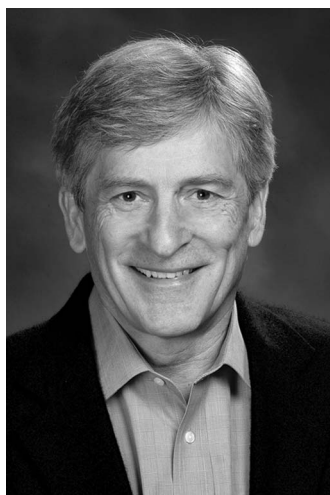
## Awards Announcements

### The 2009 Karl Meyer Award and Rosalind Kornfeld Award from the Society for Glycobiology

The Society for Glycobiology is pleased to announce that the recipient of the 2009 Karl Meyer Award is James Paulson and the 2009 Rosalind Kornfeld Award is jointly awarded to Mary Catherine Glick and Roland Schauer. The Karl Meyer Award was established in 1990 to honor the distinguished career of Karl Meyer and his outstanding contributions to the field of Glycobiology. This international award is presented to well-established scientists with currently active research programs who have made widely recognized major contributions to the field of Glycobiology. The Rosalind Kornfeld Award for Lifetime Achievement in Glycobiology was established in 2008 to honor the distinguished scientific career and service to the Society by Dr Rosalind Kornfeld. The award is given by the Society to scientists who have, over their professional lifetimes, made significant contributions with important impact on the field.

**Dr. James Paulson** is a world leader in the chemical biology of carbohydrates and in the biologic function of glycoproteins and lectins, who has made seminal discoveries and contributions to glycobiology in over 30 years of work in the field. Dr. Paulson was one of the first to use chemo-enzymatic synthesis of glycans as a tool to elucidate the functions of glycan binding proteins. His lab was also the first to clone and produce a family of recombinant sialyltransferases to allow large-scale synthesis of this synthetically challenging class of carbohydrates. His success in the cloning of the first full-length glycosyltransferase, ST6Gal I, was a landmark achievement, demonstrating the now familiar topology of glycosyltransferases with N-terminal signal anchors tethering the catalytic domain oriented to the lumen of secretory organelles, and leading to the production of recombinant glycosyltransferases for use as synthetic tools.

Dr. Paulson's interests in glycobiology encompass a wide range of biologic systems, including host-pathogen interactions and



immune regulation. In the early 80s, Dr. Paulson found that human influenza viruses and their avian progenitors recognized different sialoside linkages, resulting from specific mutations in the receptor-binding pocket of the hemagglutinin, thus identifying species-specific difference in cellular glycosylation as a crucial factor in the adaptation of avian influenza virus to human hosts. This difference is now widely accepted as a barrier for avian influenza to adapt to humans, and has been critical in understanding the recent emergence of different influenza viruses.

Subsequently, Dr. Paulson's work in identifying the glycan ligands for the leukocyte adhesion molecules, E- and P-selectin, led to an explosion of work in this field, and was essential for elucidation of the mechanism of leukocyte trafficking and appreciation for the selectins as therapeutic targets. As part of these studies, he contributed to the identification of a novel human leukocyte adhesion deficiency (LAD II). Dr. Paulson has also made critical contributions to our understanding of how glycans regulate immune cell function, specifically identifying the role of CD22 binding to cell surface glycans as a mechanism to restrain B cell signaling.

In addition to his important and wide-ranging scientific contributions, Dr. Paulson's leadership has had a major impact on the glycobiology community. He served as President of the Society for Glycobiology in 2003, serves on numerous scientific advisory boards and editorial boards, and for the last 8 years has led the Consortium for Functional Glycomics (CFG), a group of nearly 480 investigators worldwide. Dr. Paulson has mentored numerous graduate students and post-doctoral fellows who are continuing to contribute to glycobiology. The pioneering work of Dr. James Paulson over the last 30 years ago is recognized by his selection as the recipient of the 2009 Karl Meyer award from the Society for Glycobiology.

**Mary Catherine (Susy) Glick** (Professor Emerita of Pediatric Research, University of Pennsylvania) pioneered the field of terminal glycosylation of membrane glycoconjugates and their role in disease, specifically neuroblastoma, a deadly cancer in children, and cystic fibrosis, the most common fatal inherited disease in caucasians. She developed technologies to isolate pure cell surface membranes from mammalian cells and her research led to the recognition of the cell surface membrane as a distinct and interactive organelle with unique functions of locomotion, signal transduction, adhesion, endocytosis, and channel activity.

Her seminal contributions in neuroblastoma include the recognition that terminal carbohydrate structures are critical regulators of protein functions and cellular processes, and they are signature features of transformation. She discovered that neuroblastoma cell membranes contain unique N-linked  $\alpha$ 2,8 polysialic

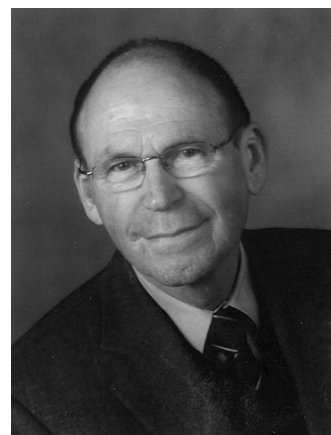
acid polymers that regulate several cellular functions including the opening of neurotoxin-responsive sodium channels, and the myelination of oligodendrocytes. Importantly, she was one of the first to demonstrate that viral transformation affects cell surface glycosylation and that altered glycosylation regulates oncogenic properties of transformed cells. In collaboration with Dr. Tom Scanlin, Dr. Glick made major contributions to our understanding of the airway biology in cystic fibrosis (CF). They reported that cell surface fibroblast and airway epithelial membranes had altered glycosylation with increased fucose and decreased sialic acid. They leveraged these initial observations to develop strategies for non-viral vector gene therapy for CF. Importantly, their observations have fueled major current investigations in CF to test whether altered cell surface glycosylation is the basic defect that confers an advantage for infection with opportunistic organisms like *Pseudomonas*.



Dr. Glick has been prolific in communicating her discoveries in over 110 peer-reviewed manuscripts and 35 invited reviews and chapters. A critical factor contributing to the influence of her work has been her productive collaborations with many leading scientists and physician-scientists; these collaborations are models of translational research in Glycobiology. In addition to her innovative and stellar scientific research, Dr. Glick has contributed mightily to the glycobiology field. She has mentored and trained numerous investigators many of whom have gone on to become department chairs or division heads in this country and abroad. She worked tirelessly to advance recognition of the field of Glycobiology, which has grown tremendously since she first entered the field in the 1960's. Drs. Glick and Eugene Davidson worked together to establish the incorporation of the Society for Complex Carbohydrates. She was elected President of the Society for Glycobiology in 1982 and was elected President of the International Glycoconjugate Organization in 1995. She was a strong supporter of glycobiology research at NIH and various foundation study sections. She has served as an Associate Editor for the Glycoconjugate Journal, Cancer Research, and Glycosylation & Disease. In recognition of significant scientific contributions on cell surface glycobiology and disease, and her leadership in promoting the field of Glycobiology, The Society for Glycobiology has awarded Dr. Glick the 2009 Rosalind Kornfeld Award for Lifetime Achievement in Glycobiology.

**Roland Schauer** (Professor Emeritus, University of Kiel) has contributed during the last 40 years more than anybody else to our knowledge about the occurrence, structure, biosynthesis and functions of the sialic acids, and has thus made a lasting impact on glycobiology. He discovered many new members of this important sugar family, and has isolated, characterized and cloned several of the key enzymes involved in the biosynthesis

and degradation of a number of these compounds, among them *N*-glycolylneuraminic acid and *O*-acetylated sialic acids. In addition, he shed light on the functions of the sialic acids, such as the protection of cells from phagocytosis, by masking galactose recognition sites, or serving as receptors for certain viruses, in particular showing that 9-*O*-acetylneuraminic acid is the receptor of influenza virus C. His work has had a marked impact on the understanding of many phenomena in which sialic acids are of critical importance such as the control of life time of cells and glycoproteins in the circulatory system, the adhesion of infectious agents to host cells, the recruitment of leukocytes to sites of inflammation, lymphocyte interactions in the immune system, and the development of metastases.



Dr. Schauer has published extensively on these substances in the primary literature, has written several widely cited reviews on the subject and in 1982 has edited a classic book devoted to sialic acids. He has also organized a number of conferences on sialic acids, and has also been a very strong supporter of others in the field, being generous to the extreme, and doing everything he could to facilitate progress. Last but not least, he has trained a large number of scientists who are spreading the gospel of glycobiology worldwide. No wonder he is known far and wide as 'Mr. Sialic Acid'.

For his lasting contributions to the knowledge about the diversity of the sialic acids and their metabolism and functions, the Society for Glycobiology has awarded Dr. Schauer the 2009 Rosalind Kornfeld Award for Lifetime Achievement in Glycobiology.

Acknowledgement and strong appreciation are expressed for the assistance of Drs. Linda Baum, Sen-itiroh Hakomori, Nathan Sharon, and Judith Voynow in the preparation of the summaries of the respective award winners.

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## **The Roy L. Whistler International Award in Carbohydrate Chemistry 2010**

The International Carbohydrate Organization is very pleased to announce that the Roy L. Whistler International Award in Carbohydrate Chemistry for 2010 has been awarded to Professor Jesús Jiménez-Barbero of the Centro de Investigaciones Biológicas (Center for Biological Research) of the Consejo Superior

de Investigaciones Cientificas (Higher Council for Scientific Research), abbreviated CIB-CSIC, Madrid, Spain.

In 1984, the International Carbohydrate Organization established the Award in honour of Professor Roy L. Whistler, to recognize scientists 'who have made contributions of excellence in carbohydrate chemistry and biochemistry and with promise of continuing significant contributions'. The Award is recognized with a plaque, a cheque for US \$10,000, and an invitation to present the opening lecture at the International Carbohydrate Symposium (ICS). The next ICS will be held in Tokyo, Japan from August 1 to 6, 2010.

Jesús Jiménez-Barbero was trained as a structural carbohydrate chemist, and from the beginning, was interested in the great potential of the application of NMR spectroscopy in carbohydrate research. His major contributions to the field of glycoscience comprise the unraveling of the molecular basis of the recognition of oligosaccharides by receptors in solution, using a multidisciplinary approach, which employs carbohydrate synthesis, protein biochemistry and molecular biology, molecular modeling, and NMR spectroscopy. Major contributions include his systematic studies on the interactions of oligosaccharides with the lectins ricin, hevein, and more recently, galectins. Such detailed investigations have contributed significantly to our general understanding of carbohydrate-mediated interactions in health and disease. Jesús is regarded as one of the few experts who not only applies NMR methods but also develops advanced NMR methods for studying the conformational properties of carbohydrates and their interaction with proteins as well as with other carbohydrates. He is firmly ensconced in the carbohydrate community and has brought his broad NMR expertise to many collaborative works worldwide. He has published over 300 papers, 1 book, and 12 book chapters. His contributions have been recognized by the Award in Organic Chemistry of the Spanish Royal Society of Chemistry in 2003 and by the Award in NMR Spectroscopy of the Spanish Royal Society of Chemistry/Bruker in 2008.

Professor Johannis P. Kamerling

Secretary of the International Carbohydrate Organization (ICO)  
Utrecht, August 17, 2009