OBITUARY

Robert L. Hill, 1928–2012

Robert L. Hill, James B Duke Professor Emeritus, and Former Chairman of the Department of Biochemistry at Duke University Medical School, passed away on November 29, 2012 at the age of 84. Bob Hill was recognized for his numerous contributions to the field of protein biochemistry, his mentorship of graduate students and post-docs that maintain active careers, and his commitment to the education of the generations that follow him. His career became entwined with the field of glycobiology through his study of glycosyltransferases, enzymes that carry out the biosynthesis of complex glycans on glycoproteins and glycolipids. His demonstration of the strict specificities of glycosyltransferases led to a deeper understanding of glycan biosynthesis and structure, and stimulated the use of these enzymes as tools that have had a major impact on glycobiology research.

Bob Hill received his PhD with Russel Mills at the University of Kansas in 1954, and moved to the University of Utah to join Emil L. Smith as a post-doctoral fellow. He was appointed to Assistant Professor at the University of Utah in 1956, and quickly developed an international reputation for his work on genetic variants of hemoglobin. This attracted the interest of Philip Handler, then Chair of Biochemistry at Duke University, who recruited Bob to join his department as Associate Professor in 1961. Bob stayed at Duke for the rest of his career, serving as Chairman of the Department of Biochemistry from 1969-1993. While he became an avid supporter of the Duke basketball team and held season tickets, he maintained his loyalty to the Kansas ‘Jayhawks’ and was conflicted when the two teams played. He maintained a close personal relationship with Emil Smith and Philip Handler throughout his career, and joined them from 1968–1978 as an editor of three editions the Principles of Biochemistry, one of the classic biochemistry textbooks at that time. He received many honors, including election to the National Academy of Sciences in 1975, to the Institute of Medicine in 1978, and to the American Academy of Arts and Sciences in 1974.

At Duke, Bob Hill continued his work on genetic variants of human hemoglobins, but as a consummate protein chemist he soon turned his attention to the structure-function and evolutionary relationships of other proteins and enzymes, including human fibrinogen and other blood coagulation factors, bacterial acyl carrier protein, egg-white lysozyme and immunoglobulins. He and his colleagues proposed the domain structure of the light and heavy chains of immunoglobulins based on their partial amino acid sequences and also proposed the evolutionary origins of the different types of immunoglobulin chains.

Noting the similarity of bovine α-lactalbumin in size and molecular properties to lysozyme, Keith Brew and Bob Hill sequenced α-lactalbumin and described its evolutionary origins from lysozyme. α-lactalbumin was also known as component A of the two component lactose synthetase, and Brew and Hill went on to show that component B was a galactosyltransferase that used N-acetylglucosamine as a substrate, whose specificity was modified by α-lactalbumin to use glucose as an acceptor substrate for synthesis of the abundant milk sugar, lactose. The importance of this finding eventually shifted the focus of the Hill laboratory to the purification and characterization of other glycosyltransferases, including a number of galactosyl-, N-acetylgalactosaminyl-, fucosyl- and sialyltransferases, and the use of these enzymes to study the biosynthesis of glycoproteins and glycolipids. As a result of the major impact of this work on the field of glycobiology, Bob Hill was honored by the Society for Glycobiology as the recipient of the Karl Meyer Award in 2001.

In addition to his productive research career, Bob believed in service to the larger scientific community, and served as an officer on numerous national and international scientific organizations, including the National Academy of Sciences, the American Society of Biochemistry and Molecular Biology, the American Chemical Society, the International Union of Biochemistry and Molecular Biology and the Federation of American Societies for Experimental Biology. He also served on the Editorial Boards of Glycobiology, the Archives of Biochemistry and Biophysics, and the Journal of Biological Chemistry (JBC). He was appointed Associate Editor of the

© The Author 2013. Published by Oxford University Press. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com
Journal of Biological Chemistry in 1988. His responsibilities included protein biochemistry, blood coagulation, and especially glycobiology. Over a decade ago he helped initiate a feature in the journal called JBC classics that reprinted key papers in the history journal. These were prefaced by a short biography of the authors of which Bob was a co-author of over 150 from 2000–2011.

In a 2010 video of Duke Emeritus Professors, Bob Hill stated, “I can’t retire and go play golf or anything like that, I want to use my mind”, and was spending 4-5 hours a day reviewing papers and performing editorial duties for the JBC. True to his word, he stepped down as Associate Editor of the JBC in October 2012, just a few weeks before he passed.

During his long career, Bob Hill trained over 60 PhD students and post-doctoral fellows, many of whom continue to have impact in academia and industry through their own careers. Bob Hill had four children and five grandchildren. He will be missed by his family and trainees, and by the field of glycobiology, to which he has contributed and nurtured over the course of his career.

Link to the Bob Hill Video: http://www.youtube.com/watch?v=qCisb32MWms

James C Paulson
Scripps Research Institute