
Tribute

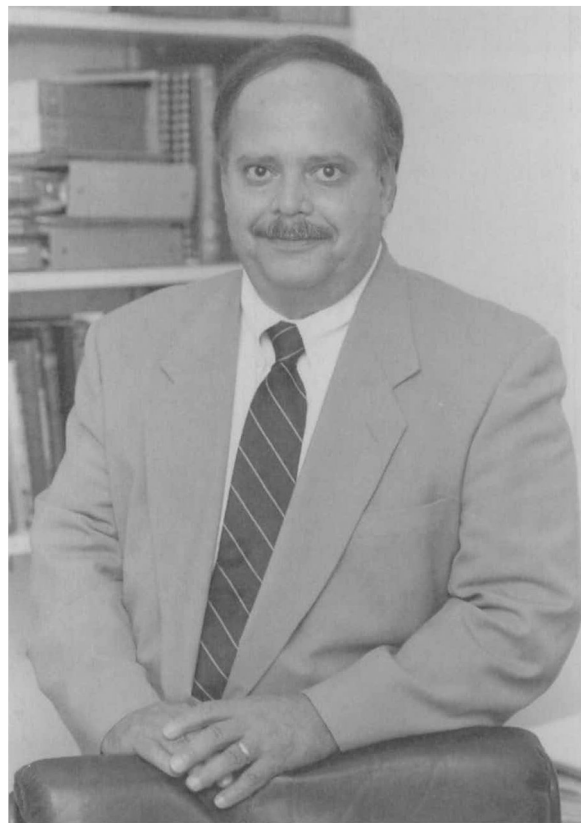
Julio V. Santiago, MD

1942–1997

Dr. Julio V. Santiago—husband, father and grandfather, physician, teacher, scientist, and friend—died on 10 August 1997. He was professor of pediatrics and medicine at Washington University School of Medicine in St. Louis, where he was a member of the faculty for 23 years, and he served on the medical staffs of St. Louis Children's and Barnes (now Barnes-Jewish) Hospitals.

Born in San German, Puerto Rico, on 13 January 1942, Julio grew up in New York. He was an honors graduate of Manhattan College and received his medical training and served an internship in medicine at the University of Puerto Rico. After serving in the army medical corps, including a tour of duty in Korea, he came to St. Louis with his young family in 1970. He served as a resident in medicine at Barnes Hospital under the leadership of the late Dr. Carl V. Moore, was a fellow in endocrinology and metabolism at Washington University, and then served as chief resident in medicine during the 1974–1975 academic year. It was in these posts that he developed a close professional relationship with Dr. David M. Kipnis that continued throughout the rest of Julio's career. Julio became an assistant professor of pediatrics and medicine at Washington University School of Medicine in 1975 and rose to the rank of professor in 1983. With his friend and colleague Dr. Dennis M. Bier, he was codirector of the division of endocrinology and metabolism in the department of pediatrics from 1984 to 1993, when, with Dr. Bier's departure from the University, Julio assumed full responsibility for the division. Fittingly, his successor in that position is his long-standing associate and devoted friend Dr. Neil H. White.

Julio served in important roles in the Washington University Diabetes Research and Training Center (DRTC) from its inception, initially under the direction of Dr. William H. Daughaday, in 1975. Julio became its associate director for biomedical research in 1977 and director of the DRTC in 1987. While the success of the DRTC is in large part a reflection of the depth and diversity of diabetes research at Washington University, there can be no doubt that its success is also largely a reflection of the commitment, intelligence, human and scientific insight, and leadership of Julio Santiago. It is difficult to rank his many contributions to the university, but the DRTC is certainly among the major ones. Julio also served in the leadership of the Washington University General Clinical Research Center and was a strong supporter of the Mass Spectrometry Resource. Clearly, he recognized the fundamental importance of research infrastructure as well as faculty development and support.



Julio thrived on challenges, be it in patient care, teaching, research, or administration. He was remarkably resilient when those challenges were seemingly most formidable. He was first attracted to biomedical research as a medical student; his first two publications were from work performed while he was a student. His research was eclectic. It ranged from studies of fundamental human metabolic physiology and the pathophysiology of diabetes, obesity, hyperlipidemia, and hypoglycemia through an array of pragmatic issues concerning the management of diabetes and its positive and negative impact to the psychosocial aspects of the care of people with diabetes. It included development of the first artificial pancreas, early experience with intensive therapy of diabetes and the utility of HbA_{1c} measurements, definition of the prevalence and means of diagnosis of the complications of diabetes, progress in islet transplantation, the development of new insulin preparations and oral hypoglycemic agents, and elucidation of the physiology of glucose counterregulation and energy balance and the pathogenesis of iatrogenic hypoglycemia and of the dawn phenomenon in

diabetes. He was an author of 161 published articles, numerous book chapters, and (with Drs. David Schade, Jay Skyler, and Robert Rizza) a fundamentally important book, *Intensive Insulin Therapy*, published in 1983 when that was a new, and somewhat controversial, concept (1).

Julio was committed to the concept of controlled clinical trials. He served among the leadership of the Diabetes Control and Complications Trial and the Diabetes Prevention Program among others. His advice was widely sought by physicians, industry, government, and voluntary health agencies. In addition to serving as a consultant to various organizations, Julio served as a member of the metabolism study section and several special study sections for the National Institutes of Health and of the endocrine advisory committee for the Food and Drug Administration. He was also a member of the congressional National Diabetes Advisory Board. He was an inveterate volunteer for the American Diabetes Association (and served as the editor of *Diabetes*) and the Juvenile Diabetes Foundation International. He received several honors including election to Alpha Omega Alpha at his medical school (where he graduated with highest academic standing) and to the American Society for Clinical Investigation.

In addition to being a researcher, Julio was a sensitive and respected physician, an inspiring teacher, and a remarkably effective academic leader. He worked easily with others, had a consistently positive attitude, and was an extraordinary collaborator. He made the work of others better, and did not seek credit for himself. Numerous postdoctoral fellows and colleagues at Washington University and elsewhere would testify to that, but I know it from personal experience. I first met Julio when he was a senior resident and I, as chief resident, quickly learned that he was the resident I wanted to be on call when the sickest patients presented to the hospital. Early in our research careers we sought to set up a single isotope derivative assay of catecholamines. That required extraction of an enzyme (catechol-O-methyl transferase), a key reagent, from rat liver. I will never forget the evening I threw the wrong fraction, the one containing the enzyme, down the drain. That was a bad evening for me and for us. But, typically, Julio took it in stride. Ultimately, he was a coauthor of our first report with the assay (2) and our first foray into its application

to the study of the physiology of hypoglycemia (3), and he was the senior author of our report of Neil White's discovery of the syndrome of defective glucose counterregulation in type 1 diabetes (4). Julio's contributions were substantive, recognized by me and some others, but not widely appreciated.

We all feel a profound sense of loss. Ana Santiago and her family have lost a devoted, perhaps even doting, husband, father, and grandfather. Julio was very proud of Ana, of their children Teresa, Julio, Vincent, and Daniel, and of their grandchild Christina. I have lost a kind, supportive friend. Truly, the best of friends. The faculty, fellows, and staff—as well as our students and residents—of the endocrinology, diabetes, and metabolism group at Washington University have lost a generous colleague who excelled in patient care, teaching, and research and led by example. Our School of Medicine has lost a loyal and consistently effective leader. The diabetes community has lost a productive clinical scientist and no small portion of its conscience. And people with diabetes and other diseases have lost a caring physician and an uncompromisingly honest advocate for their welfare. Julio cared about people. He cared about us. We should strive to follow his example. To the extent we do, Julio will continue to brighten our lives.

Julio Santiago was a man of principle. I think he would have agreed with Lincoln's admonition "Let us have faith that right makes might, and in that faith let us to the end dare to do our duty as we understand it." Julio did his duty, as he understood it, to the end.

PHILIP E. CRYER, MD

REFERENCES

1. Schade, Skyler, Rizza, Santiago: *Intensive Insulin Therapy*. Amsterdam, Excerpta Medica, 1983
2. Cryer PE, Santiago JV, Shah S: Measurement of norepinephrine and epinephrine in small volumes of human plasma by a single-isotope derivative assay: response to upright posture. *J Clin Endocrinol Metab* 39:1025–1029, 1974
3. Garber AJ, Cryer PE, Santiago JV, Haymond MW, Pagliara AS, Kipnis DM: The role of adrenergic mechanisms in the substrate and hormonal response to insulin-induced hypoglycemia in man. *J Clin Invest* 58:7–15, 1976
4. White NH, Skor D, Cryer PS, Bier DM, Levandoski L, Santiago JV: Identification of type 1 diabetic patients at increased risk for hypoglycemia during intensive therapy. *N Engl J Med* 308:485–491, 1983