

# A Celebration of the Life and Work of Caroline Breese Hall, MD

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A symposium to celebrate the life and work of Dr. Caroline Breese Hall (or Caren as she was known to thousands of her colleagues, students, mentees, and friends) was held at the University of Rochester School of Medicine & Dentistry on April 25, 2014. The symposium also served as an opening event to announce the establishment of the Caroline Breese Hall, MD Endowment for Infectious Diseases at the University of Rochester Medical Center, which will provide salary support for a promising fellow or junior faculty member at the University working in Infectious Diseases. The endowment was established as a gift from the Hall family.

Caren was remembered for her incredible energy and warmth and her formidable intellect and creativity. Her contributions to clinical research and teaching greatly improved the lives of children, medical students, residents, fellows, and colleagues alike. Many current and former trainees and colleagues came together at the symposium to meet her husband, Dr. William J. Hall, her 3 children, and several of her grandchildren, and to listen to presentations from those who worked or trained with Caren over her 4-decade career at Rochester.

A native of Brighton, New York (and daughter of eminent pediatrician Burtis Burr Breese, MD, himself a pioneer in office-based clinical research and the development of the office throat culture for streptococci [1–7]), Caroline Breese Hall, MD earned a bachelor's degree in chemistry from Wellesley College and a medical degree from the University of Rochester School of Medicine & Dentistry. She completed a residency in Pediatrics and a fellowship in Infectious Diseases at Yale University. Along with her husband Dr. William Hall, Dr. Caroline Breese Hall joined the faculty at the University of Rochester Medical Center (URMC) in 1971, with appointments in both Pediatrics and Internal Medicine. She was appointed Professor of Pediatrics and Medicine in 1986.

Dr. Hall's research focused on pediatric clinical virology—especially the natural history of infections caused by respiratory syncytial virus (RSV) and human herpes viruses 6 and 7 (HHV6 and HHV7). Early in her career, she carried out studies that defined the diagnosis, epidemiology, transmission, and therapy of RSV bronchiolitis in children [8–20]. Later, when HHV6 was identified as the

cause of roseola, she initiated studies that defined the clinical spectrum of HHV6 infection, and she attempted to understand the relationship between chromosomal integration and vertical transmission of the virus [21–26]. At the same time, few pediatric pathogens escaped her focus and interest, and Dr. Hall contributed and collaborated on many works concerning group A streptococci, parainfluenza and influenza viruses, coronaviruses, rhinoviruses, human metapneumovirus, rotaviruses, and noroviruses [27–38].

Caren Hall was a major contributor to the discipline of pediatric infectious diseases, as teacher, mentor, researcher, and counselor, and she published approximately 300 articles in the scientific literature and 130 textbook chapters—many of which were graced by her own original poetry, which spanned verses on life, odes to colleagues, and humorous microbial limericks. She was a founding member of the Pediatric Infectious Diseases Society (PIDS), its fifth president and Society Historian, and she also served for many years on the American Academy of Pediatrics (AAP) Committee on Infectious Diseases (Red Book Committee) and the Centers for Disease Control and

Prevention (CDC) Advisory Committee on Immunization Practices. Caren was often sought out to serve on the most important national committees, including those of the Institute of Medicine, the National Academy of Science, Infectious Diseases Society of America (IDSA), AAP, PIDS, Society for Healthcare Epidemiology of America (SHEA), and other professional societies. She was the recipient of numerous distinguished awards from professional organizations including PIDS, IDSA, and the Pan American Society of Virology, among others.

Leading off the celebration was a scholarly review of successes and failures in vaccine development by the keynote speaker, Dr. Stanley A. Plotkin, Emeritus Professor, University of Pennsylvania, Executive Advisor, Sanofi Pasteur, and Principal of VaxConsult, LLC; Dr. Plotkin was accompanied by his wife and partner in VaxConsult, vaccine historian Susan Plotkin. Dr. Plotkin's review updated some of his past sage comments, touching upon those infections eradicated from the globe (smallpox and rinderpest), those with ongoing struggles for elimination or control (eg, poliomyelitis, measles, rubella), and those still to be successfully prevented by vaccination (eg, human immunodeficiency virus [HIV], dengue, malaria) [39–46]. He characterized the key problems in vaccinology as being those “transvaccinology” or “pathogen-specific” in nature. Problems in transvaccinology are those applicable to the development of many vaccines—these include (with examples of each) the ability of pathogens to be variable and escape immune responses (influenza virus, HIV); the host's short-lived effector memory to a vaccine or vaccine candidate (pertussis); the difficulty in both finding and inducing the correct functional response (antibody vs cell-mediated immunity) in the host (HIV, RSV); and population-specific

challenges in vaccine epidemiology (variable epidemiology of rotavirus and meningococcal serotypes across the globe). Challenges that are classified as pathogen-specific include (1) the lack of identification of either useful correlates of protection (dengue, tuberculosis) or (2) the antigens required for generation of mechanistic or non-mechanistic correlates of protection (cytomegalovirus, tuberculosis, malaria). Dr. Plotkin also fondly recalled his decades-long personal and professional friendship with Dr. Hall.

A Roundtable discussion was next led by long-time colleagues of Dr. Hall from both academia and the Rochester pediatric community, including Drs. John Treanor (URMC Internal Medicine Infectious Diseases Unit), Peter Szilagyi (URMC General Academic Pediatrics), Larry Nazarian (Panorama Pediatrics, Rochester), Anne Francis (Elmwood Pediatrics, Rochester), and R. Gordon Douglas (formerly, URMC Internal Medicine). Many participants in the audience also related their stories of Caren Hall's mentorship and friendship, including her habit of personally addressing a colleague (no matter where they were in the world) with a timely birthday congratulation often illustrated by an original drawing or poem.

A series of lectures by former trainees and colleagues of Dr. Hall completed the festschrift. Dr. Ed Walsh (URMC Internal Medicine Infectious Diseases Unit) recalled the trials and tribulations of working with the cotton rat model of RSV infection to investigate vaccine approaches, and he also described Dr. Hall's mentorship and advice in developing a program of clinical virology studies in older adults [47–56]. Dr. Tasnee Chonmaitree (University of Texas Medical Branch-Galveston) discussed her studies of otitis media bacteriology and virology, which began with training in Rochester by

Dr. Hall [57–61]. Dr. Allison Kempe (University of Colorado School of Medicine) recalled how Dr. Hall taught her the lessons of translational research long before it was named as such, and she reviewed her ongoing studies of vaccine delivery in the community [62–66]. Dr. Thomas Evans (Aeras; formerly URMC Infectious Diseases Unit) described the pitfalls and promises of small molecule antiviral drug discovery. Dr. John McBride (Northeastern Ohio Medical University-Akron, formerly URMC Pediatric Pulmonology) summarized the physiology of RSV bronchiolitis and its relationship to asthma, and he provided some of his favorite recollections of working with Dr. Hall on the initial clinical ribavirin RSV treatment trials [67–72]. Dr. Larry Anderson (Emory University, formerly CDC) discussed the quest for a safe and effective RSV vaccine [73, 74].

Finally, Dr. Mary Caserta (URMC Pediatric Infectious Diseases), another of Caren Hall's former trainees, summarized the state of the art of HHV6 infection, disease, and its unusual property of chromosomal integration [75–81]. The success of the Caroline Breese Hall festschrift was in large part due to the planning and organization of Dr. Caserta. All who attended came away with not only a better understanding of the scientific aspects of vaccinology, RSV, and HHV6, but with a vision of the remarkable career of Caroline Breese Hall and how her mentorship has produced leaders in the practice of both pediatrics and medicine throughout in academia, industry, and the community.

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