

## Guest editorial

# A Tribute To Bill Narayan

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Opendra "Bill" Narayan during his years at the Hopkins Neurovirology Lab.

Opendra "Bill" Narayan, was a creative investigator in animal virology, a provocative teacher, and a trusted friend. He died December 24, 2007. This volume of the *Journal of NeuroVirology* is a tribute to him.

Bill was born in what was British Guiana and attended a British-style prep school before enrolling in

veterinary medicine at the University of Toronto. He graduated in 1963 and began a large animal practice in Winnipeg, Manitoba. His Caribbean background gave him little appreciation of how cold  $-40^{\circ}\text{C}$  really is. After a year he returned to Toronto with the goal of obtaining a Master's degree and opening a small veterinary laboratory in Winnipeg. During that year he began studies with fellow graduate student Barry Rouse on the pathogenesis and basis of neurovirulence of some strains of avian influenza in turkeys (H5N1 strain). Completing his PhD with an outstanding series of six papers on the pathogenesis of influenza, he had become committed to research on viral pathogenesis.

In 1969 I was still at Case Western Reserve University when I received an inquiry from Bill about coming to work with me as a postdoctoral fellow. His recommendations and papers in press were outstanding, and I was delighted to accept him. I replied that I had decided to move to Johns Hopkins, and he agreed to join me.

Bill was our first postdoctoral fellow in the Hopkins Neurovirology lab, but in months he was joined by Howard Lipton, after service in Vietnam and a neurology residency, Henry McFarland, a neurologist with laboratory experience with experimental allergic encephalomyelitis, and Diane Griffin, an infectious disease physician with a PhD in Immunology. Les Weiner and Bob Herndon had joined the laboratory as faculty. It was a great rookie team of enthusiastic young investigators, who each brought and shared diverse talents. Research was never more fun than during those early years. Although the lab was small we usually had bag lunches crowded around a coffee table in my office; we discussed new data but also shared personal stories. Bill's tales of "house calls" in frigid windswept Manitoba were memorable. His story of driving his VW beetle with an incompetent heater out 100 miles in subzero temperatures to deliver a heifer in the middle of the night were chilling (and very funny).

Bill is now closely identified with his seminal research on recombinant simian-human immunodeficiency viruses (SHIVs), primarily carried out since

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he moved to Kansas. What is not widely appreciated is the breadth and importance of his earlier work. After the studies of pathogenesis and prevention of turkey flu, Bill joined me in studies of malformations of the developing brain when infected by vaccine strains of bluetongue and parvoviruses. We adapted viruses to small animals and investigated the pathogenesis of the different brain malformations. Bill also became involved with Les Weiner's studies of progressive multifocal leukoencephalopathy (PML) and a search with John Greenlee for papovaviruses in human brain tumors. When Bill later received a von Humboldt Prize from Germany, he went to Rott's lab and did what are now classic studies of varied disease caused by Borna virus in rats. Bill also had been granted the first permit in the United States to study visna virus in its natural host, sheep. Visna was considered by some of us to be the best animal model of multiple sclerosis; and indeed remitting and relapsing disease with multifocal central nervous system (CNS) demyelination was found even in American sheep breeds. Surprisingly Bill's studies showed this did not result from selective infection of oligodendrocytes, as in progressive multifocal leukoencephalopathy (PML), but from infection restricted to macrophages and microglia. Bill postulated (with Peter Kennedy) that short-range-acting molecules released by infected cells caused the pathological changes in neighboring cells of neural origin—a then novel idea, that proved cen-

tral to understanding of human immunodeficiency virus (HIV) encephalopathy and the probable role of cytokines.

Bill was promoted through the ranks to full professor of Neurology. In 1988 new facilities were developed for SIV work in Comparative Medicine, and Bill moved his research and primary appointment into that Division. Then in 1992 he accepted the Directorship of the Marion Merrell Dow Institute at the University of Kansas. After 22 years at Hopkins he moved on to a new and very productive phase of his career. In 2006 I had the singular pleasure of presenting Bill with the Pioneer in Neurovirology Award from the International Society of Neurovirology.

Bill was upbeat in the lab; he had fun doing research. He also enjoyed life away from the laboratory. I remember his enthusiasm when we reserved a private room in a restaurant frequented by Hemingway under the Plaza Mayor in Madrid; there, with friends, we feasted on a suckling pig. I remember Bill and Moonie introducing limbo dancing at our annual Christmas party; a competition they annually won. I recall after a meeting in Vail we drove down the back road through South Park to visit my mother in Colorado Springs; new to him and familiar to me the beauty of crystal clear skies and the snow-covered Collegiate Peaks was thrilling. Bill was a wonderful traveling companion whether in the laboratory or in the outside world.