

A photograph of a man with white hair and glasses, wearing a white short-sleeved shirt and light-colored trousers, standing on the deck of a boat. He is smiling and looking out over the water, with a pipe in his mouth. The background shows a body of water and a distant shoreline with buildings. The entire image has a blue color cast.

The

Richard T. Johnson, MD.
The Alan Mason Chesney
Medical Archives

2017 Moser Award winner

Pan Am Professor



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“Aren’t you old enough to know better than to take that kind of risk?” I thought a moment. Quite the contrary, I said, I am old enough that I can afford to take that kind of risk.

—Dr. Richard T. Johnson¹

Affectionately dubbed the Pan Am Professor, Dr. Richard T. Johnson’s (AQA, University of Colorado, 1955) personal and professional travels sent him to all corners of the globe, causing some colleagues to believe that he spent as much time in the air (Pan American Airways) as he did in his office. His sharp wit and relaxed demeanor belied a mind of intense acuity, and his kind, approachable manner ensured that he would never be short of mentees.

Born in 1931—two years after the discovery of penicillin—Johnson’s life spanned a revolutionary period of

scientific advances and medical discoveries, and he was often at the epicenter of many of the innovative medical breakthroughs in neurovirology over his six-decade career.² He reveled in medicine’s progress, and throughout his life, heartily applied himself to the challenges of the field.

Known to many as the Father of Neurovirology,² Johnson’s career was highlighted by multiple prestigious positions, including serving as the director of the Johns Hopkins Department of Neurology, president of the American Neurological Association, and editor of *Annals of Neurology*. Internationally, he was the founder of the National Neuroscience Institute in Singapore, the inaugural recipient of the Pioneer in Neurovirology Award from the International Society of Neurovirology, and an Honorary Fellow of the Royal College of Physicians. He had more than 300 peer-reviewed articles, edited 16 books, and authored “Viral Infections of the Nervous System,” a first of its kind text published in 1982. He was a member of the editorial boards of 22 journals, including *Science*, *Archives in Neurology*, and *Annals of Neurology*.

The early years (1956–1962)

He asked why I did not do research in the Army—possibly in virology. I laughed. I had never done any research, and there was no field that I knew less well than virology.

—Richard T. Johnson¹

After earning his medical degree from the University of Colorado, Johnson began an internship at Stanford University Hospital in 1956, earning \$25 per month. His goal at the time was to remain in the San Francisco Bay Area practicing internal medicine after his residency ended. However, a pending draft notice and a chance conversation during a party at his chief resident's house set his career and life on an unplanned, but ultimately immeasurably rewarding, path.

Upon completion of his residency, Johnson joined the Walter Reed Army Institute of Research as a clinical pathologist, and was quickly promoted to Assistant Chief of the Department of Virus Diseases. Despite “knowing nothing” about the methodology of research or virology, Johnson became passionate about both, and while at Walter Reed began studying nervous system encephalitides by herpes simplex, enteroviruses, and arthropod-borne viruses.

Following his time at Walter Reed, Johnson moved to Massachusetts General Hospital where he completed a residency in neurology, and a clinical fellowship in neuropathology at Harvard Medical School under the training of Dr. Raymond Adams (AQA, Duke University School of Medicine, 1967). He was a teaching fellow at the Medical School of Kings College, University of Durham & Royal Victoria Infirmary at Newcastle-Upon-Tyne, England, for one year.

Arboviruses in Australia and the USSR (1962–64)

Risk is relative, and moderate risks not only fend off boredom but can open great opportunity.

—Richard T. Johnson¹

Johnson served in the U.S. Public Health Service beginning in 1962, and embarked on the first of many

international projects and assignments as an Honorary Fellow in the Department of Microbiology at the John Curtin School of Medical Research (Australian National University) in Canberra, Australia. He had developed a niche expertise in neurovirology and slow virus infections.

As is often the case in successful careers, his expertise was established at a critical time in the field, preparing him for the multiple opportunities that arose. The concept of slow virus infections was just becoming popular, and because of his expertise in neurology, neuropathology, and virology, his participation in this emerging field was sought by fellow practitioners around the world.

While in his second year at Canberra, a team of Russian physicians claimed to have reproduced Amyotrophic Lateral Sclerosis (ALS, or Lou Gehrig's disease) in monkeys “by administering extracts from the spinal cord of persons who have died of the disease.”³ They claimed, the “virus-like agent discovered has been passaged twice in monkeys without consequent attenuation.”³

Johnson's unique qualifications and experience in virology, neuropathology, and neurology landed him a position on an elite team of physicians chosen by the U.S. Public Health Service to visit the laboratories of the Russian scientists as part of a U. S. S. R. –U. S. cultural exchange program. Thus, during the height of the Cold War, Johnson flew to Moscow as a member of the Delegation on Latent Infection, Chronic Intoxications, and Genetic Influences of the Nervous System of Man and Animals.

Johnson recalled arriving in Moscow:

At the American Embassy, outside the office handling upcoming cultural exchanges, there was a small marquee. The top billing listed Marlene Dietrich, the second the Harlem Globetrotters, and there we were, the third listed rudely abbreviated as “The Slow Virologists.” Someone had misunderstood or mistranslated our research of slow viruses.¹

The slow virus thought to produce ALS in the monkeys was never replicated, however, the delegation spent time in the USSR collaborating with Russian physicians and scientists. Unfortunately, due to the geopolitical climate, and tensions between the two super-powers that amplified with Lyndon Johnson's Operation Rolling Thunder in Vietnam, further scientific collaborations between the United States and the USSR were not feasible at the time.



Richard Johnson, center, with a group of physicians in Peru. The Alan Mason Chesney Medical Archives

Prion disease in Papua New Guinea (1964)

I knew they must be members of the Fore tribe, one of the last stone-aged peoples of the world, a tribe I had heard Carleton Gajdusek speak of often, a tribe known for its sorcery, warfare and cannibalism.

—Richard T. Johnson ¹

Toward the end of his tenure in Australia, Johnson was asked by his mentor Frank Fenner, chair of the Papua New Guinea Research Council, to go to Papua New Guinea to examine people suffering from Kuru—a degenerative neurological disorder that had been described by Carleton

Gajdusek and Vincent Zigas several years earlier.⁴ At the time, only one other neurologist (Richard Hornabrook, MD, from New Zealand) had examined these patients.

Johnson was asked to join Hornabrook, and support his clinical findings in the documentation of this unusual disease. This made Johnson only the second neurologist in the world to examine a patient with Kuru, a disease subsequently found to be associated with tribal cannibalistic practices.

Returning to the United States, Johnson continued to be involved in the research of Kuru along with Gajdusek, the recipient of the 1976 Nobel Prize in Physiology or Medicine.

When the first chimpanzee inoculated with brain

extracts from a Kuru victim developed clinical signs of the disease, Johnson helped examine the chimpanzee and compare it with the afflicted humans he saw in Papua New Guinea. At the time, no one knew that these original descriptions and subsequent scientific discoveries, were the starting point for an entirely new type of infectious agent called prions—the cause for more well-known diseases such as Bovine Spongiform Encephalopathy (Mad Cow Disease).

Johns Hopkins University

In 1964, Johnson became a member of the faculty at Case Western Reserve, where he worked until 1969.

A search committee in Baltimore, led by Dr. Vernon B. Mountcastle, Jr. (AQA, Johns Hopkins University, 1942) was recruiting the first director of the new Johns Hopkins Department of Neurology. Dr. Guy Mead McKhann (AQA, Yale University School of Medicine, 1954) recalls that Dr. Mountcastle had “narrowed the field down to Dick Johnson and me. It was Vernon’s idea to get us both, so we both arrived at Johns Hopkins and spent the rest of our careers here. I took over running the department, and Dick built up the research side.”²

Johnson was appointed the Dwight D. Eisenhower Professor of Neurology at Johns Hopkins University, a position he held for the remainder of his career.

Johnson’s training in both neurology and virology uniquely qualified him to develop a specialty division combining both fields, thus inventing the nascent field of neurovirology. He also started the Johns Hopkins Multiple Sclerosis Center, became Director of the Department of Neurology, and established close ties to the Bloomberg School of Public Health.

As an astute clinician, he received many patient referrals, both nationally and internationally. Johnson was particularly sought after by patients with undiagnosed, unusual nervous system infections. Patients would often fly to Baltimore from obscure regions of the world to see him. His patients stayed with him year after year, and it was not unusual to find some who had followed him for 30 years, or more.

Having trained in neurology prior to the advent of imaging and accessible laboratory testing under some of neurology’s greatest modern day clinicians, Johnson never failed to insist on the importance of the clinical neurologic exam and incorporate the art of the exam into his differential diagnoses. Trainees in his clinics were given the straight-forward advice:

When you first greet the patient, shake their hand, see how they stand up, interact with you, and walk to the patient room, already half your exam is done.²

Measles in Peru (1971)

In 1971, after my first two years as a faculty member in Baltimore, I was invited to spend a three-month clinical teaching assignment in Lima. I accepted enthusiastically.

—Richard T. Johnson¹

In the early 1970s, Peru was caught in a cycle of incapacitating annual measles outbreaks. The disease was so prevalent that one of the main hospitals in Lima reserved an entire pediatric ward from January to March to accommodate the large number of patients affected by the virus.

Recognizing that the high birth rate, lack of effective vaccines, seasonal variation, and annual migration patterns offered an unusual chance to study the disease, Johnson jumped at the opportunity to conduct research at the Universidad Peruana Cayetano Heredia in Lima, Peru. Having developed measles assays in his laboratory at Johns Hopkins, his team was able to study the outbreaks in Peru, helping patients as well as establishing collaborations and friendships between Peruvian and American scientists. Much of the research from this work became, and still is, applicable to current measles outbreaks in the United States due to anti-vaccine choices among some communities.

Johnson’s three-month clinical teaching opportunity resulted in a decade-long collaborative anti-measles venture funded by the National Institutes of Health. From this collaboration, several scientific papers were published, including two in the *New England Journal of Medicine*.^{5,6}

In recognition of his work on controlling measles, Johnson received a Comendador Medal by the President of Peru, the Charcot Prize from the International Federation of Multiple Sclerosis Societies, and an Honorary Professorship in the Peruvian University.

The HIV epidemic

On June 5, 1981, the U.S. Centers for Disease Control and Prevention published a seminal report of *Pneumocystis Carinii Pneumonia* in five otherwise healthy men. Six months later, 270 cases had been reported.

In Baltimore, Johnson’s laboratory was focused on viral infections of the central nervous system. As described by



Richard T. Johnson receiving honorary degree at University of Colorado Health Sciences Center commencement, 1993.

The Alan Mason Chesney Medical Archives

Dr. Janice Clements who spent years under Johnson's tutelage, "His research was novel and had a major influence on academic medicine, and the treatment of virus infections of the brain. One of the first patients with HIV was diagnosed by Dr. Johnson because the disease had caused neurological disease."⁵

In 1991, Johnson was named by the Governor of Maryland to lead a panel on HIV, and was named a consultant on the NIH AIDS Executive Committee, allowing him to be at the incipience of research focused on the HIV epidemic.

His knowledge and mentoring skills enabled a new generation of scientists, including Clements, and Director of

the Johns Hopkins Department of Neurology Dr. Justin C. McArthur (ΑΩΑ, Johns Hopkins University, 1994, Faculty), to continue to make important discoveries in the field.

Japanese encephalitis in Thailand (1984)

During an annual epidemic of Japanese encephalitis, I set up a field study lab at a general hospital in the small highland town of Ching Rai, near the northernmost border [of Thailand].

—Richard T. Johnson¹

In 1984, at the request of Dr. Philip Russell (AOA, University of Rochester School of Medicine and Dentistry, 1958) at the Walter Reed Army Institute of Research, Johnson moved with his family to Thailand to conduct research on Japanese encephalitis. His focus was on the cytochemistry of the virus in affected humans and monkeys. As a visiting scientist at the Armed Forces Research Institute of Medical Sciences, and a visiting professor at Mahidol University in Bangkok, his six months in Thailand resulted in multiple publications on the inflammatory cells and immunocytochemical characteristics of Japanese encephalitis.^{8–10}

Though not directly related to his medical practice, he enjoyed talking about other important life skills learned during his time in Thailand, like avoiding the cobras from the nearby farm while wading through floodwaters around his home.

The final years

[T]here are only three jobs I have had in my life that I truly loved—driving a night cab, working as a Park Ranger Archeologist at Mesa Verde, and being a doctor.

—Richard T. Johnson¹

For decades, Johnson cautioned that the arrival of new neurotropic viruses was, in fact, not new at all. Over the span of his career he observed the emergence of many so called new viruses, including West Nile Virus, HIV, and Ebola, as well as several undiagnosed ones like the “mysterious diseases of Mongolia and the Arctic tundra,” that he learned about while in Russia. The last few months of his life coincided with the emergence of the Zika virus into the Western Hemisphere.

Johnson died November 22, 2015, at the age of 84. His presence, stories, guidance, and unwavering encouragement to colleagues, students, and mentees are sorely missed by those who knew and worked with him. He founded the field of neurovirology, traveled to Cuba, Iran, and Russia to establish friendly collaborations during the Cold War, and as an unofficial medical ambassador for the United States, represented the best our country has to offer the world.

While his accomplishments speak for themselves, Johnson’s often self-deprecating humor, quiet kindness to others, and empathy to young apprehensive trainees and

patients made him genuinely special. Whether examining people in the United States, Thailand, Peru, Cuba, Papua New Guinea, Singapore, Iran, or Russia he always extended respect and consideration. It is primarily for these reasons that Richard T. Johnson, MD, enriched the world, and by passing these principles down to his literally hundreds of mentees, he continues to enrich the world today.

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