Willard J Visek, MD, PhD (1922–2014)1,2

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The life of Willard James Visek spanned a portion of 10 decades from 1922 to 2014. The endearing traits that characterized Willard’s personal and professional life were defined by the monumental historical events that embraced his early years. Willard, born on 19 September 1922, was the only son of James and Anna Dworak Visek, who inhabited a rural farm near Sargent, Nebraska. His grandparents were immigrants who had settled in Nebraska within a community of Czechoslovakian farmers. Indeed, Willard spoke Czechoslovakian before he acquired the English language. His formal education began at age 7 in a one-room schoolhouse, which required several miles on horseback over the windswept plains of the eastern edge of the Nebraska Sandhills to reach. As Willard began his schooling, the stock market crash of 1929 heralded a series of financial and economic developments that cascaded throughout all segments of the economy and extended to even the most remote farming communities of the nation. In parallel, during the 1930s, agricultural production across the central prairies from Texas in the south to the Dakotas in the north was devastated by dust storms resulting from a combination of drought conditions and the failure to apply dry land farming methods to prevent wind erosion. Willard’s family was not spared the hardship and lost their farm; ultimately, a bank provided a loan, grounded upon Willard’s future earnings, to purchase farmland that remained in the family for many decades. Despite the deeply engrained social tradition of boys ending their schooling before high school in order to devote full-time efforts to the family farm, Willard was encouraged by teachers, with the support of his family, to complete high school, with an emphasis on science and mathematics.

Willard’s parents proudly supported his enrollment at the University of Nebraska in the fall of 1940 with a focus on agricultural sciences. His well-known work ethic was fully established at this age, and he was employed to clean the university cow barns and also waited tables in fraternities to help defray the cost of his education. Active in the Future Farmers of America, Willard was elected National Vice President in 1943. America entered World War 2, and Willard’s ROTC unit was soon called up to active duty in the US Army. Willard served >3 years, mostly as a Master Sergeant in a field artillery unit in France and Germany. Like many of his generation, the shared experience of war provided life lessons in teamwork, self-sacrifice, and camaraderie that made Willard a loyal and dedicated colleague in all of his future endeavors. In later years, he recalled with his characteristic chuckle that one of his duties was to provide the lectures to American soldiers regarding the perils of sexually transmitted disease, preventive strategies, and the importance of early treatment for those with distinctive signs and symptoms. He referred to this experience as his first scientific presentation!

By 1947, Willard had returned to the University of Nebraska and completed his undergraduate degree in Agricultural Sciences. With advice from his professors, he was encouraged to pursue graduate training. With the support of the GI bill and a Fellowship in Agriculture, he enrolled at one of the nation’s preeminent Departments of Animal Sciences at Cornell University in Ithaca. Willard completed his MS (1949) and PhD (1951) training under the mentorship of Dr. JK Loosli, who was one of the eminent nutritional scholars in animal sciences. Willard was one of the pioneers in the application of radioisotopes to the study of nutrient metabolism. Their studies of calcium (Ca45) metabolism in cattle, goats, and pigs were a landmark in the application of new technology to biomedical nutrition research (1–4). The “atomic age” was a popular phrase in the 1950s, coupled with a feeling of optimism that nuclear technology would provide a safe power resource both on earth and for space travel, that irradiation of food would enhance food preservation and safety, and nuclear-based medicine would play a key role in the cure of many diseases. On the basis of his graduate experience, Willard was awarded an Atomic Energy Commission Postdoctoral Fellowship at Oak Ridge National Laboratory, affiliated with the University of Tennessee (1951–1953), where he continued to study mineral metabolism with 45Ca (4) and conducted the first studies showing chromium (51Cr) biodistribution in vivo (5). Willard fondly recalled the mentorship and support of Dr. Cyril L Comar, the director of the program and Colonel John H Rust of the Army Veterinary Corps, who famously reported to the public the cancerous conditions found in cattle that were grazed downwind of atomic bomb testing in the Southwest. Rust encouraged Willard to apply his research experience to humans and offered a personal seed loan to support Willard’s subsequent training at the University of Chicago (1953–1957), where he graduated with his medical degree (MD) in 1957 and remained at the university for completion of his rigorous medical internship.

During this era of intense academic accomplishment, Willard found some time for experiences outside of academics. While in
graduate school in upstate New York, he discovered that a young woman and fellow “cornhusker” he had briefly known at the University of Nebraska, Priscilla Flagg, was pursuing a dietetics internship in New York City. They became reacquainted and soon were married on 28 December 1949 in Lincoln, Nebraska. Thus began 65 y together, and all of Willard’s friends and colleagues over the years have been fully convinced that marriage to Priscilla was among his greatest accomplishments. Pris, as she is known to friends, is an accomplished dietitian and educator and contributed to the quality care and research at the Department of Gastroenterology at the University of Chicago during the years of Willard’s training, particularly in the area of inflammatory bowel disease. During the years at Oak Ridge and Chicago, the Viseks welcomed 3 children into their lives: Dianna, Madeleine, and Clayton.

Upon completion of his internship, Willard remained at the University of Chicago, joining the faculty in the Department of Pharmacology as Assistant Professor, and began the work that remained his passion for decades to come. He was intrigued by the nutritional and metabolic complications of liver disease, particularly with regard to protein and amino acid metabolism, the urea cycle, and the detoxification of ammonia. His laboratory team examined the important contribution of the colon microbiome in mediating the hydrolysis of urea that contributed to hyperammonemia characteristic of advanced liver failure and its multitude of physiologic effects, including encephalopathy (6–9). His laboratory developed a unique approach to treating liver failure by immunizing the host against the bacterial enzyme urease, thus reducing the ammonia burden (10–13). In 1964, Willard returned to Cornell University and experienced a productive 13 y. As an educator, he established a renowned 6-h graduate course in Mammalian Physiology, with extensive and complex laboratory experimentation coupled with course material that strongly integrated basic science and medicine. Willard’s laboratory included students in multiple graduate programs, ranging from nutrition, physiology, and environmental toxicology. In 1964, he achieved the rank of Professor of Nutrition and Comparative Metabolism.

The laboratory team at Cornell University was creative and industrious, continually motivated by Willard’s own enthusiasm and work ethic, and many students moved on to accomplished careers in biomedical or agricultural sciences. Studies of environmental pesticides (14–16) documented an impact on sex steroid receptor binding, leading to a publication in Science (15). One of the authors, Alan Wakeling, pursued a career in the pharmaceutical industry, contributing significantly to the development of steroid receptor antagonists that are used in cancer therapy today. Others focused on experimental carcinogenesis, a topic that would soon arise as a strong theme in the Visek laboratory in the emerging field of diet, nutrition, and cancer (16, 17). However, most important, the work of graduate students including Gary Gibson, Andy Clifford, and Ronald Prior, followed by John A Milner, defined many of the metabolic changes and physiologic impacts of hyperammonemia associated with urea hydrolysis in a series of experimental systems (18–24). Ron Prior moved on with an accomplished research career within multiple components of the USDA. Seminal work as a component of Milner’s thesis defined the greater requirement for the amino acid arginine in states of ammonia stress and was published in Nature (25).

In 1975, a unique opportunity was presented to Willard by the University of Illinois in Urbana. In a remarkable dual recruitment, Willard Visek and John Milner both transitioned to new positions in the Midwest. Milner, who remained one of Willard’s great friends, embodied many of Willard’s traits and rapidly progressed through the academic ranks, ultimately serving the nation as chief of the National Cancer Institute’s Nutrition Science Research Group (26). Willard was attracted by the new regional medical school established at the main campus in Urbana, specializing in the training of students for combined degrees including nutrition and traditional biomedical sciences, but also law and engineering among others. The combined degree program flourishes today as the Medical Scholars Program. For example, James Shoemaker was the first to complete the combined degree program with a thesis focusing on metabolic signatures by gas chromatography in the 1980s (27, 28). The project would now be easily recognized as metabolomics and led to a productive career of metabolic testing for diseases of metabolism at St. Louis University. Willard also incorporated nutrition into the novel integrated medical school curriculum developed at the Urbana campus. As a Professor of Medicine at the University of Illinois, Willard thoroughly embraced the opportunity to utilize his medical training, particularly at the affiliated Veterans Administration Hospital in Danville, where he participated in weekly grand rounds with the nutrition support services. In parallel, his laboratory effort blossomed, building on the core of students and staff who joined Willard in his move to Illinois. The team further defined the arginine requirements of different species (29, 30) and during periods of metabolic stressors such as intense exercise, during amino acid imbalance (31–33), or during recovery from malnourished states (34). Studies also demonstrated that physiologic intakes of arginine significantly influenced optimal regulation of insulin secretion and glucose control (35, 36). In parallel, a robust research effort supported by a series of National Cancer Institute grants focused on the macronutrient interactions and caloric intake in breast, colon, and prostate carcinogenesis (37–40). Willard was particularly pleased to demonstrate that ammonia was a classic promoter of experimental colon carcinogenesis in the rodent model (38), supporting his hypothesis that dietary factors affecting bacterial hydrolysis of urea to free ammonia will promote colon cancer (41). The rapid growth in the fields of molecular biology and genetics in the 1980s ushered in the era of diet and genetic interactions. During the final phase of his career, Willard’s laboratory used experimental models to identify genetic signatures that affected lipid metabolic pathways (42). During his career, Willard mentored dozens of trainees for MS and PhD degrees, including physicians with combined degrees. He remained profoundly proud of their accomplishments as each moved forward with their careers, and many benefited from his wise stewardship as the years passed. Although Willard defined the boundaries of research within his laboratory program, he never micromanaged research, and he fully expected a student to become a critical reviewer of the relevant literature, synthesize new concepts, and actively participate in the design and execution of new studies. Those who expected to be given a list of tasks to be completed in order to receive a degree were soon left in the dust. Willard always expected high-quality mechanisms-based investigation, based on a foundation of precise dietary design, excellent animal husbandry and monitoring, and robust statistical analysis. Laboratory meetings, often held in the evenings or on Saturdays, were stimulating, productive, and critical for refining the research agenda. Willard expected all to contribute, which was a challenge and often intimidating, and the debate was frequently vigorous, yet all members of his team benefited through the...
dynamic exchange and camaraderie that was instilled by the team's efforts. At the end of the workday, Willard would routinely make his rounds through the laboratory and greet those at the laboratory bench with, “Well, what did you discover today?”

Throughout his career, Willard was a reliable source of expertise and service to many organizations. He seemed to be continually reviewing manuscripts for dozens of journals, and served the NIH as well as many other organizations for review of grant proposals. He would occasionally ask advanced laboratory members to critically comment on his reviews, which clearly demonstrated his fairness and objectivity as well as his dedication to the peer review process that is so critical to our field. Willard served as editor of The Journal of Nutrition for 6 y (1990–1996), focusing on a high-quality and timely review process. Willard was a strong supporter of the American Society for Nutrition and served on the board of directors (then the American Institute of Nutrition); he was a vigorous attendee and presenter at the Society’s annual meetings for nearly 5 decades, becoming a Fellow in 1990. Willard was honored with the Osborne and Mendel Award (1985) for his pioneering research in ammonia and protein metabolism and, subsequently, the Conrad Elvehjem Award for Public Service in Nutrition (1996). Willard was thrilled to receive an honorary Doctor of Science degree from the University of Nebraska in 1980 and was named a University Scholar by the University of Illinois in 1988. After his appointment as Emeritus Professor in 1993, Willard gradually reduced his research activity and devoted more time to his lifelong interests in farming, home handyman activities, and creating devices to foil the ability of squirrels to promote havoc with his birdfeeders. He enthusiastically followed Illinois basketball and Nebraska football and profoundly enjoyed his deer-hunting and fishing adventures with his son and faculty colleagues. He loved to share jokes with a mischievous grin and cackling laugh. Even as his memory failed in recent years, he was cheerful and quick to banter. He dealt with the challenges of old age with grace, humor, and dignity. Priscilla and Willard were always warm and hospitable hosts. Throughout his career, the Visek family welcomed many of Willard’s students and trainees to their home for glorious Thanksgiving and Christmas feasts. Willard and Priscilla treasured their time together and with their children and their families, including 6 grandchildren. Willard was always quick to state that “Priscilla worked very hard to make something of me.” Daughter Dianna Visek and her husband Mark Ginsberg live in Urbana; daughter Madeleine Visek Cotts and her husband Eric Cotts live in Binghamton, New York; and son Clayton Visek and his wife Jennifer White Visek live in Grayslake, Illinois. Willard is survived by his wife Priscilla who lives in Urbana. For all of those who interfaced with Willard Visek through his professional life, his spirit lives on as a glowing example of “the greatest generation.” He will be long remembered as a devoted friend, a humble leader by example, and a trusted colleague in all endeavors.

Acknowledgments
Both authors read and approved the final manuscript.

References