James Allen Olson (1924–2000)1,2

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The true genius is a mind of large general powers, accidentally determined in some particular direction.
– Samuel Johnson

James Allen Olson made multiple contributions to the field of nutrition and to the nutritional biochemistry of vitamin A and carotenoids, ranging from fundamental studies of chemistry and enzymology to applications in assessment of human vitamin A status. In addition to many original research publications, he wrote numerous insightful and stimulating reviews. He was primary author or co-author or coeditor of many books, including several editions of the compendium “Modern Nutrition in Health and Disease.” His contributions to our profession also included significant service at the local, national, and international levels.

He was born October 10, 1924, in Minneapolis, Minnesota, the second of three children. His brother Robert is a Distinguished Professor of Nutritional Biochemistry; his brother William was an advertising executive in Minneapolis. He was of Scandinavian descent, and his demeanor was characterized by qualities of honesty, sincerity, a strong work ethic, and a quiet reserve.

Olson graduated from Gustavus Adolphus College (St. Peter, Minnesota) summa cum laude in 1946 with a B.S. in chemistry and physics. During his undergraduate years, he had a two-year break as a Lieutenant in the U.S. Navy (1944–1946), where he learned electronics and Japanese; from 1946 to 1948, he served as a translator and scientific abstractor for the Supreme Command Allied Powers in Tokyo in occupied Japan.

He returned to the United States as a Harvard Scholar and predoctoral fellow in 1948 and earned a Ph.D. degree in biochemistry at Harvard University in 1952, under the tutelage of Nobel Laureate Christian Anfinsen, with studies on crystallization, characterization, and kinetic properties of glutamic acid dehydrogenase. He became a postdoctoral fellow of the National Foundation, International Center for Chemical Microbiology in Rome, Italy, with Nobel Laureate Sir Ernst Chain, studying metabolism of acetate and organic acids by Penicillium chrysogenum. He then returned to Harvard University as a research associate of Nobel Laureate Konrad Bloch, 1954–1956, studying isoprenoid biosynthesis.

While he was working at the Instituto di Sanita in Rome with Professor Chain, Olson met Giovanna del Nero. Despite the misgivings of Professor Chain, who warned her that Americans have terrible food, Giovanna agreed to tutor Olson in Italian. They subsequently married and had three children: Daniel (an attorney), Lisa (a biochemist), and Eric (a veterinarian). Mrs. Olson’s skills as a cook equaled those of her husband as a biochemist, and they were excellent host and hostess—an invitation to the Olson home for lunch or dinner was always greeted with delight!

Prof. Olson’s independent scientific career began in the Department of Biochemistry at the University of Florida College of Medicine in 1956. His initial research was on the biochemistry of alpha-keto carboxylic acids. But researchers in his laboratory also studied the biliary excretion of water-soluble metabolites of vitamin A and identified two water-soluble compounds, retinoyl beta-glucuronide and retinyl beta-glucuronide. He became an associate professor in 1959 and rose to the rank of full professor in 1963. Prof. Olson served as the acting chairman of the Department of Biochemistry at the University of Florida from 1965 to 1966. According to his students, he taught with great skill and dedication. He trained numerous graduate students and postdoctoral fellows and began to establish an international reputation in vitamin A and carotenoid research.

Olson combined his interests in isoprenoids and enzymes by taking up the challenge of understanding the enzymatic cleavage of beta-carotene to produce vitamin A. The existence of such enzymatic activity had been postulated by Moore and by Karrer in the early 1930s, but in vitro characterization of the enzyme had proven difficult. His perspective initially was not that of a nutritional biochemist, but rather that of an enzymologist: how to characterize, and, if possible, isolate the enzyme responsible for carotenoid cleavage. Isolation of the enzyme proved elusive, but a sabbatical leave in Japan provided opportunity for research on the enzyme and a landmark publication on characterization of the enzyme (1). Similar results were published by Goodman and Huang at about the same time (2).

Gradually his research interests broadened from enzymology to nutritional aspects of vitamin A chemistry and metabolism and the importance of vitamin A in human nutrition. Under the
auspices of the Rockefeller Foundation, he and his family moved from Florida to Thailand in 1966, where he chaired the Biochemistry Department of Mahidol University in Bangkok, helping establish it as a premier department in Southeast Asia. During this time, he also spent a year as a visiting scientist in the laboratory of Professor Lewis Wolpert at Middlesex Hospital Medical School, London, England. At Mahidol University, he directed research in the chemical synthesis of vitamin A analogs and in their metabolism, as well as studying the physiological and biochemical effects of vitamin A deficiency and toxicity, and he began studies in assessment of human vitamin A status, initially by measuring liver concentrations in autopsy specimens. He also began his practice of writing exemplary reviews of vitamin A and carotenoid chemistry and metabolism. Subsequently he and his family went to the Federal University of Bahia in Brazil in 1974, again as a Staff Member of the Rockefeller Foundation and Professor of Biomedical Sciences. In establishing these laboratories, he applied his “Noah’s Ark principle”: Purchase two of each item of major equipment, so that one unit will still be available if the other fails.

In 1975, Professor Olson and his family moved to Iowa State University, where he was chair of the Department of Biochemistry and Biophysics until 1985. In 1985, he was named a Distinguished Professor of the University. At Iowa State University he continued research in the chemistry and metabolism of vitamin A, directing studies on the chemical synthesis and biological metabolism of retinoyl- and retinyl-beta-glucuronides, and on the enzymatic steps involved in retinyl ester formation and hydrolysis and the physiology of liver storage of vitamin A. His interest in human nutrition and in assessment of human vitamin A status continued to increase, and he introduced the concept of the Modified Relative Dose Response (MRDR) by using vitamin A2 (3,4-didehydroretinol) as a marker, a technique that continues to be used. He also developed further the concept of isotope dilution to assess human vitamin A status and directed a pioneering study of its application in humans.

A stream of visitors passed through his office, and his laboratory at Iowa State University hosted international scientists from India, Italy, France, Austria, Brazil, and Japan. As a mentor he allowed independence for his students and research associates, showing a lively interest in their work but allowing them to make important decisions. At the same time, his reputation as a remarkable teacher also grew and he received a teaching excellence award from Iowa State University.

The wisest are the most annoyed at the loss of time.
– Dante (Divine Comedy, Purgatorio, III, 78)

He also became heavily involved in discussions of national and international nutrition policy. He served as president of the American Institute of Nutrition (AIN), subsequently renamed the American Society for Nutrition) and as chair of the U.S. National Committee of the International Union of Nutrition Sciences (IUNS) and served on the U.S.–Japan Malnutrition Panel of the U.S.–Japan Cooperative Medical Science Program, as well as a number of other national and international committees. Among his more challenging experiences was service in the mid-1980s on the expert review panel of the Food and Nutrition Board of the National Academy of Sciences to determine the Recommended Dietary Intakes (RDI) for vitamins A, C, and K; he and a number of the other panel members remained convinced that true requirements (and hence recommendations for dietary intake) for these nutrients are lower than those that were officially set. His service to the field of nutrition was recognized by bestowal of the Borden Award and the Elvehjem Award from the American Society for Clinical Nutrition (now part of the American Society for Nutrition), and by election as an AIN Fellow. For his contributions to international nutrition programs, he received Distinguished Service Citations from institutions around the world. For his service to the development of Mahidol University and his lifetime achievements in improving global nutrition, that university bestowed him with an Honorary Doctorate degree in 1999. He also received an Honorary Doctorate degree from the University of Gent, Belgium. He coauthored or coedited many books, including several editions of the compendium “Modern Nutrition in Health and Disease.”

He listens well who takes notes.
– Dante (Divine Comedy, Inferno, XV, 99)

His participation in the field of nutrition took more personal forms also. He believed firmly that every oral presentation at Experimental Biology or other meetings deserved a good question, and he could always be seen, notebook in hand, at the microphone to direct a kind but insightful query to a young scientist. He was instrumental in establishing the FASEB Retinoids research conferences and the Gordon Conferences on Carotenoids, and he played a major role in the founding of the Carotenoids Research Interaction Group (CARIG) as an auxiliary to the annual Experimental Biology meetings. For many years he personally sponsored the Vitamin A Research Interaction Group (VARIG) Social as an opportunity for informal personal and professional social interactions at Experimental Biology meetings. Even when he and other colleagues disagreed on the interpretation of experimental results or the most appropriate applications to human nutrition programs, he and other senior members of the vitamin A community set an example of collegial respect and cooperation.

Professor Olson died unexpectedly on September 22, 2000, at age 75. He had never retired, and had continued to maintain a busy daily schedule. In his honor, a Symposium was held at Iowa State University in 2001, “Functions and Actions of Retinoids and Carotenoids: Building on the Vision of James Allen Olson.” The proceedings of this symposium were published in the Journal of Nutrition (2004; 134 (Supplement 1): 220S–293S). A bibliography consisting of most of his publications is available as Online Supporting Material with the online posting of this article at http://jn.nutrition.org.

Acknowledgment
We thank former members of James Olson’s Vitamin A Research Group (VARG), especially Sherry Tanumihardjo (University of Wisconsin, Madison) and Desiree Gunning (Iowa State University), for helpful discussions and editorial comments.

Literature Cited