Walter D. Conway was born February 4, 1931, in Troy, New York. He received a BS degree in Chemistry from Rensselaer Polytechnic Institute in 1952. Then he went to the University of Rochester, where he received a PhD in Organic Chemistry in 1956. He joined Esso Research and Engineering Co. in Linden, New Jersey, in January 1956.

He obtained an opportunity, in 1957, to enlist in the US Public Health Service (USPHS) and did research at the Environmental Cancer Section at the National Institutes of Health in Bethesda, Maryland, where he studied the metabolic fate of carcinogenic compounds, such as 2-naphthylamine and azo dyes in animals.

In 1958 he married Eileen Watson, and over the next eleven years they were blessed with three sons and one daughter.

He moved in 1962 to Sterling-Winthrop Research Institute in Rensselaer, New York, where he studied the metabolic rate of drugs in animals and humans. The lack of today’s sensitive instrumentation for metabolite isolation, quantification, and structural elucidation made research in drug metabolism quite challenging. The most sensitive quantitative methods were fluorimetry and gas chromatography (after preparation of a volatile derivative) or use of radioisotope-labeled drug or derivative. Structures were usually ascertained by chemically or enzymatically converting the metabolite to a known structure.

His time at NIH kindled an interest to seek an academic position and an opportunity arose in 1966 to return to NIH for a postdoctoral appointment as a research associate in pharmacology in Dr. Bernard B. Brodie’s laboratory. In 1967, Dr. Conway was offered a position in the Pharmaceutics Department in the School of Pharmacy at the State University of New York at Buffalo (more recently named the Pharmaceutical Sciences Department at the
University at Buffalo. He was granted tenure in 1971 and his position was expanded to a joint appointment with the Department of Medicinal Chemistry in 1975.

Dr. Conway taught pharmaceutical chemistry and a course on the analysis of drugs in body fluids. He also taught an elective course on drug metabolites and drug metabolism until he retired. He served as mentor for six PhD and four MS students who completed theses in the areas of drug metabolism and drug analysis. It was often desirable in such studies to isolate the metabolites, often from urine, in sufficient quantities for additional studies. While HPLC, commonly available since the 1970s, was used for analytical purposes, it is not so readily applied to preparative isolation, particularly for somewhat polar metabolites. He had employed Craig countercurrent distribution in some studies, but it was cumbersome and very slow. He became aware of a new technique called countercurrent chromatography (CCC), invented by Dr. Yoichiro Ito at NIH and it looked useful. By chance, he met Dr. Ito at a Pittsburgh Conference (Pittcon) and arranged to spend an eight-month sabbatical leave in his laboratory in 1980.

He was intrigued by CCC and did demonstration studies to separate conjugates of p-nitrophenol from rat urine. The instrumentation typically employs a coil of Teflon tubing, which rotates as a planet about a central axis, thereby generating an undulating centrifugal force field. The coil is filled with two immiscible solvents, one of the phases is pumped through without displacing the other. Components of injected samples separate by partitioning between the phases and emerge at retention volumes proportional to their partition coefficients. It was marvelous, but little was known about how it worked, how to select a solvent system, or how to optimize the separation. The apparatus was not available commercially and it was very difficult to describe it to anyone.

Through various hobbies, including the design and construction of laboratory apparatuses, he had acquired rudimentary machining skills. The Technical Development Laboratory at NIH had a machine shop available to researchers. He was allowed to use it evenings and weekends to fabricate a modification of Ito’s instrument and take it with him to the University at Buffalo. Since then, his research centered on CCC.

In 1982, Peter Carmeci, an engineer in the Technical Development Laboratory, retired and started a small company, P.C., Inc. to manufacture the first commercial CCC instrument. Through Peter’s company, he applied for and obtained a small business innovation research grant (SBIR) to construct and study a newer model CCC. Much was accomplished, but, sadly, Peter died unexpectedly in 1988. Dr. Conway was then writing a monograph, Countercurrent Chromatography: Apparatus, Theory and Applications (VCH publisher, 1990) that became popular in the CCC field and on occasion has been referred to as “Conway’s bible.” He also received a patent for a novel coil configuration. Peter’s wife, Marie, continued managing P.C., Inc. and the company licensed the patent from the university. This coil, and improved fabrication, improved sales of P.C., Inc. instrumentation. CCC is used by pharmaceutical companies and academic researchers to isolate and purify natural products from plants and other organisms, which are then screened for useful drug activity. In 1997 founded
Conway Centri Chrom, Inc., which acquired the CCC coil license and continued manufacturing, sales, and research for CCC instrumentation.

Other miscellaneous details of his career include serving as chairman of the Western New York Section of ACS (1978–79), secretary of the Northeast Regional Chromatography Group (1980), and member of US Pharmacopeia Committee of Revision (1975–85). He presented 109 talks, published 57 reviewed papers, wrote or edited five books, and received five patents. Foreign invitations to speak on CCC took him to London, Stockholm, Rio de Janeiro, Ottawa, and Tokyo.

Dr. Conway retired from teaching in 2000, but continued at the University at Buffalo in emeritus status and maintained a small research laboratory there until the time of his death.

Walter Conway
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