Robert Steven Ledley (1926–2012) is one of the most influential Medical informatics scientists in the history of development of Medical informatics (1–3). Robert S. Ledley and his colleague Lee B. Lusted (1922–1994) wrote a seminal 1959 paper in Science that many people cite as the publication that launched the informatics field (Reasoning Foundations of Clinical Diagnosis) (4).

His contributions, however, extend well beyond informatics into a variety of other areas that reflect the breadth of his talents as an inventor and his drive to contribute to health care and science. He is often described simply as the inventor of the full-body Computer Tomography (CT) scanner, but he has had a large number of other inventions to his name and was among the first to anticipate the role of computers in managing and analyzing the expanding but already substantial amounts of biomedical and clinical data.

Ledley was born in 1926 in New York City. He received a D.D.S. from the New York College of Dentistry in 1948. He went on to earn an M.A. degree in theoretical physics from Columbia University in 1950. He first worked for Washington D.C.’s National Bureau of Standards (later the National Institute of Standards and Technology) and then moved on to Johns Hopkins University where he was a physicist and research analyst. From 1968 to 1970, he was professor of Electrical Engineering in the School of Engineering and Applied Science at the George Washington University (1, 2).

In 1970 Ledley joined the School of Medicine, Georgetown University Medical Center, as a professor in the Department of Physiology and Biophysics. It was there, in 1973, that he developed the Automatic Computerized Transverse Axial (ACTA) x-ray scanner, known as the first whole-body CT machine.

The machine has had a revolutionary impact on diagnostic medicine; it is able to generate visual models of internal organs not possible for conventional x-ray machines to produce. The three-dimensional reconstructions, created by transmitting X-ray beams through transverse axial slices of the body, allow physicians to view soft tissue in the body with detail unlike any they were able to see before, improving diagnosis of cancers, heart disease, bone disease and other irregularities. The technology is also used in radiation therapy planning.

In 1974 Ledley became a professor in the Medical Center’s Department of Radiology. In 1975 he was appointed Director of the Medical Computing and Biophysics Division. He has contributed to a number of areas within the field of diagnostic medicine. For example, he patented the image processor (originally called the Texture Analysis
Computer or TEXAC). He also wrote the first comprehensive textbook for engineers on digital computer engineering. He developed computer systems for organizing the often very large volume of medical data required for precise diagnosis. He co-produced the first large-scale biotechnology databases, Protein Information Resources (PIR), to organize all known protein and DNA sequences. He also invented the instrumentation and computer algorithms used for automated chromosome analysis for prenatal diagnosis of birth defects. PIR is used by almost all in the field of molecular biology. Also, his vision of computers led to the early development of a genetics database, Genbank, the premier, universally used genetics database.

In the 1970s, he studied the use of computer technology in diagnosing and treating patients. Ledley’s research on cost containment in a concentrated care center was a landmark study that led to the creation of critical care units in hospitals.” In 1979-1980, Dr. Ledley developed the computerized electroneutral-ophthalmograph (CENOG), an integrated system for analysis of ocular motility, which helps in the diagnosis of seizure patients (1).

REFERENCES