# Influential IBM Engineer and DRAM Chip Inventor Robert H. Dennard Dies at 91



Robert H. Dennard, an influential IBM engineer who invented the dynamic random-access memory (DRAM) chip, died on April 23, 2024, at the age of 91 in Sleepy Hollow, New York. His daughter, Holly Dennard, confirmed that a bacterial infection was the cause of death.

Dennard's groundbreaking work emerged in the 1960s while he was at IBM. At a time when data storage was costly and cumbersome, he introduced DRAM in 1966, a technology that stores one digital bit per transistor as an electrical charge, periodically refreshed to maintain data integrity. This invention revolutionized data capacity, speed, and cost-efficiency, foundationally transforming the tech landscape.

DRAM has been pivotal in the development of modern computing, enabling rapid data processing for devices such as smartphones, laptops, and tablets. Innovations such as streaming services and AI applications heavily rely on this technology.

Born on September 5, 1932, in Terrell, Texas, Dennard pursued electrical engineering, earning degrees from Southern Methodist University and a Ph.D. from Carnegie Institute of Technology. His career at IBM spanned from 1958 until his retirement in 2014.

Dennard's contributions also included a concept known as "Dennard scaling," which detailed how transistors could shrink while maintaining power efficiency, complementing Moore's Law. This principle profoundly influenced semiconductor development, although its physical limits were reached by the mid-2000s.

Throughout his career, Dennard was awarded 75 patents and numerous accolades, including the National Medal of Technology in 1988 and the Kyoto Prize in 2019.

He is survived by his wife Frances Jane Bridges, two daughters, and four grandchildren. His work remains integral to ongoing advancements in computing technology.