

## **PAST RECIPIENTS OF THE LEMELSON-MIT LIFETIME ACHIEVEMENT AWARD**

### ***Dr. Sidney Pestka, 2006***

Also known as the “father of interferon” for his groundbreaking work developing antiviral treatments for chronic hepatitis B and C, multiple sclerosis and cancers, Sidney Pestka holds 270 U.S. and foreign patents, of which many have broad applications in the biotechnology and pharmaceutical industries. Pestka was the first to purify interferon alpha and beta; to develop reverse phase high-performance liquid chromatography (RPHPLC) for protein purification; to genetically engineer interferons; and to manufacture interferons for human therapy.

### ***Robert H. Dennard, 2005***

Robert Dennard helped change the face of computer technology with dynamic random access memory (DRAM) in 1967. Created at IBM, DRAM’s denser memory cell storage on a single chip has enabled smaller, portable computers and is still the paragon in the industry today. Dennard also conceived the scaling theory, with colleagues, published in the 1974 paper—“Design of Ion-Implanted MOSFETs with Very Small Physical Dimensions.” Since its inception, it has been deemed the principal guide for designing submicron dimensional devices. He is the author of 35 patents.

### ***Edith M. Flanigen, 2004***

While working as a research chemist at Union Carbide, Edith Flanigen led a team that uncovered a new generation of synthetic molecular sieve zeolites. Used in chemical, petrochemical and petroleum refining industries, these industrial materials adsorb smaller molecules and prevent larger molecules from entering the sieve; many also help reduce energy and waste. Flanigen, who has amassed over 100 patents, also discovered the first practical way to manufacture zeolite Y, one of the most commonly produced molecular sieves used to make gasoline and jet fuel commercially feasible.

### ***William P. Murphy, Jr., 2003***

Combining a passion for mechanical engineering with his expertise in medicine, William P. Murphy, Jr. advanced the biomedical industry. Among his 17 patents (many co-developed) are: flexible sealed blood bags; an efficient hemodialyzer (artificial kidneys); motor-driven high-pressure angiography injectors; disposable medical trays; torque-controlled selective and disposable vascular diagnostic catheters; and the first physiologic cardiac pacemaker.

### ***Ruth R. Benerito, 2002***

In the post World War II era, Ruth Benerito salvaged the cotton industry with her invention of easy-care cotton. By using mono-basic acid chlorides instead of di-basic acid chlorides to crosslink cotton's cellulose chains, she produced the wrinkle-, stain- and flame-resistant fabric known as "wash and wear." Benerito garnered 55 patents throughout her career, and made vital contributions that helped transform the textile, wood and paper industries.

### ***Raymond V. Damadian, 2001***

Raymond Damadian's invention of the first full-body human magnetic resonance scanner changed the face of diagnostic medicine. In 1977, after seven years of arduous work, Damadian was able to produce the first scan of the human body. MRI (magnetic resonance imaging) scanners are

used in hospitals and clinics to diagnose cancer, traumatic injuries, and other diseases and infections non-invasively. Damadian has since received 45 patents (some co-invented) for MRI innovations.

***Al Gross, 2000***

Al Gross (1918-2000), considered the founding father of wireless communications, brought the world such indispensable devices as the walkie-talkie, pager and cordless phone. During World War II, Gross's walkie-talkie invention led to the development of a two-way air-to-ground communications system used for wireless intelligence gathering. His discriminatory circuitry, which followed, enabled personal pocket paging systems, plus the cell phone and cordless phone.

***Stephanie L. Kwolek, 1999***

As a chemist at DuPont's Pioneering Lab, Stephanie Kwolek revolutionized the polymer industry in the 1960s when she developed Kevlar®, the high-strength, lightweight and heat-resistant fiber that is the life-saving material of bulletproof vests. Kwolek's 40-year devotion to research in chemistry also contributed to the development of Lycra®, Spandex®, Nomex® and Kapton®.

***Jacob Rabinow, 1998***

With 230 patents, inventor/engineer Jacob Rabinow's (1910-1999) inventions span many fields including ordnance, sound reproduction, photography, horology, reading machines, optical products and electronic systems. Among them are the automatic letter-sorting machine for the U.S. Postal Service; automatic regulation of clocks and watches; the magnetic particle clutch used in cars and airplanes; straight-line phonograph; pick-proof lock; and a magnetic memory device.

***Gertrude B. Elion, 1997***

With her colleague George Hitchings, Gertrude Elion (1918-1999) developed many breakthroughs in medicine such as drugs to treat leukemia, malaria, bacterial infections, and even suppress the immune system to enable organ transplants. During her 40-year career at Burroughs-Wellcome (now Glaxo-Wellcome), Elion received 45 patents and was a co-recipient of the 1988 Nobel Prize for Medicine.

***Wilson Greatbatch, 1996***

Wilson Greatbatch created the implantable cardiac pacemaker in the 1950s, the first major internal biomedical device in history. In 1970, he upgraded his device with a lithium iodine battery for durability. He holds 150 patents and has founded nine companies, including Greatbatch, Ltd, which still sells or licenses more than 90 percent of the world's pacemaker batteries. In 2002, Greatbatch co-invented an MRI-safe defibrillator and an MRI-compatible pacemaker.

***William R. Hewlett and David Packard, 1995***

Engineers William Hewlett (1913-2001) and David Packard (1912-1996) founded the Hewlett-Packard Company in 1939, where they developed some of the world's most successful measurement and computation products and systems. HP innovations include the cesium-beam standard clock, first scientific desktop calculator, mainframe computer, inkjet printer and laser printer.