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2012 LASKER AWARDS HONOR SCIENTISTS FOR GROUNDBREAKING MEDICAL RESEARCH

Michael Sheetz, James Spudich and Ronald Vale for discoveries concerning cytoskeletal motor proteins, machines that move cargoes within cells, contract muscles, and enable cell movements.

Roy Calne and Thomas Starzl for the development of liver transplantation, which has restored normal life to thousands of patients with end-stage liver disease.

Donald Brown and Thomas Maniatis for exceptional leadership and citizenship in biomedical science, exemplified by fundamental discoveries concerning the nature of genes, by selfless commitment to young scientists, and by disseminating revolutionary technologies to the scientific community.

New York, Sept. 10, 2012 — The Albert and Mary Lasker Foundation, which for 67 years has championed the greatest advances in medical research, announced today the winners of the 2012 Lasker Awards: **Michael Sheetz, James Spudich** and **Ronald Vale** for basic medical research, **Roy Calne** and **Thomas E. Starzl** for clinical research, and **Donald D. Brown** and **Thomas Maniatis** for special achievement. The Lasker Awards — considered one of the most respected science prizes in the world — honor visionaries whose insight and perseverance have led to dramatic advances that will prevent disease and prolong life.

The Lasker Awards, which carry an honorarium of $250,000 for each category, will be presented at a ceremony on Friday, September 21 in New York City. Since 1945, the Lasker Awards program has recognized the contributions of scientists, physicians, and public servants who have made major progress in understanding, diagnosing, treating, curing, and preventing human disease worldwide.

“The Lasker Awards celebrate biomedical research that has had a transformative effect on the practice of medicine, science, and the lives and health of people all over the world,” said Alfred Sommer, Chair of the Foundation’s Board of Directors. “This year’s awards are no exception, honoring fundamental biological discoveries, life-saving surgical techniques and scientific statesmanship of the highest order.”

Sheetz (Columbia University, New York), Spudich (Stanford University School of Medicine, Palo Alto, California), and Vale (University of California, San Francisco) will receive the 2012 Albert Lasker Basic Medical Research Award for discovering machine-like cytoskeletal motor proteins that transport cargoes within cells. Calne (University of Cambridge, England) and Starzl (University of Pittsburgh Medical Center) will receive the 2012 Lasker~DeBakey Clinical Medical Research Award for developing life-saving liver transplantation techniques. Brown (Carnegie Institution for Science, Baltimore) and Maniatis (Columbia University, New York) will receive the Lasker~Koshland Special Achievement Award in Medical Science

for making fundamental discoveries about the nature of genes while fostering the careers of young scientists and spreading cutting-edge technologies throughout the global scientific community.

"The intellectual rigor and perseverance exhibited by this year's laureates greatly extended the medical research community's knowledge of cell biology, led to new surgical techniques that prevented many deaths, and provided a deeper understanding of genetics across generations of scientists worldwide," said Maria Freire, President of the Lasker Foundation. "With determination and verve, they boldly pursued new paths of inquiry that have benefited all mankind."

"In granting the Basic and Clinical awards, the Lasker Foundation recognizes the work of daring and determined scientists who revealed the awe-inspiring mechanics of the tiny motor proteins that drive the cellular world and it honors the work of surgeon-scientists who saved tens-of-thousands of lives by overcoming the once insurmountable obstacles of liver transplantation," said Joseph L. Goldstein, Chair of the Lasker Medical Research Awards Jury.

"In recognizing Donald Brown and Thomas Maniatis, the Foundation honors two scientists who through their visionary experimentation and technical virtuosity — along with their deep love of science and unselfish collegial enthusiasm — played crucial roles in establishing modern molecular biology as we know it today," Goldstein said.

Michael Sheetz, James Spudich, and Ronald Vale for Discoveries Concerning Motor Proteins

The 2012 Albert Lasker Basic Medical Research Award honors Michael Sheetz, 65, James Spudich, 70, and Ronald Vale, 53, for opening up the study of cytoskeletal motor proteins, whose activities are essential for numerous processes, such as muscle contraction, intracellular movement, and cell locomotion. The trio's discoveries have spurred research on new treatments aimed at cardiac problems, neurological disorders, and cancer.

Movements within cells have intrigued scientists for centuries. In 1774, microscopist Bonaventura Corti showed that even tiny units of life bustle with movement when he observed "torrents" of fluid inside plant cells. By the mid-1900s, researchers witnessed chromosome separation during cell division and discovered that material travels long distances within nerve cells. Studies of biological movement zeroed in on muscle contraction, an activity that relies on the proteins actin and myosin. But in the latter half of the last century, investigators found themselves stymied because they lacked the experimental techniques needed to piece together the complex mechanisms underlying cellular movement.

By developing systems that allow scientists to reconstitute motility from its constituent parts in the laboratory, Sheetz, Spudich, and Vale established ways to study molecular motors in detail. These accomplishments provided powerful tools that investigators worldwide began using to probe the process of intracellular and muscular movement. Sheetz, Spudich, and Vale harnessed the assays they invented to discover the motor protein kinesin and unveiled key aspects of the process by which molecular engines convert chemical energy into mechanical work.

Today we know that humans have dozens of myosins and kinesins. The proteins differ in their mechanistic details, but they share characteristics that provoke movement. The miniscule motors underlie numerous vital processes and hold promise as therapeutic targets. For example, defects in cardiac myosin can produce a leading cause of death in young athletes called hypertrophic cardiomyopathy, and the landmark achievements

of Vale, Spudich, and Sheetz are driving drug-discovery efforts aimed at cardiac problems as well as cancer. Through their vision, ingenuity, and persistence, Sheetz, Spudich and Vale opened the study of molecular motors and illuminated crucial features of a fundamental biological process.

Roy Calne and Thomas E. Starzl Honored for Liver Transplantation

The 2012 Lasker~DeBakey Clinical Medical Research Award honors Roy Calne, 81, and Thomas E. Starzl, 86, for developing liver transplantation, an intervention that has restored normal life to thousands of patients with end-stage liver disease. Through their systematic and relentless efforts, Calne and Starzl created a medical procedure that most physicians dismissed as a dream. Some of Starzl's and Calne's early patients — originally diagnosed with untreatable and lethal diseases — are still thriving today, decades after their surgeries.

As Starzl's and Calne's medical careers were getting under way in the late 1950s, serious liver diseases were fatal, and treatment prospects looked bleak. The idea of transplanting any organ from one person to another seemed foolish to most experts. Rejection — the process by which a body's immune system attacks unfamiliar tissue — posed a seemingly insurmountable obstacle. In terms of surgical technique, the liver presents a particular daunting challenge given its mass of wormlike vessels in which a tiny nick can trigger massive blood loss.

Despite these barriers, the researchers persevered. Through their independent and complementary efforts, Starzl and Calne reached their goal. In 1983, a conference convened by the U.S. Surgeon General concluded that liver transplantation had progressed past "experimental procedure" status into a "clinical service." The medical community finally accepted the procedure, which centers worldwide rushed to offer.

Today, liver transplantation has taken hold across the world, and some patients even survive long term without medication. Those benefitting include adults who have sustained liver scarring — or cirrhosis — from hepatitis C infection and children who have biliary atresia in which the bile duct between the liver and the small intestine is blocked or absent. More than half of the liver-transplant patients who underwent surgery in 1998 were alive a decade later, and in 2009, almost 50,000 Americans carried a transplanted liver. Calne and Starzl persevered on a bold course against a backdrop of doubt. By following glints of hope, they have brought new life to tens-of-thousands of individuals.

Donald D. Brown and Tom Maniatis for Creating the Tools Enabling Modern Molecular Biology and Showing Exceptional Leadership and Citizenship in Biomedical Science

The Lasker~Koshland Award for Special Achievement in Medical Science honors Donald D. Brown, 80, and Tom Maniatis, 69, for numerous discoveries concerning the nature of genes and for exceptional leadership and citizenship in biomedicine. These two visionaries have brought not only seminal findings but also novel experimental techniques to the field of genetics. In addition, each one has gone to extraordinary efforts to support the research enterprise. Their willingness to follow their curiosity, share findings, and support fellow scientists has significantly enhanced medical science.

Brown started blazing trails in the nascent field of developmental genetics during the mid-1950s by studying frog embryos. He figured out the biological function of an organelle called the nucleolus, co-discovered a process called gene amplification, which later led to an understanding of runaway growth of drug-resistant cancer cells, and made key observations about how cells control gene activity. Brown's work help paved the way toward the recombinant DNA era, at which point, Maniatis harnessed and applied the new tools to create

a set of extraordinarily powerful techniques that have driven key advances in molecular biology — and enabled him to make numerous landmark discoveries.

Beyond their remarkable breakthroughs, Brown and Maniatis advanced the field of genetic study through their collegial approach to research and commitment to the scientific enterprise. Brown founded and led the Life Sciences Research Foundation (LSRF), an inventive partnership that began with his idea that pharmaceutical companies would want to support the academic research that made their drug-discovery efforts possible. LSRF has now provided prestigious postdoctoral fellowships to promising investigators for 30 years. Maniatis, building on his own pioneering work, created the quintessential Molecular Cloning manual and thus spread revolutionary technologies into a multitude of laboratories across the world. Through their relentless pursuit of the questions that fascinated them and their willingness to help their peers as well as students, they have achieved success and have set a high of exemplary behavior for members of the biomedical research community.

Additional information:

The Albert and Mary Lasker Foundation fosters the prevention and treatment of disease and disabilities by honoring excellence in basic and clinical science, by educating the public, and by advocating for support of medical research. Founded in 1942, the Lasker Foundation presents the prestigious Lasker Awards, which recognize the world's leaders in basic and clinical medical research, and individuals with outstanding public service. For much of the 20th Century, the Foundation was led by Mary Lasker, who was America's most prominent citizen-activist for public investment in medical research. She is widely credited with motivating the White House and the Congress to greatly expand federal funding for medical research, particularly through the National Institutes of Health.

About the Lasker Awards: The Lasker Awards are among the most respected science prizes in the world. Recipients of the Lasker Medical Research Awards are selected by a distinguished international jury chaired by Joseph L. Goldstein, recipient of the 1985 Lasker Award for Basic Medical Research and the Nobel Prize in Medicine. Lasker Laureates receive a citation highlighting their achievements and an inscribed statuette of the Winged Victory of Samothrace, the Lasker Foundation's traditional symbol representing humanity's victory over disease, disability, and death. Eighty-one Lasker laureates have received the Nobel Prize, including 29 in the past two decades. More details on the Lasker Award recipients, the full citations for each award category, video interviews and photos of the awardees, and additional information on the foundation are available at www.laskerfoundation.org.