november 20, 2025

46th annual edison patent awards

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dear friends,

It is my great privilege to welcome you to the 46th annual Edison Patent Awards, a celebration of the innovators who are *Powering the Future Through Invention* right here in New Jersey. In our lives, there has been no greater moment to celebrate science and innovation, and to recognize what everyone in New Jersey's research community stands for.

From the lightbulb to life-saving medicines, innovation has always been part of New Jersey's DNA. Our state is home to world-class universities, global research companies, and generations of scientists and engineers who have transformed the way we live and work. That legacy continues tonight as we honor the brilliant minds whose discoveries are shaping the future and strengthening New Jersey's position as the nation's Innovation State.

This year's honorees include patents representing 13 organizations and universities, 35 inventors, and six distinguished special award recipients. Together, they reflect the creativity, collaboration, and commitment to excellence that define New Jersey. From Edison's Menlo Park laboratory to today's cutting-edge research centers, our state has always led the way in discovery.

The Edison Patent Awards remind us that innovation begins with people—teams who question deeply, dream boldly, and persist in finding new ways to heal, connect, and sustain our world. It also begins with place. New Jersey's unique ecosystem, where industry, academia, and government work hand in hand, creates the environment that allows innovation to thrive.

As we celebrate tonight's awardees, we also celebrate the future they are helping to build for New Jersey. The breakthroughs recognized this evening—from health care to sustainability to communications—are fueling our state's economy, improving lives, and inspiring the next generation of inventors.

On behalf of the Research & Development Council of New Jersey, thank you to our sponsors, honorees, and the many organizations that make this celebration possible. Together, we are not only honoring invention but ensuring that New Jersey remains the place where innovation begins and the future takes shape.

Virginie Maillard

Virginie Maillard
Chairwoman, Research & Development Council of New Jersey
Head of Global Research in Simulation and Digital Twin and Head of Research in US, Siemens Foundational Technologies

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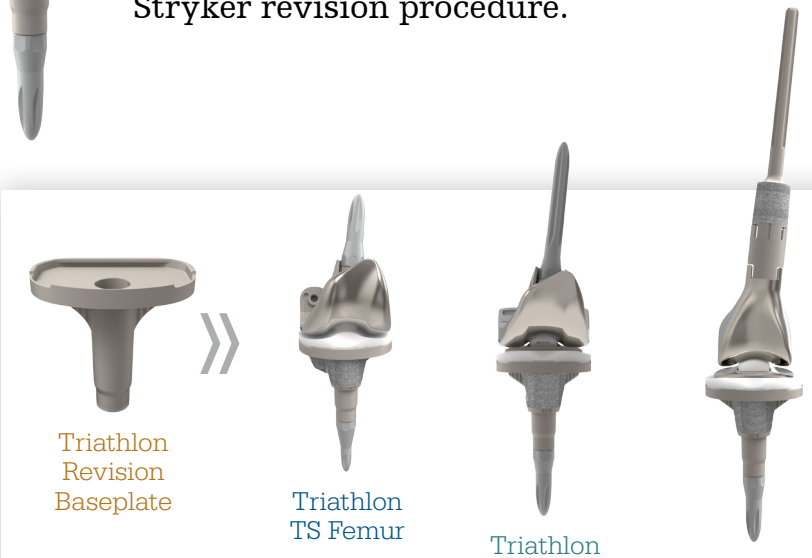

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PHILIP D. MURPHY
GOVERNOR

November 20, 2025

Dear Friends,

It is my pleasure to welcome all those gathered for the 46th Annual Edison Patent Awards ceremony and reception, presented by the Research & Development Council of New Jersey (RDNJ).

Since its inception, RDNJ has remained committed to its mission of fostering collaboration amongst leaders in industry, academia, and government to drive New Jersey's innovation economy. New Jersey recognizes and applauds our distinguished STEM leaders, especially our State's educators, for their tireless dedication and steadfast commitment to inspiring and guiding STEM learners and professionals toward successful and meaningful career paths.

This event serves as an opportune time to recognize the extraordinary work of the RDNJ and the scientists, engineers, and inventors who are Powering the Future Through Invention. As Governor, I commend the RDNJ, its leadership, and its members for their hard work and endless contributions across the Garden State to promote and support STEM education and our innovative initiatives.

I would like to take the time to recognize this year's honorees: Robert Cohen with the reception of the Science & Technology Medal; John Crowley with the reception of the Visionary Award; Dr. Brian Strom with the reception of the Educator of the Year Award; Dr. Craig Arnold with the reception of the Catalyst Award; Nathaniel Banks and Yidian Liu with the reception of the Emerging Tech Award; and all of the 2025 Edison Patent Awardees for their exceptional breakthroughs in medicine, technology, defense, and sustainability. Each of today's honorees have demonstrated a level of commitment to their profession and community that is truly worthy of special recognition.

Best wishes for a successful and memorable event.

My very best,

Philip D. Murphy
Governor

edison patent award winners

Company	Category	Patent Name
Avantor and Amgen	Biotechnology	Alternate Detergents for Viral Inactivation
Merck & Co., Inc.	Pharmaceutical	Solid Forms of Ceftolozane and Processes for Preparing
MTF Biologics	Biomaterials	Tissue-Derived Tissuegenic Implants, and Methods of Fabricating and Using Same
New Jersey Institute of Technology	Technology Transfer	Method for 3D Printing a Thermally Curable Polymeric Ink
Nokia Bell Labs	Telecommunications	Topology Aware Cache Cooperation
Princeton University	Consumer	Methods, Devices and Compositions for Preserving Human Milk
Rowan University	Medical Diagnostics	Method for Detecting Radiological Progression in Cancer Surveillance
Rutgers, The State University of New Jersey	Emerging Technology	Light-Field Messaging to Embed a Hidden Message Into a Carrier
Rutgers, The State University of New Jersey	Industrial Processes	Methods for Low Energy Inorganic Material Synthesis
Siemens	Information Technology	Supervisory Device With Deployed Independent Application Containers for Automation Control Programs
Stryker	Medical Transfer	Modular Hinge Knee Prosthesis and Improvements of Same
U.S. Army	Defense	Distributed Geospatial Communications System for UAV Monitoring

	Patent No.	Inventors
	U.S. 2022/0106573 A1	Gabriella Perell, Rosa Daneshvar and Martina Kopp and recognizing Nandu Deorkar and Jungmin Oh for contributions to the patent
	U.S. 11,542,279 B2	Kevin Matthew Maloney, Eric M. Sirota, Richard J. Varsolona, Donald R. Gauthier, Jr., and Hong Ren
	U.S. 9,352,003 B1	Eric Semler, Alex Callahan, Joed Canales, Katrina Carroll, Anouska Dasgupta, and Roman Shikanovich
	U.S. 12,186,986 B2	Murat Guvendiren, Chya-Yan Liaw, and Andrew House
	U.S. 8,417,816 B2	Jairo O. Esteban, Andre Beck, Volker Hilt, and Ivica Rimac
	U.S. 12,239,142 B2	Justin E. Silpe and Bonnie L. Bassler
	U.S. 12,198,334 B2	Nidhal Bouaynaya and Hassan Fathallah-Shaykh
	U.S. 11,790,475 B2	Eric Wengrowski and Kristin Dana
	U.S. 11,332,847 B2	Richard E. Riman and Daniel Kopp
	E.P. 3 963 447 B1	Francesco Bleve and Holger Strobel
	U.S. 10,548,735 B2	Damon J. Servidio
	U.S. 10,999,696 B1	Paul Manz

special recognition

science & technology medal

Robert Cohen

Vice President, Innovation and Technology,
Orthopaedics Group, Stryker

As Vice President of Innovation and Technology for Stryker's Orthopaedics Group, Robert Cohen leads the development of the group's technical strategy across digital, AI, surgical robotics, guidance, healthcare data access, and talent growth. He also serves as a thought leader and company spokesperson, representing Stryker's innovation at industry conferences, investor forums, and in media engagements. Additionally, Robert chairs AdvaMed's Digital Health Technology Board, helping to guide national policy and advocacy efforts around digital health, reimbursement, and data access.

With over 40 years of experience in the medical device industry, Robert has been at the forefront of orthopedic innovation, contributing to advancements in joint replacement and spinal implants, novel biomaterials, 3D printing technology, and robotics. His extensive expertise helps to ensure the organization continues to expand Stryker's mission to improve patient lives.

Prior to his current role, Robert held technical leadership positions at Implex Corp, Zimmer, Mako Surgical, Chief Technology Officer for Stryker's Joint Replacement division, and President of Stryker's Digital, Robotics, and Enabling Technologies organization. He holds more than 25 patents and frequently speaks at medical education conferences globally. He also serves on numerous boards and is the Chair of the Board of Trustees of the New Jersey Institute of Technology.

Robert is a Fellow of the American Institute for Medical and Biological Engineering and a Member of the National Academy of Inventors. He was recently elected to the prestigious National Academy of Engineering (NAE), one of the highest professional distinctions in engineering.

Robert earned his bachelor's degree in mechanical engineering and master's degrees in both engineering management and mechanical engineering (specializing in biomechanics) from the New Jersey Institute of Technology.

visionary award

John F. Crowley

President and CEO, Biotechnology Innovation Organization (BIO)

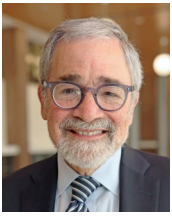
John F. Crowley is the President and CEO of the Biotechnology Innovation Organization (BIO), the world's largest biotechnology advocacy organization. Crowley, a longtime BIO board member, was most recently the Founder and Executive Chairman of Amicus Therapeutics, a global biotechnology company focusing on developing treatments for rare genetic diseases. He served as Chief Executive Officer of Amicus from 2005 to 2022.

John's decades of biotech experience and deep passion for the field have made him a strong supporter of policies that empower innovation, enable entrepreneurship, and put people and patients first. His involvement with biotechnology stems from the 1998 diagnosis of two of his children with Pompe disease — a severe and often fatal neuromuscular disorder. In his drive to find a cure for them, John left his position at Bristol Myers Squibb and became an entrepreneur as the Co-founder, President and CEO of Novazyme Pharmaceuticals. In 2001, Novazyme was acquired by Genzyme Corporation, where John continued to play a lead role in the development of a drug for Pompe disease.

John and his family have been profiled numerous times on the front page of The Wall Street Journal and are the subjects of a book by Pulitzer Prize-winning journalist Geeta Anand, The Cure. The 2010 major motion picture, *Extraordinary Measures*, is inspired by the Crowley family journey. John is the author of the memoir: *Chasing Miracles: The Crowley Family Journey of Strength, Hope, and Joy.*

John served as a commissioned officer in the U.S. Navy Reserve from 2005–2016. His assignments included service with the Joint Special Operations Command (JSOC), Naval Special Warfare Development Group (NSWDG), and the CIA. He attended the U.S. Naval Academy and earned degrees from Georgetown, Notre Dame, and Harvard.

special recognition



educator of the year

Brian L. Strom, MD, MPH

Chancellor, Rutgers Biomedical and Health Sciences (RBHS) and Executive Vice President for Health Affairs, Rutgers University

Brian L. Strom, MD, MPH, is the Chancellor of Rutgers Biomedical and Health Sciences (RBHS) and Executive Vice President for Health Affairs at Rutgers University. Under his leadership, RBHS/Rutgers Health unites eight schools and seven centers, integrating most of the former University of Medicine and Dentistry of New Jersey with Rutgers' health-focused units to advance patient care, education, research, and community health.

Prior to Rutgers, Dr. Strom was Executive Vice Dean for Institutional Affairs at the Perelman School of Medicine at the University of Pennsylvania, where he was the Founding Chair of the Department of Biostatistics and Epidemiology, Founding Director of both the Center for Clinical Epidemiology and Biostatistics and the Graduate Program in Epidemiology and Biostatistics. He earned a BS from Yale, an MD from Johns Hopkins, and trained in internal medicine and clinical pharmacology.

Dr. Strom is a global leader in pharmacoepidemiology, recognized for pioneering work using large databases to study drug safety and effectiveness. His research has influenced major policy changes, including national guidelines on antibiotic use. He has authored over 865 papers and 18 books, secured more than $116 million in research funding, and delivered over 454 invited lectures worldwide.

A nationally recognized educator, Dr. Strom has led NIH-funded training programs that have produced hundreds of clinical researchers. He was instrumental in founding the International Clinical Epidemiology Network (INCLEN), training clinicians across the developing world.

Dr. Strom has served on boards and advisory committees for the NIH, FDA, and major professional societies. His numerous honors include election to the National Academy of Medicine, the ACP's John Phillips Memorial Award, and fellowships in AAAS and Sigma Xi. In 2022, he received the Heart of BioNJ Award for leadership during the COVID-19 pandemic and was named to the New Jersey Innovative 100 in 2024.

catalyst award

Craig B. Arnold, Ph.D.

Vice Dean for Innovation and University Innovation Officer, Princeton University

Craig B. Arnold, Princeton University's vice dean for innovation since 2022, became Princeton's first University innovation officer with the establishment of the Office of Innovation on July 1, 2024. The office, which he heads, provides academic leadership for innovation and entrepreneurship activities across campus.

From 2015 to 2022, Arnold was director of the Princeton Materials Institute.

As the Susan Dod Brown Professor of Mechanical and Aerospace Engineering, he leads a vibrant research program that ranges from basic science to applied technology aimed at developing a deeper understanding of materials synthesis and processing in areas including advanced manufacturing, energy storage and conversion, and optics and photonics.

In 2017, Arnold received an Edison Patent Award from the Research & Development Council of New Jersey for the creation of an adjustable lens that focuses light in response to sound waves. The tunable acoustic gradient (TAG) lens is now used in many industrial and research applications including robotics, machine vision, industrial metrology and ultra-high precision microscopy.

Arnold holds 17 granted patents and is the co-founder of four companies and one non-profit organization. TAG Optics Inc. developed the TAG lens and was later acquired by a major precision instrument manufacturer.

He and co-authors have published over 200 scientific papers and book chapters. He serves as a member of the National Research Council's National Materials and Manufacturing Board and is a fellow of the Society of Photo-Optical Instrumentation Engineers (SPIE) and the Optical Society of America.

Arnold has received a number of prominent industry awards for his technology including R&D World magazine's R&D 100 award, the SPIE Prism Award for Photonics Innovation, and Vision Systems Design magazine's Innovators Award.

Arnold holds a Ph.D. in experimental condensed matter physics from Harvard University and a B.S. from Haverford College. He joined the Princeton faculty in 2003.

special recognition

emerging tech award

Nathaniel Banks

Co-Founder and Chief Executive Officer,
PolyGone Systems

Nathaniel Banks is the Co-Founder and CEO of PolyGone Systems, where he pioneers the development of novel technologies for microplastic filtration and removal. Under his leadership, PolyGone launched the world's first dedicated microplastics removal pilot at the Atlantic County Utilities Authority (ACUA), where the company's inaugural treatment system has removed over 540 million microplastics since its launch in September 2024. Nathaniel oversees the company's research and development strategy alongside its lead scientists, and serves as Principal Investigator and lead author for all grant applications. To date, he has secured over $2.5 million in non-dilutive funding from institutions including Princeton University, NJCSIT, NJEDA, the National Science Foundation (NSF), and the National Oceanic and Atmospheric Administration (NOAA).

Yidian Liu

Co-Founder and Chief Operating Officer,
PolyGone Systems

Yidian Liu is the Co-Founder and COO of PolyGone Systems, Inc. and a Forbes 30 under 30 Fellow. Yidian oversees company operations, resource accrual, and team management. Since 2021, Yidian has helped secure over $2.5 million in state and federal financing for PolyGone from organizations including NJCSIT, NJEDA, the NSF, and NOAA and approximately $4.36 million in venture capital investment.

Yidian is a trained designer with a Master's degree in Architecture from Princeton University and a Bachelor's degree from Syracuse University. She brings over a decade of experience in building systems, construction, and sustainable design.

New Jersey Institute of Technology proudly celebrates Stryker executive and **NJIT Alumni and Board Chair Robert C. Cohen** for receiving the Science and Technology Medal and **NJIT Associate Professor Murat Guvendiren** for receiving a 2025 Edison Patent Award.

This dual recognition underscores the exceptional spirit of innovation that runs through our entire community, from our students and faculty to our most accomplished alumni.

RowanUniversity

Proud to honor our own Nidhal Bouaynaya among the 2025 Edison Patent Award innovators.

Grateful to celebrate the advances made possible by all Edison honorees' work.

rowan.edu

Nidhal C. Bouaynaya, Ph.D.

Associate Vice President for Artificial Intelligence; Director, Machine & Artificial Intelligence VR Center

explore the 2025 edison patent award winners

Tonight's ceremony celebrates the innovators who are Powering the Future Through Invention right here in New Jersey — brilliant minds whose discoveries are shaping our state's future and strengthening its position as the nation's Innovation State.

Continue celebrating their work by visiting **rdnj.org/2025patentawards** to:

- Watch the tribute films honoring tonight's award-winning inventions
- Learn how these breakthroughs are shaping our world
- Uncover the stories behind the innovators who made them possible

Together, we're honoring invention — and ensuring that New Jersey remains the place where innovation begins and the future takes shape.

Scan the QR code to explore this year's Edison Patent Awards.

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