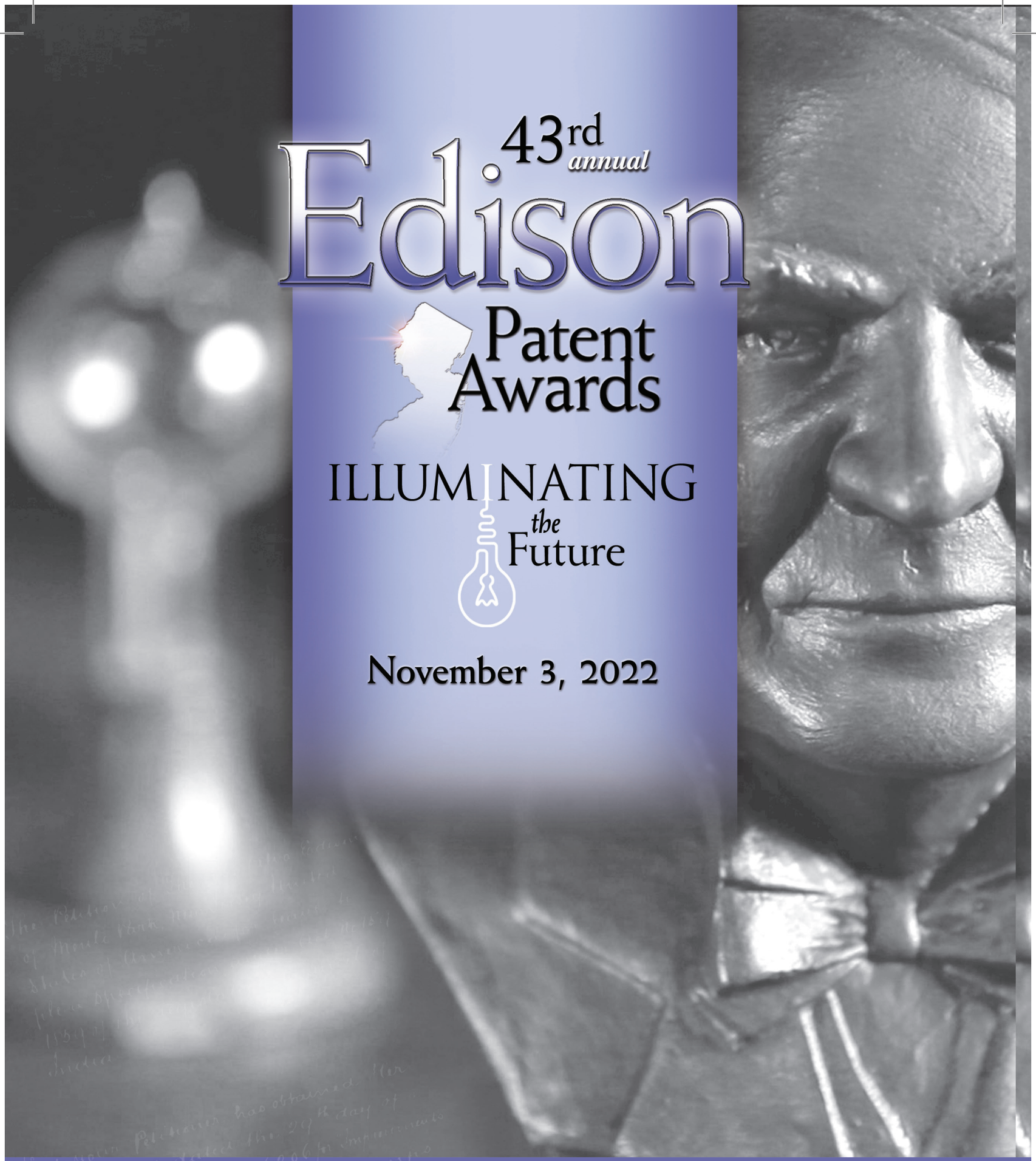

43rd annual Edison Patent Awards

ILLUMINATING the Future

November 3, 2022

RESEARCH & DEVELOPMENT COUNCIL OF NEW JERSEY

SPECIAL THANKS TO OUR SPONSORS

RESEARCH & DEVELOPMENT COUNCIL OF NEW JERSEY

Inventor

Janssen Pharmaceutical Companies of Johnson & Johnson

MERCK INVENTING FOR LIFE

COLGATE-PALMOLIVE

kulite

stryker

Director

KEAN UNIVERSITY

Bristol Myers Squibb

NJIT New Jersey Institute of Technology

RUTGERS 1766

SIEMENS Healthineers

SIEMENS

PRINCETON UNIVERSITY

DEAR FRIENDS,

At our 43rd Edison Patent Awards Ceremony this year we honor New Jersey research organizations and inventors from across the state under the theme, "Illuminating the Future." We celebrate 14 organizations and 57 researchers with the 2022 Edison Patent Award. We also highlight three important individuals: the Science & Technology Medal will go to Nobel Prize winner and Princeton Professor Dr. David MacMillan; the Chairman's Award will be awarded to New Jersey Health Commissioner Judith Persichilli; and, New Jersey Senator Ruiz will be named the Council's 2022 Educator of the Year. Congratulations to you all!

The Research & Development Council of New Jersey created the Edison Patent Award to honor the tremendous legacy of Thomas Alva Edison. Edison was a trailblazer, the father of the modern day method of research and development. His footprint in New Jersey began over 135 years ago and yet he is still looked at as the north star of invention across the world. Even with all of the "firsts" that Edison can claim—the phonograph, the incandescent light bulb, the alkaline battery—it was he who said, "I start where the last man left off."

Tonight we honor almost 60 inventors, all who started where the last man/woman left off; and in New Jersey, that's an incredible place to start. New Jersey can boast of the most scientists and engineers per square mile in the world. We are home to incredible research companies and universities, all of which are contributing to innovation across the globe. And what started with Edison right here in New Jersey, continues with the winners here tonight. Inventions in the fields of aerospace, medical devices, defense, pharmaceuticals, and energy, to name a few, are part of the amazing Edison Patent Award Class of 2022.

The Council's vision is: Growing STEM. Advancing innovation. Impacting the world. Each and every one of you here tonight contributes to the realization of this vision and we thank you for that. We're proud of your work and want you to know that its important to us, its important to New Jersey, and its important to the world. You are continuing New Jersey's legacy of innovation and illuminating the future for inventors to follow.

Thank you to our 2022 Edison Patent Award Ceremony sponsors, our winners, and R&D Council members and staff. Without question, New Jersey's future in innovation is bright!

Cheers!

Kevin Campos, Ph.D.
Chairman, Research & Development Council of New Jersey
VP, Head of Process Research & Development at Merck

2022 EDISON PATENT

ORGANIZATION/INVENTORS	PATENT	CATEGORY
BASF *David Weinberger, Wolfgang Ruettinger, Pascaline Tran, Laif Alden, Ting Gu, Feng Zhao, Anju Shi, Nils Lawrenz and Lukas Wengeler*	**Manganese Oxide Based Catalyst and Catalyst Device for the Removal of Formaldehyde and Volatile Organic Compounds** U.S. Patent 11,203,009	ENVIRONMENTAL
Celularity Inc. *Robert J. Hariri M.D., Ph.D.*	**Method of Collecting Placental Stem Cells** U.S. Patent 10,113,146	EMERGING THERAPIES
Colgate-Polmolive Company *Jun Wang*	**Dimensionally Stable Recyclable Plastic Package** U.S. Patent 10,889,093	CONSUMER
Ethicon, Inc., a Johnson & Johnson Company *Jason T. Perkins, Jesse G. Nawrocki, Jason Huff and David C. Lindh, Sr.*	**End Effector for Wound Closure Device** U.S. Patent 10,336,001	MEDICAL DEVICE
Kulite Semiconductor Products, Inc. *Martin A. Sanzari, Ph.D.*	**Thermally Stable High Temperature Pressure and Acceleration Optical Interferometric Sensors** U.S. Patent 9,810,594	AEROSPACE
Merck & Co., Inc. *Carl A. Baxter, Edward Cleator, Faye Sheen, Shane W. Krska, Gavin Stewart, Neil Strotman, Debra J. Wallace and Timothy Wright*	**Process for the Preparation of an Orexin Receptor Antagonist** U.S. Patent 9,108,959	PHARMACEUTICAL
New Jersey Institute of Technology *Wen Zhang and Wanyi Fu*	**Antifouling Membrane Filtration System** U.S. Patent 10,583,402	EMERGING TECHNOLOGY

AWARD *Winners*

ORGANIZATION/INVENTORS	PATENT	CATEGORY
Princeton Plasma Physics Laboratory *Hantao Ji, Adan Cohen, Phil Efthimion, Eric Edlund and Erik Gilson*	**Advanced Liquid Centrifuge Using Differentially Rotating Cylinders and Optimized Boundary Conditions, and Methods for the Separation of Fluids** U.S. Patent 10,300,410	INDUSTRIAL PROCESSES
Rowan University *Anthony Lowman, Erik Brewer and Nigel Smith*	**Cross-Linked Hydrogels and Method of Making the Same** U.S. Patent 10,507,264	BIOMATERIALS
Rutgers, The State University of New Jersey *Victor Shengkan Jin and Juan-Carlos Collantes*	**Nuclease-Independent Targeted Gene Editing Platform and Uses Thereof** U.S. Patent 11,479,793	BIOTECHNOLOGY
Rutgers, The State University of New Jersey *Francisco Javier Diez-Garias and Marco M. Maia*	**Unmanned Air and Underwater Vehicle** U.S. Patent 10,315,762	DEFENSE
Siemens Healthineers *Florin-Cristian Ghesu, Eli Gibson, Bogdan Georgescu, Sasa Grbic and Dorin Comaniciu*	**Medical Image Assessment with Classification Uncertainty** U.S. Patent 11,275,976	MEDICAL HEALTH
Siemens Technology *Chao Yuan, Amit Chakraborty, Holger Hackstein and Leif Wiebking*	**Discriminative Hidden Kalman Filters for Classification of Streaming Sensor Data in Condition Monitoring** U.S. Patent 10,565,080	ENERGY
Stryker *Nicholas Nai Guang Dong, Matthew P. Poggie, Robert W. Klein, Eric Jones, Christopher J. Sutcliffe, Joseph Robinson, Dan Jones, Lewis Mullen and Robin Stamp*	**Surface Modified Unit Cell Lattice Structures for Optimized, Secure, Freeform Fabrication** U.S. Patent 9,180,010	ENABLING TECHNOLOGY

SCIENCE & TECHNOLOGY MEDAL

David W.C. MacMillan, Ph.D.

2021 Nobel Laureate in Chemistry
"For the Development of Asymmetric Organocatalysis"

Dave MacMillan was born in Bellshill, Scotland and received his undergraduate degree in chemistry at the University of Glasgow, where he worked with Dr. Ernie Colvin. In 1990, he began his doctoral studies under Professor Larry Overman at the University of California, Irvine, then assumed a postdoctoral position with Professor Dave Evans at Harvard University (1996). His independent career began at University of California, Berkeley, July 1998 and moved on to Caltech in June 2000 (Earle C. Anthony Chair of Organic Chemistry). In 2006, MacMillan assumed the position of James S. McDonnell Distinguished University Professor at Princeton University serving as Department Chair from 2010-15.

MacMillan received several prestigious awards including: the Nobel Prize (2021), the Centenary Prize (Royal Society 2020), Nagoya Medal (Japan 2019), ACS Somorjai Catalysis Award (2018), Noyori Prize, Japan (2018), Janssen Pharmaceutical Prize, Belgium (2016), Max Tischler Prize Harvard (2016), Ernst Schering Award in Biology, Chemistry and Medicine, Germany (2015), ACS Harrison Howe Award (2014). In 2018, MacMillan was elected to the National Academy of Sciences, and in 2012 he became a Fellow of the Royal Society (FRS) and a Fellow of the American Academy of Arts and Sciences. MacMillan helped launch and was editor-in-chief of Chemical Sciences (2009-1014) and was Chair of the NIH Study Section SBCA (2014-2017).

MacMillan is a scientific consultant with Pfizer (worldwide), Merck (worldwide), Amgen (worldwide), Biogen Biopharma, Abbvie Research Laboratories, Johnson & Johnson Pharmaceuticals, UCB-Celtech, Constellation Pharmaceuticals, Takeda Pharmaceuticals and Gilead Research Laboratories. Dave is also a member of the scientific advisory boards of Firmenich (Switzerland), Kadmon Pharmaceuticals (US), and a permanent member of the RSRC board at Merck Research Laboratories. Based on a gift of $45 million from Princeton University, Eric Schmidt (Google), Tony Evnin (Venrock), MacMillan launched the Princeton Catalysis Initiative (PCI), and is now director.

CHAIRMAN'S AWARD

Judith M. Persichilli, R.N., B.S.N., M.A.

Commissioner, New Jersey Department of Health

Judith M. Persichilli, R.N., B.S.N., M.A., began serving as Acting Commissioner of Health on August 5, 2019. She was confirmed by the State Senate on January 9, 2020.

She has been alongside Gov. Murphy leading the state's response to the COVID-19 pandemic. Along with the response to this once-in-a century health emergency, the Department of Health under her leadership works to protect and improve the health of New Jersey residents. The Department's priorities include reducing health disparities, improving maternal health, addressing the overdose epidemic, and increasing access to health care.

Prior to leading the department, Ms. Persichilli served as the Acting Chief Executive Officer (CEO) of University Hospital in Newark.

Ms. Persichilli was president emerita of CHE Trinity Health, the health ministry formed in May 2013 by the consolidation of Catholic Health East and Trinity Health of Livonia, MI. She previously served as the interim president and chief executive officer (CEO) of CHE Trinity Health. Prior to this appointment, Ms. Persichilli was President and CEO of Catholic Health East.

Ms. Persichilli received her nursing diploma from the St. Francis Hospital School of Nursing, a Bachelor of Science in Nursing summa cum laude from Rutgers University, and a Master of Arts in Administration summa cum laude from Rider University. She also received an honorary Doctor of Health degree from Georgian Court University in 2009. In May 2011, Ms. Persichilli received an honorary Doctor of Humane Letters from Sacred Heart University in Fairfield, CT.

EDUCATOR OF THE YEAR

The Honorable M. Teresa Ruiz

Senate Majority Leader, New Jersey State Senate

In 2007, Senator Ruiz became the first Puerto Rican elected to the Senate. Currently Senate Majority Leader, Senator Ruiz is the highest-ranking Latina legislator in state history. She previously served as chair of the Senate Education Committee. Throughout her time in the Senate, she has fought for equity in educational spaces, acting as the leading force to expand access to early childhood education throughout the state. She also spearheaded the law to build on the federal free and reduced meal program so that all students who qualify could receive breakfast and lunch at no cost. She has sponsored laws to increase diversity within school curriculum and strengthen the Amistad Commission.

The senator has also focused on expanding employment opportunities for underserved communities. She sponsored a bill package, which was enacted, to expand apprenticeship programs in the state and increase teacher diversity. This package created more accessible pathways to careers in high growth industries by incentivizing business participation in apprenticeship programs. She has taken a targeted approach at mitigating the barriers which prevent people of color from obtaining full time teaching positions, advancing legislation to establish educator apprenticeship programs, provide loan redemption opportunities and expand alternate route programs.

Senator Ruiz was also the prime sponsor of a 2020 law to allow candidates to use campaign funds to cover childcare expenses incurred due to campaign activities.

The Senator received a bachelor's degree from Drew University. She was a 2010 Aspen Institute Rodel Fellow, and a graduate of the Harvard Kennedy School's Senior Executives in State and Local Government Program. She is vice chair of the Essex County Democratic Party and is deputy chief of staff to Essex County Executive Joseph N. DiVincenzo, Jr. Among all of her accomplishments, the title she holds most dear is that of a mother.

R&D COUNCIL

STEM Education Programs

With your support, we can engage NJ's next generation of scientists, engineers, and innovators. Funds will go to support the Governor's STEM Scholars and the NJ STEM Pathways Network.

Governor's STEM Scholars

Secures the state's STEM talent pipeline by building relationships between the state's high-achieving high school and college students and New Jersey's STEM economy. Through a series of conferences, field trips, and research opportunities, Scholars can build connections through mentors, advisors, and internships with the state's leading STEM organizations within private industry, academia, and government.

NJ STEM Pathways Network

Statewide network made up of over 500 STEM leaders and includes six regional STEM ecosystems which are cross-sector collaborations made up of school districts, employers, nonprofits and government entities that implement high-quality STEM programs. The ecosystems are part of an international collaboration of nearly 100 ecosystems called the STEM Ecosystem Community of Practice.

LEARN HOW YOU CAN SUPPORT NJ STEM EDUCATION

**Descriptions on donation page are examples of how funds may be spent to support STEM education in NJ.*

The Edison Patent Award bust was created by **Robert R. Toth, founder of RT-DESIGNS USA.** His sculptures and paintings are of a diverse variety that occupy his studio. These and other creative designs present a variety of themes, some of which are featured in this presentation, which in essence is a part of his gallery.

Toth who grew up in New Jersey, graduated from the Newark School of Fine and Industrial Art, where he majored in Fine Art. His post graduate studies were at the Art Students League, New York City, and the Cape School of Art with Henry Hensche, Provincetown, Mass. He has worked in industry creating architectural renderings and designing trophies. For several years he was on the design staff with Congoleum Industries. In 1975 he established the "Island heights Studio of Art" and **RT-DESIGNS USA.** He presently resides and is working from his new studio facility in North Carolina now the home of **RT-DESIGNS USA.**

Toth has also completed nearly 100 instructional television programs demonstrating art, including two series, "Art and Creativity" and "The Realm of Art", both of which were featured on "Adelphia Cable" and "CTN" networks. He has been the subject in "American Artist Magazine" and a variety of other publications.

In every custom series the medium is selected to best receive the hand finished patinas that enhance the fine art quality of these sculptures. The nature of some of these specialty items is that they take time. They are not mass produced. They are hand crafted and painted.

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As the Research & Development Council of New Jersey, we collaborate among industry, academia and government to grow and strengthen STEM in education, innovation and the economy. The R&D Council is a nonprofit 501(c)(3) organization.

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