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UCSB’s David Gross wins Special Breakthrough Prize in Fundamental Physics

The Breakthrough Prize Foundation today announced physicist David J. Gross, of UC Santa Barbara’s Kavli Institute for Theoretical Physics, among the winners of the 2026 Breakthrough Prizes, honoring scientists whose discoveries are significantly driving growth of human knowledge.

The Breakthrough Prizes – popularly known as the “Oscars® of Science” – were created to celebrate the wonders of our scientific age. Co-founded by Sergey Brin, Priscilla Chan and Mark Zuckerberg, Julia and Yuri Milner, and Anne Wojcicki, the prizes are now in their 14th year. Past UCSB honorees include Henry Maxfield (2021), Andrea Young (2018), Joseph Polchinski (2013, 2014 and 2017) and Joe Incandela (2013).

This year, six Breakthrough Prizes of $3 million each were awarded. In addition, the Foundation recognized 15 early-career physicists and mathematicians, who share six $100,000 New Horizons Prizes. Three women mathematicians recently completing PhDs each receive a $50,000 Maryam Mirzakhani New Frontiers Prize.

This year’s prize money totals $18.75 million, bringing the amount conferred over the 15 years of the Breakthrough Prize to more than $340 million.

“This year’s laureates show what great science can do – deepen our understanding of the world and lead to discoveries that improve millions of lives,” said Mark Zuckerberg and Dr. Priscilla Chan, founders of Biohub. “We’re proud to recognize their work.”

“The brilliant scientists who win the Breakthrough Prize,” said Yuri Milner, co-founder of Breakthrough Prize Foundation, “Are building a cathedral of knowledge on foundations laid down by the giants who came before them. We owe our civilization – and its future – to them.

Gross, cited “for a lifetime of groundbreaking contributions to theoretical physics, from the strong force to string theory, and for tireless advocacy for basic science worldwide," was awarded the 2026 Special Breakthrough Prize in Fundamental Physics.

Winner of the 2004 Nobel Prize in Physics, Gross has been a leading figure in fundamental physics for six decades. In the early 1970s, there was a gap in quantum field theory, our best theory of particles and forces. The theory could not describe or accurately predict the strong nuclear force, which holds the nucleus of the atom together. But in 1973, Gross and his graduate student Frank Wilczek (as well as, independently, David Politzer) solved the mystery.

They discovered that the strong force works the opposite way to familiar forces like gravity: it gets weaker as particles approach each other, but stronger as they move apart. This explained why quarks, the particles inside the atomic nucleus, can never escape or be observed in isolation, and it enabled the development of quantum chromodynamics – the theory of the strong force and the final foundation stone of the Standard Model of particle physics.

Gross has gone on to make seminal contributions across multiple areas of theoretical physics. For example, he and his collaborators developed a simplified quantum field theory that helped explain how particles can acquire mass; and developed new theoretical approaches attempting to unify all fundamental forces, including gravity, in a single framework known as heterotic string theory.

Alongside his theoretical work, Gross has a longstanding record of leadership in the physics community, in roles including Director of the Kavli Institute for Theoretical

Physics, and President of the American Physical Society. He has helped establish physics institutes in India, China, and South America. He directed the Jerusalem Winter School in Theoretical Physics and chaired the Solvay Physics Conferences for the last 25 years. In 2025 he was one of the authors of an ambitious 40-year plan for physics on behalf of the National Academies of Sciences, Engineering, and Medicine. And over the course of his career, he has been a mentor to numerous brilliant students who became leaders themselves, passing on his vision of physics as a collaborative international endeavor.

“On behalf of UC Santa Barbara, I offer our hearty congratulations to Dr. David Gross on winning the 2026 Special Breakthrough Prize for his lifetime contributions to fundamental physics,” said UCSB Chancellor Dennis Assanis. “Dr. Gross has advanced the frontiers of particle physics and string theory, including his discovery of asymptomatic freedom and the formulation of Quantum Chromodynamics. His seminal work has been recognized with the 2004 Nobel Prize in Physics. He has also made groundbreaking contributions to the theory of Superstrings, a burgeoning enterprise that brings gravity into the quantum framework. Similarly, his impact at UCSB cannot be overstated. As the former director of the Kavli Institute for Theoretical Physics and now the Chancellor's Chair Professor in Theoretical Physics, Dr. Gross embodies the spirit and the promise of interdisciplinary research.”

A top-tier public research university, UC Santa Barbara is recognized worldwide as an intellectual and creative powerhouse. Its faculty and alumni have received countless honors, including the National Medal of Science, the National Medal of Technology and Innovation, the Fields Medal, Academy Awards, Pulitzer Prizes and Nobel Prizes.

UCSB is No. 1 in the country for granting bachelor's degrees in physics and an epicenter for quantum research, with two National Science Foundation-supported laboratories — the Quantum Foundry and the California NanoSystems Institute — on campus. Six of UCSB’s eight Nobel laureates received their honors for their work in various aspects of quantum sciences, putting groundbreaking theories to work in realms such as semiconductor materials, conductive polymers and quantum computing. The campus’s reputation in this area has attracted partnerships with tech companies including Google and Microsoft, with stunning results.

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The University of California, Santa Barbara is a leading research institution that also provides a comprehensive liberal arts learning experience. Our academic community of faculty, students, and staff is characterized by a culture of interdisciplinary collaboration that is responsive to the needs of our multicultural and global society. All of this takes place within a living and learning environment like no other, as we draw inspiration from the beauty and resources of our extraordinary location at the edge of the Pacific Ocean.