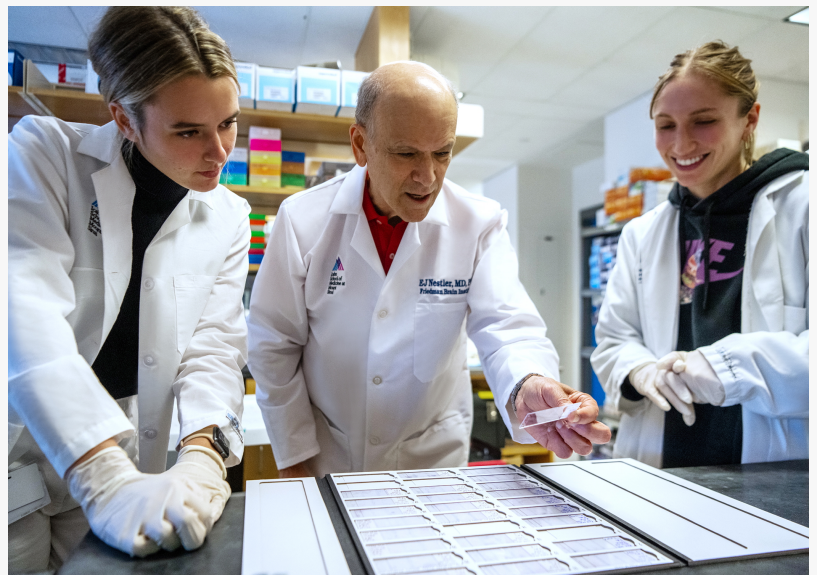


Brain resilience science reshapes psychiatry from treating illness to building strength

Dr. Eric J. Nestler reveals four decades of discoveries in molecular psychiatry that transformed global understanding of addiction and depression

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EINPresswire.com/ -- In a revealing [Genomic Press](#) Interview published in [Brain Medicine](#), Dr. Eric J. Nestler offers a rare glimpse into how curiosity about brain chemistry spawned an international movement in psychiatric research. The Anne and Joel Ehrenkranz Dean of the Icahn School of Medicine at Mount Sinai describes nearly forty years spent uncovering the molecular secrets of why drugs and stress alter human behavior, research that has fundamentally reshaped how scientists across six continents approach mental illness. What began as questions about protein signaling cascades in the laboratory of Nobel laureate Paul



Dr. Eric Nestler with two members of his laboratory, Clementine Blaschke (left) and Kinneret Rosen (right).

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In addition to seeking ways to reverse the negative effects of drug or stress exposure, we can develop treatments that promote natural resilience in people who are inherently more susceptible.”

Dr. Eric J. Nestler, Dean, Icahn School of Medicine at Mount Sinai, NY

Greengard evolved into a comprehensive understanding of how experience literally rewrites the brain's genetic program.

From Basement Experiments to Global Impact: The path to becoming one of the most cited neuroscientists in the world began in an unlikely laboratory: a house basement in Nassau County, Long Island. Dr. Nestler recounts how his father, a high school biology teacher in the New York City public school system, guided him through experiments that morphed into award-winning science fair projects. This early exposure to systematic inquiry laid the foundation for what would become an extraordinary academic trajectory through Yale University, where he

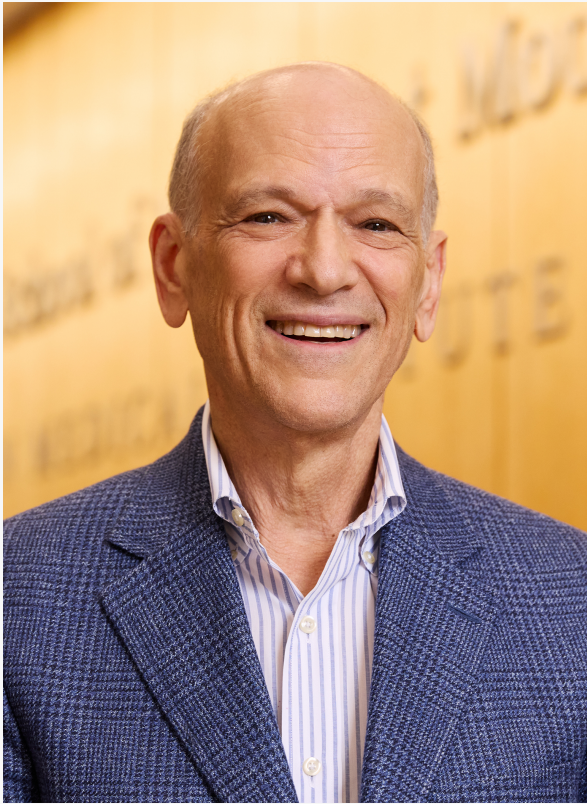
earned his BA, PhD, and MD degrees while working alongside Dr. Greengard.

The decision to name his collaborative research group at Yale Medical School "The Laboratory of Molecular Psychiatry" proved prescient. At a time when applying molecular biology tools to psychiatric disorders seemed audacious, Dr. Nestler and colleague Dr. Ron Duman captured the emerging zeitgeist of their field. This brash naming convention reflected genuine scientific ambition rather than mere marketing, and within years, Dr. Nestler was offered the position of Founding Director of the Division of Molecular Psychiatry at Yale. That moment of generosity, when the current Director Dr. George Heninger stepped aside to create this opportunity, remains etched in his memory as a lesson he has since paid forward to countless junior colleagues.

Cracking the Code of Brain Adaptation. Perhaps no discovery better illustrates Dr. Nestler's impact than his work on the transcription factor known as Δ FosB. This molecular switch accumulates in brain reward circuits during chronic drug exposure and stress, fundamentally altering which genes get expressed in neurons. Unlike most proteins that degrade within hours, Δ FosB persists for weeks or months, providing a mechanism for how brief experiences produce lasting behavioral changes. Researchers worldwide now recognize this protein as a crucial mediator of addiction vulnerability.

This interview exemplifies the type of transformative scientific discourse found across Genomic Press's portfolio of open-access journals reaching researchers worldwide. The company's commitment to making cutting-edge medical research freely available has positioned it as an enabler of scientific innovation rather than merely a publisher.

The research trajectory has evolved remarkably



Eric J. Nestler, MD, PhD, Icahn School of Medicine at Mount Sinai, USA.

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INNOVATORS & IDEAS: ACADEMIC LEADER

Eric J. Nestler: Navigating a career in molecular psychiatry

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Eric J. Nestler is the Anne and Joel Ehrenkranz Dean of the Icahn School of Medicine at Mount Sinai in New York, where he also serves as Chief Scientific Officer. He received his BA, PhD, and MD degrees, and psychiatry residency training, from Yale University, where he performed his doctoral research in the laboratory of Nobel laureate Paul Greengard. He served on the Yale faculty from 1987 to 2000 as the Elizabeth Mears and House Jameson Professor of Psychiatry and Neurobiology and founding Director of the Division of Molecular Psychiatry. He moved to Dallas in 2000, where he was the Lou and Ellen McGinley Distinguished Professor and Chair of the Department of Psychiatry at the University of Texas Southwestern Medical Center until moving to New York in 2008, where he served as the inaugural Director of The Friedman Brain Institute until 2025, building it into a powerhouse of neuroscience research. Dr. Nestler is a member of the National Academy of Sciences (2025) and the National Academy of Medicine (2008) and a Fellow of the American Academy of Arts and Sciences (2005). He is a past President of the American College of Neuropsychopharmacology (2011) and the Society for Neuroscience (2017). He is a founder and SAB chair for Psychosocial and chairs the SABs for One Mind and the Hope for Depression Research Foundation. The author of more than 800 publications, including the definitive textbooks Charney and Nestler's *Neurobiology of Mental Illness* (6th edition) and Nestler, Hyman, and Malenka's *Molecular Neuropharmacology* (4th edition), Dr. Nestler's research has been cited over 177,000 times with an h-index of 210, placing him among the top neuroscientists globally. His research studies the molecular basis of drug addiction and depression, with pioneering work on transcriptional and epigenetic mechanisms, including the molecular switch Δ FosB, revealing how drugs and stress fundamentally rewire the brain. His groundbreaking work on the biological basis of resilience has created a paradigm shift in psychiatric treatment, moving the field from symptom management toward prevention, with several pro-resilience mechanisms now in clinical testing for depression. His numerous honors include the *Julius Axelrod Prize for Mentorship*, the *Gold Medal Award from the Society of Biological Psychiatry*, the *Peter Seeburg Integrative Neuroscience Prize*, the *Patricia S. Goldman-Rakitzin, the Falkow Prize for Outstanding Achievement in Affective Disorders Research*, the *Rhoda and Bernard Samat International Prize in Mental Health*, and *honorary doctorates from Uppsala University and Concordia University*.

Part 1: Eric J. Nestler - Life and career
Where were you born, and where do you live now?
I was born in Queens, New York City, and grew up in Nassau County on Long Island. I now live on the Upper East Side of Manhattan.

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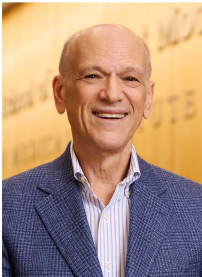


Figure 1. Eric J. Nestler, MD, PhD, Icahn School of Medicine at Mount Sinai, USA.

Could you give us a glimpse into your personal history, emphasizing the pivotal moments that first kindled your passion for science?
My interest in science grew from childhood. My father was a high school biology teacher in the NYC public school system. From my earliest memories, he would take me on nature walks to explore plants and animals near our home and anywhere we went on vacation. Starting in junior high school and continuing through high school, he guided me through science experiments in our house basement, which morphed into several high school science fair projects and awards. As a result, by the time I got to college, I knew that I wanted to be a scientist. During my junior year in college, I had the life-changing opportunity to work in the laboratory of Paul Greengard, then a Professor of Pharmacology at Yale. I completed a senior thesis in his laboratory and went on to join Yale's MD-PhD program, where I conducted my dissertation research in the Greengard laboratory. My combined training in neuroscience and psychiatry, with a PhD from the Greengard laboratory, opened extraordinary doors for me as I embarked on an independent career in academic medicine.



Eric J. Nestler: Navigating a career in molecular psychiatry

over four decades. Initial focus on intracellular signaling cascades gradually shifted toward understanding how transcription factors and their target genes mediate behavioral change across selected brain regions. About twenty years ago, Dr. Nestler's team began examining epigenetic regulation, the modifications to chromatin structure that allow environmental stimuli to induce lasting changes in brain function. Technological advances have enabled increasingly precise analysis: from studying discrete brain regions to individual cell types to single-cell approaches now revealing heterogeneity invisible to earlier methods. Could these single-cell insights eventually enable personalized treatments targeting specific neuronal populations in individual patients?

The Revolutionary Discovery of Natural Resilience: What distinguishes Dr. Nestler's contribution from conventional psychiatric research is the focus on resilience rather than pathology. His laboratory identified distinct molecular, cellular, and circuit changes in the brains of animals that maintain normal behavioral function despite exposure to drugs or stress. These resilient individuals possess biological protective mechanisms absent in their susceptible counterparts. The implications extend far beyond academic interest: understanding how some brains naturally resist damage opens entirely new therapeutic strategies.

"In addition to seeking ways to reverse the deleterious effects of drug or stress exposure, it is possible to develop treatments that promote mechanisms of natural resilience in individuals who are inherently more susceptible," Dr. Nestler explains in the interview. Several such pro-resilience mechanisms have now reached clinical testing for depression, representing perhaps the most tangible translation of his basic science discoveries. What might psychiatry look like in a decade if these resilience-promoting treatments prove effective in human trials?

Validation Across Species and a Warning About Science - Key findings from rodent models have been validated in postmortem human brain tissue from individuals with addiction and stress disorders, strengthening the translational relevance of this work. Dr. Nestler's research output, comprising over 800 publications including definitive textbooks on neurobiology of mental illness and molecular neuropharmacology, has been cited more than 177,000 times. His h-index of 210 places him among the most influential scientists in any field globally.

Yet when asked about his greatest fear, Dr. Nestler's response carries urgency for the international scientific community: "My greatest fear is that science becomes politicized, whereas science must never be political. People in blue and red states get the same illnesses." This concern about maintaining the independence and integrity of biomedical research resonates across national boundaries where similar pressures threaten evidence-based inquiry. The Genomic Press mission to advance open-access medical research aligns precisely with this vision of science serving all humanity regardless of geography or politics.

The Human Behind the Discoveries: Beyond the laboratory, Dr. Nestler treasures time with his wife Susan of 45 years, their three children David, Matt, and Jane, their spouses, and five grandchildren ranging in age from eighteen months to four years. His most marked

characteristics, he reveals, are hard work and generosity toward those around him. Organization and discipline represent his greatest talents, though he wishes he could be more patient and more willing to confront those who behave unkindly.

When asked what makes him proudest, his answer does not involve personal accolades despite receiving the Julius Axelrod Prize for Mentorship, the Gold Medal Award from the Society of Biological Psychiatry, election to both the National Academy of Sciences and National Academy of Medicine, and honorary doctorates from Uppsala University and Concordia University. Instead, he is most proud of how well his former students and postdoctoral fellows have succeeded in their own careers. More information about Dr. Nestler and other scientific leaders can be found on the Genomic Press website: <https://genomicpress.kglmeridian.com/>.

His life philosophy comes from Theodore Roosevelt: the credit belongs not to the critic but to "the man who is actually in the arena, whose face is marred by dust and sweat and blood." For nearly four decades, Dr. Nestler has inhabited that arena, emerging with discoveries that have permanently altered how the world understands the brain's response to adversity.

Dr. Eric J. Nestler's Genomic Press interview is part of a larger series called Innovators & Ideas that highlights the people behind today's most influential scientific breakthroughs. Each interview in the series offers a blend of cutting-edge research and personal reflections, providing readers with a comprehensive view of the scientists shaping the future. By combining a focus on professional achievements with personal insights, this interview style invites a richer narrative that both engages and educates readers. This format provides an ideal starting point for profiles that explore the scientist's impact on the field, while also touching on broader human themes. More information on the research leaders and rising stars featured in our Innovators & Ideas -- Genomic Press Interview series can be found on our publications website: <https://genomicpress.kglmeridian.com/>.

The Genomic Press Interview in Brain Medicine titled "Eric J. Nestler: Navigating a career in molecular psychiatry," is freely available via Open Access, in Brain Medicine at the following hyperlink: <https://doi.org/10.61373/bm025k.0143>

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