

Roxanne Khamsi

Science Communicator, Author of *Beyond Inheritance* and Thought Leader on Acquired Mutations and Disease

For more than twenty years, Roxanne has been investigating new ideas that challenge the traditional dogma of genetics. In her widely-celebrated first book, [*Beyond Inheritance: Our Ever-Mutating Cells and a New Understanding of Health*](#), she reveals that DNA changes accumulate within us throughout our lives and how these alterations can profoundly affect our health. *Beyond Inheritance* has received wide praise, including positive reviews in *Wall Street Journal*, *The New York Review of Books* and *The New Yorker*, which called it “a useful guide to this body of research and its far-reaching, sometimes surprising implications.” Roxanne is currently a contributing writer for *The Atlantic* and previously reported stories for publications such as *The New York Times*, *The Economist*, *Scientific American*, *WIRED* magazine and *National Geographic*. Previously, she served as Chief News Editor at the prestigious research journal *Nature Medicine* for more than a decade and served on the Editorial Advisory Board of TEDMED, the medical branch of the TED talks. She has appeared on national television programs such as CBS News and has guest-hosted the popular radio shows *On The Media* and *Science Friday*.

In addition to her work as a writer and editor, Roxanne has taught at the Craig Newmark Graduate School of Journalism at CUNY and the Alan Alda Center for Communicating Science at Stony Brook University. She has given keynote lectures and trained leading researchers and doctors on engaging with the public

around their discoveries. Roxanne's energized speaking on the new frontiers of genetics moves audiences with stories of families that have overcome rare conditions and inspires awe about how scientists have been working to understand the cell competition in the body since Darwin's time. Her talks give audiences the tools they need to better understand the dynamism of their own DNA and actionable measures to take such as diagnostic tests to consider for themselves and new research projects to initiate with others.

Speech topics

Thinking Beyond Inheritance: A New Paradigm for Genetics and Disease

All human beings on Earth mutate continuously every day of their lives. That's the stark genetic reality that scientists have uncovered and that inspired Roxanne Khamisi's book, *Beyond Inheritance*. Through extensive research examining thousands of medical research papers and interviews with more than a hundred doctors and patients, Roxanne has documented how acquired—or “somatic”—mutations shape our health in unexpected ways.

The *Kirkus Reviews* has called Roxanne's new book “fascinating” and noted that “grandeur... exists in this new view of DNA.” The book has received praise from luminaries of science communication and journalism such as Bill Nye and Ed Yong. The new recognition that DNA changes occur within us throughout our

lives touches all aspects of medicine and is improving everything from how doctors treat cancer and how immunologists design vaccines. It is also upending the outdated view that genetic disease is always inherited.

In her inspiring talk about this new understanding of mutation, Roxanne gives her audience a window into the future of DNA research and takes them on a whirlwind tour of the massive accumulation of genetic errors happening inside us that shapes our health and well-being. Did you know that a single white blood cell from a centenarian can possess more than 3,000 mutations acquired through that person's lifetime? Or that your immune cells' ability to mutate is vital to their capacity to make antibodies and defend you against new viruses?

For many decades, geneticists have focused on inherited mutations, but in her talk, Roxanne makes the convincing case that *noninherited* mutations might have a broader impact on our health. Doctors, researchers, patients and people curious about their health will emerge from this talk with an entirely new view on their DNA and on the future of genetics and medicine.

Mutation and Aging: Radical Insights into Why We Grow Old

Aging is a hot topic but many people overlook the profound contribution of genetic mutation to this universal phenomenon. However, going as far back as the Manhattan Project, which produced the first nuclear bomb, scientists have had concerns about how acquired mutations might drive aging.

As Roxanne describes in her book *Beyond Inheritance* and in this talk, brand-new discoveries have linked the DNA changes that accumulate in people as they get older to numerous hallmarks of aging, including frailty and dementia. For example, around 10 to 20 percent of people in their 70s have rising numbers of mutant cells in their blood with DNA changes that contribute to dire health problems in old age such as heart attack and the hardening of arteries. Meanwhile, scientists have identified islands of mutated cells within the brains of patients with Alzheimer's disease. Some cases of Parkinson's disease have also been linked to acquired mutations. There's also new data to suggest that the genetic aberrations that amass in our cells can perhaps cause muscle weakness in old age.

This talk brings audiences up to speed on the latest understanding of aging through the lens of genetics, as well as how researchers are taking inspiration from DNA repair enzymes of long-lived mammals to build potential anti-aging treatments.

The Immunity Lottery: How Random DNA Changes Protect Us

What do people really mean when they talk about having a strong immune system? In her book *Beyond Inheritance*, Roxanne illuminates that a strong immune system is really a *versatile* one. Cutting edge research has increasingly shown that genetic mutation is vital to the ability of immune cells to diversify and adapt against all of the dangerous viruses and bacteria we can encounter.

DNA mutation is the engine that powers our antibody production. The necessity of DNA change in our immune cells is underscored by the heart-breaking stories of families affected by an inherited disease that prevents them from mutating to make new antibodies. Although most people think about genetic mutation as detrimental to our health, this is not the whole picture.

In this talk, Roxanne awakens audiences to the magnificent upside of mutation and why it is so essential for a well-operating immune system. She also brings audiences up to speed on how vaccine developers are using all new knowledge about genetic change in immune cells to design sequential shots that might give us the first working vaccines against HIV. Roxanne shares the latest science on how booster shots against Covid and the flu, and helps you understand how you can encourage your system to be more diversified and robust.