

Professor Nipam Patel
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Scientists often depend exclusively on so-called model organisms, such as fruit flies, mice, and frogs, for their research. While investigation of these animals has led to incredible advances in both basic and translational biology, they represent only a tiny slice of the diversity of life on earth. Patel explores questions that can only be addressed by expanding the repertoire of animals that are studied and illustrate the sorts of fascinating insights that have already emerged from such research. In particular, he focuses on novel mechanisms of generating stunning colors in butterflies, and in how lobsters and their kin have evolved their swiss army knife approach to leg evolution.



Professor Patel was recently interviewed on the UChicago's [Big Brains podcast](#)

Research:

Patel is a leading scholar in developmental and modern evolutionary biology with specific focus on the evolution of body patterning and segmentation, regeneration of the germline, and structural coloration. His scientific expertise encompasses the development of novel, genetic model organisms for biological study, which can reveal much about human biology; and the application of advanced imaging technologies to probe the fundamental dynamics of living systems. Many of his discoveries emerge from the study of novel marine organisms, including research in comparative evolution and genomics, regenerative biology, neuroscience and sensory biology.

Patel is well known for having discovered a new technique to study gene function in non-model organism. Patel's technique allows scientists to introduce desired genes directly into embryonic cells using the baculovirus, a pathogen that normally infects and reproduces in only a few species of moths. He has used the virus to carry foreign genes into frog, beetle, and fruit fly embryonic cells and believes the virus will prove effective in a wide range of other species. In the past few years, he's known for establishing a marine crustacean named *Parhyale hawaiiensis* as a genetic model for understanding how diverse body plans develop and evolve.

Clinicians have expressed interest in using this technique to learn more about human gene function. Patel has collaborated with Louis Philipson, MD, PhD, associate professor and former chief of endocrinology at the University of Chicago Hospitals, who studies the effects of genes that regulate insulin secretion.

Professor Patel was recently interviewed on the University of Chicago's [Big Brains podcast](#) where he discusses the Marine Biological Laboratory, the lab's work and his scientific breakthrough.

Marine Biological Laboratory:

The Marine Biological Laboratory (MBL) is dedicated to scientific discovery – exploring fundamental biology, understanding biodiversity and the environment, and informing the human condition through research and education. Founded in Woods Hole, Massachusetts in 1888, the MBL is a private, nonprofit institution and an affiliate of the University of Chicago.

The MBL's oldest and most singular strength is its convening power, attracting the world's leading scientists and students to Woods Hole. Once largely a feature of summers at the MBL, this convening power is now evident year-round, with research programs, courses and conferences in all seasons. Well over 500 scientists and faculty are involved annually in research and educational programs – some based at MBL full-time in its

research division, some coming to the MBL for portions of the year, and some leading or lecturing in its broad range of research courses.

Major Research Areas

[Research at the MBL](#) – carried out by full-time MBL faculty as well as hundreds of the world’s leading scientists who are attracted by the MBL’s unique resources and strengths each year – focuses on a number of distinctive themes, including:

- new discoveries emerging from the study of novel marine organisms, encompassing research in regenerative biology, neuroscience, sensory physiology, and comparative evolution and genomics;
- the study of microbiomes and microbial diversity and ecology in a variety of ocean and terrestrial habitats;
- cutting-edge imaging and computation, making the unseen visible to illuminate cellular function and to explore biological mechanisms; and
- organismal adaptation and resilience in the face of global climate change and rapidly changing ecosystems.

Biography:

Nipam Patel, PhD, is Director of the Marine Biological Laboratory (MBL) and a Professor at the University of Chicago. He joined the MBL in 2018 from University of California, Berkeley, where he was Professor and Co-chair of the Department of Molecular and Cell Biology and Professor in the Department of Integrative Biology. Patel is the 20th scientist to serve as MBL Director since its founding in 1888.

Patel grew up in El Paso, Texas, and received an AB in Biology from Princeton University and a PhD in Biology from Stanford University. Prior to joining UC Berkeley in 2003, he was a professor of Organismal Biology and Anatomy at the University of Chicago (1995 to 2003), a Howard Hughes Medical Institute Investigator (1995 to 2010), and a Staff Associate in the Department of Embryology at the Carnegie Institution in Baltimore, Md. (1991 to 1995).

A longtime member of the MBL community, Patel has taught in the MBL Embryology course since 2001 and served as course co-director from 2007 to 2011. He is a leading scholar in modern evolutionary and developmental biology with specific focus on the evolution of body patterning and segmentation, regeneration of the germline, and structural coloration. His scientific expertise encompasses the development of novel, genetic model organisms for biological study, which can reveal much about human biology; and the application of advanced imaging technologies to probe the fundamental dynamics of living systems.

Patel is an elected fellow of the American Association for the Advancement of Science and has been awarded numerous honors, including the Schubert Endowed Chair and the William V. Power Endowed Chair at UC Berkeley, the McKnight Scholars Neuroscience Fellowship Award, and an NSF Predoctoral Fellowship. Other past appointments include faculty curator at the Essig Museum of Entomology, UC Berkeley; and adjunct professor at the National Institute of Genetics in Shizuoka, Japan.

The author of more than 130 scientific publications, Patel was an editor of the journal *Development* (2009-2018) and serves on the editorial board of several other journals in the biological sciences. He has served on numerous advisory boards, including board of directors of the Society for Developmental Biology