

# Ethan Bier

Professor at UC San Diego

La Jolla, CA, US

Ethan Bier's research uses fruit flies and other animals to better understand human diseases.

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## Biography

Bier is a distinguished professor who holds the Tata Chancellor's Endowed Professorship in Cell and Developmental Biology at UC San Diego. He also serves as science director for the new Tata Institute for Genetics and Society. During the past 25 years at UC San Diego, Bier has studied how secreted proteins known as morphogens subdivide the dorsal-ventral axis of the fruit fly embryo into neural versus epidermal regions and how such processes result in the formation of sharp boundaries. These are among the most conserved evolutionary processes. Bier has also used the common fruit fly to study mechanisms of human disease. His work in this area has focused recently on understanding the mechanisms by which bacterial toxins contribute to breaching host barriers. Thus, two toxins produced by anthrax bacteria trigger potentially fatal vascular leakage while cholera toxin leads to breakdown of the intestinal barrier leading to acute life-threatening diarrhea. Bier's group also recently developed a new CRISPR/Cas9 based method referred to as "active genetics" that greatly biases transmission of genetic traits, thereby bypassing traditional constraints of Mendelian inheritance. One application of this new technology is to create gene-drive systems for disseminating anti-malarial effector genes into mosquito populations. Bier graduated Phi Beta Kappa as a Regents Scholar from UC San Diego in 1978 with degrees in biology and mathematics. He received his Ph.D. from Harvard Medical School where he studied regulation of immune genes in Dr. Allan Maxam's laboratory from 1978-1985. He did his postdoctoral studies on development of the nervous system at UC San Diego with Dr's. Lily and Yuh Nung Jan (1985-90) and then assumed a faculty position at UC San Diego in 1990. He is an Alfred P. Sloan and Basil O'Connor Scholar and an Allen Distinguished Investigator.

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## Areas of Expertise

Protein Biosynthesis, Developmental Patterning, Cellular Biosciences, Active Genetics, Human Disease Mechanisms

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## Education

Harvard University

Ph.D. Cell & Developmental Biology

UC San Diego

B.A. Biology and Mathematics

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## Accomplishments

**Allen Distinguished Investigator**  
2016-2019

**Alfred P. Sloan Scholar and Award**  
1992

**McKnight Scholar and Award**  
1992

**Basil O'Connor Scholar Research Award**  
1992

**ACS Junior Faculty Award**  
1992

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