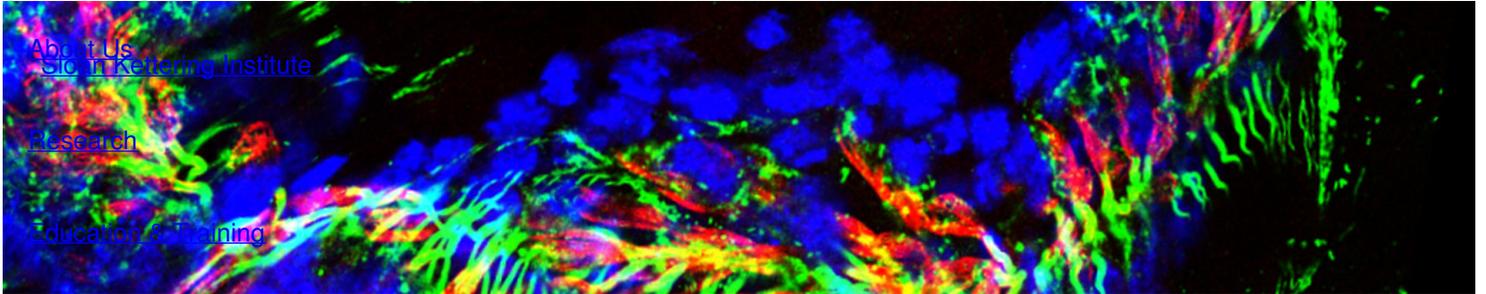


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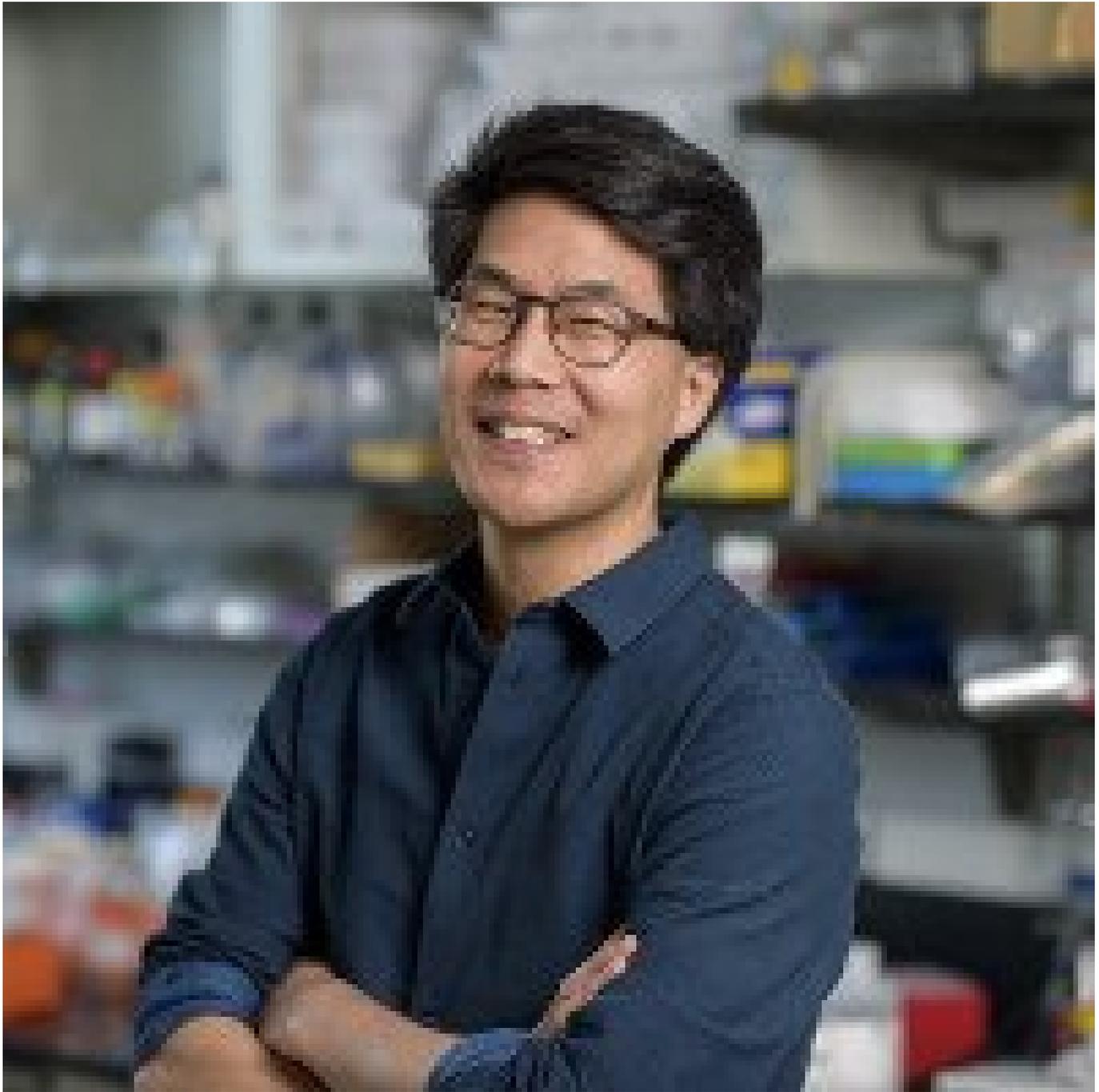
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Eric C. Lai, PhD

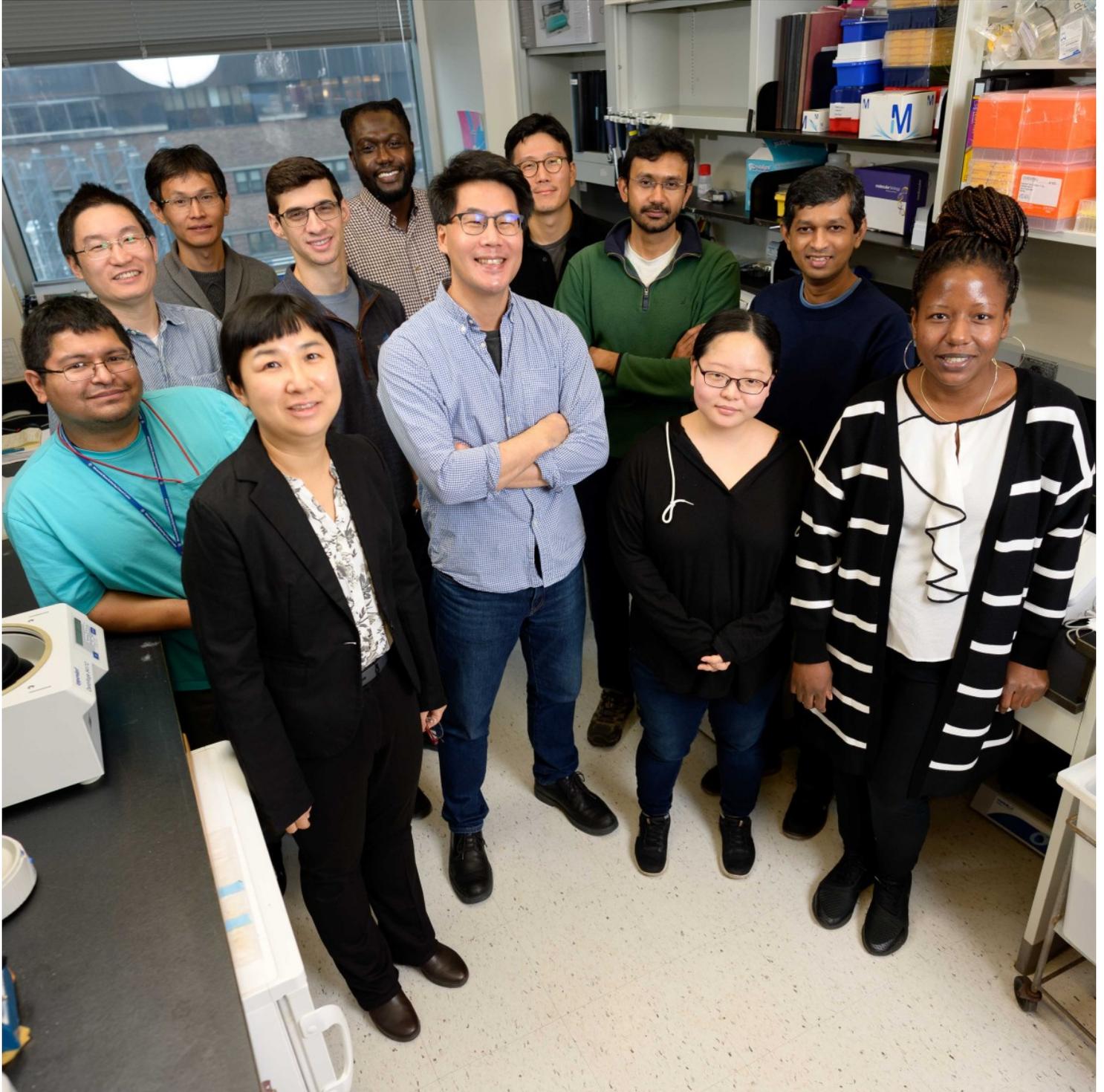
As a laboratory of developmental biology, our guiding interest is to comprehend how complex biological patterns can be assembled with stereotyped precision. This requires a detailed understanding of how cells come to execute appropriate behaviors — be it adoption of specific cell fates, proliferation, or apoptosis — and do so at the right times, in the right places, and in the right numbers. Dysfunction of processes that direct normal tissue patterning results not only in developmental disorder but also underlies adult disease. Tellingly, many factors whose mutation is relevant to human cancer were first identified and characterized with respect to development in model organisms. To study these topics, we utilize integrative approaches, combining genetics, biochemistry, and genomewide approaches, to elucidate detailed molecular mechanisms and use these to understand *in vivo* biology as well as decipher genomic regulatory networks.

Research Projects

[microRNAs and other small regulatory RNAs](#)

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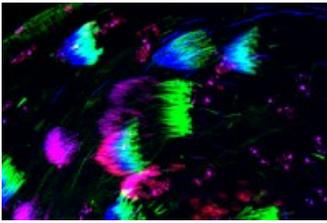


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[Beyond the Bench: Developmental Biologist Eric Lai](#)

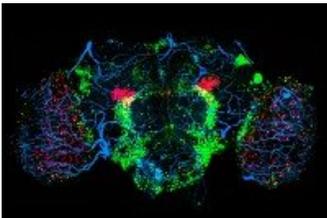
How developmental biologist Eric Lai's approach to science co-evolved with his music, art, and life outside the lab.



[Rumble in the Genome: Unlocking the Secrets of the Tiny RNAs That Keep Self-Serving, Harmful Genes in Check](#)

The common wisdom is that genes are preserved from generation to generation because they help the organism survive and reproduce. But MSK's Dr. Eric Lai's team is showing — in fruit flies — that certain genes can threaten a species' very survival by pursuing their narrow self-interests in passing along their own genetic material.

IN THE LAB



[How Fruit Flies Know When They've Mated](#)

Research from investigators at the Sloan Kettering Institute shows how a brain circuit controls mating behavior in fruit flies.

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Publications Highlights

Zhang B, Duan H, Kavaler J, Wei L, Eberl DF and Lai EC (2023). [A nonneural miRNA cluster mediates hearing via repression of two neural targets](#). *Genes & development* 37, Cover Article.

Lee S, Jee D, Srivastava S, Yang A, Ramidi A, Shang R, Bortolamiol-Becet D, Pfeffer S, Gu S, Wen J and Lai EC (2023). [Promiscuous splicing-derived hairpins are dominant substrates of tailing-mediated defense of miRNA biogenesis in mammals.](#) *Cell Reports* 42.

Shang R, Lee S, Senavirathne G and Lai EC (2023). [microRNAs in action: biogenesis, function and regulation.](#) *Nature Reviews Genetics* 24.

Vedanayagam J, Herbette M, Mudgett H, Lin CJ, Lai CM, McDonough-Goldstein C, Dorus S, Loppin B, Meiklejohn C, Dubruille R and Lai EC (2023). [Essential and recurrent roles for hairpin RNAs in silencing de novo sex chromosome conflict in *Drosophila simulans*.](#) *PLoS Biology* 21(6).

Zheng L, Liu J, Niu L, Kamran M, Yang A, Jolma A, Dai Q, Hughes TR, Patel DJ, Zhang L, Prasanth SG, Yu Y, Ren A and Lai EC (2022). [Distinct structural bases for sequence-specific DNA binding by mammalian BEN domain proteins.](#) *Genes & Development* 36.

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People



Eric C. Lai, PhD

The Lai laboratory integrates genetics, biochemistry, and genomewide approaches to study diverse regulatory networks during patterning and behavior.

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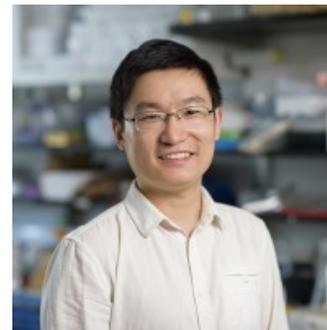
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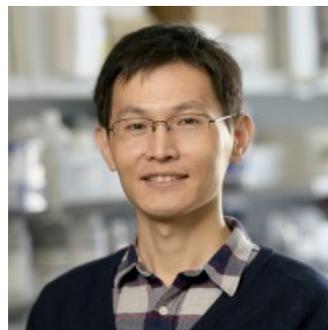


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Achievements

Louise and Allston Boyer Young Investigator Award for Basic Research, Memorial Sloan Kettering Cancer Center (2009)

Kimmel Scholar, Sidney Kimmel Foundation for Cancer Research (2007-2009)

V Scholar, V Foundation for Cancer Research (2006-2008)

Career Award in the Biomedical Sciences, Burroughs Wellcome Fund (2005)

Special Fellow, Leukemia and Lymphoma Society (2004-2006)

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