

DEVELOPMENTAL BIOLOGY PROGRAM

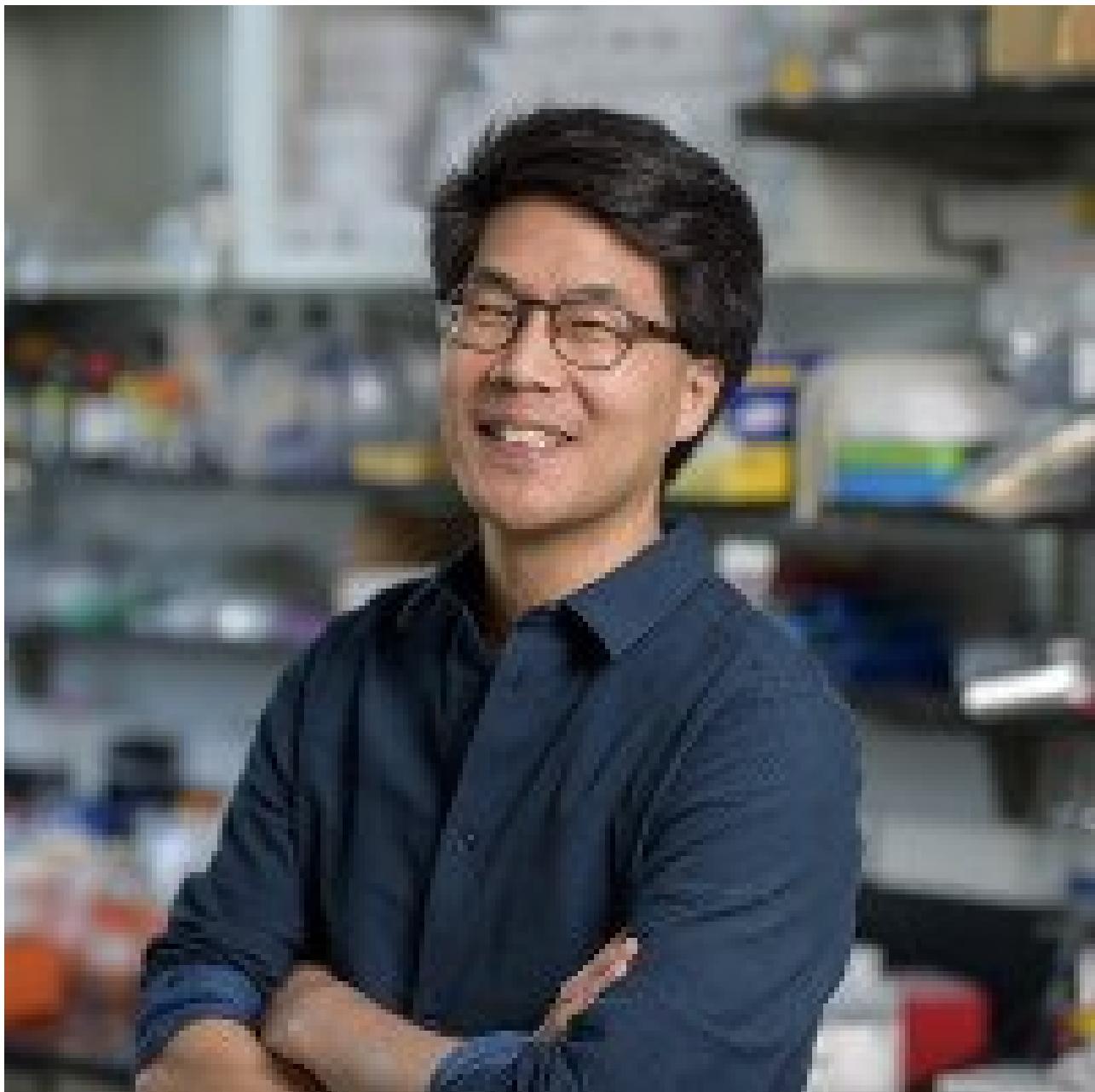
[Cancer Engineering](#)

The Eric Lai Lab

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Research

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Eric C. Lai, PhD

Professor

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](#)
- [Alternative mRNA processing and modification](#)
- [Notch Signaling and Neural Transcription Factors](#)



Featured News



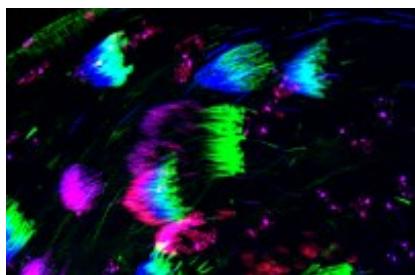
[The Secret Life of ALAS1: How a Basic Science Discovery Could Pave the Way for Better siRNA Therapies](#)

New findings by researchers at MSK and their collaborators at the Icahn School of Medicine point to an opportunity to improve therapies that use small RNAs to silence disease-causing genes, potentially including those involved in cancer.



[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.

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Publications Highlights

Lee S, Lee S, Desnick R, Yasuda M, Lai EC (2024). [Noncanonical role of ALAS1 as a heme-independent inhibitor of small RNA-mediated silencing.](#) *Science*.

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.

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.

[View All Publications](#)

People



Eric C. Lai, PhD

Professor

- The Lai laboratory integrates genetics, biochemistry, and genomewide approaches to study diverse regulatory networks during patterning and behavior.
- BA, Harvard College
- PhD, University of California, San Diego

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Members



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Lab Affiliations

Achievements

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Administrative Assistant



Daniel Guzman
Gundermann
Research Scholar

Senior Research Scientist



Taiya Jarva
Research Technician

Investigator Award for Basic

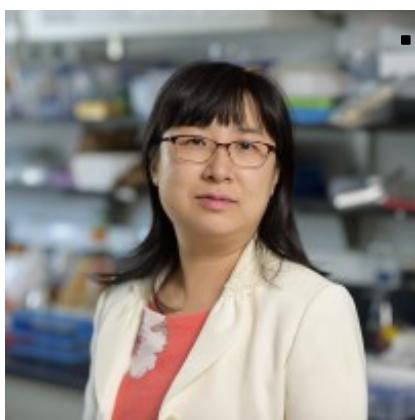
Research, Memorial Sloan Kettering
Cancer Center (2009)

▪ 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)



Lijuan Kan
Senior Research Scientist

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Seungjae Lee
Research Scholar - NYSTEM
Training Award at the CSCB
[now \(<https://www.sloankettering.edu/research-areas/labs/eric-lai/career-opportunities>\)](#)



David Morales Vicente
Research Scholar
[now \(<https://www.sloankettering.edu/research-areas/labs/eric-lai/career-opportunities>\)](#)

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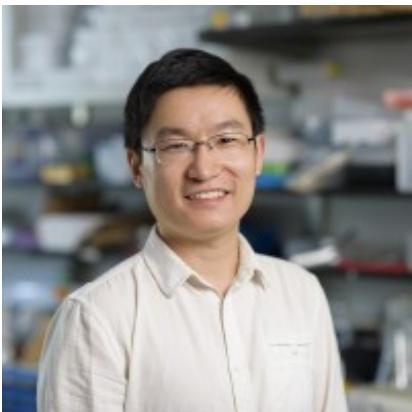
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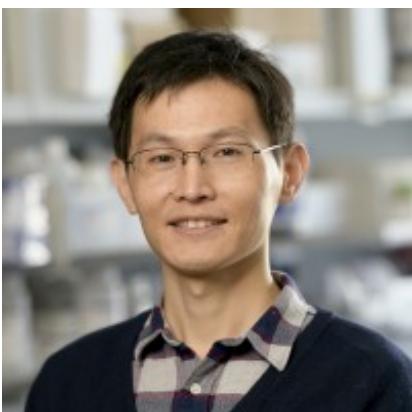
Lab Phone



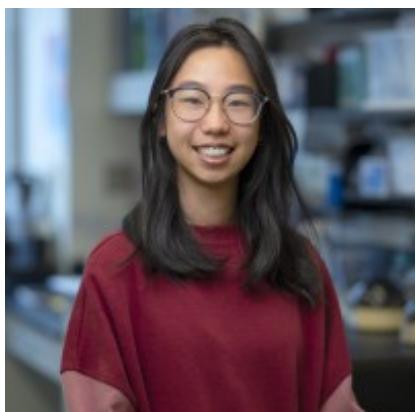
Renfu Shang
Research Associate



Rebeccah Stewart
Research Scholar



Binglong Zhang
Research Associate



Xin Yu Zhu Jiang
Graduate Student

Disclosures

Members of the MSK Community often work with pharmaceutical, device, biotechnology, and life sciences companies, and other organizations outside of MSK, to find safe and effective cancer treatments, to improve patient care, and to educate the health care community.

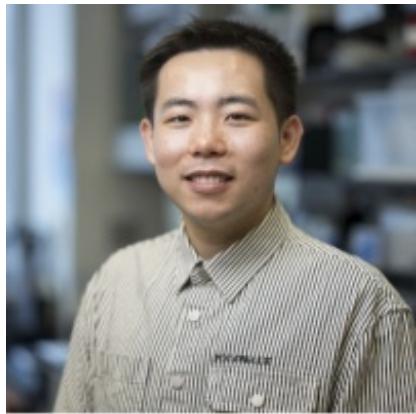
These activities outside of MSK further our mission, provide productive collaborations, and promote the practical application of scientific discoveries.

MSK requires doctors, faculty members, and leaders to report (“disclose”) the relationships and financial interests they have with external entities. As a commitment to

transparency with our community, we make that information available to the public. Not all disclosed interests and relationships present conflicts of interest. MSK reviews all disclosed interests and relationships to assess whether a conflict of interest exists and whether formal COI management is needed.

Eric C. Lai discloses the following relationships and financial interests:

No disclosures meeting criteria for time period



Xiaodong (Sheldon) Zou

Research Scholar

The information published here is a complement to other publicly reported data and is for a specific annual disclosure period. There may be differences between information on this and other public sites as a result of different reporting periods and/or the various ways relationships and financial interests are categorized by organizations that publish such data.

This page and data include information for a specific MSK annual disclosure period (January 1, 2024 through disclosure submission in spring 2025). This data reflects interests that may or may not still exist. This data is updated annually.

Learn more about MSK's COI policies [here](#) . For questions regarding MSK's COI-related policies and procedures, email MSK's Compliance Office at ecoi@mskcc.org .

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