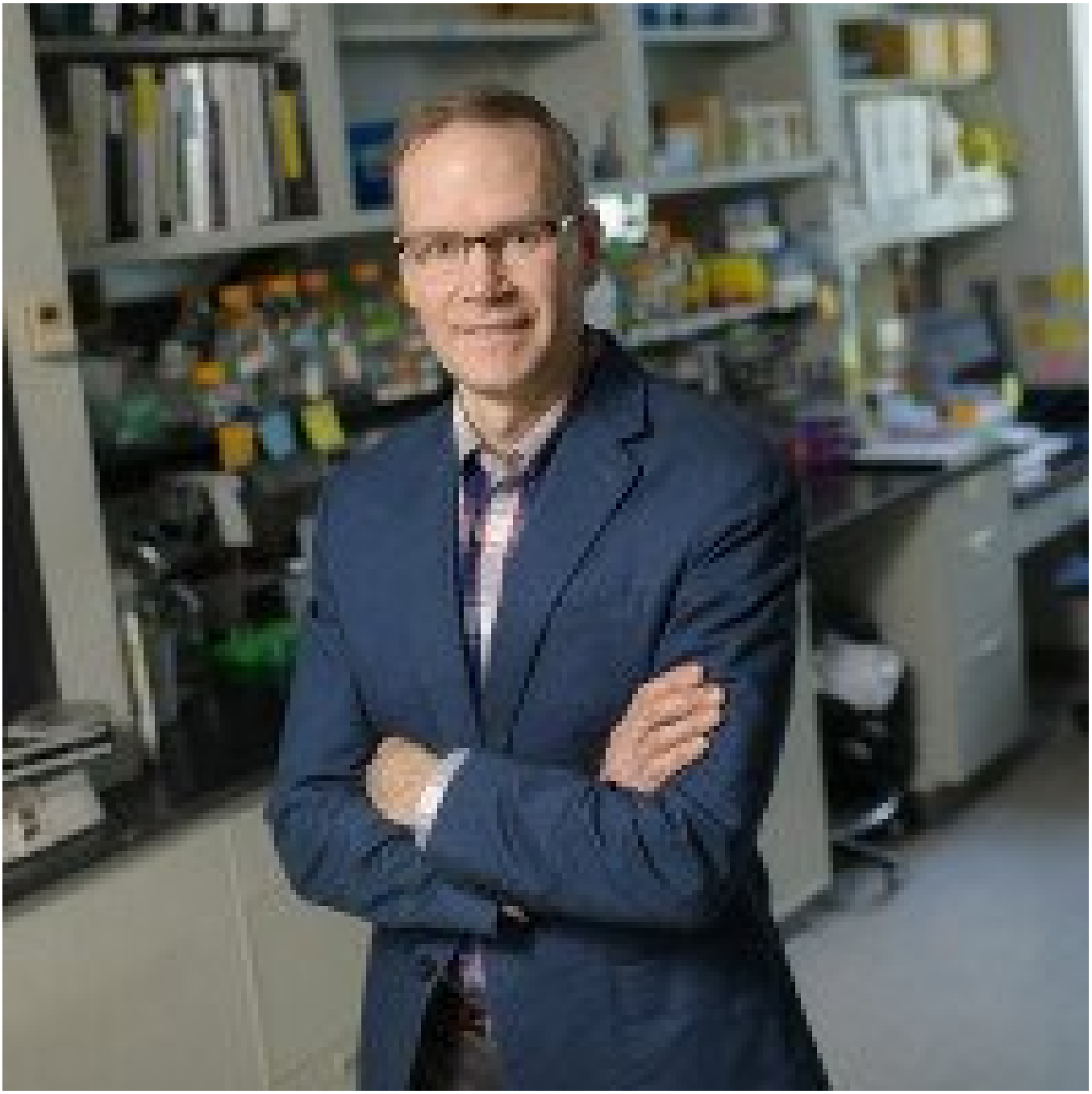
STRUCTURAL BIOLOGY PROGRAM

The Stephen Long Lab

Research



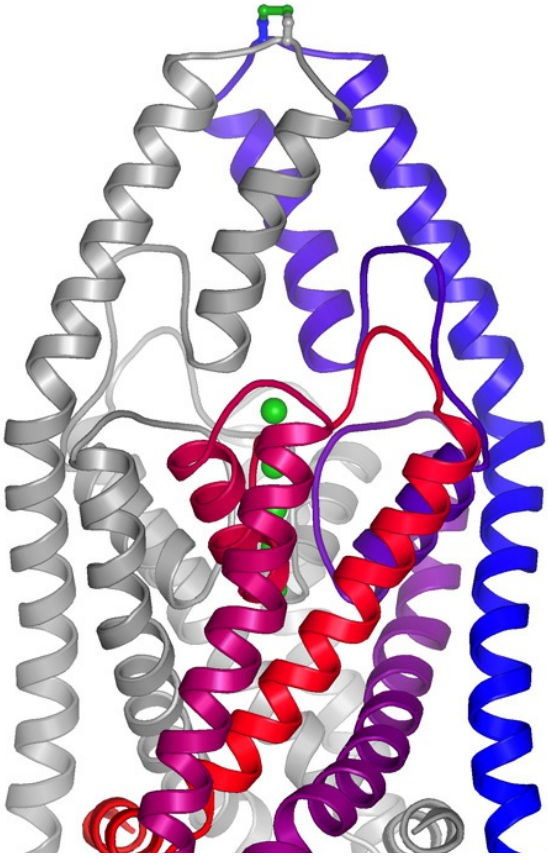
Stephen B. Long, PhD
Member

Professor

Our laboratory uses a combination of structural biology and biophysical techniques to discover how ion channels and membrane-embedded enzymes function at the atomic level. The proteins we study are crucial for the function of the immune system, vision, cell differentiation, and embryonic development, and they are potential targets for diseases including immune disorders and cancer. Our discoveries lead to new

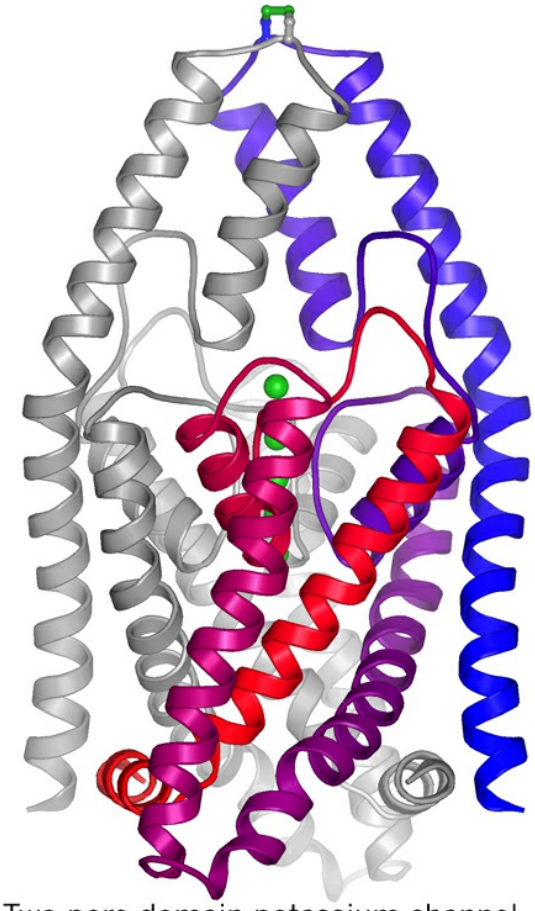
understandings of the fundamental mechanisms of the ion channels and enzymes. These understandings also guide our efforts to develop and evaluate small molecule and biologic modulators for therapeutic potential for cancer and other diseases.

View Lab Overview →

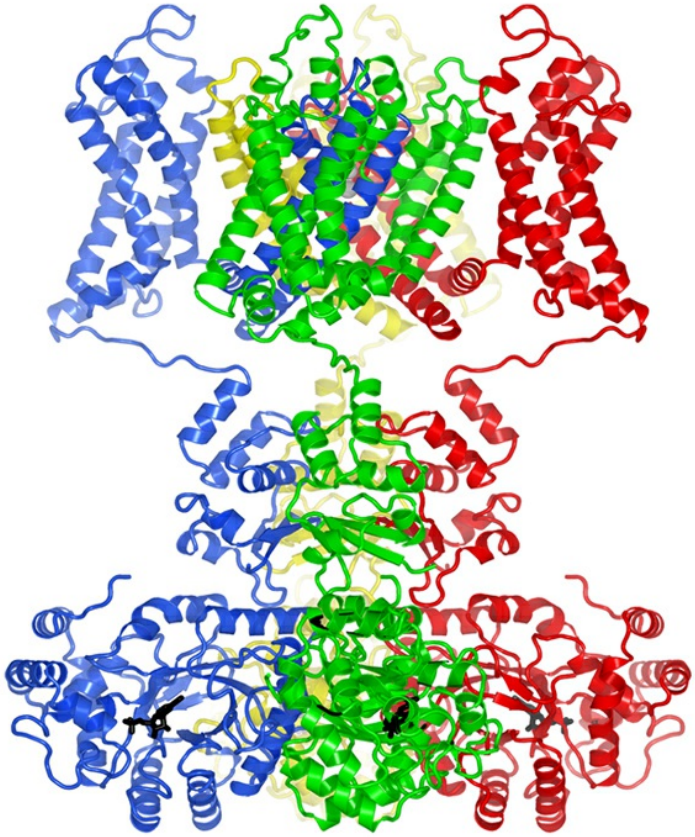


Human two-pore domain potassium channel

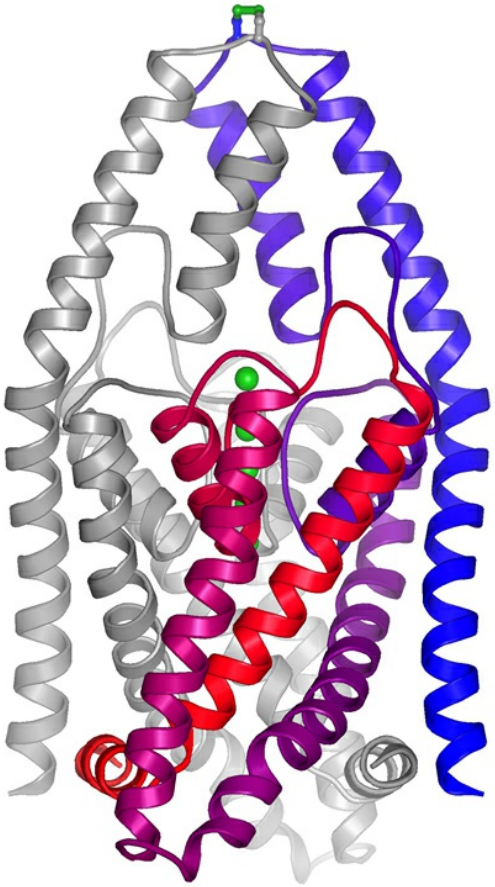
Voltage-dependent potassium channel



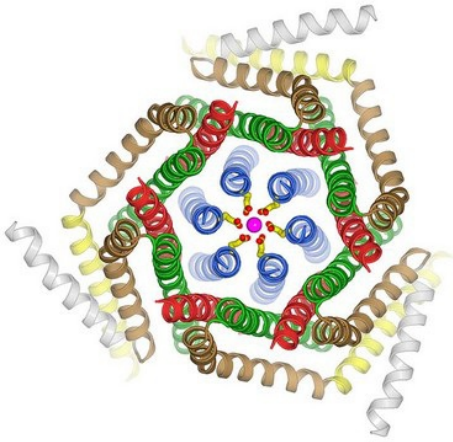
Two-pore domain potassium channel



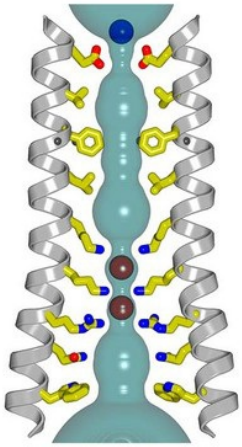
Voltage-dependent potassium channel



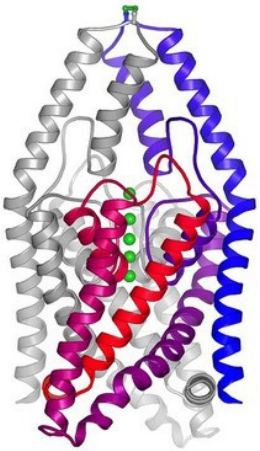
Two-pore domain potassium channel



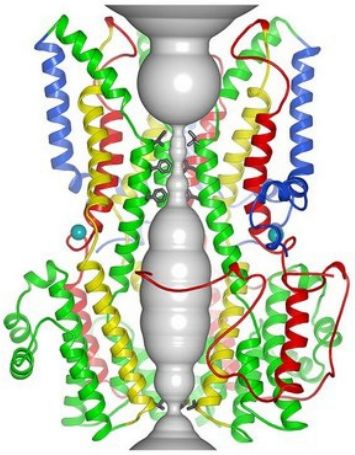
the calcium channel Orai



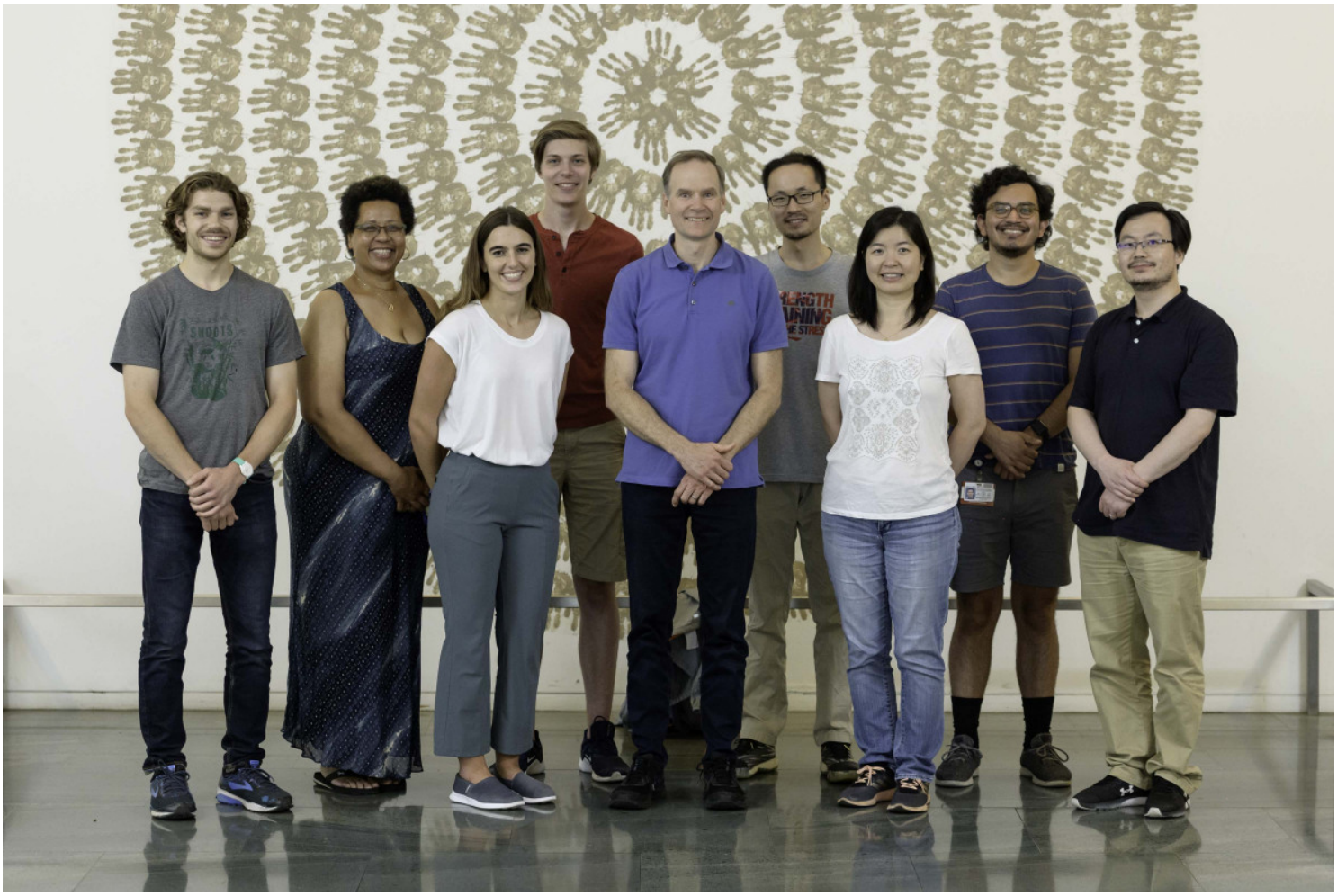
the ion pore of Orai



the potassium channel K2P1



a Ca^{2+}-activated Cl^- channel



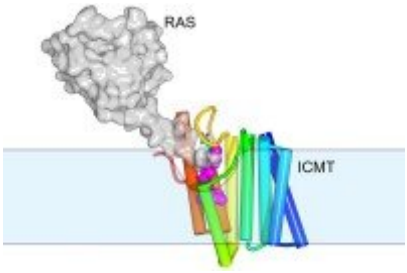
Long Lab circa 2021

Featured News

[Sloan Kettering Institute Year in Review: 10 Noteworthy Science Breakthroughs of 2021]

Take a look back at some of the biggest science stories from this past year.

IN THE LAB



Deciphering How Membrane Enzymes Work, with a Little Help from Beetles

The atomic structure of an elusive type of membrane protein has finally been solved by scientists at the Sloan Kettering Institute.

PROFILE

At Work: Structural Biologist Stephen Long

Stephen Long works to understand how proteins work by determining what they look like in three dimensions.

View All Featured News

Publications Highlights

Delgado B.D. & Long S.B. (2022). Mechanisms of ion selectivity and throughput in the mitochondrial calcium uniporter. *Science Advances*

Wang, C.*, Polovitskaya, M.M.*, Delgado, B.D., Jentsch, T. J., & Long, S.B. (2022). Gating choreography and mechanism of the human proton-activated chloride channel ASOR. *Science Advances*

Jiang, Y., Benz, T. L., & Long, S.B. (2021). Substrate and product complexes reveal mechanisms of Hedgehog acylation by HHAT. *Science*

Hou, X.*, Outhwaite, I.R.*, Pedi, L., and Long, S.B. (2020). Cryo-EM structure of the calcium release-activated calcium channel Orai in an open conformation. *Elife* 9. (Abstract | Open Conformation Cryo-EM map & Atomic Coordinates). *X. Hou and I.R. Outhwaite are co-first authors.

Wang, C., Jacewicz, A., Delgado, B.D., Baradaran, R., and Long, S.B. (2020). Structures reveal gatekeeping of the mitochondrial Ca(2+) uniporter by MICU1-MICU2. *Elife* 9. (Abstract | Holocomplex Cryo-EM map & Atomic Coordinates | MICU1-MICU2 complex Cryo-EM map & Atomic Coordinates)

View All Publications

People

Stephen B. Long, PhD

Member

Professor

The Long laboratory investigates the molecular mechanisms of ion channels and enzymatic membrane proteins and seeks to use these discoveries to benefit humanity.

BA, Physics, Amherst College, 1994

PhD, Biochemistry, Duke University, 2001

Postdoc, Rockefeller University, 2007

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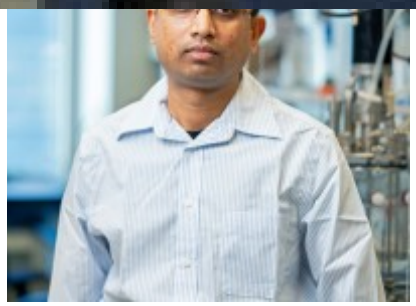
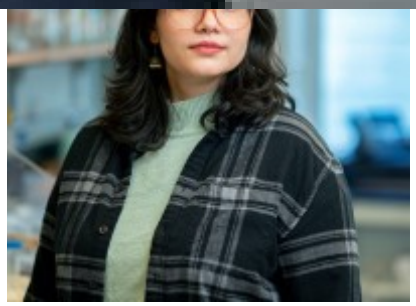
Members

Bryce D. Delgado

Graduate Student



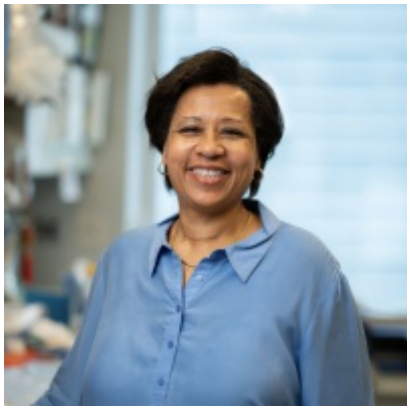
Nandish Kumar Khanra

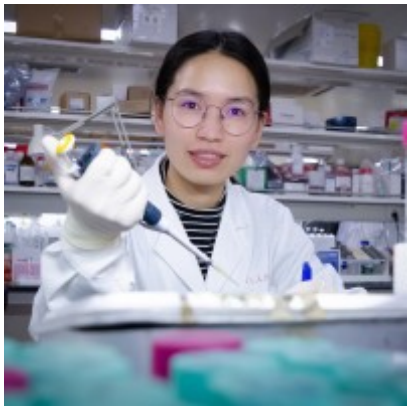


Swati Pant

Senior Research Scientist

Graduate Student





David J. Van Dongen

Graduate Student

Stephanie Woods

Assistant and Lab Coordinator

Qing Zhang

Research Scholar

Lab Alumni
+

Lab Affiliations
+

Achievements

- Louise and Allston Boyer Young Investigator in Basic Research, Memorial Sloan Kettering Cancer Center (2016)
- Louise and Allston Boyer Young Investigator in Basic Research, Memorial Sloan Kettering Cancer Center (2016)
- Burroughs Wellcome Career Award in the Biomedical Sciences (2006-2014)
- Burroughs Wellcome Career Award in the Biomedical Sciences (2006-2014)

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Disclosures

Doctors and faculty members 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.

MSK requires doctors and faculty members 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.

Stephen B. Long discloses the following relationships and financial interests:

No disclosures meeting criteria for time period

The information published here 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.

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