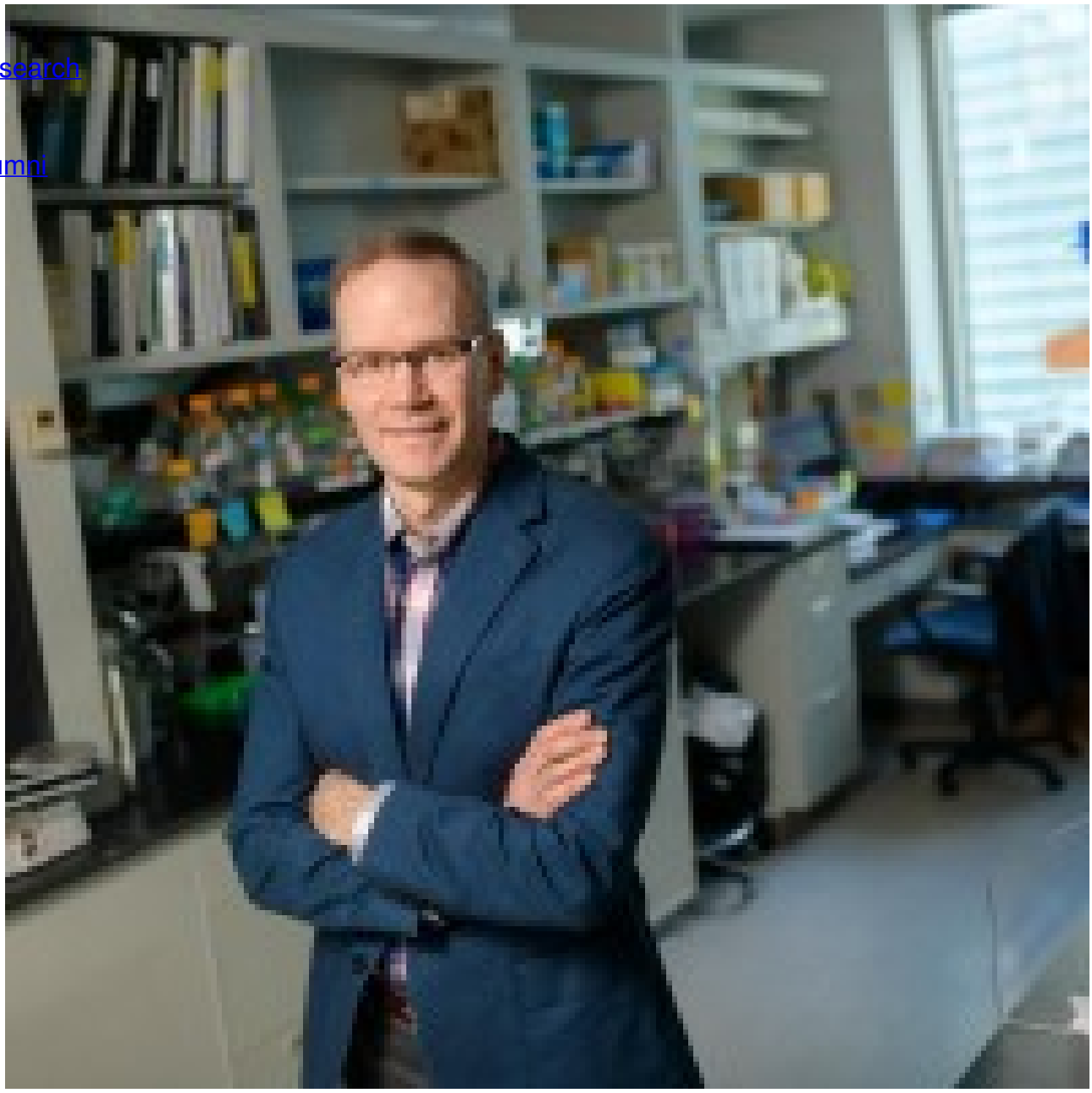
STRUCTURAL BIOLOGY PROGRAM

The Stephen Long Lab

Research



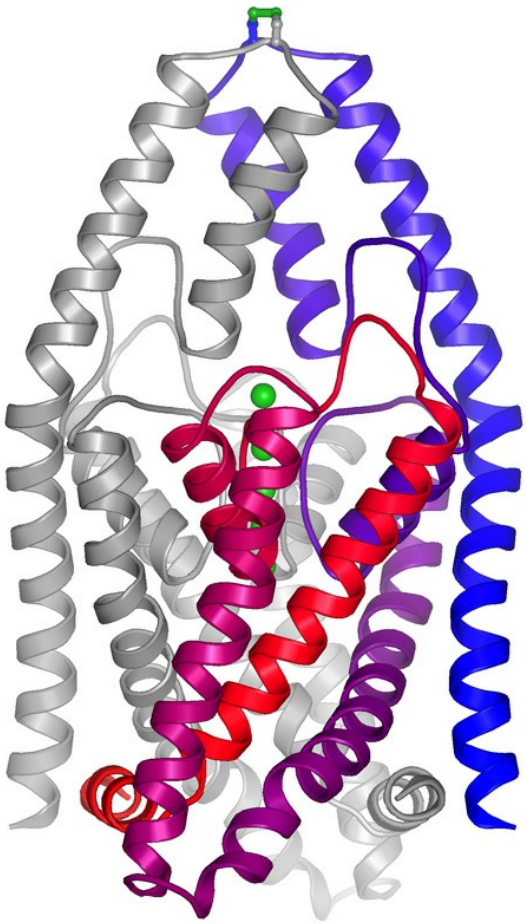
Stephen B. Long, PhD

Member, Structural Biology Program

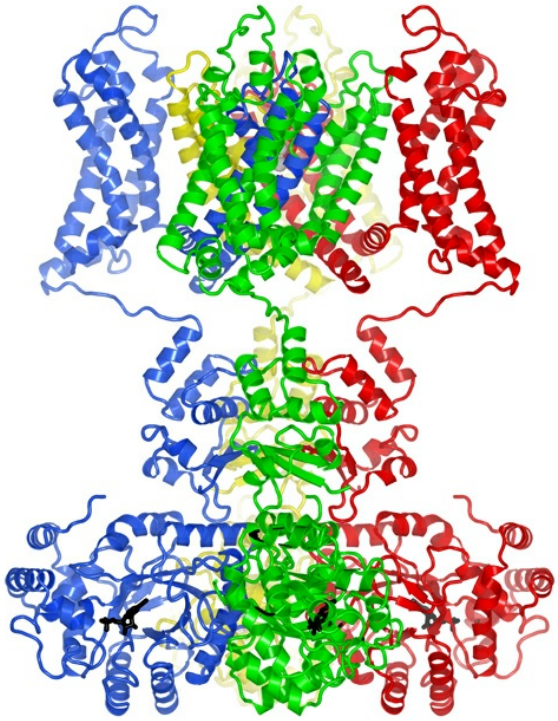
Professor

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.

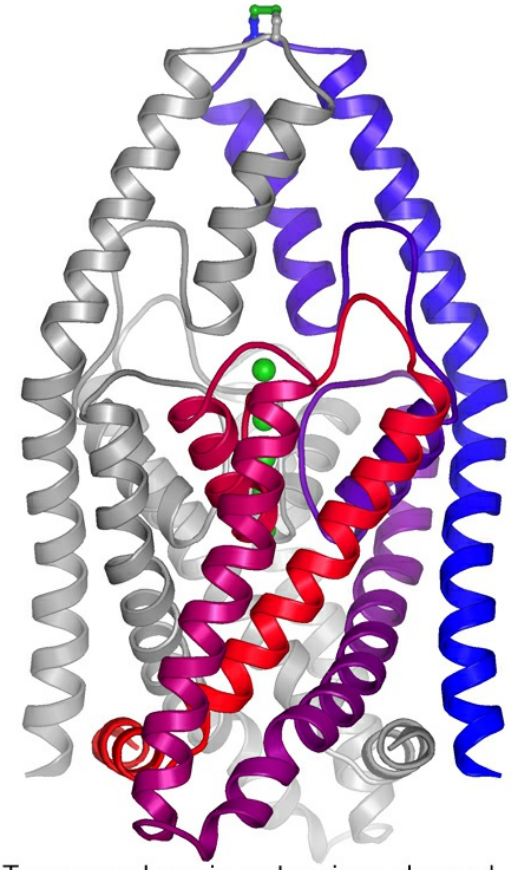
View Lab Overview (https://www.sloankettering.edu/research-areas/labs/stephen-long/overview)



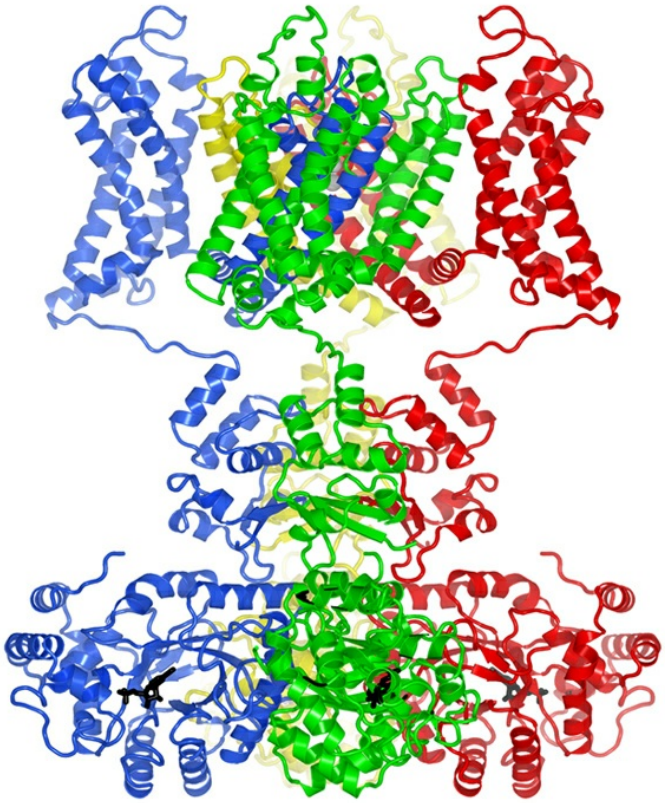
Human two-pore domain potassium channel



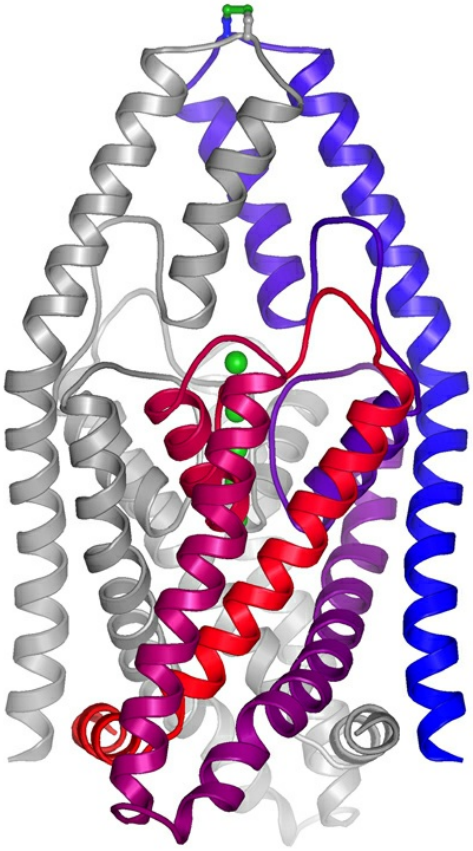
Voltage-dependent potassium channel



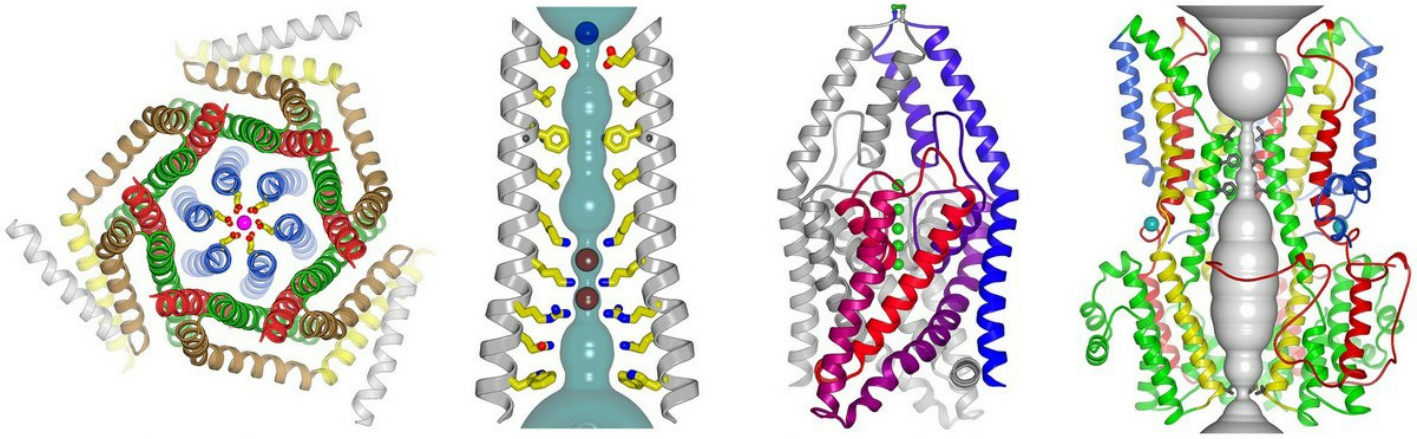
Two-pore domain potassium channel



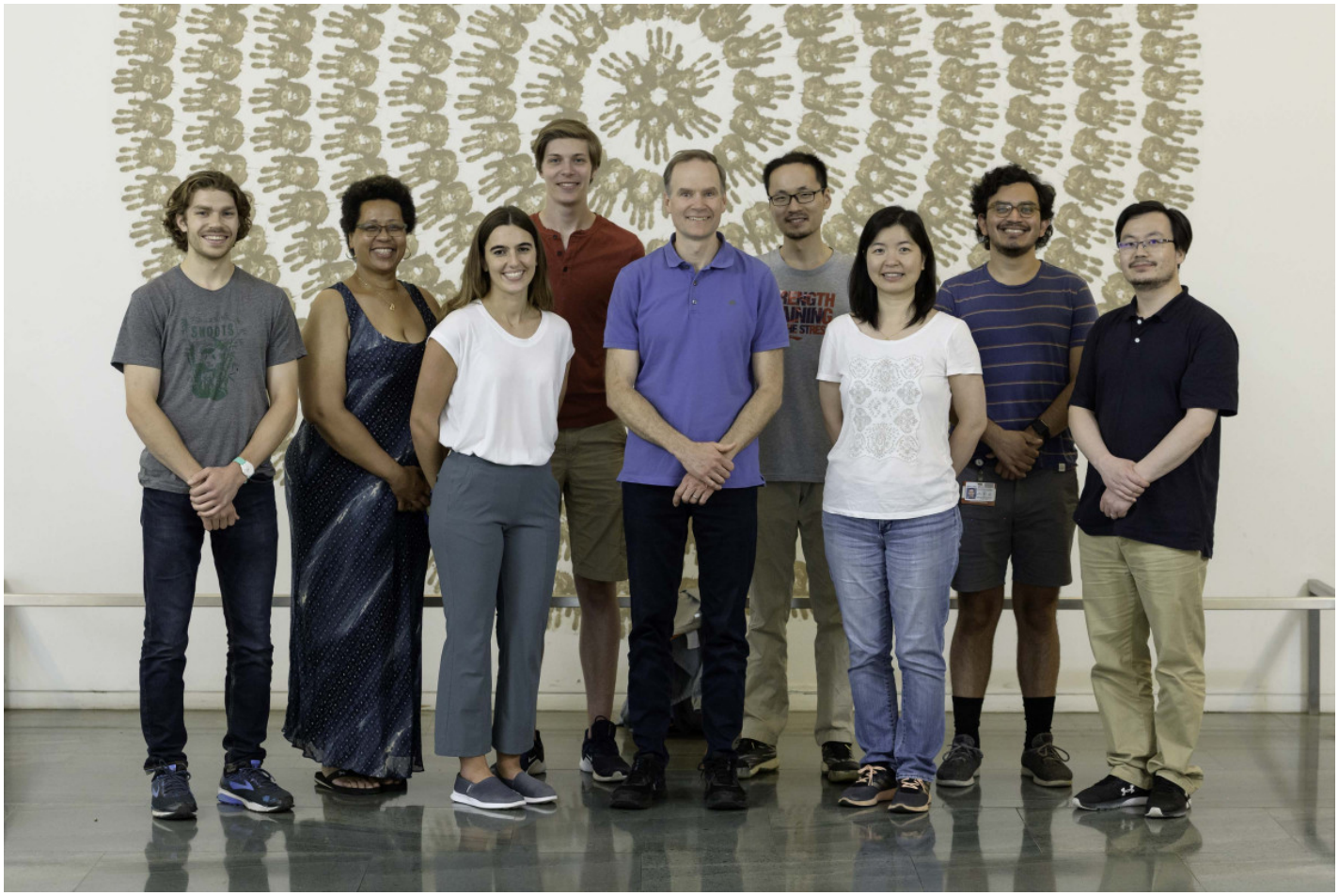
Voltage-dependent potassium channel



Two-pore domain potassium channel



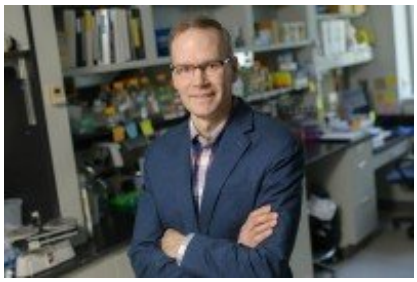
the calcium channel Orai | the ion pore of Orai | the potassium channel K2P1 | a Ca^{2+}-activated Cl^- channel



Long Lab circa 2021

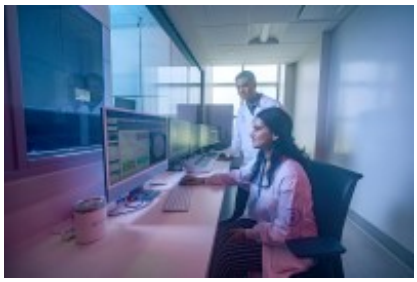
Featured News

IN THE LAB



High-Tech Microscope Reveals Inner Workings of Protein Assembly Machinery

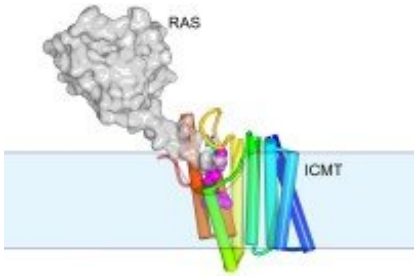
Sloan Kettering Institute investigators have learned how Hedgehog proteins, which are important in both development and cancer, are assembled.



How MSK's Newest Cryo-EM Microscope Reveals An Atom's-Eye View the Universe Inside Our Cells

How cryo-electron microscopy is providing scientists at MSK with an unprecedented view of the wild and wiggly microcosm inside our cells.

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.

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Publications Highlights

Pant, S., Tam, S. W., & Long, S. B. (2025). The pentameric chloride channel BEST1 is activated by extracellular GABA. Proceedings of the National Academy of Sciences, 122(16). Proceedings of the National Academy of Sciences

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Khanra, N. K., Wang, C., Delgado, B. D., & Long, S. B. (2025). Structure of the human TWIK-2 potassium channel and its inhibition by pimozide. bioRxiv, 2025.02.24.639991. bioRxiv

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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*

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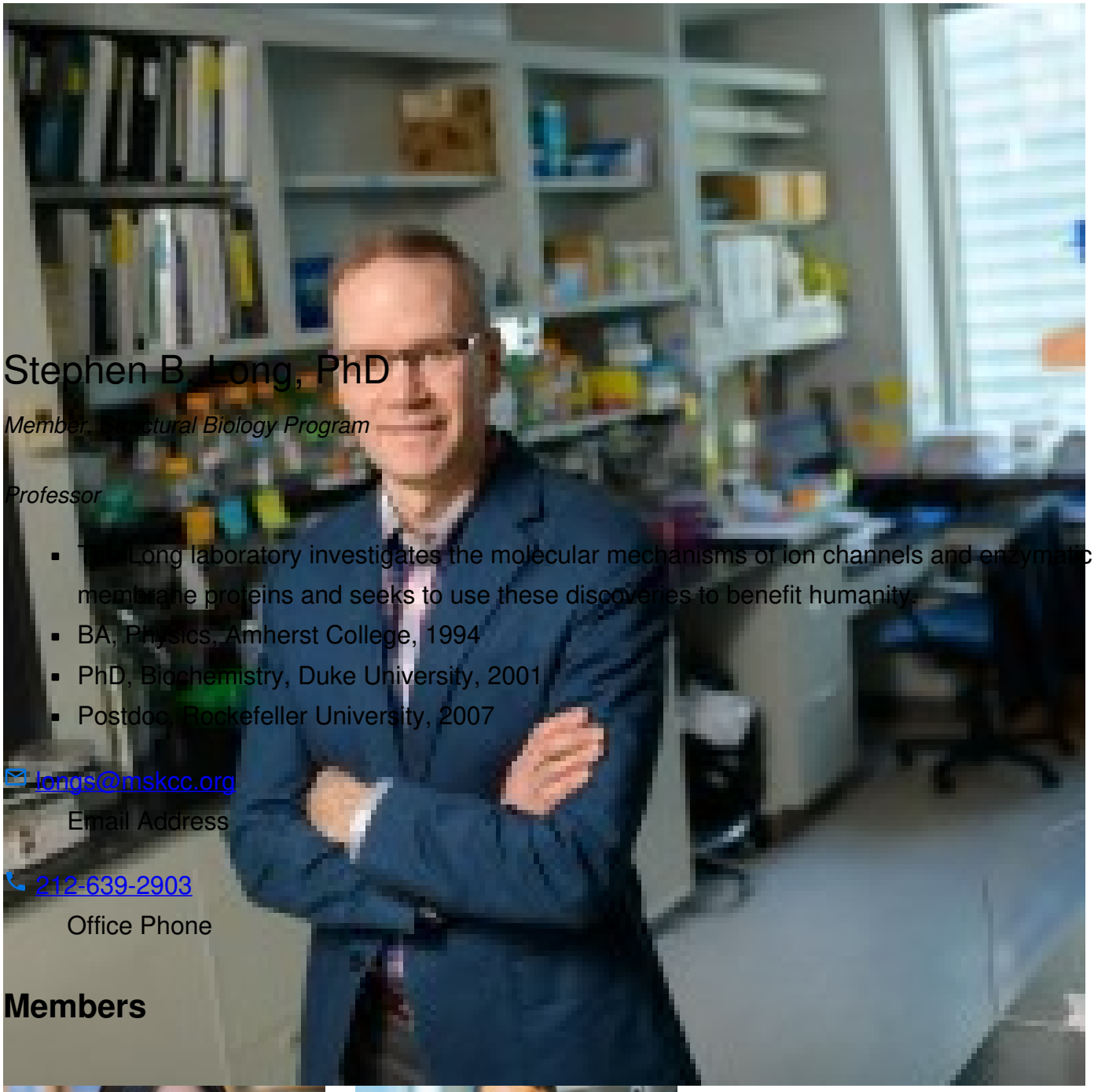
People



Stephen B. Long, PhD

Member, Structural Biology Program

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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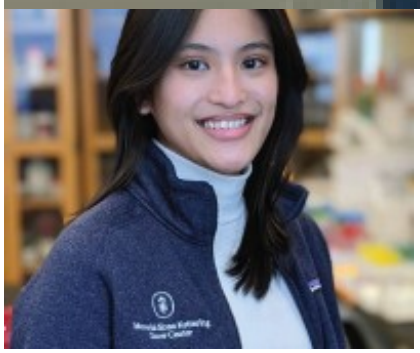
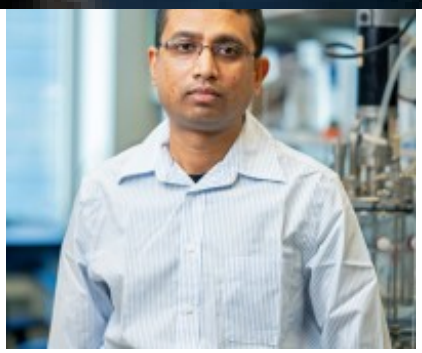
Members



Kaitlin Abrantes
Graduate Research Assistant



Nandish Kumar Khanra
Senior Research Scientist

Lab
Alumni

Lab Affiliations

Achievements

- Louise and Allston Boyer Young Investigator in Basic Research,

Memorial Sloan Kettering Cancer Center (2016)

Stephen Long

Member, Structural Biology Program; Director of Cryo-Electron Microscopy Innovation Laboratory (CEMIL), Chair of Oversight Committee

Swati Pant

Graduate Research Assistant

Jin Shuai

Research Associate

Stephanie Tam

Graduate Research Assistant

David J. Van Dongen

Graduate Research Assistant

- Burroughs Wellcome Career Award in the Biomedical Sciences (2006-2014)

Open Positions

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Get in Touch

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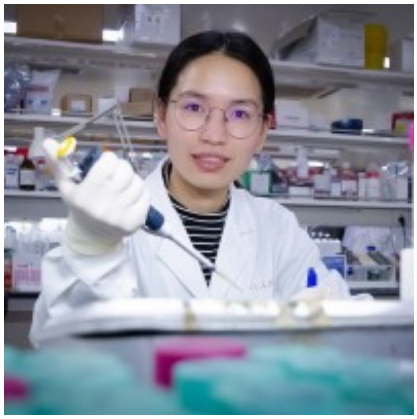
Lab Head Email



Qing Zhang
Research Scholar

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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.

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

No disclosures meeting criteria for time period

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.

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View all disclosures (https://www.sloankettering.edu/disclosures)