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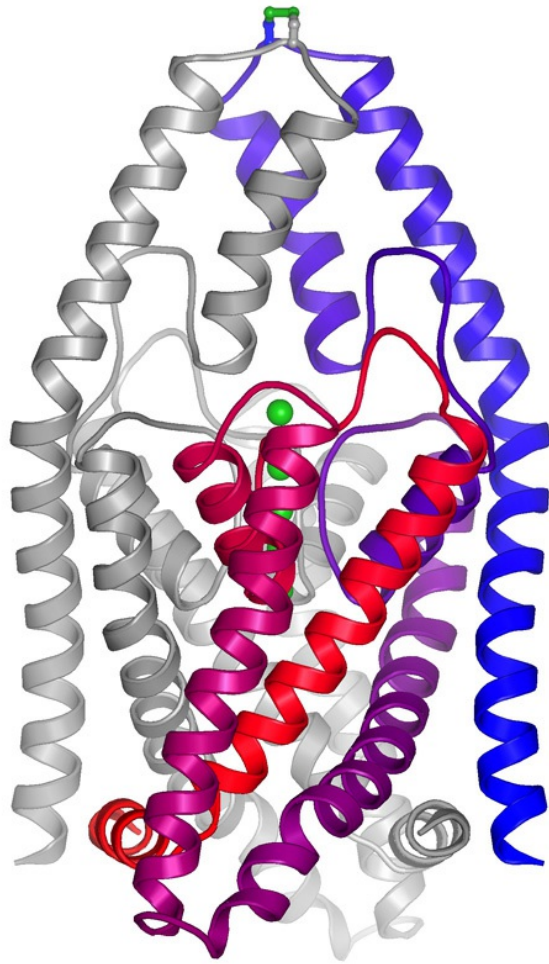
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Stephen B. Long, PhD
Member

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.

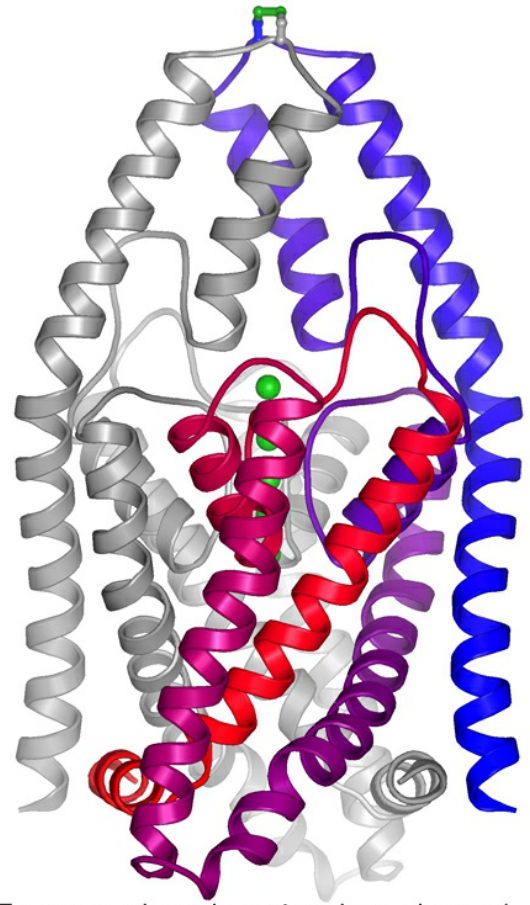
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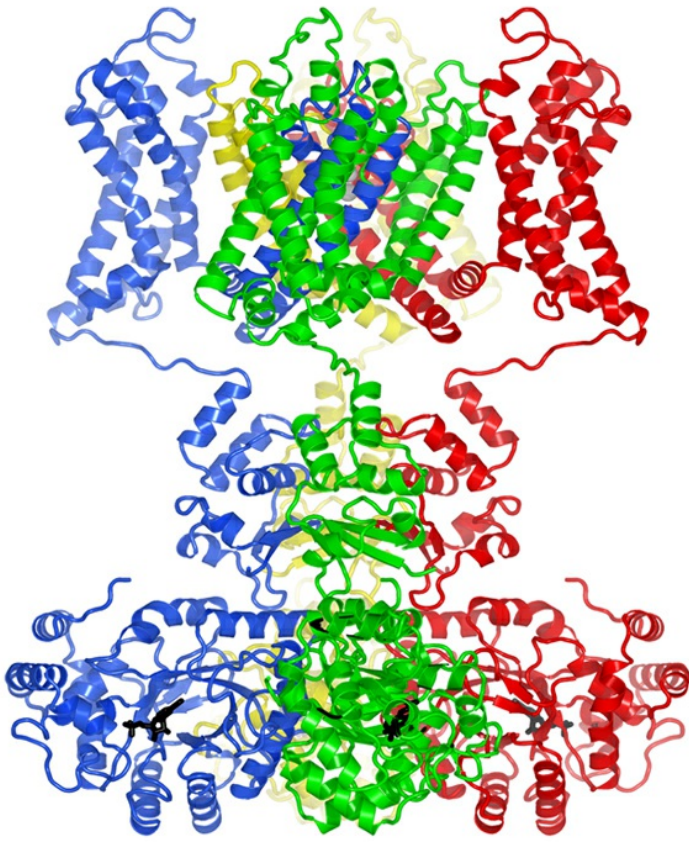
Human two-pore domain potassium channel



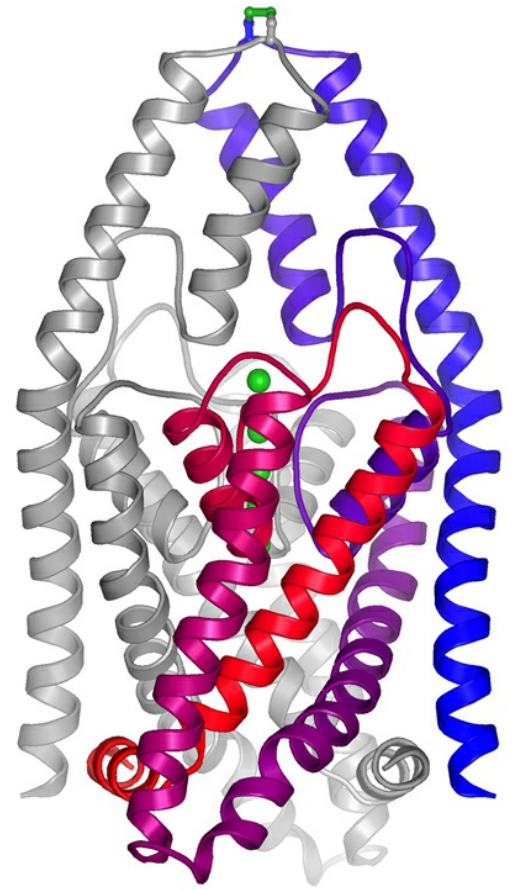
Voltage-dependent potassium channel



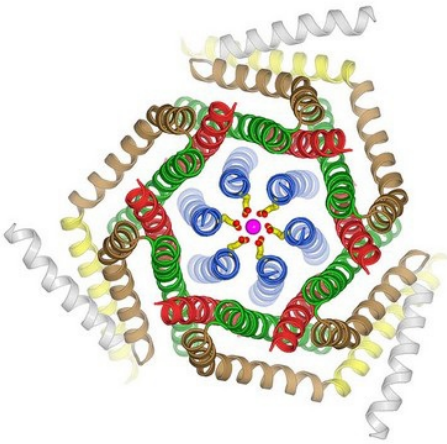
Two-pore domain potassium channel



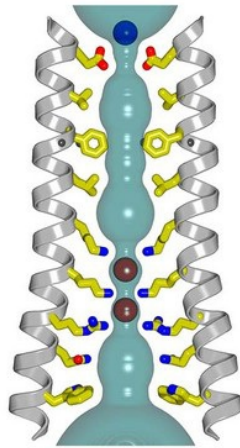
Voltage-dependent potassium channel



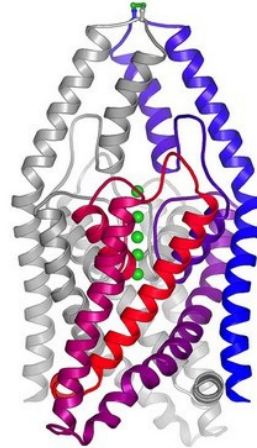
Two-pore domain potassium channel



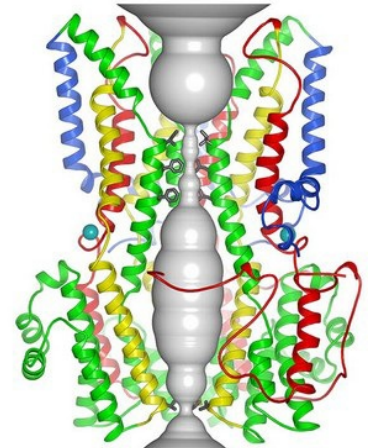
the calcium channel Orai



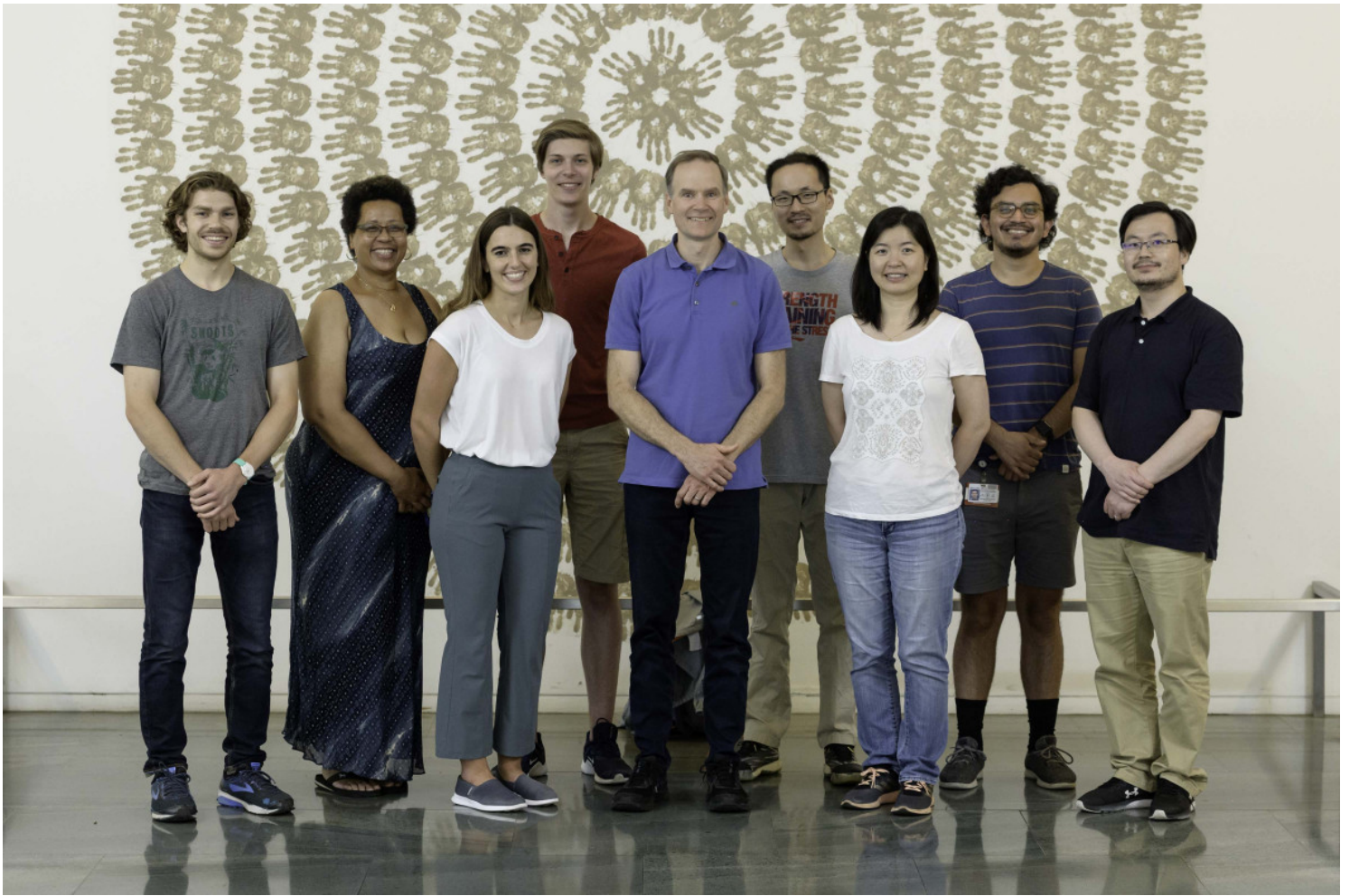
the ion pore of Orai



the potassium channel K2P1



a Ca²⁺-activated Cl⁻ channel



Long Lab circa 2021

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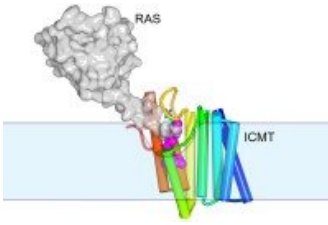
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Take a look back at some of the biggest science stories from this past year.

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.

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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](#))

People



Stephen B. Long, PhD

Member

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

Graduate Student

PhD

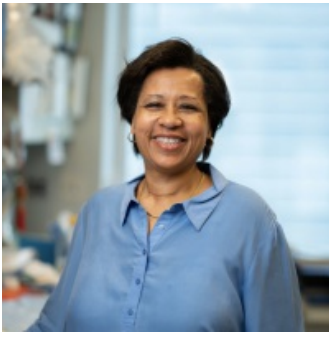
Senior Research Scientist

PhD

Graduate Student

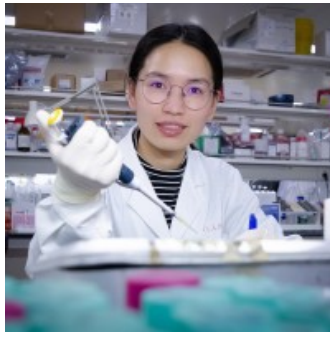
PhD

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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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

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