

Research Roundtable Community Summary – March 25, 2021

KIF1A.ORG's eighth Research Roundtable meeting featured a presentation by Dr. Richard McKenney from University of California, Davis: "Working With KIF1A.ORG Towards Finding A Cure."

Who Is Dr. Richard McKenney?

- Dr. McKenney is an Assistant Professor in the Department of Molecular and Cellular Biology at the University of California, Davis.
- Dr. McKenney was one of our first Research Network members and is a long-time, committed KAND advocate.
- The McKenney Lab is also a KIF1A.ORG funded lab.
 - Read more about our sponsored McKenney Lab project here: <https://www.kif1a.org/blog/kif1a-org-accelerates-kand-research-at-mckenney-lab/>
- Dr. McKenney has also co-authored a KIF1A.ORG Research Simplified article with collaborator and Research Network member Dr. Shinsuke Niwa.
 - <https://www.kif1a.org/blog/research-simplified-with-mckenney-and-niwa-labs/>



Attendance



19 INSTITUTIONS



**30 RESEARCHERS,
CLINICIANS, & BIOTECH
REPS**



5 KIF1A.ORG REPS

Summary

“Working With KIF1A.ORG Towards Finding A Cure”

- In this meeting, Dr. McKenney updated the Research Network on his past and on-going projects investigating how mutation can lead to KIF1A dysfunction.
- Dr. McKenney’s lab uses state-of-the-art biochemical and biophysical methods to answer scientific questions about KIF1A. What does this mean?
 - Biophysical research uses the principles of physics to understand biological systems. In other words, biophysical techniques are very useful tools to investigate how the KIF1A machine inside of our cells is able to function. Furthermore, this type of research helps us understand how mutated KIF1A genes are “broken” on a protein-specific, structural level. Kind of like being a KIF1A auto mechanic!
- We learned about a structural area of the KIF1A protein that is commonly mutated known as a 3-10 helix. This is an unusual type of shape that can be found in a protein, yet it is common amongst kinesin motor proteins. Fascinating!
- Through Dr. McKenney’s work, we are able to understand the implications of mutations in this 3-10 helix region such as impairing KIF1A’s ability land on the microtubule roadways, a behavior that is essential for neuronal cargo transport. This shows us how important the 3-10 helix region is in KIF1A function and helps explain why mutations in this region may lead to human disease.
- Additionally, this worked used a *C. elegans* worm model system to understand the implications of KIF1A mutation. This is through a collaboration with Dr. Shinsuke Niwa of Tohoku University. The power of worms!

Fun Facts

- Did you know that Aileen Lam, KIF1A.ORG’s Science Communication Associate, was a researcher in Dr. McKenney’s lab? In fact, many of the experimental findings discussed in this meeting were a result of Aileen’s work on this project!
- Dr. McKenney and Dr. Cassandra Ori-McKenney (Assistant Professor in the Department of Molecular and Cellular Biology at the University of California, Davis) have both published on KIF1A, often collaborating together. As they are married to each other, you could say that KIF1A runs in the family!