

Research Roundtable Community Summary – April 22, 2021

KIF1A.ORG's ninth Research Roundtable meeting, "From structure to patient perspective: an exploration of common KIF1A variants," was presented by Dr. Dominique Lessard, Chief Science Officer of KIF1A.ORG.

Attendance



**12 RESEARCH
INSTITUTIONS & 10
BIOTECH/INDUSTRY
COMPANIES**



**34 RESEARCHERS,
CLINICIANS, &
BIOTECH REPS**



5 KIF1A.ORG REPS

Meeting Goals

- Build on recent Research Roundtable presentations
 - Each member of the Research Network has an extremely valuable and unique set of skills and perspectives to be shared in our Research Roundtable series. By joining together and sharing this information in these meetings, we are fostering collaborative discussion that ultimately pushed therapeutic development at an expedited rate. Over the past few months we have kicked off the KIF1A 101 series with a comprehensive educational presentation (Dr. Jayne Aiken) and had an in depth report about recent research developments out of the lab of Dr. Richard McKenney. This month we wanted to communicate our (KIF1A.ORG's) own unique perspective, by building off of these recent presentations and combining the "science side" of KIF1A with the patient and family perspective.
- Summarize our understanding of five commonly reported KIF1A variants by addressing questions such as...
 - Where do these variants reside in the KIF1A structure?
 - What do we know about the functional implications of these variants across multiple scales?

- Communicate the patient and family perspective of each variant from consenting members of our KIF1A/KAND community

Summary

- We opened this meeting by doing a brief overview of KIF1A and KAND basics. As this meeting had many new Research Network members, especially new members from the biotech and industry world, we wanted to make sure everyone was on the same page before diving into the heart of the meeting.
- Next up in this presentation we featured five, high-frequency KIF1A variants that illustrated a range of KAND severity and KIF1A protein dysfunction.
- For each variant, we then connected multiple layers of information about the impact of the variant from a scientific level to the patient/family experience.
 - On the science side, we started by reviewing the smallest, most microscopic level of understanding we have about each variant. We then built upon this understanding by reviewing information about each variant with higher and higher complexity until we ultimately reached the clinical level of understanding.
 - Next, we finished reviewing each variant by highlighting the patient perspective through images, videos, and clinical experiences from our KAND community.
- We wrapped up the presentation by highlighting several different quotes from our KAND community members. Importantly, these quotes communicated the impact of these KAND variants on individuals and their families as well as the potential for treatment and cures with work spearheaded by the KIF1A.ORG Research Network.

Main Takeaways

- This presentation format was highly impactful and well received by our Research Network members. We would like to do this format again in a future meeting, featuring a new set of variants.
- Patient and family perspectives are POWERFUL. After hearing these perspectives, researchers were asking in-depth and novel questions. Researchers were thinking in new ways. Researchers were in tears. Researchers were *moved* and *empowered* by your stories.
- Questions brought up in discussion after the meeting:
 - Why is KIF1A mutated at a much higher frequency than other KIF proteins, specifically members of the kinesin-3 family? Why don't we see a high number of recorded variants in other KIF motors?
 - What are the challenges of reporting KIF1A variants on a diagnostic level? Are KIF1A Variants of Unknown Significance underreported?
 - How can we learn more about KIF1A's involvement in other organs besides the brain?
 - What is the most effective therapeutic strategy to treat such a complex disorder with several variants and varying phenotypes?