KIF1A RESEARCH NETWORK

Research Roundtable Community Summary – May 20, 2021

KIF1A.ORG's 10th Research Roundtable meeting, "Next-generation sequencing identifies unexpected high frequency of patients with KIF1A Associated Neurological Disorder (KAND) in a single center; retrospective analysis & OMICS data to further understand KAND," was presented by Dr. Isabelle Thiffault, Director of Translational Genetics Clinical Lab at the Children's Mercy Research Institute Genomic Medicine Center.

Attendance

21 RESEARCH INSTITUTIONS, INDUSTRY PARTNERS/ORGS

41 RESEARCHERS, CLINICIANS, & BIOTECH REPS

5 KIF1A.ORG REPS

Who Is Dr. Thiffault?

- Dr. Thiffault is the Director of Translational Genetics Clinical Lab at the Children's Mercy Research Institute Genomic Medicine Center in Kansas City, Missouri, as well as an Associate professor at the University of Missouri-Kansas City School of Medicine.
- KIF1A.ORG was first introduced to Dr. Thiffault earlier this year through members of our KIF1A.ORG Research Network and it has been a pleasure to get to know Dr. Thiffault and her team at Children's Mercy to learn more about the ways in which they are advancing our understanding of KAND, specifically KAND diagnostics.

Summary on Next Page

Summary

- In her Research Roundtable presentation, Dr. Thiffault walked through some of the programs and high-level genetic analysis at Children's Mercy Hospital that have allowed for the identification of an unexpectedly high frequency of KAND patients in a single center.
- First, Dr. Thiffault informed us of a research initiative at Children's Mercy Hospital called Genomic Answers for Kids (GA4K).
    - GA4K is a first-of-its-kind pediatric data repository to facilitate the search for answers and novel treatments for pediatric genetic conditions.
    - The goal of GA4K is "to collect genomic data and health information for 30,000 children and their families over the next seven years, creating a database of nearly 100,000 genomes".
- Next, Dr. Thiffault discussed the way her team conducts genetic sequencing, using a technique called Third Gen Seq. This new type of genetic sequencing is very comprehensive and has been used to help us identify and understand new KIF1A variants in our KAND community. Third Gen Seq can also inform us about proteins or cellular pathways that KIF1A interacts with that may affect clinical severity/outcome.
- Lastly, Dr. Thiffault walked through her KIF1A-specific work with KAND patients enrolled in the GA4K initiative. Currently, there are eight different patients with KIF1A variants being treated at Children's Mercy Hospital. Compared to the general population, this is an unexpected high frequency of patients with KAND found in a single clinical center, likely linked to the comprehensive genetic testing being done as a part of GA4K.

Main Takeaways

- In the content presented, Dr. Thiffault provides strong support for KIF1A variants being a *frequent* cause of neurodevelopmental disorders.
- The ability to identify a high frequency of KAND patients in a clinical diagnostic center is linked to the type of genetic sequencing being conducted.
- Scientific collaboration and family engagement is key for understanding genotype-phenotype correlation, functional characterization, and accelerating research to find treatment.