KIF1A
RESEARCH NETWORK

Research Roundtable Community Summary – September 22, 2021

KIF1A.ORG's 11th Research Roundtable meeting, "KIF1A 101 – Part Two," was presented by Dr. Kristen Verhey, A. Kent Christensen Collegiate Professor at the University of Michigan Ann Arbor.

Attendance

24 RESEARCH INSTITUTIONS, INDUSTRY PARTNERS/ORGS

45 RESEARCHERS, CLINICIANS, & BIOTECH REPS

4 KIF1A.ORG REPS

What is KIF1A 101?

- KIF1A 101 meetings are a new type of Research Roundtable presentation.
- In these presentations, KIF1A experts (scientists, clinicians, etc.) present our up-to-date understanding about different KIF1A-related processes.
    - For example, we could have a Research Network member present on our current understanding of how KIF1A walks along microtubules, how KIF1A interacts with other proteins in our bodies, the structure/shape of KIF1A proteins and how this can inform drug development, etc.

Why did we start a KIF1A 101 series?

- One of our main 2021 goals is to grow and diversify our Research Network.
- In order to do so, we must bring in new researchers who have not previously studied KIF1A in the past.
- We want to help these new researchers get up to speed on KIF1A knowledge while they are starting their own KIF1A-related research projects.
- Therefore, we are using KIF1A 101 presentations as a resource for new members of our Research Network.
- All KIF1A 101 presentations will be recorded so they can be a permanent resource for our Research Network to review whenever they'd like.

Summary & Presentation

- Our second KIF1A 101 presentation was from Dr. Kristen Verhey, an A. Kent Christensen Collegiate Professor at the University of Michigan Ann Arbor.
- Dr. Verhey has been a pioneer molecular KIF1A researcher since the early 2000s. Much of what we know about KIF1A's function on microtubules is based on her lab's work.
- Some of Dr. Verhey's work on KIF1A has focused on understanding the specific steps needed to turn KIF1A from the "off-position" (unable to transport cargo), to the "on-position" (able to transport cargo). This is an area that is currently being investigated by many researchers and is viewed as a potential therapeutic target in the lifecycle of a KIF1A protein.

- In this presentation, Dr. Verhey walks us through the kinesin-3 family (of which KIF1A is a member), historical discoveries that led to our understanding of how two KIF1A proteins can work together, and finished with an in-depth discussion of the different structural components of the KIF1A protein.
- While the first half of this meeting included Dr. Verhey's presentation, for the second half of our meeting her presentation generated a fantastic amount of discussion and idea building from members of our Research Network.
    - What we do and do not know about different parts of the KIF1A protein and how this information will be beneficial to our therapeutic approach?
    - How do two KIF1A proteins link up to form a dimer (the functional forms of KIF1A proteins)? Do we think we understand these circumstances fully or is there anything missing?
    - WHY is KIF1A "superprocessive" (a.k.a. walks much faster and much further distances than other proteins very similar to KIF1A)?

Watch the video of Dr. Verhey's presentation [here](#)!