Greetings to the KAND Community

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PRESIDENT AND CHIEF MEDICAL OFFICER

(NASDAQ: OVID)
Working Hand-in-Hand with the KAND Community

Together we are strong: The KAND community makes our work possible
You are why we come to work every day

2017

2019
We Understand What is Truly Meaningful

PATIENTS AND FAMILIES
• Understand what matters most to KAND families
• Integrate and include patients & caregivers in development process from day one

SCIENTIFIC COMMUNITY
• Raise awareness in the scientific community and collaborate with researchers

RARE DISEASE COMMUNITY
• Create therapies that have the potential to transform the lives of patients and families

ADVOCACY ORGANIZATIONS
• Work together to address the urgent need for treatment of severe neurological conditions that have limited or no therapeutic options
Together With Our Patient Communities We Accelerate R&D

Ovid Therapeutics is developing medicines based on our understanding of key biological pathways and their central role in rare neurological conditions.

We develop medicines using clinically relevant criteria related to the underlying disease pathophysiology to capture potential benefits as they relate to families and patients in the real-world.

We do this with a focused effort on the significant unmet therapeutic need in a sentinel indication.

With demonstrated success we apply science-driven, patient-focused, family-focused expertise to other conditions where we hope to make a unique difference for people living with serious conditions and their families and loved ones.
Thank you
from all of us at Ovid Therapeutics
for allowing us to be a part of your journey
OV815: KIF1A (KAND)
Preclinical Gene Modulation
KIF1A ASSOCIATED NEUROLOGICAL DISORDER (KAND)

KIF1A is primarily an autosomal dominant, gain of function disorder with mutations impacting the transport of synaptic vesicle precursors to the synapse.

Natural History Data from Chung Lab – Columbia University

- Neurological concerns
  - Hypotonia: 85%
  - Hypertonia/spasticity: 75%
  - Seizures: 44% (likely underreported due to multiple seizure types)
  - Abnormal MRIs (e.g. cerebellar atrophy): 58%

- Eye concerns
  - Vision or eye conditions: 85%
  - Optic nerve atrophy: 40%

- Intellectual disability

- Peripheral neuropathy

- Autism, obsessive compulsive behavior and anxiety

- Endocrine, kidney and urogenital issues reported but less common

- Patients without genetic test have been diagnosed with Cerebral Palsy, Charcot Marie Tooth (CMT), RETT
KIF1A-Associated Neurological Disorder (KAND)

**KIF1A (Kinesin-3 Family Member)**
- **KIF1A** is a unique monomeric microtubule motor; neuron specific
- Responsible for anterograde transport of synaptic vesicles, organelles and neurotransmitters
- Intrinsic weak binding of KIF1A to GTP-tubulin induces motor detachment at pre-synapses altering synaptic strength
- Majority of mutations occur within the motor domain

**Severity:**
- Mild
- Moderate
- Severe
- Unknown

**Inheritance:**
- De novo
- Dominant inherited
- Dominant, segregation unknown
- Recessive

**Frequency**

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<th>Mutation</th>
<th>Frequency</th>
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**Motor Domain**

- NC
- FHA
- CC1
- CC2
- PH

**Severity:**
- Severe
- Moderate
- Mild
- Unknown
KAND Therapeutic Approaches

• Knockdown defective allele
• Disable mutant protein
• Replace defective gene
• Expand understanding of global cellular pathways affected by individual KIF1A variants
  – Alternative approach targeting other signaling/transport/trophic support pathways.
  – Use patient or isogenic derived iPSCs for characterization
  – Some similarities in KIF1A variant structure with other kinesin family members and kinesin family interacting proteins (MAPs, Tau, etc)
Approach to KAND Therapies

KIF1A Mutant Neutralization

- KIF Mutant Neutralization
- Aptamer Protein Targeting
- Library Screening

Dimerization Destabilization/Disruption

- Functional Testing (Biochemical)
- In vitro Validation
- Lead Identification

KIF1A (Kinesin 3 Family Member)

- Dimeric Kinesin-3 (active)
- Monomeric Kinesin-3 (inactive)

KIF1A Mutant Knockdown

- KIF1 Mutant Knockdown
- RNAi Gene Targeting
- Library Screening

Reduction of Mutant Expression

- In vitro Validation
- Lead Identification
- Viral Delivery Development

JUNE 30, 2021
Thank you for including us in this fight to change KAND’s fate.