Daniela Brunner, PhD, Early Signal Foundation

"Wearable Sensors for Multifunctional Assessment in Rett syndrome"

The Research

Dr. Brunner is developing wearable sensor technology (WST) to measure hand stereotypies, sleep, gait, movement, heart rate, and night respiration in girls with Rett syndrome. Dr. Brunner will use data from the Natural History Study to improve and expand the use of these sensors.

Dr. Brunner and her team have partnered with Drs. Eric Marsh and Tim Roberts at the Children's Hospital of Philadelphia (CHOP) to quantify stereotypic hand movements and other symptoms seen specifically in Rett girls and to determine how the sensor data could be used as a measure for efficacy.

Click here to read more about her research.

The Hope

Dr. Brunner's goal is to show that WST can be used by clinics to assess the effectiveness of treatments in Rett syndrome patients. Right now, there are no FDA-approved clinical endpoints that can quantify treatment efficacy. Dr. Brunner, Dr. Friso Postma, and the team at Early Signal believe that this is an unmet need and is hampering the field of Rett research.

The Answers to Your Questions

What is the most exciting/hopeful aspect of this project and its possible results?

The projects that are the most exciting for my team, and for me, personally, are those that can have immediate impact on the disease burden for the kids and the families. Being able to objectively assess disease progression and improvement is a fundamental issue at the core of all research focused on understanding, managing, and curing disease.

What are you looking for/measuring/trying to solve in simple terms?

We are using wearable devices to measure stereotypic movements of the hands in a very objective way. We will also use some sensitive bed sensors to assess the quality of sleep, respiration, cardiovascular parameters and apnea.

Is there any way for families to help with your project?

We are working with the amazing Eric Marsh and Tim Roberts from CHOP. It will be an immense help if families are willing to participate, attend the lab sessions, follow instructions to test the sensors at home, and complete the questionnaires!

Does the knowledge gained help treat Rett or cure Rett?

Our research may potentially help *both* by providing objective quantification of diverse symptoms. This will allow specific assessment of the effect of different treatments on Rett symptoms.

What is the timeline of your work?

We have spent quite a bit of time during 2017 preparing for the study, choosing sensors, setting up a safe way to transfer data, creating some of the analysis tools we will use, and we are now almost at a point where we can start recruiting subjects for the study. Progress will then depend greatly on recruitment rate in Dr. Marsh's CHOP site.

The Researcher

Dr. Brunner has focused for more than 20 years on animal models of disease, in both academia as a post-doc and young assistant professor, and then in industry. One of the most satisfying projects she directed was setting up a drug screening platform for Rett, Rettsyndrome.org's Scout Program. Dr. Brunner is now the President and Founder of Early Signal Foundation, where she aims to develop new tools for the analysis of health signatures in humans, especially for rare disorders, with a special interest in connecting genomic information with behavior.

To see Dr. Brunner's complete scientific abstract, click HERE