International HD Scientists Share Latest Research and Explore New Frontiers

The world's foremost Huntington's disease and rare disease researchers were in Boston August 8 -11 for the Hereditary Disease Foundation's 11th Biennial Milton Wexler Celebration of Life Scientific Conference. The HD2018 meeting was a great success, gathering about 250 participants from across the globe. Hailing from as near as the Massachusetts General Hospital and as far as New Zealand and Taiwan, attendees came together to share their latest research findings. Topics ranged from the minutia of protein structure to the grand scale of modern computational analyses, from established animal models to recent clinical successes. Diverse research questions and methods converged on the common goal of developing novel therapies for HD and other rare disorders.

The opening session featured an introduction from Nancy Wexler, acknowledging the research community's collaborative and multigenerational efforts "throwing our shoulders against a really hard wall together." Following this warm welcome was an inspiring interview with a woman affected by HD and her husband, highlighting day-to-day challenges and bringing to light many unanswered clinical questions to motivate ongoing research. An exciting clinical session focused on Ionis-HTTRx (RG6042), a huntingtin-lowering therapy in development by Roche Pharmaceuticals (known as Genentech in the United States) that has shown great promise in early clinical trials. Nearly a decade of painstaking preclinical work from Ionis Pharmaceuticals and HD researchers worldwide led to a successful safety trial of RG6042 in 46 heroic trial participants from England, Germany, and Canada. Roche is poised to begin a Phase 3 trial to determine whether this drug could help to slow or improve symptoms of HD.

Three keynote talks highlighted some hot topics in recent Huntington's disease research: dysfunction and removal of toxic proteins, DNA repair, and the application of cutting-edge scientific tools. The first keynote speaker, Dr. Jeff Kelly, a researcher at the Scripps institute, studies how to enhance the folding and clearance of toxic disease proteins. His team's work led to the discovery of a small molecule drug to treat a neurological and heart disorder called transthyretin amyloidosis. Some of these patients are now living an extra 10 years or more, raising hope that similar approaches to enhance the breakdown of mutant huntingtin could be fruitful.

A second keynote was delivered by Dr. Ray Truant from McMaster University in Ontario, Canada. Large human genetic studies in the past few years have revealed that DNA repair plays a role in the age of onset of Huntington's disease symptoms. Dr. Truant's lab has identified a molecule called N6-furfuryladenine that can boost DNA repair and help to properly "tag" huntingtin so it functions better. This drug improved symptoms in HD mice. This project has also led to some new discoveries about energy metabolism in HD that could be applied to therapeutics. Finally, Dr. William Yang from UCLA presented three stories about applying new tools to HD research. He described a new mouse model that will allow for the study of CAG repeat expansion, shared a method to make neurons "light up" to better visualize how they grow and communicate, and presented a test to measure how mutant huntingtin clumps together and how best to stop this process.

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Additional sessions addressed other neurodegenerative diseases like spinocerebellar ataxia, explored non-invasive ways to deliver therapies to the brain, highlighted new animal models, and showcased work from the next generation of young researchers. Lively discussions followed each talk, with collaborations cropping up in real-time as researchers realized their shared interests and offered their insight and resources. Continuing in the strong tradition of HDF scientific meetings, HD2018: The Milton Wexler Celebration of Life was an outstanding forum for inspiration and ideas for HD and rare disease researchers all over the world.