Healey Center
Sean M. Healey & AMG Center
for ALS at Mass General

Amyotrophic Lateral Sclerosis (ALS) is a devastating diagnosis, but there has never been a more exciting time of ALS discovery in the quest for a cure. In sporadic or non-inherited forms of ALS, the underlying mechanism of disease is complex and likely variable across a spectrum of patients with this disorder. In 10% of patients with ALS, the disease is caused by an inherited gene mutation and often impacts generations. Many families affected by ALS harbor the C9orf72 (C9) repeat expansion, the most common gene known to cause ALS. Our understanding of how an ALS mutation causes disease and the development of novel therapeutic approaches are increasing at a rapid pace thanks to the generosity of our patients and their families. Mass General researchers have a long history of discovery in genetic forms of ALS, having identified the first gene associated with ALS in the 1990s. We are global leaders in ALS therapy development for both familial and sporadic ALS.

At the Sean M. Healey & AMG Center for ALS at Mass General, we have a multidisciplinary team of more than 100 affiliated researchers focused on understanding the cellular roots of ALS to uncover new therapeutic targets and expedite clinical trials evaluating these novel compounds.

Katharine Nicholson, MD is an ALS clinician researcher at the Healey Center for ALS and an

instructor at Harvard Medical School. Since completing fellowships in neuromuscular and neurodegenerative disease and therapeutic drug development, her clinical expertise and innovative research has focused on people with familial ALS. Dr. Nicholson launched a program to offer C9orf72 repeat expansion testing to any ALS patient at the Mass General ALS Multidisciplinary Care Clinic. She leads the ALS component of the Brain Health Clinic at Mass General, providing comprehensive evaluation to asymptomatic family members of people with ALS. She spearheaded an innovative multicenter platform to partner with asymptomatic ALS gene carriers to uncover markers of inciting disease processes. For this work, she received an American Academy of Neurology Clinical Research Training Scholarship in 2018. She currently also leads multidisciplinary research teams at the Healey Center in coordination of exciting and interfacing C9-focused research initiatives in people with C9ALS and asymptomatic C9 carriers.

Dominant Inherited ALS (DIALS) Network, A New Approach to Prevention:

At this critical time, marked by the emergence of amazing gene therapy strategies targeting familial ALS, support of the Dominant Inherited ALS (DIALS) Network would profoundly accelerate our ability to accurately predict disease onset to halt the ALS before the onset of symptoms. Within the last two years we launched the DIALS Network as a multicenter study to follow people at risk for familial ALS so that we can effectively design preventive strategies in familial ALS. Co-led by Dr. Katie Nicholson at Mass General and Dr. Timothy Miller at Washington University, the goal of the DIALS Network is to identify the earliest biological and clinical markers of disease among individuals with dominantly-inherited ALS, in order to rapidly move the ALS field towards disease prevention. These components are essential in the design of the first prevention trials in those who are asymptomatic and at risk. Philanthropic support will allow us to expand the DIALS network to more families and accelerate our ability to conduct prevention trials with digital phenotyping.

Accelerating Pre-Clinical Discovery in Familial ALS:

Information gathered through the DIALS Network will also leverage the groundbreaking laboratory research underway in the lab of Clotilde Lagier-Tourenne, MD, PhD, who holds the Healey Family ALS

Endowed Chair for Research at Mass General. Dr. Lagier-Tourenne and her team investigate the molecular mechanisms driving neuronal death in ALS and frontotemporal dementia (FTD). The laboratory has developed cellular and animal models to uncover mechanistic insights and to determine the most effective therapeutic strategies in C9-related ALS. Dr. Lagier-Tourenne established collaborations with academic and pharmaceutical partners to develop novel approaches to therapy, including RNA-targeting antisense oligonucleotides and immunotherapies for patients with ALS and FTD linked to the C9orf72 (C9) expansion. In particular, her work in collaboration with IONIS Pharmaceuticals and Biogen is at the stem of the therapeutic development of antisense oligonucleotides (ASOs) in C9-related ALS and FTD. Cutting-edge approaches in the laboratory often require start-up support to investigate whether a scientific finding has the potential for meaningful clinical impact. Support would not only promote pre-clinical work on known promising therapies, but also focus on new and groundbreaking strategies in familial ALS. This would include efforts to identify pre-symptomatic markers of disease and gene silencing therapies.

Changing the Face of Familial ALS Through Innovative Clinical Trials:

Clinical trial support would spearhead an initiative focused on innovation in C9-related trials for both people who are affected by neurodegenerative disease and those who are pre-symptomatic and at risk. Fast-paced lab discoveries in familial ALS have led to a growing list of ideas for translation into therapy, including genetic approaches and small molecules. The Healey Center Scientific Advisory Council (SAC) is an international group of ALS experts poised to provide critical advice and review of proposals to move the most exciting compounds into clinical trials quickly. A subset of the SAC will be engaged to advise on the best targets and treatments for C9-related disease. A major challenge in ALS drug development is the conventional “parallel group” trial design requiring large patient numbers and long trial duration. Part of the mission would promote “N-of-1” trials, in which a therapy is tested in just one patient or a small group of targeted patients, to determine potential impact. An experienced team at the Healey Center would lead the design of these small trials conducted in a new C9-focused trial network.

The Impact of Philanthropy:

We are excited by the speed of C9-related scientific discovery and by the opportunity to partner with you to think big and boldly about treatment and preventive strategies for ALS. Philanthropy is a critical component in our success. We look forward to partnering with you to focus on C9-related discoveries of critical disease markers and promising potential therapies, fast-tracking C9 drug development from our laboratory researchers to families affected by ALS.

Thank you for your consideration. For more information about this initiative, please contact:

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