THE ALS RESEARCH FORUM
Discovering a Common Goal, Discovering a Cure
PRIZE4LIFE ALS ASSOCIATION

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Research News

Cryo-EM Developers Win Nobel Prize in Chemistry

Cryo-EM: Developing ALS Therapies in a Flash Freeze?

The inventors of cryo-electron microscopy snapped up the Nobel Prize in Chemistry this month. The structural technique, pioneered in the 1970s, is emerging as a key approach to draft molecular blueprints of complex intracellular structures including the nuclear pore, which may clog up in ALS (see August 2015 news; for review, see Hoelz et al., 2016). The strategy recently enabled a research team, led by University of Michigan's **Daniel Southworth**, to capture molecular snapshots of Hsp104, an enzyme which helps refold aggregated proteins (Gates et al., 2017). The approach is currently being developed as a potential therapy for ALS (see September 2017 news). Efforts to optimize this approach using these molecular blueprints, are now underway.

To learn more about how scientists aim to bust up inclusions in ALS, check out our recent feature: Breaking up TDP-43 aggregates may be doable.

FUS Stabilizes Synaptic Protein mRNAs, Dendritic Spines

Researchers may be one step closer to understanding how aggregation of a key RNA-binding protein may contribute to ALS/FTD. The study, led by Nagoya University's **Gen Sobue** in Japan, found that FUS may help keep neurons connected in the brain by facilitating the synthesis of the dendritic protein SynGAPα2. The findings come at the heels of a previous study which found that cytoplasmic mislocalization of FUS resulted in key signs of FTD in mice at least in part, due to a decrease in dendritic density in the brain (Shiihashi et al., 2017). Together, the results suggest that the aggregation of FUS may result in the instability of synapses in key regions of the brain, leading to cognitive challenges. The study is published on September 26 in *Cell Reports*.

C9orf72 Glycine-Alanine DPR: The Most Toxic of Them All?

Immunotherapies under development aim to help protect motor neurons against C9orf72 ALS by reducing levels of dipeptide repeat proteins (DRPs) (see October

2017 news). But which, if any, of these five short proteins primarily contributes to motor neuron toxicity in the disease? Now, **Christopher Shaw**'s team at King's College London in England, reports that the C9orf72 ALS glycine-alanine DRP "poly(GA)" may be a key contributor to ɲeurotɵxicity - at least in the developing chick spinal cord. The findings build on previous work, led by Mayo Clinic's **Leonard Petrucelli** in Florida, which found that the expression of poly(GA) in the mouse brain led to neuronal loss in key regions affected by ALS and ALS/FTD including the motor cortex and hippocampus. The study is published on September 13 in *Human Molecular Genetics.* **Read more.**

Lymphatic Vessels Found In the Human Brain

Protein aggregates build up in ALS. But how do these clumps of proteins normally get removed from the CNS and why do these systems fail in people with the disease? Now, a research team led by **Daniel Reich** at NINDS in Maryland reports that lymphatic vessels infilitrate the human brain which may help remove toxic substances. The study builds on previous work, led by University of Virginia's **Jonathan Kipnis** and University of Helsinki's **Kari Alitalo** in Finland, which found that this internal garbage disposal system may help clean out the brain - at least in mice. Efforts are now underway to determine whether this system is impaired and therefore may contribute to neurodegenerative disease. The study is published on October 3 in *Elife*.

Check out our website to read more of the latest research advances in ALS.

Funding Opportunities:

The US CDC anticipates funding research in 2018 focusing on identifying and evaluating ALS risk factors. Estimated deadline: February 16, 2018.

October 2017

Preclinical Research in Rare Diseases: Translational Steps in Large Animals. French Foundation for Rare Diseases. Pre-proposal due by **October 24, 2017**.

Call For Proposals. French National Research Agency (ANR). Research Themes Include Neurodegenerative Diseases. Pre-proposal due by **October 26, 2017**.

November 2017

Biomedical Research Project Grants. MND Association. Applications due by **November 3, 2017**.

NEW! Dynamic Neuroimmune Interactions in the Transition from Normal CNS Function to Disorders. NIH Blueprint for Neuroscience Research. LOI due by **November 7, 2017**.

NEW! ALS ACT (Accelerated Therapeutics). Academic-Industry Partnerships. Phase I/II Clinical Trials. ALS Finding a Cure, ALS Association and NEALS. LOI due by **November 10, 2017**.

December 2017

MDA Venture Philanthropy Program. LOI due by December 1, 2017.

NeuroNEXT Clinical Trials. NINDS. Applications due by December 6, 2017.

Transformational Research: Canada 2018. Weston Brain Institute. LOI due by December 7, 2017.

Check out our updated list of grants and awards.

Job Opportunities:

Assistant, Associate, Full Professor, Pathology and Cell Bio. Columbia University. New York, NY.
Assistant Professor, College of Pharmacy. University of Illinois. Chicago, IL.
Senior Research Investigator, University of Pennsylvania School of Medicine. Philadelphia, PA.
Research Scientist, Gao Lab. University of Massachusetts Medical School. Worcester, MA.
Research Fellow, McCormick Lab. University of Westminster. London, England.
Postdoctoral Fellow, Bonanomi Lab. San Raffaele Institute. Milan, Italy.
Postdoctoral Fellow, Xia Lab. University of Central Florida. Oralndo, FL.
Research Technician, Translational Neurodegenerative Research. VIB. Gent, Belgium.

Sr. Director, Clinical Research, Rare Neurological Disease. Pfizer. Cambridge, MA.
Research Scientist, Protein Sciences. Denali Therapeutics. San Francisco, CA.
Research Scientist, Stem Cell Investigator. Novartis. Cambridge, MA.
Research Scientist, iPS/ES Cells. Novartis. Cambridge, MA.
Associate Scientist, ALS Therapy Development Institute. Cambridge, MA.

Hiring someone onto your team? Contact us to add your listing to our updated job board: ALSjobs@prize4life.org.

Full List of Job Opportunities >>

Upcoming Meetings:

November 2017

November 10, 2017. Sydney, Australia. 13th MND Australia Research Conference.

November 11-15, 2017. Washington, D.C. Society for Neuroscience Annual Meeting.

November 21-23, 2017. Trieste, Italy. Atypical Dementias: From Diagnosis to Therapies. FTD.

December 2017

December 2, 2017. Philadelphia, PA. Cell Biology of Neurodegeneration and Repair in the Nervous System.

December 7, 2017. Boston, MA. ALS/MND Allied Professionals Forum.

December 8-10, 2017. Boston, MA. International Symposium on ALS/MND.

March 2018

March 11-14, 2018. Arlington, VA. MDA Clinical Conference.

March 18-21, 2018. EMBL. Heidelberg, Germany. Microglia 2018. Abstracts due: February 15, 2018.

March 22-24, 2018. Melbourne, Australia. Australasian Motor Neurone Disease Symposium. Abstracts due: December 18, 2017.

Organizing an ALS meeting? Contact us to add your conference to our updated calendar: ALSmeetings@prize4life.org.

Full List of Upcoming Meetings>>

Download the Working with ALS Mice Manual Here

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