Fang He, Ph.D.
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Department of Biological and Health Sciences
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TRAINING AND EDUCATION

Post-Doctoral Research Fellow, Research Investigator, June 2011-Aug. 2016
Department of Neurology, University of Michigan, Ann Arbor, MI
Ph.D., Biological Sciences, 2011
Department of Biological Sciences, Louisiana State University, Baton Rouge, LA
M.S., Biochemistry and Molecular Biology, 2004
Department of Biochemistry, Nanjing University, Nanjing, China
B.S., Biology, 2001
Department of Biology, Jiangxi Institute of Education (awarded by Jiangxi Normal University), Nanchang, China

RESEARCH INTERESTS

Neurodegenerative disorders are characterized by the progressive loss of function and death of neurons in the central nervous system. This heterogeneous group of diseases includes dementias with impairments in cognition and memory, ataxias that result in motor incoordination and motor neuron diseases like ALS that lead to weakness and loss of muscle control. One common genetic cause of neurodegeneration is nucleotide repeat expansions. Using fruit fly as a model organism, together with biochemical, molecular, cellular, genetic and genomic techniques, I would like to explore how these repeat expansions drive pathological processes and also to identify novel pathways that might be amenable as drug targets for these devastating diseases.

GRANTS

Approved

Research Grant (PI: Peter Todd) Role: Co-Investigator 8/1/2016-7/31/2017
The ALS Association $25,000
Involvement of C-terminal fragment in C9ALS/FTD RAN-translated dipeptide repeat toxicity

Completed

Postdoctoral Fellowship (He) Role: PI 1/01/13-12/31/13

National Ataxia Foundation $35,000
Determination of the toxic species in Fragile X-associated tremor ataxia syndrome.

HONORS AND AWARDS

2014: Best Post-doctoral Fellow/Junior Investigator Poster Award in 1st Annual Protein Folding Diseases Initiative Symposium
2014: National Ataxia Foundation Investigator Meeting Travel Award
2012: Isadore and Margaret Mezey Junior Investigator Travel Award

PROFESSIONAL MEMBERSHIPS

Member of American Society of Cell Biology, 2007-Present
Member of Society for Neuroscience, 2015-present

SCIENCE COMMUNITY SERVICES

Invited reviewer for following scientific journals:

Brain Research
Clinical Interventions in Aging
Clinical Medicine Insights: Geriatrics
Experimental Neurology
Frontiers in Neuroscience
Genetics and Epigenetics
Journal of Alzheimer's Disease
Journal of Central Nervous System Disease
Journal of the Neurological Sciences

TEACHING AND MENTORING EXPERIENCES

Mentor of 5 undergraduate students: Sam Natla, Yash Sharma, Mariam Sheikh, Michelle Frazer, and Jihad Al-Jabban. University of Michigan, 2012-present
Graduate Student Instructor, Introductory Biology Laboratories for Science Majors, Louisiana State University, 2005-2007, 2008-2009, total 7 semesters.
Graduate Student Instructor, Introductory Biology Laboratories for Non-science Majors, Louisiana State University, 2007, one semester.
Teaching assistant, Biochemistry, Louisiana State University, 2004-2005 2 semesters.

Publications

Peer-reviewed journal articles

Yang WY, **He F**, Strack R, Oh SY, Frazer M, Jaffrey SR, Todd, PK, Disney MD. (2016) Small Molecule Recognition and Tools to Study Modulation of r (CGG) exp in Fragile X-Associated Tremor Ataxia Syndrome***. ACS Chemical Biology***. In Press

He F, Jones JM, Figueroa-Romero C, Zhang DP, Feldman EL, Goutman SA, Meisler MH, Callaghan, BC, Todd PK. (2016) Screening for novel G4C2 hexanucleotide repeat expansions at ALS and FTD-associated loci. ***Neurol. Genet***. 2(3):e71-78.

Oh SY#, **He F#**, Krans A#, Frazer M, Taylor JP, Todd PK. (2015) RAN translation induces ubiquitin proteasome system impairment in models of fragile X-associated tremor ataxia syndrome. ***Hum. Mol. Genet***. 24(15):4317-26. (#co-first authors)

He F#, Jame A#, Raje H, Ghaffari H, DiMario PJ. (2015) Deletion of *Drosophila* Nopp140 induces sub-cellular ribosomopathies. ***Chromosoma***. 124:191-208 (#co-first authors)

He F, Krans A, Freibaum BD, Taylor JP, Todd PK. (2014)TDP-43 Suppresses CGG repeat-induced neurotoxicity through interactions with hnRNP A2/B1. ***Hum. Mol. Genet.*** 23(19):5036-51.

Meisler MH, Grant AE, Jones JM, Lenk GM, **He F**, Todd PK, Kamali M, Albin RL, Lieberman AP, Langenecker SA and McInnis MG. (2013) C9ORF72 expansion in a family with bipolar disorder. ***Bipolar Disorders***, 15(3):326-332

Todd PK, Oh SY, Krans A, **He F**, Sellier C, Frazer M, Renoux AJ, Chen KC, Scaglione KM, Basrur V, Elenitoba-Johnson K, Vonsattel JP, Louis ED, Sutton MA, Taylor JP, Mills RE, Charlet-Berguerand N, Paulson HL. (2013) CGG repeat-associated translation mediates neurodegeneration in fragile X tremor ataxia syndrome. ***Neuron***, 78(3):440-55

Sellier C, Freyermuth F, Tabet R, Tran T, **He F**, Ruffenach F, Alunni V, Moine H, Thibault C, Page A, Tassone F, Willemsen R, Disney MD, Hagerman PJ, Todd PK, Charlet-Berguerand N. (2013) Sequestration of DROSHA and DGCR8 by expanded CGG RNA repeats alters microRNA processing in fragile X-associated tremor/ataxia syndrome. ***Cell Reports***, 3(3):869-80

Zhang D, Iyer LM, **He F** and Aravind L. (2012) Discovery of novel DENN proteins: implications for the evolution of eukaryotic intracellular membrane structures and human disease. ***Front. Genet***. 3:283.

He F Todd PK. (2011) Epigenetics in nucleotide repeat expansion disorders. ***Semin. Neurol.*** 31(5):470-83.

He F and DiMario PJ. (2011) Drosophila delta-1-pyrroline-5-carboxylate dehydrogenase is required for proline breakdown and mitochondrial integrity – establishing a fly model for human type II hyperprolinemia. ***Mitochondrion*** 11(3): 397-404.

He F, Doucet J, and Stephens JM. (2008) Caspase mediated degradation of PPARγ proteins in adipocytes. ***Obesity*** 16(8): 1735-41

Floyd ZE, Segura BM., **He F**, and Stephens JM. (2007) TNFα mediated degradation of STAT5 Proteins in 3T3-L1 Adipocytes. ***Am. J. Physiol. Endocrinol. Metab***. 292: E461–E468.

He F and Stephens JM. (2006) Induction of SOCS-3 is insufficient to confer IRS-1 protein degradation in 3T3-L1 adipocytes. ***Biochem. Biophys. Res. Commun.*** 344(1): 95-8.

He F and Stephens JM. (2006) The Modulation of PPARγ proteins by caspases. ***Adipocytes***. 2(1): 23-8.

He F, Wang ZX, Zhao J, Bao J, Ding J, Ruan HB, Xie Q, Zhang ZM, Gao X. (2003) Large scale screening of disease model through ENU mutagenesis in mice. ***Chin. Sci. Bull***. 48: 24-28.

Book chapter
He F and DiMario PJ. (2011) Structure and function of Nopp140 and Treacle. In Olson M. ***The Nucleolus***, of Protein Reviews 15:253-278. New York: Springer.

CONFERENCE PRESENTATIONS (SICNE 2006)

Eukaryotic translation initiation factor 4B modulates CGG repeat RAN translation in a Drosophila model of FXTAS. 47th Michigan Chapter Society for Neuroscience Annual Meeting, East Lansing, MI (2016)

Eukaryotic translation initiation factor 4B modulates CGG repeat RAN translation in a Drosophila model of FXTAS. 11th Geriatrics/Biogerontology Research Symposium, Ann Arbor, MI (2016)

A screen for novel G4C2 hexanucleotide repeat expansions at ALS and FTD-associated loci. 45th Annual Meeting of Society for Neuroscience, Chicago, IL (2015)

Differential Toxicity of Exonic Versus Intronic G4C2 Nucleotide Repeat Expansions in Drosophila Models of ALS. 10th Brain Research Conference: RNA Metabolism in Neurodegenerative Diseases, Chicago, IL (2015)

GGGGCC nucleotide repeat expansion location predicts toxicity in Drosophila models of ALS/FTD. 2nd Annual Protein Folding Diseases Initiative Symposium, Ann Arbor, MI (2015)

RAN translation at CGG repeats induces ubiquitin proteasome system impairment in models of fragile X-associated tremor ataxia syndrome. 10th Geriatrics/Biogerontology Research Symposium, Ann Arbor, MI (2015).

TDP-43 suppresses CGG repeat-induced neurodegeneration through interactions with hnRNP A2/B1. 1st Annual Prtoein Folding Diseases Initiative Symposium, Ann Arbor, MI (2014)

TDP-43 suppresses CGG repeat-induced neurodegeneration through interactions with hnRNP A2/B1. 5th NAF Ataxia Investigators Meeting, Las Vegas, NV (2014)

TDP-43 suppresses CGG repeat-induced neurodegeneration via hnRNP A2/B1. 8th Geriatrics/Biogerontology Research Symposium, Ann Arbor, MI (2013)

TDP-43 suppresses CGG repeat-induced neurodegeneration via hnRNP A2/B1. 7th Meeting on Neurodegenerative Diseases, Cold Spring Harbor, NY (Oral Talk 2012)

Nopp140 gene deletion in *Drosophila* melanogaster. 50th Annual Meeting of ASCB, Philadelphia, PA (2010)

Deletion of the nucleolar protein Nopp140 in *Drosophila melanogaster*. 49th Annual Meeting of ASCB, San Diego, CA (2009)

Disrupting *Drosophila* gene CG7145 that encodes mitochondrial matrix enzyme delta-1-pyrroline-5-carboxylate dehydrogenase. 49th Annual Meeting of ASCB, San Diego, CA (2009)

Caspase mediated degradation of transcription factors in adipocytes. Keystone Symposia, Vancouver, British Columbia, Canada (2006)