CURRICULUM VITAE

Lulu Jiang, M.D., Ph.D.

PERSONAL PROFILE

Name: Lulu Jiang

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Work address: Department of Neuroscience at University of Virginia School of Medicine,

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RESEARCH INTERESTS

- Proteomic and epitranscriptomic changes in Alzheimer's disease and related dementia
- Mechanism of prion-like propagation in Braak stages of Alzheimer's disease and related tauopathies
- Neuron-glia interactions in pathogenesis of Alzheimer's disease and Parkinson's disease
- iPSC-induced 3D brain organoid models of neurodegenerative diseases and precision medicine
- Development of novel genetic and small molecule therapeutics for neurodegenerative diseases
- Gene-environmental correlation in neurodegeneration, pre-clinical diagnosis and intervention of neurodegenerative diseases

ACADEMIC APPOINTMENTS & PROFESSIONAL EXPERIENCE

June 2023-Present Tenure-track Assistant Professor

Department of Neuroscience & Center for Brain Immunology and Glia, School of Medicine at University of Virginia,
409 Lane Road, Charlottesville, VA 22908, U.S.A.

January 2022 – June 2023 Research Assistant Professor
Department of Pharmacology and Experimental Therapeutics, Boston University School of Medicine
72 East Concord St., Boston, MA 02118, U.S.A.

February 2017 - December 2021 Post-doctoral Associate
Laboratory of Neurodegeneration, Department of Pharmacology and Experimental Therapeutics, Boston University School of Medicine
72 East Concord St., Boston, MA 02118, U.S.A.

July 2016- February 2017 Assistant Professor
School of Public Health, Shandong University
44 Wenhua Xi road, Jinan, 250014, China

September 2011-September 2014 Pre-doctoral Intramural Research Training Award (IRTA) Fellow
Laboratory of Neurobiology, National Institute of Environmental Health Sciences/ NIH,
111 T.W. Alexander Dr., Research Triangle Park, NC 27709, U.S.A

EDUCATION

September 2011- June 2016 M.D., Ph.D.

Dissertation title: The role of Locus Coeruleus-Norepinephrine in the progression of Parkinson's disease
[1]Laboratory of Neurobiology, National Institute of Environmental Health Sciences, National Institutes of Health, Research Triangle Park, NC 27709, U.S.A.
Advisor: Jau-Shyong Hong, Ph.D.

[2]Institute of Toxicology, Cheeloo School of Medicine, Shandong University, Jinan, 250012, China
Advisor: Keqin Xie, M.D., Ph.D.

September 2006- June 2011 Bachelor of Medicine

Preventive Medicine, School of Public Health, Shandong University, Jinan, Shandong 250012, China

INTERSHIP

February 2011- April 2011 Laboratory Assistant

Center for Disease Control and Prevention of Shandong Province, Jinan, China

September 2009 –March 2010 Residency Training

Multidisciplinary Rotation, Qian Foshan Hospital, Jinan, China

HONORS & AWARDS

August 18th 2023, Virginia Alzheimer's Disease Center Pitch & Catch Funding award

July 26-30 2021, Alzheimer's Association International Conference2021 Travel Award and invited speaker

Feb.12-13 2020, Tau2020 Global Conference Travel Fellowship by Alzheimer's Association

Nov. 14 2019, selected for oral presentation and honored the monetary prize at the Genome Science Institute's 11th Annual Research Symposium in Boston University

July 2018, Conference Travel Award from Professional Development & Postdoctoral Affairs office of BU

October 12th 2017, Award for outstanding doctoral dissertation in Shandong Province

July 19th 2017, Award for outstanding doctoral dissertation of Shandong University

June 2016, Honor of outstanding graduates in Shandong Province

December 2015, Honor of Outstanding graduate students of Shandong U.

October 2015, outstanding paper award in *The 7th National Congress of Toxicology*

October 2015, Award of National Scholarship for post-graduates (China Ministry of Education)

June 2015, Outstanding Academic Achievement Award (Shandong U.)

October 2011**,** Scholarship Award for Admission as Outstanding Students (Shandong U.)

December 2010, Honor in the National Innovative Research Programs for undergraduates (Shandong U.)

2006-2011, four times of Outstanding Student Scholarship in Shandong University; three times of National Scholarship from China Ministry of Education

PROFESSIONAL AFFILIATIONS

2020-present Membership with the Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (ISTAART)

2018-present Member, Society for Neuroscience, USA

CONTRIBUTIONS TO SCIENCE

1. Generation of a Novel 3D Brain assembloid Model of Alzheimer's disease with patient derived iPSC

The complexity and heterogeneity of Alzheimer's disease (AD) have hindered the development of effective disease-modifying treatments. To address the phenotypic variation, it is crucial to develop precise and coherent therapeutic strategies for AD. Therefore, we conceived the idea of generating personalized brain assembloid models derived from familial AD (fAD) in varied genetic backgrounds, as well as sporadic AD, to elucidate the disease mechanism and investigate treatment regimens from a precision medicine and regenerative point of view. Firstly, we created a tauopathy model with a 3D human neuron-astrocyte assembloid and revealed the evolutionary transcriptomic changes in neurons and astrocytes, respectively, in disease progression. We found that seeding of tau oligomers profoundly drives epichaperome-mediated interactome dysfunctions in neurons and a pro-inflammatory response in glial cells. Recently, we invented an advanced generation of the 3D neuron-glial human brain assembloid model with the incorporation of microglia. Using AD patient-iPSC derived neuron-glial brain assembloids, we fully recapitulated the Aβ deposition, tau aggregation, microglial activation, and neurodegeneration features of AD in the aging process. We found that amyloid-β and tau pathology drive a divergent microglial inflammatory response, which indicates novel molecular pathways for disease prevention and treatment. The representative publications on these studies are as follows:

a. Rickner HD[#], **Jiang L[#]**, Hong R, O'Neill NK, Mojica CA, Snyder BJ, Zhang L, Shaw D, Medalla M, Wolozin B, Cheng CS. Single cell transcriptomic profiling of a neuron-astrocyte assembloid tauopathy model. ***Nat Commun.*** 2022 Oct 21;13(1):6275. doi: 10.1038/s41467-022-34005-1. PMID: 36271092; PMCID: PMC9587045. (**# Co- first authors**)

b. **Jiang L[#]**, Chakraborty P[#], Zhang L, Wong M, Hill SE, Webber CJ, Libera J, Blair LJ, Wolozin B, Zweckstetter M. Chaperoning of specific tau structure by immunophilin FKBP12 regulates the neuronal resilience to extracellular stress. ***Sci Adv.*** 2023 Feb 3;9(5):eadd9789. doi: 10.1126/sciadv.add9789. Epub 2023 Feb 1. PMID: 36724228; PMCID: PMC9891691. (**# Co- first authors**)

2. Discovered m6A-RNA methylation as a novel feature of Alzheimer's disease and related tauopathies.

Our study brought in a seminal discovery that tau oligomerization induces neurotoxicity by driving the accumulation of N6-methyladenosine (m6A) reader HNRNPA2B1 and m6A modified transcripts in the aggregated tau complex. This work was recognized as a Research Highlight by Nature Reviews Molecular Cell Biology (PMID: 34480148) and was reported by the mainstream AD media platform Alzforum News and other medical news media. Our findings, for the first time, demonstrated how the aggregation and accumulation of tau pathology drive epitranscriptomic dysregulation, and discovered accumulation of excessive RNA methylation as a novel feature in AD

pathogenesis. Our work is also leading to invention disclosures and patents that are currently pending. The representative publications on these studies are as follows:

a. **Jiang L**, Lin W, Zhang C, Ash PEA, Verma M, Kwan J, van Vliet E, Yang Z, Cruz AL, Boudeau S, Maziuk BF, Lei S, Song J, Alvarez VE, Hovde S, Abisambra JF, Kuo MH, Kanaan N, Murray ME, Crary JF, Zhao J, Cheng JX, Petrucelli L, Li H, Emili A, Wolozin B. Interaction of tau with HNRNPA2B1 and N^6-methyladenosine RNA mediates the progression of tauopathy. ***Mol Cell***. 2021 Oct 21;81(20):4209-4227.e12. Epub 2021 Aug 27. PMID: 34453888; PMCID: PMC8541906.

b. **Jiang L**, Roberts R, Wong M, Zhang L, Webber CJ, Kilci A, Jenkins M, Sun J, Sun G, Rashad S, Dedon PC, Daley SA, Xia W, Ortiz AR, Dorrian L, Saito T, Saido TC, Wolozin B. Accumulation of m6A exhibits stronger correlation with MAPT than β-amyloid pathology in an APPNL-G-F /MAPTP301S mouse model of Alzheimer's disease. ***Res Sq.*** 2023 May 18;. doi: 10.21203/rs.3.rs-2745852/v1. PubMed PMID: 37292629; PubMed Central PMCID: PMC10246280.

3. Discovered that tau oligomers are more toxic than fibrils due to their selective interaction with RNA binding proteins.

In my studies, I first compared the neurotoxicity of propagated tau oligomers and fibrils, which are the two main species of tau aggregates driving neurodegeneration in AD. Our results demonstrated that tau oligomers are more toxic than fibrils due to their selective interaction with RNA binding proteins, particularly TIA1. To gain further insight into the dynamics of tau oligomerization and its protein-protein interactions, I developed an innovative approach that combines optogenetics with proteomics for time-resolved identification of oligomeric tau and protein interactomes. This study revealed that tau oligomerization rapidly induces a translational stress response and cytoplasmic translocation of RNA binding proteins, particularly HNRNPA2B1. Moreover, prolonged tau oligomerization leads to nuclear membrane disruption, chromatin instability, and neuronal death by binding to lamin B proteins and their receptors. The representative publications on these studies are as follows:

a. **Jiang L**, Ash PEA, Maziuk BF, Ballance HI, Boudeau S, Abdullatif AA, Orlando M, Petrucelli L, Ikezu T, Wolozin B. TIA1 regulates the generation and response to toxic tau oligomers. ***Acta Neuropathol***. 2019 Feb;137(2):259-277. PMCID: PMC6377165

b. **Jiang L**, Zhao J, Cheng JX, Wolozin B. Tau Oligomers and Fibrils Exhibit Differential Patterns of Seeding and Association With RNA Binding Proteins. ***Front Neurol***. 2020 Sep 30;11:579434. doi: 10.3389/fneur.2020.579434. PMID: 33101187; PMCID: PMC7554625.

c. **Jiang L**, Wolozin B. Oligomeric tau disrupts nuclear envelope via binding to lamin proteins and lamin B receptor. ***Alzheimer's & Dementia***. 2021 Dec;17:e054521.

4. Establishment of a neuroinflammation mouse model that recapitulates the caudal-rostral neurodegeneration in Parkinson's disease

During my Ph.D. training at NIEHS, I conducted one of the most exciting and significant research projects in our group, which revealed the novel role of locus coeruleus norepinephrine in regulating brain immune homeostasis. This project prompted us to establish a neuroinflammation mouse model that recapitulates the progressive, sequential degeneration of the neuronal circuitry in Parkinson's disease. Through my studies, I discovered that norepinephrine secreted by Locus coeruleus neurons in the CNS serves not only as a neurotransmitter but also regulates microglial activation through binding to microglia NOX2. Based on this finding, we identified the major metabolite of clozapine (a drug for schizophrenia), clozapine-N-oxide, as a potentially more efficient and safer drug for PD therapy under submicromolar doses. Our study revealed a crucial link between norepinephrine and microglial

activation, which could have significant implications for developing new therapies for Parkinson's disease. This research has the potential to contribute to the understanding of the complex mechanisms underlying neuroinflammatory diseases and to advance the development of safe and effective therapies for patients suffering from these debilitating conditions. My representative publications on these studies are as follows:

a. **Jiang L**, Chen SH, Chu CH, Wang SJ, Oyarzabal E, Wilson B, Sanders V, Xie K, Wang Q, Hong JS. A novel role of microglial NADPH oxidase in mediating extra-synaptic function of norepinephrine in regulating brain immune homeostasis. ***Glia*.** 2015 Jun; 63(6):1057-72. PMCID: PMC4405498

b. **Jiang L**, Wu X, Wang S, Chen SH, Zhou H, Wilson B, Jin CY, Lu RB, Xie K, Wang Q, Hong JS. Clozapine metabolites protect dopaminergic neurons through inhibition of microglial NADPH oxidase. ***J Neuroinflammation*.** 2016 May 16; 13(1):110. PMCID: PMC4869380

c. Song S[#], **Jiang L**[#], Oyarzabal EA[#], Wilson B, Li Z, Shih YI, Wang Q, Hong JS. Loss of Brain Norepinephrine Elicits Neuroinflammation-Mediated Oxidative Injury and Selective Caudo-Rostral Neurodegeneration. ***Mol Neurobiol.*** 2019 Apr; 56(4):2653-2669. PMCID: PMC6348128 (**# Co-first authors**)

d. Song S, Wang Q, **Jiang L**, Oyarzabal E, Riddick NV, Wilson B, Moy SS, Shih YI, Hong JS. Noradrenergic dysfunction accelerates LPS-elicited inflammation-related ascending sequential neurodegeneration and deficits in non-motor/motor functions. ***Brain Behav Immun.*** 2019 Oct; 81:374-387. PMCID: PMC6754798

PUBLICATIONS (Google Scholar Citation: 928; h-index: 17)

Complete list of publication and citations can be found on my Google Scholar page: https://scholar.google.com/citations?user=bL7Uk2sAAAAJ&hl=en

1. **Lulu Jiang**#*, Hannah Drew Rickner#, Lushuang Zhang, Melissa Wong, Tracy L. Young-Pearse, Aimee Johna Aylward, Maria Medalla, Chromewell A Mojica, Christine S. Cheng*, Benjamin Wolozin*. Amyloid-β and tau pathology drive a divergent microglia inflammatory response in a neuron-glial brain assembloid model of Alzheimer's disease. (in preparation) (# Co- first authors; *Co-corresponding authors)

2. **Jiang L***, Roberts R, Wong M, Zhang L, Webber CJ, Kilci A, Jenkins M, Sun J, Sun G, Rashad S, Dedon PC, Daley SA, Xia W, Ortiz AR, Dorrian L, Saito T, Saido TC, Wolozin B*. Accumulation of m6A exhibits stronger correlation with MAPT than β-amyloid pathology in an APPNL-G-F /MAPTP301S mouse model of Alzheimer's disease. Res Sq [Preprint]. 2023 May 18:rs.3.rs-2745852. doi: 10.21203/rs.3.rs-2745852/v1. PMID: 37292629; PMCID: PMC10246280. (*Molecular Neurodegeneration*, in press) ***Co-corresponding authors**

3. Zhao J, **Jiang L**, Matlock A, Xu Y, Zhu J, Zhu H, Tian L, Wolozin B, Cheng JX*. Mid-infrared chemical imaging of intracellular tau fibrils using fluorescence-guided computational photothermal microscopy. *Light: Science & Applications.* 2023 Jun 15;12(1):147. doi: 10.1038/s41377-023-01191-6. PMID: 37322011; PMCID: PMC10272128.

4. **Jiang L**[#], Chakraborty P[#], Zhang L, Wong M, Hill SE, Webber CJ, Libera J, Blair LJ, Wolozin B*, Zweckstetter M*. Chaperoning of specific tau structure by immunophilin FKBP12 regulates the neuronal resilience to extracellular stress. ***Science Advances***, 2023 Feb 3;9(5):eadd9789. doi: 10.1126/sciadv.add9789. Epub 2023 Feb 1. PMID: 36724228. (**#Co- first authors**)

   This paper was reported and commented by **Alzforum News**:
   https://www.alzforum.org/news/research-news/chaperone-fkbp12-shields-tau-aggregation

5. Rickner HD[#], **Jiang L**[#], Hong R, O'Neill NK, Mojica CA, Snyder BJ, Zhang L, Shaw D, Medalla M, Wolozin B*, Cheng CS*. Single cell transcriptomic profiling of a neuron-astrocyte assembloid tauopathy model. ***Nat Commun.*** 2022 Oct 21;13(1):6275. doi: 10.1038/s41467-022-34005-1. PMID: 36271092; PMCID: PMC9587045. (**#Co- first authors)**

6. **Jiang L**, Lin W, Zhang C, Ash PEA, Verma M, Kwan J, van Vliet E, Yang Z, Cruz AL, Boudeau S, Maziuk BF, Lei S, Song J, Alvarez VE, Hovde S, Abisambra JF, Kuo MH, Kanaan N, Murray ME, Crary JF, Zhao J, Cheng JX, Petrucelli L, Li H, Emili A, Wolozin B*. Interaction of tau with HNRNPA2B1 and N^6-methyladenosine RNA mediates the progression of tauopathy. ***Mol Cell***. 2021 Aug 20:S1097-2765(21)00622-5. doi: 10.1016/j.molcel.2021.07.038. PMID: 34453888.

   Research Highlight by ***Nature Reviews Molecular Cell Biology***. Corresponding Commentary article by Editor-in-chief Dr. Baumann, K.: Tau oligomers are linked to m^6A-RNA. ***Nat Rev Mol Cell Biol.*** 2021 Oct;22(10):650. doi: 10.1038/s41580-021-00419-w. PMID: 34480148.

   This paper was reported and commented by **Alzforum News**:
   https://www.alzforum.org/news/research-news/methylated-rna-new-player-tau-toxicity

7. **Jiang L***, Wolozin B. Oligomeric tau disrupts nuclear envelope via binding to lamin proteins and lamin B receptor. *Alzheimer's & Dementia*. 2021 Dec;17:e054521.

8. **Jiang L***, Wolozin B. Regulation of ribosomal function by oligomeric tau: Dysregulation of protein synthesis in neurodegeneration. *Alzheimer's & Dementia*, 2020/12, 16, e039190

9. **Jiang L**, Zhao J, Cheng JX, Wolozin B*. Tau Oligomers and Fibrils Exhibit Differential Patterns of Seeding and Association With RNA Binding Proteins. ***Front Neurol.*** 2020 Sep 30;11:579434. doi: 10.3389/fneur.2020.579434. PMID: 33101187; PMCID: PMC7554625.

10. **Jiang L**, Ash PEA, Maziuk BF, Ballance HI, Boudeau S, Abdullatif AA, Orlando M, Petrucelli L, Ikezu T, Wolozin B*. TIA1 regulates the generation and response to toxic tau oligomers. ***Acta Neuropathol***. 2019 Feb;137(2):259-277. doi: 10.1007/s00401-018-1937-5. Epub 2018 Nov 21. PMID: 30465259; PMCID: PMC6377165.

11. Song S#, **Jiang L#**, Oyarzabal EA, Wilson B, Li Z, Shih YI, Wang Q, Hong JS*. Loss of Brain Norepinephrine Elicits Neuroinflammation-Mediated Oxidative Injury and Selective Caudo-Rostral Neurodegeneration. ***Mol Neurobiol.*** 2019 Apr;56(4):2653-2669. doi: 10.1007/s12035-018-1235-1. Epub 2018 Jul 27. PMID: 30051353; PMCID: PMC6348128. (**# Co-first authors**).

12. **Jiang L**, Wu X, Wang S, Chen SH, Zhou H, Wilson B, Jin CY, Lu RB, Xie K, Wang Q, Hong JS*. Clozapine metabolites protect dopaminergic neurons through inhibition of microglial NADPH oxidase. ***J Neuroinflammation***. 2016 May 16; 13(1):110. doi: 10.1186/s12974-016-0573-z. PMID: 27184631

13. **Jiang L**, Chen SH, Chu CH, Wang SJ, Oyarzabal E, Wilson B, Sanders V, Xie K, Wang Q, Hong JS. A novel role of microglial NADPH oxidase in mediating extra-synaptic function of norepinephrine in regulating brain immune homeostasis. ***Glia***. 2015 Jun;63(6):1057-72. Epub 2015 Mar 4. PMID: 25740080; PMCID: PMC4405498.

14. Park J, Wu Y, Shao W, Gendron TF, van der Spek SJF, Sultanakhmetov G, Basu A, Castellanos Otero P, Jones CJ, Jansen-West K, Daughrity LM, Phanse S, Del Rosso G, Tong J, Castanedes-Casey M, **Jiang L**, Libera J, Oskarsson B, Dickson DW, Sanders DW, Brangwynne CP, Emili A, Wolozin B, Petrucelli L, Zhang YJ*. Poly(GR) interacts with key stress granule

factors promoting its assembly into cytoplasmic inclusions. ***Cell Rep***. 2023 Jul 19;42(8):112822. doi: 10.1016/j.celrep.2023.112822. Epub ahead of print. PMID: 37471224.

15. Ash PEA, Lei S, Shattuck J, Boudeau S, Carlomagno Y, Medalla M, Mashimo BL, Socorro G, Al-Mohanna LFA, **Jiang L**, Öztürk MM, Knobel M, Ivanov P, Petrucelli L, Wegmann S, Kanaan NM, Wolozin B*. TIA1 potentiates tau phase separation and promotes generation of toxic oligomeric tau. ***Proc Natl Acad Sci*** *USA*. 2021 Mar 2;118(9):e2014188118. doi: 10.1073/pnas.2014188118. PMID: 33619090; PMCID: PMC7936275.

16. Wang Q, Song S, **Jiang L**, Hong JS*. Interplay among norepinephrine, NOX2, and neuroinflammation: key players in Parkinson's disease and prime targets for therapies. *Ageing Neur Dis* 2021;1:6. http://dx.doi.org/10.20517/and.2021.06

17. Li X, **Jiang L**, Yu T, Li M, Wang Q, Liu Z, Xie K*. No-observed-adverse-effect level of hair pyrrole adducts in chronic n-hexane intoxication in rats. *Neurotoxicology*. 2020 May;78:11-20. doi: 10.1016/j.neuro.2020.02.002. Epub 2020 Feb 8. PMID: 32045579.

18. Apicco DJ, Zhang C, Maziuk B, **Jiang L**, Ballance HI, Boudeau S, Ung C, Li H, Wolozin B*. Dysregulation of RNA Splicing in Tauopathies. *Cell Rep.* 2019 Dec 24;29(13):4377-4388.e4. doi: 10.1016/j.celrep.2019.11.093. PMID: 31875547, PMCID: PMC6941411

19. Song S, Wang Q, **Jiang L**, Oyarzabal E, Riddick NV, Wilson B, Moy SS, Shih YI, Hong JS*. Noradrenergic dysfunction accelerates LPS-elicited inflammation-related ascending sequential neurodegeneration and deficits in non-motor/motor functions. ***Brain Behav Immun*****.** 2019 Oct;81:374-387. doi: 10.1016/j.bbi.2019.06.034. Epub 2019 Jun 24. PMID: 31247288

20. Maziuk BF, Apicco DJ, Cruz AL, **Jiang L**, Ash PEA, da Rocha EL, Zhang C, Yu WH, Leszyk J, Abisambra JF, Li H, Wolozin B*. RNA binding proteins co-localize with small tau inclusions in tauopathy. *Acta Neuropathol Commun.* 2018 Aug 1;6(1):71. doi: 10.1186/s40478-018-0574-5.

21. Li M, Wang S, Li X, **Jiang L**, Wang X, Kou R, Wang Q, Xu L, Zhao N, Xie K*. Diallyl sulfide protects against lipopolysaccharide/d-galactosamine-induced acute liver injury by inhibiting oxidative stress, inflammation and apoptosis in mice. *Food Chem Toxicol.* 2018 Oct;120:500-509. doi: 10.1016/j.fct.2018.07.053. Epub 2018 Jul 31. PMID: 30075314

22. Han W, Wang S, Li M, **Jiang L**, Wang X, Xie K*. The protective effect of diallyl trisulfide on cytopenia induced by benzene through modulating benzene metabolism. *Food Chem Toxicol.* 2018 Feb; 112:393-399. doi: 10.1016/j.fct.2017.12.060. Epub 2018 Jan 2. PMID: 29305270

23. Han W, Wang S, **Jiang L**, Wang H, Li M, Wang X, Xie K*. Diallyl trisulfide (DATS) suppresses benzene-induced cytopenia by modulating haematopoietic cell apoptosis. *Environ Pollut.* 2017 Dec; 231(Pt 1):301-310. doi: 10.1016/j.envpol.2017.07.069. Epub 2017 Aug 12. PMID: 28810199

24. Wang S, Li M, Wang X, Li X, Yin H, **Jiang L**, Han W, Irving G, Zeng T, Xie K*. Diallyl trisulfide attenuated n-hexane induced neurotoxicity in rats by modulating P450 enzymes. *Chem Biol Interact.* 2017 Mar 1;265:1-7. doi: 10.1016/j.cbi.2017.01.013. Epub 2017 Jan 20. PMID: 28115069

25. Wang S, Irving G, **Jiang L**, Wang H, Li M, Wang X, Han W, Xu Y, Yang Y, Zeng T, Song F, Zhao X, Xie K*. Oxidative Stress Mediated Hippocampal Neuron Apoptosis Participated in Carbon Disulfide-Induced Rats Cognitive Dysfunction. *Neurochem Res.* 2017 Feb;42(2):583-594. doi: 10.1007/s11064-016-2113-8. Epub 2016 Nov 29.

26. Wang S, Li X, Li M, **Jiang L**, Yuan H, Han W, Wang X, Zeng T, Xie K*. Cystamine attenuated behavioral deficiency via increasing the expression of BDNF and activating PI3K/Akt signaling in 2,5-hexanedione intoxicated rats. *Toxicol Res (Camb)*. 2016 Dec 12;6(2):199-204. doi: 10.1039/c6tx00409a. eCollection 2017 Mar 1. PMID: 30090490

27. Wang S, Chu CH, Guo M, **Jiang L**, Nie H, Zhang W, Wilson B, Yang L, Stewart T, Hong JS*, Zhang J*. Identification of a specific α-Synuclein peptide (α-Syn 29-40) capable of eliciting microglial superoxide production to damage dopaminergic neurons. *J Neuroinflammation*. 2016 Jun 21; 13(1):158. doi: 10.1186/s12974-016-0606-7. PMID: 27329107

28. An L, Li G, Si J, Zhang C, Han X, Wang S, **Jiang L**, Xie K*. Acrylamide retards the slow axonal transport of neurofilaments in rat cultured dorsal root ganglia neurons and the corresponding mechanisms. *Neurochem Res*. 2016 May; 41(5):1000-9. doi: 10.1007/s11064-015-1782-z.

29. Xu Y, Wang S, **Jiang L**, Wang H, Yang Y, Li M, Wang X, Zhao X, Xie K*. Identify Melatonin as a Novel Therapeutic Reagent in the Treatment of 1-Bromopropane (1-BP) Intoxication. *Medicine* (Baltimore). 2016 Jan; 95(3):e2203. doi: 10.1097/MD.0000000000002203.

30. Yang Y, **Jiang L**, Wang S, Zeng T, Xie K*. Diallyl trisulfide protects the liver against hepatotoxicity induced by isoniazid and rifampin in mice by reducing oxidative stress and activating Kupffer cells. *Toxicology Research* 2016, 5:954-962. doi: 10.1039/C5TX00440C.

31. Guo Y, Yuan H, **Jiang L**, Yang J, Zeng T, Xie K, Zhang C, Zhao X*. Involvement of decreased neuroglobin protein level in cognitive dysfunction induced by 1-bromopropane in rats. *Brain Res*. 2015 Mar 10; 1600:1-16. doi: 10.1016/j.brainres.2014.12.046.

32. Gleniece Irving, Shuo Wang, Hui Wang, Ying Guo, **Lulu Jiang**, Xiulan Zhao, Keqin Xie*. Effects of carbon disulfide on the learning ability of Rats and its underlying mechanism. *Journal of Shandong University (Health Sciences)*, 53 (10):82-90, 2015.

33. Wang Q, Chu CH, Oyarzabal E, **Jiang L**, Chen SH, Wilson B, Qian L, Hong JS*. 2014. Subpicomolar diphenyleneiodonium inhibits microglial NADPH oxidase with high specificity and shows great potential as a therapeutic agent for neurodegenerative diseases. *Glia*. 2014 Dec; 62(12):2034-43. doi: 10.1002/glia.22724.

34. Wang Q, Chu CH, Qian L, Chen SH, Wilson B, Oyarzabal E, **Jiang L**, Ali S, Robinson B, Kim HC, Hong JS*. Substance P exacerbates dopaminergic neurodegeneration through neurokinin-1 receptor-independent activation of microglial NADPH oxidase. *J Neurosci*. 2014 Sep 10; 34(37):12490-503. doi: 10.1523/JNEUROSCI.2238-14.2014.

BOOK CHAPTER

1. Chen SH, Oyarzabal E, Santos J, Wang Q, **Jiang L**, Hong JS. Neuroinflammation in Neurological Dysfunction and Degeneration. ***Environmental Factors in Neurodevelopmental and Neurodegenerative Disorders, 1st Edition***, Chapter 18: 385-407(2015). Elsevier Inc.

PATENTS

(1) "Synthetic 3D Brain Organoids and Uses Thereof"; US Provisional Application No.: 63/314,585, 2022. Inventor(s) Benjamin Wolozin, Christine S. Cheng, **Lulu Jiang**, Hannah Drew Rickner with patent applicant at the Trustees of Boston University.

SCIENTIFIC MEETINGS

1. **Lulu Jiang**, Rebecca Roberts, Melissa Wong, Lushuang Zhang, Chelsea Joy Webber, Alper Kilci, Matthew Jenkins, Sherif Rashad, Jingjing Sun, Peter C Dedon, Sarah Anne Daley, Weiming

Xia, Takashi Saito, Takaomi C. Saido, Benjamin Wolozin. Accumulation of m^6A correlates with Tau pathology in an APP^{NL-G-F} x $MAPT^{P301S}$ Tau double transgenic mouse model of Alzheimer's disease. **AD/PD™ 2023** *the 17th International Conference on Alzheimer's and Parkinson's Diseases*. Gothenburg Sweden; March 28-April 1st, 2023; **poster.**

2. **Lulu Jiang.** Application of patient iPSC-induced 3D brain organoid model for drug discovery in Alzheimer's disease. *9th Drug Discovery Strategic Summit*, Boston, May 9-10 2022. Keynote **speaker**.

3. **Lulu Jiang**, Benjamin Wolozin. Generation of A Patient iPSC-induced 3D Spheroid Model to Study Pathophysiology of Alzheimer's Disease and Investigate Novel Therapeutics. *The 16th International Conference on Alzheimer's & Parkinson's Diseases (AD/PD22)*, Barcelona Spain; March 15-20, 2022; **speaker.**

4. **Lulu Jiang**, Benjamin Wolozin. Oligomeric Tau Disrupts Nuclear Envelope via Binding to Lamin proteins and Lamin B Receptor. *2021 Alzheimer's Association International Conference*. July 26-30, 2021. Denver, CO, USA. Invited **Oral** presentation.

5. **Lulu Jiang**, Benjamin Wolozin. *Regulation of ribosomal function by oligomeric tau*. *2020 Alzheimer's Association International Conference*. July 27-31, 2020. Virtual, invited **Oral** presentation.

6. **Lulu Jiang**, Benjamin Wolozin. Tau Oligomerization Induces Integrated Changes in RNA Metabolism and Disruption of the Nuclear Envelope. *Tau2020 Global Conference*. Feb. 12-13, 2020. Washington, D.C., USA. **Poster** with Alzheimer's Association Travel Fellowship.

7. **Lulu Jiang**, Benjamin Wolozin. Tau Oligomerization Induces Integrated Changes in RNA Metabolism and Initiates Neuronal Death Signaling. *The Genome Science Institute's 11th Annual Research Symposium in Boston University*. Nov.14, 2019. Boston, MA, USA. Selected **Oral** presentation.

8. **Lulu Jiang**, Peter Ash, Heather Ballance, Brandon Maziuk, Samantha Boudeau, Leonard Petrucelli, Benjamin Wolozin. RNA binding protein TIA1 is involved in tau propagation and subsequent neurodegeneration. *Society for Neuroscience Annual Meeting*, Nov. 3-7, 2018. San Diego, CA, **Poster**.

9. **Lulu Jiang**, Heather Ballance, Peter Ash, Brandon Maziuk, Samantha Boudeau, Leonard Petrucelli, Benjamin Wolozin. RNA binding protein TIA1 regulates tau propagation and subsequent neurotoxicity. *The 5th RNA Metabolism in Neurological Disease Conference*, Nov. 1-2, 2018. San Diego, CA, USA. **Poster**.

10. **Lulu Jiang**, Keqin Xie, Benjamin Wolozin. Tau oligomers are more toxic than fibrils in neurodegeneration through binding to TIA1 and inducing prolonged stress granules. *The 8th National Congress of Toxicology in China.* Oct. 16-18, 2017. Jinan, Shandong, China. **Poster.**

11. **Lulu Jiang**. The role of Locus Coeruleus-Norepinephrine in the progression of Alzheimer's disease. *The Annual Neurotoxicology symposium in China*. Dec. 3-4, 2016. Beijing, China. **Oral** presentation. Won the outstanding Presentation award.

12. **Lulu Jiang,** Keqin Xie, Jau-Shyong Hong. Locus Coeruleus deficit promotes the progression of Parkinson's disease. *The 7th National Congress of Toxicology in China*. Oct. 25-28, 2015. Wuhan, Hubei province, China. **Oral** presentation on the Symposia of Brain development and Neurotoxicology. Outstanding paper award.

13. **Lulu Jiang,** Jau-Shyong Hong, Keqin Xie. A Novel Role of Microglial NADPH Oxidase in Mediating Extra-Synaptic Function of Norepinephrine in Regulating Brain Immune Homeostasis.

The 2nd World Congress on NeuroTherapeutics---Dilemmas, Debates, Discussions (DDDN). Sep. 3-6, 2015. Prague, Czech Republic. **Poster and Oral** presentation.

FUNDING

Federal Grants:

1. Title: Exploring Epitranscriptomes: Unraveling Alzheimer's disease Heterogeneity with Innovative 3D Human Brain Neuron-Glial Assembloids
Major Goals: Alzheimer's disease (AD) is a progressive neurological disorder characterized with protein misfolding, neuronal loss, microglial activation, and astrogliosis in the affected brain regions. The complexity and heterogeneity of AD have hampered the development of effective, disease-modifying treatments. In the current project I propose to use the patient iPSC derived 3D neuron-glial brain assembloids to investigate epitranscriptomic mechanism of AD and develop personalized/precision medicine for novel therapeutics.
Status of Support: ***pending/under review***
Project Number: 1DP2OD037047-01
Name of PD/PI: **Lulu Jiang**
Source of Support: NIH
Project/Proposal Start and End Date: 9/1/2024 to 8/31/2029
Actual/proposed award amount for the project: $1,500,000
% effort: 5 month/year

2. Title: The role of N6-methyladenosine modified RNA in Alzheimer's disease
Major Goals: This proposal will investigate a specific type of RNA modification, termed methylation. We will study how RNA methylation changes in Alzheimer's disease, and whether reducing excessive methylation can delay disease progression and help patients with the disease.
Status of Support: ***ongoing/current***
Project Number: 1 R01 AG080810-01
Name of PD/PI: **Benjamin Wolozin (Contact PD/PI) and Xiaoling Zhang**
Source of Support: NIH
Project/Proposal Start and End Date: 12/01/2022-11/30/2027
Actual/proposed award amount for the project (including Indirect Costs): $3,955,189
Role: co-investigator, 3 month/year

Foundation Awards:

1. Title: Explore Treatment and Biomarker of ADRD on Epitranscriptomic Level
Major Goals: In the proposed study we will generate a patient iPSC derived 3D brain assembloid and an APPNLGF/P301S Tau double transgenic mouse model to investigate the potential treatment and biomarker of ADRD on epitranscriptomic level.
Status of Support: ***Resubmission***
Award Number: AARG
Name of PD/PI: **Lulu Jiang**
Source of Support: Alzheimer's Association
Project/Proposal Start and End Date: 3/1/2024 to 2/28/2027
Actual/proposed award amount for the project (including Indirect Costs): $199,788
% effort: 2.5 month/year

State/Local Funding Support:

1. Title: Investigation on the dysregulation of RNA metabolism in Alzheimer's disease
Status of Support: ***ongoing/current***
Award Number: Virginia Alzheimer's disease Center's 2023 'Pitch and Catch' funding
Name of PD/PI: **Lulu Jiang**
Source of Support: UVA Brain Institute and Strategic Investment Fund
Project/Proposal Start and End Date: 9/1/2023 to 3/15/2024
Actual/proposed award amount for the project: $15,000

TEACHING

August 2023, **Lecture** on Microscopy Methods, BootCamp course for first-year PhD students in Neuroscience Graduate Program (NGP) at University of Virginia

September 2022, **Lecture** on advanced technologies/ Optical and electron microscopy, PhD course: **Systems Pharmacology I**

March 2022, **Lecture** on Pharmacology of Dopamine and Serotonin: Anti-Parkinson's Agents, Anti-Psychotic Agents, And Anti-Depressants, **Medical Pharmacology course** for Master students

09/01/2021-12/10/2021, Boston University Graduate Medical Sciences (GMS) **Teaching Fellow** for "**Foundations in Biomedical Science Module** 1, Proteins: Structure, catalysis and interactions"

MENTORING ACTIVITIES

Graduate Students:

11/2017-12/2017, Matthew Reiss, Ph.D. graduate student rotation, Boston University School of medicine, Department of Pharmacology

09/2017-10/2017, Kelly Miao, Ph.D. graduate student rotation, Boston University School of medicine, Department of Pharmacology

07/2017-08/2017, Christina Gallo, Summer Intern, Boston University School of medicine
05/2017-06/2017, Ning Shen, M.D. Ph.D. graduate student rotation, Boston University School of medicine, Department of Pharmacology

Undergraduate Students:
08/21/2023-present:

Nicholas Essepian, B.S. in Biology Major, B.A. in Psychology Secondary Major at UVA

Tiana Richardson, B.S. Biochemistry and B.A. Sociology at UVA

Camron Sepehri, B.A. Neuroscience & Cognitive Science at UVA

Lucie Ide, BA in Neuroscience, Minor in Data Science at UVA

Kelvin Chen, B.A. Neuroscience & Cognitive Science at UVA

02/2022-06/2023, Alper Kicil, Neuroscience major, Boston University School of medicine

06/2019-02/2020, Jane Huang, Biology major, Boston University School of medicine

12/2018-05/2019, Jaehyup Song, Biology major, Boston University School of medicine
01/2018-12/2018, Marcello Orlando, Biology major, Boston University School of medicine

Lab Technician:

08/2023-Present, Ellie Sherman, lab technician, University of Virginia School of medicine

05/2022-06/2023, Melissa Wong, lab technician, Boston University School of medicine

06/2021-06/2023, Lushuang Zhang, Stem Cell Research Technician, BU School of medicine

Ph.D. Dissertation Advisory Committees

2022-2023 Co-mentor and Committee member for Zhongyue Guo, Department of Biomedical Engineering - Boston University

PROFESSIONAL SERVICE

1. Grant Reviewer:

2023.08-present Grant reviews for CMND study section, Early Career Reviewer (ECR) program at the Center for Scientific Review (CSR), National Institutes of Health

2023.09-present Ad-hoc Peer Review for Alzheimer's Association 2024 January AARF/D Program - LOI Review

2. Journal Reviewer (Ad Hoc):

2017-present Ad-hoc peer reviewer for: Journal of Neuroinflammation, Frontiers in Pharmacology, Frontiers in Immunology, Frontiers in Aging Neuroscience, Journal of Alzheimer's Disease, Journal of Cellular Biochemistry, Toxicological Sciences

3. Society Service:

2020-present Ad-hoc article commenter for Alzforum.org