

## CURRICULUM VITAE



Rita Gabriele Sattler, MS, PhD

September 2018

### DEMOGRAPHIC AND PERSONAL INFORMATION

#### Current Appointments

- 2015-present Associate Professor of Neurobiology and Neurology, Barrow Neurological Institute, Dignity Health, St. Joseph's Hospital and Medical Center
- 2016-present Research Associate Professor, Department of Basic Medical Sciences, University of Arizona College of Medicine Phoenix, Phoenix, AZ
- 2016-present Faculty, Graduate Interdisciplinary Program (GIDP) in Neuroscience, University of Arizona, Tucson, AZ
- 2017-present Faculty, Neuroscience Interdisciplinary Graduate Degree Program, School of Life Sciences, Arizona State University

#### Business Address

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Phoenix, AZ 85013  
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Email: rita.sattler@dignityhealth.org

#### Education and training

##### *Undergraduate*

- 1993 B.S. Chemical and Biotechnology Engineering, Technical University of Mannheim, Mannheim, Germany

##### *Doctoral/Graduate*

- 1996 M.S. Physiology, University of Toronto, Toronto, Canada
- 1999 Ph.D. Physiology, University of Toronto, Toronto, Canada

##### *Postdoctoral*

- 1999-04 Postdoctoral Fellow, Department of Neuroscience, Johns Hopkins University

#### Professional Experience

- 1993-1995 Research Assistant, Department of Molecular and Cell Biology, Technical University of Mannheim, Mannheim, Germany
- 2004-2008 Research Associate, Department of Neurology, The Johns Hopkins University School of Medicine
- 2004-2008 Lead Scientist, Ruxton Pharmaceuticals Inc. (now Psyadon Pharmaceuticals Inc.)
- 2008-2012 Medical Associate, Brain Science Institute, The Johns Hopkins University School of Medicine
- 2012-2015 Assistant Professor of Neurology, The Johns Hopkins University School of Medicine
- 2012-2015 Faculty member, Brain Science Institute, The Johns Hopkins University School of Medicine
- 2015-present Associate Professor, Barrow Neurological Institute, Dignity Health, St. Joseph's Hospital and Medical Center

### RESEARCH ACTIVITIES

#### Peer Reviewed Original Science Publications

1. Sattler R, Tymianski M, Hafner M, Feyaz I, Tator CH. Voltage-sensitive calcium channels mediate calcium entry into mammalian sympathetic neurons following neurite transection, **Brain Research** 1996 May;719(1-2):239-246.
  2. Tymianski M, Bernstein GM, Abdel-Hamid KM, Sattler R, Velumian A, Carlen PL, Razavi H, Jones OT. A novel use for a carbodiimide Compound for the Fixation of Fluorescent and Non-Fluorescent Calcium Indicators *In-Situ* Following Physiological Experiments, **Cell Calcium**. 1997 Mar;21(3):175-183.
  3. Sattler R, Charlton MP, Hafner M, Tymianski M. Determination of the time-course and extent of neurotoxicity at defined temperatures in cultured neurons using a modified multi-well plate fluorescence scanner. **J Cereb Blood Flow Metab**. 1997 Apr;17:455-463.
  4. Tymianski M, Sattler R, Bernstein G, Jones OT. Preparation, characterization and utility of a novel antibody for resolving the spatial and temporal dynamics of the calcium chelator BAPTA. **Cell Calcium**. 1997 Aug;22(2), 111-120.
  5. Tymianski M\*, Sattler R\*, Zabramski J, Spetzler RF. Characterization of neuroprotection from excitotoxicity by moderate and profound hypothermia in cultured cortical neurons unmasks a temperature-insensitive component of glutamate neurotoxicity. **J Cereb Blood Flow Metab**. 1998 Aug;18:848-867.
  6. Sattler R, Charlton MP, Hafner M, Tymianski M. Distinct influx pathways, not calcium load, determine neuronal vulnerability to calcium excitotoxicity. **J. Neurochem**. 1998 71, 2349-2364
  7. Sattler R, Xiong Z, Lu WY, Hafner M, MacDonald JF, Tymianski M. Specific coupling of NMDA receptor activation to nitric oxide neurotoxicity by postsynaptic density -95 protein. **Science**, 1999 284:845-1848
  8. Sattler R, Xiong Z, Lu WY, MacDonald JF, Tymianski M. Distinct roles of synaptic and extrasynaptic NMDA receptors in excitotoxicity. **J Neurosci** 2000 Jan 1;20(1):22-33
  9. Penzes P, Johnson RC, Sattler R, Zhang X, Haganir RL, Kambampati V, Mains RE, Eipper BA. The neuronal Rho-GEF Kalirin-7 interacts with PDZ domain-containing proteins and regulates dendritic morphogenesis. **Neuron** 2001 29, 229-242
  10. Ihara K, Yoo DT, Henderson J, Sattler R, Taverna F, Lorensen S, Orser BA, Roder JC, Tymianski M. The influence of GluR2 expression on excitotoxicity in GluR2 null mutant mice. **J Neurosci** 2001 21(7), 2224-2239
  11. Kim CH, Takamiya K, Petralia RS, Sattler R, Yu S, Zhou W, Kalb R, Wenthold R, Haganir R. Persistent hippocampal CA1 LTP in mice lacking the C-terminal PDZ ligand of GluR1. **Nat Neurosci**. 2005 8(8):985-7
  12. Zhou W, Zhang L, Guoxiang X, Mojsilovic-Petrovic J, Takamiya K, Sattler R, Haganir RL, Kalb R. GluR1 controls dendrite growth through its binding partner, SAP97. **J Neurosci** 2008 Oct 8; 28(41):10220-33
  13. Li Y, Sattler R, Yang EJ, Nunes A, Ayukawa Y, Akhtar S, Ji G, Zhang PW, Rothstein JD. Harmine, a natural beta-carboline alkaloid, upregulates astroglial glutamate transporter expression. **Neuropharmacology** 2011 Jun 60(7-8):1168-75.
  14. Adamczyk A, Gause CD, Sattler R, Vidensky S, Rothstein JD, Singer H, Wang T. Genetic and functional studies of a missense variant in a glutamate transporter, SLC1A3, in Tourette syndrome. **Psychiatr Genet** 2011 Apr; 21(2):90-7.
  15. Sattler R, Ayukawa Y, Coddington LT, Gutenkunst J, Michaud R, Wolfe J, Taylor R, Lin S, Chipkin R, Block D and Rothstein JD. Human Nasal olfactory epithelium as a dynamic marker for CNS therapy development. **Exp Neurol**. 2011 Dec;232(2):203-11
  16. Shukla K, Thomas AG, Ferraris DV, Hin N, Sattler R, Alt J, Rojas C, Slusher BS, Tsukamoto T. Inhibition of xc- transporter-mediated cystine uptake by Sulfasalazine analogs. **Bioorg Med Chem Lett**. 2011 Oct 15;21(20):6184-7.
  17. Roybon L, Lamas NJ, Garcia-Diaz A, Yang EJ, Sattler R, Jackson-Lewis V, Kim YA, Kachel CA, Rothstein JD, Przedborski S, Wichterle H, Henderson CE. Human stem cell-derived spinal cord astrocytes with defined mature or reactive phenotypes. **Cell Rep** 2013 4(5), 1035-1048. PMID: 23994478
  18. Sattler R\*, Tyler B, Hoover B, Coddington LT, Recinos V, Hwang L, Brem H, Rothstein JD. Increased expression of glutamate transporter GLT-1 in peritumoral tissue associated with prolonged survival and decreases in tumor growth in a rat model of experimental malignant glioma. **J Neurosurg** 2013 119(4), 878-886. PMID: 23909244
- \*Corresponding author
19. Donnelly CJ, Zhang PW, Pham JT, Heusler AR, Mistry NA, Vidensky S, Daley EL, Poth EM, Hoover B, Fines DM, Maragakis N, Tiernari PJ, Petrucelli L, Traynor BJ, Wang J, Rigo F Bennett CF, Blackshaw S, Sattler R.\*, Rothstein JD.\* RNA toxicity from the ALS/FTD C9ORF72 Expansion is mitigated by antisense

intervention. **Neuron** 2013 80, 415-428

\*Co-corresponding senior authors

20. Haeusler AR, Donnelly CJ, Periz G, Simko EAJ, Shaw PG, Maragakis NJ, Troncoso JC, Pandey A, Sattler R, Rothstein JD, Wang J. *C9orf72* Nucleotide Repeat Structure Initiates Molecular Cascades of Disease. **Nature** 2014 Mar 5. doi: 10.1038/nature13124.
21. Abazyan S, Yang EU, Abazyan B, Xia M, Yang C, Rojas C, Slusher B, Sattler R, Pletnikov M. Mutant Disrupted-In-Schizophrenia 1 in astrocytes: focus on glutamate metabolism. **J Neurosci Res** 2014 Aug 8. doi: 10.1002/jnr.23459. [Epub ahead of print]
22. Li Y, Balasubramanian U, Cohen D, Zhang PW, Mosmiller E, Sattler R, Maragakis NJ, Rothstein JD. A comprehensive library of familial human amyotrophic lateral sclerosis induced pluripotent stem cells. **PLOS ONE** 2015 Mar 11;10(3):e0118266
23. Thomas AG, Sattler R, Tendyke K, Loiacono KA, Hansen H, Sahni V, Hashizume Y, Rojas C, Slusher BS. High-Throughput Assay Development for Cystine-Glutamate Antiporter (xc-) Highlights Faster Cystine Uptake than Glutamate Release in Glioma Cells. **PLoS One**. 2015 Aug 7;10(8):e0127785. doi: 10.1371/journal.pone.0127785
24. Zhang K, Donnelly CJ, Haeusler AR, Grima JC, Machamer JB, Steinwald P, Daley EL, Miller SJ, Cunningham KM, Vidensky S, Gupta S, Thomas MA, Hong I, Chiu SL, Haganir RL, Ostrow LW, Matunis MJ, Wang J, Sattler R, Lloyd TE, Rothstein JD. The C9ORF72 repeat expansion disrupts nucleocytoplasmic transport. **Nature** 2015 Sep 3;525(7567):56-61. doi: 10.1038/nature14973.
25. Ghosh M, Lane M, Krizman E, Sattler R, Rothstein JD, Robinson MB. Transcription Factor Pax6 Contributes to Induction of GLT-1 Expression in Astrocytes Through an Interaction with a Distal Enhancer Element. **J Neurochem**. 2015 Oct 20. doi: 10.1111/jnc.13406
26. Zhang PW, Haidet-Phillips AM, Pham JT, Lee Y, Huo Y, Tienari PJ, Maragakis NJ, Sattler R\*, Rothstein JD\*. Generation of GFAP::GFP astrocyte reporter lines from human adult fibroblast-derived iPS cells using zinc-finger nuclease technology. **Glia** 2016 Volume 64, Issue 1, pages 63–75. doi: 10.1002/glia.22903
27. Coyne, A.N., Lorenzini, I., Chou, C., Torvund, M., Rogers, R., Starr, A., Zaepfel, B.L., Levy, J., Johannesmeyer, J., Schwartz, J.C., Nishimune, H., Zinsmaier, K., Rossoll, W., Sattler, R., Zarnescu, D.C. Post-transcriptional inhibition of Hsc70-4/HSPA8 expression leads to synaptic vesicle cycling defects in multiple models of ALS. **Cell Reports** 2017 Oct 3;21(1):110-125. doi:10.1016/j.celrep.2017.09.028.
28. Chou CC, Zhang Y, Umoh ME, Vaughan SW, Lorenzini I, Liu F, Sayegh M, Donlin-Asp PG, Chen YH, Duong DM, Seyfried NT, Powers MA, Kukar T, Hales CM, Cairns NJ, Boylan KB, Dickson DW, Rademakers R, Zhang YJ, Petrucelli L, Sattler R, Zarnescu DC, Glass JD, Rossoll W. TDP-43 pathology disrupts nuclear pore complexes and nucleocytoplasmic transport in ALS/FTD. **Nature Neuroscience** 2018 Jan 8. doi: 10.1038/s41593-017-0047-3. [Epub ahead of print]
29. Bakkar N, Kovalik T, Lorenzini I, Spangler S, Lacoste A, Sponaugle K, Ferrante P, Argentinis E, Sattler R, Bowser R. (2017). Artificial intelligence in neurodegenerative disease research: Use of IBM Watson to identify additional RNA binding proteins altered in amyotrophic lateral sclerosis. **Acta Neuropathologica** 2017, DOI 10.1007/s00401-017-1785-8.

\*Co-corresponding senior authors

## **Inventions, Patents, Copyrights**

- 12/2007    Neuroprotective effects of Thiamphenicol in gliosarcoma tumor model  
              Sattler R., Block D and Rothstein JD  
              Assignee Name and Address: Johns Hopkins University, Baltimore, MD
- 12/2007    Use of human nasal biopsy samples to monitor drug efficacy on changes of astrocytic gene  
              expression levels  
              Sattler R. and Rothstein JD  
              Assignee Name and Address: Johns Hopkins University, Baltimore, MD
- 10/2013    Composition for modulating C9orf72  
              Bennett F; Rothstein JD, Donnelly C, Sattler R  
              Assignee Name and Address: ISIS Pharmaceuticals, Carlsbad, CA

## Extramural Funding

### Current Grants

- 07/01/18 – 06/30/19 Genomic and phenotypic signature profile of ALS dementia iPSC cortical neurons  
Arizona Alzheimer's Disease Center/Barrow Neurological Institute  
PI: Sattler R  
Major goals: To generate iPSC cortical neurons from ALS patients with clinically confirmed cognitive impairments and compare genetic signatures and cellular phenotypes to iPSC cortical neurons from ALS without dementia.
- 07/01/18 – 06/30/20 Small molecules targeting TDP43-RNA interaction in ALS  
Department of Defense  
PI: Zarnescu D  
Co-PI: 1 calendar month  
Major goals: To design, synthesize and test small molecules targeting the RNA recognition motif of TDP-43 to release RNAs that are sequestered during ALS disease pathogenesis and thereby restore protein translation
- 03/01/18 – 02/28/19 Microglial regulation of synapse loss in C9orf72 ALS/FTD  
Robert Packard Center for ALS Research  
PI: Sattler R  
Major goals: To determine how neuron-immune response contributes to synaptic deficits in hiPSCs neurons and C9orf72 mouse models.
- 07/01/17 – 06/30/21 The role of ADAR2-associated RNA editing in pathogenesis of ALS  
Department of Veteran's Affairs  
PI: Dracheva S  
Co-PI: 2 calendar months  
Major goals: To study ADAR2-mediated RNA editing deficits in individual cell types of ALS patient tissue and patient-derived hiPSC neural cells.
- 08/01/16 – 7/31/19 Metabolic dysregulation in ALS  
Muscular Dystrophy Association (MDA)  
PI: Zarnescu D  
Co-PI: 0.6 calendar months  
Major Goals: Study the mechanisms of metabolic dysfunction in ALS *Drosophila* models and hiPSC neurons.
- 10/12/15-10/11/20 Laboratory Start up fund  
Barrow Neurological Institute  
Major Goals: Studies of mechanisms of neurodegeneration using patient-derived iPS cells

### Previous Grants

- 08/01/15-07/31/18 Role of synaptic dysfunction in C9orf72-mediated disease pathogenesis:  
Muscular Dystrophy Association (MDA)  
PI: Sattler RG  
0.6 calendar months  
Major Goals: Study the mechanisms of RNA binding proteins in neuronal synaptic dysfunction using iPS neurons and C9orf72 animal models
- 08/01/15-07/31/18 Role of RNA interacting proteins in synaptic dysfunction in C9orf72-mediated disease pathogenesis

- ALS Association (ALSA)  
 PI: Sattler RG  
 0.6 calendar months  
 Major Goals: Study the role of RNA interacting proteins and RANT di-peptides in synaptic dysfunction in C9orf72 iPS neurons.
- 09/01/13-08/31/18 ALS/FTD mutant C9orf72-induced genetic and nuclear pathology in iPS cell models  
 R01 NS085207  
 NIH/NINDS  
 PI: Sattler RG (Multi PI), 3 calendar months  
 Major Goals: Studying the molecular pathology of C9ORF72 in iPS cell culture models and human autopsy tissue (RNA foci, RNA binding proteins, aberrant gene expression, RNA splicing, RNA editing).
- 07/01/16—6/30/18 Probing cytoskeletal dynamics in induced pluripotent stem cell-derived neurons from patients with monogenic cerebral palsy  
 Research Development and Partnering Initiative Award, University of Arizona  
 \$40,000  
 PI: Kruer M  
 Co-investigator, 0.6 calendar months  
 Major Goals: Studying the molecular mechanisms of genetic forms of cerebral palsy using patient-derived hiPSC neurons
- 07/01/17 – 06/30/18 Characterization of neurons differentiated from patients with Down’s syndrome  
 Arizona Alzheimer’s Research Consortium/BNI  
 PI: Muffson E  
 Co-PI: 1 calendar month  
 Major goals: To generate induced neurons (iNeurons) directly from fibroblasts obtained from patients with Down’s syndrome to study neurodegenerative disease mechanisms.
- 07/01/17 – 06/30/18 The role of microglial cells in C9orf72-mediated synaptic dysfunction  
 Arizona Alzheimer’s Disease Core Center  
 PI: Sattler R  
 Major goals: This pilot project is aimed at generating C9 patient-derived hiPSC microglial cells for the future use of neuron-microglial co-cultures
- 12/01/16 – 11/30/17 Mechanisms of GluA2 editing deficiencies in C9orf72  
 The Robert Packard Center for ALS Research  
 PI: Sattler RG  
 Major goals: To determine how the G4C2 repeat expansion in C9orf72 leads to GluA2 editing deficiencies in hiPSC and C9orf72 mouse models (2<sup>nd</sup> year renewal award)
- 12/01/15-11/30/16 Mechanisms of GluA2 editing deficiencies in C9orf72  
 The Robert Packard Center for ALS Research  
 PI: Sattler RG, 1.2 calendar months  
 Major Goals: Study the role of GluA2 editing in hiPSC neurons and C9 mouse models
- 12/01/14-11/30/15 Pre-clinical validation of iPS-based screening assays and RANT di-peptide biomarker development for C9orf72  
 The Judith and Jean Pape Adams Charitable Foundation  
 PI: Sattler RG, 1.2 calendar months  
 Major Goals: Validation of iPS neuron cell culture platform to screen for novel C9-

targeted therapeutics and validation of the detection of RANT dipeptides as a biomarker assay

- 12/01/14-11/30/15     Role of synaptic dysfunction in C9orf72-mediated pathogenesis in patient-derived iPS neurons and in vivo animal models  
The Robert Packard Center for ALS Research  
PI: Sattler RG, 1.2 calendar months  
Major Goals: Study the role of synaptic dysfunction in C9orf72 iPS neurons in vitro and in vivo
- 7/1/14-6/30/20         Neuron and Glial cellular signatures from normal and diseased iPS cells  
NIH/NINDS U54 award  
Sub Grant University of CA, Irvine (Rothstein, Multi PI)  
Co-investigator, 0.6 calendar months  
Major Goals: Collection of OMICS (Transcriptomics/proteomics) data and cell survival data from normal and diseased (ALS/HD/PD) iPS cells.
- 4/1/14-3/31/19         GLT-1 Enhancers as Drug Candidates for Treating Cocaine Addiction  
NIH/NINDS  
Sub Grant Temple University (Rothstein, Multi-PI)  
Co-investigator, 0.6 calendar months  
Major Goals: study the astroglial glutamate transporter and drugs that might modulate this transporter.
- 02/01/13-01/31/16     ALS C9ORF72 IPS Cells:  
Muscular Dystrophy Association  
PI: Rothstein JD  
Co-investigator, 0.6 calendar months  
Major Goals: The aim of this project is to develop C9orf72 iPS lines for use by researchers nationally
- 1/10/14-9/30/15       Use of mutant C9orf72 patient-derived iPS neurons to study the role of altered RNA metabolism in synaptic dysfunction  
NIH/NIA, Johns Hopkins ADRC  
PI: Sattler RG, 0.6 calendar months  
Major Goals: The goal of this proposal is to understand the involvement of synaptic dysfunction in C9orf72 mediated increased susceptibility to cellular stressors caused by the sequestration of RNA binding proteins.
- 4/1/14-3/31/15         Biomarker assay development to accompany antisense oligonucleotide therapeutic for mutant C9orf72-positive FTD patients.  
William and Ella Owens Medical Research Foundation  
PI: Sattler RG, 1.2 calendar months  
Major Goals: Development of a biomarker assay to monitor mutant C9orf72-targeted therapy.
- 4/1/14-3/31/15         Development of Antisense Therapy and Therapeutic biomarker for C9ORF72 FTD/ALS mutation patients  
Alzheimer's Drug Discovery Foundation  
PI: Rothstein JD  
Co-investigator, 1.2 calendar months

Major Goals: The ultimate goal of this proposal is to develop an antisense oligonucleotide (ASO) based therapeutic for the newly discovered frontotemporal dementia form of the C9ORF72 hexanucleotide repeat expansion in and to also design an accompanying biomarker assay.

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|-------------------|--|
| 12/1/12-11/30/14  | <p>Development of an antisense oligonucleotide therapeutic utilizing stem cell derived patient astrocytes and motor neurons to treat ALS caused by C9ORF72 hexanucleotide expansion<br/>         ALS Association<br/>         PI: Sattler RG, 0.12 calendar months<br/>         Major Goals: Acquiring fibroblasts from ALS patients carrying the C9ORF72 hexanucleotide repeat expansion, establishing human iPS cell lines and generating differentiated astrocytes.</p> |
| 12/31/12-12/31/13 | <p>Differentiation and characterization of iPS neurons from C9orf72-patient derived fibroblasts<br/>         The Judith and Jean Pape Adams Charitable Foundation<br/>         PI: Sattler RG, 1.2 calendar months<br/>         Major Goals: Generation of patient-derived fibroblasts and re-programming into iPS cells, followed by differentiation into neurons</p>   |
| 4/1/13-3/31/14    | <p>Development of Antisense Therapy and Therapeutic biomarker for C9ORF72 FTD/ALS mutation patients<br/>         Alzheimer's Drug Discovery Foundation<br/>         PI: Rothstein JD<br/>         Co-investigator, 1.2 calendar months</p>   |
| 12/31/13-12/31/14 | <p>Development of Biomarker Assay to monitor C9orf72 ASO therapy<br/>         The Judith and Jean Pape Adams Charitable Foundation<br/>         PI: Sattler RG, 1.2 calendar months<br/>         Major Goals: Development of a proteomics based biomarker assay to monitor secreted CNS proteins for future ASO therapy using C9ORF72-positive iPS cells (FTD and ALS).</p>  |

#### **Research Program Building/Leadership**

Not applicable

### **EDUCATIONAL ACTIVITIES**

#### **Educational Publications**

##### *Invited Review Articles*

1. Sattler R and Tymianski M. Molecular mechanisms of calcium-dependent excitotoxicity. **J Mol Med** 2000 78(1) 3-13
2. Sattler R and Tymianski M. Molecular mechanisms of glutamate receptor-mediated excitotoxic neuronal cell death. **Molecular Neurobiology** 2001 24 (1-3), 107-129
3. Sattler R and Rothstein JD. Targeting an old mechanism in a new disease - Protection of glutamatergic dysfunction in depression. **Biol Psychiatry** 2007 Jan 15;61(2):137-8
4. Mendez E. and Sattler R. Biomarker development for C9orf72 repeat expansion in ALS. Special Issue: The multifaceted Nature of ALS: Discoveries and Challenges of the last 5 years. **Brain Research** 2014 Sep 26. pii: S0006-8993(14)01263-3. doi: 10.1016/j.brainres.2014.09.041. [Epub ahead of print]
5. Donnelly CJ, Grima JC and Sattler R. Aberrant RNA homeostasis in amyotrophic lateral sclerosis: potential for new therapeutic targets? **Neurodegener Dis Manag** 2014 Dec;4(6):417-437.
6. Ghaffari L, Starr A, Nelson AT, Sattler R. Representing diversity in a dish: Using patient-derived in vitro models to recreate the heterogeneity of neurological disease. **Front Neurosci** 2018. Feb 9;12:56.

7. Starr A, Sattler R. Synaptic dysfunction and altered excitability in C9orf72 ALS/FTD. Special Issue: RNA metabolism. **Brain Res** 2018 Feb 14. pii: S0006-8993(18)30069-6

#### *Book Chapters/Monographs*

1. Sattler R, Seemann D and Hafner M: Neuronal cell cultures and digitized fluorescent imaging of intracellular calcium as tools for in vitro drug screening, in: *Animal Cell Technology: Development towards the 21st century*, E.C. Beuvery et al. (eds), Kluwer Academic Publ. 1995 p. 1117-1121,
2. Hafner M., Sattler R, Melzian D, Tymianski M.: Digital imaging of free intracellular calcium: a quantitative approach to assess excitotoxicity and neuronal protection *in vitro*. In: *Proceedings of Animal Testing Replacement Meeting*, 1996
3. Tymianski M, Sattler R. Is Calcium involved in Excitotoxic/Ischemic Neuronal Damage? In: *Primer on Cerebrovascular Diseases*. eds. M.Welch, L.Caplan, D.Reis, B.Siesjo and B.Weir, Academic Press, 1997 p. 190-192
4. Sattler R and Tymianski M. Calcium and Cellular Death. In: *Integrative Aspects of Ca<sup>2+</sup> signalling*. eds. A. Verkhratsky and E.C. Toescu, Plenum Press, 1998 p.267-290
5. Sattler R and Rothstein JD. Regulation and Dysregulation of Glutamate Transporters. In: *Neurotransmitter Transporters. Handbook of Experim. Pharmacology* 2006 175:227-303
6. Sattler R and Rothstein JD. Neurodegenerative Disease: Amyotrophic Lateral Sclerosis. In: *Neuroglia*, 3<sup>rd</sup> Edition. Eds. H. Kettenmann and B.R. Ransom. Oxford University Press 2013 p.811-824
7. Philips T and Sattler R. Glial glutamate and metabolic transporters as a target for neurodegenerative therapy and biomarkers. In: *Pathological Potential of Neuroglia: Possible new Targets for Medical Intervention*. Eds. A. Verkhratsky and V. Parpura. Springer Press, 2014
8. Lorenzini, I, Moore S, Sattler R. RNA editing deficiency in neurodegeneration. In: *RNA metabolism in neurodegenerative diseases*. Eds. R.Sattler and C. Donnelly. *Adv Neurobiol.* 2018 ;20:63-83. doi: 10.1007/978-3-319-89689-2\_3

#### *Other media*

1. Sattler R. It was the best of times for ALS research – C9orf72. *Research ALS Today*. ALS Association's National Research Periodical, 2014 Vol. 25

### **Teaching**

#### *Classroom instruction*

- |            |   |
|------------|---|
| 2010       | Lecturer, Neurotherapeutics Course, Department of Neurology: "Importance of Animal models in CNS drug development"      |
| 2012- 2015 | Director, Summer Intern Lecture Series and weekly work luncheons, Brain Science Institute, Johns Hopkins University     |
| 2013       | Lecturer, Neuroscience Graduate Program, Georgetown University: "ALS – Current insights on mechanisms and Therapeutics" |
| 2017       | Lecturer: Molecular Mechanisms of ALS, "Neurodegenerative disease" lecture series, Arizona State University, Tempe, AZ  |

#### *Clinical instruction*

None

#### *CME instruction*

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| 2015 | "Running and directing a basic research laboratory", Faculty Development Retreat, Department of Neurology, JHU SOM |
|------|--|

#### *Workshops /seminars*

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|------|--|
| 2013 | ALS Association Webinar: "C9orf72 – the role of RNA toxicity in ALS"   |
| 2017 | Lecturer: Mechanisms of Neurodegeneration in ALS; Molecular Neurodegeneration 2017, Wellcome Trust Course, Wellcome Genome Campus, Hinxton, UK |



- 2018 Lecturer: Mechanisms of Neurodegeneration in ALS; Molecular Neurodegeneration 2018, Wellcome Trust Course, Wellcome Genome Campus, Hinxton, UK
- 2019 Lecturer: Mechanisms of Neurodegeneration in ALS; Molecular Neurodegeneration 2018, Wellcome Trust Course, Wellcome Genome Campus, Hinxton, UK

#### **Mentoring** (pre- and post-doctoral)

- 1999-02 Jackie Harlow, undergraduate student/BS candidate, currently Federal Patent Judge, Denver, CO
- 2003-04 Vicki Nelson, undergraduate student/BS candidate, current position unknown
- 2004-05 Trent Steidinger, B.S., research technician, currently a graduate student, University of Alabama
- 2004-06 Megan Morrison, M.S., research technician, current position unknown
- 2005-11 Yoko Ayukawa, M.S., research technician, returned to Japan
- 2005-06 Daejin Ko, M.S., research technician, unknown
- 2005-06 Schedeen Rodgers, High School Student, unknown
- 2006-07 Cynthia Penise, M.S., research technician, unknown
- 2006-08 Jacki Gutenkunst, M.S., research technicians, University of Izmir, Turkey
- 2006-08 Luke Coddington, B.S., research technician, current: postdoctoral fellow at Janelia Farms, HHMI

#### *Publications:*

- Sattler R\*, Tyler B, Hoover B, Coddington LT, Recinos V, Hwang L, Brem H, Rothstein JD. Increased expression of glutamate transporter GLT-1 in peritumoral tissue associated with prolonged survival and decreases in tumor growth in a rat model of experimental malignant glioma. **J Neurosurg** 2013 119(4), 878-886. PMID: 23909244
- 2006 Vivel Chellappa, undergraduate student, unknown
- 2006-08 Zhu Li, M.S., research technician, JHU, Research Technician
- 2007-10 Jun Li, Ph.D., research associate, NIH/NIA, Senior Scientist
- Publications:*
- Li Y, Sattler R, Yang EJ, Nunes A, Ayukawa Y, Akhtar S, Ji G, Zhang PW, Rothstein JD. Harmine, a natural beta-carboline alkaloid, upregulates astroglial glutamate transporter expression. **Neuropharmacology** 2011 Jun 60(7-8):1168-75.
- 2007-08 Rebecca Michaud, B.S., research technician, Teaching Professor, Nashville, TN
- 2007-09 Sadia Akhtar, B.S., research technician, GeneDX Inc.
- 2008-13 Eun Ju Yang, B.S., research technicians, returned to Korea
- 2008-14 Pingwu Zhang, Ph.D., research associate, JHU, Research Associate, Dept. of Ophthalmology
- 2008-10 Alice Nunes, B.S., research technician, returned to Brazil, Nurse
- 2008-10 Naomi Sell, JHU Neuroscience undergraduate student, Temple University Medical School
- 2009-10 Robert Martin, JHU Neuroscience undergraduate student, unknown
- 2009-11 Grace Ji, B.S., research technician, Temple University Medical School
- 2009-11 Uma Balasubramanian, M.S., research technician, returned to India
- 2009-11 Irina Shats, M.S., research technician, JHU research technician
- 2010-13 Benjamin Hoover, B.S., research technician, Columbia University, NY, Graduate school for Arts
- Publications:*
- (1) Sattler R\*, Tyler B, Hoover B, Coddington LT, Recinos V, Hwang L, Brem H, Rothstein JD. Increased expression of glutamate transporter GLT-1 in peritumoral tissue associated with prolonged survival and decreases in tumor growth in a rat model of experimental malignant glioma. **J Neurosurg** 2013 119(4), 878-886. PMID: 23909244
- (2) Donnelly CJ, Zhang PW, Pham JT, Heusler AR, Mistry NA, Vidensky S, Daley EL, Poth EM, Hoover B, Fines DM, Maragakis N, Tiernari PJ, Petrucelli L, Traynor BJ, Wang J, Rigo F, Bennett CF, Blackshaw S, Sattler R.\*, Rothstein JD.\* RNA toxicity from the ALS/FTD C9ORF72 Expansion is mitigated by antisense intervention. **Neuron** 2013 80, 415-428
- 2010-13 Lihua Liang, Ph.D., research associate, current position unknown
- 2010-14 Daniel Fines, High School student + undergraduate summer student, Cornell University – PhD Student Berkley University

#### *Publications:*

Donnelly CJ, Zhang PW, Pham JT, Heusler AR, Mistry NA, Vidensky S, Daley EL, Poth EM, Hoover B, Fines DM, Maragakis N, Tiernari PJ, Petrucelli L, Traynor BJ, Wang J, Rigo F Bennett CF, Blackshaw S, Sattler R.\*, Rothstein JD.\* RNA toxicity from the ALS/FTD C9ORF72 Expansion is mitigated by antisense intervention. **Neuron** 2013 80, 415-428

Summer 2010 Nicole Seitter, High School Student, NY, current position unknown

Summer 2010 Nicole Knudsen, High School Student, NY, current position unknown

Summer 2010 Dariz Hill, High School Student, MD, Bowie University, MD

2010-13 Ian Sillars, High School Student + undergraduate summer student, University of Maryland Baltimore County, MD

2011-12 Kevin Chiang, High School Student, MD, current position unknown

Summer 2010 Lauren Atkinson, High School Student, NY, current position unknown

Summer 2010 Jessica Garretch, High School Student, NY, current position unknown

2011-13 Emily Mendez, JHU Neuroscience undergraduate student, JHU Neuroscience BS/MS candidate, MD/PhD student Baylor College of Medicine

2011-12 Aadi Kalloo, JHU Neuroscience undergraduate student, current position unknown

2011-13 Steven Guo, High School Student + undergraduate summer student, University of Maryland Baltimore County, MD

2011-13 Meredith Davitt, undergraduate student, MD, St. Mary's College, MD

2011-12 Alec Webster, JHU Neuroscience undergraduate student, current position unknown

2011-13 Nipun Mistry, JHU undergraduate student, MD Anderson Cancer Center, Houston, TX

*Publications:* Donnelly CJ, Zhang PW, Pham JT, Heusler AR, **Mistry NA**, Vidensky S, Daley EL, Poth EM, Hoover B, Fines DM, Maragakis N, Tiernari PJ, Petrucelli L, Traynor BJ, Wang J, Rigo F Bennett CF, Blackshaw S, Sattler R.\*, Rothstein JD.\* RNA toxicity from the ALS/FTD C9ORF72 Expansion is mitigated by antisense intervention. **Neuron** 2013 80, 415-428

2012-2014 Michael Thomas, High School Student + undergraduate summer student, University Delaware

2012-14 Harry Zhang, High School Student + undergraduate summer student, JHU undergraduate

2013-2015 Simon Fines, High School Student + undergraduate summer student, Cornell University

2013-2014 Regina Powers, undergraduate student, PA

Summer 2013 Vignesh Ravi, High School Student, IL, University of Chicago undergraduate

2013-2014 Olivia Berman, JHU Neuroscience undergraduate student

2014-2015 Emily Mendez, Master Student JHU Neuroscience BA/MS program. Current: MD/PhD Baylor College of Medicine, Houston, TX

*Publications:*  
Mendez E. and Sattler R. Biomarker development for C9orf72 repeat expansion in ALS. Special Issue: The multifaceted Nature of ALS: Discoveries and Challenges of the last 5 years. **Brain Research** 2014 Sep 26. pii: S0006-8993(14)01263-3. doi: 10.1016/j.brainres. 2014.09.041. [Epub ahead of print]

*Poster Presentations:*  
 11/2014 Role of ADARB2 in mutant C9ORF72 disease pathology. Cell Translational Neuroscience SfN Satellite meeting in Arlington, VA  
 12/2014 ADARB2 – RNA binding protein to C9orf72 hexanucleotide repeat expansion. Neurodegenerative Diseases Conference, Cold Spring Harbor, NY

2014-2015 Thomas O'Donnell, B.S., research technician, current: research technician JHU

*Poster Presentations:* 11/2014 Synaptic alterations in C9orf72 iPS neurons. Cell Translational Neuroscience SfN Satellite meeting in Arlington, VA – ***selected for slide presentation***

2014-2015 Ines Varela, JHU Neuroscience undergraduate student. Current: Medical Student at Ponce Health Sciences University, Puerto Rico, US

2014-present Ileana Lorenzini, Ph.D., Postdoctoral Fellow

*Publications:*  
 (1) Coyne, A.N., Lorenzini, I., Chou, C., Torvund, M., Rogers, R., Starr, A., Zaepfel, B.L., Levy, J., Johannesmeyer, J., Schwartz, J.C., Nishimune, H., Zinsmaier, K., Rossoll, W., Sattler, R., Zarnescu, D.C. Post-transcriptional inhibition of Hsc70-4/HSPA8 expression leads to synaptic vesicle cycling defects in multiple models of ALS. **Cell Reports** 2017 Oct 3;21(1):110-125. doi:10.1016/j.celrep.2017.09.028.

(2) Bakkar N, Kovalik T, Lorenzini I, Spangler S, Lacoste A, Sponaugle K, Ferrante P, Argentinis E, Sattler R, Bowser R. (2017). Artificial intelligence in neurodegenerative disease research: Use of IBM Watson to identify additional RNA binding proteins altered in amyotrophic lateral sclerosis. **Acta Neuropathologica** 2017, DOI 10.1007/s00401-017-1785-8.

(3) Chou CC, Zhang Y, Umoh ME, Vaughan SW, Lorenzini I, Liu F, Sayegh M, Donlin-Asp PG, Chen YH, Duong DM, Seyfried NT, Powers MA, Kukar T, Hales CM, Cairns NJ, Boylan KB, Dickson DW, Rademakers R, Zhang YJ, Petrucelli L, Sattler R, Zarnescu DC, Glass JD, Rossoll W. TDP-43 pathology disrupts nuclear pore complexes and nucleocytoplasmic transport in ALS/FTD. **Nature Neuroscience** 2018 Jan 8. doi: 10.1038/s41593-017-0047-3. [Epub ahead of print]

(4) Lorenzini, I, Moore S, Sattler R. RNA editing deficiency in neurodegeneration. In: RNA metabolism in neurodegenerative diseases. Eds. R. Sattler and C. Donnelly. Adv Neurobiol. 2018;20:63-83. doi: 10.1007/978-3-319-89689-2\_3

*Poster Presentations:*

- 12/2014 Synaptic dysfunction in C9orf72 iPS neurons. Neurodegenerative Diseases Conference, Cold Spring Harbor, NY;
- 10/2015 Mechanism of synaptic dysfunction of C9orf72 neurons in vitro and in vivo. 10<sup>th</sup> Brain Research Conference, RNA Metabolism in Neurological Diseases, Chicago, IL;
- 10/2015 Mechanism of synaptic dysfunction of C9orf72 neurons in vitro and in vivo. Annual SFN meeting, Chicago, IL
- 03/2016 Dendritic remodeling and synaptic alterations in C9orf72 neurons. American Society for Neurochemistry Meeting, Denver, CO
- 06/2016 Dendritic remodeling and synaptic alterations in C9orf72 neurons. Keystone symposium, Common Mechanisms of Neurodegeneration, Keystone, CO
- 03/2017 Dendritic remodeling and synaptic alterations in C9orf72 neurons. Arlington, Virginia, Muscular Dystrophy Association meeting.
- 03/2017 Synaptic Deficits in C9orf72-ALS/FTD patient-derived iPSC neurons and in vivo models of C9. **Talk selected from abstracts.** Keystone Symposia: Synapses and Circuits: Formation, Function and Dysfunction, Santa Fe, New Mexico,
- 07/2017 Dendritic Remodeling and synaptic dysfunction in C9orf72 hiPSC neurons. Gordon Research Conference: Amyotrophic Lateral Sclerosis and related motor neuron diseases. Stowe, Vermont.
- 09/2017 2<sup>nd</sup> Arizona ALS Symposium, Tucson, AZ. Synaptic deficits in C9orf72 ALS/FTD
- 09/2017 Arizona Wellbeing Commons. Inaugural symposium. Tempe, AZ. Synaptic dysfunction in C9orf72 ALS/FTD
- 11/2017 Society for Neuroscience Conference, Washington D.C. Aberrant synaptic activity in C9orf72 ALS/FTD
- 07/2018 Keystone Conference on Neurodegeneration. Synaptic dysfunction in C9orf72 ALS/FTD. Keystone, CO
- 09/2018 3<sup>rd</sup> Arizona ALS Symposium, Flagstaff, AZ. Decreased synaptic activity and neuronal morphological alterations in C9orf72 ALS/FTD
- 11/2018 Society for Neuroscience Conference, San Diego, CA. Altered synaptic function in C9orf72 ALS/FTD

*Fellowships awarded:*

- 05/2015 Maryland Stem Cell Research Foundation, Postdoctoral Fellowship Award
- 06/2016 Young Investigator's Education Enhancement (YIEE) travel award, American Society for Neurochemistry
- 07/2017 Postdoctoral Fellowship Award, Barrow Neurological Foundation

*Honors/Awards:*

- 2015 09/2018 Second Prize Poster Presentation award, AZ ALS Symposium 2018, Flagstaff, AZ
- 2015 Andrew Nelson, undergraduate summer intern, James Madison University
- 2015 Emily Labruna, High School Student summer intern, Newport Highschool, Newport, NY
- 2015-present Jennifer Levy, B.S., research technician

2015-2016	Isaiah Tesfay, Undergraduate student, Arizona State University, Dept. of Biomedical Sciences
2016-2018	Alexander Starr, B.S., research technician, current: PhD graduate program University of Pennsylvania, Dept. of Pharmacology
	<i>Publications:</i>
	1. Ghaffari L, <u>Starr A</u> , Nelson AT, Sattler R. Representing diversity in a dish: Using patient-derived in vitro models to recreate the heterogeneity of neurological disease. <b>Front Neurosci</b> 2018. Feb 9:12:56.
	2. <u>Starr A</u> , Sattler R. Synaptic dysfunction and altered excitability in C9orf72 ALS/FTD. Special Issue: RNA metabolism. <b>Brain Res</b> 2018 Feb 14. pii: S0006-8993(18)30069-6
2016-present	Stephen Moore, B.S., Graduate Student of Neuroscience, Interdisciplinary Graduate Degree Program in Neuroscience offered in collaboration between Arizona State University, University of Arizona College of Medicine Phoenix and the Barrow Neurological Institute ( <a href="https://neuroscience.asu.edu">https://neuroscience.asu.edu</a> )
	<i>Publications:</i>
	Lorenzini, I*, <u>Moore S*</u> , Sattler R. RNA editing deficiency in neurodegeneration. In: RNA metabolism in neurodegenerative diseases. Eds. R.Sattler and C. Donnelly. Springer Press, in press
	<i>Oral Presentations:</i>
	05/2018 Arizona RNA Salon, Phoenix, AZ. RNA editing deficits in C9orf72 ALS/FTD disease pathogenesis
	02/2018 ASU, Tempe, AZ. ADAR2 nucleocytoplasmic mislocalization in C9orf72 mediated ALS/FTD
	07/2017 BNI Neuroscience Seminar, Phoenix, AZ. The role of ADAR2 nucleocytoplasmic mislocalization in C9orf72 ALS/FTD pathogenesis
	04/2017 Arizona RNA Salon, Phoenix, AZ. The role of ADAR2 editing in ALS disease pathogenesis
	08/2018 BNI Neuroscience Seminar, Phoenix, AZ. ADAR2 nucleocytoplasmic mislocalization and aberrant RNA editing in C9orf72 ALS/FTD
	11/2018 RNA Metabolism Meeting, San Diego, CA. ADAR2 nucleocytoplasmic mislocalization and aberrant RNA editing in C9orf72 ALS/FTD
	<i>Poster Presentations:</i>
	03/2017 MDA Scientific Conference, Arlington, VA. Nucleocytoplasmic mislocalization of ADAR2 in C9orf72-ALS and FTD
	07/2017 Gordon Research Conference, ALS and Related Motor Neuron Disease. Stowe, VT. ADAR2 nucleocytoplasmic mislocalization and GluA2 editing deficits in C9orf72 ALS/FTD
	09/2017 2 <sup>nd</sup> Arizona ALS Symposium, Tucson, AZ. ADAR2 nucleocytoplasmic mislocalization and GluA2 editing deficits in C9orf72 ALS/FTD
	09/2017 Arizona Wellbeing Commons. Inaugural symposium. Tempe, AZ. ADAR2 nucleocytoplasmic mislocalization and GluA2 editing deficits in C9orf72 ALS/FTD
	11/2017 Society for Neuroscience Conference, Washington D.C. ADAR2 nucleocytoplasmic mislocalization in C9orf72 ALS/FTD
	01/2018 Wellcome Genome Campus. Molecular Neurodegeneration Course. Hinxton, Cambridge, UK. ADAR2 nucleocytoplasmic mislocalization in C9orf72 ALS/FTD
	07/2018 Keystone Conference on Neurodegeneration. ADAR2 nucleocytoplasmic mislocalization in C9orf72 ALS/FTD. Keystone, CO
	09/2018 3 <sup>rd</sup> Arizona ALS Symposium, Flagstaff, AZ. ADAR2 nucleocytoplasmic mislocalization and aberrant RNA editing in C9orf72 ALS/FTD
	11/2018 Society for Neuroscience Conference, San Diego, CA. ADAR2 nucleocytoplasmic mislocalization and aberrant RNA editing in C9orf72 ALS/FTD
	<i>Fellowships awarded:</i>
	12/2018 BNI graduate student fellowship
2016-present	Nancy Twishime, High School student, Bioscience High School, Phoenix, AZ STEP Class of 2018, current: ASU Barrett Honors College undergraduate student
	<i>Oral Presentation:</i>

- 08/2016 BNI Summer student research symposium  
*Poster Presentation:*  
 09/2016 AZBio 2016; Student Discovery Zone Presenter  
 08/2017 BNI Summer student research symposium  
 08/2018 BNI summer student research symposium
- 2016-2017 Sarah Swinford, undergraduate student, Arizona State University, College of Letters and Sciences, Honor Thesis candidate; current: Research technician at Norton Thoracic Center, Phoenix, AZ
- 2016-2018 Devika Shenoy, High School student, Basis High School, Scottsdale, AZ, current: UCLA undergraduate student
- Poster Presentations:*  
 08/2017 BNI Summer student research symposium  
 07/2017 Gordon Research Conference Amyotrophic Lateral Sclerosis and Related Motor neuron Disease. Stowe, Vermont: Lorenzini I, Nelson A, Moore S, Levy J, Burciu C, Shenoy D, Starr A, Twishime N, Xu W, Xu J, Cleveland D, Lagier-Tourenne C, Sattler R. Dendritic Remodeling and synaptic dysfunction in C9orf72 hiPSCneurons.
- Awards:*  
 2016-2017 **AZSEF**: 3<sup>rd</sup> Place in Cellular and Molecular Biology at state-level science competition (2017)  
 Andrew Nelson, B.S., research technician; current: Neuroscience Graduate Program at Thomas Jefferson University
- Publications:*  
 Ghaffari L, Starr A, Nelson AT, Sattler R. Representing diversity in a dish: Using patient-derived in vitro models to recreate the heterogeneity of neurological disease. **Front Neurosci** 2018. Feb 9:12:56.
- 2016-present Camelia Burciu, B.S., research technician
- 2017-2018 Layla Ghaffari, B.S., research technician, current: Neuroscience Graduate Program at Thomas Jefferson University
- Publications:*  
 Ghaffari L, Starr A, Nelson AT, Sattler R. Representing diversity in a dish: Using patient-derived in vitro models to recreate the heterogeneity of neurological disease. **Front Neurosci** 2018. Feb 9:12:56.
- 2017 Kambrell White, undergraduate student, Arizona State University, Tempe, AZ
- 2017-present Shiv Shah, High School student, Mountain Ridge High School, Phoenix, AZ
- 2017-2018 Michael Goldstein, undergraduate student, Arizona State University,
- 2017-present Divya Bhatia, undergraduate student, Arizona State University,
- 2017-2018 Kevin Ma, B.S., research technician, current: research technician BNI

#### Thesis committees

- 2014-2015 Emily Mendez, MSc student; Johns Hopkins University Neuroscience Program (Mentor)
- 2016-2018 Thomas Westergard, Neuroscience graduate student, Thomas Jefferson University (*external Committee member*)
- 2016-present Stephen Moore, Graduate Student of Neuroscience, Interdisciplinary Graduate Program in Neuroscience, Arizona State University and Barrow Neurological Institute, (*Thesis Advisor*)
- 2018 – present Emily Turner, Postdoctoral Fellow, Salvatore Oddo's Laboratory, ASU (*Advisory Committee member*)
- 2018-present Helen Magee, Masters of Science Program, University of Arizona Phoenix College of Medicine, Michael Krueger's Laboratory (*Thesis Committee Member*)
- 2018-present Lynette Bustos, Graduate Student of Neuroscience, Interdisciplinary Graduate Program in Neuroscience, Arizona State University and Barrow Neurological Institute, (*Thesis Committee Member*)

**Educational Program Building/Leadership**

2018-present Co-Director, ASU-BNI interdisciplinary Graduate Program in Neuroscience (IGPN)

**Educational Extramural Funding**

Not applicable

**CLINICAL ACTIVITIES**

Not applicable

**SYSTEMS INNOVATION AND QUALITY IMPROVEMENT ACTIVITIES**

Not applicable

**ORGANIZATIONAL ACTIVITIES****Institutional Administrative Appointments**

2015 Member, Neurology/Neurosurgery Departmental Appointments and Promotions Committee  
2015 Member, NeuroTAG initiative to promote commercialization of Neuroscience technologies within JHU in collaboration with Johns Hopkins Technology Ventures  
2017-present Research faculty appointments and promotions Committee (RFAPC), BNI

**Editorial Activities**

2004 Executive Editor for Current Molecular Medicine for a Hot Topic Issue: Molecular and Cellular mechanisms of ischemic cell death in the brain. Current Molecular Medicine, Vol.4 (2), 2004  
2017/2018 Editor, Springer Book Series: RNA metabolism in Neurodegenerative diseases

*Journal Reviewer*

1999-present Epilepsia  
2000-present J Neurochemistry  
2000-present J Cell Biology  
2000-present Neuropharmacology  
2000-present Science  
2001-present J Neuroscience  
2001-present Neuroscience  
2012-present Frontiers in Neuroscience and Neurology  
2012-present PNAS  
2012-present J of Exp Neurology  
2013-present Neurochemistry International  
2013-present Journal of Experimental Medicine  
  
2013-present Nature Medicine  
2013-present PLOS ONE  
2013-present Brain Research  
2014-present Nature Communications  
2014-present Acta Neuropathologica  
2014-present Glia  
2015-present Trends in Genetics  
2015-present European Journal of Neurology  
2015-present Annals of Neurology  
2015-present Neurobiology of Disease  
2016-present Stem Cell Reports  
2016-present Neuron  
2018-present Cell Reports

## **Advisory Committees, Review Groups/Study Sections**

### Grant Reviewer for:

2012-2015 Accelerated Translational Incubator Pilot (ATIP) Program, Johns Hopkins University ICTR  
2012 Neurofibromatosis Therapeutic Acceleration Program (NTAP), Johns Hopkins University  
2013-2015 BSI translational project grants, Johns Hopkins University  
2013-present The Thierry Latran Foundation, Belgium  
2013-present The French Muscular Dystrophy Association (AFM-Téléthon), France  
2014 NIH, ad-hoc reviewer NCF (Neurogenesis and Cell Fate) study section  
2015-2016 Muscular Dystrophy Association (MDA), ad-hoc reviewer  
2015-present Department of Veterans Affairs, ad-hoc reviewer CAMM (Cellular and Molecular Medicine)  
2015 NIH, ad-hoc reviewer, National Center for Advancing Translational Science (NCATS)  
2015-present Medical Research Council (MRC), United Kingdom  
2015-present Motor Neurone Disease Association (MND), United Kingdom  
2015-2016 NIH, ad-hoc reviewer NSD-B (Neurological Sciences and disorders B)  
2015 Department of Veterans Affairs, ad-hoc reviewer NURE (Neurobiology E)  
2016-present ALS Association (ALSA)  
2016-present Weston Brain Institute, Canada  
2016 NIH, ad-hoc reviewer Special Emphasis Panel/Scientific Review Group ZRG1-MDCN M(02)  
2016-present Muscular Dystrophy Association (MDA), standing member Research Advisory Committee  
2016-present NIH, standing member NSD-B study section (Neurological Sciences and disorders B)  
2017 NIH, ad-hoc reviewer, NINDS, ZNS1 SRB-A (10), Frontotemporal Degeneration (FTD) Sequencing Consortium Review  
2017 FWO, Research Foundation-Flanders, ad-hoc reviewer  
2017 NIH, ad-hoc reviewer, New Innovator Award review (ZRG1-MOSS-R70)  
2018 Alzheimer's Society UK, ad-hoc reviewer  
2018 Alzheimer's Research UK, ad-hoc reviewer  
2018 German Federal Ministry for Education and Research (BMBF)  
2018 NIH, ad-hoc reviewer, NIH NINDS ZNS1 SRB-A(22) Program Project Grants (PO1)

### Committees:

2013-2015 Doctoral Board Oral Exam Defense, Department of Cellular and Molecular Medicine, JHU  
2015-present Committee Member of the American Society for Neurochemistry Membership Committee  
2017-present Committee Member, Barrow Neurological Institute, Promotions Committee  
2017-present Committee Member, ASU Neuroscience Interdisciplinary Graduate Program  
2017-2018 Co-Chair, Search Committee for position of Chair of the new Department of Translational Neuroscience, UofA College of Medicine Phoenix

### Other:

2017-present Co-Director, Arizona well-being Commons, ASU, Division of "Neurobiology, Aging, Dementias and Movement Disorders"

## **Professional Societies**

1995-present Society for Neuroscience  
2014-present American Society for Neurochemistry

## **Conference Organizer, Session Chair**

03/2015 Symposium Organizer and Chair: RNA toxicity in neurodegeneration; American Society for Neurochemistry Meeting, Atlanta, GA,  
10/2015 Chair Nanosymposium: Motor Neuron Disease; Society for Neuroscience Annual Meeting, Chicago, IL

- 03/2016 Symposium Organizer and Chair: Mechanisms of mutant C9orf72 pathogenesis in ALS and FTD; American Society for Neurochemistry Meeting, Denver, CO,
- 08/2016 Symposium Co-Organizer and Co-Chair; 1<sup>st</sup> Pittsburgh Young Investigator ALS symposium, Pittsburgh, PA
- 09/2016 Symposium Co-Organizer and Co-Chair; Inaugural Arizona ALS Symposium, Phoenix, AZ,
- 07/2017 Vice-Chair, Gordon Research Conference, “ALS and related motor neuron diseases”, Stowe, VT
- 09/2017 Symposium Co-Organizer and Co-Chair; 2<sup>nd</sup> Annual Arizona ALS Symposium, Tucson, AZ,
- 12/2017 Co-Director, AZ Wellbeing Commons, Inaugural Neurobiology Division meeting, Phoenix, AZ
- 08/2018 Symposium Co-Organizer and Co-Chair; 2<sup>nd</sup> Pittsburgh Young Investigator ALS symposium, Pittsburgh, PA
- 09/2018 Symposium Co-Organizer and Co-Chair; 3<sup>rd</sup> Annual Arizona ALS Symposium, Flagstaff, AZ,
- 2017-present Chair, 2019 Gordon Research Conference on ALS and related motor neuron disease, Stowe, VT,
- 2018-present Organizing committee member, Wellcome Trust course on Neurodegenerative disease, Offered once a year by the Wellcome Trust, Cambridge, UK

### **Consultantships**

- 2004-2008 Ruxton Pharmaceuticals Inc., Consultant
- 2018-present Regenesys Biomedical Inc, Scientific Advisory Board Member

### **Philanthropic Organizations**

- 2006-present Volunteer, The Robert Packard Center for ALS Research at Johns Hopkins
- 2010-2012 Volunteer, Incentive Mentoring Program, Baltimore, MD

## **RECOGNITION**

### **Awards/Honors**

- 1992-93 German Research Exchange Program (DAAD), Undergraduate Research Fellowship to perform Thesis project at Singapore Polytech, Singapore
- 1995-99 International Student Fee Waiver Scholarship from the Department of Physiology, School of Graduate Studies, University of Toronto
- 1995 Finalist, Student Poster Competition at the Thirteenth Annual Neurotrauma Society Symposium, San Diego, California
- 1996-98 NeuroScience Network Studentship, Network of Centers of Excellence
- 1997 NeuroScience Network Studentship, Network of Centers of Excellence (NCE), Training Award for Attendance of MBL Neurobiology Summer Course
- 1997 Marine Biological Laboratory Financial Aid Award towards the MBL Neurobiology Summer Course, MBL, Woods Hole, MA
- 1997 First Place, Graduate Student Poster Presentation Award, Frontiers in Physiology, Department of Physiology, University of Toronto
- 1998-99 Heart and Stroke Foundation of Canada, Research Traineeship
- 1998 Second Place, Graduate Student Seminar Presentation (Nadler Award), Toronto Hospital Research Institute
- 1999-00 German Research Exchange Program (DAAD), Postdoctoral Fellowship
- 1999 Training Award from the International Society for Cerebral Blood Flow and Metabolism for attendance of Brain’99/BrainPET’99
- 2000-03 Human Frontier Science Program, Long Term Fellowship
- 2000 Nominee for the Distinguished Dissertation Award in the field of Engineering, Medicine and Natural Science from the Canadian Organization of Graduate Studies (CAGS)
- 2000 Recipient of the Governor General’s Gold Medal for the highest academic achievement in Graduate Studies at the University of Toronto, Toronto, Canada
- 2003-04 Howard Hughes Medical Institute, Postdoctoral Fellowship
- 2010 Volunteer of the year, The Robert Packard Center for ALS Research at Johns Hopkins



## **Invited Talks/Panels**

- 2000 Invited Speaker, "Physiology 2000: A century of excellence", "Role of glutamate in health and disease", Department of Physiology Symposium, University of Toronto, Toronto, ON, Canada
- 2004 Speaker, "Role of AMPA receptor subunits in ALS pathology", Research Symposium of the Robert Packard Center for ALS Research, Baltimore, MD
- 2004 Invited Speaker, "Mechanisms of NMDA-receptor mediated cell death", ALS and Allied Motor Neuron Diseases Retreat, Abramson Research Center, Children's Hospital of Philadelphia, Philadelphia, PA
- 2004 Invited Speaker, "Role of glutamate in health and disease", Center for Neuroscience and Cell Biology, University of Coimbra, Coimbra, Portugal
- 2004 Invited Speaker, "Site specific effects of glutamate receptor activation", Mini Symposium on Bioenergetics of Excitotoxicity and Ischemia-Reperfusion, Society for Neuroscience Annual Meeting, San Diego, CA
- 2005 Invited Speaker, "Pathology of the glutamatergic synapse", Institute of Molecular and Cellular Biology, University of Applied Sciences, Mannheim, Germany
- 2005 Speaker, "Glutamate Transporter regulation and dysregulation: the basis for drug development", National Institute on Alcohol Abuse and Alcoholism, Bethesda, MD
- 2006 Speaker, "The search for new and old drugs to combat neurodegenerative diseases", Young Investigator Research Day, Department of Neurology, The Johns Hopkins University, Baltimore, MD
- 2006 Invited Speaker, "Phenotypic screening for drugs to combat neurodegenerative diseases", Drug Repositioning Summit, Cambridge Healthtech Institute, Philadelphia, PA
- 2006 Speaker, "Discovery and development of small molecule drugs for neurodegenerative diseases", Red Abbey, Baltimore, MD
- 2006 Speaker, "Discovery and development of small molecule drugs for neurodegenerative diseases", Johnson & Johnson, Raritan, NJ
- 2006 Speaker, "Discovery and development of small molecule drugs for neurodegenerative diseases", Lundbeck, Washington, DC
- 2007 Invited Speaker, "Glutamate Transporters as Therapeutic Targets", American Chemical Society Annual Meeting, Baltimore, MD
- 2008 Speaker, "Drug discovery program: Glutamate transporters as therapeutic targets", Robert Packard Center for ALS research, Baltimore, MD
- 2009 Invited Speaker, "Glutamate transporters in olfactory epithelial tissue: Novel biomarker to monitor glutamate transporter function in ALS therapy and disease", Department of Neurology, University of Maryland, Baltimore, MD
- 2011 Invited Speaker, "Human and rodent nasal olfactory epithelium as a dynamic marker for CNS therapy development", Society for Biological Psychiatry Annual Meeting, San Francisco, CA
- 2011 Speaker, "Development of Biomarkers for CNS Therapy and Diagnosis", Clinical Neuroscience Seminar, Department of Neurology, The Johns Hopkins University, Baltimore, MD
- 2012 Invited Speaker, "In vivo rodent studies for discovery of an excitatory amino acid transporter 2 (EAAT2) PET imaging tracer to biomark ALS", ALS Drug Discovery workshop, ALSA, Washington, DC
- 2012 Invited Speaker, "Glial glutamate and metabolic transporters as a target for neurodegenerative therapy and biomarkers", ASN Meeting, Baltimore, MD
- 2012 Platform presentation, "Transcriptome analysis of C9ORF72 ALS patient derived iPC cells and autopsy tissue reveals a unique expression and splicing profile", Society for Neuroscience Meeting, New Orleans, LA
- 2012 Invited Speaker, "Antisense oligonucleotide based rescue of molecular phenotype of induced pluripotent stem cells with C9ORF72 GGGGCC hexanucleotide repeat expansion", Cold Spring Harbor Laboratory, Neurodegenerative Diseases, Cold Spring Harbor, NY
- 2013 Invited Speaker, "The tale of two biomarkers: Imaging EAAT2 and Profiling C9ORF72", AAN Drug Company working meeting, ALSA, San Diego, CA
- 2013 Invited speaker, "Studies of transcriptional regulation of GLT-1/EAAT2 reveal subtypes of astrocytes", Brain in Flux – ISN Satellite conference, Cancun, Mexico
- 2013 ALS Association monthly webinar, September: "C9ORF72 – the role of RNA toxicity in ALS"

- 2014 Invited Speaker, “The Tale of two diseases – C9orf72 in ALS and FTD”, Mayo Clinic Florida, Jacksonville, FL
- 2014 Invited Speaker, “The tripartite astrocyte in ALS – disease modifier, therapeutic target and biomarker”, University of Alabama at Birmingham, Conference on Glial Biology in Medicine, Birmingham, AL
- 2014 Invited Speaker, “Molecular Mechanisms of C9orf72 in ALS and FTD”, Barrow Neurological Institute, Phoenix, AZ
- 2014 Invited Speaker, “Therapeutics Development for C9orf72”, ALS Association Investigator Meeting, Philadelphia, PA
- 2014 Invited Speaker, “Astrocytes as disease modifiers, therapeutic target and biomarker in ALS”, Cold Spring Harbor Laboratory, Neurodegenerative Diseases Meeting, Cold Spring Harbor, NY
- 2014 Invited Speaker, “Gial Glutamate and Metabolic Transporters as a Target for Neurodegenerative Therapy and Biomarkers”, Symposium: When psychiatry and neurology inform each other: astrocyte dysfunction and behavioral disease, American College of Neuropsychopharmacology Meeting, Phoenix, AZ
- 2015 Invited Speaker, “Mechanisms of mutant C9orf72 in ALS and FTD pathogenesis”, Cleveland Clinic, Cleveland, OH
- 2015 Invited Speaker, “ALS and FTD disease phenotypes in C9orf72 iPS neurons”, Laboratory of Genetics, NIA, NIH, Bethesda, MD
- 2015 Invited Speaker, “Mutant *C9orf72* in ALS and FTD: Mechanisms, Therapeutics and Biomarkers”, University of Arizona, Phoenix, AZ
- 2015 Invited Speaker, “Mechanisms of synaptic dysfunction in C9orf72-mediated pathogenesis”, Annual symposium of the Robert Packard Center at Johns Hopkins University, Baltimore, MD
- 2015 Session chair and speaker, “Mechanisms of synaptic dysfunction in C9orf72 ALS/FTD”, American Society for Neurochemistry, Atlanta, GA
- 2015 Invited Speaker, “Mutant *C9orf72* in ALS and FTD: Mechanisms, Therapeutics and Biomarkers”, Thomas Jefferson University, Philadelphia, PA
- 2015 Invited Speaker, “Mechanisms of C9orf72 pathogenesis in ALS and FTD”, Krembil Neuroscience Center Grand Rounds, Toronto Western Hospital, Toronto, ON, Canada
- 2016 Invited Speaker, “GluA2 editing deficiencies in C9orf72 ALS”, Annual symposium of the Robert Packard Center at Johns Hopkins University, Baltimore, MD
- 2016 Session chair and speaker, “Mechanisms of mutant C9orf72 pathogenesis in ALS and FTD”, American Society for Neurochemistry, Denver, CO
- 2016 Invited Speaker, “Mechanisms of synapse loss in C9orf72 FTD”, Arizona Alzheimer’s Consortium scientific conference, University of Arizona College of Medicine, Phoenix, AZ
- 2016 Invited speaker, “Human induced pluripotent stem cells for disease modeling and drug discovery”, Barrow Annual Neuroscience symposium, Barrow Neurological Institute, Phoenix, AZ
- 2016 Invited speaker, “C9orf72 - Bridging the gap between dementia and motor neuron disease”, The Tanz Centre for Research in Neurodegenerative Diseases, Toronto, ON, Canada
- 2016 Invited Speaker, “C9orf72 - Bridging the gap between dementia and motor neuron disease”, ASU Neuroscience graduate program seminar series, Arizona State University, Tempe, AZ
- 2016 Invited Speaker, “GluA2 editing deficiencies in C9orf72 ALS”, BNI seminar series, Barrow Neurological Institute, Phoenix, AZ
- 2016 Invited Speaker, “A new twist to an old story: GluA2 editing deficiencies in C9orf72 ALS”, Monthly investigator meeting of the Robert Packard Center at Johns Hopkins University, Baltimore, MD
- 2016 Invited Speaker, “Human induced pluripotent stem cells for disease modeling and drug discovery”, Annual Meeting of the Barrow Foundation, Phoenix, AZ
- 2017 Invited Speaker, “Advances in personalized medicine for CNS diseases”, CEO Women’s group, Barrow Foundation, Phoenix, AZ
- 2017 Invited Speaker, “ADAR2 nucleocytoplasmic trafficking deficits in C9orf72 ALS/FTD”, Annual symposium of the Robert Packard Center at Johns Hopkins University, Baltimore, MD
- 2017 Mechanisms of neurodegeneration in C9orf72, Annual retreat AZ Alzheimer’s consortium, Grand Canyon, AZ
- 2017 Invited Speaker, “Glutamate excitotoxicity revisited – new mechanisms of glutamate toxicity in ALS”, University of Montana, Missoula, MT

- 2018 Invited Speaker, “The Tale of two diseases: Mutant C9orf72 in ALS and FTD”. University of Arizona, Dept. of Pharmacology, Tucson, AZ
- 2018 Invited Speaker, “Mechanisms of Neurodegeneration in ALS”, 8<sup>th</sup> Annual ASU-BNI Neuroscience Research Symposium. ASU Biodesign, Tempe, AZ
- 2018 Invited Speaker, “Patient-derived induced pluripotent stem cells to study mechanisms of disease in ALS/FTD”, Rare Disease Desert Symposium, IcaGen, Tucson, AZ
- 2018 “Synaptic dysfunction in ALS with dementia – role of microglial cells”, Annual Arizona Alzheimer’s disease consortium retreat. Sedona, AZ
- 2018 “Nucleocytoplasmic mislocalization of ADAR2 in C9orf72 ALS/FTD, Annual Robert Packard Research Symposium, Baltimore, MD
- 2018 “Synaptic dysfunction in ALS with dementia – role of microglial cells. Monthly Robert Packard Research Meeting, Baltimore, MD
- 2018 Invited Speaker, “Patient-derived induced pluripotent stem cells to study mechanisms of disease in C9orf72 FTD/ALS, FTD/ALS Program Inauguration Meeting, Cleveland Clinic Lou Ruvo Center for Brain Health, Las Vegas, NV
- 2018 Invited Speaker, “Synaptic deficits in C9orf72 ALS/FTD patient-derived human stem cell differentiated neurons and mouse models. Annual Arizona Alzheimer’s disease Consortium Research Symposium, Phoenix, AZ
- 2018 Invited Speaker, “Role of ADAR2 editing in C9orf72 ALS/FTD disease pathogenesis”. ALS Consortium Meeting, New York Genome Center, New York City, NY
- 2018 “Nucleocytoplasmic mislocalization of ADAR2 in C9orf72 ALS/FTD” LiveLikeLou Foundation young investigator meeting, University of Pittsburgh, Pittsburgh, PA
- 2018 Invited Speaker, “ADAR2 mislocalization and aberrant RNA editing in C9orf82/ALS” 14<sup>th</sup> Annual Symposium on ALS of the Fondation Andre-Delombre, Universite Laval, Quebec City, Quebec, Canada
- 2018 Invited Speaker, “Mechanisms of neurodegeneration in C9orf72 ALS/FTD” University of Montreal, Department of Neuroscience, Montreal, Quebec, Canada