

# Curriculum Vitae

**Name:** Qi Zhang, Ph.D.  
**Institutional Affiliation:** Florida Atlantic University  
The Stiles-Nicholson Brain Institute  
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Department of Biomedical Sciences  
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## Education:

07/01-05/04 School of Medicine, University of Pennsylvania, Philadelphia, PA  
PhD in Neuroscience  
09/93-06/97 Fudan University, Shanghai, China  
B. S. in Genetics and Genetic Engineering

## Employment History:

05/22-present Associate Professor (Adjunct appointment), Department of Biomedical Science, College of Medicine, Florida Atlantic University  
02/22-present Associate Professor (Primary appointment), Department of Chemistry and Biochemistry, College of Science, Florida Atlantic University  
06/18-present Principal Investigator, the Stiles-Nicholson Brain Institute, Florida Atlantic University  
06/18-present Scientific Director, FAU Cell Imaging Core and Nikon Center of Excellence  
03/21-02/22 Associate Professor (Research-track), Department of Biomedical Science, Charles E. Schmidt College of Medicine, Florida Atlantic University  
06/18-03/21 Assistant Professor (Research-track), Department of Biomedical Science, Charles E. Schmidt College of Medicine, Florida Atlantic University  
07/10-06/18 Department of Pharmacology, Vanderbilt University, Nashville, TN  
Assistant Professor  
10/08-06/10 Research Scientist, Department of Molecular and Cellular Physiology, Stanford University  
06/04-09/08 Postdoctoral Fellow, Department of Molecular and Cellular Physiology, Stanford University  
07/01-05/04 Research Assistant, Institute of Neuroscience, University of Pennsylvania  
08/98-06/01 Research Assistant, Department of Biological Science, Iowa State University  
11/95-07/98 Research Associate, Institute of Genetics, Fudan University, Shanghai, China

## Scholarship/Research/Creative Activity:

### A. Intramural scholarship:

2019-present Faculty judge, Research Day medical student poster contest  
2018-present Organizer and lecturer of Bioimaging Workshop by the Nikon Center of Excellence.  
2014-2017 Coordinator, International training program between VUMC and Ministry of Health of the People's Republic of China  
2011-2018 Department representative, Interdisciplinary Graduate Program (IGP) recruit  
2011-2018 Mentor, Vanderbilt University Research Experience for High School Students (REHSS)  
2011-2018 Mentor, Vanderbilt School of Engineering Summer Research Program  
2011-2013 Faculty judge, VUMC Science Day postdoc poster contest

### B. Extramural scholarship:

2015-present Member ad hoc of NIH study sections (BPNS, AREA, etc).  
2010-present Reviewer ad hoc of Medical Research Council (UK), Mental Health Board, Wellcome Trust (UK), etc.

2006-present	Reviewer ad hoc of Neuroscience Letters, European Neuropsychopharmacology, Neurochemistry International, Neuroscience, Biological Psychiatry, PLoS ONE, Chemistry Biology, PNAS, ACS Nano, Nano Letter, Nature Communication, etc.
2005-2007	Member of the Academic Committee of Graduate Students and Postdocs at Stanford University
2002-2004	Member of the Graduate Student Committee at the Institute of Neuroscience, the University of Pennsylvania

### **C. Other scholarship activities:**

2018-present	Scientific Director, Microscope and Cell Imaging Training Program at FAU
2018-present	Principal Investigator, the FAU Stiles-Nicholson Brain Institute
2012-2014	Team leader, Interdisciplinary Project in Nanoengineering and Neuroengineering.
2011-2018	Member, Vanderbilt Institute of Chemical Biology
2011-2018	Member, Vanderbilt Institute of Nanoscale Science and Engineering
2011-2018	Member, Vanderbilt Kennedy Center
2010-2018	Member, Vanderbilt Brain Institute

### **D. Awards and membership**

2019-present	Member of Alzheimer's Association International Society
2015-present	Member of Biophysical Society
2014-2016	Shaffer Award of Cure for Glaucoma
2013-2016	NSF GOLI Research Award
2011-2017	NIH Director's New Innovator Award
2010-2012	NARSAD Young Investigator Award
2010-2012	Rosalinde and Arthur Gilbert Foundation/AFAR New Investigator Awards
2010	Edmund Optics Higher Education Grant finalist
2009	Sammy Kuo Award, Stanford University
2009-present	Member of The Society for Cell Science
2007-present	Member of The Society for Experimental Stroke
2007-present	Member of The Society of General Physiologists
2008	Grass Fellow, the Marine Biology Laboratory, Woods Hole, Massachusetts
2007	Nominee for Beckman Senior Research Fellow
2001	"All but Dissertation" Scholarship, Iowa State University
2001	Advanced MCDB Research Fellowship, Iowa State University
2001	Advanced Neuroscience Research Fellowship, Iowa State University
2000-present	Member of Society for Neuroscience
1998-1999	Premium for Academic Excellence, Iowa State University
1993-1997	People's Scholarship, Fudan University, Shanghai, China

### **E. Teaching activities:**

2023-present	Organizer and Lecturer, Bioanalytic Instruments (CHM 4139)
2023-present	Organizer and Lecturer, Bioanalytic Instruments Lab (CHM 4139L)
2018-present	Lecturer, Neuroscience I & II (PSB 6345 & 6346)
2014-2016	Lecturer and Faculty Reviewer, Scientific Communication Skills (PHAR 8323)
2012-2017	Lecturer, Advanced Molecular Neurobiology (NURO 8346)
2011-2013	Lecturer, Fundamentals of Neuroscience (NURO 8340)

### **F. Courses and mentorships:**

#### **Graduate school courses**

2023-present	CHM 4139, Bioanalytic Instruments, College of Science, Florida Atlantic University, FL
2023-present	CHM 4139L, Bioanalytic Instruments Lab, College of Science, Florida Atlantic University, FL
2018-present	PSB 6345&6346, Neuroscience I & II, College of Science, Florida Atlantic University, FL
2015-2016	PHAM8322, Scientific Communication Skills, Vanderbilt University, TN
2011-2017	NURO8346, Advanced Molecular Neurobiology, Vanderbilt University, TN
2011-2013	NURO8345, Cellular and Molecular Neuroscience, Vanderbilt University, TN
2008-2010	Advanced Microscopy and Live Cell Imaging Techniques, Merritt College, CA

### Thesis advisory committees

2022-present	Tamara Damjanovic, Department of Chemistry and Biochemistry, FAU
2016-2021	Kayla M. Shumate, Department of Pharmacology, Vanderbilt University
2016-2020	James A. Hutchison, Department of Biochemistry, Vanderbilt University
2015-2020	Jennifer I. Aguilar, Department of Molecular Biophysics and Physiology, Vanderbilt University
2011-2018	Emily B. Warren, Department of Pharmacology, Vanderbilt University
2012-2017	Derrick S. Cumberbatch, Department of Molecular Biophysics and Physiology, Vanderbilt University
2012-2017	Yun Young Yim, Department of Pharmacology, Vanderbilt University
2011-2016	Zack P. Zurawski, Department of Pharmacology, Vanderbilt University

### Postdoctoral mentorships

2010-2017	Roman M. Lazarenko, postdoctoral fellow, now research associate at Vanderbilt University
2012-2016	Hai-gang Gu, postdoctoral fellow, now research scientist at Mayo Clinic
2012-2013	Layal Rouhana, postdoctoral fellow, now senior engineer scientist at Qualcomm Technology, Inc.

### Graduate student mentorships

2014-2018	Danielle M. Bailey, graduate student, Interdisciplinary Program of Material Science
2013-2018	Kristina, E. Kitko, graduate student, Interdisciplinary Program of Material Science
2012-2018	Claire E. DelBove, graduate student, Department of Pharmacology

### Undergraduate student mentorships

2022-present	Haylee Mesa, undergraduate research assistant, Florida Atlantic University
2022-present	James Thomas, OURI program student, Florida International University
2022 summer	Lawry Soto, REU student, Pontifical Catholic University of Puerto Rico
2021-present	Ritvik Kesharaju, OURI program student, Florida International University
2021-2022	Leya Goodwin, OURI program student, Florida International University
2021 summer	Hannah Lindmeier, REU student, Abraham Baldwin Agricultural College
2019-present	Shahriar Alamgir, undergraduate research intern, Florida International University
2018-present	Oliver Pelletier, undergraduate research intern, Florida Atlantic University
2017	Jenna Dombroski, REU student, Vanderbilt School of Engineering Summer Research Program
2016	Sophia E. Xie, REU student, Vanderbilt School of Engineering Summer Research Program
2015	Claire E. Strothman, REU student, Vanderbilt School of Engineering Summer Research Program
2015	Jerry B. Zhao, student, Vanderbilt Research Experience for High School Students (REHSS)
2014	Jason Alfaro, REU student, Vanderbilt School of Engineering Summer Research Program
2013	Jessica Chen, REU student, Vanderbilt School of Engineering Summer Research Program
2012	Stanley X. Zhang, student, Vanderbilt Research Experience for High School Students (REHSS)
2011	Abhi Goyal, student, Vanderbilt Research Experience for High School Students (REHSS)

### High school student mentorships (Universities they were admitted after graduation)

Jerry L. Lu (University of Pennsylvania), Stanley Z. Xiang (Vanderbilt University), Abhi Goyal (MIT), Linda B. Xu (University of Washington, St. Louis), Niman Mann (Princeton), Isaac Singer (Georgia Tech), Elaine Zhang, Hadley Edwards,

### Publications in print

#### First author or corresponding author research articles

1. **Zhang, Q.**, et al. (1999) Molecular cloning and expression analysis of a novel human cDNA fragment encoding a putative Ser/Thr protein kinase. *Chinese Science Bulletin*. 44, 778-783.
2. **Zhang, Q.**; Van Bockstaele, E.; Haydon, P. G. (2003) The secretory machinery of astrocytes in situ. *Glia* supplement. 2, 3.
3. **Zhang, Q.**, et al. Fusion-related release of glutamate from astrocytes. (2004) *Journal Biological Chemistry*. 279, 12724-12733.

4. **Zhang, Q.**, Fukuda, M., Van Bockstaele, E.J., Pascual, O., Haydon, P.G. (2004) Synaptotagmin IV regulates glial glutamate release. *Proceedings of the National Academy of Sciences of the United States of America*. 101, 9441-9446.
5. **Zhang, Q.**, Cao, Y.Q., Tsien, R.W. Quantum dots provide an optical signal specific to full collapse fusion of synaptic vesicles. *Proceedings of the National Academy of Sciences of the United States of America*. 104, 17843-17848.
6. **Zhang, Q.**, Li, Y.L., Tsien, R.W. Dynamics of dual fusion modes revealed by single quantum dot imaging. *Science* 323, 1448-1453.
7. Gu, H., Lazarenko, R.M., Lacovitti, L., **Zhang, Q.** (2015) A stem cell-derived platform for studying single synaptic vesicles in dopaminergic synapses. *Stem Cells Translational Medicine* 4:887-93.
8. Lazarenko, R.M., DelBove, C.E., Strothman, C.E., **Zhang, Q.** (2017) Ammonium chloride alters neuronal excitability and synaptic vesicle release. *Scientific Reports*. 7:5061-73.
9. Kitko, K.E., Hong, T., Lazarenko, R.M., Ying, D., Xu, Y. **Zhang, Q.** (2018) Membrane cholesterol mediates the cellular effects of monolayer graphene substrates. *Nature Communications*. 9(1): 796
10. DelBove, C.E., Deng, X.Z., **Zhang, Q.** (2018) The fate of nascent APP in hippocampal neurons: a live cell imaging study. *American Chemistry Society Chemical Neuroscience*. 9(9): 2225-32.
11. DelBove, C.E., Strothman, C.E., Lazarenko, R.M., Huang, H., Sanders, C.R., **Zhang, Q.** (2019) Reciprocal modulation between amyloid precursor protein and synaptic membrane cholesterol revealed by live cell imaging. *Neurobiology of Diseases*. 127: 449-461
12. Thomas, D., Rubio, V., Iragavarapu, V., Guzman, E., Pelletier, O.B., Alamgir, S., **Zhang, Q.**, Stawikowski, M.J. (2021) Solvatochromic and pH-Sensitive Fluorescent Membrane Probes for Imaging of Live Cells. *ACS Chem Neurosci*. 12(4):719-734
13. Alamgir, S., Pelletier, O. B., Thomas, D., Rubio, V., Stawikowski, M. J., **Zhang, Q.** (2021) Measuring Membrane Lipid Turnover with the pH-sensitive Fluorescent Lipid Analog ND6. *J. Vis. Exp.* (173), e62717.
14. Mesa, H., Zhang, E.Y., Wang, Y.C., **Zhang, Q.** (2023) Human neurons lacking amyloid precursor protein exhibit cholesterol-associated developmental and presynaptic deficits. *J. Cell. Physiol.* (Mar 26, Online ahead of print)

#### Co-author research articles

1. Zhang, M., Yu, L., Tu, Q., Hu, P., **Zhang, Q.**, Bi, A., Jiang, C., Zhao, S. (1999) Separation and cloning of a novel human gene encoding suppressor of cytokine signaling-2 (humSOCS-2). *Chinese Science Bulletin*. 44, 131-135.
2. Fan, Y., Yu, L., **Zhang, Q.**, Jiang, Y., Dai, F., Cheng, C., Tu, Q., Bi, A., Xu, Y., Zhao, S. (1999) Cloning and expression of a new member of human  $\beta$ -1,4- galactosyl transferase gene family. *Science China C Life Science*. 29, 1-8.
3. Fan, Y., Yu, L., Tu, Q., Gong, R., Jiang, Y., **Zhang, Q.**, Dai, F., Chen, C., Zhao, S. (2002) Molecular cloning, genomic organization, and mapping of  $\beta$ 4GalT-VIb, a brain abundant member of  $\beta$ 4-galactosyltransferase gene family, to human chromosome 18q12.1. *DNA Sequencing*. 13, 1-8.
4. Shcherbakova, O. G., Hurt, C. M., Xiang, Y., Dell'Acqua, M. L., **Zhang, Q.**, Tsien, R. W., Kobilka, B.K. (2007) Organization of beta-adrenoceptor signaling compartments by sympathetic innervation of cardiac myocytes. *Journal Cell Biology*. 176, 521-533.
5. Huang, W., Li, S., Hu, Y., Yu, H., Luo, F., **Zhang, Q.**, Zhu, F. (2011) Implication of the env gene of the human endogenous retrovirus W family in the expression of BDNF and DRD3 and development of recent -onset schizophrenia. *Schizophrenia Bulletin*. 37(5): 988-1000.
6. Tu, H., Lazarenko, R.M., Colvin, D.C., Flores, R.L. **Zhang, Q.**, Xu, Y. (2012) The effect of competitive surface functionalization on dual-modality fluorescence and magnetic resonance imaging of single-walled carbon nanotubes. *Journal Physical Chemistry C*. 116, 16319-16324.
7. Bailey, D.M., Catron, M.A., Kovtun, O., MacDonald, R. L., **Zhang, Q.**, Rosenthal, S. J. (2018) Single quantum dot tracking reveals serotonin transporter diffusion dynamics are correlated with cholesterol-sensitive threonine 276 phosphorylation status in primary midbrain neurons. *American Chemistry Society Chemical Neuroscience*. 9(11): 2534-41.

#### Review articles

1. Fan, Y., **Zhang, Q.** Research progress on biological function of  $\beta$ -1,4-galactosyltransferase. (1999) *International Medicine, Molecular Biology Series*. 21, 45-49.
2. **Zhang, Q.** and Haydon, P.G. Reels for gliotransmission in the nervous system. (2005) *Journal Neural Transmitter*. 112, 121-125.

3. Evanko, D.S., **Zhang, Q.**, Zorec, R., Haydon, P.G. Defining pathways of loss and secretion of chemical messengers from astrocytes. (2004) *Glia* 47, 233-240.
4. **Zhang, Q.** Quantum dots, the junction between Neuroscience and Nanotechnology. (2010) *Microscopy Research Techniques*. (Invited review)
5. **Zhang, Q.** Super-resolution mapping of synaptic vesicles in mammalian central synapses. (2012) *Chemical Neurobiology Methods and Protocols, Methods in Molecular Biology*. 995, 179-191.
6. **Zhang, Q.** Imaging single synaptic vesicles in mammalian central synapses with quantum dots. (2013) *Nano Biotechnology Protocol and Methods, Molecular Biology*. 1026, 57-68.
7. Lazarenko, R.M., DelBove, C.E., **Zhang, Q.** (2018) Fluorescent measurement of synaptic activity using FM dyes in dissociated hippocampal cultured neurons. *Biological Protocol*. 8(2):2690.
8. Kitko, K. E., **Zhang, Q.** Graphene-Based Nanomaterials: From Production to Integration With Modern Tools in Neuroscience. *Frontiers in Systems Neuroscience*. 13, 1-17.

## Book

1. Evanko, D.S., Sul, J.Y., **Zhang, Q.**, Haydon, P.G. (2004) Chapter 16, The regulated release of transmitters from astrocytes. In *Glial Neuronal Signaling*. 1<sup>st</sup> Edition. (Kluwer Academic Publishers, ISBN 1-4020-7936-2). pp 324-412.

## Presentations and proceedings

### Invited lectures:

- |      |   |
|------|---|
| 2020 | “Cell membrane cholesterol Homeostasis and Alzheimer’s disease”, Scripps Research Lab Florida   |
| 2019 | “Advance in fluorescence imaging”, Honor College, Florida Atlantic University   |
| 2018 | “Latest development in live cell fluorescence imaging”, The Brain Institute, Florida Atlantic University  |
| 2017 | “Synaptic vesicle, it is a small world after all”, Florida Atlantic University  |
| 2016 | “Visualizing and manipulating cell membrane cholesterol in nanoscale”, Vanderbilt Biophotonics Center   |
| 2015 | “Engineering the plasma membrane microdomains with novel carbon nanomaterials”, Vanderbilt Nanoday Lecture, Vanderbilt Institute of Nanoscale Science and Engineering |
| 2014 | “The physiology and pathology of synaptic vesicles”, Vanderbilt Brain Institute   |
| 2013 | “The turnover of synaptic vesicles and its implication in neurological disorders”, Department of Biology, University of Illinois, Chicago                             |
| 2012 | “Tracking synaptic vesicle recycling, one at a time”, Department of Pathology, Columbia University  |
| 2011 | “Using quantum dots to visualizing and tracking synaptic vesicles in live nerve terminals.” Department of Bioengineering, University of Massachusetts, Amherst        |
| 2011 | “A nanoscopic view of presynaptic terminals and synaptic vesicles within”, Department of Bioengineering, University of Washington                                     |

### Conference presentations:

1. **Zhang, Q.**, et al. (2000) Overexpression of the synaptobrevin II SNARE domain blocks the FM4-64 uptake into astrocytes *in vitro*. *Society for Neuroscience 30<sup>th</sup> Annual Meeting*, Abstract 707.4.
2. **Zhang, Q.**, et al. (2001) Expression of the synaptobrevin II SNARE domain reduces astrocytes-to-neuron signaling by decreasing calcium-dependent glutamate release from astrocytes. *Society for Neuroscience 31<sup>st</sup> Annual Meeting*, Abstract 715.9.
3. **Zhang, Q.**, et al. (2003) Expression of synaptotagmin IV, V and XI in CA1 area hippocampal astrocytes. *Society for Neuroscience 33<sup>rd</sup> Annual Meeting*, Abstract 765.3.
4. Peoples, J.F., **Zhang, Q.**, Haydon, P.G., Van Bockstaele, E.J. (2003) Ultrastructural localization of the vesicular glutamate transporter in glial cells in the hippocampal formation. *Society for Neuroscience 33<sup>rd</sup> Annual Meeting*, Abstract 373.1.
5. **Zhang, Q.**, et al. (2004) Passive, not complex, astrocytes, express gliotransmission machinery and release glutamate. *Society for Neuroscience 34<sup>th</sup> Annual Meeting*, Abstract 576.6.
6. Pascual, O., **Zhang, Q.**, Haydon, P.G. (2004) Astrocytes contribute to learning and memory. *Society for Neuroscience 34<sup>th</sup> Annual Meeting*, Abstract 576.15.
7. **Zhang, Q.**, Harata, N. C., Tsien, R. W. (2005) Using quantum dot to visualize the turnover of synaptic vesicles. *Society for Neuroscience 35<sup>th</sup> Annual Meeting*, Abstract 365.13.
8. **Zhang, Q.**, Harata, N. C., Tsien, R. W. (2006) Different modes of vesicle fusion revealed by quantum dots in single vesicle level. *Society for Neuroscience 36<sup>th</sup> Annual Meeting*, Abstract 335.9.

9. **Zhang, Q.**, Harata, N. C., Cao, Y. Q., Tsien, R. W. (2007) Unitary vesicle fusion and recycling probed with quantum dots. *61<sup>st</sup> Annual Meeting and Symposium Society of General Physiologists*, Abstract 65.
10. **Zhang, Q.**, Harata, N. C., Li, Y., Tsien, R. W. (2007) Quantum dots: a new perspective on synaptic vesicle fusion and recycling. *Society for Neuroscience 37<sup>th</sup> Annual Meeting*, Abstract 354.19.
11. **Zhang, Q.** and Tsien, R. W. (2008) Correlation between release probability and usage of fusion mode. *Society for Neuroscience 38<sup>th</sup> Annual Meeting*, Abstract 236.6.
12. **Zhang, Q.**, Li, Y. L., Tsien, R. W. (2009) Synaptic vesicles retain protein components after full collapse fusion and recycle back to their pools of origin: Implication for the memory of pool identity. *Society for Neuroscience 39<sup>th</sup> Annual Meeting*, Abstract 420.13.
13. **Zhang, Q.**, Tsien, R.W. (2010) Amyloid-beta induced presynaptic impairment and its implication in Alzheimer's disease. *Society for Neuroscience 40<sup>th</sup> Annual Meeting*, Abstract 855.17.
14. **Zhang, Q.**, Lazarenko, R. M., Edberg, B., Gao, X. (2011) Amyloid precursor protein expression is coordinated with synaptic metaplasticity. *Society for Neuroscience 41<sup>st</sup> Annual Meeting*, Abstract 453.16.
15. Lazarenko, R.M., Rouhana, L.L., Edberg, B., Gao, X., **Zhang, Q.** (2012) Effects of nano-molar Abeta1-40 on excitatory synaptic transmission. *Society for Neuroscience 42<sup>nd</sup> Annual Meeting*, Abstract 513.08.
16. Gu, H., Lazarenko, R.M., **Zhang, Q.** (2012) The Functional studies of dopaminergic neurons derived from embryonic stem cells. *Society for Neuroscience 42<sup>nd</sup> Annual Meeting*, Abstract 51.16.
17. Delbove, C., Lazarenko, R.M., Gao, X., Edberg, B., **Zhang, Q.** (2012) Synaptic homeostatic changes alter the expression and localization of amyloid precursor protein. *Society for Neuroscience 42<sup>nd</sup> Annual Meeting*, Abstract 490.12.
18. Gu, H., Lazarenko, R.M., Lacovitti, L., **Zhang, Q.** (2013) A Functional study of mouse ESC-derived dopaminergic neurons. *Society for Neuroscience 43<sup>rd</sup> Annual Meeting*, Abstract 415.02.
19. Delbove, C., Lazarenko, R.M., Kitko, K.E., Gao, X., Edberg, B., **Zhang, Q.** (2013) Synaptic homeostatic changes alter the expression and localization of amyloid precursor protein. *Society for Neuroscience 43<sup>rd</sup> Annual Meeting*, Abstract 326.17.
20. Kristaponyte, I., Lazarenko, R.M., Sun, X., **Zhang, Q.** (2013) The function of HDAC6 and CYLD in synaptic transmission. *Society for Neuroscience 43<sup>rd</sup> Annual Meeting*, Abstract 802.07.
21. Kitko, K.E., Hong, T., Lazarenko, R.M., Ying, D., Xu, Y. **Zhang, Q.** (2013) Optoelectronic nanoprobes for the neural network. *Society for Neuroscience 43<sup>rd</sup> Annual Meeting*, Abstract 655.10.
22. Lazarenko, R.M., Kristaponyte, I., **Zhang, Q.** (2013) Cholesterol regulates transient and reversible exocytosis in presynaptic terminals. *Society for Neuroscience 43<sup>rd</sup> Annual Meeting*, Abstract 229.03.
23. Retzlaff, C., Snarrenberg, C.L., Hardaways, J.A., Whitaker, S.M., Ghosh, M., Gu, H.G., **Zhang, Q.**, Balcita-Pedicino, J.J., Potamsetty, C., Sesack, S.R., Robinson, M.B., Blakely, R.D. (2014) Regulation of neuronal signaling by SWIP-10/mBlac1: Following the scent of glutamate. *Society for Neuroscience 44<sup>th</sup> Annual Meeting*, Abstract 367.12.
24. Gu, H.G., Lazarenko, R.M., Kristaponyte, I., **Zhang, Q.** (2014) Distinct populations of synaptic vesicles for different neurotransmitters in dopaminergic neurons. *Society for Neuroscience 44<sup>th</sup> Annual Meeting*, Abstract 145.06.
25. DelBove., C.E., Strothman., C.E., Kitko, K.E., Lazarenko, R.M., **Zhang, Q.** (2015) Homeostatic coupling between surface trafficking and cleavage of amyloid precursor protein. *Society for Neuroscience 45<sup>th</sup> Annual Meeting*, Abstract 215.08.
26. Lazarenko, R.M., Kamalova, A., **Zhang, Q.** (2015) Interaction between A $\beta$  and membrane cholesterol underscores presynaptic transmission. *Society for Neuroscience 45<sup>th</sup> Annual Meeting*, Abstract 231.12.
27. Kitko, K.E., Bailey, D.M., **Zhang, Q.** (2015) Single molecule imaging with monovalent quantum dot-aptamer conjugates. *Society for Neuroscience 45<sup>th</sup> Annual Meeting*, Abstract 96.45.
28. Kitko, K.E., Lazarenko, R.M., **Zhang, Q.** (2016) Nanoscale engineering of cell membrane with graphene. *Biophysical Society 60<sup>th</sup> Annual Meeting*, Abstract L3613.
29. Lazarenko, R.M., DelBove., C.E., **Zhang, Q.** (2017) Soluble  $\beta$ -amyloid modifies presynaptic membrane cholesterol. *Biophysical Society 61<sup>st</sup> Annual Meeting*, Abstract 2237.
30. DelBove., C.E., Strothman., C.E., Kitko, K.E., Lazarenko, R.M., **Zhang, Q.** (2017)  $\gamma$ -secretase and cholesterol modulate neuronal surface expression of full-length APP. *Society for Neuroscience 47<sup>th</sup> Annual Meeting*, Abstract 345.08.
31. Zhang, Q. (2018) Amyloid precursor protein and cholesterol interaction at presynaptic terminals. *Society for Neuroscience 48<sup>th</sup> Annual Meeting*, Abstract 252.12.
32. Zhang, Q. (2019) Reciprocal modulation between amyloid precursor protein and cholesterol and its implication in Alzheimer's disease. *Alzheimer's Association International Conference 2019*, Abstract 4358.

33. Zhang, Q. (2021) Graphene nanoflakes, a surgical manipulator for cell membrane cholesterol and synaptic plasticity. *Society for Neuroscience 50<sup>th</sup> Annual Meeting*, Abstract 828.19.
34. Zhang, Q. (2022) Amyloid precursor protein knockout mice, an unorthodoxy model for Alzheimer's disease. *Alzheimer's Association International Conference 2022*, Abstract 1076.

## Grant support

### Active

1. FAU Research Cores Pilot Award (PI) 12/15/2022-12/14/2023  
Topic: Studying Alzheimer's Disease in an amyloid-free mouse model  
Direct Cost: \$5,500
2. The FAU Brain Institute pilot grant (PI) 12/15/2022-12/14/2023  
Topic: A bird's-eye view of brain cholesterol regulators in Alzheimer's disease model mice  
Direct Cost: \$25,000
3. FLDOH, Ed and Ethel Moore grant #21A04 (PI) 04/01/2021-03/31/2025  
Topic: Rebalancing brain cholesterol – a novel therapeutic strategy for Alzheimer's disease  
Direct Cost: \$250,000
3. NIGM R15 AREA grant #1R15GM147912-01 (co-PI) 09/01/2022-08/31/2025  
Topic: Investigating intracellular cholesterol distribution and trafficking using novel environment-sensitive cholesterol probes  
Direct Cost: \$299,337
4. The FAU Brain Institute pilot grant (co-PI) 05/01/2022-04/30/2024  
Topic: Greasy and glowing – developing modular lipid reporters to probe brain cells  
Direct Cost: \$25,000
5. FAU Research Core Internal Pilot (RCIP) grant (co-PI) 08/01/2022-07/31/2023  
Topic: Investigating novel fluorescent lipid reporters to study lipid turnover and trafficking in live neurons and astrocytes  
Direct Cost: \$4,960

### Completed

1. FLDOH, Ed and Ethel Moore grant #20A17 (PI) 04/01/2020-01/31/2022  
Topic: Amyloid precursor protein and cholesterol as a novel druggable axis for Alzheimer's disease  
Direct Cost: \$100,000
2. Alzheimer's Association "New To The Field" (PI) 07/01/2019-06/31/2022  
Topic: APP modulates presynaptic membrane cholesterol and integrity  
Direct Cost: \$150,000
3. NIA R21 grant #1R21 AG061656 (PI) 07/01/2019-06/31/2021  
Topic: Graphene-based manipulation of Cell membrane and its implication in cell aging  
Direct Cost: \$250,000
4. 1R21 NS094738 (PI) 09/01/2016-08/31/2019  
Topic: O' Brother, Where Art Thou - interrogating glutamate co-transmission in dopaminergic neurons at a single-vesicle level using cell reprogramming and CRISPR  
Direct Cost: \$250,000
5. 1R01 EY020496-010A1 (co-PI, my part is completed) 09/01/2016-08/31/2021  
Topic: Interleukin-6 and retinal ganglion cell degeneration in glaucoma  
Direct Cost: \$1,250,000
6. 1R01 NS082635-01A1 (co-PI) 07/01/2013-06/30/2018  
Topic: Altered synapse formation and function in a novel Dravet syndrome mouse model  
Direct Cost: \$1,250,000

7. NSF 1264982 (co-PI) 07/01/2013-06/30/2017  
Topic: Graphene-based optoelectrical sensor for measuring neuronal membrane potential  
Direct Cost: \$350,000
8. Shaffer Foundation Grant (co-PI) 04/01/2014-03/31/2016  
Topic: Neuron and glial cell electrophysiology in a mouse glaucoma retina model  
Direct Cost: \$100,000
9. 1DP2OD008761 (PI) 10/01/2011-09/30/2016  
Topic: Explore fundamental aspects of neurotransmission with multifunctional nanosensor  
Direct Cost: \$1,500,000
10. AFAR Joint Research Grant (co-PI) 04/01/2013-03/31/2015  
Topic: Oxidative stress and reactive lipids in the formation of amyloid aggregation  
Direct Cost: \$100,000
11. AFAR New Investigator Grant (PI) 01/01/2011-12/31/2012  
Topic: Pathological changes of synaptic vesicles in the aging-related dementia  
Direct Cost: \$100,000
12. NARSAD Young Investigator (PI) 07/01/2011-06/30/2013  
Topic: Presynaptic abnormality in psychiatric disorders  
Direct Cost: \$100,000
13. 1K99/R00 DA025143 (PI) 07/01/2010-06/30/2013  
Topic: Modulation of synaptic vesicles in neurotransmission, plasticity, and addiction  
Direct Cost: \$1,000,000
14. Vanderbilt University Discovery Grant (PI) 06/01/2012-05/30/2013  
Topic: Bio-application of novel carbon nanomaterials in neuroscience  
Direct Cost: \$50,000
15. Vanderbilt Brain Institute CMT Pilot Grant (PI) 05/01/2012-04/30/2013  
Topic: The origination and regeneration synaptic vesicle in cholinergic and dopaminergic synapses  
Direct Cost: \$50,000