

Xiaojuan (Xandra) Xu

Department of Psychology, Grand Valley State University
1 Campus Drive, Allendale, MI 49401

E-mail: XUX@GVSU.EDU; Tele: (616)-331-2411; Fax: (616)-331-2480

EDUCATION

University of Michigan, Ann Arbor Postdoctoral training, 1992-1994; Behavioral Pharmacology
University of Michigan, Ann Arbor Ph.D., 1992: Biopsychology; M.S., 1989: Biopsychology

ACADEMIC HONORS

Rackham Dissertation Fellowship Award, University of Michigan, 1992
Rackham Fellowship, University of Michigan, 1988

PROFESSIONAL AFFILIATIONS

Member of the Society for Neuroscience
Member of the American Psychological Society
Member of the International Behavioral Neuroscience Society

PROFESSIONAL ACTIVITIES

Editorial Board member for the journal Austin Neurology & Neuroscience, 2017-present
Editorial Board member for the journal Developmental Biology Journal, 2013-2015
Invited chair of “Invited-speaker Session” at International Conference on Environmental Pollution and Public Health, Beijing, China, 2015

Invited organizer and chair of the symposium “Neural mechanisms of learning and memory in vertebrates” at the 28th International Congress of Psychology, Beijing, China, 2004

ad hoc reviewer for the journal Toxicology Report

ad hoc reviewer for the journal Science of the Total Environment

ad hoc reviewer for the journal Psychopharmacology

ad hoc reviewer for the journal Physiology & Behavior

ad hoc reviewer for the journal Pharmacology, Biochemistry, & Behavior

ad hoc reviewer for the journal NeuroToxicology

ad hoc reviewer for the journal Neuroscience Letter

ad hoc reviewer for the journal Neurobiology of Learning and Memory

ad hoc reviewer for the journal International Journal of Nanomedicine

ad hoc reviewer for the journal Environmental Pollution

ad hoc reviewer for the journal Drug Target Insights

ad hoc reviewer for the journal Behavioral Processes

ad hoc reviewer for the journal Behavioral Brain Research

ad hoc reviewer for the journal Adversity and Resilience Science

ad hoc reviewer for the Journal of Advances in Medical and Pharmaceutical Sciences

ad hoc reviewer for Journal of Fish Biology

ad hoc reviewer for the National Science Foundation: 1999

Reviewed book chapters—Gaskin’s Behavioral Neuroscience: Essentials & Beyond: Chapt 1, 5, 10, 2018

Reviewed book chapters—Meyer & Quenzer’s Psychopharmacology: Chapters 16, 18, 2009

Reviewed book chapters—Garrett’s Brain & Behavior: Chapter 2, 2007

Reviewed book chapters—Freberg’s Discovering Biological Psychology: Chapters 12-15, 2003

Reviewed book—Simon Green’s Principles of Biopsychology, 2003

Reviewed book—David Lieberman’s Learning and Memory, 2002

Reviewed book proposal—Learning and Memory: An Integration of Animal and Human research, 2002

Reviewed book proposal—Learning and Memory: From Brain to Behavior, 2002

Reviewed book chapters—Kolb & Whishaw’s Introduction to Brain and Behavior: Chapt. 11, 13, 14, 1999

TEACHING EXPERIENCE

*Grand Valley State University: As a professor, Fall, 2006-present,
As an associate professor, Fall, 1999-Winter, 2006,*

As an assistant professor, August, 1994-Winter, 1999,

- Psych. 435: Advanced Neuroscience and Behavior (2018-present)
- Psych. 432: Psychopharmacology (proposed in 2001 and taught since)
- Psych. 431: Introduction to Neuropsychology
- Psych. 430: Physiological Psychology (1999-2014)
- Psych. 363: Learning
- Psych. 330: Foundations of Behavioral Neuroscience
- Psych. 101: Introductory Psychology

University of Michigan (as a Teaching Assistant or a coordinator to coordinate TAs and faculty with the capacity of supervising and advising TAs), Sept, 1986-Dec., 1991)

- Psych. 511: Advanced Laboratory in Physiological Psychology
- Psych. 500-01: Fundamentals of Human Neuropsychology
- Psych. 500-02: Biopsychology of Learning and Memory
- Psych. 444: Perception
- Psych. 100: Learning to Learn: An Introduction to Cognitive Psychology

RESEARCH EXPERIENCE

Grand Valley State University, September, 1994-present, as a principle investigator:

Projects: roles of NMDA receptor, NO and cGMP in avoidance learning in goldfish,
active avoidance learning in zebrafish.

Collaborated projects: neurobehavioral effects of environmental contaminants in zebrafish,
animal model of psychosis in rodents,
effects of tobacco smoking on the brain electrical activity and attention,
neurobehavioral effects of PCBs and lead in goldfish.

Medical Science Building I, Univ. of Mich.; June, 1992-August, 1994, as a postdoctoral fellow:

Projects: MK-801- and phencyclidine-induced behavioral sensitization and tolerance in rats,
pharmacogenetic differences in phencyclidine administration in inbred mice.

Neuroscience Building, Univ. of Mich.; Apr. 1989-May 1992, as a graduate student research assistant:

Projects: amnesic effects of MK-801 in classical fear conditioning in goldfish,
optic nerve regeneration in goldfish using fear conditioning as an index of nerve regeneration.

Kresge Hearing Research Institute, Univ. of Mich.; Aug. 1986-Mar. 1989, as a graduate student assistant:

Projects: discrimination of complex signals by monkeys,
changes in monkeys' acuity in frequency discrimination after selective damage to the inner ear,
frequency discrimination by rodents.

GRANT AWARDS

FUNDED RESEARCH AND SCHOLARLY TEACHING GRANTS

2014: Research Grant-in-Aid Award from GVSU (\$3,000.00)

Xu, X.: Investigation of potential epigenetic effects produced by embryonic exposure to lead in zebrafish.

2007: Research Grant-in-Aid Award from GVSU (\$2,670.00)

Xu, X.: Does NO mediate memory consolidation, but not learning, of avoidance conditioning?

2004: Research Grant-in-Aid Award from GVSU (\$3,000.00)

Xu, X.: Active avoidance learning in zebrafish.

2004: Research Grant-in-Aid Award from GVSU (\$3,000.00)

Qi, M. and Xu, X.: An assessment of toxicokinetics and neurotoxicity of PCB congener 153 and 52 in goldfish.

2001: Research Grant-in-Aid Award from GVSU (\$3,000.00)

Xu, X. and Qi, M.: Analysis of D-AP5 content in goldfish telencephalon.

2000: Research Grant-in-Aid Award from GVSU (\$3,000.00)

Xu, X.: The role of goldfish telencephalon in active avoidance learning

2000: Pew Scholar Teaching Award from GVSU (7,600.00)

Xu, X and Paschke, R: Human neuroanatomy videotape and interactive computer program.

1999: Research Grant-in-Aid Award from GVSU (\$3,000.00)

Xu, X.: Amnestic effects of N-methyl-D-aspartate receptor antagonist AP5

1998: Research Grant-in-Aid Award from GVSU (\$2,600.00)

Xu, X.: Neurotoxic effects of polychlorinated biphenyls

1997: Faculty Teaching Development and Renewal Grant from GVSU (\$1,000.00)

Xu, X and Paschke, R: Developing a web-site of and a video-tape of sheep-brain dissection.

1997: Scholars Program at Chinese Consulate General and State Department of Education (\$700.00)

Xu, X.: Summer lecture project in the Institute of Psychology at the Chinese Academy of Sciences.

1996: Council on Undergraduate Research (\$3,300.00)

Boshoven B.* and Xu, X.: Amnestic effects of nitric oxide inhibitor L-NAME in goldfish.

*Bill Boshoven was my student.

1996: Research Grant-in-Aid Award from GVSU (\$1,000.00)

Xu, X.: The effects of tobacco smoking on brain electrical activity and attention.

1995: Research Grant-in-Aid Award from GVSU (\$8,500.00 including the Summer Research Stipend Award of \$5,500.00)

Xu, X.: Amnestic effects of nitric oxide inhibitors: L-NOARG and 7-Nitroindazole.

FUNDED TRAVEL GRANTS

Scholarly Travel Grant-in-Aid Award, GVSU: 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020.

FTLC Development and Renewal Grant, GVSU: 2000, 2001, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2011, 2014, 2016, 2018.

Padnos International Center—Intercultural Studies Faculty Development Grant, GVSU: 2005, 2007, 2008.

FUNDED GRANTS SUPPORTING MY STUDENTS

2014: McNair Scholars Program at GVSU (\$4,800.00)

Mercado-Idziak, N. and Xu, X.: The effects of embryonic lead exposure on avoidance learning in zebrafish.

2005: Student Summer Scholar Program at GVSU (\$6,000.00)

Werts, A. and Xu, X.: Neurotoxic effects of PCB congeners in goldfish.

2001: McNair Scholars Program at GVSU (\$4,800.00)

Bazner, J. and Xu, X.: Investigation of the amnestic effects of microinjections of NMDA receptor antagonist AP5 directly to the goldfish telencephalon.

1998: McNair Scholars Program at GVSU (\$5,400.00)

Boshoven, W and Xu, X.: Retrograde amnesic effects of nitric oxide synthase inhibitors: L-NAME and L-NOARG.

1998: McNair Scholars Program at GVSU (\$5,400.00)

Gunn, D. and Xu, X.: State-dependent effects of NMDA receptor antagonist MK-801.

1998: Minority Science Education Center Summer Scholar Program at GVSU (\$3,000.00)

Russell, T. and Xu, X.: Anterograde Amnesic Effects of Nitric Oxide Inhibitor 7-NI in Goldfish.

1997: McNair Scholars Program at GVSU (\$5,000.00)

Boshoven, W. and Xu, X.: Anterograde amnesic effects of nitric oxide synthase inhibitor L-NAME.

RESEARCH GRANTS NOT FUNDED

2001: National Science Foundation (\$178,996.00)

Xu, X.: Neurobiological basis of avoidance conditioning

2001: National Institute of Health (\$395,323.00)

Weber, D.N., Moore, J.C., and Xu, X.: Operant learning and lead exposure: a fish model

2000: National Science Foundation (\$238,861.00)

Xu, X.: The role of NMDA receptors and NO in avoidance conditioning

2000: National Institute of Health (\$136,000.00)

Xu, X.: The role of NMDA receptors and NO in avoidance conditioning

1999: National Science Foundation (\$228,978.00)

Xu, X.: Neural mechanisms of learning and memory consolidation

1998: National Science Foundation (\$228,978.00)

Xu, X.: Neural mechanisms of learning and memory consolidation (I was invited to resubmit it for the next round of funding)

PUBLICATIONS (MY STUDENTS' NAMES ARE IN BOLD)

REFEREED ARTICLES

Xu, X., Weber, D., **Burge, R., & VanAmberg, K.** (2016). Neurobehavioral impairments produced by developmental lead exposure persisted for generations in zebrafish (*Danio rerio*). *NeuroToxicology*. 52, 176-185. doi:10.1016/j.neuro.2015.12.009

Xu, X., Weber, D., **Martin, A., & Lone, D.** (2016). Trans-generational transmission of neurobehavioral impairments produced by developmental methylmercury exposure in zebrafish (*Danio rerio*). *Neurotoxicology and Teratology*. 53, 19-23. doi:10.1016/j.ntt.2015.11.003

Xu, X., & **Zmolek, K.** (2014). Nitric oxide scavenger carboxy-PTIO impaired memory of avoidance conditioning in goldfish. *Open Journal of Social Sciences*. 2, 86-89. doi:10.4236/jss.2014.25017

Xu, X., Weber, D. N., Carvan III, M. J., **Coppens, R., Lamb, C., Goetz, S., & Schaefer, L. A.** (2012). Comparison of neurobehavioral effects of methylmercury exposure in older and younger adult zebrafish (*Danio rerio*). *NeuroToxicology*. 33, 1212-1218. doi:10.1016/j.neuro.2012.06.011

Xu, X., **Lamb, C., Smith, M., Schaefer, L.,** Carvan III, M. J., & Weber, D. N. (2012). Developmental methylmercury exposure affects avoidance learning outcomes in adult zebrafish. *Journal of Toxicology and Environmental Health Sciences*. 4(5), 85-91. (<http://www.academicjournals.org/jtehs/contents/2012cont/May.htm>)

- Xu, X., & **Goetz, S.** (2012). Assessing learning and memory through the active avoidance paradigm. In A. V. Kalueff, A. D. Stewart (Ed). *Zebrafish Protocols for Neurobehavioral Research, Neuromethods, Vol 66, Part II.* 265-272. New York: Springer. (Invited and peer-reviewed book chapter)
- Xu, X., **Bently, J., Miller, T., Zmolek, K., Kovaleinen, T., Goodman, E., & Foster, T.** (2009). The role of telencephalic nitric oxide and cGMP in avoidance conditioning in goldfish (*Carassius auratus*). *Behavioral Neuroscience.* 123(3), 614-623.
- Zheng, P., Zhang, J., Liu, H., Xu, X., & Zhang, X. (2008). Angelica injection reduces cognitive impairment during chronic cerebral hypoperfusion through brain-derived neurotrophic factor and nerve growth factor. *Current Neurovascular Research.* 5(1),13-20.
- Xu, X., **Scott-Scheiern, T., Kempker, L., & Simons, K.** (2007). An active avoidance conditioning paradigm in zebrafish (*Danio rerio*). *Neurobiology of Learning and Memory.* 87(1), 72-77.
- Hu, D., Xu, X., & Gonzalez-Lima, F. (2006). Vicarious trial-and-error behavior and hippocampal cytochrome oxidase activity of rats in Y-maze discrimination learning. *International Journal of Neuroscience.* 116, 265-280.
- Hu, D., Xu, X., & Gonzalez-Lima, F. (2005). Hippocampal cytochrome oxidase activity of rats in easy and difficult visual discrimination learning. *International Journal of Neuroscience.* 115, 595-611.
- Xu, X., **Bazner, J., Qi, M., Johnson, E., & Freidhoff, R.** (2003). The role of telencephalic NMDA receptors in avoidance learning in goldfish (*Carassius auratus*). *Behavioral Neuroscience.* 117 (3), 548-554.
- Xu, X. (2002). NMDA receptor antagonists and nitric oxide inhibitors in studying of neural mechanisms of learning and memory. *Current Topics in Pharmacology.* 6, 95-107. (Invited and peer-reviewed)
- Xu, X., **Russell, T., Bazner, J., & Hamilton, J.** (2001). NMDA receptor antagonist AP5 and nitric oxide synthase inhibitor 7-NI affect different phases of learning and memory in goldfish. *Brain Research.* 889, 274-277.
- Xu, X., & Domino, E.F. (2000). Effects of tobacco smoking on topographic EEG and Stroop test in smoking deprived smokers. *Progress in Neuro-Psychopharmacology & Biological Psychiatry.* 24, 535-546.
- Xu, X., **Boshoven, W., & Gunn, D.** (1999). NMDA receptor antagonist MK-801 and nitric oxide synthase inhibitor L-NAME did not produce state-dependent learning in goldfish. *Psychobiology.* 27(3), 426-431.
- Xu, X., & Domino, E.F. (1999). A further study on asymmetric cross-sensitization between MK-801- and phencyclidine-induced ambulatory activity. *Pharmacology, Biochemistry, & Behavior.* 63(3), 413-416.
- Xu, X., **Boshoven, W., Lombardo, B., & Spranger, J** (1998). Comparison of the amnesic effects of NMDA receptor antagonist MK-801 and nitric oxide synthase inhibitors: L-NAME and L-NOARG in goldfish. *Behavioral Neuroscience.* 112(4), 892-899.
- Xu, X. (1997). NMDA receptor antagonist MK-801 selectively impairs learning of the contiguity of the conditioned stimulus and unconditioned stimulus in goldfish. *Pharmacology, Biochemistry, & Behavior.* 58(2), 491-496.
- Xu, X., & Domino, E.F. (1997). Cross-sensitization between phencyclidine and (-) but not (+)-pentazocine induced locomotor and ambulatory activity. *Pharmacology, Biochemistry, & Behavior.* 56(2), 205-210.

- Xu, X., Klinger, P., & Davis, R. (1995). Comparative anterograde amnesic and anticonvulsant effects of two types of NMDA receptor antagonists: MK-801 and HA-966. *Psychopharmacology*. 117(10), 333-339.
- Xu, X., & Domino, E.F. (1994). Genetic differences in the locomotor response to single and daily doses of phencyclidine in inbred mouse strains. *Behavioral Pharmacology*. 5, 623-639.
- Xu, X., & Domino, E.F. (1994) Asymmetric cross-sensitization to the locomotor stimulant effects of phencyclidine and MK-801. *Neurochemistry International*. 25(2), 155-159.
- Xu, X., & Domino, E.F. (1994). Phencyclidine-induced behavioral sensitization. *Pharmacology, Biochemistry, & Behavior*. 47(3), 603-608.
- Xu, X., & Davis, R.E. (1992). NMDA receptor antagonist MK-801 impairs learning but not memory fixation or expression of classical fear conditioning in goldfish (*Carassius auratus*). *Behavioral Neuroscience*. 106(2), 307-314.

PUBLISHED ABSTRACTS

- Xu, X., Weber, D. **Goetz, S., & Schaefer, L.** (2011). Methylmercury exposure produced learning impairments more severely in old adult than in young adult zebrafish. *Society for Neuroscience Abstract Viewer and Itinerary Planner*. 41.
- Xu, X. (2009). Nitric oxide is involved in memory consolidation but not learning of active avoidance conditioning in goldfish. *Society for Neuroscience Abstract Viewer and Itinerary Planner*. 39
- Zheng, P., Zhang, J., Liu, H., & Xu, X. (2008). Angelica injection reduces cognitive impairment during chronic cerebral hypoperfusion through brain-derived neurotrophic factor and nerve growth factor. *International Journal of Psychology*. 43(2-3), 820.
- Xu, X. (2004). The roles of NMDA receptors and NO in learning and memory consolidation of avoidance conditioning. *International Journal of Psychology*. 39(5-6) (Supp.S), 152-153.
- Xu, X., & **Freidhoff, R.** (2002). The effects of microinjections to the goldfish optic tectum on visually mediated avoidance learning. *Society for Neuroscience Abstract Viewer and Itinerary Planner*. 2002.
- Xu, X., & **Bazner, J.** (2001). Amnesic effects of microinjection of NMDA receptor antagonist AP5 to the goldfish telencephalon. *Amino Acids*. 21(1), 55.
- Bazner, J. L., Qi, M., & Xu, X.** (2001). The role of telencephalic NMDA receptors in active avoidance conditioning in goldfish. *Society for Neuroscience Abstracts*. 27(2):2525.
- Xu, X., **Hamilton, J. & Bazner, J.** (2000). NO synthase inhibitor 7-NI impaired memory consolidation of active avoidance conditioning whereas NMDA receptor antagonist AP5 did not. *Abstract of Society for Neuroscience* 26(1), 203.
- Xu, X., & Hu, S. (2000). EEG activity correlates with symptoms of motion sickness induced by viewing an optokinetic rotating drum. *Journal of Psychophysiology*. 14 (Supp.1), S68.
- Hu, S., & Xu, X. (2000). Facial EMG activity as an indicator of optokinetic rotation-induced taste aversions. *Journal of Psychophysiology*. 14 (Supp. 1), S44.
- Xu, X., **Gunn, D., & Russell, T.,** (1999). Anterograde amnesic effects of NMDA receptor antagonist AP5 and nitric oxide inhibitor 7- NI. *Abstracts of Society for Neuroscience*. 25(1), 632.
- Xu, X., & Domino, E.F. (1998). The effects of tobacco smoking on topographic EEG and attention. *Abstracts of Society for Neuroscience*. 24(1), 753.

- Boshoven, B., Gunn, D., & Xu, X.** (1998). State-dependency and retrograde amnesic effects of NMDA receptor antagonist MK-801 and NO synthase inhibitor L-NAME. *Abstracts of Society for Neuroscience*. 24(2), 2120.
- Xu, X., **Boshoven, W., & Spranger, J.** (1997). Nitric oxide synthase inhibitors impair retention of active avoidance response in Goldfish. *Abstracts of Society for Neuroscience*. 23(2), 2384.
- Xu, X., & **Boshoven, W.** (1997). Anterograde amnesic effects of NMDA receptor antagonist MK-801 and nitric oxide inhibitor L-NAME. *Amino Acids*. 13(1), 68.
- Xu, X., (1996). The initial phase of learning of classical fear conditioning in goldfish is selectively inhibited by the NMDA receptor antagonist MK-801. *Abstracts of Society for Neuroscience*. 22(1), 144
- Xu, X., & Domino, E.F. (1995). Reciprocal behavioral cross-sensitization between phencyclidine and (-) but not (+) pentazocine. *Abstracts of Society for Neuroscience*. 21(2), 1384.
- Xu, X., Klinger, P., & Davis, R. (1994). Anterograde amnesic and anticonvulsant effects of two types of NMDA receptor antagonists: MK-801 and HA-966. *Abstracts of Society for Neuroscience*. 20(2), 1019.
- Xu, X., & Domino, E.F. (1993). N-methyl-D-aspartate antagonist MK-801 fails to block phencyclidine-induced behavioral sensitization. *Journal of Neurochemistry*. 61 (supp.), S285.B.
- Xu, X., & Domino, E.F. (1993). Mouse strain differences in phencyclidine tolerance and sensitization on locomotor activity. *Behavioral Pharmacology*. 4 (4), 463.
- Xu, X., & Domino, E.F. (1993). N-methyl-D-aspartate antagonist MK-801 blocks amphetamine induced but not phencyclidine induced behavioral sensitization. *Abstracts of Society for Neuroscience*. 19 (2), 1012.
- Xu, X. (1993). Amnesic effects of NMDA receptor antagonist MK-801 in goldfish. *Dissertation Abstracts International*. 53B, 5478.
- Davis, R.E., Xu, X., & Klinger, P.D. (1991). NMDA receptor antagonist MK-801 inhibits acquisition of classical fear conditioning in goldfish. *Abstracts of Society for Neuroscience*. 17(1), 485.

PRESENTATIONS (MY STUDENTS' NAMES ARE IN BOLD)

AT THE NATIONAL AND INTERNATIONAL CONFERENCES

- Xu, X. (2020). Developmental exposure to environmental contaminants produced long-lasting neurobehavioral impairments. Oral presentation accepted at the 8th International Psychology and Health Conference. Xiamen, China. (The presentation was not made due to COVID-19)
- Xu, X., & Weber, D. (2019). Learning impairments produced by embryonic lead or mercury exposure persisted for generations in zebrafish. Oral presentation at the 4th International Conference on Social Sciences and Humanities. Xi'an, China.
- Xu, X., & Weber, D. (2018). Learning impairments produced by developmental mercury exposure persisted for generations in zebrafish. Oral presentation at the 3rd International Conference on Psychology and Behavioral Science. Hangzhou, China.
- Xu, X., & Weber, D. (2017). Learning impairments produced by developmental lead exposure persisted for generations. Oral presentation at the 4th International Conference on Society, Education and Psychology. Macau. (selected as the best oral presentation of the session)

- Xu, X., & Weber, D. (2016). Learning impairments produced by embryonic lead exposure persisted in F3 male and female zebrafish. Poster presentation at the 25th Annual Meeting of International Behavioral Neuroscience Society. Budapest, Hungary.
- Xu, X., & Weber, D. (2016). Embryonic lead exposures produced similar learning impairments in male and female zebrafish. Poster presentation at the 6th International Symposium on Society, Education and Psychology. Beijing, China.
- Xu, X., & Weber, D. (2015). Developmental lead exposure produced learning impairments in adult zebrafish. Oral presentation scheduled at International Conference on Environmental Pollution and Public Health. Beijing, China.
- Mercado-Idziak, N., Blutcher, J.,** Weber, D., & Xu, X. (2014). Embryonic lead exposures cause learning deficits in male and female zebrafish. Poster presentation at the 44th Annual Meeting of Society for Neuroscience. Washington DC, USA.
- Xu, X., & **Zmolek, K.** (2014). Nitric oxide scavenger carboxy-PTIO impaired memory of avoidance conditioning in goldfish. Oral presentation at Conference on Psychology and Social Harmony. Suzhou, China.
- Xu, X., Carvan III, M., & Weber, D. (2013). The learning impairment and hyperactivity produced by embryonic methylmercury exposure may persist for generations in zebrafish. Poster presentation at the International Conference on Education, Economics, Psychology and Society. Beijing, China
- Xu, X., Weber, D. **Goetz, S., & Schaefer, L.** (2011). Methylmercury exposure produced learning impairments more severely in old adult than in young adult zebrafish. Poster presentation at the 41st Annual Meeting of Society for Neuroscience. Washington DC, USA
- Weber, D., & Xu, X. (2010). Zebrafish models for developmental neurobehavioral toxicology. Presentation at the 49th Annual Meeting of Society of Toxicology. Salt Lake City, UT, USA.
- Xu, X. (2009). Nitric oxide is involved in memory consolidation but not learning of active avoidance conditioning in goldfish. Poster presentation at the 39th Annual Meeting of Society for Neuroscience. Chicago, IL, USA.
- Xu, X., **Lamb, C., Schaefer, L.A.,** & Weber, D. (2009). Neurobehavioral outcomes of developmental vs. adult exposures of methylmercury in zebrafish (*Danio rerio*). Oral + poster presentation at the 9th International Conference on Mercury as a Global Pollutant. Guiyang, Guizhou, China.
- Zheng, P., Zhang, J., Liu, H., & Xu, X. (2008). Angelica injection reduces cognitive impairment during chronic cerebral hypoperfusion through brain-derived neurotrophic factor and nerve growth factor. Poster presented at the 29th International Congress of Psychology. Berlin, Germany.
- Werts, A., VanZanten, B.,** Xu, X., & Qi, M. (2007). Kinetics of polychlorinated biphenyls and lead in goldfish. Poster presentation at the 5th International Conference on Marine Pollution & Ecotoxicology. Hong Kong, China.
- Xu, X., **Miller, T., Bently, J., & Foster, T.** (2006). The roles of nitric oxide and cGMP in active avoidance conditioning in goldfish. Poster presentation at the 36th Annual Meeting of Society for Neuroscience. Atlanta, Georgia, USA.
- Scott-Scheiern, T., Simons, K., Kempker, L.,** & Xu, X. (2005). An avoidance conditioning paradigm in zebrafish. Poster presentation at the 35th Annual Meeting of Society for Neuroscience. Washington D.C., USA.

- Xu, X. (2004). The roles of NMDA receptors and NO in learning and memory consolidation of avoidance conditioning. Oral presentation at the 28th International Congress of Psychology. Beijing, China.
- Johnson, E., Xu, X., & Qi, M.** (2004). Behavioral studies and concentration analysis of non-planner PCB-52 injected goldfish. Poster presentation at the 4th International Conference on Marine Pollution & Ecotoxicology. Hong Kong, China.
- Xu, X., Hu, D., & Amsel, A. (2003). Vicarious trial-and-error behavior and hippocampal cytochrome oxidase activity of rats in Y-maze learning. Poster presentation at the 6th World Congress of Neuroscience. Prague, Czech Republic.
- Xu, X., & **Freidhoff, R.** (2002). The effects of microinjections to the goldfish optic tectum on visually mediated avoidance learning. Poster presentation (abstract of SFN, 28, Program No 81.18) at the 32nd Annual Meeting of Society for Neuroscience. Orlando, FL, USA.
- Bazner, J. L., Qi, M., & Xu, X.** (2001). The role of telencephalic NMDA receptors in active avoidance conditioning in goldfish. Poster presentation (Abstract of SFN, 27, Program No. 951.10) at the 31st Annual Meeting of Society for Neuroscience, San Diego, CA, USA.
- Xu, X., & **Bazner, J.** (2001). Amnestic effects of microinjection of NMDA receptor antagonist AP5 to the goldfish telencephalon. Poster presentation at the 7th International Congress on Amino Acids and Protein, Vienna, Austria.
- Xu, X., & **Bazner, J.** (2001). Microinjection of NMDA receptor antagonist AP5 to the goldfish telencephalon impaired learning without impairing performance processes. Poster presentation at the 10th annual meeting of International Behavioral Neuroscience Society. Cancun, Mexico.
- Xu, X., **Hamilton, J., & Bazner, J.** (2000). NO synthase inhibitor 7-NI impaired memory consolidation of active avoidance conditioning whereas NMDA receptor antagonist AP5 did not. Poster presentation at the 30th Annual Meeting of Society for Neuroscience. New Orleans, Louisiana, USA.
- Xu, X., & Hu, S. (2000). EEG activity correlates with symptoms of motion sickness induced by viewing an optokinetic rotating drum. Poster presentation at the 4th European Conference of the Federation of Psychophysiology Societies. Amsterdam, Netherlands.
- Hu, S., & Xu, X. (2000). Facial EMG activity as an indicator of optokinetic rotation-induced taste aversions. Poster presentation at the 4th European Conference of the Federation of Psychophysiology Societies. Amsterdam, Netherlands.
- Xu, X., **Gunn, D., & Russell, T.,** (1999). Anterograde amnestic effects of NMDA receptor antagonist AP5 and nitric oxide inhibitor 7- NI. Poster presentation at the 29th Annual Meeting of Society for Neuroscience. Miami Beach, FL, USA.
- Xu, X., & Domino, E.F. (1998). The effects of tobacco smoking on topographic EEG and attention. Poster presentation at the 28th Annual Meeting of Society for Neuroscience. Los Angeles, CA, USA.
- Boshoven, B., Gunn, D., & Xu, X.** (1998). State-dependency and retrograde amnestic effects of NMDA receptor antagonist MK-801 and NO synthase inhibitor L-NAME. Poster presentation at the 28th Annual Meeting of Society for Neuroscience. Los Angeles, CA, USA.
- Xu, X., **Boshoven, W., & Spranger, J.** (1997). Nitric oxide synthase inhibitors impair retention of active avoidance response in Goldfish. Poster presentation at the 27th Annual Meeting of Society for Neuroscience. New Orleans, Louisiana, USA.

- Xu, X., & **Boshoven, W.** (1997). Anterograde amnesic effects of NMDA receptor antagonist MK-801 and nitric oxide inhibitor L-NAME. Oral presentation at the 5th International Congress on Amino Acid. Chalkidiki, Greece.
- Xu, X. (1996). The initial phase of learning of classical fear conditioning in goldfish is selectively inhibited by the NMDA receptor antagonist MK-801. Poster presentation at the 26th Annual Meeting of society for Neuroscience. Washington D.C., USA.
- Xu, X., & Domino, E.F. (1995). Reciprocal behavioral cross-sensitization between phencyclidine and (-) but not (+) pentazocine. Poster presentation at the 25th Annual Meeting of Society for Neuroscience. San Diego, CA, USA.
- Xu, X., Klinger, P., & Davis, R. (1994). Anterograde amnesic and anticonvulsant effects of two types of NMDA receptor antagonists: MK-801 and HA-966. Poster presentation at the 24th Annual Meeting of Society for Neuroscience. Miami Beach, FL, USA.
- Xu, X., & Domino, E.F. (1993). N-methyl-D-aspartate antagonist MK-801 fails to block phencyclidine-induced behavioral sensitization. Poster presentation at the 14th meeting of International Society for Neurochemistry, Satellite Meeting on Excitatory Amino Acids. Marseille, France.
- Xu, X., & Domino, E.F. (1993). Mouse strain differences in phencyclidine tolerance and sensitization on locomotor activity. Poster presentation at the European Behavioral Pharmacology Society-International Meeting on Sensitization and Tolerance in behavioral pharmacology. Pistoia, Italy.
- Xu, X., & Domino, E.F. (1993). N-methyl-D-aspartate antagonist MK-801 blocks amphetamine induced but not phencyclidine induced behavioral sensitization. Poster presentation at the 23rd Annual Meeting of Society for Neuroscience. Washington D.C., USA.
- Davis, R.E., Xu, X., & Klinger, P.D. (1991). NMDA receptor antagonist MK-801 inhibits acquisition of classical fear conditioning in goldfish. Poster presentation at the 21st Annual Meeting of Society for Neuroscience. New Orleans, Louisiana, USA.
- Moody, D.B., Xu, X., Thompson, C.S., & Stebbins, W.C. (1990). Discrimination of modulation frequency of amplitude modulated tones and noise bands by the macaque. Poster presentation at the annual meeting of Acoustic Society.
- Prosen, C.A., Xu, X., Moody, D.B., & Stebbins, W.C. (1989). Frequency difference limens following sensorineural damage in the monkey: high vs. low frequencies. Poster presentation at the 12th Midwinter Meeting, Association for Research in Otolaryngology.

AT THE LOCAL AND REGIONAL MEETINGS

- Xu, X. Weber, D., **Martin, A.**, & **Lone, D.** (2016). Learning impairments produced by embryonic exposure to methylmercury persists for generation. Poster presentation at the CLAS sabbatical showcase at GVSU. MI, USA
- Mercado-Idziak, N.**, & Xu, X. (2015). Continued study on the effects of embryonic lead exposure in zebrafish. Oral presentation at the Student Scholarship Day at GVSU. MI, USA
- Mercado-Idziak, N.**, **Burge, R.**, **VanAmberg, K.**, & Xu, X. (2014). The effects of embryonic lead exposure on avoidance learning in female zebrafish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Mercado-Idziak, N.**, & Xu, X. (2013). The effects of embryonic lead exposure on avoidance learning in male zebrafish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA

- Martin, A., Lone, D., & Xu, X.** (2012). Are neurobehavioral effects of embryonic methylmercury exposure heritable transgenerationally in zebrafish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Goetz, S., & Xu, X.** (2011). Neurobehavioral effects of methylmercury exposure in young adult zebrafish. Oral presentation at the Student Scholarship Day at GVSU. MI, USA
- Smith, M., Schaefer, L., & Xu, X.** (2010). Embryonic methylmercury exposure caused hyperactivity and impaired learning in zebrafish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Coppen, R., & Xu, X.** (2010). Avoidance learning of young adult zebrafish (*Danio rerio*) exposed to methylmercury. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Xu, X., Goodman, E., & Kovalchek, T.** (2009). Nitric oxide is involved in memory consolidation but not learning of active avoidance conditioning in goldfish. Poster presentation at the CLAS sabbatical showcase at GVSU. MI, USA
- Lamb, C., Schaefer, L., & Xu, X.** (2009). Neurobehavioral effects of exposure to methylmercury in adult zebrafish (*Danio rerio*). Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Goodman, E., Kovalchek, T., & Xu, X.** (2008). The effects of microinjections of nitric oxide donor SNAP on memory in goldfish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Zmolek, K., & Xu, X.** (2007). Retrograde amnesic effects of nitric oxide scavenger carboxy-PTIO in goldfish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Bently, J., & Xu, X.** (2006). Retrograde amnesic effects of microinjections of cGMP inhibitor LY-83583 to the goldfish telencephalon. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Miller, T., & Xu, X.** (2006). Anterograde amnesic effects of microinjections of cGMP inhibitor LY-83583 to the goldfish telencephalon. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Werts, A., Xu, X., & Qi, M.** (2006). Neurotoxic effects of PCB congeners in goldfish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Kempker, L., & Xu, X.** (2005). Comparison of retrograde amnesic effects of NMDA receptor antagonist MK-801 and nitric oxide synthase inhibitor L-NAME in zebrafish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Scott-Scheiern, T., Simons, K., & Xu, X.** (2005). Active avoidance learning in zebrafish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Foster, T., & Xu, X.** (2004). The effects of nitric oxide inhibitor L-NAME in goldfish telencephalon. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Johnson, E.C., Xu, X., & Qi, M.** (2003). Behavioral studies and concentration analysis of PCB-52 injected goldfish. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Freidhoff, R., & Xu, X.** (2002). The effect of microinjection to the goldfish optic tectum in avoidance conditioning. Poster presentation at the Student Scholarship Day at GVSU. MI, USA
- Bazner, J., Qi, M., & Xu, X.** (2001). Microinjection of NMDA receptor antagonist AP5 to the telencephalon impaired acquisition of active avoidance conditioning in goldfish. Poster

presentation at the annual meeting of the Midwestern Psychological Association. Chicago, IL. USA

Bazner, J., & Xu, X. (2001). Microinjection of NMDA receptor antagonist AP5 to the goldfish telencephalon impaired learning but not expression of active avoidance conditioning. Oral presentation at the meeting of the Michigan Academy of Science, Arts, and Letters. University of Michigan at Dearborn, MI. USA.

Hamilton, J., & Xu, X. (2000). NMDA receptor antagonist AP5 impairs learning but not memory consolidation of active avoidance conditioning. Oral presentation at the meeting of the Michigan Academy of Science, Arts, and Letters. Saginaw Valley State University, MI. USA.

Hamilton, J., & Xu, X. (2000). NMDA receptor antagonist AP5 does not impair memory consolidation or expression of active avoidance conditioning in goldfish. Oral presentation at the Student Scholarship Day at GVSU. MI. USA

Russell, T., Gunn, D., & Xu, X. (1999). Amnesic Effects of Nitric Oxide Inhibitor 7-NI in Goldfish. Poster presentation at the annual meeting of the Midwestern Psychological Association. Chicago, IL. USA

Gunn, D. & Xu, X. (1999). Nitric oxide inhibitor 7-NI impaired learning of active avoidance conditioning. Poster presentation at the Student Scholarship Day at GVSU. MI. USA

Russell, T., Gunn, D., & Xu, X. (1999). Anterograde Amnesic Effects of Nitric Oxide Inhibitor 7-NI in Goldfish. Oral presentation at the meeting of the Michigan Academy of Science, Arts, and Letters. Grand Rapids, MI. USA.

Gunn, D., & Xu, X. (1998). State-dependent effects of NMDA receptor antagonist MK-801. Poster presentation at the Ronald E. McNair Research conference. Pennsylvania State University, USA.

Lombardo, B., & Xu, X. (1998). NMDA receptor antagonist MK-801 impairs acquisition of active avoidance conditioning in goldfish. Poster presentation at the annual meeting of the Midwestern Psychological Association. Chicago, IL. USA.

Boshoven, W., & Xu, X. (1998). Retrograde amnesic effects of nitric oxide synthase inhibitors: L-NAME and L-NOARG. Oral presentation at the Student Scholarship Day at GVSU. MI. USA.

Williamson, K., Gunn, D., & Xu, X. (1998). State-dependent effects of MK-801. Poster presentation at the Student Scholarship Day at GVSU. MI. USA.

Boshoven, B., & Xu, X. (1997). Amnesic effects of Nitric Oxide Inhibitor L-NAME in goldfish. Poster presentation at the annual meeting of the Midwestern Psychological Association. Chicago, IL. USA.

Boshoven, W., & Xu, X. (1997). Anterograde amnesic effects of nitric oxide synthase inhibitor L-NAME. Poster presentation at the Student Scholarship Day at GVSU. MI. USA.

Boshoven, B., & Xu, X. (1997). Anterograde amnesic effects of nitric oxide inhibitor L-NAME in goldfish. Oral presentation at the meeting of the Michigan Academy of Science, Arts, and Letters. Grand Rapids, MI. USA.

INVITED TALKS

Xu, X. (2013). Cortical damages and neuropsychological assessments. Department of Psychology, Wuhan University, Wuhan, Hubei, China.

- Xu, X. (2011). Symptoms of cortical damages and neuropsychological assessments. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2011). Neurobehavioral effects of developmental methylmercury exposure: from embryonic exposure to old adult exposure in zebrafish. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2011). The roles of NMDA receptors, NO, and cGMP in learning and memory. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2010). Neurochemical steps of learning and memory consolidation. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2010). Neurobehavioral outcomes of embryonic vs. adult exposure of methylmercury. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2010). Biopsychology: its current divisions and research. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2010). Effects of tobacco smoking on the brain electrical activity and attention. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2008). Neurochemical steps of learning and memory consolidation. School of Psychology, Central China Normal University, Wuhan, Hubei, China.
- Xu, X. (2008). Current trends in biopsychology. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2008). Neurochemical steps of learning and memory consolidation. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2008). Current trends in biopsychology. Department of Psychology, Hubei University, Wuhan, Hubei, China.
- Xu, X. (2007). Memory theories and research. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2007). Memory theories and research. School of Psychology, Central China Normal University, Wuhan, Hubei, China.
- Xu, X. (2007). Memory theories and research. Department of Psychology, Hubei University, Wuhan, Hubei, China.
- Xu, X. (2006). Neurochemical steps of learning and memory consolidation. Psychology Research Colloquium, Allendale, Grand Valley State University, MI, USA.
- Xu, X. (2006). Research in subfields of biopsychology. Department of Psychology, Wuhan University, Wuhan, Hubei, China.
- Xu, X. (2006). Overview of psychopharmacology. School of Psychology, Central China Normal University, Wuhan, Hubei, China.
- Xu, X. (2006). Current research in biopsychology. School of Psychology, Central China Normal University, Wuhan, Hubei, China.
- Xu, X. (2005). Current trends in biopsychology. Department of Psychology, Wuhan University, Wuhan, Hubei, China.

- Xu, X. (2004). Symposium: Neural mechanisms of learning and memory in vertebrates. Invited organizer of the symposium at the 28th International Congress of Psychology, Beijing, China.
- Xu, X. (2003). Advanced research in biopsychology. Department of Psychology, Hubei University, Wuhan, Hubei, China.
- Xu, X. (1999). Current trends in research on neural substrates of learning and memory: the roles of NMDA receptors and nitric oxide. The Institute of Psychology at the Chinese Academy of Sciences, Beijing, China.
- Xu, X. (1997) Neural mechanisms of learning and memory. Department of Psychology, Beijing University, Beijing, China.
- Xu, X. (1997) How to choose research questions and decide one's research focus. The Institute of Psychology at the Chinese Academy of Sciences, Beijing, China.
- Xu, X. (1997) Advanced research and trends in physiological psychology. The Institute of Psychology at the Chinese Academy of Sciences, Beijing, China.
- Xu, X. (1997) How to do basic research in physiological psychology. The Institute of Psychology at the Chinese Academy of Sciences, Beijing, China.
- Xu, X. (1997) Learning, memory and mechanisms. The Institute of Psychology at the Chinese Academy of Sciences, Beijing, China.
- Xu, X. (1997) Overview of American psychological journals. The Institute of Psychology at the Chinese Academy of Sciences, Beijing, China.
- Xu, X. (1997) Manuscript writing in physiological psychology. The Institute of Psychology at the Chinese Academy of Sciences, Beijing, China.
- Xu, X. (1997) Grant writing in physiological psychology. The Institute of Psychology at the Chinese Academy of Sciences, Beijing, China.
- Xu, X. (1996) NO, a neural mechanism of learning and memory? Psychology Departmental Roundtable, Grand Valley State University, Allendale, MI, USA.
- Xu, X. (1996) Women and the social sciences. Festival of Woman, Grand Valley State University, Allendale, MI, USA.

OTHER PRODUCTS

- Paschke, R., & Xu, X. (2002) Human Brain Anatomy: a videotape of dissection of human brain.
- Paschke, R., & Xu, X. (2000) Human Brain Anatomy: an interactive computer program on the anatomy of human brain.
- Paschke, R., & Xu, X. (1999) Sheepbrain dissection: a videotape.
- Paschke, R., & Xu, X. (1998) Sheepbrain Anatomy: Biopsychology Website, Grand Valley State University. <http://www.gvsu.edu/psych/>.

COMMITTEE EXPERIENCES

University faculty grievance panel
Institutional Animal Care and Use Committee (IACUC)

University Faculty salary and budget committee
University grievance committee
University general education subcommittee
University research and development committee
University judiciary committee
CLAS personnel committee
CLAS faculty council
Social Science divisional multicultural affairs committee
Psychology departmental curriculum committee
Psychology departmental recruitment committee
Psychology departmental lab committee
Psychology departmental convener for neuroscience teaching circle
Psychology departmental Graduate Outcomes Survey Task Force & Alumni Relations committee
Board member of Actor's Theater

UNPUBLISHED MANUSCRIPTS

Williams, K., Xu, X., & Capodilupo, J. (2002). Goldfish Brain GAP-43: Analysis by one and two-dimensional gel electrophoresis. Manuscript submitted to Brain Research Bulletin

Domino, E.F., & Xu, X. (1999). Effects of tobacco smoking on the topographic EEG III-comparison to sham smoking in nonsmokers. Manuscript submitted to Nicotine & Tobacco Research

WORKING IN PROGRESS

Xu, X (in progress). An automated T-maze to study both spatial learning and visual discrimination learning in zebrafish.