

YAO-YING MA, M.D., Ph.D.

EDUCATION

- 2001 –2006 Ph.D. Neurobiology, Peking University, Health Science Center
1996 –2001 M.D. Clinical Medicine, Shanxi Medical University

ACADEMIC POSITIONS/EMPLOYMENT HISTORY

- 2015 –Present Assistant Professor in Department of Psychology, Binghamton University at SUNY
2011 –2015 Postdoctoral research fellow in Dr. Yan Dong Lab, Department of Neuroscience, University of Pittsburgh (Lab moved from Washington State University)
2008 –2011 Postdoctoral research fellow in Dr. Christopher Evans Lab, Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles
2006 –2008 Research fellow in Dr. David Y-W Lee Lab, McLean Hospital, Harvard University

RESEARCH INTERESTS

My primary research interest is on the glutamate receptor-mediated neuroplasticity in the striatum in mental disorders, including substance abuse and neurodegenerative disease. Combining whole-cell patch clamp recordings and in vivo / in vitro chemogenetics / optogenetics on animal models, such as drug self-administration model in rats/mice and mouse models of Huntington's disease, the neuroadaptations of striatal medium-sized spiny neurons as well as striatal interneurons in mental disorders are explored in specific neural circuits at both cellular and synaptic levels.

GRANT SUPPORT

1. **Ma YY** (Principal Investigator). "Higher Risk of Drug Addiction Caused by Excitatory Synaptic Reorganization", Developmental exposure Alcohol Research Center (DEARC) Pilot project (grant number: 1134512), National Institutes of Alcohol Abuse and Alcoholism (NIAAA); Funding period: 09/01/2016 – 08/31/2018; Direct Costs: \$60,000 (awarded)
2. **Ma YY** (Principal Investigator). "High Risk of Drug Addiction after Prenatal Alcohol Exposure", NARSAD Young Investigator Grant from the Brain & Behavior Research Foundation (grant number: 24989); Funding period: 01/15/2017 – 1/14/2019; Direct Costs: \$70,000 (awarded)
3. **Ma YY** (Principal Investigator). "Role of Nucleus Accumbens and Calcium-Permeable AMPA Receptors in the Pathophysiology of Huntington's Disease", National Institute of Neurological Disorders and Stroke (NINDS); Funding period: 04/2017 – 03/2019; Direct Costs: \$275,000 (pending)

4. **Ma YY** (Principal Investigator). "Synaptic Adaptations Induced by Prenatal Alcohol Exposure", National Institutes of Alcohol Abuse and Alcoholism (NIAAA). Funding period: 04/2017 – 03/2022; Direct Costs: \$1,250,000 (pending)

PUBLICATIONS

Peer-reviewed papers

1. **Ma YY**, Wang X, Huang Y, Marie H, Nestler EJ, Schlüter OM, Dong Y. Re-silencing of silent synapses unmasks anti-relapse effects of environmental enrichment. *Proc Natl Acad Sci USA*, 2016, 113: 5089-94. [\[PDF\]](#)
2. **Ma YY**, Lee BR, Wang X, Guo C, Liu L, Cui R, Lan Y, Balcita-Pedicino JJ, Wolf ME, Sesack SR, Shaham Y, Schlüter OM, Huang YH, Dong Y. Bi-directional modulation of incubation of cocaine craving by silent synapse-based remodeling of prefrontal cortex to accumbens projections. *Neuron*, 2014, 83: 1-15. [\[PDF\]](#)
3. Lee BR, **Ma YY (Co-First Author)**, Huang YH, Wang X, Otaka M, Ishikawa M, Neumann PA, Graziane NM, Brown TE, Suska A, Guo C, Lobo MK, Sesack SR, Wolf ME, Nestler EJ, Shaham Y, Schlüter OM, Dong Y. Maturation of silent synapses in amygdala- accumbens projection contributes to incubation of cocaine craving. *Nat Neurosci*. 2013, 16: 1644-51. [\[PDF\]](#)
4. Chen B, **Ma YY (Co-First Author)**, Wang Y, Wang X, Schlüter OM, Dong Y, Huang YH. Cocaine-induced membrane adaptation in the central nucleus of amygdala. *Neuropsychopharmacology* 2013, 38:2240-8. [\[PDF\]](#)
5. **Ma YY**, Henley SM, Toll J, Jentsch JD, Evans CJ, Levine MS, Cepeda C. Drug-primed reinstatement of cocaine seeking in mice: increased excitability of medium-sized spiny neurons in the nucleus accumbens. *ASN Neuro* 2013, 5: 257-71. [\[PDF\]](#)
6. **Ma YY**, Cepeda C, Chatta P, Franklin L, Evans CJ, Levine MS. Regional and Cell Type-Specific Effects of DAMGO on Striatal D1 and D2 Dopamine Receptor-Expressing Medium-Sized Spiny Neurons. *ASN Neuro*. 2012, 4: 59-70. [\[PDF\]](#)
7. Ping X, **Ma YY (Co-First Author)**, Li Y, Qi C, Sun X, Lv X, Cui C. Essential role of protein kinase C in morphine-induced rewarding memory. *Neuropharmacology* 2012, 62: 959-66. [\[PDF\]](#)
8. **Ma YY**, Yu P, Guo CY, Cui CL. Effects of ifenprodil on morphine-induced conditioned place preference and spatial learning and memory in rats. *Neurochem Res*. 2011, 36: 383-91. [\[PDF\]](#)
9. Liang J, Ping XJ, Li YJ, **Ma YY**, Wu LZ, Han JS, Cui CL. Morphine-induced conditioned place preference in rats is inhibited by electroacupuncture at 2 Hz: role of enkephalin in the nucleus accumbens. *Neuropharmacology*. 2010, 58: 233-40. [\[PDF\]](#)
10. **Ma YY**, Meng L, Guo CY, Han JS, Lee DY, Cui CL. Dose- and time-dependent,

- context-induced elevation of dopamine and its metabolites in the nucleus accumbens of morphine-induced CPP rats. *Behav Brain Res.* 2009, 204: 192-9. [\[PDF\]](#)
11. Zhou Y, Li HL, Zhao R, Yang LT, Dong Y, Yue X, **Ma YY**, Wang Z, Chen J, Cui CL, Yu AC. Astrocytes express N-methyl-D-aspartate receptor subunits in development, ischemia and post-ischemia. *Neurochem Res.* 2010, 35: 2124-34. [\[PDF\]](#)
 12. **Ma YY**, Shi XD, Han JS, Cui CL. Peripheral electrical stimulation-induced suppression of morphine-induced CCP in rats: a role for dopamine in the nucleus accumbens. *Brain Res.* 2008, 1212: 63-70. [\[PDF\]](#)
 13. Overstreet DH, Cui CL, **Ma YY**, Guo CY, Han JS, Lukas SE, Lee DY. Electroacupuncture reduces voluntary alcohol intake in alcohol-preferring rats via an opiate-sensitive mechanism. *Neurochem Res.* 2008, 33: 2166-70. [\[PDF\]](#)
 14. **Ma YY**, Chu NN, Guo CY, Han JS, Cui CL. NR2B-containing NMDA receptor is required for morphine-but not stress-induced reinstatement. *Exp Neurol.* 2007, 203: 309-19. [\[PDF\]](#)
 15. **Ma YY**, Guo CY, Yu P, Lee DY, Han JS, Cui CL. The role of NR2B containing NMDA receptor in place preference conditioned with morphine and natural reinforcers in rats. *Exp Neurol.* 2006, 200: 343-55. [\[PDF\]](#)
 16. Ji D, Sui ZY, **Ma YY**, Luo F, Cui CL, Han JS. NMDA receptor in nucleus accumbens is implicated in morphine withdrawal in rats. *Neurochem Res.* 2004, 29: 2113-20.
 17. Shi XD, Wang GB, **Ma YY**, Ren W, Luo F, Cui CL, Han JS. Repeated peripheral electrical stimulations suppress both morphine-induced CPP and reinstatement of extinguished CPP in rats: accelerated expression of PPE and PPD mRNA in NAc implicated. *Brain Res Mol Brain Res.* 2004, 130: 124-33. [\[PDF\]](#)

Book Chapters and Reviews

18. **Ma YY**, Cui CL, Cepeda C. Novel Approaches to Studying Basal Ganglia and Related Neuropsychiatric Disorders Chapter 6: The Role of Striatal NMDA Receptors in Drug Addiction. *International Review of Neurobiology* 2009, 89: 131-146.
19. Marvizon JC, **Ma YY**, Charles AC, Walwyn W, Evans CJ. Chapter 5: Pharmacology of the Opioid System. *Pharmacology of Pain*, IASP Press 2010.
20. **Ma YY**, Cui CL. Drug addiction and structural plasticity in central nervous system. *Chinese Journal of Drug Dependence* 2006, 15: 416-421.

EDITORIAL BOARDS

CNS Neuroscience & Therapeutics, 2014-present

MEETING ABSTRACTS / POSTERS

1. **Ma YY**, Lee BR, Wand X, Guo C, Balcita-Pedicino JJ, Sesack SR, Shaham Y, Schlüter OM, Huang YH, Dong Y. Bi-directional modulation of incubation of

cocaine craving by silent synapse-based remodeling of prefrontal cortex to accumbens projections. Cell Symposia: Translational Neuroscience 2014, Arlington, VA, USA (Poster and abstract).

2. **Ma YY**, Lee BR, Wand X, Guo C, Liu L, Lan Y, Balcita-Pedicino JJ, Cui R, Sesack SR, Shaham Y, Schlüter OM, Huang YH, Dong Y. Bi-directional modulation of incubation of cocaine craving by silent synapse-based remodeling of prefrontal cortex to accumbens projections. Society for Neuroscience 2014, Washington D.C., USA (Poster and abstract).
3. **Ma YY**, Lee BR, Huang YH, Wang X, Otaka M, Ishikawa M, Neumann PA, Graziene N, Brown TB, Suska A, Lobo MK, Wolf ME, Nestler EJ, Shaham Y, Schlüter OM, Dong Y. Silent synapse-based reorganization in cocaine craving. Society for Neuroscience 2013, San Diego, CA, USA (Poster and abstract).
4. **Ma YY**, Henley SM, Toll J, Cepeda C, Maidment NT, Levine MS, and EVANS CJ. Increased spontaneous excitatory synaptic activity in the nucleus accumbens of cocaine self-administering but not yoked mice. Society for Neuroscience 2010, San Diego, CA, USA (Poster and abstract).
5. **Ma YY**, Wu NP, Cepeda C, Evans CJ, Levine MS. Regional and cell type specific effects of a μ -opioid receptor agonist on electrophysiology of identified D1 and D2 receptor-expressing medium-sized striatal neurons. Society for Neuroscience 2009, Chicago, IL, USA (Poster and abstract).
6. **MA YY**, Yu P, HAN JS, Cui CL. Comparison of effects of ifenprodil, an NR2B-containing NMDA receptor antagonist, with the non-selective NMDA receptor antagonist MK-801 on the spatial memory and cued learning in rats. Society for Neuroscience 2008, Washington D.C., USA (Poster and abstract).
7. **Ma YY**, Yu P, Han JS, Cui CL. Involvement of ifenprodil in the addiction memory vs. the spatial learning and memory in rats. The 2008 Annual Meeting of The College on Problems of Drug Dependence (oral presentation and abstract).
8. **Ma YY**, Guo CY, Cui CL, Han JS, Lee DY. Inhibitory Effects of Electroacupuncture on the reinstatement of cocaine-Induced conditioned place preference and involvement of opioid-receptors. The 10th meeting of the Society of Acupuncture Research Conference 2007, Baltimore, Maryland (abstract and poster).
9. **Ma YY**, Cui CL, Han JS. Morphine-induced CPP in rats: dose and temporal correlation with dopamine metabolism in nucleus accumbens. The 6th Biennial Meeting of the Asian-Pacific Society for Neurochemistry, Hong Kong. (Abstract and poster. Abstract was published in *Journal of Neurochemistry* 2004, 88 sup1, 34).
10. **Ma YY**, Shi XD, Cui CL, Han JS. Involvement of dopamine in the nucleus accumbens in the inhibitory effect of electroacupuncture on morphine-induced conditioned place preference. The 2004 proseminar in medicine progress Beijing, China (abstract and presentation).

11. **Ma YY**, Shi XD, Cui CL, Han JS. Inhibitory effect of ifenprodil on the maintenance of morphine-induced conditioned place preference. The 2004 proseminar in medicine progress Beijing, China (abstract and presentation).
12. **Ma YY**, Meng L, Yu P, Han JS, Cui CL. Effect of protein kinase C γ isoform in rat brain hippocampus on the expression of morphine-induced reinforcing effect. The 8th Meeting of Chinese Physiopsychology, Jun 15-19, Zhangjajie, China (abstract).
13. **Ma YY**, Yu P, Cui CL. The importance of NR2B containing NMDA receptor in morphine priming-induced reinstatement of morphine CPP. The 6th Meeting of Chinese Association of neuroscience, Oct 13-19, 2005, Chongqing, China (Oral report).

PROFESSIONAL ASSOCIATIONS

American Society for Neuroscience since 2008