

**CURRICULUM VITAE  
COLLEGE OF MEDICINE and LIFE SCIENCES  
THE UNIVERSITY OF TOLEDO (UT)**

**I. PERSONAL INFORMATION:**

Name: Xin Wang M.D., Ph.D.

**EDUCATION AND TRAINING:**

Medical Bachelor Degree (M.D. equivalent)  
Department of Clinical Medicine, Tianjin Medical University  
Tianjin, China, 1995

Master of Science  
Medical Science, Tianjin Medical University, Tianjin, China, 2000

Ph.D. Neuroscience, University of Toledo, Toledo, Ohio, 2005

**POSTGRADUATE MEDICAL EDUCATION (RESIDENCIES, FELLOWSHIPS):**

Residency

1995 - 2000 Tianjin Medical University General Hospital  
Tianjin, China  
Residency in Anesthesiology

**PRE AND POST-DOCTORAL FELLOWSHIPS:**

8/2000 - Department of Neurosciences  
12/2005 University of Toledo, Toledo, Ohio  
Pre-doctoral Fellow

2/2006 - Department of Neurosciences,  
11/2007 University of Toledo, Toledo, Ohio  
Postdoctoral Research Associate

6/2006 - Department of Physiology  
07/2007 Northwestern University Feinberg School of Medicine, Chicago, Illinois  
Collaborator

11/2007 - Department of Psychiatry,  
11/2009 University of Toledo, Toledo, Ohio  
Postdoctoral Fellow

11/2007 - Department of Psychiatry,  
07/2010 University of Michigan, Ann Arbor, Michigan

## Visiting Research Investigator

### **EMPLOYMENT:**

- 1995 - 2000      Tianjin Medical University General Hospital, Tianjin, China  
Department of Anesthesiology  
Anesthesiologist/Clinical Lecturer  
Full time, Salaried
- 2009 - 2015      University of Toledo, Toledo, Ohio  
Department of Psychiatry  
Assistant Professor  
Full time, Salaried
- 2010 - present    Department of Psychiatry  
University of Michigan, Ann Arbor, Michigan  
Adjunct Assistant Professor
- 2015 - 2017      University of Toledo, Toledo, Ohio  
Department of Psychiatry  
Associate Professor  
Full time, Salaried
- 2017 – 2019      Department of Veterans Affairs Ann Arbor Health System  
Department of Psychiatry, Ann Arbor, Michigan  
Scientist  
Worker without compensation (WOC)
- 2017 – 2019      Bowling Green State University  
Department of Psychology, Bowling Green, Ohio  
Adjunct faculty
- 2018 - 2020      University of Toledo, Toledo, Ohio  
Department of Psychiatry  
Associate Professor with tenure  
Full time, Salaried
- 2020 - present    University of Toledo, Toledo, Ohio  
Department of Psychiatry  
Professor with tenure  
Full time, Salaried

### **CERTIFICATIONS/LICENSURES:**

#### Certification

Medicine/Junior Professional Rank Certificate  
Tianjin Municipal Personnel Bureau, China  
Certificate No.: 064142, 1996

People's Republic of China Teacher's Qualification Certificate  
Tianjin Education Committee, China  
Certificate No.: 971210070013437, 1997

Anesthesiology/People's Republic of China Qualification Certificate of Physician  
Tianjin Public Health Bureau, China,  
Certificate No.: 199812110120101710811201, 1999

### **AWARDS AND COMMENDATIONS:**

International Travel Fellowship, The 12th World Congress of Anesthesiologists, Montreal, Québec, Canada, 2000

Young Investigator Travel Award, 22nd Annual Scientific Meeting of American Pain Society, Chicago, Illinois, 2003

Undergraduate Research Recognition Award, University of Toledo, 2012

Inter-Professional Student Research Award, University of Toledo, 2013

Provost's Office Support for Travel, University of Toledo, 2015

President's Award for Excellence in Grantsmanship, University of Toledo, 2019, 2021

## **II. SERVICE**

### **COMMITTEES. THE UNIVERSITY OF TOLEDO:**

#### University of Toledo Main Campus:

Undergraduate Research Advisory Committee, 2015 - present, COMLS Representative

#### College of Medicine and Life Sciences (COMLS):

Medical Student Research Committee, 2013 - present, Member

Research Advisory Council, 2020- present, member

MRC COVID-19 grant review committee, 2020, Member

Medical Student Selection, 2013 - 2017, Interviewer

Bioengineering BS/MD Student Selection, 2013, Interviewer

Annual Graduate Research Forum, 2015, judge

#### Department of Psychiatry:

Administrator Search Committee, 2011, 2012, 2020, Member

Faculty Search Committee, 2012, Member

Geriatric Unit Medical Director Search Committee, 2014, Member

Research Committee, 2012 - present, Member

Department of Radiology:

Clinical applications of functional MRI Technology Team, 2014-present, Team Leader

**REGIONAL, NATIONAL AND INTERNATIONAL PROFESSIONAL SOCIETIES:**

Society for Neurosciences, 2001 - present, Member

American Pain Society, 2003 - 2007, Member

Sigma Xi: the Scientific Research Society, 2005 - 2006, Member

Organization of Human Brain Mapping, 2012 - present, Member

Society of Biological Psychiatry, 2015 - present, Member

International Society for Traumatic Stress Studies, 2016 - present, Member

Member of the Membership Retention Subcommittee of Membership committee (2019)

Member of the Membership committee (2019-2021)

**PROFESSIONAL ACTIVITIES:**

2012 - present, Annual University of Toledo - Bowling Green State University - University of Michigan-Dearborn Annual Symposium on Research in Psychiatry, Psychology and Behavioral Science. Member of Organizational Committee, meeting preparation, and student poster presentations.

**COMMUNITY SERVICE AND ORGANIZATIONS:**

ProMedica Toledo Hospital Research Office, 2014, advising for NIH grant submission.

**III. EDUCATIONAL ACTIVITIES**

**TEACHING**

Physician Assistant (PA) Students:

Neuroscience 47 (Lab.), 2011: 45 students; 2013: 48 students; 4 hours annually, Laboratory instructor

Neuroscience ANAT 5000, Basal Ganglia lecture, 2012: 45 PA and Pathology graduate students; 2013: 48 PA and Pathology graduate students; 2014: 47 PA and Pathology graduate students; 2015: 47 PA and Pathology graduate students; 2016: 47 PA and Pathology graduate students; 2017: 45 PA students; 2018, 25 PA students; 2019: 25 PA

students; 2 hours annually, Lecturer

Medical Students:

Neuroscience UT ANAT 680 (Lab.), 2013: 75 students; 2014: 75 students; 12 hours annually, Laboratory instructor

Clinical Decision Making-I INDI 778, 2013: 12 students, 2 hours; 2014: 12 students, 24 hours; 2015: 10 students, 30 hours; 2016: 10 students; 2017: 10 students, 2 semesters, 30 hours per semester, Group discussion facilitator

Research in Biomedical Sciences INDI 726:021: PSCH750/PSCH751. 2013, 1 student; 2014: 1 student. 20 hours in 4 weeks. Co-Major Advisor. This new elective was developed as requested by 4th year medical students in 2013. I worked with Dr. Tamburrino on curriculum development for the medical student elective course: Research in Biomedical Sciences (PSCH750). I contributed to this course as a major advisor for lab research.

Neuroscience Research NERS701-002 CRN 32296. Major Advisor. 40 hours weekly in 4 weeks. Major advisor. 1 student. 2017 Andrew Cotton

Graduate Students:

Neuroscience NND 581/781, Plastic changes in the structure of human brain lecture, 2013: 3 Neurosciences and Neurological Disorders Ph.D. students, 1 hour. Lecturer

Psychiatry Residents:

General Psychiatry Didactics: Neurochemistry Lecture, 2011: 4 Child psychiatry fellows; 2013: 4 child psychiatry fellows and 1 rehab psychology fellow, 2016: 4 Child psychiatry fellows; 1 hour annually, Lecturer

General Psychiatry Didactics: Clinical research writing. 2013: 9 residents; 2014: 7 residents; 2016: 7 residents; 2017: 4 residents; 2018: 3 residents; 2 hours annually, Lecturer. I created this program designed to improve clinical research writing that is given to General Psychiatry and other residents.

General Psychiatry Didactics: Statistics, 2014: 7 residents, 5 hours, Lecturer

Undergraduate Students:

Honors Research BIOL 4910, The College of Natural Sciences and Mathematics. Major Advisor: data analysis, scholarly report and oral presentation. 3 hours weekly in fall and spring semesters. 2014: 1 student; 2019: 1 student.

INDI 4000-003 (CRN: 20585) Directed Research In Human Health Sciences, 2017: Spring semester, 1 student, 20 hours weekly, Instructor. Jemila Council: meta-analysis of cortical structural differences between PTSD patients and non-PTSD controls.

Grand Rounds:

MRI Research on Emotion Deficits of PTSD Patients, Psychiatry Grand Rounds, University

of Toledo, Toledo, OH, 2011.

Rapid dynamic changes in the adult human brain associated with improvement of mental health and academic performance; Neurosciences Grand Rounds, Department of Neurosciences, University of Toledo, Toledo, OH, 2012.

Dynamic Brain Changes Following a Motor Vehicle Collision: A Paradigm for the Study of Neurophysiological Adaptations to Traumatic Stress; Psychiatry Grand Rounds, University of Toledo, Toledo, OH, 2014.

Early and Progressive Brain Alterations Contribute to PTSD Development. Psychiatry Grand Rounds, University of Toledo, Toledo, OH, 2015.

Clinical and Research Application of Transcranial Magnetic Stimulation. Psychiatry Grand Rounds, University of Toledo, Toledo, OH, 2018.

## **MENTORING**

### Visiting Scholars:

1. 2014: Xuezhong Huang MD (Psychiatrist from North Sichuan Medical College) (10 hours in 2 months). Introduction to UT psychiatric research programs and neuroimaging research of psychiatric disorders.

### Residents and Medical Graduates:

1. 2012: Residency Program Applicants as Research Volunteers. Major Advisor, 1 trainee: Satwant Singh (2 hours weekly for 3 months). Training on neuroimaging research and behavioral data analysis
2. 2013-present: Tutoring for Resident Research. Total 12 trainees. Major Advisor. 2012: Joseph Migliori (Radiology resident, IRB application, data presentation, 4 hours); 2013: Chandani M. Lewis (Psychiatric resident, 20 hours in 3 months on data analysis); 2014: Michael Lee (Rehabilitation resident, 2 hours on IRB application [IRB# 200235: PI Dr. Wuescher] and experimental design); 2014: Olga Zhalkovska (Psychiatric resident, 20 hours in three months on data presentation); 2015: Mohamad Bazerbashi (Radiology resident, imaging analysis); 2018: Psychiatry resident research project: Iminder Kaur Saran, Shazia Jamal Naqvi, Dionis Kononov, Meghana Rao Medavaram, Bradley Dane Brown(10 hours), Susan Akapo (Emergency Medicine, 40 hours), Omar Ashour (radiology, 10 hours)
3. 2013 – present: ProMedica Trauma Research Internship. Total 8 trainees. Major Advisor on subject recruitment, data analysis and result presentation. 2012: Leelasri Vanguru (4 hours), Udita Bhavsar (40 hours); Nathaniel Sellers (40 hours), Parisa Eskandari (2 hours), Khaldoon Alfayad (20 hours), 2017: John Bazydlo (10 hours), 2017 – 2020: Gabriel Naimy (20 hours), 2018-2020: Alexander Vollmar (10 hours)
  - a. Leelasri Vanguru gave an oral presentation at the 2013 ProMedica Trauma/Jobst Vascular research symposium.
  - b. Udita Bhavsar and Khaldoon Alfayad gave an oral presentation at the 2014

ProMedica Trauma/Jobst Vascular research symposium.

- c. Gabriel Naimy was a co-author on a presentation at the 2019

Postdoctoral Fellows:

1. 2013: Psychology postdoctoral fellows. 2 trainees: Elizabeth Duval (3 hours monthly for 6 months on data analysis in FSL, Major Advisor: Israel Liberzon, Department of Psychiatry, University of Michigan); Michelle C. Hudson (2 hour weekly for 2 months on data analysis of post-concussion symptoms, Major Advisor: Mary E. Haines, Rehab Psychology Services, University of Toledo).
2. 2018: NIH Diversity Supplement for Postdoctoral fellowship: Major Advisor. Elizabeth Rodriguez PhD. Current position: faculty at Morgan State University
3. 2019 – present: Postdoctoral Fellows. 2 trainees: Chia-Hao (James) Shih, PhD; Andrew Cotton, MD, Major Advisor (10 hours weekly each)

Graduate Students:

1. 2010 – 2013: Advisory Committee Member: Andrew S. Cotton (Major Advisor: Michael Dennis), degree awarded: Master of Medical Physics, current position: Senior Research Associate, University of Toledo
2. 2016 – 2018: Advisory Committee Member: James Montgomery (Major Advisor: Hassan HassabElnaby), degree pursuing: PhD of Accounting, current position: tenure-track Assistant Professor, Troy University
3. 2016 – 2018: Advisory Committee Member: Josh Ricker, Ph.D. in Psychology (Major Advisor: Howard Cromwell), current position: Instructor of Psychology, Wright State University Lake Campus, Celina, OH.
4. 2017 – 2019: Advisory Committee Member and Major Advisor: Nicole Harless, degree pursuing: MD/PhD of Neurosciences, deceased in 2019, University of Toledo.
5. 2017 – present: Advisory Committee Member: Brian O’Leary (Major Advisor: Kevin Xu), degree: Master of Computer Science, current position: Specialist, University of Toledo.
6. 2018 – 2020 Advisory Committee Member: Xin Lv (Major Advisor: Jon E Elhai), degree: PhD of Clinical Psychology, current position
7. 2019 – present: Advisory Committee Member: Courtney Forbe (Major Advisor: Matthew Tull), degree pursuing: PhD of Clinical Psychology, current position: PhD candidate, University of Toledo.

Internship, Research/scholarly Project of Graduate Students Mentoring:

1. 2010 – 2015: Master of Science Biomedical Science Program, University of Toledo. (Spring and summer semesters) Degree awarded: Master of Medical Science.

Major Advisor on lab research, writing a scholarly report, and an oral presentation. 12 students: 2012: Maisa Alafyouni, Seyed Sahand Banisadr, Carol A. Angel; 2013: Andrew Cotton; 2014: Avis Randle; 2015: Juhi Rattan; 2020: Aaron Grau, Puja G. Patel. Co-major Advisor, Austin Kosier (2010), Robert Roether (2010), Sameep S. Dhillon (2011), John Luckoski (2012)

2. 2017: Master of Science Biomedical Science Program, Boston University. (Fall and Spring semesters) Degree awarded: Master of Medical Science. Major Advisor on lab research, writing a scholarly report, and an oral presentation. 1 student, 2017: Maciej Walkosz

3. 2010 – present: Graduate Student Research Assistants. Major Advisor on subject recruitment, symptomatic data collection from acute traumatic patients. Total 12 students: Master student: Ahmed S Al-Khudhair (2013, 20 hours); PhD students: Tracey Biehn (2010-2013, 80 hours), Ateka Contractor (2010-2014, 80 hours), Tory A. Durham (2013-2015, 80 hours), Brianna Byllesby (2014, 5 hours), Meredith Claycomb (2014-2017, 80 hours), Xin Lv (2017, 40 hours), Nicole Christ (2017-present, 80 hours), Abigail Dempsey (2018-present, 5 hours), Courtney Forbes (2019, 5 hours), Emily Rooney(2019-2021, 5 hours), Anna C. Barbano (2019-2021, 5 hours),

4. 2011 – 2012: Medical School Applicants as Research Volunteers. Major Advisor for clinical and behavioral data analysis. Total 3 students: Dara Dabiri (2011, 40 hours in 3 months), Delaney Banas (2011, 40 hours in 6 months), Robert S. D. Morgan (2012, 50 hours in 6 months).

5. 2014-2015: Physician Assistant Program PHYA 6630/6620, University of Toledo. (Two semesters). Major Advisor for data analysis, preparation of publications, writing scholarly report, and an oral presentation. 1 student, Aaron Shaw

6. 2016-present: PhD student rotation, 5 hours per week in a 2 months rotation, University of Toledo. Total 4 trainees. 2016: Vipul Shukla; 2018: Scott Miruzzi; 2018: Justin Creeden.

7. 2017: Internship of Master of Public Health Program, University of Toledo. (80 hours in two semesters). Advisor for clinical research training. Total 2 students, Rachel Hoecherl, Jake Severson.

#### Research/scholarly Project of Medical Students Mentoring:

1. 2011 – present: Medical Student Summer Research Program, University of Toledo. 10 weeks in summer semester. Major Advisor (co-advisor: Marijo Tamburrino) on human subject recruitment, data collection and analysis, oral presentation, poster or oral presentations in conferences, and journal publications. 26 students: 2011: Alexander D. Dzurik, Alex B. Blair; 2012: Bryan Lubomirsky, Christine Sutu, Kristopher M. Carbone; 2013: Kevin D Stromberg, Laura Prince, Vikram Ramanujam, Elizabeth F Olds; 2014: Russell F. Palm, Rachel L. Parker, Michael C Jang, Jenifer L Drue; 2015: Andrew Cotton, Parth Patel, Kenny Law, Joseph Riffe; 2016: Neal L. Swartz; 2017: Katherine Chen, Talha Saif; 2018: Christine Lu, Mitchell McDaniel; 2019: Jenny Chen, Palguna Thalla; 2020: Adrian Xu, Brandon Yonel; 2021: David Liu, Soyoun Cheon



- a. Bryan Lubomirsky published an article as the first author on a peer-reviewed journal
  - b. Bryan Lubomirsky won a Second Prize in the 2013 Stanley M. Kaplan Essay Contest (\$250), University of Cincinnati.
  - c. Bryan Lubomirsky was reported by Tower Views, University of Toledo, 2013.
  - d. Bryan Lubomirsky won 2014 Ohio Psychiatric Physicians Foundation Research Awards: Honorable Mention in the OPPA Annual Psychiatric Update (03/16/2014) and in future OPPF publications.
  - e. Bryan Lubomirsky was reported in News “Medical student’s paper on post-traumatic stress disorder recognized nationally”. UT News University of Toledo (01/31/2014).
  - f. Alex B. Blair published an article as a co-first author in a peer-reviewed journal
  - g. Alex B. Blair and Alexander D. Dzurik gave an oral presentation at the 16th Annual SAEM MidAtlantic Regional Research Forum, Georgetown University School of Medicine, Washington DC, 2013.
  - h. Elizabeth F. Olds attended the 167th Annual Meeting of the American Psychiatric Association to present a poster as the first author in 2013.
  - e. Andrew C. Cotton won the first Dr. Charles Balch Medical Student award, (\$2,500) in 2016
  - f. Katharine Chen published an abstract on American Medical student Association Meeting in 2017
  - g. Mitchell McDaniel will attend 2019 Society for Neuroscience Annual Meeting to present a poster as the first author
  - h. Jenny Chen presented a poster on American Medical student Association Meeting in 2019
  - i. Palguna Thalla presented a poster on ISTSS Meeting in 2019
2. 2010 – 2019: Medical Student Research Assistant. Major Advisor on IRB training and human subject recruitment in the Emergency Department. 8 students: 2010: Dennis Kountouris (10 hours); 2012: Joseph Chen (20 hours); 2013: Benjamin D. Duncan (60 hours on data analysis and a poster presentation in a conference); 2017: Connor D Parsell (20 hours), Zayd Ghassan Safadi (20 hours); 2018: Joseph Duff (5 hours), Josef Pontasch (5 hours); 2019: David Miller (20 hours)
- a. Benjamin D. Duncan attended 2014 Society for Neuroscience Annual Meeting to present a poster as the first author
3. 2014: Global Health Program. 5 hours in 2 weeks. Major Advisor. 1 student: Runci Wang (West China Hospital/Sichuan University, School of Medicine in Chengdu China)

Research/scholarly Project of Undergraduate Students Mentoring:

1. 2011 – 2013: Biomedical Research Summer Undergraduate Research Fellowship (SURF). 10 weeks in summer semester. Co-Advisor on data analysis and oral presentation. 2 students: Jennifer Haupricht (2011), Anjali Naik (2013)
2. 2012: University of Toledo Sullivan Honors Fellowship. Spring semester. Co-major Advisor on data analysis, writing scholarly report. 1 student: Jennifer Haupricht.

3. 2011- 2012: National Science Foundation Research Experiences for Undergraduates in Physics and Astronomy NSF-REU Grant. 10 weeks in summer semester. Co-major Advisor (Major Advisor: Michael Dennis) on data analysis and oral presentation. 2 students: Jacob Buenger (2011), Kathleen Connolly (2012)
  
4. 2013 – 2014: Doctor of Pharmacy Program Student Assistant, College of Pharmacy, University of Toledo. Major Advisor on IRB training and data analysis. 2 students: Maureen P. Converse (2013, 10 hours), Yasmine Zakaria Ayoub (2014, 4 hours weekly in fall semester)
  
5. 2013 – present: Undergraduate Student Research Assistants. Major Advisor on database development and literature review. 9 students: 2013: Ryan M Dughayli (40 hour), Danielle Kwiatkowski (5 hours); 2016: Alexandra Rose Schmidt (10 hours); 2017: Kylee Smith (5 hours), 2018: Andrew Ding (10 hours weekly), Jacob Radabaugh (10 hours weekly), Aaron S. Grau (5 hours weekly); 2019: Nadin Radwan Mohamed (5 hours); 2019-2020: Elizabeth Marie Gibson (5 hours weekly).
  
6. 2013-present: Baccalaureate/MD Program Student Assistants. Major Advisor on subject recruitment, data organization. Total 14 students: Shazli Khan (2013, 5 hours weekly in two semesters), Amy C. Custer (2013-2014, 5 hours weekly in three semesters), Palguna Thalla (2016-2018, 10 hours weekly), Caroline Kraft (2016-2017, 3 hours weekly), Christina Poduska (2016, 40 hours), Sood, Ambika (2017-2018, 3 hours weekly), Brynn Skilliter (2017-2018, 3 hours weekly), Shailen Shah (2017-2018, 2 hours weekly), Huriyyah Aslam Chaudhry (2019, 3 hours weekly), Adil Syed Hasan (2019, 3 hours weekly), Jerrin George (2019, 20 hours). Sai Bhargav Ganga Vuppala (2019-2020, 3 hours weekly), Rupesh Vn Boddapati (2019-2020, 3 hours weekly), Jeremey Mathews (2018-2020, 3 hours weekly)

Research volunteer Mentoring:

2017- present: University of Toledo Medical Center Volunteer Service Program. Major advisor on research data collection and analysis. Total 6 trainees. Alexandra Rias, MPH (2017, 40 hours), Marwan Li (2017, high school student, 40 hours), Lorianna Joos MS (2018, 20 hours), Emily Michelle Marzari (2019, 5 hours), Olga Raevskaya MD, PhD (2019, 20 hours), Jyothika Yermal (2019, 5 hours).

**IV. SCHOLARSHIP**

**EDITORIAL BOARDS**

Translation: The University of Toledo Journal of Medical Sciences, 2013-present.

**JOURNAL PEER REVIEW**

Journal of Clinical Anesthesia, 2008 (1 manuscript)

Anxiety, Stress, & Coping, 2013 (1 manuscript)

Journal of Affective Disorders, 2014 (1 manuscript)

Organization of Human Brain Mapping Annual Meeting Abstract Reviewer, 2014 (24 abstracts) and 2015 (12 abstracts)

PLOS ONE, 2015 (2 manuscript)

Schizophrenia Research, reviewer 2019 (1 manuscript)

Biological Psychiatry: Cognitive Neuroscience and Neuroimaging (CNNI), Reviewer, 2019 (1 manuscript)

Psychiatry Research: Neuroimaging, reviewer 2019 (1 manuscript)

Neuropsychopharmacology, reviewer, 2020 (3 manuscripts)

NeuroImage, reviewer, 2020 (1 manuscript)

Translational Psychiatry, reviewer, 2021 (1 manuscript)

### **STUDY SECTIONS, REVIEW PANELS:**

Alliance for Human Effectiveness and Advancement (AHEAD), Biomarker Workgroup, Dayton, Ohio. Member, 12/12/2012. Workgroup reviewed research capabilities of biomarkers development at Midwestern institutions for collaborations with Air Force Research Laboratories.

Alliance for Human Effectiveness and Advancement (AHEAD), Neurosciences Workgroup, Dayton, Ohio. Member, 1/15/2013. Workgroup reviewed neuroscience research at Midwestern institutions for collaborations with Air Force Research Laboratories.

Alliance for Human Effectiveness and Advancement (AHEAD), Neurosciences 5 Year Planning Meeting, Dayton, Ohio, Representative of UT in the panel discussion, 4/8-10/2013. The panel reviewed neuroscience research at Midwestern institutions and developed a plan for increasing collaborations with Air Force Research Laboratories.

2016 Ohio National Guard Study scientific advisory committee meeting. Discussion of study progress and future analyses for this longitudinal study on mental health of five thousand Ohio Army Reserve National Guard members for ten years, before and after they were deployed to Afghanistan or Iraq during OIF/OEF.

### **INVITED LECTURES, SEMINARS, SYMPOSIA, VISITING PROFESSORSHIPS:**

Influences of peripheral, cortical and intrinsic inhibitory inputs on receptive fields of dorsal

column nuclei neurons; Department of Psychology, Vanderbilt University, Nashville, Tennessee, 2006.

Longitudinal MRI study of PTSD development within weeks after trauma; PanLab meeting, Department of Psychiatry, University of Michigan, Ann Arbor, MI, 2011.

Progressive brain changes from initial days to 12 weeks after motor vehicle accident; PanLab meeting, Department of Psychiatry, University of Michigan, Ann Arbor, MI, 2012.

Rapid dynamic changes in the adult human brain associated with improvement of mental health and academic performance; Neurosciences Workgroup, Alliance for Human Effectiveness and Advancement (AHEAD), Dayton, OH, 2013.

Cortical structural analysis. Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) - Psychiatric Genomics Consortium (PGC) - PTSD Group Teleconference, 2016.

Early brain, symptom, and social measures associated with PTSD development after motor vehicle collision. Seminar. Department of Biology, University of Toledo, March 2018

Mega-analysis of cortical volume differences between PTSD patients and non-PTSD controls. Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) - Psychiatric Genomics Consortium (PGC) - PTSD Group Teleconference, 2019.

Early brain, symptom, and social measures associated with PTSD development after motor vehicle collision. Seminar. Department of Psychology, Bowling Green State University, March 2019

Vertex-based analysis methods. The Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) Consortium All-Hands Meeting at SOBP 2019. Clinical Working Group Updates pt II & Methods Used Across Working Groups. Chicago IL. 2019

Vertex-based analysis methods. The Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) Consortium All-Hands Chairs Meeting. Rome Italy. 2019

ENIGMA Brain Injury Group Brain Structural Analyses. Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) – Military Brain Injury Subgroup Teleconference, 2019.

Machine learning using Vertex-Based Data. The Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) Consortium All-Hands Chairs Meeting. Virtual Meeting. 2020

ENIGMA Brain Injury Group Brain Structural Analyses. Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) – Military Brain Injury Subgroup Teleconference, 2021.

### **CONSULTATIVE ACTIVITIES:**

The U-M Center for Computational Medicine and Bioinformatics (CCMB) Pilot Award, University of Michigan; Testing Models of Risk for PTSD: Gene x Environment Interaction in Emotional Neurocircuitry. PI: Anthony King PhD, Psychiatry, UM; Role: Consultant, 2008 - 2010.

*This study investigated brain functional and structural abnormalities in veterans who were diagnosed with PTSD, and explored the relationship between brain abnormalities and their genetic profiles. I analyzed brain structural data.*

National Center on Minority Health and Health Disparities 1RC2MD004767; Childhood Poverty and Brain Development: the Role of Chronic Stress and Parenting. PIs: Gray W. Evans PhD (Cornell University), Israel Liberzon MD and James Swain MD PhD (University of Michigan); Role: Consultant, 2009 - 2011.

*This study investigated brain functional and structural differences between young adults who grew up in low- and average-income families, and then explored the relationship between brain differences and their socioeconomic history. I contributed to the development and analysis of brain structural MRI study for this project.*

Adolescent Neuromaturation and Alcohol Trajectories. PI: Duncan B. Clark MD, PhD, Psychiatry, University of Pittsburgh; Role: Consultant, 2010.

*A grant proposal to use functional and structural MRI approaches to examine longitudinal effects of alcohol on brain development. I contributed to the study design of integrating analysis of functional and structural MRI data.*

Neurobehavioral Evaluation of the Recovery and Retention of Prehension Use of NMES Neuroprosthesis Following Stroke. PI: Chapman Rice, PhD, Occupational Therapy, UT; Role: Consultant, 2011 - 2012.

*This grant proposal was to explore using fMRI approaches to evaluate the therapeutic effects of a new device on stroke patients. I contributed to the study design and grant proposal development.*

Michigan Institute for Clinical and Health Research (MICH-R) Pilot Grant Award: Early Postpartum Maternal Neural Adaptations. PI: James Swain, MD PhD, Psychiatry, UM; Role: Consultant, 2011 – 2016.

*Examined brain functional and structural changes in the early postpartum period and associations with mental disorders. I contributed to structural data analysis and grant proposal development.*

University of Michigan; Emotional Regulation and Fear Conditioning in Mild Traumatic Brain Injury. PI: Israel Liberzon MD; Psychiatry, UM; Role: Consultant, 9/2012 – 8/2018.

*This study investigates brain functional and structural differences between traffic accident survivors who are and aren't diagnosed with mild traumatic brain injury (mTBI), and then explores the relationship between brain differences and their post-traumatic stress symptoms. I contributed to the development of study design.*

Longitudinal Impact of a Mindfulness Intervention on Teacher Professional Development. PI: Revathy Kumar, Department of Educational Foundations and Leadership, UT; Role: Consultant, 2014.

*This grant proposal was to explore using fMRI approaches to evaluate the effects of Mindfulness Intervention on teacher brain activation of emotion regulation, and association with their Attitudes, Classroom Climate, and Student Outcomes. I contributed to development of study design and grant proposal development.*

Diffusion Tensor Imaging Study of the Progression and Disease Pathogenesis of Inherited Leukodystrophies. PI: Jeremy J. Laukka PhD, Neurosciences, UT; Role: Consultant, 04/2014.

*This study examined the white matter structure of leukodystrophies patients using diffusion imaging techniques. I contributed my expertise on diffusion imaging analysis to the data analysis.*

Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) - Psychiatric Genomics Consortium (PGC) - PTSD Group. Chairs: Karestan Koenen, Israel Liberzon, Kerry Ressler. 2016 – Present.

*The group includes 81 investigators from 46 institutions representing 7 countries. I am working with the Imaging Genetics subgroup (Chairs: Rajendra Morey and Mark Logue). I am leading a meta-analysis of cortical structural differences between PTSD and non-PTSD subjects.*

DOD W81XWH-BAA10-1 Randomized controlled trial of sertraline, prolonged exposure therapy and their combination in OEF/OIF with PTSD. PI: Sheila Rauch, Emory University, Role: Consultant, 2017 – 2019.

*This study is to directly compare Prolonged Exposure (PE), sertraline, and their combination for the treatment of PTSD in OEF/OIF populations. I contribute my expertise to lead the brain structural imaging data analysis.*

Enhancing Neuro Imaging Genetics Through Meta Analysis (ENIGMA) – Brain Injury Working Group. Chairs: Emily L. Diamond, Elisabeth Wilde , and David Tate. 2019 – Present.

*The group includes 125 researchers in 65 institutions from 12 countries. I am leading the brain structural analysis project.*

### **MAJOR RESEARCH INTERESTS:**

1. Development of post-traumatic psychiatric and neurological disorders, particularly PTSD and pain
2. Application of neuroplasticity concept to study the mechanisms of psychiatric and neurological disorders
3. Using functional and structural neuroimaging techniques to study human brain abnormalities underlying post-traumatic disorders and neurological disorders
4. The links between pre-traumatic factors (e.g., risky genotypes) and development of

post-traumatic disorders

5. Application of functional neuroimaging techniques to study human brain responses to stress conditions.

### **PAST RESEARCH SUPPORT, TRAINING GRANTS:**

1. MRI of human cortex after limb loss  
Grantor: Translational Research Stimulation Award (TRSA), University of Toledo, Toledo, Ohio, 2008-2009.  
Amount: \$40,000  
PI: John T. Wall, Department of Neuroscience, University of Toledo  
Role: Co-Investigator

*This project used MRI in humans to get preliminary data on whether limb amputation and related pain leads to changes in cortical thickness. I contributed to experimental design, data collection and analysis.*

2. Research Fellowship of Ohio Army National Guard Mental Health Initiative - Risk and Resilience Factors for Combat-Related Posttraumatic Psychopathology and Post-Combat Adjustment, 2007-2009.  
Grantor: Department of Defense Congressionally-Directed Medical Research Program: W81XHW- 07-1-0409  
Amount: \$50,000 / year  
PIs: Joseph Calabrese, Department of Psychiatry, Case West Reserve University  
Marijo Tamburrino, Department of Psychiatry, University of Toledo  
Role: Postdoctoral Fellow

*The fellowship provided support for me to be trained in fMRI study of PTSD in Dr. Liberzon's laboratory at the University of Michigan. I subsequently led the neuroimaging project of this DoD funded study after training.*

3. A preliminary neuroimaging study of the development of PTSD following a motor vehicle accident, 11/2009-05/2018.  
Grantor: Start-Up Funding, University of Toledo  
Amount: \$200,000  
Role: PI

*This study develops the experimental design and MRI techniques to study changes in neural responses to emotional stimuli and brain structure changes from acute to chronic post-accident periods.*

4. The neural activity underlying persistent fear responding in Post Traumatic Stress Disorder, 2010-2011.  
Grantor: Michigan Institute for Clinical and Health Research (MICH-R) Pilot Grant of University of Michigan, UL1RR024986  
Amount: \$49,981  
PI: Sarah N. Garfinkel, Department of Psychiatry, University of Michigan  
Role: Co-Principal Investigator

*This project investigated the neural activity associated with fear conditioning in veterans with or without PTSD.*

5. Development of MRI Research, 2011

Grantor: University of Toledo Foundation: William Bauer fMRI Research Fund, Grant NO: 2401957

Amount: \$55,000 (total)

Role: Recipient

*This donation supports Dr. Wang's MRI research.*

6. Response of neurotrophic factors and cerebral imaging to current exercise recommendations, 2011-2013.

Grantor: Interdisciplinary Research Initiation Award

Amount: \$75,000

PIs: Barry W. Scheuermann, Department of Kinesiology, University of Toledo

David L. Weldy, Department of Family Medicine, University of Toledo

Role: Co-Investigator

*This study explored the neurobiological mechanisms of exercise to improve learning using neuroimaging and neuro-endocrine analyses. I designed, conducted and analyzed neuroimaging components of the study, and explored the relationship between brain changes and physiological or cognitive changes after exercise.*

7. A preliminary neuroimaging study of the development of PTSD following a motor vehicle accident, 11/2011-11/2015.

Grantor: Translational Research Stimulation Award (TRSA), Grant NO: N-122930-01, ProMedica Health System

Amount: \$25,000

Role: PI

*This study developed collaborations to extend the preliminary study of development of PTSD after traffic accidents from the University of Toledo Medical Center to the Emergency Departments of ProMedica Health System.*

8. Longitudinal MRI study of PTSD development from days to weeks after trauma, 04/2013-03/2016.

Grantor: NIMH: 1 R21 MH098198-01A1

Amount: \$425,294

Role: PI

*This study explored brain mechanisms for posttraumatic development of PTSD. The study compared progressive changes in brain functional and structural changes over the initial three months of post-accident periods in PTSD and non-PTSD survivors to explore development of PTSD after traffic accidents.*

9. Neuroimaging and Genetic Investigation of Resilience and Vulnerability to PTSD, 05/2013-05/2016.

Grantor: Translational Research Stimulation Award (TRSA), ProMedica Health System

Amount: \$25,000



PI: Marijo Tamburrino, Department of Psychiatry, University of Toledo  
Role: Co-Investigator

*This study explored convergent effects of risky genetic profiles and childhood abuse experiences on brain function and structure in adulthood PTSD after military deployment in Ohio National Guard soldiers. I contributed to experimental design, data collection and analysis.*

10. The impact of managers' supervisory style on the relation between debt covenants and earnings management: a neuroscience imaging approach, 06/2014-12/2016.

Grantor: The United Arab of Emirates University

Amount: \$55,000

PIs: Hassan HassabElnaby, Department of Accounting, UT; Haitham Elsamaloty, Department of Radiology; and Xin Wang

*This international collaboration (US-United Arab of Emirates) utilized MRI to understand the behavior of managers in different debt covenant violation situations, and its relation to supervisory styles.*

11. Evaluation of spinal cord stimulators in patients with paralysis post spinal cord injury.

Grantor: the Bryon Riesch Paralysis Foundation

Amount: \$21,075

Budget period: 01/2015 – 12/2017

PIs: Daniel Gaudin, UT neurosurgery

Role: Co-Investigator

*This clinical trial combines clinical and brain imaging approaches to evaluate effects of spinal cord stimulation on treating paralysis after spinal cord injury. I contribute my expertise in the area of structural and functional MRI studies of brain changes to the study design. I have been involved with this research from its initial design through the protocol writing, internal review board submission, and funding application processes.*

12. Pathophysiological mechanisms and functional consequences of early cortical thickness changes after mTBI, 3/2016

Grantor: UT Foundation Dick Bostleman Memorial Endowment Fund

Amount: \$4077

Role: PI

13. Concussions, Cognition and Collegiate Athletics. 11/2016-6/2018

Grantor: Bowling Green State University

Amount: \$10,000

PI: Howard Casey Cromwell

Role: UT Site PI

*This pilot study develops the experimental design and MRI techniques to study changes in neural responses to continuous attention task and emotional stimuli in concussed athletes. Advanced imaging techniques are used to explore the brain structural and vascular changes underlying activation changes after concussion. My role is to design MRI experiments, supervise MRI data collection and analysis, and presentation of*

*findings.*

14. Research Supplements to Promote Diversity in Health-Related Research.

08/2018

Grantor: NIH 3R01MH110483 - 03S1

Amount: \$143,447 (direct)

PI: Xin Wang, Candidate: Elizabeth Rodriguez

Role: PI, Mentor

*This diversity supplement will support postdoctoral training of Elizabeth Rodriguez PhD, a neuroscientist from an underrepresented racial and ethnic group in health-related sciences, to transition from animal research to human clinical neuroimaging research in PTSD.*

15. Neurobehavioral Moderators of Post-traumatic Disease Trajectories: Prospective MRI Study of Recent Trauma Survivors, 06/2014-04/2020 (no cost extension).

Grantor: NIMH 5R01MH103287

Amount: \$3,377,662 (total); UT subcontract budget: \$29,825

PI: Arie Shalev, Department of Psychiatry, New York University

Role: Co-investigator, UT Site-Principal Investigator

*This international collaboration (US-Israel) examines progressive changes in psychological conditions, brain function and structure during the initial year after traumatic experiences to examine neuroplasticity mechanisms of development of PTSD. This study is an extension of my research on the changes in the initial post-accident months in a large population. I contributed to the study designs of functional and structural MRI experiments of this proposal based on the preliminary results of my on-going project. The data collection and analyses are done at UT and I supervise the analysis of structural MRI data (one of three specific aims).*

**CURRENT RESEARCH SUPPORT:**

1. Study of early brain alterations that predict development of chronic PTSD

09/23/2016-06/30/2022 (no-cost extension)

Grantor: NIMH R01MH110483

Amount: \$2,478,968 (direct)

PI: Xin Wang (Early Stage Investigator, New Investigator)

Role: PI

*Based on findings of my R21 grant of acute PTSD, this proposal aims to identify early and progressive brain changes that contribute to, and that can be used to predict, chronic PTSD diagnosed at a year after trauma. It was ranked at 4th percentile by a NIH Study Section.*

2. Administrative Supplements COVID costs.

04/28/2021 –06/30/2021

Grantor: NIH 3R01MH110483-05S1

Amount: \$190,088 (direct)

PI: Xin Wang,

Role: PI

3. CO<sub>2</sub> inhalation enhances the lability of fear memory. 04/2018-12/2022

Grantor: R01MH113986

Amount: \$1,000,000 (direct)

PI: Jianyang Du

Role: Co-Investigator

*This study is to test if activation of ASICs by CO<sub>2</sub> inhalation-induced acidosis within a reconsolidation window enhances the lability of fear memory. I will contribute my expertise in basic science and clinical research to the experimental design, preparation and publication of findings. I will also contribute to future development of a translational study based on the outcomes of the proposed work.*

#### **SUBMITTED GRANT APPLICATION:**

1. Using pre-pandemic baseline data in people with and without PTSD to study effects of the COVID-19 pandemic on brain emotion neurocircuits and mental health

Grantor: R21MH126172

Amount: \$275,000 (direct)

PI: Xin Wang

Role: Principle-Investigator

Submitted in June 2020

#### **UNFUNDED RESEARCH SUPPORT, TRAINING GRANTS:**

1. Functional Network Properties in Suicidal Brain.

1F32MH125554-01

Applicant: Chia-Hao Shih,

Role: Major Advisor

submission in 04/2020. Not discussed.

#### **PUBLICATIONS**

##### **Articles published in peer-reviewed journals**

1. **Wang X**, Wang G. Application of propofol anesthesia in the operation of renal insufficiency patients. Journal of Anesthesia and Relative Clinical Medicine. 4(1):27-8 (in Chinese); 1996.
2. Wang G, Xie H, **Wang X**, Yu Y. Reptilase enhances coagulation during anesthesia. Chinese Pharmacy. 8 (supplement):144-5 (in Chinese); 1997.
3. Wall JT, Xu J, **Wang X**. Human brain plasticity: an emerging view of the multiple substrates and mechanisms that cause cortical changes and related sensory dysfunctions after injuries of sensory inputs from the body. Brain Research Reviews. 39(2-3):181-215; 2002.
4. Xie H, **Wang X**, Liu G, Wang GL. Analgesic effects and pharmacokinetics of a low dose of ketamine preoperatively administered epidurally or intravenously. Clinical

Journal of Pain. 19(5):317-22; 2003.

5. **Wang X**, Wall JT. Cortical influences on sizes and rapid plasticity of tactile receptive fields in the dorsal column nuclei. *Journal of Comparative Neurology*. 489(2):241-8; 2005.
6. **Wang X**, Wall JT. Cortical influences on rapid brainstem plasticity. *Brain Research*. 1095:73-84; 2006.
7. **Wang X**, Xie H, Wang GL. Improved postoperative analgesia with coadministration of preoperative epidural ketamine and midazolam. *Journal of Clinical Anesthesia*. 18(8):563-9; 2006.
8. Xie H, Dong ZQ, Ma F, Bauer WR, **Wang X**, Wu GC. Involvement of serotonin 2A receptors in the analgesic effect of tramadol in mono-arthritic rats. *Brain Research*. 1210:76-83; 2008.
9. Geha PY, Baliki MN, **Wang X**, Harden RN, Paice JA, Apkarian AV. Brain dynamics for perception of tactile allodynia (touch-induced pain) in postherpetic neuralgia. *Pain*. 138(3):641-56; 2008.
10. **Wang X**, Bauer W, Chiaia N, Dennis M, Gerken M, Hummel J, Kane J, Kenmuir C, Khuder S, Lane R, Mooney R, Bazeley P, Apkarian V, Wall J. Longitudinal MRI evaluations of human global cortical thickness over minutes to weeks. *Neuroscience Letters*. 441(2):145-8; 2008.
11. **Wang X**, Gerken M, Dennis M, Mooney R, Kane J, Khuder S, Xie H, Bauer WR, Apkarian AV, Wall JT. Profiles of precentral and postcentral cortical mean thicknesses in individual subjects over acute and subacute time-scales. *Cerebral Cortex*. 20(7):1513-22; 2010.
12. **Wang X**, Garfinkel SN, King AP, Angstadt M, Dennis MJ, Xie H, Welsh RC, Tamburrino MB, Liberzon I. A multiple-plane approach to measure the structural properties of functionally active regions in the human cortex. *Neuroimage*. 49(4):3075-85; 2010.
13. Kim P, Leckman JF, Mayes LC, Feldman R, **Wang X**, James E. Swain. The plasticity of human maternal brain: longitudinal changes in brain anatomy during the early postpartum period. *Behavioral Neuroscience*. 124(5):695-700; 2010.
14. Sripada RK, King AP, Garfinkel SN, **Wang X**, Sripada C, Welsh RC, Liberzon I. Altered resting-state amygdala functional connectivity in PTSD. *Journal of Psychiatry Neuroscience* 37(4):241-9; 2012.
15. Sripada RK, King AP, Welsh RC, Garfinkel SN, **Wang X**, Sripada CS, Liberzon I. Neural dysregulation in posttraumatic stress disorder: evidence for disrupted equilibrium between salience and default mode brain networks. *Psychosomatic Medicine* 74(9):904-11; 2012.

16. Xie, H, Kane, J, Dennis, MJ, Mooney R, Bauer WR, **Wang X**, Wall JT. Case series evidence for changed interhemispheric relationships in cortical structure in some amputees. *Journal of Clinical Neuroscience*. 20(4):523-6; 2013.
17. Lubomirsky B, **Wang X (co-first author)**, Xie H, Smirnoff JB, Biehn TL, Contractor AA, Elhai JD, Sutu C, Brickman KR, Liberzon I, McLean SA, Tamburrino MB. Preliminary study on the relationship between visitation in the emergency department and post-traumatic mental health. *Social Work in Mental Health*. 12(1): 69-80; 2014.
18. Garfinkel SN, Abelson J, King AP, Sripada RK, **Wang X**, Gaines L, and Liberzon I. Impaired contextual modulation of memories in PTSD: An fMRI and psychophysiological study of extinction retention and fear renewal. *Journal of Neurosciences*: 34(40):13435-1344; 2014.
19. Xu J, Kober H, **Wang X**, DeVito EE, Carroll KM, Potenza MN. Hippocampal volume mediates the relationship between measures of pretreatment cocaine use and within-treatment cocaine abstinence. *Drug and Alcohol Dependence*. Oct 1;143:74-80; 2014.
20. Contractor AA, Armour C, **Wang X**, Forbes D, and Elhai JD. The mediating role of anger in the relationship between PTSD symptoms and impulsivity. *Psychological Trauma: Theory, Research, Practice, and Policy*. Mar;7(2):138-45; 2015.
21. **Wang X**, Xie H, Cotton AS, Tamburrino MB, Brickman KR, Lewis TL, McLean SA, Liberzon I. Early cortical thickness changes after mild traumatic brain injury following motor vehicle collision. *Journal of Neurotrauma*. Apr 1;32(7):455-63; 2015.
22. Evans GW, Swain JE, King AP, **Wang X**, Javanbakht A, Ho SS, Angstadt M, Phan KL, Xie H, Liberzon I. Childhood Cumulative Risk Exposure and Adult Amygdala Volume and Function. *J Neurosci Res*. Jun;94(6):535-43; 2016.
23. **Wang X**, Xie H, Cotton AS, Duval ER, Tamburrino MB, Brickman KR, Elhai JD, Ho S, McLean SA, Ferguson EJ, Liberzon I. Preliminary study of acute changes in emotion processing in survivors with PTSD symptoms. *POLS ONE*, Jul 14;11(7):e0159065; 2016.
24. **Wang X**, Xie H, Cotton AS, Brickman KR, Lewis TL, Wall JT, Tamburrino MB, Bauer WR, Law K, McLean SA, Liberzon I. Early changes in emotion processing after mild traumatic brain injury following motor vehicle collision. *Journal of Neurotrauma*. Jan 15;34(2):273-280; 2017.
25. Byllesby BM, Charak R, Durham TA, **Wang X**, Elhai JD. The Underlying Role of Negative Affect in the Association Between PTSD, Major Depressive Disorder, and Generalized Anxiety Disorder. *Journal of Psychopathology and Behavioral Assessment*. 38, 655-665; 2017.
26. Wall JT, Xie H, **Wang X**. Exploration Into Short-Interval Maintenance of Adult Hemispheric Cortical Thickness at an Individual Brain Level. *Journal of Experimental Neuroscience*. (11): 1–14; 2017.

27. Logue MW, van Rooij SJH, Dennis EL, Davis SL, Hayes JP, Stevens JS, Densmore M, Haswell CC, Ipser J, Koch SB, Korgaonkar M, Lebois LAM, Peverill M, Baker JT, Frijling JL, Gruber SA, Harpaz-Rotem I, Jahanshad N, Koopowitz S, Levy I, Nawijn L, O'Connor L, Olff M, Salat DH, Sheridan MA, Spielberg JM, van Zuiden M, Winternitz SR, Wolff JD, Wolf EJ, **Wang X**, Wrocklage K, Abdallah CG, Bennett M, Bryant RA, Geuze E, Jovanovic T, Kaufman ML, King AP, Krystal JH, Lagopoulos J, Lanius R, Liberzon I, McGlinchey RE, McLaughlin KA, Milberg WP, Miller MW, Ressler KJ, Veltman DJ, Stein DJ, Thomaes K, Thompson PM, Morey RA. Smaller hippocampal and amygdala volume in posttraumatic stress disorder: a multi-site ENIGMA-PGC study. *Biological Psychiatry*. 83(3):244-253; 2018.
28. Xie H, Claycomb Erwin M, Elhai JD, Wall JT, Tamburrino MB, Brickman KR, Kaminski B, McLean SA, Liberzon I, **Wang X**. Relationship of hippocampal volumes and posttraumatic stress disorder symptoms over early post-trauma periods. *Biol Psychiatry Cogn Neurosci Neuroimaging*. 3(11):968-975. 2018.
29. Xie H, Wall JT, **Wang X**. Relationships in ongoing structural maintenances of the two cerebral cortices of an individual brain. *Journal of Experimental Neuroscience*. 12: 1-11, 2018.
30. Forbes CN, Tull MT, Xie H, Christ NM, Brickman K, Mattin M, and **Wang X**. Emotional avoidance and social support interact to predict depression symptom severity one year after traumatic exposure. *Psychiatry Research*. 284, 112746. doi:10.1016/j.psychres.2020.112746; 2020
31. Christ NM, Contractor AA, **Wang X**, and Elhai JD. "The mediating effect of rumination between posttraumatic stress disorder symptoms and anger reactions." *Psychol Trauma* 12(6): 619-626; 2020
32. Forbes C, Tull M, Rapport D, Xie H, Kaminski B, and **Wang X**. Emotion Dysregulation Prospectively Predicts PTSD Symptom Severity 3-Months After Traumatic Exposure. *Journal of Traumatic Stress*. 33(6), 1007-1016. doi:10.1002/jts.22551, 2020
33. O'Leary B, Shih CH, Chen T, Xie H, Cotton AS, Xu K, Morey R, Wang X, and ENIGMA-PGC PTSD Workgroup. Classification of PTSD and Non-PTSD Using Cortical Structural Measures in Machine Learning Analyses—Preliminary Study of ENIGMA-Psychiatric Genomics Consortium PTSD Workgroup. In: Mahmud M., Vassanelli S., Kaiser M.S., Zhong N. (eds) *Brain Informatics*. BI 2020. Lecture Notes in Computer Science, vol 12241. Springer, Cham. [https://doi.org/10.1007/978-3-030-59277-6\\_11](https://doi.org/10.1007/978-3-030-59277-6_11); 2020
34. Xie H, Wall JT, Wang X. Interaction of sleep and cortical structural maintenance from an individual person microlongitudinal perspective and implications for precision medicine research. *Frontiers Neuroscience*. DOI: 10.3389/fnins.2020.00769; 2020
35. Shih C.-H., Talla P. R., Elhai J. D., Mathews J. Brickman K. R. Redfern R. E., Xie H.,

& Wang X. Preliminary study examining the mediational link between mild traumatic brain injury, acute stress, and post-traumatic stress symptoms following trauma. *European Journal of Psychotramatology*. 11(1), 1815279. doi:10.1080/20008198.2020.1815279.; 2020

36. **Wang X**, Xie H, Chen T, Cotton AS, Salminen L, Logue M, Clarke-Rubright E, Wall JT, Dennis EL, O’Leary BM, Abdallah CG, Andrew E, Baugh LA, Bomyea J, Bruce S, Bryant RA, Choi K, Daniels JK, Davenport N, Davidson R, DeBellis MD, deRoon-Cassini T, Disner S, Fani N, Fercho KA, Fitzgerald J, Forster GL, Frijling JL, Geuze E, Gomaa H, Gordon E, Grupe D, Harpaz-Rotem I, Haswell CC, Herzog J, Hofmann DB, Hollifield, M., Hosseini B, Hudson A, Ipser J, Jahanshad N, Jovanovic T, Kaufman ML, King AP, Koch SBJ, Koerte I, Korgaonkar MS, Krystal JH, Larson C, Lebois LAM, Levy I, Li G, Magnotta VA, Manthey A, May G, McLaughlin KA, Mueller S, Nawijn L, Nelson SM, Neria Y, Nitschke J, Olf M, Olson E, Peverill M, Phan KL, Rashid F, Ressler KJ, Rosso I, Sambrook K, Schmahl C, Shenton M, Sierk A, Simons JS, Simons RM, Sponheim S, Stein M, Stein D, Stevens JS, Straube T, Suarez-Jimenez B, Tamburrino M, Thomopoulos S, van der Wee NJA, van der Werff SJA, Van Erp T, van Rooij SJH, van Zuiden M, Varkevisser T, Veltman DJ, Vermeiren RRJM, Walter H, Wang L, Zhu Y, Zhu X, Thompson PM, Morey RA, and Liberzon I. Cortical volume abnormalities in posttraumatic stress disorder: An ENIGMA-Psychiatric Genomics Consortium PTSD work group mega-analysis. *Molecular Psychiatry*. doi:10.1038/s41380-020-00967-1; 2020
37. Tate DF, Dennis EL, Adams JT, Adamson MM, Belanger HG, Bigler ED, Bouchard HC, Clark AL, Delano-Wood LM, Disner SG, Eapen BC, Franz CE, Geuze E, Goodrich-Hunsaker NJ, Han K, Hayes JP, Hinds SR, 2nd, Hodges CB, Hovenden ES, Irimia A, Kenney K, Koerte IK, Kremen WS, Levin HS, Lindsey HM, Morey RA, Newsome MR, Ollinger J, Pugh MJ, Scheibel RS, Shenton ME, Sullivan DR, Taylor BA, Troyanskaya M, Velez C, Wade BS, Wang X, Ware AL, Zafonte R, Thompson PM, Wilde EA. Coordinating Global Multi-Site Studies of Military-Relevant Traumatic Brain Injury: Opportunities, Challenges, and Harmonization Guidelines. *Brain imaging and behavior* doi:10.1007/s11682-020-00423-2; 2021
38. Chen J, Christ NM, Shih CH, Xie H, Grider SR, Lewis C, Elhai J, Wang X. Dispositional Optimism Mediates Relations between Childhood Maltreatment and PTSD Symptom Severity in an Adult Trauma-Exposed Sample. *Child Abuse & Neglect*. Accepted
39. Ricker J, Smith K, Schmidt A, Cripps A, Thalla P, Cromwell HC, and Wang X. Concussion-related Alterations in Neural Activity During Emotion Recognition: Case Studies of Short-term and Residual Effects. *Journal of Sports Medicine and Allied Health Sciences: Official Journal of the Ohio Athletic Trainers Association*. Accepted

#### **Articles published in non-peer-reviewed internal journals**

1. Brickman KR, Blair AB, Tamburrino MB, Dzurik AD, Xie H, Smirnoff JB, **Wang X**. Quantitative Minor Injury Scale: pilot study of a scale to measure level of minor injury after motor vehicle collisions. Translation. *The University of Toledo Journal of Medical Sciences*. 1: 13–16; 2014.
2. **Wang X**, Prince L, Rattan J, Swartz NL, Shukla V, Durham TA, Biehn TL, Drue JL,

Ramachandran G, Sutu C, Benton AJ, Luckoski JL, Ding A, Tamburrino MB. Civilian Social Support and Posttraumatic Stress Disorder Symptoms among National Guard Members. Translation. The University of Toledo Journal of Medical Sciences. 5: 14–16; 2018.

### **Chapters in books**

1. **Wang X.** Transfusion treatment of burns. In: Li. W, editor. Transfusion Treatment. Beijing, China: Chinese Medical Science Press. p232-40, (in Chinese); 1999.
2. **Wang X.** Tabular lexicon of cytokine structure and function. In: Du B, editor. Biologic Therapeutics. Tianjin: Tianjin Science & Technology Translation & Publication Corporation. p31-48 (Translation from English to Chinese); 2002.
3. Liberzon I, **Wang X**, Hong Xie.. Brain Structural Abnormalities in Posttraumatic Stress Disorder and Relations with Sleeping Problems. Ed. Vermetten E. Sleep and Combat-related Post-Traumatic Stress Disorders. Springer–Verlag. 2018.

### **Abstracts and Presentations**

#### **Oral Presentation**

1. Brickman KR, Blair AB, Tamburrino, Dzurik AD, Xie H, Smirnoff JB, **Wang X.** The Quantitative Minor Injury Scale: Pilot Study of a Scale to Measure Level of Minor Injury after Motor Vehicle Collisions. 16th Annual SAEM MidAtlantic Regional Research Forum. Georgetown University School of Medicine, Washington DC. Program No. 1136 2013. Presented by Blair AB and Dzurik AD.
2. Combining Acute Stress Symptoms and Hippocampal Volume in Machine Learning Prediction of PTSD. International Society for Traumatic Stress Studies (ISTSS) 32nd Annual Meeting. Abstract #133, Neuroimaging One Paper Session. Dallas, TX. 2016. Presented by **Xin Wang**.
3. Early Brain, Symptom, and Social Factors Associated with PTSD Development after Motor Vehicle Collision. International Society for Traumatic Stress Studies (ISTSS) 33rd Annual Meeting. Abstract #683, Symposium General Overview #97, Neural Circuits of Affect Regulation in PTSD: Symptom and Subtype Differentiation and Longitudinal Prediction of Risk. Chicago IL 2017. Presented by **Xin Wang**.
4. **Wang X**, Xie H, Chen T, O’Leary BM, Cotton, AS, Logue M, and ENIGMA-PGC PTSD Work Group, Thompson PM, Morey RA, and Liberzon I. Mega-analysis of cortical morphometric differences between PTSD patients and non-PTSD controls. In Symposium “Structural and substructural investigation of the brain in Posttraumatic Stress Disorder by the ENIGMA Worldwide Consortium”, Rajendra Morey (Chair). Society of Biological Psychiatry's 2019 Annual Meeting. Chicago IL, 2019. Presented by **Xin Wang**

#### **Poster Presentations**

1. Xie H, **Wang X**, Wang G. The effect of administering reptilase preoperatively on coagulation in aged patients. 12th World Congress of Anesthesiologists; Montreal,



Canada: World Foundations of Societies of Anesthesiologists (WFSA). Program No. p6.4.21; 2000.

2. **Wang X**, Xie H, Yu S, Zhu J, Wang G. Preemptive intrathecal ketamine suppresses formalin-induced both nociceptive behavior and increasing in spinal cord NGF, TrkA, P75 mRNA. 12th World Congress of Anesthesiologists; Montreal, Canada: World Foundations of Societies of Anesthesiologists (WFSA). Program No. p4.1.33; 2000.
3. Xie H, **Wang X**, Liu G, Chen K, Wang G. Analgesic effects and pharmacokinetics of a low dose of ketamine preoperatively administered epidurally or intravenously. Society for Neuroscience Annual Meeting, Washington, DC. Abstract No. 842.9; 2002.
4. **Wang X**, Wall JT. Evidence that sensory input disruption triggers brainstem disinhibition. Society for Neuroscience Annual Meeting, Washington, DC. Abstract No. 256.7; 2002.
5. Xie H, Ma F, Dong Z, Wang Y, Wu G, **Wang X**, Chen K. Chronic tramadol attenuates thermal hyperalgesia and inhibit PKA activity of inflammatory rats maybe via opioid and 5 - HT receptor subtypes. Society for Neuroscience Annual Meeting, New Orleans, LA. Abstract No. 909.9; 2003.
6. **Wang X**, Wall JT. Evidence that decreased inhibition contributes to rapid brainstem plasticity after nerve injury. Society for Neuroscience Annual Meeting, New Orleans, LA. Abstract No. 479.13; 2003.
7. **Wang X**, Xie H, Yu S, Wang G. NMDA receptors up-regulate NGF expression in dorsal horn neurons during peripheral inflammatory hyperalgesia. American Pain Society 22<sup>nd</sup> Annual Scientific Meeting;. Program No. 475. The Journal of Pain. 4(2, supplement 1):37; 2003.
8. Nirranjan S, **Wang X**, Wall JT. Structural and functional convergences of digit inputs. Society for Neuroscience Annual Meeting, San Diego, CA. Program No. 640.12; 2004.
9. **Wang X**, Wall JT. Cortical inputs effects on receptive field sizes in the dorsal column nuclei. Society for Neuroscience Annual Meeting, San Diego, CA. Program No. 640.13; 2004.
10. Nirranjan S, **Wang X**, Wall JT. Relationships of structural and functional inputs to the cuneate nucleus. Society for Neuroscience Annual Meeting, Washington, DC. Program No. 624.2; 2005.
11. **Wang X**, Wall JT. Effects of cortical inhibition on cortical reorganization after nerve injury. Society for Neuroscience Annual Meeting, Washington, DC. Program No. 173.20; 2005.
12. Bauer WR, Xie H, **Wang X**, Wang G. Plasma concentrations and postoperative analgesia of midazolam epidural injections. American Pain Society 26<sup>th</sup> Annual

Scientific Meeting; Program No. 786. The Journal of Pain S47; 2007.

13. **Wang X**, Apkarian AV, Bauer WR, Chiaia NL, Dennis MJ, Hummel JC, Kane JT, Kenmuir CL, Lane RD, Mooney RD, Wall JT. An initial approach to use MRI to assess structural changes in the brain after limb loss. Society for Neuroscience Annual Meeting, San Diego, CA. Program No. 825.3; 2007.
14. Geha PY, Baliki MN, **Wang X**, Harden RN, Paice JA, Apkarian AV. Brain dynamics for perception of tactile allodynia (touch-induced pain) in postherpetic neuralgia. Society for Neuroscience Annual Meeting, San Diego, CA. Program No. 70.17; 2007.
15. Ho SH, Taylor SF, Ochsner K, **Wang X**, Abelson J, Gonzalez R, Wager TD, Smith EE, Liberzon I. Neurocircuitry of cortisol and cognition modulations on implicit emotional processing. 63rd Annual Convention of the Society of Biological Psychiatry; Washington, DC; Abstract No. 220. Biological Psychiatry 7(S): 74S; 2008.
16. Wall JT, Bauer WR, Dennis MJ, Kane JT, Mooney RD, **Wang X**, Gerken M, Khuder SA, Bazeley PS, Apkarian AV, Chiaia NL, Lane RD. Longitudinal MRI evaluation of human global cortical thickness over minutes to weeks. Society for Neuroscience Annual Meeting, Washington, DC. Program No. 649.16; 2008.
17. Garfinkel SN, Ho S-H, **Wang X**, Abelson JL, Taylor SF, Gonzalez R, Wager TD, Young EA, Ochsner KN, Liberzon I. Modulatory effects of cortisol on the neurocircuitry predictive of memory accuracy. Society for Neuroscience Annual Meeting, Washington, DC. Program No. 786.21; 2008.
18. Ho SH, Taylor SF, Ochsner K, **Wang X**, Abelson JL, Gonzalez R, Wager TD, Smith EE, Liberzon I. Neurocircuitry underlying cortisol modulation of emotion regulation. Society for Neuroscience Annual Meeting, Washington, DC. Program No. 786.22; 2008.
19. Garfinkel SN, Sripada C, **Wang X**, Kaufman R, Shire E, Lee KU, Giardino N, King AP, Liberzon I. Neurocircuitry Underlying the Reinstatement and Renewal of Fear Responding in PTSD. Society of Biological Psychiatry 64th Annual Meeting; Vancouver, Canada, Abstract No. 412. Biological Psychiatry 65(8): 124S; 2009.
20. **Wang X**, Garfinkel SN, King AP, Angstadt M, Welsh RC, Dennis MJ, Xie H, Tamburrino MB, Liberzon I. Measurements of structural properties of functionally active regions. Society for Neuroscience Annual Meeting, Chicago, IL. Program No. 894.4; 2009.
21. Wall JT, **Wang X**, Xie H, Dennis MJ, Kane JT, Mooney RD, Khuder SA, Apkarian AV, Bauer WR. Longitudinal variation in thicknesses of the pre-central and post-central cortical areas over acute and subacute time-scales. Society for Neuroscience Annual Meeting, Chicago, IL. Program No. 363.22; 2009.
22. Garfinkel SN, Kaufman R, Sripada C, **Wang X**, Lee K-UK, Giardino N, King AP, Liberzon I. Neurocorrelates underlying fear reinstatement in PTSD patients. Society

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