

Stanford



Ting-Ting Huang

Associate Professor (Research) of Neurology (Adult Neurology)
Neurology & Neurological Sciences

Bio

ACADEMIC APPOINTMENTS

- Associate Professor (Research), Neurology & Neurological Sciences
- Member, Wu Tsai Neurosciences Institute

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Committee member, McCormick Fellowship (2012 - present)
- Editorial board, Redox Biology (2013 - present)
- Review Editor, Frontiers in Aging Neuroscience (2015 - present)
- Review Editor, Frontier in Physiology - Redox Biology (2021 - present)

PROFESSIONAL EDUCATION

- B.S., Taipei Medical College , Medical Technology (1981)
- M.S., University of Oklahoma HSC , Microbiol. and Immunol. (1985)
- Ph.D., University of Oklahoma HSC , Microbial Genetics (1988)

LINKS

- Huang Lab Site: <http://neurology.stanford.edu/labs/huanglab/>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

We study the role of oxygen free radicals in oxidative tissue damage and degeneration. Our research tools include transgenic and knockout mice and tissue culture cells for in vitro gene expression.

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Neurosciences (Phd Program)

Publications

PUBLICATIONS

- **Reduced Hippocampal Neuronal Activity and Impaired Cognitive Function in a Mouse Model of Chronic Kidney Disease.** *FASEB journal : official publication of the Federation of American Societies for Experimental Biology*

- Suzaki, A., Sul, J., Day, H., Goba, L., Huang, T.
2022; 36 Suppl 1
- **Exposure to Gulf War Illness-related agents leads to the development of chronic pain and fatigue.** *Life sciences*
Nguyen, H., Sahbaie, P., Goba, L., Sul, J., Suzaki, A., Clark, J. D., Huang, T.
2021: 119867
 - **Fear Deficits in Hypomyelinated Tppp Knockout Mice.** *eNeuro*
Nguyen, H., Meservey, L. M., Ishiko-Silveria, N., Zhou, M., Huang, T., Fu, M.
2020
 - **Over-expression of miR-34c leads to early-life visceral fat accumulation and insulin resistance.** *Scientific reports*
Jones, P. H., Deng, B., Winkler, J., Zirnheld, A. L., Ehringer, S., Shetty, V., Cox, M., Nguyen, H., Shen, W., Huang, T., Wang, E.
2019; 9 (1): 13844
 - **CNS bioavailability and radiation protection of normal hippocampal neurogenesis by a lipophilic Mn porphyrin-based superoxide dismutase mimic, MnTnBuOE-2-PyP5** *Redox Biology*
Leu, D., Spasojevic, I., Nguyen, H., Deng, B., Tovmasyan, A., Weitner, T., Sampaio, R. S., Batinic-Haberle, I., Huang, T.
2017; 12: 864-871
 - **Cognitive impairments following cranial irradiation can be mitigated by treatment with a tropomyosin receptor kinase B agonist** *EXPERIMENTAL NEUROLOGY*
Yang, P., Leu, D., Ye, K., Srinivasan, C., Fike, J. R., Huang, T.
2016; 279: 178-186
 - **Extracellular superoxide dismutase is important for hippocampal neurogenesis and preservation of cognitive functions after irradiation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Zou, Y., Corniola, R., Leu, D., Khan, A., Sahbaie, P., Chakraborti, A., Clark, D. J., Fike, J. R., Huang, T.
2012; 109 (52): 21522-21527
 - **SOD2 deficiency-induced oxidative stress attenuates steroidogenesis in mouse ovarian granulosa cells.** *Molecular and cellular endocrinology*
Zaidi, S. K., Shen, W. J., Cortez, Y. n., Bittner, S. n., Bittner, A. n., Arshad, S. n., Huang, T. T., Kraemer, F. B., Azhar, S. n.
2020: 110888
 - **Accumulation of Uremic Solutes in the Cerebrospinal Fluid in Experimental Acute Renal Failure.** *American journal of physiology. Renal physiology*
Mair, R. D., Nguyen, H., Huang, T., Plummer, N. S., Sirich, T. L., Meyer, T. W.
2019
 - **The Golgi Outpost Protein TPPP Nucleates Microtubules and Is Critical for Myelination.** *Cell*
Fu, M. M., McAlear, T. S., Nguyen, H. n., Osés-Prieto, J. A., Valenzuela, A. n., Shi, R. D., Perrino, J. J., Huang, T. T., Burlingame, A. L., Bechstedt, S. n., Barres, B. A.
2019
 - **Oxidative Stress Contributes to Fracture/Cast-Induced Inflammation and Pain in a Rat Model of Complex Regional Pain Syndrome** *JOURNAL OF PAIN*
Guo, T., Wei, T., Huang, T., Kingery, W. S., Clark, J.
2018; 19 (10): 1147-56
 - **The hippocampal extracellular matrix regulates pain and memory after injury.** *Molecular psychiatry*
Tajerian, M., Hung, V., Nguyen, H., Lee, G., Joubert, L., Malkovskiy, A. V., Zou, B., Xie, S., Huang, T., Clark, J. D.
2018
 - **Nociceptive and Cognitive Changes in a Murine Model of Polytrauma.** *The journal of pain : official journal of the American Pain Society*
Sahbaie, P., Tajerian, M., Yang, P., Irvine, K. A., Huang, T., Luo, J., Wyss-Coray, T., Clark, J. D.
2018
 - **MicroRNA-Mediated Therapy Modulating Blood-Brain Barrier Disruption Improves Vascular Cognitive Impairment.** *Arteriosclerosis, thrombosis, and vascular biology*
Toyama, K., Spin, J. M., Deng, A. C., Huang, T., Wei, K., Wagenhauser, M. U., Yoshino, T., Nguyen, H., Mulorz, J., Kundu, S., Raaz, U., Adam, M., Schellinger, et al
2018

- **Radiation-Mediated Tumor Growth Inhibition Is Significantly Enhanced with Redox-Active Compounds That Cycle with Ascorbate** *ANTIOXIDANTS & REDOX SIGNALING*
Tovmasyan, A., Bueno-Janice, J. C., Jaramillo, M. C., Sampaio, R. S., Reboucas, J. S., Kyui, N., Benov, L., Deng, B., Huang, T., Tome, M. E., Spasojevic, I., Batinic-Haberle, I.
2018
- **SOD1 Lysine 123 Acetylation in the Adult Central Nervous System** *FRONTIERS IN CELLULAR NEUROSCIENCE*
Kaliszewski, M., Kennedy, A. K., Blaes, S. L., Shaffer, R. S., Knott, A. B., Song, W., Hauser, H. A., Bossy, B., Huang, T., Bossy-Wetzel, E.
2016; 10
- **Differential Efficacy of Ketamine in the Acute versus Chronic Stages of Complex Regional Pain Syndrome in Mice** *ANESTHESIOLOGY*
Tajerian, M., Leu, D., Yang, P., Huang, T. T., Kingery, W. S., Clark, J. D.
2015; 123 (6): 1435-1447
- **Sex differences in a Murine Model of Complex Regional Pain Syndrome** *NEUROBIOLOGY OF LEARNING AND MEMORY*
Tajerian, M., Sahbaie, P., Sun, Y., Leu, D., Yang, H. Y., Li, W., Huang, T. T., Kingery, W., Clark, J. D.
2015; 123: 100-109
- **Oxidative stress and redox regulation on hippocampal-dependent cognitive functions** *ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS*
Huang, T., Leu, D., Zou, Y.
2015; 576: 2-7
- **Delayed Administration of Alpha-Difluoromethylornithine Prevents Hippocampus-Dependent Cognitive Impairment after Single and Combined Injury in Mice** *RADIATION RESEARCH*
Allen, A. R., Eilertson, K., Sharma, S., Baure, J., Allen, B., Leu, D., Rosi, S., Raber, J., Huang, T., Fike, J. R.
2014; 182 (5): 489-498
- **Brain Neuroplastic Changes Accompany Anxiety and Memory Deficits in a Model of Complex Regional Pain Syndrome** *ANESTHESIOLOGY*
Tajerian, M., Leu, D., Zou, Y., Sahbaie, P., Li, W., Khan, H., Hsu, V., Kingery, W., Huang, T. T., Becerra, L., Clark, J. D.
2014; 121 (4): 852-865
- **Hepatitis C and Alcohol Exacerbate Liver Injury by Suppression of FOXO3** *AMERICAN JOURNAL OF PATHOLOGY*
Tumurbaatar, B., Tikhanovich, I., Li, Z., Ren, J., Ralston, R., Kuravi, S., Campbell, R., Chaturvedi, G., Huang, T., Zhao, J., Hao, J., O'Neil, M., Weinman, et al
2013; 183 (6): 1803-1814
- **Effects of Altered Levels of Extracellular Superoxide Dismutase and Irradiation on Hippocampal Neurogenesis in Female Mice** *INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY BIOLOGY PHYSICS*
Zou, Y., Leu, D., Chui, J., Fike, J. R., Huang, T.
2013; 87 (4): 777-784
- **Paradoxical Relationship between Mn Superoxide Dismutase Deficiency and Radiation-Induced Cognitive Defects** *PLOS ONE*
Corniola, R., Zou, Y., Leu, D., Fike, J. R., Huang, T.
2012; 7 (11)
- **Oxidative stress and adult neurogenesis-Effects of radiation and superoxide dismutase deficiency** *SEMINARS IN CELL & DEVELOPMENTAL BIOLOGY*
Huang, T., Zou, Y., Corniola, R.
2012; 23 (7): 738-744
- **Redox balance- and radiation-mediated alteration in hippocampal neurogenesis** *FREE RADICAL RESEARCH*
Huang, T.
2012; 46 (8): 951-958
- **Endogenous mitochondrial oxidative stress in MnSOD-deficient mouse embryonic fibroblasts promotes mitochondrial DNA glycation** *FREE RADICAL BIOLOGY AND MEDICINE*
Breyer, V., Weigel, I., Huang, T., Pischetsrieder, M.
2012; 52 (9): 1744-1749
- **Mitochondrial oxidative stress and epilepsy in SOD2 deficient mice: Attenuation by a lipophilic metalloporphyrin** *NEUROBIOLOGY OF DISEASE*
Liang, L., Waldbaum, S., Rowley, S., Huang, T., Day, B. J., Patel, M.
2012; 45 (3): 1068-1076

- **Persistent Expression of Hepatitis C Virus Non-Structural Proteins Leads to Increased Autophagy and Mitochondrial Injury in Human Hepatoma Cells** *PLOS ONE*
Chu, V. C., Bhattacharya, S., Nomoto, A., Lin, J., Zaidi, S. K., Oberley, T. D., Weinman, S. a., Azhar, S., Huang, T.
2011; 6 (12)
- **Enhancing Mitochondrial Respiration Suppresses Tumor Promoter TPA-Induced PKM2 Expression and Cell Transformation in Skin Epidermal JB6 Cells** *CANCER PREVENTION RESEARCH*
Wittwer, J. A., Robbins, D., Wang, F., Codarin, S., Shen, X., Kevil, C. G., Huang, T., Van Remmen, H., Richardson, A., Zhao, Y.
2011; 4 (9): 1476-1484
- **Irradiation Enhances Hippocampus-Dependent Cognition in Mice Deficient in Extracellular Superoxide Dismutase** *HIPPOCAMPUS*
Raber, J., Villasana, L., Rosenberg, J., Zou, Y., Huang, T. T., Fike, J. R.
2011; 21 (1): 72-80
- **Genetic modifier of mitochondrial superoxide dismutase-deficient mice delays heart failure and prolongs survival** *MAMMALIAN GENOME*
Kim, A., Chen, C., Ursell, P., Huang, T.
2010; 21 (11-12): 534-542
- **Age-related Defects in Sensorimotor Activity, Spatial Learning, and Memory in C57BL/6 Mice** *JOURNAL OF NEUROSURGICAL ANESTHESIOLOGY*
Barreto, G., Huang, T., Giffard, R. G.
2010; 22 (3): 214-219
- **Enhanced expression of mitochondrial superoxide dismutase leads to prolonged in vivo cell cycle progression and up-regulation of mitochondrial thioredoxin** *FREE RADICAL BIOLOGY AND MEDICINE*
Kim, A., Joseph, S., Khan, A., Epstein, C. J., Sobel, R., Huang, T.
2010; 48 (11): 1501-1512
- **Hepatic Mitochondrial DNA Depletion after an Alcohol Binge in Mice: Probable Role of Peroxynitrite and Modulation by Manganese Superoxide Dismutase** *JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS*
Larosche, I., Letteron, P., Berson, A., Fromenty, B., Huang, T., Moreau, R., Pessayre, D., Mansouri, A.
2010; 332 (3): 886-897
- **Radiation-induced reductions in neurogenesis are ameliorated in mice deficient in CuZnSOD or MnSOD** *FREE RADICAL BIOLOGY AND MEDICINE*
Fishman, K., Baure, J., Zou, Y., Huang, T., Andres-Mach, M., Rola, R., Suarez, T., Acharya, M., Limoli, C. L., Lamborn, K. R., Fike, J. R.
2009; 47 (10): 1459-1467
- **A New Mouse Model for Temporal- and Tissue-Specific Control of Extracellular Superoxide Dismutase** *GENESIS*
Zou, Y., Chen, C., Fike, J. R., Huang, T.
2009; 47 (3): 142-154
- **Identification of biomarkers associated with the development of hepatocellular carcinoma in CuZn superoxide dismutase deficient mice** *PROTEOMICS*
Elchuri, S., Naeemuddin, M., Sharpe, O., Robinson, W. H., Huang, T.
2007; 7 (12): 2121-2129
- **Lack of extracellular superoxide dismutase (EC-SOD) in the microenvironment impacts radiation-induced changes in neurogenesis** *FREE RADICAL BIOLOGY AND MEDICINE*
Rola, R., Zou, Y., Huang, T., Fishman, K., Baure, J., Rosi, S., Milliken, H., Limoli, C. L., Fike, J. R.
2007; 42 (8): 1133-1145
- **Genetic modifiers of the phenotype of mice deficient in mitochondrial superoxide dismutase** *HUMAN MOLECULAR GENETICS*
Huang, T. T., Naeemuddin, M., Elchuri, S., Yamaguchi, M., Kozy, H. M., Carlson, E. J., Epstein, C. J.
2006; 15 (7): 1187-1194
- **Selective neuronal vulnerability and inadequate stress response in superoxide dismutase mutant mice** *FREE RADICAL BIOLOGY AND MEDICINE*
Lynn, S., Huang, E. J., Elchuri, S., Naeemuddin, M., Nishinaka, Y., Yodoi, J., Ferriero, D. M., Epstein, C. J., Huang, T. T.
2005; 38 (6): 817-828
- **CuZnSOD deficiency leads to persistent and widespread oxidative damage and hepatocarcinogenesis later in life** *ONCOGENE*
Elchuri, S., Oberley, T. D., Qi, W. B., Eisenstein, R. S., Roberts, L. J., Van Remmen, H., Jepsen, C. J., Huang, T. T.
2005; 24 (3): 367-380

- **Cell-density-dependent regulation of neural precursor cell function** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Limoli, C. L., Rola, R., Giedzinski, E., Mantha, S., Huang, T. T., Fike, J. R.
2004; 101 (45): 16052-16057
- **Life-long reduction in MnSOD activity results in increased DNA damage and higher incidence of cancer but does not accelerate aging** *PHYSIOLOGICAL GENOMICS*
Van Remmen, H., IKENO, Y., Hamilton, M., Pahlavani, M., Wolf, N., Thorpe, S. R., Alderson, N. L., Baynes, J. W., Epstein, C. J., Huang, T. T., Nelson, J., Strong, R., Richardson, et al
2003; 16 (1): 29-37
- **Forkhead transcription factor FOXO3a protects quiescent cells from oxidative stress** *NATURE*
Kops, G. J., Dansen, T. B., Polderman, P. E., Saarloos, I., Wirtz, K. W., Coffey, P. J., Huang, T. T., Bos, J. L., Medema, R. H., Burgering, B. M.
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- **Increased sensitivity of homozygous SOD2 mutant mice to oxygen toxicity** *FREE RADICAL BIOLOGY AND MEDICINE*
Asikainen, T. M., Huang, T. T., Taskinen, E., Levenon, A. L., Carlson, E., Lapatto, R., Epstein, C. J., Raivio, K. O.
2002; 32 (2): 175-186
- **Transgenic and mutant mice for oxygen free radical studies** *SUPEROXIDE DISMUTASE*
Huang, T. T., Raineri, I., Eggerding, F., Epstein, C. J.
2002; 349: 191-213
- **Regional vulnerability after traumatic brain injury: Gender differences in mice that overexpress human copper, zinc superoxide dismutase** *EXPERIMENTAL NEUROLOGY*
Igarashi, T., Huang, T. T., Noble, L. J.
2001; 172 (2): 332-341
- **Genetic modification of prenatal lethality and dilated cardiomyopathy in Mn superoxide dismutase mutant mice** *FREE RADICAL BIOLOGY AND MEDICINE*
Huang, T. T., Carlson, E. J., Kozy, H. M., Mantha, S., Goodman, S. I., Ursell, P. C., Epstein, C. J.
2001; 31 (9): 1101-1110
- **Ubiquitous overexpression of CuZn superoxide dismutase does not extend life span in mice** *JOURNALS OF GERONTOLOGY SERIES A-BIOLOGICAL SCIENCES AND MEDICAL SCIENCES*
Huang, T. T., Carlson, E. J., Gillespie, A. M., Shi, Y. P., Epstein, C. J.
2000; 55 (1): B5-B9
- **The use of transgenic and mutant mice to study oxygen free radical metabolism** *Conference on Oxidative/Energy Metabolism in Neurodegenerative Disorders*
Huang, T. T., Carlson, E. J., Raineri, M., Gillespie, A. M., Kozy, H., Epstein, C. J.
NEW YORK ACAD SCIENCES.1999: 95-112
- **Ts1Cje, a partial trisomy 16 mouse model for Down syndrome, exhibits learning and behavioral abnormalities** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Sago, H., Carlson, E. J., SMITH, D. J., Kilbridge, J., Rubin, E. M., Mobley, W. C., Epstein, C. J., Huang, T. T.
1998; 95 (11): 6256-6261
- **DILATED CARDIOMYOPATHY AND NEONATAL LETHALITY IN MUTANT MICE LACKING MANGANESE SUPEROXIDE-DISMUTASE** *NATURE GENETICS*
Li, Y. B., Huang, T. T., Carlson, E. J., Melov, S., Ursell, P. C., Olson, T. L., Noble, L. J., YOSHIMURA, M. P., Berger, C., Chan, P. H., Wallace, D. C., Epstein, C. J.
1995; 11 (4): 376-381