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## Area of Expertise

The principal goals of my research are focused on translational stroke research. Although rtPA is the sole FDA approved treatment for ischemic stroke, very few patients have been benefited from rtPA treatment because of its limited therapeutic window and the increased risk of hemorrhage transformation due to blood-brain barrier breakdown. We are among the first to explore the combined therapy to extend rtPA's therapeutic window in ischemic stroke models. We have demonstrated that estrogens could extend the therapeutic window of rtPA for the treatment of ischemic stroke. In addition, our research has provided insight to target ischemic penumbra and beyond for the treatment of ischemic stroke. Currently we repurpose a century-old drug, methylene blue, for the treatment of ischemic stroke. Our study demonstrates that large MCA territory infarct may induce long-lasting elevated GABAergic tonic inhibition in the hippocampus and, thus, contributes to cognitive impairment after ischemic stroke. All these results have led us to explore the role of GABAA receptor mediated neurotransmission in the cognitive impairment after large MCA territory infarct and to determine the effect of methylene blue on cognitive impairment after ischemic stroke.

## Qualifications

MD, Beijing Medical University

## Recent Publications

### **Determination of metformin bio-distribution by LC-MS/MS in mice treated with a clinically relevant paradigm**

Chaudhari, K., Wang, J., Xu, Y., Winters, A., Wang, L., Dong, X., Cheng, E. Y., Liu, R. & Yang, S. H., 1 Jan 2020, In : PLoS ONE. 15, 6, p. e0234571

### **Cholesterol sulfate alters astrocyte metabolism and provides protection against oxidative stress**

Prah, J., Winters, A., Chaudhari, K., Hersh, J., Liu, R. & Yang, S. H., 15 Nov 2019, In : Brain Research. 1723, 146378.

### **Experimental ischemic stroke induces long-term T cell activation in the brain**

Xie, L., Li, W., Hersh, J., Liu, R. & Yang, S. H., 1 Nov 2019, In : Journal of Cerebral Blood Flow and Metabolism. 39, 11, p. 2268-2276 9 p.

### **A novel serum free primary astrocyte culture method that mimic quiescent astrocyte phenotype**

Prah, J., Winters, A., Chaudhari, K., Hersh, J., Liu, R. & Yang, S. H., 15 May 2019, In : Journal of Neuroscience Methods. 320, p. 50-63 14 p.

### **Metformin alters locomotor and cognitive function and brain metabolism in normoglycemic mice**

Li, W., Chaudhari, K., Shetty, R., Winters, A., Gao, X., Hu, Z., Ge, W. P., Sumien, N., Forster, M., Liu, R. & Yang, S. H., 1 Jan 2019, In : Aging and Disease. 10, 5, p. 949-963 15 p.

### **Erratum: Reversing the Warburg effect as a treatment for glioblastoma(Journal of Biological Chemistry (2013) 288 (9153–9164) DOI: 10.1074/jbc.M112.440354)**

Poteet, E., Choudhury, G. R., Winters, A., Li, W., Ryou, M. G., Liu, R., Tang, L., Ghorpade, A., Wen, Y., Yuan, F., Keir, S. T., Yan, H., Bigner, D. D., Simpkins, J. W. & Yang, S. H., 28 Sep 2018, In : Journal of Biological Chemistry. 293, 39, 1 p.

### **Artemisinin prevents glutamate-induced neuronal cell death via Akt pathway activation**

Lin, S. P., Li, W., Winters, A., Liu, R. & Yang, S. H., 20 Apr 2018, In : Frontiers in Cellular Neuroscience. 12, 108.

### **Precision Medicine for Ischemic Stroke, Let Us Move Beyond Time Is Brain**

Yang, S. H., Lou, M., Luo, B., Jiang, W. J. & Liu, R., 1 Apr 2018, In : Translational Stroke Research. 9, 2, p. 93-95 3 p.

**Hyperglycemia alters astrocyte metabolism and inhibits astrocyte proliferation**

Li, W., Choudhury, G. R., Winters, A., Prah, J., Lin, W., Liu, R. & Yang, S. H., 1 Jan 2018, In : Aging and Disease. 9, 4, p. 674-684 11 p.

**Administration of 5-methoxyindole-2-carboxylic acid that potentially targets mitochondrial dihydrodipicolinate dehydrogenase confers cerebral preconditioning against ischemic stroke injury**

Wu, J., Li, R., Li, W., Ren, M., Thangthaeng, N., Sumien, N., Liu, R., Yang, S., Simpkins, J. W., Forster, M. J. & Yan, L. J., Dec 2017, In : Free Radical Biology and Medicine. 113, p. 244-254 11 p.

## **Sponsored Projects**

**Assessment of the Effects of Novel Nestle Diets on balance (Phase I) and cognitive function (Phase II) in Female 5XFAD Transgenic Mice (Project VII)**

Yang, S. & Liu, R.

Nestle Purina

18/10/16 → 18/10/18

**Establishment of Inducible Astrocyte Specific p38 MAPK Knockout Mouse Line**

Yang, S. & Liu, R.

NINDS: Neurological Disorders & Stroke

15/09/14 → 28/02/18

**Metformin and Cognition**

Liu, R., Huang, R., Yang, S. & Sumien, N.

Intramural Research(UNTHSC)

1/05/16 → 31/08/17

**Methylene Blue for Ischemic Stroke Therapy**

Liu, R., Huang, R. & Yang, S.

American Heart Association

12/06/13 → 30/06/17

**Neuroglobin: Cell Membrane and Neuroprotection**

Yang, S., Liu, R. & Jin, K.

NINDS: Neurological Disorders & Stroke

1/07/14 → 31/05/19

**Novel Mechanistic Targets of Steroid Hormones in the Brain - Core B**

Forster, M., Shetty, R., Yang, S., Liu, R. & Sumien, N.

NIA: National Institute on Aging

1/12/12 → 30/11/18

**Post Stroke Cognitive Impairment: Mechanism and Therapy**

Yang, S., Liu, R., Sumien, N. & Jin, K.

NINDS: Neurological Disorders & Stroke

1/02/19 → 31/01/24

**To Determine the Mechanisms Underlying the Protection of Nestle Diet in AD Mice**

Yang, S. & Liu, R.

Nestle Purina

5/05/12 → 30/09/13