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## Area of Expertise

Occlusive arterial disease, or the pathological obstruction of arteries, is very common and prevalent in Western countries. Major risk factors of this disease include aging, smoking, hypertension, diabetes, high-fat/high-cholesterol diet, and in-stent surgical procedures.

My lab examines why the smooth muscle layer of the arterial wall thickens as a result of these risk factors, leading to vessel constriction and pathological obstruction. We use a rat model of blood vessel wall thickening to study how interference with the expression of these inheritable traits/factors can possibly reduce and/or alleviate this arterial constriction. The underlying mechanism from risk factor to arterial smooth muscle remodeling is not well understood. Therefore, we want to identify the molecular players and cellular pathways responsible for this narrowing of blood vessels. Interfering with these genes and pathways may reduce the risk of this type of blood vessel constriction and, thus, become primary targets to inhibit or reduce the onset of occlusive arterial disease.

## Qualifications

PhD in Cell and Molecular Biology, Johns Hopkins University  
BS in Chemical Engineering, Cornell University

## Recent Publications

### Sniffer cells for the detection of neural Angiotensin II in vitro

Farmer, G. E., Amune, A., Bachelor, M. E., Duong, P., Yuan, J. P. & Cunningham, J. T., 1 Dec 2019, In : Scientific Reports. 9, 1, 8820.

### Effects of salt-loading on supraoptic vasopressin neurones assessed by ClopHensorN chloride imaging

Balapattabi, K., Farmer, G. E., Knapp, B. A., Little, J. T., Bachelor, M., Yuan, J. P. & Cunningham, J. T., 1 Jan 2019, In : Journal of Neuroendocrinology. 31, 8, e12752.

### Homer binds to Orai1 and TRPC channels in the neointima and regulates vascular smooth muscle cell migration and proliferation

Jia, S., Rodriguez, M., Williams, A. G. & Yuan, J. P., 1 Dec 2017, In : Scientific Reports. 7, 1, 5075.

### Methods to study TRPC channel regulation by interacting proteins

Kiselyov, K., Lee, K. P., Yuan, J. P. & Muallem, S., 19 Apr 2016, *TRP Channels*. CRC Press, p. 21-42 22 p.

### High glucose and diabetes enhanced store-operated Ca<sup>2+</sup> entry and increased expression of its signaling proteins in mesangial cells

Chaudhari, S., Wu, P., Wang, Y., Ding, Y., Yuan, J. P., Begg, M. & Ma, R., 1 May 2014, In : American Journal of Physiology - Renal Physiology. 306, 9

### Molecular determinants mediating gating of transient receptor potential canonical (TRPC) channels by stromal interaction molecule 1 (STIM1)

Lee, K. P., Choi, S., Hong, J. H., Ahuja, M., Graham, S., Ma, R., So, I., Shin, D. M., Muallem, S. & Yuan, J. P., 7 Mar 2014, In : Journal of Biological Chemistry. 289, 10, p. 6372-6382 11 p.

### Nuclear factor κB mediates suppression of canonical transient receptor potential 6 expression by reactive oxygen species and protein kinase C in kidney cells

Wang, Y., Ding, M., Chaudhari, S., Ding, Y., Yuan, J. P., Stankowska, D. L., He, S., Krishnamoorthy, R., Cunningham, J. T. & Ma, R., 3 May 2013, In : Journal of Biological Chemistry. 288, 18, p. 12852-12865 14 p.

### **STIM-TRP pathways the STIM1/Orai/TRPC channels multiple Ca<sup>2+</sup> influx complexes**

Hong, J. H., Kim, M. S., Lee, K. P., Yuan, J. P. & Muallem, S., 1 Nov 2012, *Store-operated Ca<sup>2+</sup> entry (SOCE) pathways: Emerging signaling concepts in human (patho)physiology*. Springer-Verlag Wien, Vol. 9783709109625. p. 57-72 16 p.

### **Opposite regulatory effects of TRPC1 and TRPC5 on neurite outgrowth in PC12 cells**

Heo, D. K., Chung, W. Y., Park, H. W., Yuan, J. P., Lee, M. G. & Kim, J. Y., 1 Apr 2012, In : *Cellular Signalling*. 24, 4, p. 899-906 8 p.

### **The Ca<sup>2+</sup> sensor stromal interaction molecule 1 (STIM1) is necessary and sufficient for the store-operated Ca<sup>2+</sup> entry function of transient receptor potential canonical (TRPC) 1 and 4 channels in endothelial cells**

Sundivakkam, P. C., Freichel, M., Singh, V., Yuan, J. P., Vogel, S. M., Flockerzi, V., Malik, A. B. & Tirupathi, C., 1 Apr 2012, In : *Molecular Pharmacology*. 81, 4, p. 510-526 17 p.

## **Sponsored Projects**

### **Gating Mechanism of TRPCs and Orai1 & Their Role in Cardiac Hypertrophy**

Yuan, J.

NHLBI: Nat Heart, Lung & Blood Institute

1/01/11 → 30/04/14

### **Gating Mechanism of TRPCs and Their Role in Cardiac Hypertrophy**

Yuan, J.

Intramural Research(UNTHSC)

1/07/11 → 30/06/12

### **Molecular Determinants of Store-operated Calcium Entry in Vascular Smooth Muscle Cell Proliferation and Migration**

Yuan, J.

Intramural Research(UNTHSC)

1/07/16 → 31/08/17

### **Neural Regulation of Vasopressin Release in a model of Dilutional Hyponatremia**

Cunningham, T., Cunningham, R. & Yuan, J.

NHLBI: Nat Heart, Lung & Blood Institute

15/04/18 → 31/03/22

### **Store-operated Calcium Entry in Vascular Smooth Muscle Proliferation and Migration Leading to Occlusive Arterial Disease (For: Miguel Rodriguez)**

Yuan, J.

Intramural Research(UNTHSC)

15/10/15 → 15/02/16

### **The Role of STIMATE as Regulator of TRPC Channels (For: Selwyn Erapuram)**

Yuan, J.

Intramural Research(UNTHSC)

1/06/16 → 31/05/17