

# Y. CLARE ZHANG, PhD, MAcOM, LAc

*Y. Clare Zhang Practice of Oriental Medicine*  
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## Brief Biography

Dr. Zhang was raised in China and educated in the US. Prior to her work in Chinese medicine, she received a doctoral degree in Physiology & Pharmacology and for fifteen years pursued biomedical research and teaching in universities. Given her understanding of Oriental and Western philosophies, modern science and ancient healing, she strives to promote the patient's health with an integrative approach that combines acupuncture, herbs, Tui Na (Chinese bodywork), nutrition, exercise and pharmacological consultation.

## Educational Background

- Bachelor of Engineering, Biochemical Engineering, Shanghai Jiaotong University, Shanghai, China, 1992
- Doctor of Philosophy, Physiology & Pharmacology, University of Florida, Gainesville, FL, 2000
- Master in Acupuncture & Oriental Medicine, Arizona School of Acupuncture & Oriental Medicine, Tucson, AZ, 2010
- Internship, Acupuncture, Nephrology and Gastroenterology of Chinese Medicine, Hubei Provincial Hospital of Traditional Chinese Medicine, Wuhan, China, 2010

## Licenses and Credentials

- Diplomate in Oriental Medicine, National Commission for the Certification of Acupuncture & Oriental Medicine, 2010
- Licensed Acupuncturist, State of Arizona, 2010
- Certified Kinesio Taping Practitioner (CKTP), Kinesio Taping Association International, 2015

## Professional Experience

- Research Associate, Shanghai Institute of Biochemistry, Chinese Academy of Sciences, Shanghai, China, 1992-1996
- Research Assistant, Department of Physiology, University of Florida, Gainesville, FL, 1996-2000  
(*Research areas: hypertension and heart diseases*)
- Post-doctoral Research Fellow, Department of Pathology, University of Florida, Gainesville, FL, 2000-2003  
(*Research areas: diabetes and autoimmune diseases*)
- Assistant Professor, Department of Pediatrics, University of South Florida, Tampa, FL, 2003-2008  
(*Research areas: diabetes and heart diseases*)
- Visiting Scholar, Department of Cell Biology & Anatomy, University of Arizona, Tucson, AZ, 2007-2008
- Practitioner of Acupuncture & Oriental Medicine, Tucson, AZ, 2010-present
- Integrative Medicine Preceptor, University of Arizona College of Medicine South Campus, 2015-present

- Visiting Professor, Chinese Medicine Nephrology Department, Hubei Provincial Hospital of Traditional Chinese Medicine, Wuhan, China, 2016-2018

### **Honors and Awards**

- International Student Fellowship, Council for International Cooperation, 1996
- Exceptional Honors-GPA 4.0, University of Florida, 1996
- First Place Winner of Medical Guild Graduate Student Research Award; International Graduate Student Academic Achievement Award, University of Florida, 1999
- Hypertension Summer School Travel Award, American Heart Association, 1999
- American Heart Association Predoctoral Fellowship, 1998-2000
- Young Investigators-in-Training Award, American Society of Hypertension, 2000
- Professional Opportunity Award, American Physiology Society, 2000
- Travel Fellowship Grant, Society for Experimental Biology and Medicine, 2000
- Research Grant, National Institute of Health, 2001
- Innovative Research Award, Juvenile Diabetes Research Foundation, 2003
- Scientist Development Award, American Heart Association, 2004
- Research Rising Stars Award, University of South Florida, 2005
- Valedictorian, Arizona School of Acupuncture & Oriental Medicine, 2010

### **Patents**

- U.S. Patent No. 6,087,343, “Antisense oligonucleotides targeted to  $\beta$ 1-adrenoceptor and methods of use”, 2000
- U.S. Patent No. 6,489,307, “Antisense compositions targeted to  $\beta$ 1-adrenoceptor-specific mRNA and methods of use”, 2002

### **Scientific Services**

- Associate Editor, *Regulatory Peptides*, 2003-2006
- Invited reviewer for scientific journals *Gene Therapy*, *Transplantation*, *Diabetes/Metabolism Research and Reviews*

### **Societies and Memberships**

- American Heart Association
- American Physiology Society
- Society for Experimental Biology and Medicine
- American Society of Hypertension
- American Diabetes Association
- American Association of Acupuncture and Oriental Medicine
- Arizona Society of Oriental Medicine and Acupuncture

### **Publications**

1. **YC Zhang**, YD Zhang, C Chang, YL Zhang. Differential regulation of glutathione S-transferase Yb1 mRNA levels in rat prostate, liver and brain by androgen. *Cell Research*, 1995, 5:235-242.

2. **YC Zhang**, et al. Studies of the expression of estrogen receptor gene in the rat uterus during the estrous cycle and periimplantational period. *Reproduction & Contraception*, 1995, 6: 65-73.
3. **YC Zhang**, GZ Zhu, YD Zhang, YL Zhang. Studies of the expression of progesterone receptor gene in the rat uterus during early pregnancy by RT-PCR. *Acta Biochimica et Biophysica Sinica*, 1997, 29(3): 221-228.
4. BC Yang, MI Phillips, **YC Zhang**, B Kimura, LP Shen, P Mehta, JL Mehta. Critical role of AT1 receptor expression after ischemia/reperfusion in isolated rat hearts. *Circulation Research*, 1998, 83(5): 552-559.
5. DY Li, **YC Zhang**, BC Yang, MI Phillips, JL Mehta. Upregulation of endothelial receptor for ox-LDL in cultured human coronary artery endothelial cells by angiotensin II type 1 receptor activation. *Circulation Research*, 1999, 84: 1043-49.
6. XP Tang, D Mohuczy, **YC Zhang**, B Kimura, SM Galli, MI Phillips. Systemic delivery of antisense against angiotensinogen mRNA by adeno-associated virus-based plasmid vector decreases hypertension. *American Journal of Physiology*, 1999, 277 (Heart Circ. Physiol. 46): H2392-H2399.
7. **YC Zhang**, JD Bui, L Shen, MI Phillips. Antisense inhibition of  $\beta$ 1-adrenoceptor mRNA in a single dose produces a profound and prolonged reduction in high blood pressure in spontaneously hypertensive rats. *Circulation*, 2000, 101: 682-688. (**Selected in 2001 Year Book of Cardiology**)
8. **YC Zhang**, B Kimura, L Shen, MI Phillips. New  $\beta$ -blocker: prolonged reduction in high blood pressure with  $\beta$ 1 antisense oligodeoxynucleotides. *Hypertension*, 2000, 35(part 2): 219-224.
9. HJ Chen, **YC Zhang**, DY Li, MI Phillips, P Mehta, M Shi, JL Mehta. Protection against myocardial ischemia-reperfusion-induced cardiac dysfunction by antisense-oligodeoxynucleotides directed at  $\beta$ 1-adrenoceptor mRNA. *J. Pharmacol. Exp. Ther.*, 2000, 294(2):722-727.
10. MI Phillips, **YC Zhang**. Basic principles of using antisense oligonucleotides in vivo. *Methods in Enzymology*, 2000, vol. 313, Antisense Technology Part A, p46-56, Academic Press.
11. K Goudy, S Song, C Wasserfall, **YC Zhang**, M Kapturczak, A Muir, M Powers, M Scott-Jorgensen, M Campbell-Thompson, JM Crawford, TM Ellis, TR Flotte, MA Atkinson. Adeno-associated virus vector-mediated IL-10 gene delivery prevents type 1 diabetes in NOD mice. *Proc Natl Acad Sci U S A*, 2001, 98: 13913-8.
12. **YC Zhang**, RD Molano, A Pileggi, M Powers, J Cross, C Wasserfall, M Jorgensen, M Campbell-Thompson, JM Crawford, T Flotte, TM Ellis, C Ricordi, MA Atkinson, L Inverardi. Adeno-associated virus transduction of islets with interleukin-4 results in impaired metabolic function in syngeneic marginal islet mass transplantation. *Transplantation*, 2002, 74:1184-1186.
13. S Kagiya, S Eguchi, GD Frank, T Inagami, **YC Zhang**, MI Phillips. Angiotensin II-induced cardiac hypertrophy and hypertension are attenuated by epidermal growth factor receptor antisense. *Circulation*, 2002, 106: 909-12.
14. **YC Zhang**, A Pileggi, RD Molano, M Powers, C Wasserfall, T Brusko, T Flotte, TM Ellis, C Ricordi, MA Atkinson, L Inverardi. Adeno-associated virus mediated interleukin-10 gene therapy inhibits autoimmune diabetes recurrence in syngeneic islet cell transplantation of NOD mice. *Diabetes*, 2003, 52:708-16.
15. **YC Zhang**, M Powers, C Wasserfall, T Brusko, T Flotte, R Snyder, M Potter, M Jorgensen, M Campbell-Thompson, JM Crawford, TM Ellis, MA Atkinson. Immune responsiveness imparted by genetic predisposition to autoimmunity to AAV-delivered transgenes. *Gene Therapy*, 2004, 11:233-40. (**Accompanied by an editorial, Gene Therapy, 2004, 11:231-232**)
16. YL Tang, Y Tang, **YC Zhang**, K Qian, L Shen, MI Phillips. Preventing ischemic heart injury by vigilant plasmid mediated heme oxygenase-1 gene transfer. *Hypertension*. 2004, 43:746-51. (**Accompanied by an editorial, Hypertension, 2004, 43:720-21**).

17. YL Tang, Q Zhao, **YC Zhang**, MI Phillips, et al, Autologous mesenchymal stem cell transplantation induces VEGF and neovascularization in ischemic myocardium. *Regulatory Peptides*, 2004, 117:3-10.
18. **YC Zhang**, MA Atkinson. Gene therapy for type 1 diabetes: metabolism, immunity, islet cell preservation and regeneration. *Current Opinion in Endocrinology & Diabetes*, 2004, 11(2): 91-97.
19. **YC Zhang**, A Pileggi, RD Molano, C Wasserfall, M Campbell-Thompson, C Ricordi, MA Atkinson, L Inverardi. Systemic overexpression of interleukin-10 fails to protect allogeneic islet transplants in Non-obese diabetic mice. *Transplantation*, 2005, 80:530-33.
20. **YC Zhang**, M Powers, MA Atkinson, T Flotte. Measurement of humoral and cell-mediated immune responses to AAV vector administration. *Methods in Molecular Medicine*, in press.
21. BR Burkhardt, MJ Parker, **YC Zhang**, S Song, CH Wasserfall, MA Atkinson. Glucose Transporter-2 (GLUT2) Promoter Mediated Transgenic Insulin Production Reduces Hyperglycemia in Diabetic Mice. *FEBS Letter*, 2005, 579:5759-64.
22. YC Tang, Y Tang, **YC Zhang**, K Qian, L Shen, MI Phillips. Improved graft mesenchymal stem cell survival in ischemic heart with a hypoxia-regulated Heme Oxygenase-1 Vector. *Journal of the American College of Cardiology*, 2005, 46:1339-50. (*Accompanied by an editorial, JACC, 46: 1351-53*).
23. YL Tang, K Qian, **YC Zhang**, L Shen, MI Phillips. Mobilizing of haematopoietic stem cells to ischemic myocardium by plasmid mediated stromal-cell-derived factor-1 $\alpha$  (SDF-1 $\alpha$ ) treatment. *Regulatory Peptides*, 2005, 125:1-8.
24. YL Tang, Y Tang, **YC Zhang**, A Agarwal, H Kasahara, K Qian, L Shen, MI Phillips. A hypoxia-inducible vigilant vector system for activating therapeutic genes in ischemia. *Gene Therapy*, 2005, 12:1163-70.
25. YL Tang, K Qian, **YC Zhang**, L Shen, MI Phillips. A vigilant hypoxia-regulated heme oxygenase-1 gene vector in the heart limits cardiac injury after ischemia-reperfusion in vivo. *J Cardiovas Pharmacol Therapeut*, 2005, 10: 251-63.
26. **YC Zhang**, MM Taylor, WK Samson, S Kagiya, MI Phillips. Antisense inhibition: oligonucleotides, ribozymes and siRNAs. *Methods in Molecular Medicine*, 2005, 106: 11-34.
27. BR Burkhardt, R Lyle, K Qian, AS Arnold, H Cheng, MA Atkinson, **YC Zhang**. Efficient Delivery of siRNA into Cytokine-stimulated Insulinoma Cells Silences Fas Expression and Inhibits Fas-mediated Apoptosis. *FEBS Letters*, 2006, 580:553-560.
28. AS Arnold, YL Tang, K Qian, L Shen, V Valencia, MI Phillips, **YC Zhang**. Specific  $\beta$ 1-adrenergic receptor silencing with siRNA lowers high blood pressure and improves cardiac function in myocardial ischemia. *Journal of Hypertension*, 2007, 25:197-205.
29. MI Phillips, **YC Zhang**. Gene therapy for hypertension: a promise waiting to be fulfilled. *Genetics of Hypertension*, 2007, volume 24, chapter 14, p239-251, Elsevier.
30. H Cheng, S Wolfe, V Valencia, K Qian, L Shen, MI Phillips, LJ Chang, **YC Zhang**. Efficient and persistent transduction of exocrine and endocrine pancreas by adeno-associated virus type 8. *Journal of Biomedical Science*, 2007, 14: 585-594.
31. C Shen, Q Li, **YC Zhang**, G Ma, Y Feng, Q Zhu, Q Dai, Z Chen, Y Yao, L Chen, Y Jiang, N Liu. Advanced glycation end products increase EPC apoptosis and decrease nitric oxide release via MAPK pathways. *Biomedicine & Pharmacotherapy*, 2010, 64(1):35-43.
32. H Cheng, **YC Zhang**, S Wolfe, V Valencia, K Qian, L Shen, YL Tang, WH Hsu, MA Atkinson and MI Phillips. Combinatorial treatment of bone marrow stem cells and stromal cell-derived

- factor 1 improved glycemia and insulin production in diabetic mice. *Molecular and Cellular Endocrinology*, 2011, 345: 88-96.
33. DQ Tang, L Shun, V Koya, Y Sun, Q Wang, H Wang, SW Li, Y Sun, DL Purich, **YC Zhang**, B Hansen, K Qian, M Atkinson, MI Phillips, LJ Yang. Genetically reprogrammed, liver-derived insulin-producing cells are glucose-responsive, but susceptible to autoimmune destruction in settings of murine model of type 1 diabetes. *Am J Transl Res*. 2013, 5(2):184-99.
  34. XQ Wang, XR Zhou, YC Zhang. From “Kidneys govern bones” to chronic kidney diseases, diabetes mellitus, and metabolic bone disorder: a crosstalk between traditional Chinese medicine and modern science. *Evid Based Complement Alternat Med*, 2016, 4370263.
  35. B Chakravarti, C Sherpa, D Bose, KP Chowdhury, K Khadar, **YC Zhang**, DN Chakravarti. Pancreatic proteome profiling of type 1 diabetic mouse: Differential expression of proteins involved in exocrine function, stress response, growth, apoptosis and metabolism. *Biochem Biophys Res Commun*. 2017, 487(4):930-36.
  36. XQ Wang, L Wang, YC Tu, YC Zhang. Traditional Chinese medicine for refractory nephrotic syndrome: strategies and promising treatments. *Evid Based Complement Alternat Med*, 2018, 8746349.