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## 高平进

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### 研究方向

研究方向是血管重塑与心血管疾病。主要研究内容包括:

1. 高血压相关基因的定位, 克隆及功能研究;
2. 心血管细胞表型转化的机制及相关基因研究;
3. 血管重塑的细胞信号传导机制研究;
4. 心血管药物在血管重塑中的作用及机制;
5. 心血管干细胞的体外定向分化研究。

### 主要成果

目前, 该研究组建立了高血压病大家系与隔离人群DNA样本信息库, 将高血压易感基因定位在2号染色体的2q14-q23区内; 在心血管细胞分化方面, 已分离出多个血管外膜肌成纤维细胞差异表达基因及ESTs, 正进行相关基因的功能研究, 并开展TGF $\beta$ 1细胞信号通路与表型转化及其相关基因的研究。同时该研究组还分离培养了大鼠间质干细胞, 体外诱导分化为心肌样细胞。

### 学习经历

1973-1977 第三军医大学医疗系学士

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1991-1994 上海第二医科大学心内科博士

1995-1996 法国国家科研中心(CNRS)合作研究

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1979-1985 上海市高血压研究所高血压科住院医生

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2003 上海医学科技二等奖(第三完成人)

2004 上海市科学技术进步二等奖(第二完成人)

2005 中华医学科技一等奖(第二完成人)

2001 中国分子心脏病杂志编委

2003 中华老年心脑血管病杂志编委

## 近期主要论文

1. Fu GX, Xu CC, Zhong Y, Zhu DL, **Gao PJ**. Aldosterone-induced osteopontin expression in vascular smooth muscle cells involves MR, ERK, and p38 MAPK. *Endocrine*. 2012 Dec;42(3):676-83.
2. Li XD, Chen J, Ruan CC, Zhu DL, **Gao PJ**. Vascular Endothelial Growth Factor-Induced Osteopontin Expression Mediates Vascular Inflammation and Neointima Formation via Flt-1 in Adventitial Fibroblasts. *Arterioscler Thromb Vasc Biol*. 2012, 32(9): p. 2250-8.
3. Wang Y, Hu Y, Li Y, Li H, Chu S, Zhu D, **Gao P**. Association of renal function with the ambulatory arterial stiffness index and pulse pressure in hypertensive patients. *Hypertens Res*. 2012, 35(2):201-6.
4. Jin X, Fu GX, Li XD, Zhu DL, **Gao PJ**. Expression and function of osteopontin in vascular adventitial fibroblasts and pathological vascular remodeling. *PLoS One*. 2011; 6(9):e23558.
5. Xu TY, Li Y, Wang YQ, Li YX, Zhang Y, Zhu DL, **Gao PJ**. Association of stroke with ambulatory arterial stiffness index (AASI) in hypertensive patients. *Clin Exp Hypertens*. 2011;33(5):304-8.
6. Chen J, Wu J, Li L, Zou YZ, Zhu DL, **Gao PJ**. Effect of an acute mechanical stimulus on aortic structure in the transverse aortic constriction mouse model. *Clin Exp Pharmacol Physiol*. 2011, 38(9):570-6.
7. Ruan, CC, Zhu, DL, Chen, QZ, Chen, J, Guo, SJ, Li, XD and **Gao, PJ**. Perivascular adipose tissue-derived complement 3 is required for adventitial fibroblast functions and adventitial remodeling in deoxycorticosterone acetate-salt hypertensive rats. *Arterioscler Thromb Vasc Biol*. 2010, 30(12): p. 2568-74.
8. Han WQ, Chen J, Wu LY, Zhu DL, **Gao PJ**. Different biomechanical properties of medial and adventitial layers of thoracic aorta in Wistar-Kyoto and spontaneously hypertensive rats. *Acta Pharmacol Sin*. 2010, 31(10):1319-23.
9. Zheng L, Xu CC, Chen WD, Shen WL, Ruan CC, Zhu LM, Zhu DL, **Gao PJ**. MicroRNA-155 regulates angiotensin II type 1 receptor expression and phenotypic differentiation in vascular adventitial fibroblasts. *Biochem Biophys Res Commun*. 2010, 400(4):483-8.
10. Han WQ, Wong WT, Tian XY, Huang Y, Wu LY, Zhu DL, **Gao PJ**. Contributory role of endothelium and voltage-gated potassium channels in apocynin-induced vasorelaxations. *J Hypertens*. 2010, 28(10):2102-10.
11. Zhou HY, Chen WD, Zhu DL, Wu LY, Zhang J, Han WQ, Li JD, Yan C, **Gao PJ**. The PDE1A-PKCalpha signaling pathway is involved in the upregulation of alpha-smooth muscle actin by TGF-beta1 in adventitial fibroblasts. *J Vasc Res*. 2010, 47(1):9-15.
12. Xu JZ, Zhang Y, Wu SN, Niu WQ, Zhu DL, **Gao PJ**. Impaired endothelial function in hypertensive patients with target organ damage. *J Hum Hypertens*. 2009 Nov;23(11):751-7.
13. Chen W, Chu Y, Zhu D, Yan C, Liu J, Ji K, **Gao P**. Perivascular gene transfer of dominant-negative N19RhoA attenuates neointimal formation via inhibition of TGF-beta1-Smad2 signaling in rats after carotid artery balloon injury. *Biochem Biophys Res Commun*. 2009 Nov 13;389(2):217-23.
14. Zhou WJ, Zhu DL, Yang GY, Zhang Y, Wang HY, Ji KD, Lu YM, **Gao PJ**. Circulating endothelial progenitor cells in Chinese patients with acute stroke. *Hypertens Res*. 2009 Apr;32(4):306-10.
15. Han WQ, Zhu DL, Wu LY, Chen QZ, Guo SJ, **Gao PJ**. N-acetylcysteine-induced vasodilation involves voltage-gated potassium channels in rat aorta. *Life Sci*. 2009 May 22;84(21-22):732-7.
16. Han WQ, Wu LY, Zhou HY, Zhang J, Che ZQ, Wu YJ, Liu JJ, Zhu DL, **Gao PJ**. Changes in the composition of the thoracic aortic wall in spontaneously hypertensive rats treated with losartan or spironolactone. *Clin Exp Pharmacol Physiol*. 2009 May; 36(5-6):583-8.
17. Che ZQ, **Gao PJ**, Shen WL, Fan CL, Liu JJ, Zhu DL. Angiotensin II-stimulated collagen synthesis in aortic adventitial fibroblasts is mediated by connective tissue growth factor. *Hypertens Res*. 2008 Jun;31(6):1233-40.
18. Jin X, Ge X, Zhu DL, Yan C, Chu YF, Chen WD, Liu J, **Gao PJ**. Expression and function of vascular endothelial growth factor receptors (Flt-1 and Flk-1) in vascular adventitial fibroblasts. *J Mol Cell Cardiol*. 2007 Sep;43(3):292-300.
19. Wu SN, Zhang Y, Gardner CO, Chen Q, Li Y, Wang GL, **Gao PJ**, Zhu DL. Evidence for association of polymorphisms in CYP2J2 and susceptibility to essential hypertension. *Ann Hum Genet*. 2007 Jul;71(Pt 4):519-25.
20. GUO Shu-Jie, WU Ling-Yun, WEI Jian, **GAO Ping-Jin**, ZHU Ding-Liang. Research on Proteins Associated to Differentiation of Vascular Ad-ventitial Myofibroblasts. *ACTA CHIMICA SINICA*. 2007 Apr 27;65(15):1504-1510.
21. Guochang Zhang, **Pingjin Gao**, Jie Shen, Dingliang Zhu. Measurement of urine kynurenic acid by high-performance liquid chromatography in SHR. *Journal of Shanghai Jiaotong University (Medical Science)*. 2007 Apr;27(4):361-363.
22. Guo HF, **Gao PJ**, Li Y, Zhu DL, Wang JG. Association between uroguanylin G-247A polymorphism and blood pressure/fluid and electrolytes homeostasis. *Zhonghua Xin Xue Guan Bing Za Zhi*. 2007 Mar;35(3):233-6.
23. Wang HY, **Gao PJ**, Ji KD, Shen WF, Fan CL, Lu L, Zhu DL. Circulating endothelial progenitor cells, C-reactive protein and severity of coronary stenosis in Chinese patients with coronary artery disease. *Hypertens Res*. 2007 Feb;30(2):133-41.
24. Chen H, Shen WL, Wang XH, Chen HZ, Gu JZ, Fu J, Ni YF, **Gao PJ**, Zhu DL, Higashino H. Paradoxically enhanced heart tolerance to ischaemia in type 1 diabetes and role of increased osmolarity. *Clin Exp Pharmacol Physiol*. 2006 Oct;33(10):910-6.
25. Guo SJ, Wu LY, Shen WL, Chen WD, Wei J, **Gao PJ**, Zhu DL. Gene profile for differentiation of vascular adventitial myofibroblasts. *Acta Physiologica Sinica*. 2006 Aug 25;58(4):337-344.
26. Fan CL, **Gao PJ**, Gu YJ, Tang XF, Liu JJ, Wei J, Inoue K, Zhu DL. Therapeutic angiogenesis by intramuscular injection of fibrin particles into ischaemic hindlimbs. *Clin Exp Pharmacol Physiol*. 2006 Jul;33(7):617-22.

27. Zhang WD, Zhang C, Wang XH, **Gao PJ**, Zhu DL, Chen H, Liu RH, Li HL. Astragaloside IV dilates aortic vessels from normal and spontaneously hypertensive rats through endothelium-dependent and endothelium-independent ways. *Planta Med*. 2006 Jun;72(7):621-6.
28. Li Y, Wang JG, **Gao PJ**, Wang GL, Qian YS, Zhu DL, Staessen JA. Interaction between body mass index and alcohol intake in relation to blood pressure in HAN and SHE Chinese. *Am J Hypertens*. 2006 May;19(5):448-53.
29. Hu BC, Chu SL, Wang JG, Wang ZH, Wang GL, **Gao PJ**, Zhu DL. Association of aldosterone synthase gene -344T/C polymorphism with plasma aldosterone and angiotensin II concentration in hypertensive patients. *Zhonghua Yi Xue Za Zhi*. 2006 Apr 25;86(16):1144-7.
30. Li Y, Staessen JA, Li LH, **Gao PJ**, Thijssen L, Brand E, Brand-Herrmann SM, Zhu DL, Wang JG. Blood pressure and urinary sodium excretion in relation to the A-1984G adrenomedullin polymorphism in a Chinese population. *Kidney Int*. 2006 Apr;69(7):1153-8.
31. Hu BC, Chu SL, Wang JG, Wang GL, **Gao PJ**, Zhu DL. Single nucleotide polymorphisms of three candidate genes in essential hypertension. *Zhonghua Nei Ke Za Zhi*. 2006 Apr;45(4):281-4.
32. Li Y, Wang JG, Dolan E, **Gao PJ**, Guo HF, Nawrot T, Stanton AV, Zhu DL, O'Brien E, Staessen JA. Ambulatory arterial stiffness index derived from 24-hour ambulatory blood pressure monitoring. *Hypertension*. 2006 Mar;47(3):359-64.
33. Li L, Zhu DL, Shen WL, **Gao PJ**. Increased migration of vascular adventitial fibroblasts from spontaneously hypertensive rats. *Hypertens Res*. 2006 Feb;29(2):95-103.
34. Shen WL, **Gao PJ**, Che ZQ, Ji KD, Yin M, Yan C, Berk BC, Zhu DL. NAD(P)H oxidase-derived reactive oxygen species regulate angiotensin-II induced adventitial fibroblast phenotypic differentiation. *Biochem Biophys Res Commun*. 2006 Jan 6;339(1):337-43.
35. Lei Liao, Ximin Zeng, **Pingjin Gao**, Dingliang Zhu, Yanai Mei. PKC pathway associated with the expression of an A-type K<sup>+</sup> channel induced by TGF-β1 in rat vascular myofibroblasts. *Biochem Biophys Res Commun*. 2005 Oct 28;336(3):854-9.
36. Zhang FB, Li L, Fang B, Zhu DL, Yang HT, **Gao PJ**. Passage-restricted differentiation potential of mesenchymal stem cells into cardiomyocyte-like cells. *Biochem Biophys Res Commun*. 2005 Oct 28;336(3):784-92.
37. Fan CL, **Gao PJ**, Che ZQ, Liu JJ, Wei J, Zhu DL. Therapeutic neovascularization by autologous transplantation with expanded endothelial progenitor cells from peripheral blood into ischemic hind limbs. *Acta Pharmacol Sin*. 2005 Sep;26(9):1069-75.
38. Liu YQ, Zhang YZ, Sun CY, **Gao PJ**. A novel approach to estimate in vitro antibacterial potency of Chinese medicine using a concentration-killing curve method. *Am J Chin Med*. 2005;33(4):671-82.
39. Li Y, Wang JG, **Gao P**, Guo H, Nawrot T, Wang G, Qian Y, Staessen JA, Zhu D. Are published characteristics of the ambulatory blood pressure generalizable to rural Chinese? The JingNing population study. *Blood Press Monit*. 2005 Jun;10(3):125-134.
40. CHE Zaiqian, **GAO Pingjin**, SHEN Weili, WU Yongjie, LIU Jianjun, GUO Li, ZHU Dingliang. Angiotensin II induces Connective Tissue Growth Factor in the Adventitial Fibroblasts. *Chinese Journal of Hypertension*. 2005 May 25;13(5):301-305.
41. Haiya Wang, **Pingjin Gao**, Kiada Ji, Weifeng Shen, Lin Lu, Dingliang Zhu. Number of circulating endothelial progenitor cells inversely correlate with the severity of coronary artery disease in patients with stable coronary artery disease. *Chinese Journal of Cardiology*. 2005 May 19;33(5):425-427.
42. Liu YQ, Zhang YZ, **Gao PJ**. Novel concentration-killing curve method for estimation of bactericidal potency of antibiotics in an in vitro dynamic model. *Antimicrob Agents Chemother*. 2004 Oct;48(10):3884-91.
43. SUN AiJun, **GAO PingJing**, LIU JianJun, JI KaiDa, ZHU DingLiang. Osteopontin enhances migratory ability of cultured aortic adventitial fibroblasts from spontaneously hypertensive rats. *Acta Physiologica Sinica*. 2004 Feb 25;56(1):21-24.
44. **Gao PJ**, Li Y, Sun AJ, Liu JJ, Ji KD, Zhang YZ, Shen WL, March P, Zhu DL. Differentiation of vascular myofibroblasts induced by transforming growth factor-β1 requires the involvement of protein kinase Ca. *Journal of Molecular and Cellular Cardiology*. 2003 Sep;35(9):1105-1112.
45. SUN AiJun, **GAO PingJin**, LIU JianJun, JI KaiDa, ZHU DingLiang. Identification of genes related to cell phenotypic transition by differential display analysis. *Acta physiologica Sinica*. 2001 Dec;53(6):435-439.
46. **Gao PJ**, Zhang KX, Zhu DL, He X, Han ZY, Zhan YM, Yang LW. Diagnosis of Liddle syndrome by genetic analysis of beta and gamma subunits of epithelial sodium channel--a report of five affected family members. *J Hypertens*. 2001 May;19(5):885-9.
47. Zhang YZ, **Gao PJ**, Wang XY, Stepien O, Marche P, Zhang ZL, Zhu DL. The inhibitory mechanisms of amlodipine in human vascular smooth muscle cell proliferation. *Hypertens Res*. 2000 Jul;23(4):403-6.
48. **Pingjin Gao**, Yuan Gong, Lanshen Gong, Dingliang Zhu. Measurement of serum hepatocyte growth factor in patients with essential hypertension. *Chinese Journal of Hypertension*. 2000 Mar 1;8(4):309-311.

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