長庚大學臨床醫學研究所教師簡介

PERSONAL DATA

NAME: **張國志 (Gwo-Jyh Chang)**
TITLE: Associate Professor
SEX: Male
DATE OF BIRTH: July 15, 1963
PLACE OF BIRTH: Yi-Lan County, Taiwan
NATIONALITY: Taiwan
MARTIAL STATUS: Married
CURRENT WORK ADDRESS: Cardiovascular Electrophysiology and Pharmacology Research Lab, College of Medicine, Chang Gung University, 1st Medical Building, No. 259, Wen-Hwa 1st Road, Kwei-Shan, Tao-Yuan 33302, Taiwan
CONTACT: gjchang@mail.cgu.edu.tw (Tel: 886-3-2118800 ext. 3481; Fax: 886-3-3280170)
SPECIALITY: Pharmacology
SUBSPECIALTY: Cardiovascular electrophysiology, pathology and pharmacology; Ion channel pharmacology; Natural product pharmacology
LICENSURE: Licensed pharmacist since Sep. 1986

EDUCATION

1992/9-1997/1	Ph.D., Graduate Institute of Pharmacology, College of Medicine, National Taiwan University, Taipei, Taiwan
1989/9-1991/6	M.Sci., Graduate Institute of Pharmacology, College of Medicine, National Taiwan University, Taipei, Taiwan
1982/9-1986/6	B.S., Department of Pharmacy, Kaohsiung Medical College, Kaohsiung, Taiwan

ACADEMIC APPOINTMENTS

2015/8-present	Associate Professor, Graduate Institute of Clinical and Medicinal Sciences, College of Medicine, Chang-Gung University, Tao-Yuan, Taiwan
1999/8-2015/7	Assistant Professor, Graduate Institute of Clinical and Medicinal Sciences, College of Medicine, Chang-Gung University, Tao-Yuan, Taiwan
1997/8-1999/8	Postdoctor, Drug Development and Research Group, College of Medicine, National Taiwan University, Taipei, Taiwan
1991/8-1997/7	Teaching Assistant, Department of Pharmacology, College of Medicine, National Taiwan

	University, Taipei, Taiwan
1988/8-1989/7	Research Assistant, Department of Anesthesiology, Taipei Veterans Hospital, and Department of Pharmacology, National Yang-Ming Medical College, Taipei, Taiwan

PROFESSIONAL SOCIETIES

Member, Taiwan Pharmacological Society

JOURNAL REVIEW

Pharmacological Research (2010)
Cardiovascular and Hematological Agents in Medicinal Chemistry (2013)
Pharmaceutical Biology (2014)
Environmental Toxicology & Pharmacology (2014)
Oxidative Medicine and Cellular Longevity (2014)
Molecules (2014)
Journal Agricultural and Food Chemistry (2015)
Journal Physiology and Pharmacology (2016)
European Journal Pharmacology (2016 [2 papers], 2017 [2 papers], 2018 [2 papers])

RESEARCH INTERESTS

The strength of my research is the characterization of the pharmacological and electrophysiological properties of new drugs with antiarrhythmic, anti-heart failure or vasorelaxant effects. In the past few years, we also devoted in the studies of novel cardioprotective agents on the pathological (including structural, molecular and electrical) remodeling of the failing heart in pressure overloaded, diabetic, myocardial infracted, or pulmonary hypertensive animals. By close cooperation with investigators of other disciplines we shall explore many complicate questions about the pathological mechanisms and find potential therapeutic strategies of modern cardiac diseases.

RESEARCH TECHNIQUES

The main research models in our Lab are created for the electropharmacological research of the cardiovascular system and include: (1) *In vivo* cardiac performance, echocardiography, and electrocardiogram recording technique for small animals, (2) *In vitro* and *in vivo* ischemia and reperfusion-induced or electrical pacing-induced arrhythmic models, (3) Intracardiac conduction system recording technique for isolated heart, (4) Left ventricular pressure (LVP) and monophasic action potential recording technique for isolated heart, (5) Isometric tension recording technique for isolated muscle tissues, (6) Conventional microelectrode recording technique for membrane potential recording, (7) Whole-cell voltage (patch)-clamp recording technique for ionic current detection, (8) Calcium fluorescence signal (calcium transients) recording technique, and (9) Protein detection (Western blot) technique. The well established patch-clamp recording technique in our Lab is one of the most convincing pathways to evaluate the function of various ionic channels on dissociated cells. This

technique was developed by Neher and Sakmann since 1970s and is still gained worldwide use by the biomedical scientists. The application of this technique combined with various cardiovascular research techniques can help us to explore not only the actions of new drugs with unknown mechanism but also to reveal the electrophysiological remodeling processes during chronic cardiovascular diseases.

TEACHING ACTIVITIES

1. General topics on experimental and biochemical pharmacology
2. Special topics on pharmacological therapeutics
3. Seminars in research (M.S. & Ph.D. degree program)
4. Cell biology
5. Instrumental analysis and laboratory work
6. Lecture and laboratory work of modern life science research techniques
7. Biomedical research techniques
8. Special topics on circulation
9. Special topics on pharmacology
10. Pharmacology (undergraduate)
11. Laboratory Exercise of Pharmacology
12. Advanced pharmacology
13. Advanced clinical pharmacology
14. Tumor biology

JOURNAL PUBLICATIONS (*corresponding author)

1. Lui, P.W., **Chang, G.J**., Lee, T.Y. and Samuel Chan*, H.H. (1993). Spinal cord localization of the motoneurons innervating the sacrococcygeus dorsi lateralis muscle and their noradrenergic nerve terminals in rats. *Neurosci. Lett.* 150: 165-168. (SCI). (IF 2.159, Neurosciences 188/261).

2. Lui, P.W., **Chang, G.J.**, Lee, T.Y. and Samuel Chan*, H.H. (1993). Antagonization of fentanyl-induced muscular rigidity by denervation of the coerulospinal noradrenergic pathway in the rat. *Neurosci. Lett.* 157: 145-148. (SCI). (IF 2.159, Neurosciences 188/261).

3. Su, M.J., **Chang, G.J.** and Kuo, S.C. (1993). Mechanical and electrophysiological evidence for the positive inotropic effect of 2-phenyl-4-oxo-hydroquinoline in rat cardiac tissues. *Br. J. Pharmacol.* 110: 310-316. (SCI). (IF 6.810, Pharmacology & Pharmacy 12/261).

4. Lin, C.H., **Chang, G.J.**, Su, M.J., Wu, Y.C., Teng, C.M. and Ko*, F.N. (1994). Pharmacological characteristics of liriodenine, isolated from *Fissistigma glaucescens*, a novel muscarinic antagonist in guinea pigs. *Br. J. Pharmacol.* 113: 275-281. (SCI). (IF 6.810, Pharmacology & Pharmacy 12/261).

5. **Chang, G.J.**, Su*****, M.J., Lee, P.H., Lee, S.S. and Karin Liu, C.S. (1995). Mechanical and electrophysiological effects of a hydroxyphenyl-substituted tetrahydroisoquinoline, SL-1, on isolated rat cardiac tissues. *Can. J. Physiol. Pharmacol.* 73: 1651-1660. (SCI). (IF 2.210, Physiology 49/83).

6. **Chang, G.J.**, Wu, M.H., Wu, Y.C. and Su*, M.J. (1996). Electrophysiological mechanisms for

antiarrhythmic efficacy and positive inotropy of liriodenine, a natural aporphine alkaloid from *Fissistigma glaucescens*. *Br. J. Pharmacol.* 118: 1571-1583. (SCI). (IF 6.810, Pharmacology & Pharmacy 12/261).

7. Su*, M.J., **Chang, G.J.**, Wu, M.H. and Kuo, S.C. (1997). Electrophysiological basis for the antiarrhythmic action and positive inotropy of HA-7, a furoquinoline alkaloid derivative, in rat heart. *Br. J. Pharmacol.* 122: 1285-1298. (SCI). (IF 6.810, Pharmacology & Pharmacy 12/261).

8. **Chang, G.J.**, Wu, M.H., Chen, W.P., Kuo, S.C. and Su*, M.J. (2000). Electrophysiological characteristics of antiarrhythmic potential of acrophyllidine, a furoquinoline alkaloid isolated from *Acronychia halophylla*. *Drug Devel. Res.* 50: 170-185. (SCI). (IF 2.646, Chemistry, Medicinal 27/59).

9. **Chang, G.J.**, Su*, M.J., Hung, L.M. and Lee, S.S. (2002) Cardiac electrophysiologic and antiarrhythmic actions of a pavine alkaloid derivative, *O*-methyl-neocaryachine, in rat heart. *Br. J. Pharmacol.* 136: 459-471. (IF 6.810, Pharmacology & Pharmacy 12/261).

10. **Chang*, G.J.**, Su, M.J., Kuo, S.C., Lin, T.P. and Lee, Y.S. (2006). Multiple cellular electrophysiological effects of a novel antiarrhythmic furoquinoline derivative HA-7 [*N*-benzyl-7-methoxy-2,3,4,9-tetrahydrofuro[2,3-*b*]quinoline-3,4-dione] in guinea pig cardiac preparations. *J. Pharmacol. Exp. Ther.* 316:380-391. (SCI) (IF 3.706, Pharmacology & Pharmacy 53/261).

11. Chang, S.W., **Chang, G.J.**, and Su*, M.J. (2006). Change of potassium current density in rabbit corneal epithelial cells during maturation and cellular senescence. *J. Formos. Med. Assoc.* 105:7-16. (SCI) (IF 2.452, Medicine, General & Internal 42/155).

12. **Chang*, G.J.**, Su, M.J., Wu, T.S., Chen, W.P. and Kuo, C.M. (2008). Electromechanical characterization of cinnamophilin, a natural thromboxane A_2 receptor antagonist with anti-arrhythmic activity, in guinea-pig heart. *Br. J. Pharmacol.*, 153: 110-123. (SCI) (IF 6.810, Pharmacology & Pharmacy 12/261).

13. Chen*, W.J., Ho, W.J., **Chang, G.J.**, Chen, S.T., Pang, J.H.S., Chou, S.H., Tsay, P.K. and Kuo, C.T. (2008). Propylthiouracil, independent of its antithyroid effect, produces endothelium-dependent vasodilatation through induction of nitric oxide bioactivity. *Atherosclerosis*, 196: 383-390. SCI (IF 4.467, Peripheral Vascular Disease 9/65).

14. Chang, C.J., Chen, C.C., Hsu, L.A., **Chang, G.J.**, Ko, Y.S., Chen, C.F., Chen, M.Y., Yang, S.H., Pang*, J.H. (2009) Degradation of the internal elastic laminae in vein grafts of rats with aortocaval fistulae: potential impact on graft vasculopathy. *Am. J. Pathol.*, 174: 1837-1846. (SCI). (IF 4.069, Pathology 13/79).

15. **Chang*, G.J.**, Lin, T.P., Ko, Y.S. and Lin, M.S. (2010). Endothelium-dependent and -independent vasorelaxation induced by CIJ-3-2F, a novel benzyl-furoquinoline with antiarrhythmic action, in rat aorta. *Life Sci.,* 86: 869-879. (SCI). (IF 3.234, Pharmacology & Pharmacy 78/261).

16. Chang, C.J., Wu, L.S., Hsu, L.A., **Chang, G.J**., Chen, C.F., Yeh, H.I. and Ko*, Y.S. (2010) Differential endothelial gap junction expression in venous vessels exposed to different

hemodynamics. *J. Histochem. Cytochem.,* 58: 1083-1092. (SCI). (IF 2.816, Cell Biology 118/190).

17. Chen*, W.J., Yeh, Y.H., Lin, K.H., **Chang, G.J.** and Kuo, C.T. (2011) Molecular characterization of thyroid hormone-inhibited atrial L-type calcium channel expression: implication for atrial fibrillation in hyperthyroidism. *Basic Res. Cardiol.,* 106: 163-174. (SCI). (IF 5.723, Cardiac & Cardiovascular Systems 16/128).

18. Yeh, Y.H., Kuo, C.T., Chan, T.H., **Chang, G.J.**, Qi, X.Y., Tsai, F.C., Nattel, S. and Chen*, W.J. (2011) Transforming growth factor-β and oxidative stress mediate tachycardia-induced cellular remodelling in cultured atrial-derived myocytes. *Cardiovasc. Res.,* 91: 62-70. (SCI). (IF 6.290, Cardiac & Cardiovascular Systems 16/128).

19. Wu, Y.H., Chuang, S.Y., Hong, W.C., Lai, Y.J., **Chang, G.J.** and Pang*, J.H. (2012) Berberine reduces leukocyte adhesion to LPS-stimulated endothelial cells and VCAM-1 expression both in vivo and in vitro. *Int. J. Immunopathol. Pharmacol.*, 25(3):741-750. (SCI). (IF 2.117, Pharmacology & Pharmacy 160/261).

20. **Chang*, G.J.**, Chang, C.J., Chen, W.J., Yeh, Y.H. and Lee H.Y. (2013). Electrophysiological and mechanical effects of caffeic acid phenethyl ester, a novel cardioprotective agent with antiarrhythmic activity, in guinea-pig heart. *Eur. J. Pharmacol.,* 702: 194-207. (SCI). (IF 3.040, Pharmacology & Pharmacy 94/261).

21. Yeh, Y.H., Kuo, C.T., **Chang, G.J.**, Qi, X.Y., Nattel, S. and Chen*, W.J. (2013). Nicotinamide adenine dinucleotide phosphate oxidase 4 mediates the differential responsiveness of atrial versus ventricular fibroblasts to transforming growth factor-β. *Circ. Arrhythm. Electrophysiol.,* 6(4): 790-798. (SCI). (IF 4.728, Cardiac & Cardiovascular Systems 30/128).

22. Lee, C.H., Lin, Y.H., Chang, S.H., Tai, C.D., Liu*, S.J., Chu, Y., Wang, C.J., Hsu, M.Y., Chang, H., **Chang, G.J.**, Hung, K.C., Hsieh, M.J., Lin, F.C., Hsieh, I.C., Wen, M.S. and Huang, Y. (2014). Local sustained delivery of acetylsalicylic acid via hybrid stent with biodegradable nanofibers reduces adhesion of blood cells and promotes reendothelialization of the denuded artery. *Int. J. Nanomed.*, 9: 311–326. (SCI). (IF 4.370, Pharmacology & Pharmacy 37/261).

23. **Chang*, G.J.**, Yeh, Y.H., Lin, T.P., Chang, C.J. and Chen, W.J. (2014). Electromechanical and atrial and ventricular antiarrhythmic actions of CIJ-3-2F, a novel benzyl-furoquinoline vasodilator in rat heart. *Br. J. Pharmacol.*, 171: 3918–3937. (SCI). (IF 6.810, Pharmacology & Pharmacy 12/261).

24. Hsu, L.A., Yeh, Y.H., Kuo, C.T, Chen, Y.H., **Chang, G.J.**, Tsai, F.C. and Chen*, W.J. (2014) Microsatellite polymorphism in the heme oxygenase-1 gene promoter and the risk of atrial fibrillation in Taiwanese. *PLoS ONE,* 9: e108773. (SCI). (IF 2.766; Multidisciplinary Sciences 15/64).

25. Yeh, Y.H., Kuo, C.T, **Chang, G.J.**, Lai, Y.J., Chen, Y.H. and Chen*, W.J. (2015). Rosuvastatin suppresses atrial tachycardia-induced cellular remodeling via Akt/Nrf2/heme oxygenase-1 pathway. *J. Mol. Cell. Cardiol.* 82: 84-92. (SCI). (IF 5.296, Cardiac & Cardiovascular Systems 23/128).

26. Lai, Y.J., **Chang, G.J.**, Yeh, Y.H., Pang, J.H.S., Huang, C.C. and Chen*, W.J. (2015). Propylthiouracil Attenuates Experimental Pulmonary Hypertension via Suppression of Pen-2, a Key Component of Gamma-Secretase. *PLoS One,* 10(9): e0137426. (SCI). (IF 2.766; Multidisciplinary Sciences 15/64).

27. Wu, L.S., Chang, S.H., **Chang, G.J.**, Liu, J.R., Chan, Y.H., Lee, H.F., Wen, M.S., Chen, W.J., Yeh, Y.H., Kuo, C.T., See*, L.C. (2016). A comparison between angiotensin converting enzyme inhibitors and angiotensin receptor blockers on end stage renal disease and major adverse cardiovascular events in diabetic patients: a population-based dynamic cohort study in Taiwan. *Cardiovasc. Diabetol.* 15:56. (SCI). (IF 5.235, Endocrinology & Metabolism 22/142).

28. Tsai, F.C., **Chang, G.J.**, Hsu, Y.J., Lin, Y.M., Lee, Y.S., Chen, W.J., Kuo*, C.T. and Yeh*, Y.H. (2016). Proinflammatory gene expression in patients undergoing mitral valve surgery and Maze ablation for atrial fibrillation. *J. Thorac. Cardiovasc. Surg.* 151(6): 1673-1682. (SCI). (IF 4.880, Surgery 9/200).

29. Li, L.F., Chang Y.L., Chen, N.H., Wang, C.Y., **Chang, G.J.**, Lin, M.C., Chang, C.H., Huang, C.C., Chung, J.H., Yang, Y.P., Chiou, S.H., Liu*, Y.Y. (2016). Inhibition of Src and forkhead box O1 signaling by induced pluripotent stem-cell therapy attenuates hyperoxia-augmented ventilator-induced diaphragm dysfunction. *Translational Res.* 173: 131–147.e1. (SCI). (IF 4.880, Medical Laboratory Technology 3/30).

30. Yeh, Y.H., Hsu, L.A., Chen, Y.H., Kuo, C.T., **Chang, G.J.**, Chen*, W.J. (2016). Protective role of heme oxygenase-1 in atrial remodeling. *Basic Res. Cardiol.* 111:58 (13 pages) (SCI). (IF 5.723, Cardiac & Cardiovascular Systems 18/128).

31. Tsai, F.C., Lin, Y.C., Chang, S.H., **Chang, G.J.**, Hsu, Y.J., Lin, Y.M., Lee, Y.S., Wang, C.L., Yeh*, Y.H. (2016) Differential left-to-right atria gene expression ratio in human sinus rhythm and atrial fibrillation: Implications for arrhythmogenesis and thrombogenesis. *Int. J. Cardiol.* 222: 104–112. (SCI). (IF 4.034, Cardiac & Cardiovascular Systems 41/128).

32. Chuang, W.Y., Chang, H., **Chang, G.J.**, Wang, T.H., Chang, Y.S., Wang, T.H., Yeh, C.J., Ueng, S.H., Chien, H.P., Chang, C.Y., Wan, Y.L., Hsueh*, C. (2017). Pleomorphic mantle cell lymphoma morphologically mimicking diffuse large B-cell lymphoma: common cyclin D1 negativity and a simple immunohistochemical algorithm to avoid the diagnostic pitfall. *Histopathology.* 70(6): 986-999. (SCI). (IF 3.267, Pathology 18/79). Mar 10

33. Lai*, Y.J., Hsu, H.H., **Chang, G.J.**, Lin, S.H., Chen, W.J., Huang, C.C., Pang, J.H.S. (2017) Prostaglandin E1 attenuates pulmonary artery remodeling by activating phosphorylation of the CREB and PTEN signaling pathway. *Sci. Rep.* 7(1): 9974. 2017 Aug 30 (SCI). (IF 4.122, Multidisciplinary Sciences 12/64).

34. Chen*, C.N., Liao, Y.H., Lin, S.Y., Yu, J.X., Li, Z.J., Lin, Y.C., **Chang, G.J.**, Lin, C.H., Wong, A.M. (2017) Diet-induced obesity accelerates blood lactate accumulation of rats in response to

incremental exercise to maximum. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 313 (5): R601-R607. 2017 Nov 1. (SCI). (IF 3.082, Physiology 28/83).

35. Li, H.H., Hsu, H.H., **Chang, G.J.**, Chen, I.C., Ho, W.J., Hsu, P.C., Chen, W.J., Pang, J.H.S., Huang, C.C., Lai*, Y.J. (2018). Prostanoid EP4 agonist, L-902,688, activates PPARγ and attenuates pulmonary arterial hypertension. *Am. J. Physiol. Lung Cell. Mol. Physiol*. 314(3): L349-L359. 2018 Mar 1. (IF 4.092, Physiology 11/83).

36. Chou, W.C., Wu, M.H., Chang, P.H., Hsu, H.C., **Chang, G.J.**, Huang, W.K., Wu, C.E., Hsieh*, Jason C.H. (2018). A prognostic model based on circulating tumour cells is useful for identifying the poorest survival outcome in patients with metastatic colorectal cancer. *Int. J. Bio. Sci.* 14(2): 137-146. doi: 10.7150/ijbs.2318. Jan. (IF 4.057, Multidisciplinary Sciences 84/357)

37. Tsai, W.C., Yu, T.Y., **Chang, G.J.**, Lin, L.P., Lin, M.S., Pang*, J.H.S. (2018). Platelet-rich plasma releasate promotes regeneration and decreases inflammation and apoptosis of injured skeletal muscle. *Am. J. Sports Med.* 46(8):1980-1986. doi: 10.1177/0363546518771076. Jul. (IF 6.057, Orthopedics 7/219)

38. Liu, G.H., Tsai, M.Y., **Chang, G.J.**, Wu, C.M., Lin, S.K., Chen*, Y.S., Lee*, T.Y. (2018). Safety assessment of the auto manipulation device for acupuncture in sprague-dawley rats: Preclinical evaluation of the prototype. *Evidence-based Complementary & Alternative Medicine.* 2018: 9 pages. Article ID 5708393. https://doi.org/10.1155/2018/5708393. Aug. (IF 2.064, Integrative & Complementary Medicine 10/27)

39. Chang, P.C., Huang, Y.C., Lee, H.L., **Chang, G.J.**, Chu, Y., Wen, M.S., Chou*, C.C. (2018). Inhomogeneous downregulation of I_{Na} underlies piceatannol proarrhythmic mechanism in regional ischemia-reperfusion. *Pacing Clin. Electrophysiol.* 41(9): 1116-1122. doi: 10.1111/pace.13424. Sep. (IF 1.441, Engineering, Biomedical 54/78)

40. **Chang*, G.J.**, Yeh, Y.H., Chen, W.J., Ko, Y.S., Pang, J.H.S., Lee H.Y. (2019). Inhibition of advanced glycation end products formation attenuates cardiac electrical and mechanical remodeling and vulnerability to tachyarrhythmias in diabetic rats. *J. Pharmacol. Exp. Ther.* 368: 66-78. DOI: https://doi.org/10.1124/jpet.118.252080. Jan. (SCI) (IF 3.706, Pharmacology & Pharmacy 53/261).

CONGRESS PRESENTATIONS

1. **Chang, G.J.**, Kuo, S.C. and Su*, M.J. (1994). Positive inotropic action of HAJ7 on rat and guinea pig cardiac tissue. The Ninth Joint Annual Conference of Biomedical Sciences. Abstract No. 99.
2. **Chang, G.J.**, Wu, M.H., Selma Sun, S.M., Wu, Y.C. and Su*, M.J. (1995). The electrophysiological effect and antiarrhythmic potential of liriodenine, isolated form *Fissistigma glaucescens*. The Tenth Joint Annual Conference of Biomedical Sciences. Abstract No. 091.
3. **Chang, G.J.**, Wu, M.H., Selma Sun, S.M., Young, M.L., Kuo, S.C. and Su*, M.J. (1997). The electrophysiological mechanisms for antiarrhythmic potential of a natural furoquinoline alkaloid,

acrophyllidine. The Twelfth Joint Annual Conference of Biomedical Sciences. Abstract No. P 101.

4. **Chang, G.J.**, Wu, M.H., Lee, S.S. and Su*, M.J. (1998). Electrophysiological mechanisms for the antiarrhythmic action of a pavine alkaloid derivative O-Me-CA. Second Symposium on Cardiovascular Science Across Strait. Dalian, May 20-23. Abstract No. 7-2.
5. **Chang, G.J.**, Wu, M.H., Lee, S.S. and Su*, M.J. (1998). Antiarrhythmic action of O-methyl-neocaryachine, a pavine alkaloid derivative, in rat heart. The 2nd Association of Eastern Asia Research Universities (AEARU) Biotechnology Symposium/Workshop in Taipei. Abstract No. PS-13.
6. **Chang*, G.J.**, Kuo, S.C. and Su, M.J. (2000). Electrophysiological and inotropic characterization of a novel antiarrhythmic agent, HA-7, in guinea pig heart. The Fifteenth Joint Annual Conference of Biomedical Sciences. Abstract No. P 45.
7. **Chang*, G.J.**, Lee, Y.S., Su, M.J. and Kuo, S.C. (2000). Characterization of the electromechanical effects of HA-7, a furoquinoline alkaloid derivative with antiarrhythmic potential, in guinea pig heart. Third Symposium on Cardiovascular Diseases Across Strait. Bejing, Sep 7-9. Abstract page 88.
8. **Chang*, G.J.**, Su, M.J. and Kuo, S.C. (2001). Electrophysiological evaluation for the antiarrhythmic potential of furoquinoline alkaloid derivatives. The Sixteenth Joint Annual Conference of Biomedical Sciences. Abstract No. S54.
9. **Chang*, G.J.**, Su, M.J. and Wu, Y.C. (2001).The electrophysiological effects of liriodenine on the conduction system of guinea pig heart. The Sixteenth Joint Annual Conference of Biomedical Sciences. Abstract No. P135.
10. Su*, M.J., **Chang, G.J.**, Hung, L.M., Chen, W.P., Chang, W.L., Lee, S.S., Kuo, S.C., Wu, T.S. and Wu, Y.C. (2001). Difference of cardioprotective activities of chemical principles in isolated hearts and ischemia-reperfusion animals. The Sixteenth Joint Annual Conference of Biomedical Sciences. Abstract No. S52.
11. **Chang*, G.J.**, Lee, Y.S., Su, M.J. and Lin, T.P. (2002). Electrophysiological basis for the antiarrhythmic efficacy of CIJ-3-2F, a benzyl-furoquinoline derivative with vasorelaxation activity, in rat heart. Fourth Symposium on Cardiovascular Diseases Across Strait. Shanghai, Mar. 30-31. Abstract No. 158.
12. **Chang*, G.J.**, Su, M.J., Kuo, C.M. and Wu, T.S. (2003) Electromechanical effects of cinnamophilin in guinea pig heart. The 18th Joint Annual Conference of Biomedical Sciences. Taipei, Abstract No. P158.
13. Li, S.L., Lin, T.P., Su, I.F., Huang*, A.C., Huang, S.M., Chang, C.P., **Chang, G.J.**, Su, M.J. (2007). Synthesis and biological activity of ethyl 2-[N-substituted benzyl-4'(or 3')-bromo]anilino-4-oxo-4,5-dihydrofuran-3-carboxylate. Medicinal Chemistry Conference of Taiwan Pharmaceutical Association, 2007-05-18.
14. **Chang*, G.J.**, Lin, T.P., Ko, Y.S. and Lin, M.S. (2008). Mechanisms of vasorelaxation induced by CIJ-3-2F, a benzyl-furoquinoline antiarrhythmic agent, in rat thoracic aorta. The 23rd Joint

Annual Conference of Biomedical Sciences. Taipei, Abstract No. P2.

15. **Chang*, G.J.**, Wang, Y.C., Hsieh, C.W. and Li, H.Y. (2009) Ca^{2+} Antagonistic action of caffeic acid phenethyl ester (CAPE), a known inhibitor of NF-κB activation, in guinea pig heart. The 24th Joint Annual Conference of Biomedical Sciences. Taipei. Abstract No. P1.

16. **Chang* G.J.**, Ko, Y.S., Chen, W.J., Yeh, Y.H., Weng, S.H., Tsai, S.Y. and Lee, H.Y. (2010) Candesartan Cilexetil prevents cardiac electrical remodeling and calcium handling abnormalities in pressure-overloaded rats. American Heart Association Scientific Session 2010. Chicago, U.S.A. Nov. 13-17, Circulation 2010;122:A14304.

17. Yeh, YH, Lin, K.H., **Chang, G.J.**, Kuo, C.T. and Chen*, W.J. (2011) Molecular Mechanism Of Thyroid Hormone-inhibited Atrial L-type Calcium Channel Expression. Heart Rhythm 2011 32nd Annual Scientific Session, San Francisco, CA, U.S.A. May 06, Abstract No. PO5-102.

18. **Chang*, G.J.**, Yeh, Y.H., Lai, Y.J., and Chen, W.J. (2018) Hemin treatment attenuates progression of right ventricular pressure overload-induced electromechanical remodeling in rats, The 33rd Joint Annual Conference of Biomedical Sciences. Taipei. Abstract No. PH130.