

## 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, 1<sup>st</sup> Medical Building,  
No. 259, Wen-Hwa 1<sup>st</sup> Road, Kwei-Shan, Tao-Yuan 33302, Taiwan

CONTACT: [gjchang@mail.cgu.edu.tw](mailto: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

1999/8-2017/7 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, 2017)

## 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 infarcted, 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 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
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 2.107, Neurosciences 171/256).
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 coeruleospinal noradrenergic pathway in the rat. *Neurosci. Lett.* 157: 145-148. (SCI). (IF 2.107, Neurosciences 171/256).
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 5.259, Pharmacology & Pharmacy 17/253).
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 5.259, Pharmacology & Pharmacy 17/253).
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 1.704, Pharmacology & Pharmacy 174/253).
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 5.259, Pharmacology & Pharmacy 17/253).

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 5.259, Pharmacology & Pharmacy 17/253).
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 0.984, Pharmacology & Pharmacy 226/254).
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 5.259, Pharmacology & Pharmacy 17/253).
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 3.760, Pharmacology & Pharmacy 53/253).
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 2.018, Medicine, General & Internal 46/154).
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<sub>2</sub> receptor antagonist with anti-arrhythmic activity, in guinea-pig heart. *Br. J. Pharmacol.*, 153: 110-123. (SCI) (IF 5.259, Pharmacology & Pharmacy 17/253).
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 3.942, Peripheral Vascular Disease 12/63).
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 4.206, Pathology 11/79).
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 2.685, Pharmacology & Pharmacy 95/253).
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 2.140, Cell Biology 136/187).
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 6.008, Cardiac & Cardiovascular Systems 11/124).
  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- $\beta$  and oxidative stress mediate tachycardia-induced cellular remodelling in cultured atrial-derived myocytes. *Cardiovasc. Res.*, 91: 62-70. (SCI). (IF 5.465, Cardiac & Cardiovascular Systems 16/124).
  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 2.347, Pathology 32/79).
  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 2.896, Pharmacology & Pharmacy 98/257).
  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- $\beta$ . *Circ. Arrhythm. Electrophysiol.*, 6(4): 790-798. (SCI). (IF 5.410, Cardiac & Cardiovascular Systems 22/126).
  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 4.300, Pharmacology & Pharmacy 37/257).
  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 5.491, Pharmacology & Pharmacy 19/257).
  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 2.806; 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 5.680, Cardiac & Cardiovascular Systems 20/126).

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 2.806; 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 4.752, Cardiac & Cardiovascular Systems 29/126).
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 4.446, Surgery 12/197).
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 4.652, Medicine, General & Internal 17/155).
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 5.306, Cardiac & Cardiovascular Systems 23/126).
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 6.189, Cardiac & Cardiovascular Systems 16/126).
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 3.523, Pathology 15/79).
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. (SCI). (IF 4.259, Multidisciplinary Sciences 10/64).
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. (SCI). (IF 2.982, Physiology 27/84).

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., (2017). Prostanoid EP4 agonist, L-902,688, activates PPAR $\gamma$  and attenuates pulmonary arterial hypertension. *Am. J. Physiol. Lung Cell. Mol. Physiol.* 2017 Nov 16:ajplung002452017. doi: 10.1152/ajplung.00245.2017.
36. **Chang\*, G.J.**, Yeh, Y.H., Chen, W.J., Ko, Y.S., Pang, J.H.S., Lee H.Y. (2018). Inhibition of advanced glycation end products formation attenuates cardiac electrical and mechanical remodeling and vulnerability to tachyarrhythmias in diabetic rats. *Sci. Rep.* (under review).

## 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 from *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 2<sup>nd</sup> 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)  $\text{Ca}^{2+}$  Antagonistic action of caffeic acid phenethyl ester (CAPE), a known inhibitor of NF- $\kappa$ B 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 32<sup>nd</sup> Annual Scientific Session, San Francisco, CA, U.S.A. May 06, Abstract No. PO5-102.