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湖北省生物物理学会副理事长



1994 年被授予湖北省有突出贡献的中青年专家称号

European Biophysics Journal (SCI 源期刊)、Clin Exp Pharmacol Physiol (SCI 源期刊)、Acta Pharmacologica Sinica (SCI 源期刊) 和生物物理学报特邀审稿人。

四十多年来运用电生理和生化技术方法从整体，器官，细胞和分子水平研究各种药物、理化和生物因素引起的心律失常或心肌细胞损伤机制及其用药对策。主持完成国家自然科学基金面上项目 3 项、国际合作科研项目 5 项和省部级科研项目 5 项。共发表研究论文 60 余篇，其中被 SCI 收录 45 篇（均为通讯作者、第一作者或共同第一作者）。获原冶金工业部科技进步三等奖 1 项（第一完成人），获湖北省第十四届自然科学优秀学术论文特等奖 1 项；湖北省第四、第六、第七、十二、十三届自然科学优秀学术论文二等奖 5 项。2018 年湖北省自然科学三等奖 1 项（第一完成人）。

招收研究生学科及方向：生物学、生物医学工程

从事研究的学科专业领域及主要研究方向：生物学、心脏电生理与临床

### 主持的科研项目：

1. 国家自然科学基金面上项目, 30670764, cAMP-蛋白激酶 A 系统对心室肌细胞瞬时钠电流和持续性钠电流之间互变现象的调制作用, 2007/01-2009/12, 26 万元, 已结题, 主持
2. 国家自然科学基金面上项目, 30870912, 心室肌细胞持续性钠电流与胞内钙离子之间的正反馈调节机制, 2009/01-2011/12, 32 万元, 已结题, 主持
3. 国家自然科学基金面上项目, 81072637, 托特罗定-一种心肌细胞持续性钠电流高效阻断剂的研究, 2011/01-2013/12, 30 万元, 已结题, 主持

4. 国际合作科研项目, 美国 CV Therapeutics, Inc. 资助, 药物对氧自由基诱发的心室肌细胞晚钠电流的影响, 2006/06-2006/12, 0.46 万美元, 已结题, 主持
5. 国际合作科研项目, 美国 CV Therapeutics, Inc. 资助, 药物对低氧诱发的心室肌细胞持续性钠电流的影响, 2006/12-2008/12, 6 万美元, 已结题, 主持
6. 国际合作科研项目, 美国 CV Therapeutics, Inc. 资助, CO<sub>2</sub> 和钙离子对心室肌细胞持续性钠电流的调制作用, 2008/04-2010/04, 6 万美元, 已结题, 主持
7. 国际合作科研项目, 美国 Gilead Sciences, Inc. 资助, 心房肌细胞晚钠电流的作用: 与心室肌细胞的比较, 2011/05-2012/12, 6 万美元, 已结题, 主持
8. 湖北省自然科学基金项目, 2003ABA180, 缺氧及缺氧再灌注时的心室肌细胞持续性钠电流及其机理研究, 2003/05-2005/05, 2 万元, 已结题, 主持
9. 湖北省教育厅重大科研项目, Z200511002, 高钾, 酸中毒及模拟缺血对心室肌细胞持续性钠电流的影响, 2005/09-2007/09, 8 万元, 已结题, 主持
10. 稳心颗粒抑制心室肌细胞晚钠电流诱发的钠依赖性钙超载的研究。

国家国际科技合作专项项目子课题 (No:2013DFA31620) 30 万元

### 近五年发表的主要论著:

1. Liu Z, Jia Y, Song L, Tian Y, Zhang P, Zhang P, Cao Z, Ma J. Antiarrhythmic effect of crotonoside by regulating sodium and calcium channels in rabbit ventricular myocytes. *Life Sci.* 2020 Mar 1;244:117333. doi: 10.1016/j.lfs.2020.117333. Epub 2020 Jan 18. (JCR 分类: A2; 中科院分类: A3), IF: 3.647
2. Zhang PP, Guo ZF, Zhang PH, Liu ZP, Song L, Zhang ZF, Jia YZ, Cao ZZ, Ma JH\*. Eleutheroside B, a selective late sodium current inhibitor, suppresses atrial fibrillation induced by sea anemone toxin II in rabbit hearts. *Acta Pharmacol Sin.* 2020 Jul 1. doi: 10.1038/s41401-020-0453-z. Online ahead of print. PMID: 32612277. SCI 源期刊 (JCR 分类: A1; 中科院分类: A2), IF: 5.064
3. Lv Song, Ze-fu Zhang, Liang-kun Hu, Pei-hua Zhang, Zhen-zhen Cao, Zhi-pei Liu, Pei-pei Zhang and Ji-hua Ma\*. Curcumin, a Multi-Ion Channel Blocker That Preferentially Blocks Late Na<sup>+</sup> Current and Prevents I/R-Induced Arrhythmias. *Frontiers in Physiology* 21 August 2020 <https://doi.org/10.3389/fphys.2020.00978>. SCI 源期刊 (JCR 分类: A1; 中科院分类: A2), IF: 3.367
4. Liu Z, Hu L, Zhang Z, Song L, Zhang P, Cao Z, Ma J\*. Isoliensinine Eliminates Afterdepolarizations Through Inhibiting Late Sodium Current and L-Type Calcium

Current. *Cardiovasc Toxicol*. 2020 Aug 8. doi: 10.1007/s12012-020-09597-z. Online ahead of print. PMID: 32770463 SCI 源期刊(中科院分类: A3), IF: 2.284

5. Liu Z, Song L, Zhang P, Cao Z, Hao J, Tian Y, Luo A, Zhang P, Ma J. Ginsenoside Rb1 exerts antiarrhythmic effects by inhibiting  $I_{Na}$  and  $I_{CaL}$  in rabbit ventricular myocytes. *Sci Rep*. 2019 Dec 31;9(1):20425. doi: 10.1038/s41598-019-57010-9. SCI 源期刊 (JCR 分类: A1; 中科院分类: A3), IF:3.998

6. Zhenzhen Cao, Zhipei Liu, Peipei Zhang, Liangkun Hu, Jie Hao, Peihua Zhang, Youjia Tian, Zhijing Song, Quankui Zhou, Ji-hua Ma\*. Sodium Houttuynonate Inhibits Voltage-Gated Peak Sodium Current and Anemonia Sulcata Toxin II-Increased Late Sodium Current in Rabbit Ventricular Myocytes. *Pharmacology* 2018;102:253–261 (SCI, 中科院分类: A4) IF:1.625

7. Cao ZZ, Tian YJ, Hao J, Zhang PH, Liu ZP, Jiang WZ, Zeng ML, Zhang PP, Ma JH. Barbaloin inhibits ventricular arrhythmias in rabbits by modulating voltage-gated ion channels. *Acta Pharmacol Sin*. 2018 Mar; 39(3):357-370.( SCI, JCR 分类: A1; 中科院分类: A2), IF: 5.064

8. Zeng M, Jiang W, Tian Y, Hao J, Cao Z, Liu Z, Fu C, Zhang P, Ma J. Andrographolide inhibits arrhythmias and is cardioprotective in rabbits. *Oncotarget*. 2017 May 22; 8(37):61226-61238. SCI 2 区 IF: 5.165

9. Luo A, Liu Z, Cao Z, Hao J, Wu L, Fu C, Zeng M, Jiang W, Zhang P, Zhao B, Zhao T, Zhao J, Ma J\*. Wenxin Keli diminishes  $Ca^{2+}$  overload induced by hypoxia/reoxygenation in cardiomyocytes through inhibiting  $I_{NaL}$  and  $I_{CaL}$ . *Pacing Clin Electrophysiol*. 2017; 40(12):1412-1425.( SCI 中科院分类: A4) IF: 1.486

10. Jiang W, Zeng M, Cao Z, Liu Z, Hao J, Zhang P, Tian Y, Zhang P, Ma J. Icariin, a Novel Blocker of Sodium and Calcium Channels, Eliminates Early and Delayed Afterdepolarizations, As Well As Triggered Activity, in Rabbit Cardiomyocytes. *Frontiers in Physiology* 2017; 29 (8) : 342. (JCR 分类: A1; 中科院分类: A2), IF: 3.367

11. Fu C, Hao J, Zeng M, Song Y, Jiang W, Zhang P, Luo A, Cao Z, Belardinelli L, Ma J. Modulation of late sodium current by  $Ca^{2+}$ -calmodulin-dependent protein kinase II, protein kinase C and  $Ca^{2+}$  during hypoxia in rabbit ventricular myocytes. *Exp Physiol*. 2017;102(7):818-834. (SCI, 中科院分类: A3) IF: 2.431

12. Xing J, Zhang C, Jiang W, Hao J, Liu Z, Luo A, Zhang P, Fan X, Ma J. The Inhibitory Effects of Ketamine on Human Hyperpolarization-Activated Cyclic Nucleotide-Gated Channels and Action Potential in Rabbit Sinoatrial Node. *Pharmacology*. 2017;99(5-6):226-235. (SCI, 中科院分类: A4) IF: 1.442

13. Wang C, Wang LL, Zhang C, Cao ZZ, Luo AT, Zhang PH, Fan XR, Ma JH.

Tolterodine reduces veratridine-augmented late  $I_{Na}$ , reverse- $INCX$  and early afterdepolarizations in isolated rabbit ventricular myocytes. *Acta Pharmacol Sin.* 2016;37(11):1432-1441. (SCI, JCR 分类: A1; 中科院分类: A2), IF: 5.064

14. Ying Wu, Leilei Wang<sup>1</sup>, Jihua Ma\*, Yeji Song, Peihua Zhang, Antao Luo, Chen Fu, Zhenzhen Cao, Xiaojing Wang, John C. Shryock<sup>3</sup> and Luiz Belardinelli. Protein kinase C and  $Ca^{2+}$ -calmodulin-dependent protein kinase II mediate the enlarged reverse  $INCX$  induced by ouabain-increased late sodium current in rabbit ventricular myocytes. *Experimental Physiology* 2015; 100(4): 399-309. (SCI, 中科院分类: A3) IF: 2.431

15. An-tao LUO, Zhen-zhen CAO, Yu XIANG, Shuo ZHANG, Chun-ping QIAN, Chen FU, Pei-hua ZHANG, Ji-hua MA\*. Ketamine attenuates the  $Na^{+}$ -dependent  $Ca^{2+}$  overload in rabbit ventricular myocytes *in vitro* by inhibiting late  $Na^{+}$  and L-type  $Ca^{2+}$  currents. *Acta Pharmacologica Sinica* 2015; 36: 1327-1336 (SCI, JCR 分类: A1; 中科院分类: A2), IF: 5.064

16. Wang C, Wang LL, Zhang C, Cao ZZ, Luo AT, Zhang PH, Fan XR, Ma JH\*. Tolterodine reduces veratridine-augmented late  $I_{Na}$ , reverse- $INCX$  and early afterdepolarizations in isolated rabbit ventricular myocytes. *Acta Pharmacologica Sinica.* 2016; 37:1432-1441 (SCI, JCR 分类: A1; 中科院分类: A2), IF: 5.064