浙江省科学技术奖公示信息表（单位提名）

提名奖项：自然科学奖

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| 成果名称 | 心肌梗死后心脏修复和重建的关键机制与干预策略 |
| 提名等级 | 一等奖 |
| 提名书相关内容 | 见附表 |
| 主要完成人 | 胡新央，排名1，教授、主任医师，浙江大学医学院附属第二医院；陈静海，排名2，研究员，浙江大学医学院附属第二医院；吴蓉蓉，排名3，助理研究员，浙江大学医学院附属第二医院；朱伟，排名4，副研究员，浙江大学医学院附属第二医院；王建安，排名5，教授、主任医师，浙江大学医学院附属第二医院； |
| 主要完成单位 | 浙江大学医学院附属第二医院 |
| 提名单位 | 浙江大学 |
| 提名意见 | 心肌梗死及其后续的心力衰竭是导致我国国民死亡的重要原因，因其高发病率、高致残率和高致死率已造成了巨大的社会负担。如何促进心肌梗死后损伤修复是心血管领域面临的重大挑战和临床需求。该成果针对心肌损伤修复的关键科学问题，开展了从理论机制的建立、创新靶点的挖掘到临床转化策略的提出三个维度工作，取得了一系列原创性成果。首先主导国际迄今最大的非人灵长类心脏研究，创新了心肌修复的旁分泌理论；在此基础上，发现了旁分泌介导的细胞间应答促进心肌修复的新途径，并揭示细胞内线粒体应答介导心梗后心肌修复的新机制；通过理化医工深度融合，提出并建立了以旁分泌为核心的促进心肌修复和功能重建的临床转化新策略如细胞“穿衣”、工程化细胞外囊泡等。该项目发表了系列高水平研究成果，包括心血管专业及相关专业领域主流期刊如C*irculation Research、Science Translational Medicine、PNAS、Advanced Science*等26篇，获得相关授权发明专利4项，PCT专利1项。该研究成果聚焦心肌梗死前沿问题，具有很好的创新性和临床转化前景，整体达到国内领先，部分成果达到国际先进水平。同意推荐为浙江省自然科学一等奖。 |

附表

一、代表性论文专著目录

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 序号 | 论文专著名称/刊名 | 年卷页码（xx年xx卷xx页） | 发表时间（年、月） | 通讯作者 | 第一作者 | 所有作者（按排序） | 他引总次数 | 检索数据库 |
| 1 | Lack of Remuscularization Following Transplantation of Human Embryonic Stem Cell-Derived Cardiovascular Progenitor Cells in Infarcted Nonhuman Primates/Circulation Research | 2018;122(7):958-969 | 2018-03 | Jian’an Wang, Xinyang Hu, Huang-Tian Yang  | Keyang Zhu, Qiang Wu, Cheng Ni | Keyang Zhu#, Qiang Wu#, Cheng Ni#, Peng Zhang, Zhiwei Zhong, Yan Wu, Yingchao Wang, Yinchuan Xu, Minjian Kong, Haifeng Cheng, Zhihua Tao, Qian Yang, He Liang, Yun Jiang, Qingju Li, Jing Zhao, Jijun Huang, Fengjiang Zhang, Qi Chen, Yi Li, Jinghai Chen, Wei Zhu, Hong Yu, Jianyi Zhang, Huang-Tian Yang\*, Xinyang Hu\*, Jian’an Wang\* | 91 | Web of Science |
| 2 | Transplanted Mesenchymal Stem Cells Reduce Autophagic Flux in Infarcted Hearts via the Exosomal Transfer of mir-125b/Circulation Research | 2018; 123(5): 564-578 | 2018-08 | Xinyang Hu, Jian’an Wang | Changchen Xiao | Changchen Xiao, Kan Wang, Yinchuan Xu, Hengxun Hu, Na Zhang, Yingchao Wang, Zhiwei Zhong, Jing Zhao, Qingju Li, Dan Zhu, Changle Ke, Shuhan Zhong, Xianpeng Wu, Hong Yu, Wei Zhu, Jinghai Chen, Jianyi Zhang, Jian’an Wang\*, Xinyang Hu\* | 191 | Web of Science |
| 3 | A Novel Human Long Noncoding RNA SCDAL Promotes Angiogenesis through SNF5-Mediated GDF6 Expression /Advanced Science | 2021;8(18):e2004629 | 2021-09 | [Jian'an Wang](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Wang+J&cauthor_id=34319658), [Xinyang Hu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Hu+X&cauthor_id=34319658) | [Rongrong Wu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Wu+R&cauthor_id=34319658), [Wangxing Hu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Hu+W&cauthor_id=34319658) | [Rongrong Wu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Wu+R&cauthor_id=34319658)#, [Wangxing Hu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Hu+W&cauthor_id=34319658)#, [Huan Chen](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Chen+H&cauthor_id=34319658), [Yingchao Wang](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Wang+Y&cauthor_id=34319658), [Qingju Li](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Li+Q&cauthor_id=34319658), [Changchen Xiao](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Xiao+C&cauthor_id=34319658), [Lin Fan](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Fan+L&cauthor_id=34319658), [Zhiwei Zhong](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Zhong+Z&cauthor_id=34319658), [Xiaoying Chen](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Chen+X&cauthor_id=34319658), [Kaiqi Lv](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Lv+K&cauthor_id=34319658), [Shuhan Zhong](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Zhong+S&cauthor_id=34319658), [Yanna Shi](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Shi+Y&cauthor_id=34319658), [Jinghai Chen](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Chen+J&cauthor_id=34319658), [Wei Zhu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Zhu+W&cauthor_id=34319658), [Jianyi Zhang](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Zhang+J&cauthor_id=34319658), [Xinyang Hu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Hu+X&cauthor_id=34319658)\*, [Jian'an Wang](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Wang+J&cauthor_id=34319658)\* | 13 | Web of Science |
| 4 | Electron leak from NDUFA13 within mitochondrial complex I attenuates ischemia-referfusion injury via dimerized STAT3/PNAS | 2017;114(45):11908-11913 | 2017-11 | Jian'an Wang, Wei Zhu | Hengxun Hu, Jinliang Nan, Yong Sun | Hengxun Hu#, Jinliang Nan#, Yong Sun#, Dan Zhu, Changchen Xiao, Yaping Wang, Lianlian Zhu, Yue Wu, Jing Zhao, Rongrong Wu, Jinghai Chen, Hong Yu, Xinyang Hu, Wei Zhu\*, Jian'an Wang\* | 81 | Web of Science |
| 5 | LncRNA LncHrt preserves cardiac metabolic homeostasis and heart function by modulating the LKB1-AMPK signaling pathway/Basic Research in Cardiology | 2021;116(1):48. | 2021-08 | Jinghai Chen, Da-Zhi Wang, Jian’an Wang  | [Ning Liu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Liu+N&cauthor_id=34379189), [Masaharu Kataoka](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Kataoka+M&cauthor_id=34379189), [Yingchao Wang](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Wang+Y&cauthor_id=34379189) | [Ning Liu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Liu+N&cauthor_id=34379189)[#](#full-view-equal-contrib-explanation" \o "Contributed equally), [Masaharu Kataoka](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Kataoka+M&cauthor_id=34379189)[#](#full-view-equal-contrib-explanation" \o "Contributed equally), [Yingchao Wang](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Wang+Y&cauthor_id=34379189)[#](#full-view-equal-contrib-explanation" \o "Contributed equally), [Linbin Pu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Pu+L&cauthor_id=34379189), [Xiaoxuan Dong](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Dong+X&cauthor_id=34379189), [Xuyang Fu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Fu+X&cauthor_id=34379189), [Feng Zhang](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Zhang+F&cauthor_id=34379189), [Feng Gao](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Gao+F&cauthor_id=34379189), [Tian Liang](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Liang+T&cauthor_id=34379189), [Jianqiu Pei](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Pei+J&cauthor_id=34379189), [Changchen Xiao](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Xiao+C&cauthor_id=34379189), [Qiongzi Qiu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Qiu+Q&cauthor_id=34379189), [Tingting Hong](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Hong+T&cauthor_id=34379189), [Qiming Chen](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Chen+Q&cauthor_id=34379189), [Jing Zhao](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Zhao+J&cauthor_id=34379189), [Lianlian Zhu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Zhu+L&cauthor_id=34379189), [Junhua He](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=He+J&cauthor_id=34379189), [Xiaoyun Hu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Hu+X&cauthor_id=34379189), [Yu Nie](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Nie+Y&cauthor_id=34379189), [Wei Zhu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Zhu+W&cauthor_id=34379189), [Hong Yu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Yu+H&cauthor_id=34379189), [Douglas B Cowan](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Cowan+DB&cauthor_id=34379189), [Xinyang Hu](https://pubmed.ncbi.nlm.nih.gov/?sort=date&term=Hu+X&cauthor_id=34379189), Jian’an Wang\*, Da-Zhi Wang\*, Jinghai Chen\* | 26 | Web of Science |
| 6 | A Large-scale Investigation of Hypoxia-preconditioned Allogeneic Mesenchymal Stem Cells for Myocardial Repair in Non-human Primates: Paracrine Activity Without Remuscularization/ Circulation Research | 2016;118(6):970-83 | 2016-03 | Jian’an Wang, Jianyi Zhang | Xinyang Hu, Yinchuan Xu | Xinyang Hu#, Yinchuan Xu#, Zhiwei Zhong, Yan Wu, Jing Zhao, Yingchao Wang, Haifeng Cheng, Minjian Kong, Fengjiang Zhang, Qi Chen, Jianzhong Sun, Qian Li, Jing Jin, Qingju Li, Lihong Chen, Chen Wang, Hongwei Zhan, Youqi Fan, Qian Yang, Lei Yu, Rongrong Wu, Jie Liang, Jinyun Zhu, Ya Wang, Yiping Jin, Yifan Lin, Fan Yang, Liangliang Jia, Wei Zhu, Jinghai Chen, Hong Yu, Jianyi Zhang\*, Jian’an Wang\* | 130 | Web of Science |
| 7 | Surface-Anchored Nanogel Coating Endows Stem Cells with Stress Resistance and Reparative Potency via Turning Down the Cytokine-Receptor Binding Pathways/Advanced Science | 2021;8(3):2003348 | 2021-01 | Xinyang Hu, Ben Wang | Ling Zhang, Guowu Liu, Kaiqi Lv | Ling Zhang#, Guowu Liu#, Kaiqi Lv#, Jinxia Xin, Yingchao Wang, Jing Zhao, Wangxing Hu, Changchen Xiao, Keyang Zhu, Lianlian Zhu, Jinliang Nan, Ye Feng, Huaying Zhu, Wei Chen, Wei Zhu, Jianyi Zhang, Jian’an Wang, Ben Wang\*, Xinyang Hu\* | 10 | Web of Science |
| 8 | Small extracellular vesicles containing miR-486-5p promote angiogenesis after myocardial infarction in mice and nonhuman primates/Science Translational Medicine | 2021;13(584):eabb0202 | 2021-03 | Xinyang Hu, Jian’an Wang, Jianyi(Jay) Zhang  | Qingju Li, Yinchuan Xu, Kaiqi Lv | Qingju Li#, Yinchuan Xu#, Kaiqi Lv#, Yingchao Wang, Zhiwei Zhong, Changchen Xiao, Keyang Zhu, Cheng Ni, Kan Wang, Minjian Kong, Xuebiao Li, Youqi Fan, Fengjiang Zhang, Qi Chen, Yi Li, Qian Li, Chengjia Liu, Jinyun Zhu, Shuhan Zhong, Jingyi Wang, Yongjian Chen, Jing Zhao, Dan Zhu, Rongrong Wu, Jinghai Chen, Wei Zhu, Hong Yu, Reza Ardehali, Jianyi(Jay) Zhang\*, Jian’an Wang\*, Xinyang Hu\* | 83 | Web of Science |
|  | 合计 | 625 |  |

二、主要知识产权和标准规范目录

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| 授权发明专利 | FLAVIN-CONTAINING MONOOXYGENASE 2 FOR TREATMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE | 欧洲 | EP3978012 | 2023-08-16 | PCT/CN2021/083861 | 浙江大学 | 胡新央；王建安；柯昌乐 | 有效 |
| 授权发明专利 | GDF6及其过表达试剂在制备心肌细胞保护剂中的应用 | 中国 | ZL202210105486.X | 2023-02-03 | 5724218 | 浙江大学 | 吴蓉蓉；王建安；胡新央；施贝晟 | 有效 |
| 授权发明专利 | PD1抑制剂在制备心脏成纤维细胞转分化抑制剂中的用途 | 中国 | ZL202210323171.2 | 2023-06-27 | 6095994 | 浙江大学 | 胡新央；王建安；陈晓英；柯昌乐 | 有效 |
| 授权发明专利 | 一种多肽及其在制备抗纤维化药物中的应用 | 中国 | ZL202310368198.8 | 2023-12-22 | 6577387 | 浙江大学 | 胡新央；王建安；倪骋；王灵军；叶舒畅 | 有效 |
| 授权发明专利 | 一种含黄素单氧化酶2在制备血管新生促进剂中的应用 | 中国 | ZL201811589915.5 | 2020-10-23 | 4043785 | 浙江大学 | 胡新央；王建安；王静宜 | 有效 |