Cell Research

Q K 2 2 2 8 8 0 8

Volume 32 Number 4 April 2022

www.cell-research.com

Venous arterialization during mammalian early vascular development
High resolution structure of the nuclear ring of NPC
EGFR signaling promotes TSPAN8 nuclear translocation
mRNA antibody provides long-term protection against SARS-CoV-2







Research

(Founded in 1990)

Online submission via: http://www.nature.com/cr http://www.cell-research.com

Cell Research is published monthly by Nature Publishing Group (NPG) in partnership with Center for Excellence in Molecular Cell Science (CEMCS), Chinese Academy of Sciences (CAS) since 2006.

Sponsored by:

Center for Excellence in Molecular Cell Science (CEMCS), CAS

© 2022 CEMCS, CAS





Affiliated with:

The Chinese Society for Cell Biology since August 2007



Granted by:

Publishing Foundation of Chinese Academy of Sciences, National Natural Science Foundation of China, and China Association for Science and Technology





This journal is a member of, and subscribes to the principles of, the Committee on Publication Ethics (COPE) www.publicationethics.org

COPE COMMITTEE OF PUBLICATION ETHICS

SPRINGER NATURE

Coordinating Editor for this issue Fangfang Hu

RESEARCH HIGHLIGHTS

325 Vein to artery: the first arteriogenesis in the mammalian embryo

Siyeon Rhee, Joseph C. Wu

327 Revealing the secret behind Smo cholesterylation

Yuhong Han, Jin Jiang

329 Transcriptomic profiling fuels the derivation of stable pig epiblast stem cells

Cuiqing Zhong, Ronghui Li, Juan Carlos Izpisua Belmonte

331 Innovative adjuvant augments potency of a SARS-CoV-2 subunit vaccine

Hua Peng, Yang-Xin Fu

ARTICLES

333 Heterogeneity in endothelial cells and widespread venous arterialization during early vascular development in mammals *Open*

Siyuan Hou, Zongcheng Li, Ji Dong, Yun Gao, Zhilin Chang, Xiaochen Ding, Shuaili Li, Yunqiao Li, Yang Zeng, Qian Xin, Baihan Wang, Yanli Ni, Xiaowei Ning, Yuqiong Hu, Xiaoying Fan, Yu Hou, Xianlong Li, Lu Wen, Bin Zhou, Bing Liu, Fuchou Tang, Yu Lan

349 Cryo-EM structure of the nuclear ring from Xenopus laevis nuclear pore complex Open

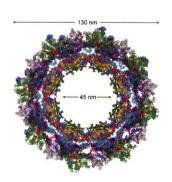
> Gaoxingyu Huang, Xiechao Zhan, Chao Zeng, Xuechen Zhu, Ke Liang, Yanyu Zhao, Pan Wang, Qifan Wang, Qiang Zhou, Qinghua Tao, Minhao Liu, Jianlin Lei, Chuangye Yan, Yigong Shi

359 EGFR signaling promotes nuclear translocation of plasma membrane protein TSPAN8 to enhance tumor progression via STAT3-mediated transcription

Xiaoqing Lu, Liwei An, Guangjian Fan, Lijuan Zang, Weiyi Huang, Junjian Li, Jun Liu, Weiyu Ge, Yuwei Huang, Jingxuan Xu, Shaoqian Du, Yuan Cao, Tianhao Zhou, Huijing Yin, Li Yu, Shi Jiao, Hongxia Wang



Cover: The theme of facechanging in Beijing Opera reflects the fate conversion of embryonic vascular endothelial cells. Along with the change of face are the colors of costume. fan, waves and fish, alluding to the widespread endothelial fate conversion. Direction of the swimming fish upstream represents a venous-to-arterial fate change as opposed to the direction of blood flow from artery to the vein. See page 333-348 by Siyuan Hou et al. for details. Cover art is contributed by Wenxi Ye.



Overall structure of the central ring scaffold (CR/IR/NR) of *Xenopus laevis* NPC. See page 349–358 by Gaoxingyu Huang et al. for details.

Cell Research Contents

375 Lipid nanoparticle-encapsulated mRNA antibody provides long-term protection against SARS-CoV-2 in mice and hamsters *Open*

Yong-Qiang Deng, Na-Na Zhang, Yi-Fei Zhang, Xia Zhong, Sue Xu, Hong-Ying Qiu, Tie-Cheng Wang, Hui Zhao, Chao Zhou, Shu-Long Zu, Qi Chen, Tian-Shu Cao, Qing Ye, Hang Chi, Xiang-Hui Duan, Dan-Dan Lin, Xiao-Jing Zhang, Liang-Zhi Xie, Yu-Wei Gao, Bo Ying, Cheng-Feng Qin

383 Generation and characterization of stable pig pregastrulation epiblast stem cell lines *Open*

Minglei Zhi, Jinying Zhang, Qianzi Tang, Dawei Yu, Shuai Gao, Dengfeng Gao, Pengliang Liu, Jianxiong Guo, Tang Hai, Jie Gao, Suying Cao, Zimo Zhao, Chongyang Li, Xiaogang Weng, Mengnan He, Tianzhi Chen, Yingjie Wang, Keren Long, Deling Jiao, Guanglei Li, Jiaman Zhang, Yan Liu, Yu Lin, Daxin Pang, Qianqian Zhu, Naixin Chen, Jingjing Huang, Xinze Chen, Yixuan Yao, Jingcang Yang, Zicong Xie, Xianya Huang, Mengxin Liu, Ran Zhang, Qiuyan Li, Yiliang Miao, Jianhui Tian, Xingxu Huang, Hongsheng Ouyang, Bofeng Liu, Wei Xie, Qi Zhou, Hongjiang Wei, Zhonghua Liu, Caihong Zheng, Mingzhou Li, Jianyong Han

LETTERS TO THE EDITOR

401 Rapid development of an updated mRNA vaccine against the SARS-CoV-2 Omicron variant *Open*

Na-Na Zhang, Rong-Rong Zhang, Yi-Fei Zhang, Kai Ji, Xiao-Chuan Xiong, Qian-Shan Qin, Peng Gao, Xi-Shan Lu, Hang-Yu Zhou, Hai-Feng Song, Bo Ying, Cheng-Feng Qin

404 Peptide-based pan-CoV fusion inhibitors maintain high potency against SARS-CoV-2 Omicron variant

Shuai Xia, Jasper Fuk-Woo Chan, Lijue Wang, Fanke Jiao, Kenn Ka-Heng Chik, Hin Chu, Qiaoshuai Lan, Wei Xu, Qian Wang, Chao Wang, Kwok-Yung Yuen, Lu Lu, Shibo Jiang

407 Spontaneous necroptosis and autoinflammation are blocked by an inhibitory phosphorylation on MLKL during neonatal development *Open*

Xinxin Zhu, Na Yang, Yu Yang, Feiyang Yuan, Dandan Yu, Yu Zhang, Zhaoqian Shu, Ning Nan, Hong Hu, Xiaoyan Liu, She Chen, Liming Sun, Huayi Wang

411 Structural basis for the gating modulation of Kv4.3 by auxiliary subunits

Demin Ma, Cheng Zhao, Xiaochen Wang, Xiaoxiao Li, Yi Zha, Yan Zhang, Guosheng Fu, Ping Liang, Jiangtao Guo, Dongwu Lai

CORRECTION

415 Author Correction: Whole-genome sequencing of 508 patients identifies key molecular features associated with poor prognosis in esophageal squamous cell carcinoma

Yongping Cui, Hongyan Chen, Ruibin Xi, Heyang Cui, Yahui Zhao, Enwei Xu, Ting Yan, Xiaomei Lu, Furong Huang, Pengzhou Kong, Yang Li, Xiaolin Zhu, Jiawei Wang, Wenjie Zhu, Jie Wang, Yanchun Ma, Yong Zhou, Shiping Guo, Ling Zhang, Yiqian Liu, Bin Wang, Yanfeng Xi, Ruifang Sun, Xiao Yu, Yuanfang Zhai, Fang Wang, Jian Yang, Bin Yang, Caixia Cheng, Jing Liu, Bin Song, Hongyi Li, Yi Wang, Yingchun Zhang, Xiaolong Cheng, Qimin Zhan, Yanhong Li, Zhihua Liu

ADVANCE ONLINE PUBLICATION

Gut microbiota drives macrophage-dependent self-renewal of intestinal stem cells via niche enteric serotonergic neurons

Pingping Zhu, Tiankun Lu, Jiayi Wu, Dongdong Fan, Benyu Liu, Xiaoxiao Zhu, Hui Guo, Ying Du, Feng Liu, Yong Tian and Zusen Fan

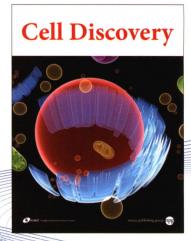
Cell Discovery

Making publication fun for you

Cell Discovery is an open access international journal that publishes results of high significance and broad interest in all areas of molecular and cell biology. The basic bar of acceptance is comparable to prestigious society journals in the respective field of the work. It is established in 2015 as a sister journal of *Cell Research*, a high-profile international journal with a current impact of 25.617. The new impact of *Cell Discovery* is 10.849.

Authors benefit from:

- Open Access Publication anyone can download and read your paper
- Wide exposure to a large global audience on nature.com
- Internationally renowned editors and editorial board
- Quality peer-review and fast publication
- Indexed in Scopus and PubMed Central (PMC)
 Science Citation Index Expanded (SciSearch®),
 Journal Citation Reports/Science Edition



Editor-in-Chief: Dangsheng Li

Featured articles

Initial whole-genome sequencing and analysis of the host genetic contribution to COVID-19 severity and susceptibility

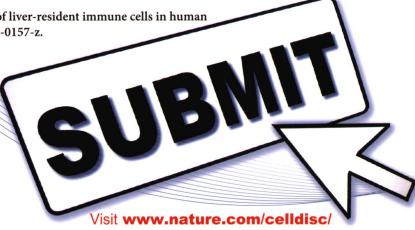
Cell Discov. 2020 Nov 10;6(1):83. doi: 10.1038/s41421-020-00231-4.

The differential immune responses to COVID-19 in peripheral and lung revealed by single-cell RNA sequencing *Cell Discov.* 2020 Oct 20;6:73. doi: 10.1038/s41421-020-00225-2.

Immune cell profiling of COVID-19 patients in the recovery stage by single-cell sequencing *Cell Discov.* 2020 May 4;6:31. doi: 10.1038/s41421-020-0168-9.

Phosphorylation of cGAS by CDK1 impairs self-DNA sensing in mitosis *Cell Discov.* 2020 Apr 28;6:26. doi: 10.1038/s41421-020-0162-2.

Single-cell RNA sequencing reveals the heterogeneity of liver-resident immune cells in human *Cell Discov.* 2020 Apr 28;6:22. doi: 10.1038/s41421-020-0157-z.



to read the Published Papers and Submit Today!