

Cell Research



Volume 32 Number 7 July 2022

www.nature.com/cr
www.cell-research.com



Structural insights into enhanced infectivity of Omicron BA.2
A novel role of nuclear RIPK1 in inflammatory responses
R-2-HG promotes angiogenesis in IDH1-mutant solid tumors
Cytoskeleton system drives condensation of p62 bodies

ISSN 1001-0602



Center for Excellence in Molecular Cell Science
Chinese Academy of Sciences



SPRINGER NATURE

(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



Supported by SPFCAS

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



SPRINGER NATURE

Coordinating Editor for this issue
Jiajun Xu

RESEARCH HIGHLIGHTS

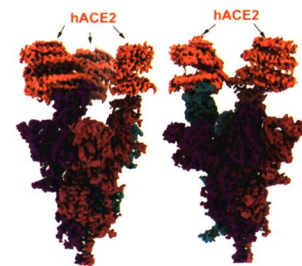
- 601 Up or down: where comes Omicron?**
Zezhong Liu, Lu Lu, Shibo Jiang
- 603 A SNIPpet of safety: a Goldilocks approach in CAR-T therapy**
Mehdi Benzaoui, Naomi Taylor, Nirali N. Shah
- 605 A gut feeling: diet-sensing mesenchymal cells regulate intestinal stem cell function**
Julia Messina-Pacheco, Alex Gregorieff
- 607 Cytoskeleton grows p62 condensates for autophagy**
Nobuo N. Noda

ARTICLES

- 609 Structural and biochemical mechanism for increased infectivity and immune evasion of Omicron BA.2 variant compared to BA.1 and their possible mouse origins**
Open
Youwei Xu, Canrong Wu, Xiaodan Cao, Chunyin Gu, Heng Liu, Mengting Jiang, Xiaoxi Wang, Qingning Yuan, Kai Wu, Jia Liu, Deyi Wang, Xianqing He, Xueping Wang, Su-Jun Deng, H. Eric Xu, Wanchao Yin
- 621 Nuclear RIPK1 promotes chromatin remodeling to mediate inflammatory response**
Wanjin Li, Bing Shan, Chengyu Zou, Huibing Wang, Meng-Meng Zhang, Hong Zhu, Masanori Gomi Naito, Daichao Xu, Vica Jean Manuel, Lauren Mifflin, Zhaodong Hou, John Ravits, Junying Yuan
- 638 SLC1A1-mediated cellular and mitochondrial influx of R-2-hydroxyglutarate in vascular endothelial cells promotes tumor angiogenesis in IDH1-mutant solid tumors**
Xiaomin Wang, Ziqi Chen, Jun Xu, Shuai Tang, Nan An, Lei Jiang, Yixiang Zhang, Shaoying Zhang, Qingli Zhang, Yanyan Shen, Shijie Chen, Xiaojing Lan, Ting Wang, Linhui Zhai, Siyuwei Cao, Siqi Guo, Yingluo Liu, Aiwei Bi, Yuehong Chen, Xiameng Gai, Yichen Duan, Ying Zheng, Yixian Fu, Yize Li, Liang Yuan, Linjiang Tong, Kun Mo, Mingcheng Wang, Shu-Hai Lin, Minjia Tan, Cheng Luo, Yi Chen, Jia Liu, Qiansen Zhang, Leping Li, Min Huang



Cover: The cover describes the famous story of Trojan horse in ancient Greek history. This story reflects how tumor-originated oncometabolite R-2-hydroxyglutarate (R-2-HG, Trojan horse) enters vascular endothelial cells via its new transporter SLC1A1 (city gate). R-2-HG entry is accompanied by Na⁺ (soldiers hiding in the Trojan horse) that triggers downstream events to enhance tumor angiogenesis. See page 638-658 by Xiaomin Wang et al. for details.



Cryo-EM density maps of the hACE2-Omicron BA.2 spike trimer complexes, with hACE2 and BA.2 spike in molar ratios of 3:3 and 2:3, respectively. See page 609-620 by Youwei Xu et al. for details.

659 Myosin 1D and the branched actin network control the condensation of p62 bodies

Xuezhao Feng, Wanqing Du, Mingrui Ding, Wenkang Zhao, Xirenayi Xirefu, Meisheng Ma, Yuhui Zhuang, Xiaoyu Fu, Jiangfeng Shen, Jinpei Zhang, Xiuying Lei, Daxiao Sun, Qing Xi, Yiliyasi Aisa, Qian Chen, Ying Li, Wenjuan Wang, Shanjin Huang, Li Yu, Pulong Li, Na Mi

670 Lepr⁺ mesenchymal cells sense diet to modulate intestinal stem/progenitor cells via Leptin-Igf1 axis

Min Deng, Christian F. Guerrero-Juarez, Xiaole Sheng, Jiuzhi Xu, Xi Wu, Kai Yao, Mengzhen Li, Xu Yang, Guilin Li, Jintao Xiao, Xiaowei Liu, Kaichun Wu, Fazheng Ren, Qing Nie, Maksim V. Plikus, Zhengquan Yu, Cong Lv

LETTERS TO THE EDITOR

687 The structure of erastin-bound xCT-4F2hc complex reveals molecular mechanisms underlying erastin-induced ferroptosis *Open*

Renhong Yan, Enjun Xie, Yanning Li, Jin Li, Yuanyuan Zhang, Ximin Chi, Xueping Hu, Lei Xu, Tingjun Hou, Brent R. Stockwell, Junxia Min, Qiang Zhou, Fudi Wang

691 Selection and structural bases of potent broadly neutralizing antibodies from 3-dose vaccinees that are highly effective against diverse SARS-CoV-2 variants, including Omicron sublineages *Open*

Lei Wang, Wangjun Fu, Linlin Bao, Zijing Jia, Yuxia Zhang, Yunjiao Zhou, Wei Wu, Jianbo Wu, Qianqian Zhang, Yidan Gao, Kang Wang, Qiao Wang, Chuan Qin, Xiangxi Wang

695 Structural basis of the activation of metabotropic glutamate receptor 3 *Open*

Wei Fang, Fan Yang, Chanjuan Xu, Shenglong Ling, Li Lin, Yingxin Zhou, Wenjing Sun, Xiaomei Wang, Peng Liu, Philippe Rondard, Pan Shi, Jean-Philippe Pin, Changlin Tian, Jianfeng Liu

699 Treatment of autosomal recessive hearing loss via in vivo CRISPR/Cas9-mediated optimized homology-directed repair in mice

Xi Gu, Xinde Hu, Daqi Wang, Zhijiao Xu, Fang Wang, Di Li, Geng-lin Li, Hui Yang, Huawei Li, Erwei Zuo, Yilai Shu

CORRECTION

703 Author Correction: Crystal structure of ISG54 reveals a novel RNA binding structure and potential functional mechanisms

Zhenlin Yang, Huanhuan Liang, Qian Zhou, Ying Li, Haiwei Chen, Wen Ye, Danying Chen, Joy Fleming, Hongbing Shu, Yingfang Liu

ADVANCE ONLINE PUBLICATION

A super pan-genomic landscape of rice *Open*

Liangang Shang, Xiaoxia Li, Huiying He, Qiaoling Yuan, Yanni Song, Zhaoran Wei, Hai Lin, Min Hu, Fengli Zhao, Chao Zhang, Yuhua Li, Hongsheng Gao, Tianyi Wang, Xiangpei Liu, Hong Zhang, Ya Zhang, Shuaimin Cao, Xiaoman Yu, Bintao Zhang, Yong Zhang, Yiqing Tan, Mao Qin, Cheng Ai, Yingxue Yang, Bin Zhang, Zhiqiang Hu, Hongru Wang, Yang Lv, Yuexing Wang, Jie Ma, Quan Wang, Hongwei Lu, Zhe Wu, Shanlin Liu, Zongyi Sun, Hongliang Zhang, Longbiao Guo, Zichao Li, Yongfeng Zhou, Jiayang Li, Zuofeng Zhu, Guosheng Xiong, Jue Ruan and Qian Qian

Depression compromises antiviral innate immunity via the AVP-AHL1-Tyk2 axis

Hong-Guang Zhang, Bin Wang, Yong Yang, Xuan Liu, Junjie Wang, Ning Xin, Shifeng Li, Ying Miao, Qiuyu Wu, Tingting Guo, Yukang Yuan, Yibo Zuo, Xiangjie Chen, Tengfei Ren, Chunsheng Dong, Jun Wang, Hang Ruan, Miao Sun, Xingshun Xu and Hui Zheng

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. *Cell Discovery* is established in 2015 as a sister journal of *Cell Research*, a top-tier journal with a current impact factor of 46.297. The new impact factor of *Cell Discovery* is 38.079 (Clarivate Analytics, 2022), the current acceptance standard of *Cell Discovery* is comparable to the sister journals of *Cell/Nature/Science*.

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

Featured articles

Novel cleavage sites identified in SARS-CoV-2 spike protein reveal mechanism for cathepsin L-facilitated viral infection and treatment strategies
Cell Discov. 2022 Jun 6;8(1):53. doi: 10.1038/s41421-022-00419-w.

Dynamic O-GlcNAcylation coordinates ferritinophagy and mitophagy to activate ferroptosis
Cell Discov. 2022 May 3;8(1):40. doi: 10.1038/s41421-022-00390-6.

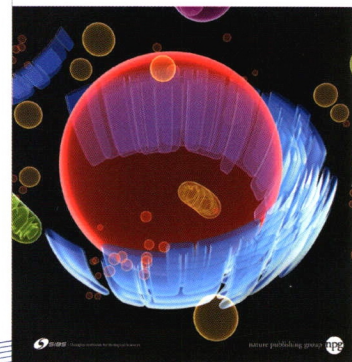
Treatment of SARS-CoV-2-induced pneumonia with NAD⁺ and NMN in two mouse models
Cell Discov. 2022 Apr 29;8(1):38. doi: 10.1038/s41421-022-00409-y.

CRISPR signal conductor 2.0 for redirecting cellular information flow
Cell Discov. 2022 Mar 15;8(1):26. doi: 10.1038/s41421-021-00371-1.

Cross-species metabolomic analysis identifies uridine as a potent regeneration promoting factor
Cell Discov. 2022 Feb 1;8(1):6. doi: 10.1038/s41421-021-00361-3.

Histone lysine methacrylation is a dynamic post-translational modification regulated by HAT1 and SIRT2
Cell Discov. 2021 Dec 28;7(1):122. doi: 10.1038/s41421-021-00344-4.

Cell Discovery



Editor-in-Chief: Dangsheng Li

SUBMIT

Visit www.nature.com/celldisc/
to read the Published Papers and Submit Today!