

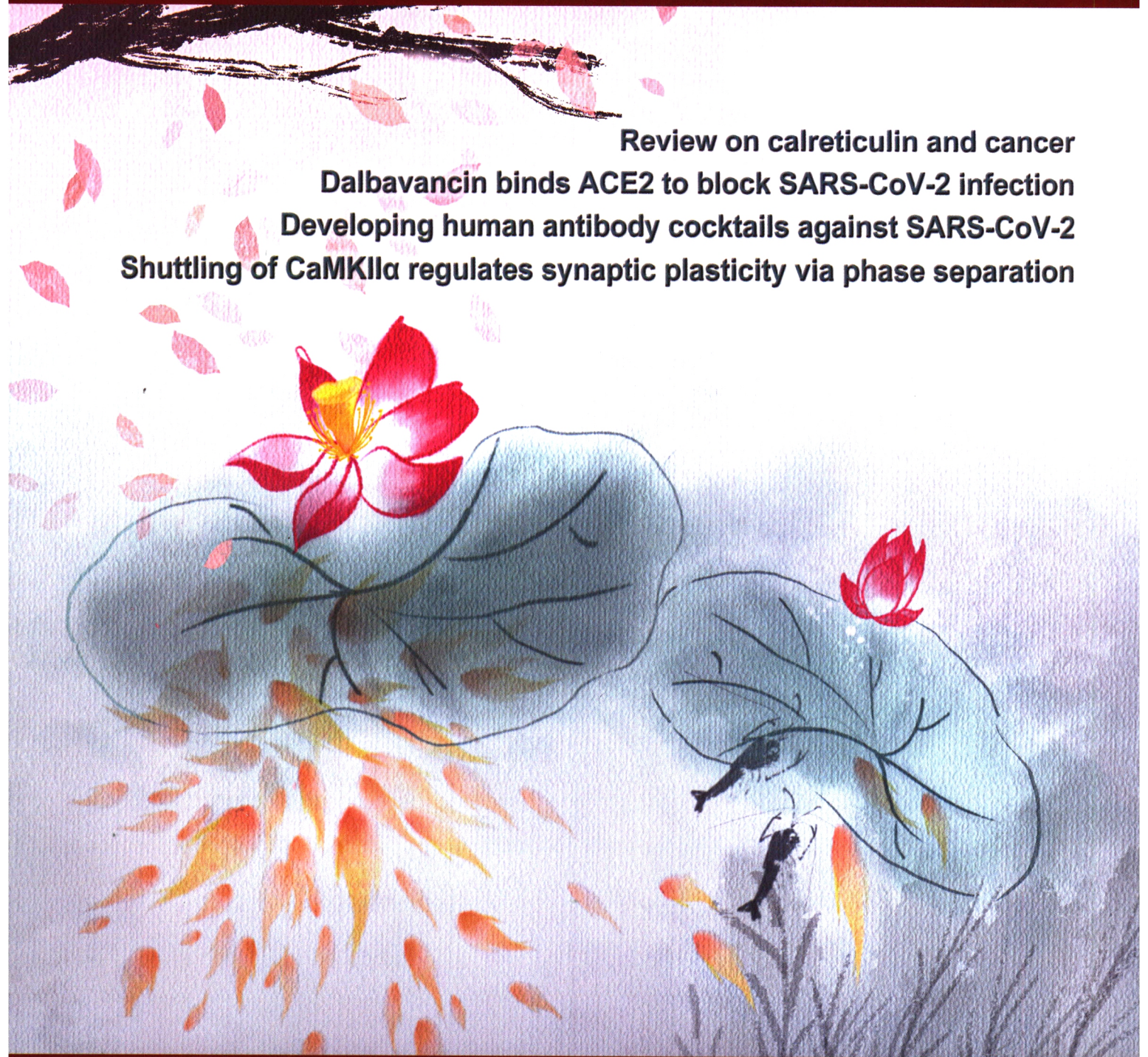
# Cell Research



QK2061972

Volume 31 Number 1 January 2021

[www.nature.com/cr](http://www.nature.com/cr)  
[www.cell-research.com](http://www.cell-research.com)



**Review on calreticulin and cancer**  
**Dalbavancin binds ACE2 to block SARS-CoV-2 infection**  
**Developing human antibody cocktails against SARS-CoV-2**  
**Shuttling of CaMKII $\alpha$  regulates synaptic plasticity via phase separation**

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

© 2021 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](http://www.publicationethics.org)



SPRINGER NATURE

Coordinating Editor for this issue  
Li Lu

## RESEARCH HIGHLIGHTS

### 1 SARS-CoV-2-induced lung pathology: AHR as a candidate therapeutic target

Federico Giovannoni, Francisco J. Quintana

### 3 Water quality check: macrophages setting the standards

Camille Blériot, Zhaoyuan Liu, Florent Ginhoux

## REVIEW ARTICLE

### 5 Calreticulin and cancer

Jitka Fucikova, Radek Spisek, Guido Kroemer, Lorenzo Galluzzi

## ARTICLES

### 17 Dalbavancin binds ACE2 to block its interaction with SARS-CoV-2 spike protein and is effective in inhibiting SARS-CoV-2 infection in animal models **Open**

Gan Wang, Meng-Li Yang, Zi-Lei Duan, Feng-Liang Liu, Lin Jin, Cheng-Bo Long, Min Zhang, Xiao-Peng Tang, Ling Xu, Ying-Chang Li, Peter Muiruri Kamau, Lian Yang, Hong-Qi Liu, Jing-Wen Xu, Jie-Kai Chen, Yong-Tang Zheng, Xiao-Zhong Peng, Ren Lai

### 25 Rational development of a human antibody cocktail that deploys multiple functions to confer Pan-SARS-CoVs protection **Open**

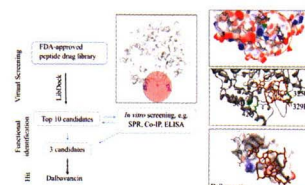
Hangping Yao, Yao Sun, Yong-Qiang Deng, Nan Wang, Yongcong Tan, Na-Na Zhang, Xiao-Feng Li, Chao Kong, Yan-Peng Xu, Qi Chen, Tian-Shu Cao, Hui Zhao, Xintian Yan, Lei Cao, Zhe Lv, Dandan Zhu, Rui Feng, Nanping Wu, Wenhai Zhang, Yuhao Hu, Keda Chen, Rong-Rong Zhang, Qingyu Lv, Shihui Sun, Yunhua Zhou, Run Yan, Guan Yang, Xinglu Sun, Chanjuan Liu, Xiangyun Lu, Linfang Cheng, Hongying Qiu, Xing-Yao Huang, Tianhao Weng, Danrong Shi, Weidong Jiang, Junbin Shao, Lei Wang, Jie Zhang, Tao Jiang, Guojun Lang, Cheng-Feng Qin, Lanjuan Li, Xiangxi Wang

### 37 CaMKII $\alpha$ -driven, phosphatase-checked postsynaptic plasticity via phase separation

Qixu Cai, Menglong Zeng, Xiandeng Wu, Haowei Wu, Yumeng Zhan, Ruijun Tian, Mingjie Zhang



**Cover:** Ca<sup>2+</sup>-induced (fallen leaves) and phosphatase-checked (shrimps) shuttling of CaMKII (lotuses) enlarges postsynaptic density assembly (larger cluster of fish) and induces structural long-term potentiation. Cover art is contributed by Jia Xu. See page 37-51 by Qixu Cai et al. for details.



Screening for potential inhibitors of SARS-CoV-2-ACE2 interactions. See page 17-24 by Gan Wang et al. for details.

**52 Molecular basis for ligand activation of the human KCNQ2 channel**

Xiaoxiao Li, Qiansen Zhang, Peipei Guo, Jie Fu, Lianghe Mei, Dashuai Lv, Jiangqin Wang, Dongwu Lai, Sheng Ye, Huaiyu Yang, Jiangtao Guo

**62 A novel selective autophagy receptor, CCDC50, delivers K63 polyubiquitination-activated RIG-I/MDA5 for degradation during viral infection**

Panpan Hou, Kongxiang Yang, Penghui Jia, Lan Liu, Yuxin Lin, Zibo Li, Jun Li, Shuliang Chen, Shuting Guo, Ji'an Pan, Junyu Wu, Hong Peng, Weijie Zeng, Chunmei Li, Yingfang Liu, Deyin Guo

**80 Skp2 dictates cell cycle-dependent metabolic oscillation between glycolysis and TCA cycle**

Jing Liu, Yunhua Peng, Le Shi, Lixin Wan, Hiroyuki Inuzuka, Jiangang Long, Jianping Guo, Jinfang Zhang, Min Yuan, Shuangxi Zhang, Xun Wang, Jing Gao, Xiangpeng Dai, Shozo Furumoto, Lijun Jia, Pier Paolo Pandolfi, John M. Asara, William G. Kaelin Jr., Jiankang Liu, Wenyi Wei

## LETTERS TO THE EDITOR

**94 N<sup>6</sup>-methyladenine is incorporated into mammalian genome by DNA polymerase**  
**Open**

Xiaoling Liu, Weiwei Lai, Yao Li, Shaokun Chen, Baodong Liu, Ning Zhang, Jiezheng Mo, Cong Lyu, Jing Zheng, Ya-Rui Du, Guibin Jiang, Guo-Liang Xu, Hailin Wang

**98 Engineered trimeric ACE2 binds viral spike protein and locks it in “Three-up” conformation to potently inhibit SARS-CoV-2 infection**

Liang Guo, Wenwen Bi, Xinling Wang, Wei Xu, Renhong Yan, Yuanyuan Zhang, Kai Zhao, Yaning Li, Mingfeng Zhang, Xia Cai, Shibo Jiang, Youhua Xie, Qiang Zhou, Lu Lu, Bobo Dang

**101 Structure-based development of human antibody cocktails against SARS-CoV-2**  
**Open**

Nan Wang, Yao Sun, Rui Feng, Yuxi Wang, Yan Guo, Li Zhang, Yong-Qiang Deng, Lei Wang, Zhen Cui, Lei Cao, Yan-Jun Zhang, Weimin Li, Feng-Cai Zhu, Cheng-Feng Qin, Xiangxi Wang

## CORRECTION

**104 Author Correction: Skp2 dictates cell cycle-dependent metabolic oscillation between glycolysis and TCA cycle**

Jing Liu, Yunhua Peng, Le Shi, Lixin Wan, Hiroyuki Inuzuka, Jiangang Long, Jianping Guo, Jinfang Zhang, Min Yuan, Shuangxi Zhang, Xun Wang, Jing Gao, Xiangpeng Dai, Shozo Furumoto, Lijun Jia, Pier Paolo Pandolfi, John M. Asara, William G. Kaelin Jr., Jiankang Liu, Wenyi Wei

## ADVANCE ONLINE PUBLICATION

**Sequential fate-switches in stem-like cells drive the tumorigenic trajectory from human neural stem cells to malignant glioma** **Open**

Xiaofei Wang, Ran Zhou, Yanzhen Xiong, Lingling Zhou, Xiang Yan, Manli Wang, Fan Li, Chuanxing Xie, Yiming Zhang, Zongyao Huang, Chaoqiong Ding, Kaidou Shi, Weida Li, Yu Liu, Zhongwei Cao, Zhen-Ning Zhang, Shengtao Zhou, Chong Chen, Yan Zhang, Lu Chen and Yuan Wang

**AXL is a candidate receptor for SARS-CoV-2 that promotes infection of pulmonary and bronchial epithelial cells** **Open**

Shuai Wang, Zongyang Qiu, Yingnan Hou, Xiya Deng, Wei Xu, Tingting Zheng, Peihan Wu, Shaofang Xie, Weixiang Bian, Chong Zhang, Zewei Sun, Kunpeng Liu, Chao Shan, Aifu Lin, Shibo Jiang, Youhua Xie, Qiang Zhou, Lu Lu, Jing Huang and Xu Li

**Mutual dependency between lncRNA LETN and protein NPM1 in controlling the nucleolar structure and functions sustaining cell proliferation** **Open**

Xianteng Wang, Xiaolin Hu, Wanlu Song, Hui Xu, Zhengtao Xiao, Rongyao Huang, Qingran Bai, Fan Zhang, Yongzhen Chen, Yu Liu, Jianhuo Fang, Xin Li, Qin Shen, Haitao Zhao and Xuerui Yang



# 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 20.507. The new impact of *Cell Discovery* is 6.255.

## 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

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.

Comparative genetic analysis of the novel coronavirus (2019-nCoV/SARS-CoV-2) receptor ACE2 in different populations  
*Cell Discov.* 2020 Feb 24;6:11. doi: 10.1038/s41421-020-0147-1.

Generation and characterization of a novel knockin minipig model of Hutchinson-Gilford progeria syndrome  
*Cell Discov.* 2019 Mar 19;5:16. doi: 10.1038/s41421-019-0084-z.



Editor-in-Chief: Gang Pei  
Executive Editor: Dangsheng Li

# SUBMIT

Visit [www.nature.com/celldisc/](http://www.nature.com/celldisc/)  
to read the Published Papers and Submit Today!