

# Cell Research

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**Probing the dynamic nucleosome organization after fertilization**  
**Novel osteoprogenitors in maxillofacial bone homeostasis & regeneration**  
**Hetero-bivalent nanobodies protect against diverse SARS-CoV-2 variants**  
**Glutamate drives LCR in cardiac pacemaker cells**

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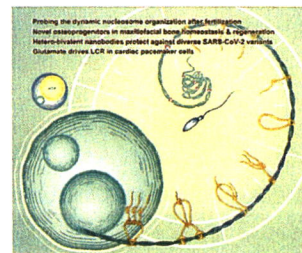


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## RESEARCH HIGHLIGHTS

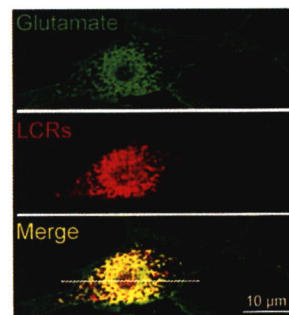
- 791 Shaping the sinuses: a novel *Krt14<sup>+</sup>Ctsk<sup>+</sup>* cell lineage driving regenerative bone formation**  
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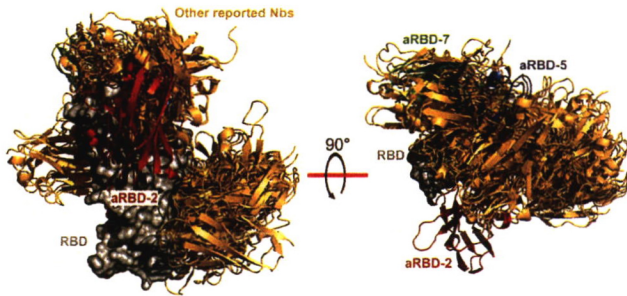
**Cover:** Nucleosome remodeling of the paternal genome during the first 12 h after fertilization in mice. The knotted ropes represent chromatin in the nucleus. In the first 3 h after fertilization, the protamine (pink knots) on paternal DNA was replaced by histone (yellow knots). Then the nucleosome positioning pattern was continually rebuilt to form nucleosome depletion regions at promoters and transcription factor binding sites, which were represented by more complex knots. See page 801-813 by Chenfei Wang et al. for details.

## ARTICLES

- 801 Dynamic nucleosome organization after fertilization reveals regulatory factors for mouse zygotic genome activation** *Open*  
*Chenfei Wang, Chuan Chen, Xiaoyu Liu, Chong Li, Qiu Wu, Xiaolan Chen, Lingyue Yang, Xiaochen Kou, Yanhong Zhao, Hong Wang, Yawei Gao, Yong Zhang, Shaorong Gao*
- 814 A novel lineage of osteoprogenitor cells with dual epithelial and mesenchymal properties govern maxillofacial bone homeostasis and regeneration after MSFL** *Open*  
*Yuteng Weng, Haicheng Wang, Di Wu, Shuyu Xu, Xiaofan Chen, Jie Huang, Yanhuizhi Feng, Lin Li, Zuolin Wang*
- 831 Hetero-bivalent nanobodies provide broad-spectrum protection against SARS-CoV-2 variants of concern including Omicron** *Open*  
*Huan Ma, Xinghai Zhang, Peiyi Zheng, Peter H. Dube, Weihong Zeng, Shaohong Chen, Qingyu Cheng, Yunru Yang, Yan Wu, Junhui Zhou, Xiaowen Hu, Yan Xiang, Huajun Zhang, Sandra Chiu, Tengchuan Jin*



Representative confocal images demonstrating the subcellular colocalization of glutamate accumulation and LCR events. See page 843-854 by Duanyang Xie et al. for details.



Alignment of the structures of RBD:aRBD-2, RBD:aRBD-5 and RBD:aRBD-7 complexes with other reported RBD/spike:Nb complex structures (bright-orange) deposited in the PDB database. See page 831–842 by Huan Ma et al. for details.

## 843 Glutamate drives 'local $\text{Ca}^{2+}$ release' in cardiac pacemaker cells **Open**

Duanyang Xie, Ke Xiong, Xuling Su, Guanghua Wang, Qicheng Zou, Luxin Wang, Caihong Zhang, Yuting Cao, Beihua Shao, Yixin Zhang, Peidong Zhang, Dandan Liang, Yi Liu, Yi-Han Chen

## LETTERS TO THE EDITOR

### 855 Structural insights into ligand binding and activation of the human thyrotropin-releasing hormone receptor

Youwei Xu, Hongmin Cai, Chongzhao You, Xinheng He,

Qingning Yuan, Hualiang Jiang, Xi Cheng, Yi Jiang, H. Eric Xu

### 858 Structural insights into thyrotropin-releasing hormone receptor activation by an endogenous peptide agonist or its orally administered analogue **Open**

Fan Yang, Huanhuan Zhang, Xianyu Meng, Yingge Li, Yingxin Zhou, Shenglong Ling, Demeng Sun, Pei Lv, Lei Liu, Pan Shi, Changlin Tian

### 862 A broadly neutralizing antibody against SARS-CoV-2 Omicron variant infection exhibiting a novel trimer dimer conformation in spike protein binding

Yingdan Wang, Wuqiang Zhan, Jiangyan Liu, Yanqun Wang, Xiang Zhang, Meng Zhang, Lin Han, Yunping Ma, Lu Lu, Yumei Wen, Zhenguo Chen, Jincun Zhao, Fan Wu, Lei Sun, Jinghe Huang

## CORRECTION

### 866 Author Correction: Formative pluripotent stem cells show features of epiblast cells poised for gastrulation **Open**

Xiaoxiao Wang, Yunlong Xiang, Yang Yu, Ran Wang, Yu Zhang, Qianhua Xu, Hao Sun, Zhen-Ao Zhao, Xiangxiang Jiang, Xiaoqing Wang, Xukun Lu, Dandan Qin, Yujun Quan, Jiaqi Zhang, Ng Shyh-Chang, Hongmei Wang, Naihe Jing, Wei Xie, Lei Li

## ADVANCE ONLINE PUBLICATION

### Unravelling female reproductive senescence to enhance healthy longevity

Lu Dong, Daniel Boon Loong Teh, Brian Keith Kennedy and Zhongwei Huang

### CRISPR FISHer enables high-sensitivity imaging of nonrepetitive DNA in living cells through phase separation-mediated signal amplification

Xin-Yuan Lyu, Yuan Deng, Xiao-Yan Huang, Zhen-Zhen Li, Guo-Qing Fang, Dong Yang, Feng-Liu Wang, Wang Kang, En-Zhi Shen and Chun-Qing Song



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## 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.

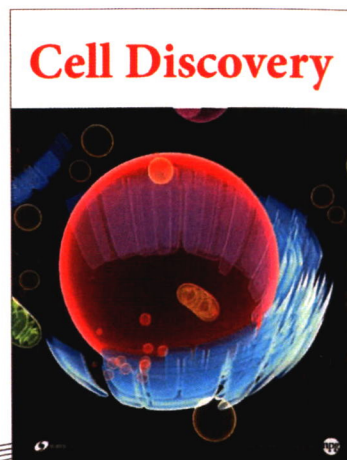
Dynamic O-GlcNAcylation coordinates ferritinophagy and mitophagy to activate ferroptosis  
*Cell Discov.* 2022 May 3;8(1):40. doi: 10.1038/s41421-022-00390-6.

Treatment of SARS-CoV-2-induced pneumonia with NAD<sup>+</sup> 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.



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