

Cell Research



Volume 27 Number 6 June 2017

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

Molecular insights into GPCR-GRK interactions
A novel mechanism linking hormonal regulation to lysosomal function
Self-inflicted DNA DSBs promote tumorigenesis
AIM2 inflammasome activation mediates chemotherapy-induced intestinal toxicity



(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 Shanghai Institutes for Biological Sciences (SIBS), Chinese Academy of Sciences (CAS) since 2006.

Sponsored by:

Institute of Biochemistry and Cell Biology (IBCB), Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences

© 2017 IBCB, SIBS, 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 SPFECAS

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
Jingjing Zheng

RESEARCH HIGHLIGHTS

717 5-methylcytosine mediates nuclear export of mRNA

Dan Dominissini, Gideon Rechavi

720 Spontaneous DNA damage propels tumorigenicity

Ilio Vitale, Guido Kroemer

722 An evolving function of DNA-containing exosomes in chemotherapy-induced immune responses

Paul Kurywachak, Raghu Kalluri

724 Circular RNAs: Coding or noncoding?

Tim Schneider, Albrecht Bindereif

726 Seducing astrocytes to the dark side

Joshua E Burda, Michael V Sofroniew

ORIGINAL ARTICLES

728 Molecular assembly of rhodopsin with G protein-coupled receptor kinases **Open**

Yuanzheng He, Xiang Gao, Devrishi Goswami, Li Hou, Kuntal Pal, Yanting Yin, Gongpu Zhao, Oliver P Ernst, Patrick Griffin, Karsten Melcher, H Eric Xu

748 Fasting-induced hormonal regulation of lysosomal function **Open**

Liqun Chen, Ke Wang, Aijun Long, Liangjie Jia, Yuanyuan Zhang, Haiteng Deng, Yu Li, Jinbo Han, Yiguo Wang

764 Self-inflicted DNA double-strand breaks sustain tumorigenicity and stemness of cancer cells **Open**

Xinjian Liu, Fang Li, Qian Huang, Zhengxiang Zhang, Ling Zhou, Yu Deng, Min Zhou, Donald E Fleenor, He Wang, Michael B Kastan, Chuan-Yuan Li

784 Chemotherapy-induced intestinal inflammatory responses are mediated by exosome secretion of double-strand DNA via AIM2 inflammasome activation

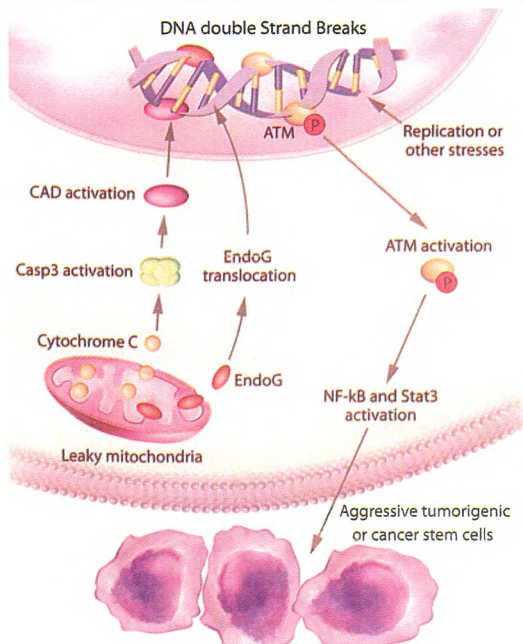
Qiaoshi Lian, Jun Xu, Shanshan Yan, Min Huang, Honghua Ding, Xiaoyu Sun, Aiwei Bi, Jian Ding, Bing Sun, Meiyu Geng



Cover: The cartoon image shows that AIM2 inflammasome in innate immune cells is responsible for the gastrointestinal toxicity via sensing double-strand DNA released from intestinal epithelial cells. See page 784-800 by Qiaoshi Lian *et al.* for details.



3D reconstruction of the 2D negative stain images of the rhodopsin/GRK5 complex overlaid with modeled rhodopsin/GRK5 complex. See page 728-747 by Yuanzheng He *et al.* for details.



An illustration of induction of spontaneous DNA DSBs and their roles in maintaining the stemness and tumorigenicity of cancer cells. See page 764-783 by Xinjian Liu *et al.* for details.

LETTERS TO THE EDITOR

830 Gene and mutation independent therapy via CRISPR-Cas9 mediated cellular reprogramming in rod photoreceptors **Open**

Jie Zhu, Chang Ming, Xin Fu, Yaou Duan, Duc Anh Hoang, Jeffrey Rutgard, Runze Zhang, Wenqiu Wang, Rui Hou, Daniel Zhang, Edward Zhang, Charlotte Zhang, Eye Gene Therapy Consortium, Xiaoke Hao, Wenjun Xiong, Kang Zhang

834 Mitochondrial replacement by pre-pronuclear transfer in human embryos

Keliang Wu, Tailai Chen, Sexin Huang, Cuiqing Zhong, Junhao Yan, Xiaoyu Zhang, Jinsong Li, Yuan Gao, Han Zhao, Zi-Jiang Chen

838 ShHTL7 is a non-canonical receptor for strigolactones in root parasitic weeds

Ruifeng Yao, Fei Wang, Zhenhua Ming, Xiaoxi Du, Li Chen, Yupei Wang, Wenhao Zhang, Haiteng Deng, Daoxin Xie

CORRIGENDUM

842 A molecular roadmap for induced multi-lineage trans-differentiation of fibroblasts by chemical combinations

Xiaoping Han, Hao Yu, Daosheng Huang, Yang Xu, Assieh Saadatpour, Xia Li, Lengmei Wang, Jie Yu, Luca Pinello, Shujing Lai, Mengmeng Jiang, Xueying Tian, Fen Zhang, Yanhong Cen, Yuko Fujiwara, Wei Zhu, Bin Zhou, Tianhua Zhou, Hongwei Ouyang, Jianan Wang, Guo-Cheng Yuan, Shumin Duan, Stuart H Orkin, Guoji Guo

ERRATUM

843 A molecular roadmap for induced multi-lineage trans-differentiation of fibroblasts by chemical combinations

Xiaoping Han, Hao Yu, Daosheng Huang, Yang Xu, Assieh Saadatpour, Xia Li, Lengmei Wang, Jie Yu, Luca Pinello, Shujing Lai, Mengmeng Jiang, Xueying Tian, Fen Zhang, Yanhong Cen, Yuko Fujiwara, Wei Zhu, Bin Zhou, Tianhua Zhou, Hongwei Ouyang, Jianan Wang, Guo-Cheng Yuan, Shumin Duan, Stuart H Orkin, Guoji Guo

801 Homology-mediated end joining-based targeted integration using CRISPR/Cas9 **Open**

Xuan Yao, Xing Wang, Xinde Hu, Zhen Liu, Junlai Liu, Haibo Zhou, Xiaowen Shen, Yu Wei, Zijian Huang, Wenqin Ying, Yan Wang, Yan-Hong Nie, Chen-Chen Zhang, Sanlan Li, Leping Cheng, Qifang Wang, Yan Wu, Pengyu Huang, Qiang Sun, Linyu Shi, Hui Yang

815 CRISPR-Cas9-mediated genome editing in one blastomere of two-cell embryos reveals a novel Tet3 function in regulating neocortical development

Lingbo Wang, Min-Yin Li, Chao Qu, Wan-Ying Miao, Qi Yin, Jiaoyang Liao, Hua-Teng Cao, Min Huang, Kai Wang, Erwei Zuo, Guangdun Peng, Shu-Xin Zhang, Guodong Chen, Qing Li, Ke Tang, Qian Yu, Zhoujie Li, Catherine CL Wong, Guoliang Xu, Naihe Jing, Xiang Yu, Jinsong Li

ADVANCE ONLINE PUBLICATION (published weekly on Tuesday and Friday)

JUNE 2 2017

Alternate binding modes of anti-CRISPR viral suppressors AcrF1/2 to Csy surveillance complex revealed by cryo-EM structures

Ruchao Peng, Ying Xu, Tengfei Zhu, Ningning Li, Jianxun Qi, Yan Chai, Min Wu, Xinzhen Zhang, Yi Shi,

Peiyi Wang, Jiawei Wang, Ning Gao, George Fu Gao

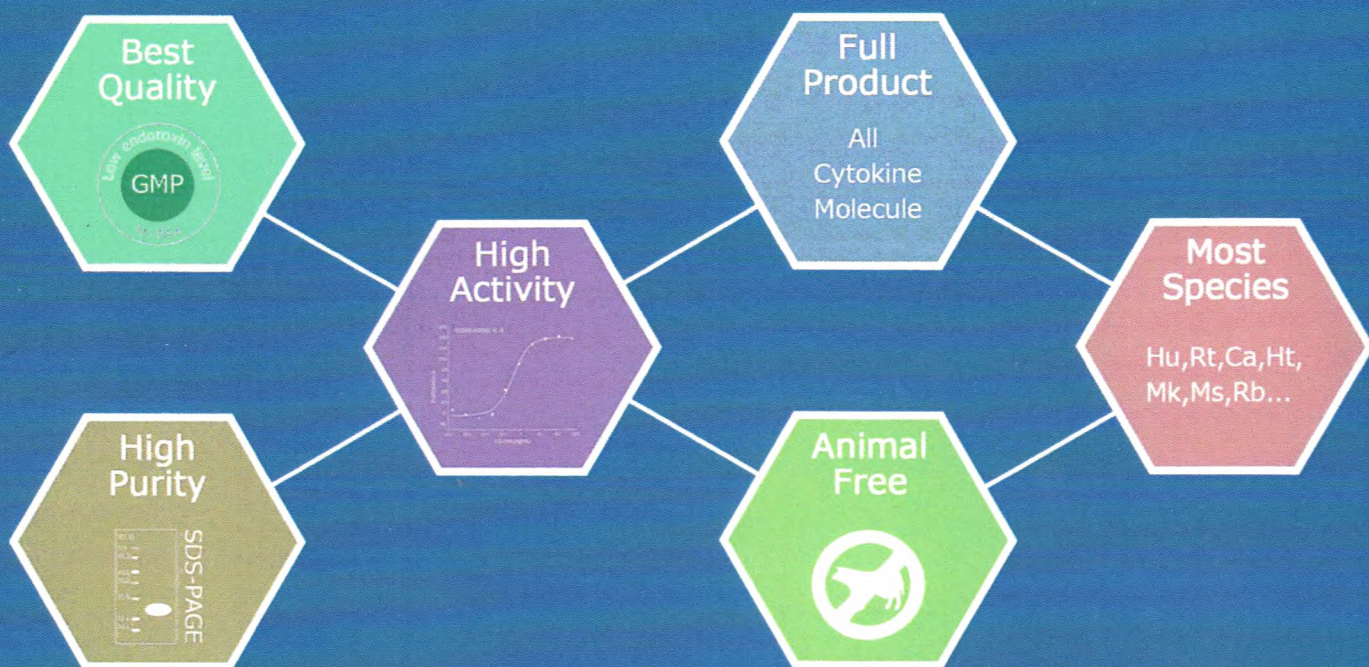
doi:10.1038/cr.2017.79



Sino Biological
Biological Solution Specialist

Sino Biological Cytokine

——Apply to cell culture



More

650 Cytokine
600 Receptor

Fast

All in stock
Ship in 24 hours

Better

Best Quality
Rigorous QC

Save

Save 30-70% off
your funds