

2024 APS Most Cited Paper Awards

APS (Acta Pharmacologica Sinica), published monthly in English, is an international peer-reviewed journal. With the leading by Professor [Jian Ding](#), Editor-in-Chief, and the support from a respected global [editorial board](#), APS is continuously growing to a high-level journal in the area of pharmacology and related life sciences. To acknowledge authors' fine contributions to the journal, We are pleased to announce the '2024 APS Most Cited Paper Awards'. This award is presented to multiple highly cited papers published between 1 January 2018 and 31 December 2023.

[Structural and functional properties of SARS-CoV-2 spike protein: potential antiviral drug development for COVID-19](#)

Yuan Huang, Chan Yang, Xin-Feng Xu, Wei Xu, Shu-Wen Liu

Acta Pharmacol Sin. 2020 Sep;41(9):1141-1149. doi: 10.1038/s41401-020-0485-4. Epub 2020 Aug 3.

[CB-Dock: a web server for cavity detection-guided protein-ligand blind docking](#)

Yang Liu, Maximilian Grimm, Wen-Tao Dai, Mu-Chun Hou, Zhi-Xiong Xiao, Yang Cao

Acta Pharmacol Sin. 2020 Jan;41(1):138-144. doi: 10.1038/s41401-019-0228-6. Epub 2019 Jul 1.

[Anti-SARS-CoV-2 activities in vitro of Shuanghuanglian preparations and bioactive ingredients](#)

Hai-Xia Su, Sheng Yao, Wen-Feng Zhao, Min-Jun Li, Jia Liu, Wei-Juan Shang, Hang Xie, Chang-Qiang Ke, Hang-Chen Hu, Mei-Na Gao, Kun-Qian Yu, Hong Liu, Jing-Shan Shen, Wei Tang, Lei-Ke Zhang, Geng-Fu Xiao, Li Ni, Dao-Wen Wang, Jian-Ping Zuo, Hua-Liang Jiang, Fang Bai, Yan Wu, Yang Ye, Ye-Chun Xu

Acta Pharmacol Sin. 2020 Sep;41(9):1167-1177. doi: 10.1038/s41401-020-0483-6. Epub 2020 Jul 31.

[miRNAs in cardiovascular diseases: potential biomarkers, therapeutic targets and challenges](#)

Shan-Shan Zhou, Jing-Peng Jin, Ji-Qun Wang, Zhi-Guo Zhang, Jonathan H Freedman, Yang Zheng, Lu Cai

Acta Pharmacol Sin. 2018 Jul;39(7):1073-1084. doi: 10.1038/aps.2018.30. Epub 2018 Jun 7.

[Exosomes: new molecular targets of diseases](#)

Saheli Samanta, Sheeja Rajasingh, Nicholas Drosos, Zhigang Zhou, Buddhadeb Dawn, Johnson Rajasingh

Acta Pharmacol Sin. 2018 Apr;39(4):501-513. doi: 10.1038/aps.2017.162. Epub 2017 Dec 7.

[Salvia miltiorrhizaBurge \(Danshen\): a golden herbal medicine in cardiovascular therapeutics](#)

Zhuo-Ming Li, Suo-Wen Xu, Pei-Qing Liu

Acta Pharmacol Sin. 2018 May;39(5):802-824. doi: 10.1038/aps.2017.193. Epub 2018 Apr 26.

[Natural products: potential treatments for cisplatin-induced nephrotoxicity](#)

Chun-Yan Fang, Da-Yong Lou, Li-Qin Zhou, Jin-Cheng Wang, Bo Yang, Qiao-Jun He, Jia-Jia Wang, Qin-Jie Weng

Acta Pharmacol Sin. 2021 Dec;42(12):1951-1969. doi: 10.1038/s41401-021-00620-9. Epub 2021 Mar 9.

[Exosomal cargo-loading and synthetic exosome-mimics as potential therapeutic tools](#)

Song-Pei Li, Zhong-Xiao Lin, Xue-Yan Jiang, Xi-Yong Yu

Acta Pharmacol Sin. 2018 Apr;39(4):542-551. doi: 10.1038/aps.2017.178. Epub 2018 Jan 25.

[Endothelial dysfunction in COVID-19: an overview of evidence, biomarkers, mechanisms and potential therapies](#)

Suo-Wen Xu, Iqra Ilyas, Jian-Ping Weng

Acta Pharmacol Sin. 2023 Apr;44(4):695-709. doi: 10.1038/s41401-022-00998-0. Epub 2022 Oct 17.

[Small molecule inhibitors targeting the PD-1/PD-L1 signaling pathway](#)

Qian Wu, Li Jiang, Si-Cheng Li, Qiao-Jun He, Bo Yang, Ji Cao

Acta Pharmacol Sin. 2021 Jan;42(1):1-9. doi: 10.1038/s41401-020-0366-x. Epub 2020 Mar 9.

[Zinc deficiency and cellular oxidative stress: prognostic implications in cardiovascular diseases](#)

Sangyong Choi, Xian Liu, Zui Pan

Acta Pharmacol Sin. 2018 Jul;39(7):1120-1132. doi: 10.1038/aps.2018.25. Epub 2018 Jun 21.

[Artesunate synergizes with sorafenib to induce ferroptosis in hepatocellular carcinoma](#)

Zhong-Jie Li, Hui-Qi Dai, Xiao-Wei Huang, Ji Feng, Jing-Huan Deng, Zi-Xuan Wang, Xiao-Mei Yang, Yu-Jia Liu, Yong Wu, Pan-Hong Chen, Huan Shi, Ji-Gang Wang, Jing Zhou, Guo-Dong Lu

Acta Pharmacol Sin. 2021 Feb;42(2):301-310. doi: 10.1038/s41401-020-0478-3. Epub 2020 Jul 22.

[Vascular endothelial dysfunction, a major mediator in diabetic cardiomyopathy](#)

Maura Knapp, Xin Tu, Rongxue Wu

Acta Pharmacol Sin. 2019 Jan;40(1):1-8. doi: 10.1038/s41401-018-0042-6.

[Drp1-dependent mitochondrial fission in cardiovascular disease](#)

Jia-Yu Jin, Xiang-Xiang Wei, Xiu-Ling Zhi, Xin-Hong Wang, Dan Meng

Acta Pharmacol Sin. 2021 May;42(5):655-664. doi: 10.1038/s41401-020-00518-y.

[Hypoxia, HIF-1 \$\alpha\$, and COVID-19: from pathogenic factors to potential therapeutic targets](#)

Zoya O Serebrovska, Elisa Y Chong, Tetiana V Serebrovska, Lesia V Tumanovska, Lei Xi

Acta Pharmacol Sin. 2020 Dec;41(12):1539-1546. doi: 10.1038/s41401-020-00554-8. Epub 2020 Oct 27.

[Growth factors-based therapeutic strategies and their underlying signaling mechanisms for peripheral nerve regeneration](#)

Rui Li, Duo-Hui Li, Hong-Yu Zhang, Jian Wang, Xiao-Kun Li, Jian Xiao

Acta Pharmacol Sin. 2020 Oct;41(10):1289-1300. doi: 10.1038/s41401-019-0338-1. Epub 2020 Mar 2.

[Leptin, cardiovascular diseases and type 2 diabetes mellitus](#)

Niki Katsiki, Dimitri P Mikhailidis, Maciej Banach

Acta Pharmacol Sin. 2018 Jul;39(7):1176-1188. doi: 10.1038/aps.2018.40. Epub 2018 Jun 7.

[Ganoderic acid hinders renal fibrosis via suppressing the TGF- \$\beta\$ /Smad and MAPK signaling pathways](#)

Xiao-Qiang Geng, Ang Ma, Jin-Zhao He, Liang Wang, Ying-Li Jia, Guang-Ying Shao, Min Li, Hong Zhou, Shu-Qian Lin, Jian-Hua Ran, Bao-Xue Yang

Acta Pharmacol Sin. 2020 May;41(5):670-677. doi: 10.1038/s41401-019-0324-7. Epub 2019 Dec 5.

[Mitochondrial-derived damage-associated molecular patterns amplify neuroinflammation in neurodegenerative diseases](#)

Miao-Miao Lin, Na Liu, Zheng-Hong Qin, Yan Wang

Acta Pharmacol Sin. 2022 Oct;43(10):2439-2447. doi: 10.1038/s41401-022-00879-6. Epub 2022 Mar 1.

[Structure genomics of SARS-CoV-2 and its Omicron variant: drug design templates for COVID-19](#)

Can-Rong Wu, Wan-Chao Yin, Yi Jiang, H Eric Xu

Acta Pharmacol Sin. 2022 Dec;43(12):3021-3033. doi: 10.1038/s41401-021-00851-w. Epub 2022 Jan 20.

[Caspase-11/4 and gasdermin D-mediated pyroptosis contributes to podocyte injury in mouse diabetic nephropathy](#)

Qian Cheng, Jing Pan, Zhuan-Li Zhou, Fan Yin, Hong-Yan Xie, Pan-Pan Chen, Jing-Yao Li, Pei-Qing Zheng, Li Zhou, Wei Zhang, Jun Liu, Li-Min Lu

Acta Pharmacol Sin. 2021 Jun;42(6):954-963. doi: 10.1038/s41401-020-00525-z. Epub 2020 Sep 23.

[Ginsenoside Rg1 protects against ischemic/reperfusion-induced neuronal injury through miR-144/Nrf2/ARE pathway](#)

Shi-Feng Chu, Zhao Zhang, Xin Zhou, Wen-Bin He, Chen Chen, Piao Luo, Dan-Dan Liu, Qi-di Ai, Hai-Fan Gong, Zhen-Zhen Wang, Hong-Shuo Sun, Zhong-Ping Feng, Nai-Hong Chen

Acta Pharmacol Sin. 2019 Jan;40(1):13-25. doi: 10.1038/s41401-018-0154-z. Epub 2018 Sep 27.

[Engineering nanomedicines through boosting immunogenic cell death for improved cancer immunotherapy](#)

Jing Gao, Wei-Qi Wang, Qing Pei, Megan S Lord, Hai-Jun Yu

Acta Pharmacol Sin. 2020 Jul;41(7):986-994. doi: 10.1038/s41401-020-0400-z. Epub 2020 Apr 21.

[Sirtuin 3 deficiency exacerbates diabetic cardiomyopathy via necroptosis enhancement and NLRP3 activation](#)

Shu Song, Yue Ding, Guo-Liang Dai, Yue Zhang, Meng-Ting Xu, Jie-Ru Shen, Ting-Ting Chen, Yun Chen, Guo-Liang Meng

Acta Pharmacol Sin. 2021 Feb;42(2):230-241. doi: 10.1038/s41401-020-0490-7. Epub 2020 Aug 7.

[Overview of the anti-inflammatory effects, pharmacokinetic properties and clinical efficacies of arctigenin and arctiin from *Arctium lappa* L](#)

Qiong Gao, Mengbi Yang, Zhong Zuo

Acta Pharmacol Sin. 2018 May;39(5):787-801. doi: 10.1038/aps.2018.32. Epub 2018 Apr 26.

[Artemisinin analogue SM934 ameliorates DSS-induced mouse ulcerative colitis via suppressing neutrophils and macrophages](#)

Yu-Xi Yan, Mei-Juan Shao, Qing Qi, Yan-Sheng Xu, Xiao-Qian Yang, Feng-Hua Zhu, Shi-Jun He, Pei-Lan He, Chun-Lan Feng, Yan-Wei Wu, Heng Li, Wei Tang, Jian-Ping Zuo
Acta Pharmacol Sin. 2018 Oct;39(10):1633-1644. doi: 10.1038/aps.2017.185. Epub 2018 May 31.

[Matrine attenuates pathological cardiac fibrosis via RPS5/p38 in mice](#)

Xin Zhang, Can Hu, Ning Zhang, Wen-Ying Wei, Ling-Li Li, Hai-Ming Wu, Zhen-Guo Ma, Qi-Zhu Tang
Acta Pharmacol Sin. 2021 Apr;42(4):573-584. doi: 10.1038/s41401-020-0473-8. Epub 2020 Jul 21.

[Ulinastatin attenuates LPS-induced inflammation in mouse macrophage RAW264.7 cells by inhibiting the JNK/NF- \$\kappa\$ B signaling pathway and activating the PI3K/Akt/Nrf2 pathway](#)

Si-Tong Li, Qi Dai, Shu-Xian Zhang, Ya-Jun Liu, Qiu-Qiong Yu, Fei Tan, Shu-Hong Lu, Quan Wang, Jian-Wen Chen, He-Qing Huang, Pei-Qing Liu, Min Li
Acta Pharmacol Sin. 2018 Aug;39(8):1294-1304. doi: 10.1038/aps.2017.143. Epub 2018 Jan 11.

[Chimeric antigen receptor \(CAR\)-transduced natural killer cells in tumor immunotherapy](#)

Yuan Hu, Zhi-Gang Tian, Cai Zhang
Acta Pharmacol Sin. 2018 Feb;39(2):167-176. doi: 10.1038/aps.2017.125.

[Wogonin protects glomerular podocytes by targeting Bcl-2-mediated autophagy and apoptosis in diabetic kidney disease](#)

Xue-Qi Liu, Ling Jiang, Yuan-Yuan Li, Yue-Bo Huang, Xue-Ru Hu, Wei Zhu, Xian Wang, Yong-Gui Wu, Xiao-Ming Meng, Xiang-Ming Qi
Acta Pharmacol Sin. 2022 Jan;43(1):96-110. doi: 10.1038/s41401-021-00721-5. Epub 2021 Jul 12.

[Eukaryotic elongation factor-2 kinase regulates the cross-talk between autophagy and pyroptosis in doxorubicin-treated human melanoma cells in vitro](#)

Pian Yu, Hai-Yan Wang, Min Tian, Ao-Xue Li, Xi-Sha Chen, Xin-Luan Wang, Yi Zhang, Yan Cheng
Acta Pharmacol Sin. 2019 Sep;40(9):1237-1244. doi: 10.1038/s41401-019-0222-z. Epub 2019 Mar 26.

[KLF4 functions as an oncogene in promoting cancer stem cell-like characteristics in osteosarcoma cells](#)

Xiao-Tian Qi, Yang-Ling Li, Yan-Qi Zhang, Tong Xu, Bin Lu, Liang Fang, Jian-Qing Gao, Lu-Shan Yu, Di-Feng Zhu, Bo Yang, Qiao-Jun He, Mei-Dan Ying
Acta Pharmacol Sin. 2019 Apr;40(4):546-555. doi: 10.1038/s41401-018-0050-6. Epub 2018 Jun 21.

[GPR3, GPR6, and GPR12 as novel molecular targets: their biological functions and interaction with cannabidiol](#)

Alyssa S Laun, Sarah H Shrader, Kevin J Brown, Zhao-Hui Song
Acta Pharmacol Sin. 2019 Mar;40(3):300-308. doi: 10.1038/s41401-018-0031-9. Epub 2018 Jun 25.

[Oncogene-induced senescence: a double edged sword in cancer](#)

Xue-Ling Liu, Jian Ding, Ling-Hua Meng
Acta Pharmacol Sin. 2018 Oct;39(10):1553-1558. doi: 10.1038/aps.2017.198. Epub 2018 Apr 5.

[Pyroptosis and pyroptosis-inducing cancer drugs](#)

Fan Yang, Sahana N Bettadapura, Mark S Smeltzer, Hua Zhu, Shanzhi Wang

Acta Pharmacol Sin. 2022 Oct;43(10):2462-2473. doi: 10.1038/s41401-022-00887-6. Epub 2022 Mar 14.

[Heart-type fatty acid binding protein \(H-FABP\) as a biomarker for acute myocardial injury and long-term post-ischemic prognosis](#)

Xiao-Dong Ye, Yi He, Sheng Wang, Gordon T Wong, Michael G Irwin, Zhengyuan Xia

Acta Pharmacol Sin. 2018 Jul;39(7):1155-1163. doi: 10.1038/aps.2018.37. Epub 2018 May 17.

[NRF2-GPX4/SOD2 axis imparts resistance to EGFR-tyrosine kinase inhibitors in non-small-cell lung cancer cells](#)

Chun-Shuang Ma, Qian-Ming Lv, Ke-Ren Zhang, Ya-Bin Tang, Yu-Fei Zhang, Ying Shen, Hui-Min Lei, Liang Zhu

Acta Pharmacol Sin. 2021 Apr;42(4):613-623. doi: 10.1038/s41401-020-0443-1. Epub 2020 Jul 23.

[Advanced biomaterials for cancer immunotherapy](#)

Fan Yang, Kun Shi, Yan-Peng Jia, Ying Hao, Jin-Rong Peng, Zhi-Yong Qian

Acta Pharmacol Sin. 2020 Jul;41(7):911-927. doi: 10.1038/s41401-020-0372-z. Epub 2020 Mar 2.

[Pharmacological activation of REV-ERB \$\alpha\$ represses LPS-induced microglial activation through the NF- \$\kappa\$ B pathway](#)

Dong-Kai Guo, Yao Zhu, Hong-Yang Sun, Xing-Yun Xu, Shun Zhang, Zong-Bing Hao, Guang-Hui Wang, Chen-Chen Mu, Hai-Gang Ren

Acta Pharmacol Sin. 2019 Jan;40(1):26-34. doi: 10.1038/s41401-018-0064-0. Epub 2018 Jun 27.

[Organ preservation: from the past to the future](#)

Lei Jing, Leeann Yao, Michael Zhao, Li-Ping Peng, Mingyao Liu

Acta Pharmacol Sin. 2018 May;39(5):845-857. doi: 10.1038/aps.2017.182. Epub 2018 Mar 22.

[Versatile effects of bacterium-released membrane vesicles on mammalian cells and infectious/inflammatory diseases](#)

You-Jiang Yu, Xiao-Hong Wang, Guo-Chang Fan

Acta Pharmacol Sin. 2018 Apr;39(4):514-533. doi: 10.1038/aps.2017.82. Epub 2017 Aug 31.

[Mutations in key driver genes of pancreatic cancer: molecularly targeted therapies and other clinical implications](#)

Hai-Feng Hu, Zeng Ye, Yi Qin, Xiao-Wu Xu, Xian-Jun Yu, Qi-Feng Zhuo, Shun-Rong Ji

Acta Pharmacol Sin. 2021 Nov;42(11):1725-1741. doi: 10.1038/s41401-020-00584-2. Epub 2021 Feb 11.

[Cycloastragenol upregulates SIRT1 expression, attenuates apoptosis and suppresses neuroinflammation after brain ischemia](#)

Man Li, Shi-Chun Li, Bao-Kai Dou, Ying-Xiang Zou, Hao-Zhen Han, Dong-Xiang Liu, Zun-Ji Ke, Zhi-Fei Wang

Acta Pharmacol Sin. 2020 Aug;41(8):1025-1032. doi: 10.1038/s41401-020-0386-6. Epub 2020 Mar 16.

[Role of oxylipins in cardiovascular diseases](#)

Mohammed A Nayeem

Acta Pharmacol Sin. 2018 Jul;39(7):1142-1154. doi: 10.1038/aps.2018.24. Epub 2018 Jun 7.

[Circular noncoding RNAs as potential therapies and circulating biomarkers for cardiovascular diseases](#)

Ahmed S Bayoumi, Tatsuya Aonuma, Jian-Peng Teoh, Yao-Liang Tang, Il-Man Kim

Acta Pharmacol Sin. 2018 Jul;39(7):1100-1109. doi: 10.1038/aps.2017.196. Epub 2018 Mar 22.

[Safety, tolerability, and pharmacokinetics of VV116, an oral nucleoside analog against SARS-CoV-2, in Chinese healthy subjects](#)

Hong-Jie Qian, Yu Wang, Meng-Qi Zhang, Yuan-Chao Xie, Qing-Qing Wu, Li-Yu Liang, Ye Cao, Hua-Qing Duan, Guang-Hui Tian, Juan Ma, Zhuo-Bing Zhang, Ning Li, Jing-Ying Jia, Jing Zhang, Haji Akber Aisa, Jing-Shan Shen, Chen Yu, Hua-Liang Jiang, Wen-Hong Zhang, Zhen Wang, Gang-Yi Liu

Acta Pharmacol Sin. 2022 Dec;43(12):3130-3138. doi: 10.1038/s41401-022-00895-6. Epub 2022 Mar 16.

[The circulating non-coding RNA landscape for biomarker research: lessons and prospects from cardiovascular diseases](#)

Stępień E, Marina C Costa, Szczepan Kurc, Anna Drożdż, Nuno Cortez-Dias, Francisco J Enguita

Acta Pharmacol Sin. 2018 Jul;39(7):1085-1099. doi: 10.1038/aps.2018.35. Epub 2018 Jun 7.

[Wnt signaling pathways in myocardial infarction and the therapeutic effects of Wnt pathway inhibitors](#)

Wen-Bin Fu, Wei Eric Wang, Chun-Yu Zeng

Acta Pharmacol Sin. 2019 Jan;40(1):9-12. doi: 10.1038/s41401-018-0060-4. Epub 2018 Jul 12.

[Non-coding RNAs as biomarkers for acute myocardial infarction](#)

Chen Wang, Qing Jing

Acta Pharmacol Sin. 2018 Jul;39(7):1110-1119. doi: 10.1038/aps.2017.205. Epub 2018 Apr 26.

[Identification of SARS-CoV-2 entry inhibitors among already approved drugs](#)

Li Yang, Rong-Juan Pei, Heng Li, Xin-Na Ma, Yu Zhou, Feng-Hua Zhu, Pei-Lan He, Wei Tang, Ye-Cheng Zhang, Jin Xiong, Shu-Qi Xiao, Xian-Kun Tong, Bo Zhang, Jian-Ping Zuo

Acta Pharmacol Sin. 2021 Aug;42(8):1347-1353. doi: 10.1038/s41401-020-00556-6. Epub 2020 Oct 28.

[Discovery of potential small molecular SARS-CoV-2 entry blockers targeting the spike protein](#)

Lin Wang, Yan Wu, Sheng Yao, Huan Ge, Ya Zhu, Kun Chen, Wen-Zhang Chen, Yi Zhang, Wei Zhu, Hong-Yang Wang, Yu Guo, Pei-Xiang Ma, Peng-Xuan Ren, Xiang-Lei Zhang, Hui-Qiong Li, Mohammad A Ali, Wen-Qing Xu, Hua-Liang Jiang, Lei-Ke Zhang, Li-Li Zhu, Yang Ye, Wei-Juan Shang, Fang Bai

Acta Pharmacol Sin. 2022 Apr;43(4):788-796. doi: 10.1038/s41401-021-00735-z. Epub 2021 Aug 4.

[Bile acid and receptors: biology and drug discovery for nonalcoholic fatty liver disease](#)

Ting-Ying Jiao, Yuan-di Ma, Xiao-Zhen Guo, Yun-Fei Ye, Cen Xie

Acta Pharmacol Sin. 2022 May;43(5):1103-1119. doi: 10.1038/s41401-022-00880-z. Epub 2022 Feb 25.

[Recombinant human ACE2: potential therapeutics of SARS-CoV-2 infection and its complication](#)

Xiacong Pang, Yimin Cui, Yizhun Zhu

Acta Pharmacol Sin. 2020 Sep;41(9):1255-1257. doi: 10.1038/s41401-020-0430-6. Epub 2020 Jun 24.

[Gut microbiota dysbiosis-induced activation of the intrarenal renin-angiotensin system is involved in kidney injuries in rat diabetic nephropathy](#)

Chen-Chen Lu, Ze-Bo Hu, Ru Wang, Ze-Hui Hong, Jian Lu, Pei-Pei Chen, Jia-Xiu Zhang, Xue-Qi Li, Ben-Yin Yuan, Si-Jia Huang, Xiong-Zhong Ruan, Bi-Cheng Liu, Kun-Ling Ma

Acta Pharmacol Sin. 2020 Aug;41(8):1111-1118. doi: 10.1038/s41401-019-0326-5. Epub 2020 Mar 17.

[Ganoderma lucidum extract ameliorates MPTP-induced parkinsonism and protects dopaminergic neurons from oxidative stress via regulating mitochondrial function, autophagy, and apoptosis](#)

Zhi-Li Ren, Chao-Dong Wang, Tao Wang, Hui Ding, Ming Zhou, Nan Yang, Yan-Yong Liu, Piu Chan

Acta Pharmacol Sin. 2019 Apr;40(4):441-450. doi: 10.1038/s41401-018-0077-8. Epub 2018 Jul 10.

[Quercetin attenuates toosendanin-induced hepatotoxicity through inducing the Nrf2/GCL/GSH antioxidant signaling pathway](#)

Yao Jin, Zhen-Lin Huang, Li Li, Yang Yang, Chang-Hong Wang, Zheng-Tao Wang, Li-Li Ji

Acta Pharmacol Sin. 2019 Jan;40(1):75-85. doi: 10.1038/s41401-018-0024-8. Epub 2018 Jun 19.

[AlphaFold2 versus experimental structures: evaluation on G protein-coupled receptors](#)

Xin-Heng He, Chong-Zhao You, Hua-Liang Jiang, Yi Jiang, H Eric Xu, Xi Cheng

Acta Pharmacol Sin. 2023 Jan;44(1):1-7. doi: 10.1038/s41401-022-00938-y. Epub 2022 Jul 1.

[STING inhibitor ameliorates LPS-induced ALI by preventing vascular endothelial cells-mediated immune cells chemotaxis and adhesion](#)

Bing Wu, Meng-Meng Xu, Chen Fan, Chun-Lan Feng, Qiu-Kai Lu, Hui-Min Lu, Cai-Gui Xiang, Fang Bai, Hao-Yu Wang, Yan-Wei Wu, Wei Tang

Acta Pharmacol Sin. 2022 Aug;43(8):2055-2066. doi: 10.1038/s41401-021-00813-2. Epub 2021 Dec 14.

[Tetrandrine alleviates silicosis by inhibiting canonical and non-canonical NLRP3 inflammasome activation in lung macrophages](#)

Mei-Yue Song, Jia-Xin Wang, You-Liang Sun, Zhi-Fa Han, Yi-Tian Zhou, Ying Liu, Tian-Hui Fan, Zhao-Guo Li, Xian-Mei Qi, Ya Luo, Pei-Ran Yang, Bai-Cun Li, Xin-Ri Zhang, Jing Wang, Chen Wang

Acta Pharmacol Sin. 2022 May;43(5):1274-1284. doi: 10.1038/s41401-021-00693-6. Epub 2021 Aug 20.

[GABAergic inhibitory neurons as therapeutic targets for cognitive impairment in schizophrenia](#)

Meng-Yi Xu, Albert H C Wong

Acta Pharmacol Sin. 2018 May;39(5):733-753. doi: 10.1038/aps.2017.172. Epub 2018 Mar 22.

[New therapeutics beyond amyloid- \$\beta\$ and tau for the treatment of Alzheimer's disease](#)

Feng Zhang, Ru-Jia Zhong, Cheng Cheng, Song Li, Wei-Dong Le

Acta Pharmacol Sin. 2021 Sep;42(9):1382-1389. doi: 10.1038/s41401-020-00565-5. Epub 2020 Dec 2.

[Icariside II attenuates cerebral ischemia/reperfusion-induced blood-brain barrier dysfunction in rats via regulating the balance of MMP9/TIMP1](#)

Mu-Bo Liu, Wei Wang, Jian-Mei Gao, Fei Li, Jing-Shan Shi, Qi-Hai Gong

Acta Pharmacol Sin. 2020 Dec;41(12):1547-1556. doi: 10.1038/s41401-020-0409-3. Epub 2020 Jun 2.

[Rebalancing of the gut flora and microbial metabolism is responsible for the anti-arthritis effect of kaempferol](#)

Li-Xiang Aa, Fei Fei, Qi Qi, Run-Bin Sun, Sheng-Hua Gu, Zi-Zhen Di, Ji-Ye Aa, Guang-Ji Wang, Chang-Xiao Liu

Acta Pharmacol Sin. 2020 Jan;41(1):73-81. doi: 10.1038/s41401-019-0279-8. Epub 2019 Aug 19.

[Ferroptosis inhibitor liproxstatin-1 alleviates metabolic dysfunction-associated fatty liver disease in mice: potential involvement of PANoptosis](#)

Jie Tong, Xiu-Ting Lan, Zhen Zhang, Yi Liu, Di-Yang Sun, Xu-Jie Wang, Shen-Xi Ou-Yang, Chun-Lin Zhuang, Fu-Ming Shen, Pei Wang, Dong-Jie Li

Acta Pharmacol Sin. 2023 May;44(5):1014-1028. doi: 10.1038/s41401-022-01010-5. Epub 2022 Nov 2.

[Ferroptosis in viral infection: the unexplored possibility](#)

Mao-Peng Wang, Banda Joshua, Ning-Yi Jin, Shou-Wen Du, Chang Li

Acta Pharmacol Sin. 2022 Aug;43(8):1905-1915. doi: 10.1038/s41401-021-00814-1. Epub 2021 Dec 6.

[Sirt1 inhibits renal tubular cell epithelial-mesenchymal transition through YY1 deacetylation in diabetic nephropathy](#)

Lei Du, Xuan Qian, Yuan Li, Xi-Zhi Li, Lin-Lin He, Liu Xu, Yi-Qi Liu, Cheng-Cheng Li, Pu Ma, Fang-Lin Shu, Qian Lu, Xiao-Xing Yin

Acta Pharmacol Sin. 2021 Feb;42(2):242-251. doi: 10.1038/s41401-020-0450-2. Epub 2020 Jun 17.

[Inhibition of M2-like macrophages by all-trans retinoic acid prevents cancer initiation and stemness in osteosarcoma cells](#)

Xue-Jing Shao, Sen-Feng Xiang, Ying-Qian Chen, Ning Zhang, Ji Cao, Hong Zhu, Bo Yang, Qian Zhou, Mei-Dan Ying, Qiao-Jun He

Acta Pharmacol Sin. 2019 Oct;40(10):1343-1350. doi: 10.1038/s41401-019-0262-4. Epub 2019 Jul 11.

[PEITC triggers multiple forms of cell death by GSH-iron-ROS regulation in K7M2 murine osteosarcoma cells](#)

Huan-Huan Lv, Chen-Xiao Zhen, Jun-Yu Liu, Peng Shang

Acta Pharmacol Sin. 2020 Aug;41(8):1119-1132. doi: 10.1038/s41401-020-0376-8. Epub 2020 Mar 4.

[Targeting HMGB1 for the treatment of sepsis and sepsis-induced organ injury](#)

Chao Deng, Lin Zhao, Zhi Yang, Jia-Jia Shang, Chang-Yu Wang, Ming-Zhi Shen, Shuai Jiang, Tian Li, Wen-Cheng Di, Ying Chen, He Li, Ye-Dong Cheng, Yang Yang

Acta Pharmacol Sin. 2022 Mar;43(3):520-528. doi: 10.1038/s41401-021-00676-7. Epub 2021 May 26.

[Sapidolide A alleviates acetaminophen-induced acute liver injury by inhibiting NLRP3 inflammasome activation in macrophages](#)

Jin-Cheng Wang, Qi Shi, Qian Zhou, Lu-Lu Zhang, Yue-Ping Qiu, Da-Yong Lou, Li-Qin Zhou, Bo Yang,

Qiao-Jun He, Qin-Jie Weng, Jia-Jia Wang

Acta Pharmacol Sin. 2022 Aug;43(8):2016-2025. doi: 10.1038/s41401-021-00842-x. Epub 2022 Jan 12.

[Harnessing nanomedicine to overcome the immunosuppressive tumor microenvironment](#)

Bo Sun, Hyesun Hyun, Lian-Tao Li, Andrew Z Wang

Acta Pharmacol Sin. 2020 Jul;41(7):970-985. doi: 10.1038/s41401-020-0424-4. Epub 2020 May 18.

[Disulfiram-loaded lactoferrin nanoparticles for treating inflammatory diseases](#)

An-Te Ou, Jia-Xin Zhang, Yue-Fei Fang, Rong Wang, Xue-Ping Tang, Peng-Fei Zhao, Yu-Ge Zhao, Meng Zhang, Yong-Zhuo Huang

Acta Pharmacol Sin. 2021 Nov;42(11):1913-1920. doi: 10.1038/s41401-021-00770-w. Epub 2021 Sep 24.

[Cannabidiol does not display drug abuse potential in mice behavior](#)

Adrián Viudez-Martínez, María S García-Gutiérrez, Juan Medrano-Relinque, Carmen M Navarrón, Francisco Navarrete, Jorge Manzanares

Acta Pharmacol Sin. 2019 Mar;40(3):358-364. doi: 10.1038/s41401-018-0032-8. Epub 2018 Jul 18.

[MicroRNAs as biomarkers for human glioblastoma: progress and potential](#)

Shi-Wei Huang, Ni-da Ali, Lily Zhong, Jian Shi

Acta Pharmacol Sin. 2018 Sep;39(9):1405-1413. doi: 10.1038/aps.2017.173. Epub 2018 Feb 8.

[Discovery and development of NA-1 for the treatment of acute ischemic stroke](#)

Beatrice Ballarin, Michael Tymianski

Acta Pharmacol Sin. 2018 May;39(5):661-668. doi: 10.1038/aps.2018.5. Epub 2018 Mar 22.

[Ginsenoside Rb1 alleviates diabetic kidney podocyte injury by inhibiting aldose reductase activity](#)

Jia-Yi He, Quan Hong, Bi-Xia Chen, Shao-Yuan Cui, Ran Liu, Guang-Yan Cai, Jiao Guo, Xiang-Mei Chen

Acta Pharmacol Sin. 2022 Feb;43(2):342-353. doi: 10.1038/s41401-021-00788-0. Epub 2021 Nov 22.

[Cannabis, cannabinoid receptors, and endocannabinoid system: yesterday, today, and tomorrow](#)

Jie Wu

Acta Pharmacol Sin. 2019 Mar;40(3):297-299. doi: 10.1038/s41401-019-0210-3. Epub 2019 Jan 22.

[Sevoflurane postconditioning protects against myocardial ischemia/reperfusion injury by restoring autophagic flux via an NO-dependent mechanism](#)

Shi-Gang Qiao, Ying Sun, Bo Sun, An Wang, Jia Qiu, Lei Hong, Jian-Zhong An, Chen Wang, Hui-Ling Zhang

Acta Pharmacol Sin. 2019 Jan;40(1):35-45. doi: 10.1038/s41401-018-0066-y. Epub 2018 Jul 12.

[The role of KATP channels in cerebral ischemic stroke and diabetes](#)

Vivian Szeto, Nai-Hong Chen, Hong-Shuo Sun, Zhong-Ping Feng

Acta Pharmacol Sin. 2018 May;39(5):683-694. doi: 10.1038/aps.2018.10. Epub 2018 Apr 19.

[Atomic force microscopy for revealing micro/nanoscale mechanics in tumor metastasis: from single cells to microenvironmental cues](#)

Mi Li, Ning Xi, Yue-Chao Wang, Lian-Qing Liu

Acta Pharmacol Sin. 2021 Mar;42(3):323-339. doi: 10.1038/s41401-020-0494-3. Epub 2020 Aug 17.

[Angiogenin and tRNA fragments in Parkinson's disease and neurodegeneration](#)

Jochen H M Prehn, Elisabeth Jirstrom

Acta Pharmacol Sin. 2020 Apr;41(4):442-446. doi: 10.1038/s41401-020-0375-9. Epub 2020 Mar 6.

[Research progress on the protective effects of licorice-derived 18 \$\beta\$ -glycyrrhetic acid against liver injury](#)

Shou-Yan Wu, Wen-Jie Wang, Jin-Hui Dou, Li-Kun Gong

Acta Pharmacol Sin. 2021 Jan;42(1):18-26. doi: 10.1038/s41401-020-0383-9. Epub 2020 Mar 6.

[Chitosan oligosaccharide modified liposomes enhance lung cancer delivery of paclitaxel](#)

Yun-Qiu Miao, Ming-Shu Chen, Xin Zhou, Lin-Miao Guo, Jing-Jing Zhu, Rui Wang, Xin-Xin Zhang, Yong Gan

Acta Pharmacol Sin. 2021 Oct;42(10):1714-1722. doi: 10.1038/s41401-020-00594-0. Epub 2021 Jan 19.

[The oncometabolite 2-hydroxyglutarate inhibits microglial activation via the AMPK/mTOR/NF- \$\kappa\$ B pathway](#)

Chao-Jun Han, Ji-Yue Zheng, Lin Sun, Hui-Cui Yang, Zhong-Qiang Cao, Xiao-Hu Zhang, Long-Tai Zheng, Xue-Chu Zhen

Acta Pharmacol Sin. 2019 Oct;40(10):1292-1302. doi: 10.1038/s41401-019-0225-9. Epub 2019 Apr 23.

[Garcinol inhibits esophageal cancer metastasis by suppressing the p300 and TGF- \$\beta\$ 1 signaling pathways](#)

Jing Wang, Man Wu, Dan Zheng, Hong Zhang, Yue Lv, Li Zhang, Hong-Sheng Tan, Hua Zhou, Yuan-Zhi Lao, Hong-Xi Xu

Acta Pharmacol Sin. 2020 Jan;41(1):82-92. doi: 10.1038/s41401-019-0271-3. Epub 2019 Aug 1.

[Targeting RNS/caveolin-1/MMP signaling cascades to protect against cerebral ischemia-reperfusion injuries: potential application for drug discovery](#)

Han-Sen Chen, Xi Chen, Wen-Ting Li, Jian-Gang Shen

Acta Pharmacol Sin. 2018 May;39(5):669-682. doi: 10.1038/aps.2018.27. Epub 2018 Mar 29.

[Isoalantolactone suppresses LPS-induced inflammation by inhibiting TRAF6 ubiquitination and alleviates acute lung injury](#)

Yun-He Ding, Yun-Duan Song, Ya-Xian Wu, Hui-Qiong He, Tian-Hong Yu, Yu-Dong Hu, De-Peng Zhang, Hong-Chao Jiang, Kai-Kai Yu, Xiao-Zong Li, Lei Sun, Feng Qian

Acta Pharmacol Sin. 2019 Jan;40(1):64-74. doi: 10.1038/s41401-018-0061-3. Epub 2018 Jul 16.

[Berberine remodels adipose tissue to attenuate metabolic disorders by activating sirtuin 3](#)

Dan Li, Chao Yang, Jian-Zhong Zhu, Eduardo Lopez, Tian Zhang, Qiang Tong, Cheng Peng, Li-Gen Lin

Acta Pharmacol Sin. 2022 May;43(5):1285-1298. doi: 10.1038/s41401-021-00736-y. Epub 2021 Aug 20.

[Diterbutyl phthalate attenuates osteoarthritis in ACLT mice via suppressing ERK/c-fos/NFATc1 pathway, and subsequently inhibiting subchondral osteoclast fusion](#)

Chao Fang, Jia-Wei Guo, Ya-Jun Wang, Xiao-Qun Li, Hao Zhang, Jin Cui, Yan Hu, Ying-Ying Jing, Xiao Chen, Jia-Can Su

Acta Pharmacol Sin. 2022 May;43(5):1299-1310. doi: 10.1038/s41401-021-00747-9. Epub 2021 Aug 11.

[Celastrol induces lipophagy via the LXR \$\alpha\$ /ABCA1 pathway in clear cell renal cell carcinoma](#)

Chan-Juan Zhang, Neng Zhu, Jia Long, Hong-Tao Wu, Yu-Xiang Wang, Bi-Yuan Liu, Duan-Fang Liao, Li Qin

Acta Pharmacol Sin. 2021 Sep;42(9):1472-1485. doi: 10.1038/s41401-020-00572-6. Epub 2020 Dec 10.

[Involvement of the secreted protein Metrnl in human diseases](#)

Zhu-Wei Miao, Wen-Jun Hu, Zhi-Yong Li, Chao-Yu Miao

Acta Pharmacol Sin. 2020 Dec;41(12):1525-1530. doi: 10.1038/s41401-020-00529-9. Epub 2020 Sep 30.

[Magnesium isoglycyrrhizinate ameliorates high fructose-induced liver fibrosis in rat by increasing miR-375-3p to suppress JAK2/STAT3 pathway and TGF- \$\beta\$ 1/Smad signaling](#)

Yan-Zi Yang, Xiao-Juan Zhao, Hong-Jiang Xu, Shan-Chun Wang, Ying Pan, Shui-Juan Wang, Qiang Xu, Rui-Qing Jiao, Hong-Mei Gu, Ling-Dong Kong

Acta Pharmacol Sin. 2019 Jul;40(7):879-894. doi: 10.1038/s41401-018-0194-4. Epub 2018 Dec 19.

[Brain activity of anandamide: a rewarding bliss?](#)

Maria Scherma, Paolo Masia, Valentina Satta, Walter Fratta, Paola Fadda, Gianluigi Tanda

Acta Pharmacol Sin. 2019 Mar;40(3):309-323. doi: 10.1038/s41401-018-0075-x. Epub 2018 Jul 26.

[Sorafenib triggers ferroptosis via inhibition of HBXIP/SCD axis in hepatocellular carcinoma](#)

Lu Zhang, Xian-Meng Li, Xu-He Shi, Kai Ye, Xue-Li Fu, Xue Wang, Shi-Man Guo, Jia-Qi Ma, Fei-Fei Xu, Hui-Min Sun, Qian-Qian Li, Wei-Ying Zhang, Li-Hong Ye

Acta Pharmacol Sin. 2023 Mar;44(3):622-634. doi: 10.1038/s41401-022-00981-9. Epub 2022 Sep 15.

[Intrarenal 1-methoxypyrene, an aryl hydrocarbon receptor agonist, mediates progressive tubulointerstitial fibrosis in mice](#)

Gang Cao, Hua Miao, Yan-Ni Wang, Dan-Qian Chen, Xia-Qing Wu, Lin Chen, Yan Guo, Liang Zou, Nosratola D Vaziri, Ping Li, Ying-Yong Zhao

Acta Pharmacol Sin. 2022 Nov;43(11):2929-2945. doi: 10.1038/s41401-022-00914-6. Epub 2022 May 16.

[Corynoxine B derivative CB6 prevents Parkinsonian toxicity in mice by inducing PIK3C3 complex-dependent autophagy](#)

Zhou Zhu, Liang-Feng Liu, Cheng-Fu Su, Jia Liu, Benjamin Chun-Kit Tong, Ashok Iyaswamy, Senthilkumar Krishnamoorthi, Sravan Gopalkrishnashetty Sreenivasmurthy, Xin-Jie Guan, Yu-Xuan Kan, Wen-Jian Xie, Chen-Liang Zhao, King-Ho Cheung, Jia-Hong Lu, Jie-Qiong Tan, Hong-Jie Zhang, Ju-Xian Song, Min Li

Acta Pharmacol Sin. 2022 Oct;43(10):2511-2526. doi: 10.1038/s41401-022-00871-0. Epub 2022 Feb 25.

[Reduced nicotinamide adenine dinucleotide phosphate in redox balance and diseases: a friend or foe?](#)

Nirmala Koju, Zheng-Hong Qin, Rui Sheng

Acta Pharmacol Sin. 2022 Aug;43(8):1889-1904. doi: 10.1038/s41401-021-00838-7. Epub 2022 Jan 11.

[The m⁶A demethylase FTO promotes the osteogenesis of mesenchymal stem cells by downregulating PPAR \$\gamma\$](#)

Liu-Shan Chen, Meng Zhang, Peng Chen, Xiao-Feng Xiong, Pei-Qing Liu, Hai-Bin Wang, Jun-Jian Wang, Juan Shen

Acta Pharmacol Sin. 2022 May;43(5):1311-1323. doi: 10.1038/s41401-021-00756-8. Epub 2021 Aug 30.

[Gout-associated monosodium urate crystal-induced necrosis is independent of NLRP3 activity but can be suppressed by combined inhibitors for multiple signaling pathways](#)

Chun-Su Zhong, Bo Zeng, Jia-Hao Qiu, Li-Hui Xu, Mei-Yan Zhong, Yuan-Ting Huang, Rong Xu, Si-Ying Liu, Qing-Bing Zha, Bo Hu, Dong-Yun Ou-Yang, Xian-Hui He

Acta Pharmacol Sin. 2022 May;43(5):1324-1336. doi: 10.1038/s41401-021-00749-7. Epub 2021 Aug 10.

[Probiotics protect against RSV infection by modulating the microbiota-alveolar-macrophage axis](#)

Jian-Jian Ji, Qin-Mei Sun, Deng-Yun Nie, Qian Wang, Han Zhang, Fen-Fen Qin, Qi-Sheng Wang, Sheng-Feng Lu, Guo-Ming Pang, Zhi-Gang Lv

Acta Pharmacol Sin. 2021 Oct;42(10):1630-1641. doi: 10.1038/s41401-020-00573-5. Epub 2021 Jan 25.