

Annexin V-FITC细胞凋亡检测试剂盒

产品编号	产品名称	包装
C1062S	Annexin V-FITC细胞凋亡检测试剂盒	20次
C1062M	Annexin V-FITC细胞凋亡检测试剂盒	50次
C1062L	Annexin V-FITC细胞凋亡检测试剂盒	100次

产品简介:

- Annexin V-FITC细胞凋亡检测试剂盒(Annexin V-FITC Apoptosis Detection Kit)是用FITC标记的重组人Annexin V来检测细胞凋亡时出现在细胞膜表面的磷脂酰丝氨酸的一种细胞凋亡检测试剂盒。可以使用流式细胞仪、荧光显微镜或其它荧光检测设备进行检测。
- Annexin是一类广泛分布于真核细胞细胞浆内钙离子依赖的磷脂结合蛋白，参与细胞内的信号转导。但仅Annexin V被报道可以调控一些PKC的活性。
- Annexin V选择性结合磷脂酰丝氨酸(phosphatidylserine, 简称PS)。磷脂酰丝氨酸主要分布在细胞膜内侧，即与细胞浆相邻的一侧。在细胞发生凋亡的早期，不同类型的细胞都会把磷脂酰丝氨酸外翻到细胞表面，即细胞膜外侧。磷脂酰丝氨酸暴露到细胞表面后会促进凝血和炎症反应。而Annexin V和外翻到细胞表面的磷脂酰丝氨酸结合后可以阻断磷脂酰丝氨酸的促凝血和促炎症反应活性。
- 用带有绿色荧光的荧光探针FITC标记的Annexin V，即Annexin V-FITC，就可以用流式细胞仪或荧光显微镜非常简单而直接地检测到磷脂酰丝氨酸的外翻这一细胞凋亡的重要特征。
- 本试剂盒还提供了碘化丙啶(Propidium Iodide, PI)染色液，碘化丙啶可以染色坏死细胞或凋亡晚期丧失细胞膜完整性的细胞，呈现红色荧光。对于坏死细胞，由于细胞膜的完整性已经丧失，Annexin V-FITC可以进入到细胞浆内，与位于细胞膜内侧的磷脂酰丝氨酸结合，从而使坏死细胞呈现绿色荧光。
- 本试剂盒的流式检测效果参考图1和图2，荧光显微镜检测效果参考图3。

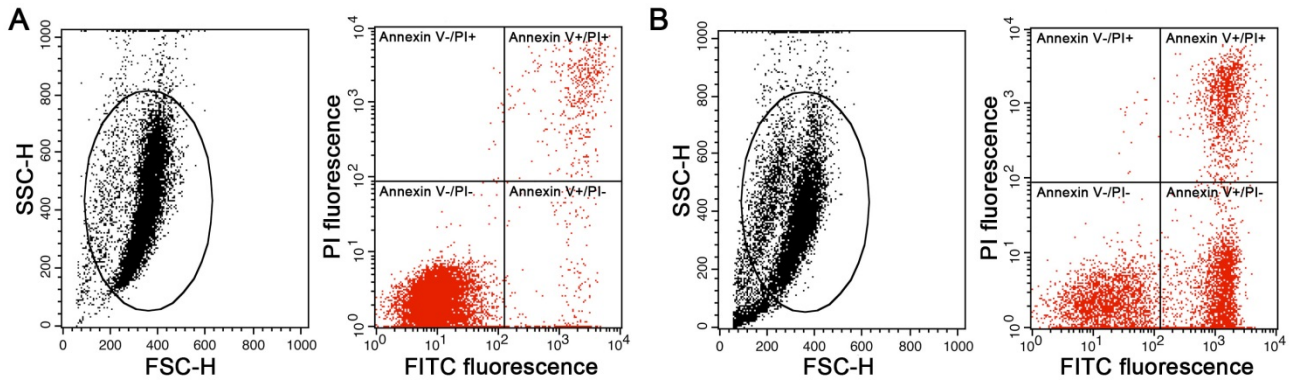


图1. 细胞用本试剂盒染色后流式细胞仪检测细胞凋亡的效果图。Jurkat细胞未经处理(A)或用 $10\mu\text{M}$ 喜树碱(Camptothecin)作用4小时(B)后，用本试剂盒染色，然后用流式细胞仪进行细胞的散射和荧光检测。从图中可以看出，经过凋亡诱导剂喜树碱处理后的细胞，其Annexin V-FITC染色阳性并且PI染色阴性的细胞，即凋亡细胞，明显增加(B图的右下象限)，Annexin V-FITC和PI染色双阳性的细胞，即坏死细胞，也有所增加(B图的右上象限)。图中Annexin V-FITC染色阴性PI染色阳性(Annexin V-/PI+)所在象限(A和B图的左上象限)出现的细胞点是许可范围内的检测误差。实测数据可能会因细胞类型、细胞凋亡情况、检测仪器的不同而存在差异，图中数据仅供参考。

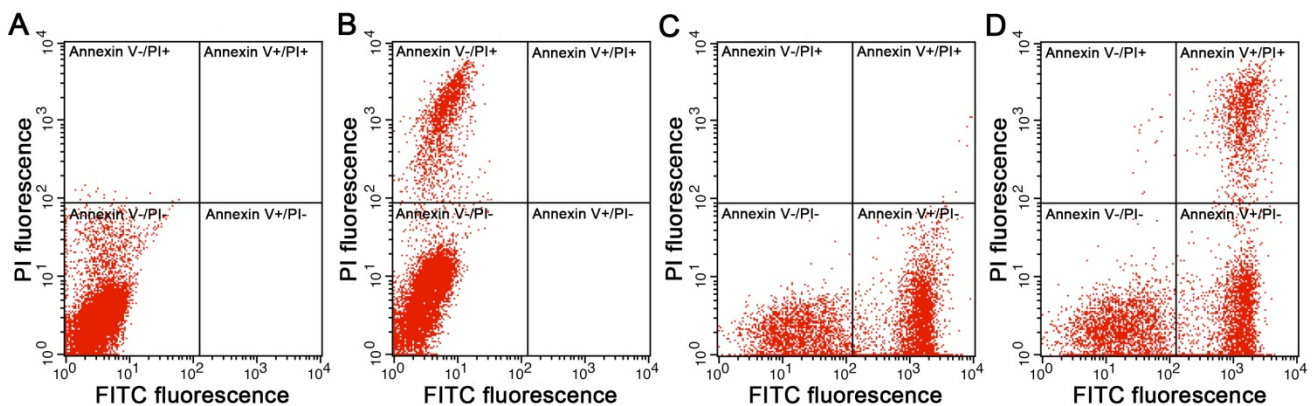


图2. 细胞用本试剂盒染色后流式细胞仪检测效果验证图。Jurkat细胞用10 μ M喜树碱(Camptothecin)作用4小时后, 未经染色(A)、仅用本试剂盒中的PI进行染色(B)、仅用本试剂盒中的Annexin V-FITC进行染色(C)、用本试剂盒中的Annexin V-FITC和PI进行双染(D)。从图中可以看出, 未经染色的是双阴性细胞(A), 仅PI染色后出现了预期的PI染色阳性的细胞, 仅Annexin V-FITC染色出现了预期的Annexin V-FITC染色阳性的细胞, Annexin V-FITC和PI双染出现了预期的仅Annexin V-FITC染色阳性的凋亡细胞和双阳性的坏死细胞。出现的非预期的细胞点完全在许可的误差范围内。实测数据可能会因细胞类型、细胞凋亡情况、检测仪器等的不同而存在差异, 图中数据仅供参考。

➤ 本试剂盒小包装C1062S可以检测20个样品, 中包装C1062M可以检测50个样品, 大包装C1062L可以检测100个样品。

包装清单:

产品编号	产品名称	包装
C1062S-1	Annexin V-FITC	100 μ l
C1062S-2	Annexin V-FITC结合液	12ml
C1062S-3	碘化丙啶染色液	220 μ l
—	说明书	1份

产品编号	产品名称	包装
C1062M-1	Annexin V-FITC	250 μ l
C1062M-2	Annexin V-FITC结合液	30ml
C1062M-3	碘化丙啶染色液	550 μ l
—	说明书	1份

产品编号	产品名称	包装
C1062L-1	Annexin V-FITC	500 μ l
C1062L-2	Annexin V-FITC结合液	60ml
C1062L-3	碘化丙啶染色液	1.1ml
—	说明书	1份

保存条件:

4 $^{\circ}$ C保存, 半年有效。-20 $^{\circ}$ C保存, 一年有效。Annexin V-FITC和碘化丙啶染色液需要避光保存。为了长期保存, 可以把碘化丙啶染色液适当分装后-20 $^{\circ}$ C保存。

注意事项:

- 尽管经测试Annexin V-FITC反复冻融5次对于其检测效果无显著影响, 但为取得良好的使用效果, 3-6个月内推荐4 $^{\circ}$ C保存, 并适当注意避免反复冻融。
- 如果有细菌或真菌污染, 会严重影响检测效果。
- 染色后宜尽快检测, 时间过长可能会导致凋亡或坏死细胞的数量增加。
- 如果细胞收集过程中使用了胰酶, 需注意设法去除残留的胰酶。残留的胰酶会消化并降解Annexin V-FITC, 导致染色失败。
- 荧光物质均易发生淬灭, 在进行荧光观察时, 尽量缩短观察时间, 同时在操作和存放过程中也尽量注意避光保存。
- 用于流式细胞仪检测时, 如果发现Annexin V-FITC单独染色时出现了过多的PI假阳性细胞, 并且通过调整相关设置和参数也无法改善, 可以用PBS将Annexin V-FITC稀释3-10倍后再进行检测, 这样通常可以有效减少假阳性的坏死细胞。
- 需自备PBS。
- 本产品仅限于专业人员的科学研究用, 不得用于临床诊断或治疗, 不得用于食品或药品, 不得存放于普通住宅内。
- 为了您的安全和健康, 请穿实验服并戴一次性手套操作。

使用说明:

1. 对于悬浮细胞:

- a. 在进行完细胞凋亡刺激后, 1000g离心5分钟, 弃上清, 收集细胞, 用PBS轻轻重悬细胞并计数。注意: PBS重悬不能省略, PBS重悬的过程同时也起到了洗涤细胞的作用, 可以保证后续Annexin V-FITC的结合。
- b. 取5-10万重悬的细胞, 1000g离心5分钟, 弃上清, 加入195 μ l Annexin V-FITC结合液轻轻重悬细胞。
- c. 加入5 μ l Annexin V-FITC, 轻轻混匀。
- d. 加入10 μ l碘化丙啶染色液, 轻轻混匀。
- e. 室温(20-25 $^{\circ}$ C)避光孵育10-20分钟, 随后置于冰浴中。可以使用铝箔进行避光。孵育过程中可以重悬细胞2-3次以改善染色效果。
- f. 如果用于流式细胞仪检测, 可立即上机检测, Annexin V-FITC为绿色荧光, 碘化丙啶(PI)为红色荧光, 流式检测细胞凋亡的效果及其验证请参考图1和图2。初次进行流式细胞仪检测时, 建议选择一组适当的细胞参考图2设置未染色、PI单染和Annexin V-FITC单染这3个对照。如果用于荧光显微镜检测, 1000g离心5分钟, 收集细胞, 用50-100 μ l Annexin V-FITC结合液轻轻重悬细胞, 涂片后, 荧光显微镜下观察。注意: 细胞在染色后须尽快完成检测, 通常宜在1小时之内完成检测。用于流式细胞仪

检测时，如果发现Annexin V-FITC单独染色时出现了过多的PI假阳性细胞，并且通过调整相关设置和参数也无法改善，可以用PBS将Annexin V-FITC稀释3-10倍后再进行检测。

2. 对于贴壁细胞的消化后检测：

- 把细胞培养液吸出至一合适离心管内，PBS洗涤贴壁细胞一次，加入适量胰酶细胞消化液(可含有EDTA)消化细胞。室温孵育至轻轻吹打可以使贴壁细胞吹打下来时，吸除胰酶细胞消化液。需避免胰酶的过度消化。注意：对于贴壁细胞，胰酶消化步骤很关键。胰酶消化时间如果过短，细胞需要用力吹打才能脱落，容易造成细胞膜的损伤，从而导致细胞坏死的假阳性；消化时间如果过长，同样易造成细胞膜损伤而出现细胞坏死的假阳性，甚至会影响细胞膜上磷脂酰丝氨酸与Annexin V-FITC的结合从而干扰对于细胞凋亡的检测。同时，胰酶细胞消化液中应尽量不含EDTA，因为EDTA可能会影响Annexin V与磷脂酰丝氨酸的结合。
- 加入步骤2a中收集的细胞培养液，把细胞轻轻吹打下来，转移到离心管内，1000g离心5分钟，弃上清，收集细胞，用PBS轻轻重悬细胞并计数。注意：加入步骤2a中的细胞培养液非常重要，一方面可以收集已经悬浮的发生凋亡或坏死的细胞，另一方面细胞培养液中的血清可以有效抑制或中和残留的胰酶。残留的胰酶会消化并降解后续加入的Annexin V-FITC，导致染色失败。
- 取5-10万重悬的细胞，1000g离心5分钟，弃上清，加入195 μ l Annexin V-FITC结合液轻轻重悬细胞。
- 加入5 μ l Annexin V-FITC，轻轻混匀。
- 加入10 μ l碘化丙啶染色液，轻轻混匀。
- 室温(20-25 $^{\circ}$ C)避光孵育10-20分钟，随后置于冰浴中。可以使用铝箔进行避光。孵育过程中可以重悬细胞2-3次以改善染色效果。
- 如果用于流式细胞仪检测，可立即上机检测，Annexin V-FITC为绿色荧光，碘化丙啶(PI)为红色荧光，流式检测的效果及其验证请参考图1和图2。如果用于荧光显微镜检测，1000g离心5分钟，收集细胞，用50-100 μ l Annexin V-FITC结合液轻轻重悬细胞，涂片后，荧光显微镜下观察。注意：细胞在染色后须尽快完成检测，通常宜在1小时之内完成检测。用于流式细胞仪检测时，如果发现Annexin V-FITC单独染色时出现了过多的PI假阳性细胞，并且通过调整相关设置和参数也无法改善，可以用PBS将Annexin V-FITC稀释3-10倍后再进行检测。

3. 对于贴壁细胞的原位荧光检测：

注：本方法的优点是可以原位观察细胞凋亡，缺点是部分凋亡由于不贴壁而检测不到。

- (选做)如果条件许可，把细胞培养于24孔板、48孔板或96孔板内。在凋亡诱导结束后，用可以对多孔板进行离心的离心机1000g离心5分钟。
- 吸除细胞培养液，加入PBS洗涤一次。如果条件许可，在吸除PBS前1000g离心5分钟。
- 加入195 μ l Annexin V-FITC结合液。
- 加入5 μ l Annexin V-FITC，轻轻混匀。
- 加入10 μ l碘化丙啶染色液，轻轻混匀。
- 室温(20-25 $^{\circ}$ C)避光孵育10-20分钟，随后置于冰浴中。可以使用铝箔进行避光。
- 随即在荧光显微镜下观察，Annexin V-FITC为绿色荧光，碘化丙啶(PI)为红色荧光。注意：细胞在染色后须尽快完成检测，通常宜在1小时之内完成检测。

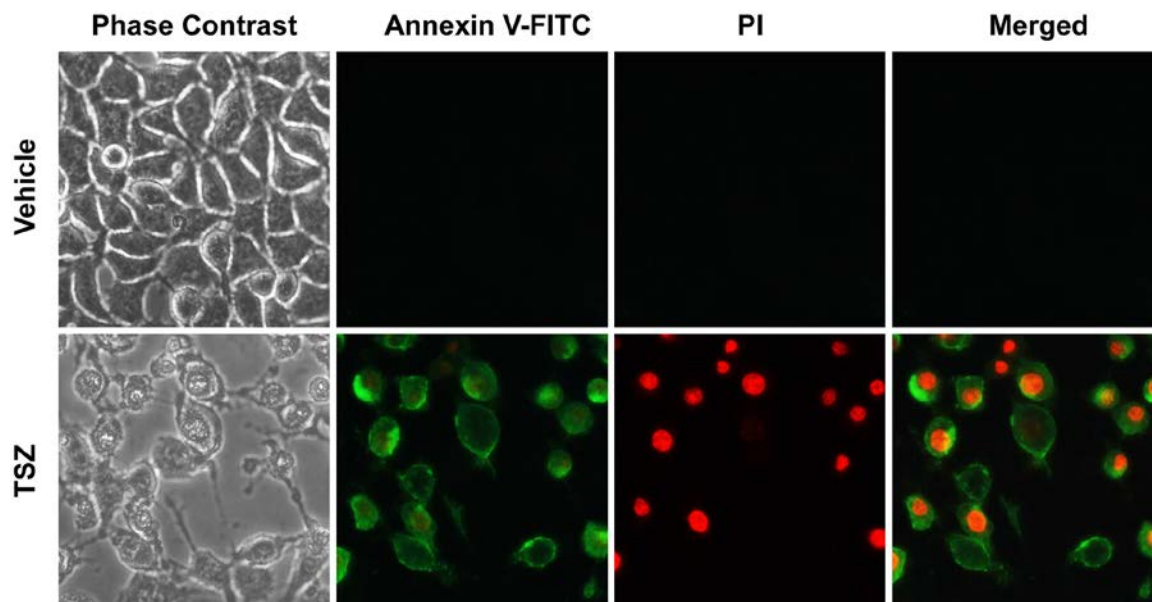


图3. Annexin V-FITC和碘化丙啶(PI)染色效果图。图中绿色荧光为Annexin V-FITC染色阳性细胞，红色荧光为碘化丙啶染色阳性细胞。仅被绿色荧光染色的为凋亡细胞，被绿色和红色荧光双染的是坏死细胞，未被荧光染色的是正常细胞。Vehicle组为阴性对照，Annexin V-FITC染色和碘化丙啶染色都非常弱，L-929细胞处于正常状态；TSZ组为阳性对照，L-929细胞用TSZ处理3小时。TSZ为TNF α 、SM-164和Z-VAD-FMK组成的细胞坏死诱导试剂(C1058)。

相关产品：

产品编号	产品名称	包装
C1052	细胞周期与细胞凋亡检测试剂盒	50次
C1056	细胞凋亡与坏死检测试剂盒	100次
C1062S	Annexin V-FITC细胞凋亡检测试剂盒	20次
C1062M	Annexin V-FITC细胞凋亡检测试剂盒	50次
C1062L	Annexin V-FITC细胞凋亡检测试剂盒	100次
C1065S	Annexin V-PE细胞凋亡检测试剂盒	20次
C1065M	Annexin V-PE细胞凋亡检测试剂盒	50次
C1065L	Annexin V-PE细胞凋亡检测试剂盒	100次
C1067S	Annexin V-EGFP细胞凋亡检测试剂盒	20次
C1067M	Annexin V-EGFP细胞凋亡检测试剂盒	50次
C1082	TUNEL检测阳性对照制备试剂盒	10次
C1086	一步法TUNEL细胞凋亡检测试剂盒(绿色荧光)	20次
C1088	一步法TUNEL细胞凋亡检测试剂盒(绿色荧光)	50次
C1089	一步法TUNEL细胞凋亡检测试剂盒(红色荧光)	20次
C1090	一步法TUNEL细胞凋亡检测试剂盒(红色荧光)	50次
C1091	TUNEL细胞凋亡检测试剂盒(显色法)	20次
C1098	TUNEL细胞凋亡检测试剂盒(显色法)	50次

使用本产品的文献：

1. Yan HL, Xue G, Mei Q, Wang YZ, Ding FX, Liu MF, Lu MH, Tang Y, Yu HY, Sun SH. Repression of the miR-17-92 cluster by p53 has an important function in hypoxia-induced apoptosis. *EMBO J*. 2009 Sep 16;28(18):2719-32.
2. Zhang Z, Song T, Zhang T, Gao J, Wu G, An L, Du G. A novel BH3 mimetic S1 potently induces Bax/Bak-dependent apoptosis by targeting both Bcl-2 and Mcl-1. *Int J Cancer*. 2011 Apr 1;128(7):1724-35.
3. Zhang C, Tan C, Zu X, Zhai X, Liu F, Chu B, Ma X, Chen Y, Gong P, Jiang Y. Exploration of (S)-3-aminopyrrolidine as a potentially interesting scaffold for discovery of novel Abl and PI3K dual inhibitors. *Eur J Med Chem*. 2011 Apr;46(4):1404-14.
4. Xin H, Jiang X, Gu J, Sha X, Chen L, Law K, Chen Y, Wang X, Jiang Y, Fang X. Angiopep-conjugated poly(ethylene glycol)-co-poly(ϵ -caprolactone) nanoparticles as dual-targeting drug delivery system for brain glioma. *Biomaterials*. 2011 Jun;32(18):4293-305.
5. Wang Z, Yang X, Yang S, Ren G, Ferreri M, Su Y, Chen L, Han B. Sodium fluoride suppress proliferation and induce apoptosis through decreased insulin-like growth factor-I expression and oxidative stress in primary cultured mouse osteoblasts. *Arch Toxicol*. 2011 Nov;85(11):1407-17.
6. Han JB, Tao ZZ, Chen SM, Kong YG, Xiao BK. Adenovirus-mediated transfer of tris-shRNAs induced apoptosis of nasopharyngeal carcinoma cell in vitro and in vivo. *Cancer Lett*. 2011 Oct 28;309(2):162-9.
7. Zhang R, Shi H, Chen Z, Wu Q, Ren F, Huang H. Effects of metastasis-associated in colon cancer 1 inhibition by small hairpin RNA on ovarian carcinoma OVCAR-3 cells. *J EXP CLIN CANC RES*. 2011 Sep 16;30:83.
8. Zou X, Feng Z, Li Y, Wang Y, Wertz K, Weber P, Fu Y, Liu J. Stimulation of GSH synthesis to prevent oxidative stress-induced apoptosis by hydroxytyrosol in human retinal pigment epithelial cells: activation of Nrf2 and JNK-p62/SQSTM1 pathways. *J Nutr Biochem*. 2012 Aug;23(8):994-1006.
9. Dai M, Xia XB, Xiong SQ. BDNF regulates GLAST and glutamine synthetase in mouse retinal Müller cells. *J Cell Physiol*. 2012 Feb;227(2):596-603.
10. Zhang Y, Lv Z, Zhong H, Geng D, Zhang M, Zhang T, Li Y, Li K. Convenient synthesis of novel geparvarin analogs with potential anti-cancer activity via click chemistry. *Eur J Med Chem*. 2012 Jul;53C:356-63.
11. Lin F, Lin P, Zhao D, Chen Y, Xiao L, Qin W, Li D, Chen H, Zhao B, Zou H, Zheng X, Yu X. Sox2 targets cyclin E, p27 and survivin to regulate androgen-independent human prostate cancer cell proliferation and apoptosis. *CELL PROLIFERAT*. 2012 Jun;45(3):207-16.
12. Wang X, Wu H, Chen H, Liu R, Liu J, Zhang T, Yu W, Hai C. Does insulin bolster antioxidant defenses via the extracellular signal-regulated kinases-protein kinase b-nuclear factor erythroid 2 p45-related factor 2 pathway. *ANTIOXID REDOX SIGN*. 2012 May 15;16(10):1061-70.
13. Wang L, Xu Y, Fu L, Li Y, Lou L. (5R)-5-hydroxytryptolide (LLDT-8), a novel immunosuppressant in clinical trials, exhibits potent antitumor activity via transcription inhibition. *Cancer Lett*. 2012 Nov 1;324(1):75-82.
14. Liu X, Zhao M, Lu J, Ma J, Wei J, Wei S. Cell responses to two kinds of nanohydroxyapatite with different sizes and crystallinities. *INT J NANOMED*. 2012;7:1239-50.
15. Wu W, Yang J, Feng X, Wang H, Ye S, Yang P, Tan W, Wei G, Zhou Y. MicroRNA-32 (miR-32) regulates phosphatase and tensin homologue (PTEN) expression and promotes growth, migration, and invasion in colorectal carcinoma cells. *Mol Cancer*. 2013 Apr 23;12:30.
16. Mo R, Sun Q, Li N, Zhang C. Intracellular delivery and antitumor effects of pH-sensitive liposomes based on zwitterionic oligopeptide lipids. *Biomaterials*. 2013 Apr;34(11):2773-86.
17. Tang Q, Li G, Wei X, Zhang J, Chiu JF, Hasenmayer D, Zhang D, Zhang H. Resveratrol-induced apoptosis is enhanced by inhibition of autophagy in esophageal squamous cell carcinoma. *Cancer Lett*. 2013 Aug 19;336(2):325-37.
18. Cheng P, Ni Z, Dai X, Wang B, Ding W, Rae Smith A, Xu L, Wu D, He F, Lian J. The novel BH-3 mimetic apogossypolone induces Beclin-1- and ROS-mediated autophagy in human hepatocellular cells. *Cell Death Dis*. 2013 Feb 7;4:e489.
19. Gu G, Gao X, Hu Q, Kang T, Liu Z, Jiang M, Miao D, Song Q, Yao L, Tu Y, Pang Z, Chen H, Jiang X, Chen J. The influence of the penetrating peptide iRGD on the effect of paclitaxel-loaded MT1-AF7p-conjugated nanoparticles on glioma cells. *Biomaterials*. 2013 Jul;34(21):5138-48.
20. Hu Q, Gao X, Gu G, Kang T, Tu Y, Liu Z, Song Q, Yao L, Pang Z, Jiang X, Chen H, Chen J. Glioma therapy using tumor homing and penetrating peptide-functionalized PEG-PLA nanoparticles loaded with paclitaxel. *Biomaterials*. 2013 Jul;34(22):5640-50.
21. Chen T, Hao J, He J, Zhang J, Li Y, Liu R, Li L. Cannabidiol B induces autophagic cell death by inhibiting the AKT/mTOR pathway and S phase cell cycle arrest in HepG2 cells. *Food Chem*. 2013 Jun 1;138(2-3):1034-41.
22. Wang Y, Liu P, Qiu L, Sun Y, Zhu M, Gu L, Di W, Duan Y. Toxicity and therapy of cisplatin-loaded EGF modified mPEG-PLGA-PLL nanoparticles for SKOV3 cancer in mice. *Biomaterials*. 2013 May;34(16):4068-77.

23. Li BH, Yin YW, Liu Y, Pi Y, Guo L, Cao XJ, Gao CY, Zhang LL, Li JC. TRPV1 activation impedes foam cell formation by inducing autophagy in oxLDL-treated vascular smooth muscle cells. *Cell Death Dis.* 2014 Apr 17;5:e1182.
24. Wang L, He S, Wu X, Liang S, Mu Z, Wei J, Deng F, Deng Y, Wei S. Polyetheretherketone/nano-fluorohydroxyapatite composite with antimicrobial activity and osseointegration properties. *Biomaterials.* 2014 Aug;35(25):6758-75.
25. Feng Y, Ke C, Tang Q, Dong H, Zheng X, Lin W, Ke J, Huang J, Yeung SC, Zhang H. Metformin promotes autophagy and apoptosis in esophageal squamous cell carcinoma by downregulating Stat3 signaling. *Cell Death Dis.* 2014 Feb 27;5:e1088.
26. Huyan T, Li Q, Yang H, Jin ML, Zhang MJ, Ye LJ, Li J, Huang QS, Yin DC. Protective effect of polysaccharides on simulated microgravity-induced functional inhibition of human NK cells. *CARBOHYD POLYM.* 2014 Jan 30;101:819-27.
27. Wang Z, Zeng Q, Chen T, Liao K, Bu Y, Hong S, Hu G. Silencing NFB1/MDC1 enhances the radiosensitivity of human nasopharyngeal cancer CNE1 cells and results in tumor growth inhibition. *Cell Death Dis.* 2015 Aug 6;6:e1849.
28. Tang Y, Li J, Li F, Hu CA, Liao P, Tan K, Tan B, Xiong X, Liu G, Li T, Yin Y. Autophagy protects intestinal epithelial Cells against Deoxynivalenol toxicity by alleviating oxidative stress via IKK signaling pathway. *FREE RADICAL BIO MED.* 2015 Dec;89:944-51.
29. Meng H, Wang K, Chen X, Guan X, Hu L, Xiong G, Li J, Bai Y. MicroRNA-330-3p functions as an oncogene in human esophageal cancer by targeting programmed cell death 4. *Am J Cancer Res.* 2015 Feb 15;5(3):1062-75.
30. Ren X, Bai X, Zhang X, Li Z, Tang L, Zhao X, Li Z, Ren Y, Wei S, Wang Q, Liu C, Ji J. Quantitative nuclear proteomics identifies that miR-137-mediated EZH2 reduction regulates resveratrol-induced apoptosis of neuroblastoma cells. *Mol Cell Proteomics.* 2015 Feb;14(2):316-28.
31. Cai Y, Sun Z, Fang X, Fang X, Xiao F, Wang Y, Chen M. Synthesis, characterization and anti-cancer activity of Pluronic F68-curcumin conjugate micelles. *Drug Deliv.* 2015 Jun 16:1-9.
32. Xiao YC, Yang ZB, Cheng XS, Fang XB, Shen T, Xia CF, Liu P, Qian HH, Sun B, Yin ZF, Li YF. CXCL8, overexpressed in colorectal cancer, enhances the resistance of colorectal cancer cells to anoikis. *Cancer Lett.* 2015 May 28;361(1):22-32.
33. Chen G, Qian W, Li J, Xu Y, Chen K. Exopolysaccharide of Antarctic bacterium *Pseudoalteromonas* sp. S-5 induces apoptosis in K562 cells. *CARBOHYD POLYM.* 2015 May 5;121:107-14.
34. Liu Y, Liu Y, Bu W, Xiao Q, Sun Y, Zhao K, Fan W, Liu J, Shi J. Radiation/hypoxia-induced solid tumor metastasis and regrowth inhibited by hypoxia-specific upconversion nanoradiosensitizer. *Biomaterials.* 2015 May;49:1-8.
35. Shao XJ, Miao MH, Xue J, Xue J, Ji XQ, Zhu H. The Down-Regulation of MicroRNA-497 Contributes to Cell Growth and Cisplatin Resistance Through PI3K/Akt Pathway in Osteosarcoma. *CELL PHYSIOL BIOCHEM.* 2015;36(5):2051-62.
36. Zha X, Wu G, Zhao X, Zhou L, Zhang H, Li J, Ma L, Zhang Y. PRDX6 Protects ARPE-19 Cells from Oxidative Damage via PI3K/AKT Signaling. *CELL PHYSIOL BIOCHEM.* 2015;36(6):2217-28.
37. Liu G, Sheng Y, Zhang M, Sun D. A polysaccharide from the leaves of *Aralia elata* induces apoptosis in U-2 OS cells via mitochondrial-dependent pathway. *Int J Biol Macromol.* 2016 Dec;93(Pt A):418-425.
38. Tu Z, Wang Q, Cui T, Wang J, Ran H, Bao H, Lu J, Wang B, Lydon JP, DeMayo F, Zhang S, Kong S, Wu X, Wang H. Uterine RAC1 via Pak1-ERM signaling directs normal luminal epithelial integrity conducive to on-time embryo implantation in mice. *Cell Death Differ.* 2016 Jan;23(1):169-81.
39. He B, Zhang N, Zhao R. Dexamethasone Downregulates SLC7A5 Expression and Promotes Cell Cycle Arrest, Autophagy and Apoptosis in BeWo Cells. *J Cell Physiol.* 2016 Jan;231(1):233-42.
40. Wang X, Zhu P, Pi F, Jiang H, Shao J, Zhang Y, Sun X. Sensitive and simple macrophage-based electrochemical biosensor for evaluating lipopolysaccharide cytotoxicity of pathogenic bacteria. *BIOSENS BIOELECTRON.* 2016 Jul 15;81:349-57.
41. Liu W, Zhang Q, Zhang J, Pan W, Zhao J, Xu Y. Long non-coding RNA MALAT1 contributes to cell apoptosis by sponging miR-124 in Parkinson disease. *Cell Biosci.* 2017 Apr 21;7:19.
42. Liu SL, Lin HX, Lin CY, Sun XQ, Ye LP, Qiu F, Wen W, Hua X, Wu XQ, Li J, Song LB, Guo L. TIMELESS confers cisplatin resistance in nasopharyngeal carcinoma by activating the Wnt/ β -catenin signaling pathway and promoting the epithelial mesenchymal transition. *Cancer Lett.* 2017 Aug 28;402:117-130.
43. Li C, Zhu X, Chen S, Chen L, Zhao Y, Jiang Y, Gao S, Wang F, Liu Z, Fan R, Sun L, Zhou X. Melatonin promotes the proliferation of GC-1 spg cells by inducing metallothionein-2 expression through ERK1/2 signaling pathway activation. *ONCOTARGET.* 2017 Aug 7;8(39):65627-65641.
44. Guo XD, Sun GL, Zhou TT, Wang YY, Xu X, Shi XF, Zhu ZY, Rukachaisirikul V, Hu LH, Shen X. LX2343 alleviates cognitive impairments in AD model rats by inhibiting oxidative stress-induced neuronal apoptosis and tauopathy. *Acta Pharmacol Sin.* 2017 Aug;38(8):1104-1119.
45. Wang M, Meng B, Liu Y, Yu J, Chen Q, Liu Y. MiR-124 Inhibits Growth and Enhances Radiation-Induced Apoptosis in Non-Small Cell Lung Cancer by Inhibiting STAT3. *CELL PHYSIOL BIOCHEM.* 2017 Dec 11;44(5):2017-2028.
46. Wang Z, Liao K, Zuo W, Liu X, Qiu Z, Gong Z, Liu C, Zeng Q, Qian Y, Jiang L, Bu Y, Hong S, Hu G. Depletion of NFB1/MDC1 Induces Apoptosis in Nasopharyngeal Carcinoma Cells Through the p53-ROS-Mitochondrial Pathway. *Oncol Res.* 2017 Jan 2;25(1):123-136.
47. Gu C, Zhang Y, Hu Q, Wu J, Ren H, Liu CF, Wang G. P7C3 inhibits GSK3 β activation to protect dopaminergic neurons against neurotoxin-induced cell death in vitro and in vivo. *Cell Death Dis.* 2017 Jun 1;8(6):e2858.
48. Jiang H, Guo S, Xiao D, Bian X, Wang J, Wang Y, Zhou H, Cai J, Zheng Z. Arginine deiminase expressed in vivo, driven by human telomerase reverse transcriptase promoter, displays high hepatoma targeting and oncolytic efficiency. *ONCOTARGET.* 2017 Jun 6;8(23):37694-37704.
49. Zhao M, Li H, Ma Y, Gong H, Yang S, Fang Q, Hu Z. Nanoparticle abraxane possesses impaired proliferation in A549 cells due to the underexpression of glucosamine 6-phosphate N-acetyltransferase 1 (GNPNAT1/GNA1). *INT J NANOMED.* 2017 Mar 1;12:1685-1697.
50. Shao Y, Li C, Xu W, Zhang P, Zhang W, Zhao X. miR-31 Links Lipid Metabolism and Cell Apoptosis in Bacteria-Challenged *Apostichopus japonicus* via Targeting CTRP9. *Front Immunol.* 2017 Mar 13;8:263.
51. Yuan J, Ge H, Liu W, Zhu H, Chen Y, Zhang X, Yang Y, Yin Y, Chen W, Wu W, Yang Y, Lin J. M2 microglia promotes neurogenesis and oligodendrogenesis from neural stem/progenitor cells via the PPAR γ signaling pathway. *ONCOTARGET.* 2017 Mar 21;8(12):19855-19865.
52. Zhou TJ, Zhang SL, He CY, Zhuang QY, Han PY, Jiang SW, Yao H, Huang YJ, Ling WH, Lin YC, Lin ZN. Downregulation of mitochondrial cyclooxygenase-2 inhibits the stemness of nasopharyngeal carcinoma by decreasing the activity of dynamin-related protein 1. *Theranostics.* 2017 Mar 23;7(5):1389-1406.
53. Dong H, Xu J, Li W, Gan J, Lin W, Ke J, Jiang J, Du L, Chen Y, Zhong X, Zhang D, Yeung SJ, Li X, Zhang H. Reciprocal androgen receptor/interleukin-6 crosstalk drives oesophageal carcinoma progression and contributes to patient prognosis. *J Pathol.* 2017 Mar;241(4):448-462.
54. Meng J, Zhang QX, Lu RR. Surface layer protein from *Lactobacillus acidophilus* NCFM inhibit intestinal pathogen-induced apoptosis in HT-29 cells. *Int J Biol Macromol.* 2017 Mar;96:766-774.
55. Zhang YY, Feng HM. MEG3 Suppresses Human Pancreatic Neuroendocrine Tumor Cells Growth and Metastasis by Down-Regulation of Mir-183. *CELL PHYSIOL BIOCHEM.* 2017 Nov 13;44(1):345-356.
56. Zhou M, Li X, Li Y, Yao Q, Ming Y, Li Z, Lu L, Shi S. Ascorbyl palmitate-incorporated paclitaxel-loaded composite nanoparticles for synergistic anti-tumoral therapy. *Drug Deliv.* 2017 Nov;24(1):1230-1242.
57. Feng M, Yin H, Peng H, Liu Z, Lu G, Dang Z. Hexavalent chromium induced oxidative stress and apoptosis in *Pycnoporus sanguineus*. *Environ Pollut.* 2017 Sep;228:128-139.
58. Cao Z, Zhang H, Cai X, Fang W, Chai D, Wen Y, Chen H, Chu F, Zhang Y. Luteolin Promotes Cell Apoptosis by Inducing Autophagy in Hepatocellular Carcinoma.

- CELL PHYSIOL BIOCHEM. 2017;43(5):1803-1812.
59. Yang W, Huang J, Xiao B, Liu Y, Zhu Y, Wang F, Sun S. Taurine Protects Mouse Spermatoocytes from Ionizing Radiation-Induced Damage Through Activation of Nrf2/HO-1 Signaling. *CELL PHYSIOL BIOCHEM*. 2017;44(4):1629-1639.
 60. Dong X, Kong C, Liu X, Bi J, Li Z, Li Z, Zhu Y, Zhang Z. GAS5 functions as a ceRNA to regulate hZIP1 expression by sponging miR-223 in clear cell renal cell carcinoma. *Am J Cancer Res*. 2018 Aug 1;8(8):1414-1426. eCollection 2018.
 61. Wang X, Li GH. MicroRNA-16 functions as a tumor-suppressor gene in oral squamous cell carcinoma by targeting AKT3 and BCL2L2. *J Cell Physiol*. 2018 Dec;233(12):9447-9457.
 62. Chen Y, Peng F, Song X, Wu J, Yao W, Gao X. Conjugation of paclitaxel to C-6 hexanediamine-modified hyaluronic acid for targeted drug delivery to enhance antitumor efficacy. *CARBOHYD POLYM*. 2018 Feb 1;181:150-158.
 63. Chen Y, Peng F, Song X, Wu J, Yao W, Gao X. Conjugation of paclitaxel to C-6 hexanediamine-modified hyaluronic acid for targeted drugdelivery to enhance antitumor efficacy. *CARBOHYD POLYM*. 2018 Feb 1;181:150-158.
 64. Wang M, Shi G, Bian C, Nisar MF, Guo Y, Wu Y, Li W, Huang X, Jiang X, Bartsch JW, Ji P, Zhong JL. UVA Irradiation Enhances Brusatol-Mediated Inhibition of Melanoma Growth by Downregulation of the Nrf2-Mediated Antioxidant Response. *Oxid Med Cell Longev*. 2018 Feb 18;2018:9742154.
 65. Duan Z, Chen Q, Du L, Tong J, Xu S, Zeng R, Ma Y, Chen X, Li M. Phagocytosis of *Candida albicans* Inhibits Autophagic Flux in Macrophages. *Oxid Med Cell Longev*. 2018 May 20;2018:4938649.
 66. Sun Q, Tang C, Su Z, Du J, Shang Y, Xue L, Zhang C. A modular assembly pH-sensitive charge reversal siRNA delivery system. *BIOMATER SCI-UK*. 2018 Nov 1;6(11):3075-3084.
 67. Hua H, Cheng J, Bu W, Liu J, Ma W, Si C, Wang J, Zhou B, Luo D. 5-Aminolevulinic Acid-Based Photodynamic Therapy Pretreatment Mitigates Ultraviolet A-Induced Oxidative Photodamage. *Oxid Med Cell Longev*. 2018 Nov 7;2018:9420745.
 68. Xuan F, Huang M, Zhao E, Cui H. MINA53 deficiency leads to glioblastoma cell apoptosis via inducing DNA replication stress and diminishing DNA damage response. *Cell Death Dis*. 2018 Oct 17;9(11):1062.
 69. Li Y, Tong L, Zhang J, Zhang Y, Zhang F. Galangin Alleviates Liver Ischemia-Reperfusion Injury in a Rat Model by Mediating the PI3K/AKT Pathway. *CELL PHYSIOL BIOCHEM*. 2018;51(3):1354-1363.
 70. Fu C, Yin D, Nie H, Sun D. Notoginsenoside R1 Protects HUVEC Against Oxidized Low Density Lipoprotein (Ox-LDL)-Induced Atherogenic Response via Down-Regulating miR-132. *CELL PHYSIOL BIOCHEM*. 2018;51(4):1739-1750.
 71. Shen J, Cao S, Sun X, Pan B, Cao J, Che D, Jin S, Cao Y, Tian Y, Yu Y. Sinoporphyrin Sodium-Mediated Sonodynamic Therapy Inhibits RIP3 Expression and Induces Apoptosis in the H446 Small Cell Lung Cancer Cell Line. *CELL PHYSIOL BIOCHEM*. 2018;51(6):2938-2954.
 72. Jiao Y, Niu T, Liu H, Tay FR, Chen JH. Protection against HEMA-Induced Mitochondrial Injury In Vitro by Nrf2 Activation. *Oxid Med Cell Longev*. 2019 Apr 7;2019:3501059.
 73. Liu P, Ren J, Xiong Y, Yang Z, Zhu W, He Q, Xu Z, He W, Wang J. Enhancing magnetic resonance/photoluminescence imaging-guided photodynamic therapy by multiple pathways. *Biomaterials*. 2019 Apr;199:52-62.
 74. Yu X, Yin H, Peng H, Lu G, Liu Z, Dang Z. OPFRs and BFRs induced A549 cell apoptosis by caspase-dependent mitochondrial pathway. *Chemosphere*. 2019 Apr;221:693-702.
 75. Duan S, Yu S, Yuan T, Yao S, Zhang L. Exogenous Let-7a-5p Induces A549 Lung Cancer Cell Death Through BCL2L1-Mediated PI3K γ Signaling Pathway. *Front Oncol*. 2019 Aug 23;9:808.
 76. Hua H, Cheng JW, Bu WB, Liu J, Ma WW, Ni N, Shi J, Zhou BR, Luo D. 5-aminolaevulinic acid-based photodynamic therapy inhibits ultraviolet B-induced skin photodamage. *Int J Biol Sci*. 2019 Aug 7;15(10):2100-2109.
 77. Zhang X, Liu Y, Luo L, Li L, Xing S, Yin T, Bian K, Zhu R, Gao D. A chemo-photothermal synergetic antitumor drug delivery system: Gold nanoshell coated wedelolactone liposome. *MAT SCI ENG C-MATER*. 2019 Aug;101:505-512.
 78. Lan YY, Wang YQ, Liu Y. CCR5 silencing reduces inflammatory response, inhibits viability, and promotes apoptosis of synovial cells in rat models of rheumatoid arthritis through the MAPK signaling pathway. *J Cell Physiol*. 2019 Aug;234(10):18748-18762.
 79. Yu HF, Duan CC, Yang ZQ, Wang YS, Yue ZP, Guo B. HB-EGF Ameliorates Oxidative Stress-Mediated Uterine Decidualization Damage. *Oxid Med Cell Longev*. 2019 Dec 2;2019:6170936.
 80. Ding C, Wu Z, You H, Ge H, Zheng S, Lin Y, Wu X, Lin Z, Kang D. CircNFIX promotes progression of glioma through regulating miR-378e/RPN2 axis. *J EXP CLIN CANC RES*. 2019 Dec 30;38(1):506.
 81. Li R, Shi Y, Zhao S, Shi T, Zhang G. NF- κ B signaling and integrin- β 1 inhibition attenuates osteosarcoma metastasis via increased cell apoptosis. *Int J Biol Macromol*. 2019 Feb 15;123:1035-1043.
 82. Li R, Shi Y, Zhao S, Shi T, Zhang G. NF- κ B signaling and integrin- β 1 inhibition attenuates osteosarcoma metastasis via increased cell apoptosis. *Int J Biol Macromol*. 2019 Feb 15;123:1035-1043.
 83. Kang C, Gao J, Kang M, Liu X, Fu Y, Wang L. Sappanone A prevents hypoxia-induced injury in PC-12 cells by down-regulation of miR-15a. *Int J Biol Macromol*. 2019 Feb 15;123:35-41.
 84. Li Z, Tang X, Luo Y, Chen B, Zhou C, Wu X, Tang Z, Qi X, Cao G, Hao J, Liu Z, Wang Q, Yin Z, Yang H. NK007 helps in mitigating paclitaxel resistance through p38MAPK activation and HK2 degradation in ovarian cancer. *J Cell Physiol*. 2019 Feb 20.
 85. Yue L, Guo J. LncRNA TUSC7 suppresses pancreatic carcinoma progression by modulating miR-371a-5p expression. *J Cell Physiol*. 2019 Feb 4.
 86. Wang Z, Zuo W, Zeng Q, Qian Y, Li Y, Liu C, Wang J, Zhong S, Bu Y, Hu G. Loss of NFBDD1/MDC1 disrupts homologous recombination repair and sensitizes nasopharyngeal carcinoma cells to PARP inhibitors. *J Biomed Sci*. 2019 Feb 4;26(1):14.
 87. Yu X, Yin H, Peng H, Lu G, Liu Z, Dang Z. OPFRs and BFRs induced A549 cell apoptosis by caspase-dependent mitochondrial pathway. *Chemosphere*. 2019 Jan 16;221:693-702.
 88. Qi D, Wang M, Zhang D, Li H. Tanshinone IIA protects lens epithelial cells from H2 O 2 -induced injury by upregulation of lncRNA ANRIL. *J Cell Physiol*. 2019 Jan 30.
 89. Qi D, Wang M, Zhang D, Li H. Tanshinone IIA protects lens epithelial cells from H2 O 2 -induced injury by upregulation of lncRNA ANRIL. *J Cell Physiol*. 2019 Jan 30.
 90. Huang H, Dong Y, Zhang Y, Ru D, Wu Z, Zhang J, Shen M, Duan Y, Sun Y. GSH-sensitive Pt(IV) prodrug-loaded phase-transitional nanoparticles with a hybrid lipid-polymer shell for precise theranostics against ovarian cancer. *Theranostics*. 2019 Jan 30;9(4):1047-1065.
 91. Yao X, Zhang J, Jing X, Ye Y, Guo J, Sun K, Guo F. Fibroblast growth factor 18 exerts anti-osteoarthritic effects through PI3K-AKT signaling and mitochondrial fusion and fission. *Pharmacol Res*. 2019 Jan;139:314-324.
 92. Zhou R, Wang H, Yang Y, Zhang C, Dong X, Du J, Yan L, Zhang G, Gu Z, Zhao Y. Tumor microenvironment-manipulated radiocatalytic sensitizer based on bismuth heteropolytungstate for radiotherapy enhancement. *Biomaterials*. 2019 Jan;189:11-22.
 93. Zhou R, Wang H, Yang Y, Zhang C, Dong X, Du J, Yan L, Zhang G, Gu Z, Zhao Y. Tumor microenvironment-manipulated radiocatalytic sensitizer based on bismuth heteropolytungstate for radiotherapy enhancement. *Biomaterials*. 2019 Jan;189:11-22.
 94. Zhang W, Cui X, Gao Y, Sun L, Wang J, Yang Y, Liu X, Li Y, Guo X, Sun D. Role of pigment epithelium-derived factor (PEDF) on arsenic-induced neuronal apoptosis. *Chemosphere*. 2019 Jan;215:925-931.
 95. Xing J, Zhang X, Wang Z, Zhang H, Chen P, Zhou G, Sun C, Gu N, Ji M. Novel lipophilic SN38 prodrug forming stable liposomes for colorectal carcinoma therapy. *INT J NANOMED*. 2019 Jul 12;14:5201-5213.
 96. Li D, Zhang J, Yang W, He Y, Ru Y, Fu S, Li L, Liu X, Zheng H. Poly (rC) binding protein 2 interacts with VP0 and increases the replication of the foot-and-mouth disease virus. *Cell Death Dis*. 2019 Jul 4;10(7):516.
 97. Wang P, Tang C, Wu J, Yang Y, Yan Z, Liu X, Shao X, Zhai M, Gao J, Liang S, Luo E,

- Jing D. Pulsed electromagnetic fields regulate osteocyte apoptosis, RANKL/OPG expression, and its control of osteoclastogenesis depending on the presence of primary cilia. *J Cell Physiol.* 2019 Jul;234(7):10588-10601.
98. Huang MS, Liu JY, Xia XB, Liu YZ, Li X, Yin JY, Peng JB, Wu L, Zhang W, Zhou HH, Liu ZQ. Hsa_circ_0001946 Inhibits Lung Cancer Progression and Mediates Cisplatin Sensitivity in Non-small Cell Lung Cancer via the Nucleotide Excision Repair Signaling Pathway. *Front Oncol.* 2019 Jun 12;9:508.
99. Yang QX, Zhong S, He L, Jia XJ, Tang H, Cheng ST, Ren JH, Yu HB, Zhou L, Zhou HZ, Ren F, Hu ZW, Gong R, Huang AL, Chen J. PBK overexpression promotes metastasis of hepatocellular carcinoma via activating ETV4-uPAR signaling pathway. *Cancer Lett.* 2019 Jun 28;452:90-102.
100. Zhang K, Ge L, Dong S, Liu Y, Wang D, Zhou C, Ma C, Wang Y, Su F, Jiang Y. Global miRNA, lncRNA, and mRNA Transcriptome Profiling of Endometrial Epithelial Cells Reveals Genes Related to Porcine Reproductive Failure Caused by Porcine Reproductive and Respiratory Syndrome. *Vir. Front Immunol.* 2019 Jun 4;10:1221.
101. Wu Y, Guo T, Qiu Y, Lin Y, Yao Y, Lian W, Lin L, Song J, Yang H. An inorganic prodrug, tellurium nanowires with enhanced ROS generation and GSH depletion for selective cancer therapy. *Chem Sci.* 2019 Jun 6;10(29):7068-7075.
102. Wang D, Zhang Y, Yang S, Zhao D, Wang M. A polysaccharide from cultured mycelium of *Hericium erinaceus* relieves ulcerative colitis by counteracting oxidative stress and improving mitochondrial function. *Int J Biol Macromol.* 2019 Mar 15;125:572-579.
103. Wang D, Zhang Y, Yang S, Zhao D, Wang M. A polysaccharide from cultured mycelium of *Hericium erinaceus* relieves ulcerative colitis by counteracting oxidative stress and improving mitochondrial function. *Int J Biol Macromol.* 2019 Mar 15;125:572-579.
104. Ling L, Wen J, Tao L, Zhao M, Ge W, Wang L, Zhang J, Weng D. RIP1 and RIP3 contribute to Tributyltin-induced toxicity in vitro and in vivo. *Chemosphere.* 2019 Mar;218:589-598.
105. Zhu LJ, Gu LS, Shi TY, Zhang XY, Sun BW. Enhanced treatment effect of nanoparticles containing cisplatin and a GSH-reactive probe compound. *MAT SCI ENG C-MATER.* 2019 Mar;96:635-641.
106. Wu C, Dai Y, Yuan G, Su J, Liu X. Immunomodulatory Effects and Induction of Apoptosis by Different Molecular Weight Chitosan Oligosaccharides in Head Kidney Macrophages From Blunt Snout Bream (*Megalobrama amblycephala*). *Front Immunol.* 2019 May 15;10:869.
107. Yu H, Zhang J, Ji Q, Yu K, Wang P, Song M, Cao Z, Zhang X, Li Y. Melatonin alleviates aluminium chloride-induced immunotoxicity by inhibiting oxidative stress and apoptosis associated with the activation of Nrf2 signaling pathway. *ECOTOX ENVIRON SAFE.* 2019 May 30;173:131-141.
108. Zhao H, Xu X, Lei S, Shao D, Jiang C, Shi J, Zhang Y, Liu L, Lei S, Sun H, Huang Q. Iturin A-like lipopeptides from *Bacillus subtilis* trigger apoptosis, paraptosis, and autophagy in Caco-2 cells. *J Cell Physiol.* 2019 May;234(5):6414-6427.
109. Zhao H, Xu X, Lei S, Shao D, Jiang C, Shi J, Zhang Y, Liu L, Lei S, Sun H, Huang Q. Iturin A-like lipopeptides from *Bacillus subtilis* trigger apoptosis, paraptosis, and autophagy in Caco-2 cells. *J Cell Physiol.* 2019 May;234(5):6414-6427.
110. Xu WN, Zheng HL, Yang RZ, Liu T, Yu W, Zheng XF, Li B, Jiang SD, Jiang LS. Mitochondrial NDUFA4L2 attenuates the apoptosis of nucleus pulposus cells induced by oxidative stress via the inhibition of mitophagy. *Exp Mol Med.* 2019 Nov 18;51(11):1-16.
111. Zhang Y, Xiao JF, Yang HF, Jiao Y, Cao WW, Shi HM, Cun JF, Tay FR, Ping J, Xiao YH. N-Acetyl Cysteine as a Novel Polymethyl Methacrylate Resin Component: Protection against Cell Apoptosis and Genotoxicity. *Oxid Med Cell Longev.* 2019 Sep 15;2019:1301736.
112. Chen P, Kuang W, Zheng Z, Yang S, Liu Y, Su L, Zhao K, Liang G. Carboxylesterase-Cleavable Biotinylated Nanoparticle for Tumor-Dual Targeted Imaging. *Theranostics.* 2019 Sep 25;9(24):7359-7369.
113. Pan Z, Zhang X, Yu P, Chen X, Lu P, Li M, Liu X, Li Z, Wei F, Wang K, Zheng Q, Li D. Cinobufagin Induces Cell Cycle Arrest at the G2/M Phase and Promotes Apoptosis in Malignant Melanoma Cells. *Front Oncol.* 2019 Sep 4;9:853.
114. Mengdi Yang, Zhiyuan Jiang, Guangyu Yao, Zhiyu Wang, Jing Sun, Huanlong Qin, Hui Zhao. GALC Triggers Tumorigenicity of Colorectal Cancer via Senescent Fibroblasts. *Front Oncol.* 2020 Apr 7;10:380.
115. Zhenhua Zhong, Xiaolong Fu, He Li, Jie Chen, Maohua Wang, Song Gao, Liyan Zhang, Cheng Cheng, Yuan Zhang, Peipei Li, Shasha Zhang, Xiaoyun Qian, Yilai Shu, Renjie Chai, Xia Gao. Citicoline Protects Auditory Hair Cells Against Neomycin-Induced Damage. *Front Cell Dev Biol.* 2020 Aug 31;8:712.
116. Naijin Zhang, Ying Zhang, Boquan Wu, Shilong You, Yingxian Sun. Role of WW domain E3 ubiquitin protein ligase 2 in modulating ubiquitination and Degradation of Septin4 in oxidative stress endothelial injury. *Redox Biol.* 2020 Feb;30:101419.
117. Panpan Zhang, Xiaomin Li, Qiuping He, Lulu Zhang, Keqing Song, Xiaojing Yang, Qingmei He, Yaqin Wang, Xiaohong Hong, Jun Ma, Na Liu. TRIM21-SERPINB5 aids GMPS repression to protect nasopharyngeal carcinoma cells from radiation-induced apoptosis. *J Biomed Sci.* 2020 Jan 31;27(1):30.
118. Wu C, Tian Y, Zhang Y, Xu J, Wang Y, Guan X, Li T, Yang H, Li S, Qin X, Liu Y. Acid-Triggered Charge-Convertible Graphene-Based All-in-One Nanocomplex for Enhanced Genetic Phototherapy of Triple-Negative Breast Cancer. *Adv Healthc Mater.* 2020 Jan;9(1):e1901187.
119. Da Liu, Zixuan Song, Xiaoying Wang, Ling Ouyang. Ubiquitin C-Terminal Hydrolase L5 (UCHL5) Accelerates the Growth of Endometrial Cancer via Activating the Wnt/ β -Catenin Signaling Pathway. *Front Oncol.* 2020 Jun 11;10:865.
120. Hua Wang, Peng Gong, Jie Li, Yudong Fu, Zhongcheng Zhou, Lin Liu. Role of CD133 in human embryonic stem cell proliferation and teratoma formation. *Stem Cell Res Ther.* 2020 May 27;11(1):208.
121. Qing-Xian Li, Zhen-Yu Li, Liang Liu, Qu-Bo Ni, Xu Yang, Biao Chen, Liao-Bin Chen. Dexamethasone causes calcium deposition and degeneration in human anterior cruciate ligament cells through endoplasmic reticulum stress. *Biochem Pharmacol.* 2020 May;175:113918.
122. Yanli Bi, Xiaoyu Chen, Bajin Wei, Linchen Wang, Longyuan Gong, Haomin Li, Xiufang Xiong, Yongchao Zhao. DEPTOR stabilizes ErbB2 to promote the proliferation and survival of ErbB2-positive breast cancer cells. *Theranostics.* 2021 Apr 19;11(13):6355-6369.
123. Lian Liu, Quan Cao, Wenwei Gao, Bing-Yu Li, Cheng Zeng, Zhongyuan Xia, Bo Zhao. Melatonin ameliorates cerebral ischemia-reperfusion injury in diabetic mice by enhancing autophagy via the SIRT1-BMAL1 pathway. *FASEB J.* 2021 Dec;35(12):e22040.
124. Yilong Miao, Xinyu Li, Xiaoyan Shi, Qian Gao, Jingyue Chen, Rui Wang, Yong Fan, Bo Xiong. Nicotinamide Mononucleotide Restores the Meiotic Competency of Porcine Oocytes Exposed to Ethylene Glycol Butyl Ether. *Front Cell Dev Biol.* 2021 Feb 2;9:628580.
125. Yu Li, Yilong Miao, Jingyue Chen, Bo Xiong. SIRT6 Maintains Redox Homeostasis to Promote Porcine Oocyte Maturation. *Front Cell Dev Biol.* 2021 Feb 25;9:625540.
126. Yongsheng Yu, Huan Guo, Wenli Jiang, Chenxi Zhang, Chunlei Xing, Dagui Chen, Can Xu, Li Su. Cyclic GMP-AMP promotes the acute phase response and protects against *Escherichia coli* infection in mice. *Biochem Pharmacol.* 2021 Jun;188:114541.
127. Fengliang Wang, Sujin Yang, Mingming Lv, Fei Chen, Hong Yin, Sheng Gao, Jinhai Tang, Jing Yu. Novel Long Noncoding RNA 005620 Induces Epirubicin Resistance in Triple-Negative Breast Cancer by Regulating ITGB1 Expression. *Front Oncol.* 2021 Mar 4;11:592215.
128. Yifeng Xu, Boqian Wang, Xiaoxiao Liu, Yunfei Deng, Yanqi Zhu, Feng Zhu, Yanyan Liang, Hongli Li. Sp1 Targeted PARP1 Inhibition Protects Cardiomyocytes From Myocardial Ischemia-Reperfusion Injury via Downregulation of Autophagy. *Front Cell Dev Biol.* 2021 May 25;9:621906.
129. Li Hu, Xingbo Cheng, Zev Binder, Zhibin Han, Yibo Yin, Donald M O'Rourke, Sida Wang, Yumeng Feng, Changjiang Weng, Anhua Wu, Zhiguo Lin. Molecular and Clinical Characterization of UBE2S in Glioma as a Biomarker for Poor Prognosis and Resistance to Chemo-Radiotherapy. *Front Oncol.* 2021 May 27;11:640910.
130. Yali Zhang, Yu Fu, Chenyang Zhang, Linying Jia, Nuo Yao, Yuhao Lin, Yue Dong, Nazira Fatima, Naqash Alam, Rong Wang, Weirong Wang, Liang Bai, Sihai Zhao,

- Enqi Liu. MED1 Deficiency in Macrophages Accelerates Intimal Hyperplasia via ROS Generation and Inflammation. *Oxid Med Cell Longev*. 2021 Nov 22;2021:3010577.
131. Jiezhou Pan, Guidong Gong, Qin Wang, Jiaojiao Shang, Yunxiang He, Chelsea Catania, Dan Birnbaum, Yifei Li, Zhijun Jia, Yaoyao Zhang, Neel S Joshi, Junling Guo. A single-cell nanocoating of probiotics for enhanced amelioration of antibiotic-associated diarrhea. *Nat Commun*. 2022 Apr 19;13(1):2117.
132. Zhiqing Bai, Zhiying Guo, Jiaying Liu, Yu-Ann Chen, Qian Lu, Ping Zhang, Lili Hong, Yunfang Wang, Jiahong Dong. Lapatinib Suppresses HER2-Overexpressed Cholangiocarcinoma and Overcomes ABCB1-Mediated Gemcitabine Chemoresistance. *Front Oncol*. 2022 Apr 8;12:860339.
133. Yaling Zhang, Lei Wang, Yajing Weng, Daojuan Wang, Rong Wang, Hongwei Wang, Lihui Wang, Shanmei Shen, Hongwei Wang, Yan Li, Yong Wang. Curcumin Inhibits Hyperandrogen-Induced IRE1 α -XBP1 Pathway Activation by Activating the PI3K/AKT Signaling in Ovarian Granulosa Cells of PCOS Model Rats. *Oxid Med Cell Longev*. 2022 Aug 24;2022:2113293.
134. Binlong Chen, Yue Yan, Ye Yang, Guang Cao, Xiao Wang, Yaoqi Wang, Fangjie Wan, Qingqing Yin, Zenghui Wang, Yunfei Li, Letong Wang, Bo Xu, Fuping You, Qiang Zhang, Yiguang Wang. A pyroptosis nanotuner for cancer therapy. *Nat Nanotechnol*. 2022 Jul;17(7):788-798.
135. Yujie Ren, An Wang, Di Wu, Chong Wang, Muhan Huang, Xiaobei Xiong, Liang Jin, Wei Zhou, Yang Qiu, Xi Zhou. Dual inhibition of innate immunity and apoptosis by human cytomegalovirus protein UL37x1 enables efficient virus replication. *Nat Microbiol*. 2022 Jul;7(7):1041-1053.
136. Shan Lei, Jing Zhang, Nicholas Thomas Blum, Meng Li, Dong-Yang Zhang, Weimin Yin, Feng Zhao, Jing Lin, Peng Huang. In vivo three-dimensional multispectral photoacoustic imaging of dual enzyme-driven cyclic cascade reaction for tumor catalytic therapy. *Nat Commun*. 2022 Mar 11;13(1):1298.
137. Jianglong Kong, Rui Zou, Ga-Lai Law, Yi Wang. Biomimetic multifunctional persistent luminescence nanoprobe for long-term near-infrared imaging and therapy of cerebral and cerebellar gliomas. *Sci Adv*. 2022 Mar 11;8(10):eabm7077.
138. Ningke Fan, Xintong Bian, Meng Li, Junman Chen, Haiping Wu, Qiling Peng, Huijie Bai, Wenqian Cheng, Liangsheng Kong, Shijia Ding, Siqiao Li, Wei Cheng. Hierarchical self-uncloaking CRISPR-Cas13a-customized RNA nanococoons for spatial-controlled genome editing and precise cancer therapy. *Sci Adv*. 2022 May 20;8(20):eabn7382.
139. Dongya Zhang, Sidan Tian, Yanjie Liu, Meng Zheng, Xiangliang Yang, Yan Zou, Bingyang Shi, Liang Luo. Near infrared-activatable biomimetic nanogels enabling deep tumor drug penetration inhibit orthotopic glioblastoma. *Nat Commun*. 2022 Nov 11;13(1):6835.
140. Yue Zhang, Kai Yin, Dongxu Wang, Yu Wang, Hongmin Lu, Hongjing Zhao, Mingwei Xing. Polystyrene microplastics-induced cardiotoxicity in chickens via the ROS-driven NF- κ B-NLRP3-GSDMD and AMPK-PGC-1 α axes. *Sci Total Environ*. 2022 Sep 20;840:156727.
- 注: 更多使用本产品的文献请参考产品网页。

Version 2024.03.12