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一步法TUNEL细胞凋亡检测试剂盒

产品编号	产品名称	包装
C1090	一步法TUNEL细胞凋亡检测试剂盒(红色荧光)	50次

产品简介：

- 碧云天生产的一步法TUNEL细胞凋亡检测试剂盒(One Step TUNEL Apoptosis Assay Kit)为您提供了一种高灵敏度又快速简便的细胞凋亡检测方法。对于经过固定和洗涤的细胞或组织，只要经过一步染色反应，洗涤后就可以通过荧光显微镜或流式细胞仪检测到呈现红色荧光的凋亡细胞。
- 细胞在发生凋亡时，会激活一些DNA内切酶，这些内切酶会切断核小体间的基因组DNA。细胞凋亡时抽提DNA进行电泳检测，可以发现180-200bp的DNA ladder。基因组DNA断裂时，暴露的3'-OH可以在末端脱氧核苷酸转移酶(Terminal Deoxynucleotidyl Transferase, TdT)的催化下加上红色荧光探针Cy3(Cyanine 3)标记的dUTP，从而可以通过荧光显微镜或流式细胞仪进行检测，这就是TUNEL(TdT-mediated dUTP Nick-End Labeling)法检测细胞凋亡的原理。
- 本试剂盒有如下优点。(1) 高灵敏度：背景染色极低，阳性染色明亮，可以在单细胞水平检测到细胞凋亡，同时由于凋亡早期就有DNA断裂，可以检测到早期的细胞凋亡。(2) 特异性：TUNEL检测时通常更容易标记凋亡细胞，而不容易标记坏死细胞。(3) 快速：仅需约1-2个小时即可完成。(4) 方便：只需一步染色反应，洗涤后即可观察，不必使用二抗等进行多步操作。(5) 应用范围广：可以用于检测冷冻或石蜡切片中的细胞凋亡情况，也可以检测培养的贴壁细胞或悬浮细胞的凋亡情况。(6) 实测效果好：参考图1。

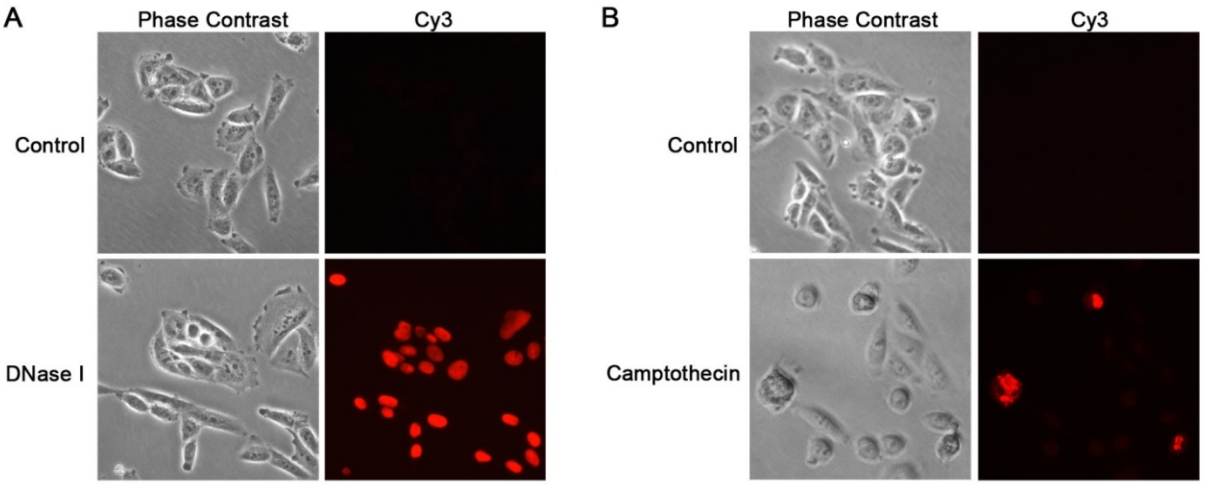

图1. 本试剂盒的检测效果图。A. HeLa细胞未经处理或用DNase I室温孵育10分钟后的检测效果图。B. HeLa细胞未经处理或用10μM喜树碱(Camptothecin)处理24小时后的检测效果图。图中的红色荧光为TUNEL染色阳性细胞。本图中的染色实验均在12孔板中进行。本图仅作参考，不同的样品不同的检测条件，实际获得的结果可能有较明显的差别。

- TUNEL法特异性检测细胞凋亡时产生的DNA断裂，但不会检测出射线等诱导的DNA断裂(和细胞凋亡时的断裂方式不同)。这样一方面可以把凋亡和坏死区分开，另一方面也不会把射线等诱导发生DNA断裂的非凋亡细胞判断为凋亡细胞。
- 极少数细胞凋亡时没有DNA断裂，此时不适用TUNEL法检测。在个别类型的坏死细胞中也发现TUNEL检测呈阳性。在需要严格判断细胞凋亡的情况下，最好同时检测多个凋亡指标。
- 本试剂盒足够检测50个样品。

包装清单：

产品编号	产品名称	包装
C1090-1	TdT酶	250μl
C1090-2	荧光标记液	2×1.2ml
C1090-3	TdT酶稀释液(选用)	1ml
—	说明书	1份

保存条件：

-20ºC保存，荧光标记液需避光保存。

注意事项：

- 需自备用于洗涤细胞的PBS或HBSS，用于封片的抗荧光淬灭封片液(P0126)，用于固定的4%多聚甲醛或向碧云天订购免疫染色固定液(P0098)，同时需自备含0.3% Triton X-100的PBS或向碧云天订购免疫染色强力通透液(P0097)。
- 如果用于石蜡切片的检测，需自备蛋白酶K，二甲苯。蛋白酶K(ST533)可以向碧云天订购。
- 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. 对于贴壁细胞或细胞涂片：

a. PBS或HBSS洗涤一次。
b. 如果细胞贴得不牢，可以干燥样品使细胞贴得更牢。
c. 用碧云天生产的免疫染色固定液(P0098)或4%多聚甲醛固定细胞30分钟。
d. 用PBS或HBSS洗涤一次。
e. 加入碧云天生产的免疫染色强力通透液(P0097)或含0.3% Triton X-100的PBS，室温孵育5分钟。
f. 转步骤5。

2. 对于悬浮细胞或细胞悬液：

a. 收集细胞(不超过200万细胞)，PBS或HBSS洗涤一次。
b. 用碧云天生产的免疫染色固定液(P0098)或4%多聚甲醛固定细胞30分钟。为防止细胞聚集成团，宜在侧摆摇床或水平摇床上缓慢摇动的同时进行固定。
c. 用PBS或HBSS洗涤一次。
d. 用碧云天生产的免疫染色强力通透液(P0097)或含0.3% Triton X-100的PBS重悬细胞，室温孵育5分钟。
e. 转步骤5。

3. 对于石蜡切片：

a. 二甲苯中脱蜡5-10分钟。换用新鲜的二甲苯，再脱蜡5-10分钟。无水乙醇5分钟。90%乙醇2分钟。70%乙醇2分钟，蒸馏水2分钟。
b. 滴加20μg/ml不含DNase的蛋白酶K(推荐使用碧云天的ST532/ST533 蛋白酶K(20mg/ml)，用P0106 免疫染色洗涤液或10mM Tris-HCl pH7.4-7.8稀释1000倍即为20μg/ml不含DNase的蛋白酶K)，20-37ºC作用15-30分钟(不同组织的最佳作用温度和时间需自行摸索)。
c. PBS或HBSS洗涤3次。注意：这一步必须把蛋白酶K洗涤干净，否则会严重干扰后续的标记反应。
d. 转步骤5。

4. 对于冰冻切片：

a. 用碧云天生产的免疫染色固定液(P0098)或4%多聚甲醛固定细胞30-60分钟。
b. PBS或HBSS洗涤2次，每次10分钟。
c. 加入碧云天生产的免疫染色强力通透液(P0097)或含0.5% Triton X-100的PBS，室温孵育5分钟。
d. 转步骤5。

5. 配制TUNEL检测液：

参考下表配制适当量的TUNEL检测液，需充分混匀。注意：配制好的TUNEL检测液必须一次使用完毕，不能冻存。

	1个样品	5个样品	10个样品
TdT酶	5μl	25μl	50μl
荧光标记液	45μl	225μl	450μl
TUNEL检测液	50μl	250μl	500μl

6. 对于贴壁细胞、细胞涂片或组织切片：

a. 用PBS或HBSS洗涤2次。
b. 在样品上加50μl TUNEL检测液，37ºC避光孵育60分钟。注意：50μl TUNEL检测液适合涂片、切片或96孔板、48孔板、24孔板或12孔板的一个孔，如果是6孔板中的一个孔TUNEL检测液宜使用100μl。如果待检测的样品为涂片、切片或在24孔板、12孔板或6孔板中，可以使用防蒸发膜，或自行尝试使用自封袋或者其它适当材料自行裁剪成比孔略小的圆形塑料片，滴加TUNEL检测液后覆盖在样品上，可以防止TUNEL检测液蒸发，并且使TUNEL检测液均匀覆盖样品。自行裁剪圆片时需要连着圆片突出一个角或连着一条，并将圆形之外的突出部分折叠，方便染色结束后利用突出部分顺利取出圆片。也可以用PAP Pen圈出一个区域进行染色。孵育时需注意在多余的孔和多孔板的空隙中加入适量水以保持湿润，从而尽量减少TUNEL检测液的蒸发。
c. PBS或HBSS洗涤3次。
d. 用抗荧光淬灭封片液封片后荧光显微镜下观察。Cy3的激发波长为550nm，发射波长为570nm (红色荧光)。染色效果可参见图1。

7. 对于悬浮细胞或细胞悬液：

a. 用PBS或HBSS洗涤2次。

b. 加入50μl TUNEL检测液，37ºC避光孵育60分钟。
c. PBS或HBSS洗涤2次。
d. 用250-500μl PBS或HBSS悬浮。
e. 此时可以用流式细胞仪进行检测或涂片后在荧光显微镜下观察。Cy3的激发波长为550nm，发射波长为570nm (红色荧光)。

常见问题：

1. 出现非特异性荧光标记。

a. 有些细胞或组织，例如平滑肌细胞或组织，nuclease或polymerase的酶活性水平较高，易导致出现非特异性的荧光标记。解决方法是，取细胞或组织后立即固定并且要充分固定，以阻止这些酶导致假阳性。
b. 使用了不适当的固定液，例如一些酸性固定液，导致出现假阳性。建议采用推荐的固定液。
c. TUNEL检测反应时间过长，或TUNEL检测反应过程中反应液渗漏，细胞或组织表面不能保持湿润，也可能出现非特异性荧光。注意控制反应时间，并确保TUNEL检测反应液能很好地覆盖样品。

2. 荧光背景很高。

a. 支原体污染。请使用支原体染色检测试剂盒检测是否为支原体污染。支原体染色检测试剂盒(C0296)可以向碧云天订购。
b. 高速分裂和增殖的细胞，有时也会出现细胞核中的DNA断裂。
c. TUNEL反应过强。可以用试剂盒提供的TdT酶稀释液稀释TdT酶2-5倍后再按照说明书操作。稀释后的TdT酶需当日使用。
d. 红细胞中血红蛋白导致的自发荧光产生严重干扰。此时宜选择其它细胞凋亡检测试剂盒。

3. 标记效率低。

a. 使用乙醇或甲醇固定会导致标记的效率较低。
b. 固定时间过长，导致交联程度过高。此时宜减少固定时间。
c. 荧光淬灭。荧光在普通光照10分钟就会严重淬灭。解决方法是需注意避光操作。
d. 贴壁细胞如果使用药物诱导凋亡，会使发生凋亡细胞的贴壁性会减弱，所以建议在凋亡诱导结束后，用可以对多孔板进行离心的离心机1000g离心5分钟，然后再吸除培养基并用PBS洗涤。如果没有适合的离心机，请注意操作轻缓，防止发生凋亡的细胞在洗涤时洗去。后续整个操作也需要轻缓。

相关产品：

产品编号	产品名称	包装
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
C1062	Annexin V-FITC细胞凋亡检测试剂盒	20次
C1063	Annexin V-FITC细胞凋亡检测试剂盒	50次
C1065	Annexin V-PE细胞凋亡检测试剂盒	20次
C1067	Annexin V-EGFP细胞凋亡检测试剂盒	20次
C1068	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
P0098	免疫染色固定液	100ml
P0097-100ml	免疫染色强力通透液	100ml
P0097-500ml	免疫染色强力通透液	500ml
P0126	抗荧光淬灭封片液	5ml
ST533	Proteinase K (20mg/ml)	1ml

使用本产品的文献：

1. Li Q, Zhou Y, Yao C, Ma X, Wang L, Xu W, Wang Z, Qiao Z. Apoptosis caused by Hsp90 inhibitor geldanamycin in Leishmania donovani during promastigote-to-amastigote transformation stage. Parasitol Res. 2009 Nov;105(6):1539-48.
2. Zhao R, Yang W, Wang Z, Li G, Qin W, Wang J. Treatment of transplanted tumor of lung adenocarcinoma A549 transfected by human somatostatinreceptor subtype 2 (hsstr2) gene with 188Re-RC-160. Nucl Med Biol. 2010 Nov;37(8):977-87.
3. Bai F, Sun B, Woo NY, Zhang XH. Vibrio harveyi hemolysin induces ultrastructural changes and apoptosis in flounder (Paralichthysolivaceus) cells. Biochem Biophys Res Commun. 2010 Apr 23;395(1):70-5
4. Dong W, Du J, Shen H, Gao D, Li Z, Wang G, Mu X, Liu Q. Administration of embryonic stem cells generates effective antitumor immunity in mice withminor and heavy tumor load. Cancer Immunol Immunother. 2010 Nov;59(11):1697-705.
5. Ma W, Xu W, Xu H, Chen Y, He Z, Ma M. Nitric oxide modulates cadmium influx during cadmium-induced programmed cell death intobacco BY-2 cells. Planta. 2010 Jul;232(2):325-35.
6. Li Y, Xu X, Liang Y, Liu S, Xiao H, Li F, Cheng H, Fu Z. miR-375

enhances palmitate-induced lipoapoptosis in insulin-secreting NIT-1 cells by 9repressingmyotrophin (V1) protein expression. Int J Clin Exp Pathol. 2010 Jan 25;3(3):254-64.

7. Shen X, Zhu W, Zhang X, Xu G, Ju S. A role of both NF-κB pathways in expression and transcription regulation of BAFF-R gene inmultiple myeloma cells. Mol Cell Biochem. 2011 Nov;357(1-2):21-30.
8. Liu FQ, Zhang XL, Gong L, Wang XP, Wang J, Hou XG, Sun Y, Qin WD, Wei SJ, Zhang Y, Chen L, Zhang MX. Glucagon-like peptide 1 protects microvascular endothelial cells by inactivating the PARP-1/iNOS/NO pathway. Mol Cell Endocrinol. 2011 Jun 6;339(1-2):25-33.
9. Wang K, Liu L, Zhang T, Zhu YL, Qiu F, Wu XG, Wang XL, Hu FQ, Huang J. Oxaliplatin-incorporated micelles eliminate both cancer stem-like and bulk cell populations incolorectal cancer. Int J Nanomedicine. 2011;6:3207-18.
10. Zheng L, Yang W, Zhang C, Ding WJ, Zhu H, Lin NM, Wu HH, He QJ, Yang B. GDC-0941 sensitizes breast cancer to ABT-737 in vitro and in vivo through promoting thedegradation of Mcl-1. Cancer Lett. 2011 Oct 1;309(1):27-36.
11. Peng YR, Ding YF, Wei YJ, Shu B, Li YB, Liu XD. Caudatin-2,6-dideoxy-3-O-methy-β-D-cymaropyranoside 1 induced apoptosis through caspase 3-dependent pathway in human hepatoma cell line SMMC7721. Phytother Res. 2011 May;25(5):631-7.
12. Mo-fei Li MF, Wang CL, Sun L. A pathogenic Vibrio harveyi lineage causes recurrent disease outbreaks in cultured Japanese flounder (Paralichthys olivaceus) and induces apoptosis in host cells. Aquaculture. 2011 Sep;319(1-2):30-6.
13. Wang JJ, Li YF, Jin YY, Wang X, Chen TX. Effects of Epstein-Barr virus on the development of dendritic cells derived from cord bloodmonocytes: an essential role for apoptosis. Braz J Infect Dis. 2012 Jan-Feb;16(1):19-26.
14. Wang J, Wang Y, Shan S, Hu T, Chen H, Tian J, Ren A, Zhou X, Yuan W, Lin L. Salusins protect myocardium against ischemic injury by alleviating endoplasmic reticulum stress. Sci China Life Sci. 2012 Apr; 55(4):358-66.
15. Zhang HY, Wang WX, Yin H, Zhao XM, Du YG. Oligochitosan induces programmed cell death in tobacco suspension cells. Carbohydrate Polymers. 2012 Feb;87(3):2270-2278.
16. Shen ZW, Cao Z, You KZ, Yang ZX, Xiao YY, Cheng XF, Chen YW, Wu RH. Quantification of choline concentration following liver cell apoptosis using 1H magnetic resonancespectroscopy. World J Gastroenterol. 2012 Mar 14;18(10):1130-6.
17. Du Z, Yang Y, Hu Y, Sun Y, Zhang S, Peng W, Zhong Y, Huang X, Kong W. A long-term high-fat diet increases oxidative stress, mitochondrial damage and apoptosis in theinner ear of D-galactose-induced aging rats. Hear Res. 2012 May;287(1-2):15-24.
18. Zhang Y, Yan M, Yu A, Mao H, Zhang J. Inhibitory effects of β-tricalciumphosphate wear particles on osteocytes via apoptotic responseand Akt inactivation. Toxicology. 2012 Jul 16;297(1-3):57-67.
19. Cui Z, Ren S, Lu J, Wang F, Xu W, Sun Y, Wei M, Chen J, Gao X, Xu C, Mao JH, Sun Y. The prostate cancer-up-regulated long noncoding RNA PlncRNA-1 modulates apoptosis andproliferation through reciprocal regulation of androgen receptor. Urol Oncol. 2013 Oct;31(7):1117-23.
20. Xia L, Huang Q, Nie D, Shi J, Gong M, Wu B, Gong P, Zhao L, Zuo H, Ju S, Chen J, Shi W. PAX3 is overexpressed in human glioblastomas and critically regulates the tumorigenicity of glioma cells. Brain Res. 2013 Jul 12;1521:68-78.
21. Ren S, Liu Y, Xu W, Sun Y, Lu J, Wang F, Wei M, Shen J, Hou J, Gao X, Xu C, Huang J, Zhao Y, Sun Y. Long Noncoding RNA MALAT-1 is a New Potential Therapeutic Target for Castration-Resistant Prostate Cancer. J Urol. 2013 Dec;190(6):2278-87.
22. Kun D, Xiang-Lin C, Ming Z, Qi L. Chlamydia inhibit host cell apoptosis by inducing Bag-1 via the MAPK/ERK survival pathway. Apoptosis. 2013 Sep;18(9):1083-92.
23. Wu YH, Zhao H, Zhou LP, Zhao CX, Wu YF, Zhen LX, Li J, Ge DX, Xu L, Lin L, Liu Y, Liang DD, Chen YH. miR-134 Modulates the Proliferation of Human Cardiomyocyte Progenitor Cells by Targeting Meis2. Int J Mol Sci. 2015 Oct 23;16(10):25199-213.
24. Sun Y, Xiu C, Liu W, Tao Y, Wang J, Qu YI. Grape seed proanthocyanidin extract protects the retina against early diabetic injury by activating theNrf2 pathway. Exp Ther Med. 2016 Apr;11(4):1253-8.
25. Zhu N, Zhao X, Xiang Y, Ye S, Huang J, Hu W, Lv L, Zeng C. Thymoquinone attenuates monocrotaline-induced pulmonary artery hypertension via inhibitingpulmonary arterial remodeling in rats. Int J Cardiol. 2016 Oct 15;221:587-96.
26. He Y, Li H, Zhang F, Zhang G, Tang X, Zhu T, Huang N, Li X. Immunotherapeutic effects of lymphocytes co-cultured with human cord blood-derived multipotent stemcells transplantation on APP/PS1 mice. Behav Brain Res. 2016 Dec 15;315:94-102.
27. Zhang X, Pan C, Zhou L, Cai Z, Zhao S, Yu D. Knockdown of ST6Gal-I increases cisplatin sensitivity in cervical cancer cells. BMC Cancer. 2016 Dec 16;16(1):949.
28. Li W, Fang Q, Zhong P, Chen L, Wang L, Zhang Y, Wang J, Li X, Wang Y, Wang J, Liang G . EGFR Inhibition Blocks Palmitic Acid-induced inflammation in cardiomyocytes and PreventsHyperlipidemia-induced Cardiac Injury in Mice. Sci Rep. 2016 Apr 18;6:24580.
29. Zhou J, Ling J, Wang Y, Shang J, Ping F. Cross-talk between interferon-gamma and interleukin-18 in melanogenesis. J Photochem Photobiol B. 2016 Oct;163:133-43.
30. Li X, Li J, Zhang Y, Zhou Y. Di-n-butyl phthalate Induced Hypospadias Relates to Autophagy in Genital Tubercle via thePI3K/Akt/mTOR Pathway. J Occup Health. 2016 Nov 22. [Epub ahead of print]
31. Pan Q, Sun Y, Jin Q, Li Q, Wang Q, Liu H, Zhao S. Hepatotoxicity and nephrotoxicity of 3-bromopyruvate in mice. Acta Cir Bras. 2016 Nov;31(11):724-729.
32. Yang Y, Yang Y, Xie X, Xu X, Xia X, Wang H, Li L, Dong W, Ma P, Liu Y. Dual stimulus of hyperthermia and intracellular redox environment triggered release of siRNA for tumor-specific therapy. Int J Pharm. 2016 Jun 15;506(1-2):158-73.
33. Xu Z, Shao J, Li L, Peng X, Chen M, Li G, Yan H, Yang B, Luo P, He Q. All-trans retinoic acid synergizes with topotecan to suppress AML cells via promoting RARα-mediatedDNA damage. BMC Cancer. 2016 Jan 5;16:2.
34. Yue T, Zheng X, Dou Y, Zheng X, Sun R, Tian Z, Wei H. Interleukin 12 shows a better curative effect on lung cancer than paclitaxel and cisplatin doubletchemotherapy. BMC Cancer. 2016 Aug 22;16:665.
35. Chen L, Ou S, Zhou L, Tang H, Xu J, Guo K . Formononetin attenuates Aβ25-35-induced cytotoxicity in HT22 cells via PI3K/Akt signaling and non-amyloidogenic cleavage of APP. Neurosci Lett. 2016 Dec 26639:36-42.
36. Zheng X, Fan X, Fu B, Zheng M, Zhang A, Zhong K, Yan J, Sun R, Tian Z, Wei H. EpCAM Inhibition Sensitizes Chemoresistant Leukemia to Immune Surveillance. Cancer Res. 2017 Jan 15;77(2):482-493.
37. Jia L, Zhang S, Huang Y, Zheng Y, Gan Y. Trichostatin A increases radiosensitization of tongue squamous cell carcinoma via miR 375. Oncol Rep. 2017 Jan;37(1):305-312.
38. Fan Y, Feng Q, Lai K, Huang W, Zhang C, Li QX. Toxic effects of indoxacarb enantiomers on the embryonic development and induction of apoptosis in zebrafish larvae (Danio rerio). Environ Toxicol. 2017 Jan;32(1):7-16.
39. Li R, Zhang X, Tian X, Shen C, Zhang Q, Zhang Y, Wang Z, Wang F, Tao Y. Triptolide inhibits tumor growth by induction of cellular senescence. Oncol Rep. 2017 Jan;37(1):442-448.
40. Song XL, Zhang YJ, Wang XF, Zhang WJ, Wang Z, Zhang F, Zhang YJ, Lu JH, Mei JW, Hu YP, Chen L, Li HF, Ye YY, Liu YB, Gu J.Casticin induces apoptosis and G0/G1 cell cycle arrest in gallbladder cancer cells.Cancer Cell Int . 2017 Jan 5;17:9
41. Wang X, Guo Q, Tao L, Zhao L, Chen Y, An T, Chen Z, Fu R.E platinum,a newly synthesized platinum compound, induces apoptosis through ROS-triggeredER stress in gastric carcinoma cells.MOL CARCINOGEN . 2017 Jan;56(1):218-231
42. Chen L, Ou S, Zhou L, Tang H, Xu J, Guo K.Formononetin attenuates A β 25-35-induced cytotoxicity in HT22 cells via PI3K/Akt signaling and non-amyloidogenic cleavage of APP.Neurosci Lett . 2017 Feb 3;639:36-42
43. Guo R, Wu Z, Jiang J, Liu C, Wu B, Li X, Li T, Mo H, He S, Li S, Yan H, Huang R, You Q, Wu K.New mechanism of lipotoxicity in diabetic cardiomyopathy: Deficiency of Endogenous H2SProduction and ER stress.Mech Ageing Dev . 2017 Mar;162:46-52
44. Wang J, Wang Y, Shen L, Qian Y, Yang J, Wang F.Sulfated lentinan induced mitochondrial dysfunction leads to programmed cell death of tobaccoBY-2 cells.PESTIC BIOCHEM PHYS . 2017 Apr;137:27-35
45. Ma L, Han M, Keyoumu Z, Wang H, Keyoumu S.Immunotherapy of Dual-Function Vector with Both Immunostimulatory and B-Cell Lymphoma 2 (Bcl-2)-Silencing Effects on Gastric Carcinoma.MED SCI MONITOR . 2017 Apr 25;23:1980-1991

46. Lin HD, Li KT, Duan QQ, Chen Q, Tian S, Chu ESM, Bai DQ.The effect of aloe-emodin-induced photodynamic activity onthe apoptosis of human gastriccancer cells: A pilot study.Oncol Lett . 2017 May;13(5):3431-3436

47. Zhou QM, Zhang JJ, Li S, Chen S, Le WD.n-butylidenephthalide treatment prolongs life span and attenuates motor neuron loss in SOD1G93A mouse model of amyotrophic lateral sclerosis.CNS Neurosci Ther . 2017 May;23(5):375-385

48. Wei W, Liu Y, Zhang Q, Wang Y, Zhang X, Zhang H.Danshen-Enhanced Cardioprotective Effect of Cardioplegia on Ischemia Reperfusion Injury ina Human-Induced Pluripotent Stem Cell-Derived Cardiomyocytes Model.Artif Organs . 2017 May;41(5):452-460

49. Wei J, Sun C, Liu C, Zhang Q.Effects of Rat Anti-mouse Interleukin-6 Receptor Antibody onthe Recovery of CognitiveFunction in Stroke Mice.Cell Mol Neurobiol . 2017 May 9

50. Li W, Zhou Y, Yang J, Li H, Zhang H, Zheng P.Curcumin induces apoptoticcelldeath and protective autophagy in human gastric cancer cells.Oncol Rep . 2017 Jun;37(6):3459-3466

51. Zhang Z, Zhang L, Sun C, Kong F, Wang J, Xin Q, Jiang W, Li K, Chen O, Luan Y.Baicalin attenuates monocrotaline-induced pulmonary hypertension through bonemorphogenetic protein signaling pathway.ONCOTARGET . 2017 Jun 28;8(38):63430-63441

52. Pei N, Mao Y, Wan P, Chen X, Li A, Chen H, Li J, Wan R, Zhang Y, Du H, Chen B, Jiang G, Xia M, Sumners C, Hu G, Gu D, Li H.Angiotensin II type 2 receptor promotes apoptosis and inhibits angiogenesis in bladder cancer.J EXP CLIN CANC RES . 2017 Jun 9;36(1):77

53. Lin X, Zha Y, Zeng XZ, Dong R, Wang QH, Wang DT.Role ofthe Wnt/ β -catenin signaling pathway in inducing apoptosis and renal fibrosis in 5/6-nephrectomized rats.Mol Med Rep . 2017 Jun;15(6):3575-3582

54. Zong C, Qin D, Yu C, Gao P, Chen J, Lu S, Zhang Y, Liu Y, Yang Y, Pu Z, Li X, Fu Y, Guan Q, Wang X.The stress-response molecule NR4A1 resists ROS-induced pancreatic β -cells apoptosis via WT1.Cell Signal . 2017 Jul;35:129-139

55. Xu Y, Leng K, Li Z, Zhang F, Zhong X, Kang P, Jiang X, Cui Y.The prognostic potential and carcinogenesis of long non-coding RNA TUG1 in humancholangiocarcinoma.ONCOTARGET . 2017 Jul 22;8(39):65823-65835

56. Wu YY, Zhang JH, Gao JH, Li YS.Aloe-emodin (AE) nanoparticles suppresses proliferation and induces apoptosis in human lungsquamous carcinoma via ROS generation in vitro and in vivo.BIOCHEM BIOPH RES CO . 2017 Aug 26;490(3):601-607

57. Zhu L, Chen J, Zhang J, Guo C, Fan W, Wang YM, Yan Z.Parathyroid Hormone (PTH) Induces Autophagy to Protect Osteocyte Cell Survival from Dexamethasone Damage.MED SCI MONITOR . 2017 Aug 21;23:4034-4040

58. Xiao R, Xiang AL, Pang HB, Liu KQ.Hyperoside protects against hypoxia/reoxygenation induced injury in cardiomyocytes by suppressing the Bnip3 expression.Gene . 2017 Sep 20;629:86-91

59. Xue X, Wang L, Meng X, Jiao J, Dang N.Regulator of G protein signaling 4 inhibits human melanoma cells proliferation and invasion through the PI3K/AKT signaling pathway.ONCOTARGET . 2017 Sep 11;8(45):78530-78544

60. Liao T, Xue Y, Zhao D, Li S, Liu M, Chen J, Brand DD, Zheng H, Zhang Y, Zheng SG, Sun Q.In Vivo Attenuation of Antibody-Mediated Acute Renal Allograft Rejection by Ex Vivo TGF- β -Induced CD4+Foxp3+ Regulatory T Cells.Front Immunol . 2017 Oct 16;8:1334.

61. Pu Y, Meng K, Gu C, Wang L, Zhang X.Thrombospondin-1 modified bone marrow mesenchymal stem cells (BMSCs) promote neuriteoutgrowth and functional recovery in rats with spinal cord injury.ONCOTARGET . 2017 Oct 24;8(56):96276-96289

62. Wei S, Luo C, Yu S, Gao J, Liu C, Wei Z, Zhang Z, Wei L, Yi B.Erythropoietin ameliorates early brain injury after subarachnoid haemorrhage by modulatingmicroglia polarization via the EPOR/JAK2-STAT3 pathway.Exp Cell Res . 2017 Dec 15;361(2):342-352

63. Li T, Ding ZL, Zheng YL, Wang W.MiR-484 promotes non-small-cell lung cancer (NSCLC) progression through inhibiting Apaf-1associated with the suppression of apoptosis.Biomed Pharmacother . 2017 Dec;96:153-164

64. Deng B,Lv W,Duan W,Liu Y,Li Z,Ma Y,Zhang G,Song X,Cui C,Qi X,Li Y,Li C.Progressive Degeneration and Inhibition of Peripheral Nerve Regeneration in the SOD1-G93A Mouse Model of Amyotrophic Lateral Sclerosis.CELL PHYSIOL BIOCHEM . 2018;46(6):2358-2372

65. Ma Y,Yue Z,Zhang B,Yang M,Lao H,Lai W,Zeng Y,Chen S,Liu P.Calcium Signal Pathway is Involved in Prostaglandin E2 Induced Cardiac Fibrosis in Cardiac Fibroblasts.J Pharm Pharm Sci . 2018;21(1):326-339

66. Chen H, Song Z, Ying S, Yang X, Wu W, Tan Q, Ju X, Wu W, Zhang X, Qu J, Wang Y.Myeloid differentiation protein 2 induced retinal ischemia reperfusion injury via upregulation of ROS through a TLR4-NOX4 pathway.Toxicol Lett . 2018 Jan 5;282:109-120

67. Xiong FY, Tang ST, Su H, Tang HQ, Jiang P, Zhou Q, Wang Y, Zhu HQ.Melatonin ameliorates myocardial apoptosis by suppressing endoplasmic reticulum stress in rats with long term diabetic cardiomyopathy.Mol Med Rep . 2018 Jan;17(1):374-381

68. Wang Y, Chen F, Liang M, Chen S, Zhu Y, Zou Z, Shi B.Grape seed proanthocyanidin extract attenuates varicocele induced testicular oxidative injury in rats by activating the Nrf2 antioxidant system.Mol Med Rep . 2018 Jan;17(1):1799-1806

69. Lin H,Hu H,Duan W,Liu Y,Tan G,Li Z,Liu Y,Deng B,Song X,Wang W,Wen D,Wang Y,Li C.Intramuscular Delivery of scAAV9-hIGF1 Prolongs Survival in the hSOD1G93A ALS Mouse Model via Upregulation of D-Amino Acid Oxidase.Mol Neurobiol . 2018 Jan;55(1):682-695

70. Pan Y, Wang N, Xia P, Wang E, Guo Q, Ye Z.Inhibition of Rac1 ameliorates neuronal oxidative stress damage via reducing Bcl-2/Rac1complex formation in mitochondria through PI3K/Akt/mTOR pathway.Exp Neurol . 2018 Feb;300:149-166

71. Zhang J,Su J,Hu S,Zhang J,Ding R,Guo J,Cao G,Li R,Sun QY,Li X.Correlation between ubiquitination and defects of bull spermatozoa and removal of defective spermatozoa using anti-ubiquitin antibody-coated magnetized beads.Anim Reprod Sci . 2018 May;192:44-52

72. Wang Y,Lei T,Yuan J,Wu Y,Shen X,Gao J,Feng W,Lu Z.GCN2 deficiency ameliorates doxorubicin-induced cardiotoxicity by decreasing cardiomyocyte apoptosis and myocardial oxidative stress.Redox Biol . 2018 Jul;17:25-34

73. Ni E,Zhao L,Yao N,Zhu X,Cao H,Sun S,Zhu W.The PXXP domain is critical for the protective effect of BAG3 in cardiomyocytes.CLIN EXP PHARMACOL P . 2018 Oct 16

74. Xiong XY,Liu Y,Shan LT,Xu YQ,Liang J,Lai YH,Hsiao CD.Evaluation of collagen mixture on promoting skin wound healing in zebrafish caused by acetic acid administration.BIOCHEM BIOPH RES CO . 2018 Oct 28;505(2):516-522

75. Cui J,Wei C,Deng L,Kuang X,Zhang Z,Pierides C,Chi J,Wang L.MicroRNA-143 increases cell apoptosis in myelodysplastic syndrome through the Fas/FasL pathway both in vitro and in vivo.Int J Oncol . 2018 Nov;53(5):2191-2199

76. Deng B,Lv W,Duan W,Liu Y,Li Z,Song X,Cui C,Qi X,Wang X,Li C.FGF9 modulates Schwann cell myelination in developing nerves and induces a pro-inflammatory environment during injury.J Cell Biochem . 2018 Nov;119(10):8643-8658

77. Zhang L,Liu J,Geng T.Ginkgetin aglycone attenuates the apoptosis and inflammation response through nuclear factor-kB signaling pathway in ischemic-reperfusion injury.J Cell Biochem . 2018 Dec 23

78. Liu Z,Li R,Jiang C,Zhao S,Li W,Tang X.The neuroprotective effect of lithium chloride on cognitive impairment through glycogen synthase kinase-3 β inhibition in intracerebral hemorrhage rats.Eur J Pharmacol . 2018 Dec 5;840:50-59

79. Yong J,Yan L,Wang J,Xiao H,Zeng Q.Effects of compound 21, a non-peptide angiotensin II type 2 receptor agonist, on general anesthesia-induced cerebral injury in neonatal rats.Mol Med Rep . 2018 Dec;18(6):5337-5344

80. Feng W,Lei T,Wang Y,Feng R,Yuan J,Shen X,Wu Y,Gao J,Ding W,Lu Z.GCN2 deficiency ameliorates cardiac dysfunction in diabetic mice by reducing lipotoxicity and oxidative stress.FREE RADICAL BIO MED. 2019 Jan;130:128-139

81. Long W,Wang J,Yang J,Wu H,Wang J,Mu X,He H,Liu Q,Sun YM,Wang H,Zhang XD.Naturally-Derived PHA-L Protein Nanoparticle as a Radioprotector Through Activation of Toll-Like Receptor 5.J BIOMED NANOTECHNOL. 2019 Jan 1;15(1):62-76

82. Huang K,Liu Y,Tang H,Qiu M,Li C,Duan C,Wang C,Yang J,Zhou X.Glabridin Prevents Doxorubicin-Induced Cardiotoxicity Through Gut Microbiota Modulation and Colonic Macrophage Polarization in Mice.Front Pharmacol. 2019 Feb 15;10:107

83. Luo Z,Xu X,Sho T,Zhang J,Xu W,Yao J,Xu J.ROS-induced autophagy regulates porcine trophectoderm cell apoptosis, proliferation, and differentiation.AM J PHYSIOL-CELL PH . 2019 Feb 1;316(2):C198-

C209

84. Zuo Y,Hu J,Xu X,Gao X,Wang Y,Zhu S.Sodium azide induces mitochondria-mediated apoptosis in PC12 cells through Pgc-1 α -associated signaling pathway.Mol Med Rep. 2019 Mar;19(3):2211-2219

85. Wang W,Zheng Y,Wang M,Yan M,Jiang J,Li Z.Exosomes derived miR-126 attenuates oxidative stress and apoptosis from ischemia and reperfusion injury by targeting ERRFI1.Gene. 2019 Mar 30;690:75-80

86. Liu M,Hu Y,Yuan Y,Tian Z,Zhang C. γ δ T Cells Suppress Liver Fibrosis via Strong Cytolysis and Enhanced NK Cell-Mediated Cytotoxicity Against Hepatic Stellate Cells.Front Immunol. 2019 Mar 15;10:477

87. Atheer Hameid Odda,Youcui Xu,Jun Lin,Gang Wang,Naseeb Ullah,Akif Zeb,Kuang Liang,Long-Ping Wen,An-Wu Xu.Plasmonic MoO 3-x Nanoparticles Incorporated in Prussian Blue Frameworks Exhibit Highly Efficient Dual Photothermal/Photodynamic Therapy J Mater Chem B. 2019 Mar 28;7(12):2032-2042.;doi: 10.1039/c8tb03148g

88. Xiao R,Zhu L,Su Y,Zhang J,Lu Y,Li J,Wang T,Fang J,Jing ZC,Dupuis J,Luo S,Hu Q.Monocrotaline pyrrole induces pulmonary endothelial damage through binding to and release from erythrocytes in lung during venous blood reoxygenation.AM J PHYSIOL-LUNG C. 2019 May 1;316(5):L798-L809

89. Zhou J,Yu W,Zhang M,Tian X,Li Y,Lü Y.Imbalance of Microglial TLR4/TREM2 in LPS-Treated APP/PS1 Transgenic Mice: A Potential Link Between Alzheimer's Disease and Systemic Inflammation.Neurochem Res. 2019 May;44(5):1138-1151

90. Gao S,Huang Q,Tang X,Qu X,Yu Y,Zhao Y,Tian L,Wu P,Gong H,Xu Y,Xu J.ZhiShiXiaoPi tang inhibits autophagy induced by corticosterone and functional dyspepsia through blockade of the mTOR pathway.J Ethnopharmacol. 2019 Jun 28;238:111836

91. Zhang L,Pang Y,Cui X,Jia W,Cui W,Liu Y,Liu C,Li F.MicroRNA-410-3p upregulation suppresses proliferation, invasion and migration, and promotes apoptosis in rhabdomyosarcoma cells.Oncol Lett. 2019 Jul;18(1):936-943

92. Chen JX,Xu X,Zhang S.Silence of long noncoding RNA NEAT1 exerts suppressive effects on immunity during sepsis by promoting microRNA-125-dependent MCEMP1 downregulation.IUBMB Life. 2019 Jul;71(7):956-968

93. Xie L,Huang R,Liu S,Wu W,Su A,Li R,Liu X,Lei Y,Sun H,Liu X,Xu S.A positive feedback loop of SIRT1 and miR17HG promotes the repair of DNA double-stranded breaks.Cell Cycle. 2019 Sep;18(17):2110-2123

94. Chen P,Zhang H,Zhang Q,Zhou W,Deng Y,Hu X,Zhang L.Basic Fibroblast Growth Factor Reduces Permeability and Apoptosis of Human Brain Microvascular Endothelial Cells in Response to Oxygen and Glucose Deprivation Followed by Reoxygenation via the Fibrobl MED SCI MONITOR. 2019 Sep 25;25:7191-7201

95. Luo F,Wu L,Zhang Z,Zhu Z,Liu Z,Guo B,Li N,Ju J,Zhou Q,Li S,Yang X,Mak S,Han Y,Sun Y,Wang Y,Zhang G,Zhang Z.The dual-functional memantine nitrate MN-08 alleviates cerebral vasospasm and brain injury in experimental subarachnoid haemorrhage models.BRIT J PHARMACOL. 2019 Sep;176(17):3318-3335

96. Li T,Tian H,Li J,Zuo A,Chen J,Xu D,Guo Y,Gao H.Overexpression of lncRNA Gm2691 attenuates apoptosis and inflammatory response after myocardial infarction through PI3K/Akt signaling pathway.IUBMB Life. 2019 Oct;71(10):1561-1570

97. Wang XW,Tian RM,Yang YQ,Lu ZY,Han XD,Liu XS,Mao W,Xu P,Xu HT,Liu B.Triptriolide antagonizes triptolide-induced nephrocyte apoptosis via inhibiting oxidative stress in vitro and in vivo.Biomed Pharmacother. 2019 Oct;118:109232

98. Yi X,Wei X,Lv H,An Y,Li L,Lu P,Yang Y,Zhang Q,Yi H,Chen G.Exosomes derived from microRNA-30b-3p-overexpressing mesenchymal stem cells protect against lipopolysaccharide-induced acute lung injury by inhibiting SAA3.Exp Cell Res. 2019 Oct 15;383(2):111454

99. Pan X,Chen J,Wang T,Zhang M,Wang H,Gao H.Essential Role Of High Glucose-Induced Overexpression Of PKC β And PKC δ In GLP-1 Resistance In Rodent Cardiomyocytes.DIABET METAB SYND OB. 2019 Nov 4;12:2289-2302

100. Jing Liu,Yuan Hu,Qie Guo,Xin Yu,Liwei Shao,Cai Zhang.Enhanced Anti-melanoma Efficacy of a Pim-3-Targeting Bifunctional Small Hairpin RNA via Single-Stranded RNA-Mediated Activation of Plasmacytoid Dendritic Cells Front Immunol. 2019 Nov 26;10:2721.;doi: 10.3389/fimmu.2019.02721

101. Jing H,Liu L,Jia Y,Yao H,Ma F.Overexpression of the long non-coding RNA Oprm1 alleviates apoptosis from cerebral ischemia-reperfusion injury through the Oprm1/miR-155/GATA3 axis.ARTIF CELL NANOMED B. 2019 Dec;47(1):2431-2439

102. Lin J,Shen J,Yue H,Cao Z.miRNA-183-5p.1 promotes the migration and invasion of gastric cancer AGS cells by targeting TPM1.Oncol Rep. 2019 Dec;42(6):2371-2381

103. Chuan-Jin Yu,Xia Liu,Zhi-Yang Zhou,Xiao-Jun Chen,Yi-Cong Meng,Hang-Chao Gu,Jing-Jing Xu,Guo-Lian Ding,Xin-Mei Liu,Jian-Zhong Sheng,He-Feng Huang.The casein kinase 2 α promotes the occurrence polycystic ovary syndrome BIOCHEM BIOPH RES CO. 2020 Feb 17;S0006-291X(20)30333-8.;doi: 10.1016/j.bbrc.2020.02.065

104. Yanling Zhao,Yanqiu Ai.Overexpression of lncRNA Gm15621 alleviates apoptosis and inflammation response resulting from sevoflurane treatment through inhibiting miR-133a/Sox4 J Cell Physiol. 2020 Feb;235(2):957-965.;doi: 10.1002/jcp.29011

105. Yang Wang,Liang Zhang,Yuweng Pang,Lingxie Song,Hao Shang,Zhenzhen Li,Qianqian Liu,Yangyang Zhang,Xiaomeng Wang,Qianru Li,Qiaochu Zhang,Chunxia Liu,Feng Li.MicroRNA-29 family inhibits rhabdomyosarcoma formation and progression by regulating GEFT function Am J Transl Res. 2020 Mar 15;12(3):1136-1154.

106. Lufei Ouyang,Xiaoyu Mu,Junying Wang,Qifeng Li,Yalong Gao,Haile Liu,Si Sun,Qinjuan Ren,Ruijuan Yan,Jingya Wang,Qiang Liu,Yuanming Sun,Changlong Liu,Hua He,Wei Long,Xiao-Dong Zhang.Carbon dot targeting to nitrogen signaling molecules for inhibiting neuronal death J Mater Chem B. 2020 Mar 18;8(11):2321-2330.;doi: 10.1039/c9tb02447f

107. Xiaoxiao Liu,Yanzhuo Liu,Xuewei Chen,Chenlong Wang,Xuehan Chen,Wen Liu,Keqing Huang,Honglei Chen,Jing Yang.Multi-walled carbon nanotubes exacerbate doxorubicin-induced cardiotoxicity by altering gut microbiota and pulmonary and colonic macrophage phenotype in mice Toxicology. 2020 Apr 15;435:152410.;doi: 10.1016/j.tox.2020.152410

108. Yiyi Li,Xuan Niu,Haitao Xu,Qingwen Li,Lanxia Meng,Mingyang He,Jie Zhang,Zhentao Zhang,Zhaohui Zhang.VX-765 attenuates atherosclerosis in ApoE deficient mice by modulating VSMCs pyroptosis Exp Cell Res. 2020 Apr 1;389(1):111847.;doi: 10.1016/j.yexcr.2020.111847

109. Hui Liu,Zhaojun Liu,Meng Gao,Xinglin Hu,Ruizhen Sun,Xinghui Shen,Feng Liu,Jingling Shen,Zhiyan Shan,Lei Lei.The Effects of Daxx Knockout on Pluripotency and Differentiation of Mouse Induced Pluripotent Stem Cells Cell Reprogram. 2020 Apr;22(2):90-98.;doi: 10.1089/cell.2019.0071

110. Jitong Liu,Suhong Tan,Yongsheng Wang,Jia Luo,Yi Long,Xiping Mei,Yixun Tang.Role of Metallothionein-1 and Metallothionein-2 in the Neuroprotective Mechanism of Sevoflurane Preconditioning in Mice J Mol Neurosci. 2020 May;70(5):713-723.;doi: 10.1007/s12031-020-01481-3

111. Xue Wang,Xue-Liang Yang,Ke-Chun Liu,Wen-Long Sheng,Qing Xia,Rong-Chun Wang,Xi-Qiang Chen,Yun Zhang.Effects of streptozotocin on pancreatic islet β -cell apoptosis and glucose metabolism in zebrafish larvae Fish Physiol Biochem. 2020 Jun;46(3):1025-1038.;doi: 10.1007/s10695-020-00769-w

112. Xin Liu,Yuchen Hao,Zhekun Li,Jilong Zhou,Hongmei Zhu,Guowei Bu,Zhiting Liu,Xudong Hou,Xia Zhang,Yi-Liang Miao.Maternal Cytokines CXCL12, VEGFA, and WNT5A Promote Porcine Oocyte Maturation via MAPK Activation and Canonical WNT Inhibition Front Cell Dev Biol. 2020 Jul 7;8:578.;doi: 10.3389/fcell.2020.00578

113. Xin Cheng,Yu Zhang,Fei Song,Fengliang Song,Cheng Gao,Xiaoliang Liang,Feiran Wang,Zhong Chen.URM1 Promoted Tumor Growth and Suppressed Apoptosis via the JNK Signaling Pathway in Hepatocellular Carcinoma ONCOTARGETS THER. 2020 Aug 12;13:8011-8025.;doi: 10.2147/OTT.S258843

114. Zhen Xiang,Yiyao Qi,Yusheng Lu,Zhenrong Hu,Xiao Wang,Wenwen Jia,Jingzhou Hu,Jiansong Ji,Wei Lu.MOF-derived novel porous Fe 3 O 4@C nanocomposites as smart nanomedical platforms for combined cancer therapy: magnetic-triggered synergistic hyperthermia and chemotherapy J Mater Chem B. 2020 Sep 30;8(37):8671-8683.;doi: 10.1039/d0tb01021a

115. Weijian Zhang,Hao Xiong,Jiaqi Pang,Zhongwu Su,Lan Lai,Hanqing Lin,Bingquan Jian,Wuhui He,Haidi Yang,Yiqing Zheng.Nrf2 activation protects auditory hair cells from cisplatin-induced ototoxicity independent on mitochondrial ROS production Toxicol Lett. 2020 Oct 1;331:1-10.;doi: 10.1016/j.toxlet.2020.04.005

116.Weixiao Nan,Guangyu Li,Huazhe Si,Yujie Lou,Dianyong Wang,Rui Guo,Haihua Zhang.All-trans-retinoic acid inhibits mink hair follicle growth via inhibiting proliferation and inducing apoptosis of dermal papilla cells through TGF-β2/Smad2/3 pathway Acta Histochem. 2020 Oct;122(7):151603.;doi: 10.1016/j.acthis.2020.151603

117.Xu Luo,Lina Li,Weilin Xu,Yuan Cheng,Zongyi Xie.HLY78 Attenuates Neuronal Apoptosis via the LRP6/GSK3 β / β -Catenin Signaling Pathway After Subarachnoid Hemorrhage in Rats Neurosci Bull. 2020 Oct;36(10):1171-1181.;doi: 10.1007/s12264-020-00532-4

118.Yan Li,Li-Min Zhang,Dong-Xue Zhang,Wei-Chao Zheng,Yang Bai,Jing Bai,Lan Fu,Xu-Peng Wang.CORM-3 ameliorates neurodegeneration in the amygdala and improves depression- and anxiety-like behavior in a rat model of combined traumatic brain injury and hemorrhagic shock Neurochem Int. 2020 Nov;140:104842.;doi: 10.1016/j.neuint.2020.104842

119.Yun Chen,Chaojin Hong,Xiaochen Chen,Zhiquan Qin.Demethoxycurcumin increases the sensitivity of cisplatin-resistant non-small lung cancer cells to cisplatin and induces apoptosis by activating the caspase signaling pathway Oncol Lett. 2020 Nov;20(5):209.;doi: 10.3892/ol.2020.12072

120.Biao Chen,Qing Chai,Shengmin Xu,Qian Li,Tao Wu,Shaopeng Chen,Lijun Wu.Silver nanoparticle-activated COX2/PGE2 axis involves alteration of lung cellular senescence in vitro and in vivo ECOTOX ENVIRON SAFE. 2020 Nov;204:111070.;doi: 10.1016/j.ecoenv.2020.111070

121.Yang Hu,Xinyu Wang,Qingju Li,Yunzheng Pan,Li Xu.Salvianolic acid B alleviates myocardial ischemic injury by promoting mitophagy and inhibiting activation of the NLRP3 inflammasome Mol Med Rep. 2020 Dec;22(6):5199-5208.;doi: 10.3892/mmr.2020.11589

122.Jing Lan,Kangling Xie.miR-202-3p overexpression attenuates endometriosis-like lesions by modulating YAP-dependent transcription of S100A6 in murine models Life Sci. 2021 Jan 15;265:118757.;doi: 10.1016/j.lfs.2020.118757

123.Peiwen Zhang,Shen Chen,Huanwen Tang,Wanjun Fang,Ke Chen,Xu Chen.CoQ10 protects against acetaminophen-induced liver injury by enhancing mitophagy TOXICOL APPL PHARM . 2021 Jan 1;410:115355.;doi: 10.1016/j.taap.2020.115355

124.Feng Long,Hongbiao Shi,Pengyu Li,Shaoqiang Guo,Yuer Ma,Shijun Wei,Yan Li,Fei Gao,Shang Gao,Meitian Wang,Ruonan Duan,Xiaojing Wang,Kun Yang,Wenjie Sun,Xi Li,Jiangxia Li,Qiji Liu.A SMOC2 variant inhibits BMP signaling by competitively binding to BMPR1B and causes growth plate defects Bone. 2021 Jan;142:115686.;doi: 10.1016/j.bone.2020.115686

125.Qing Wang,Le Ma,Long Chen,Hongdan Chen,Min Luo,Wei Yang,Fengying Liao,Qiang Gong,Yang Wang,Zeyu Yang,Jie Wu,Can Zhang,Jiancheng Zheng,Shiqian Han,Yu Leng,Peng Luo,Chunmeng Shi.Knockdown of PC4 increases chemosensitivity of Oxaliplatin in triple negative breast cancer by suppressing mTOR pathway BIOCHEM BIOPH RES CO. 2021 Mar 12;544:65-72.;doi: 10.1016/j.bbrc.2021.01.029

126.Yangyang Xia,Shouzhen Chen,Jianfeng Cui,Yong Wang,Xiaochen Liu,Yangli Shen,Li Gong,Xuewen Jiang,Wenfu Wang,Yaofeng Zhu,Shuna Sun,Jiangxia Li,Yongxin Zou,Benkang Shi.Berberine suppresses bladder cancer cell proliferation by inhibiting JAK1-STAT3 signaling via upregulation of miR-17-5p Biochem Pharmacol. 2021 Apr 20;188:114575.;doi: 10.1016/j.bcp.2021.114575

127.Jian Tan,Shuang-Xi Chen,Qing-Yun Lei,Shan-Qing Yi,Na Wu,Yi-Lin Wang,Zi-Jian Xiao,Heng Wu.Mitochonic acid 5 regulates mitofusin 2 to protect microglia Neural Regen Res. 2021 Sep;16(9):1813-1820.;doi: 10.4103/1673-5374.306094

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