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Lipo6000™转染试剂

产品编号	产品名称	包装
C0526-0.5ml	Lipo6000™转染试剂	0.5ml
C0526-1.5ml	Lipo6000™转染试剂	1.5ml
C0526-7.5ml	Lipo6000™转染试剂	5×1.5ml

产品简介:

- Lipo6000™转染试剂(Lipo6000™ Transfection Reagent)是一种非常高效的新型转染试剂，达到了国际最主流转染试剂的转染效果。适用于把质粒、siRNA或其它形式的核酸包括DNA、RNA、寡核苷酸、以及核酸蛋白复合物或带负电荷的蛋白转染到真核细胞中，也可以用于活体动物的核酸转染以用于基因治疗。
- Lipo6000™转染试剂对于常见的哺乳动物细胞具有非常高的转染效率、重复性好、操作简单、无明显的细胞毒性，并且对于贴壁细胞和悬浮细胞都适用。贴壁细胞转染试剂的比较和选择请参考：http://www.beyotime.com/support/lipo.htm。
- Lipo6000™转染试剂的使用方法和常用的Lipofectamine® 2000 Reagent基本一致。并且经过对HEK293T、Hela、NIH3T3、HEK293FT、CHO等细胞的测试，转染效率也和Lipofectamine® 2000 Reagent相当甚至略高。
- Lipo6000™转染试剂不仅适用于质粒、siRNA等单一成分的细胞转染，也适合多个质粒或者质粒与siRNA等的组合转染。
- Lipo6000™转染试剂转染过表达质粒后，通常24-48小时后达到较高的蛋白表达水平，并且很多情况下蛋白表达量在转染后48小时显著高于转染后24小时；转染siRNA通常3-5天后对于目的基因的下调水平会比较理想。
- Lipo6000™转染试剂转染细胞时，基本不受细胞培养液中的血清和抗生素的影响，即可以在血清和抗生素存在的情况下进行细胞转染。但为了取得最佳的转染效果，推荐转染时使用不含抗生素的含血清的细胞培养液。
- Lipo6000™转染试剂的转染效果可以通过转染表达EGFP等荧光蛋白的质粒进行快速鉴定。
- Lipo6000™转染试剂与Lipofectamine® 2000 Reagent转染效果比较请参考图1-6。

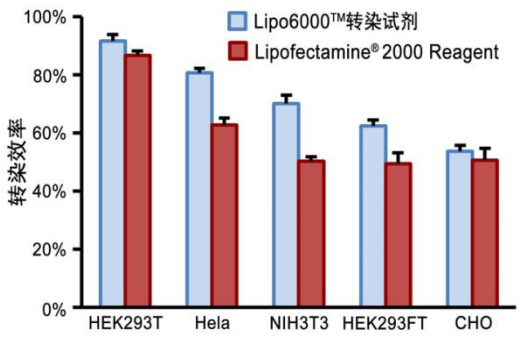


图1. Lipo6000™转染试剂与Lipofectamine® 2000 Reagent转染效率的比较。仅转染试剂不同，其余条件一致。

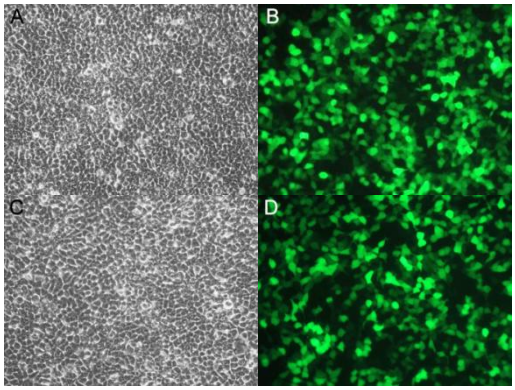
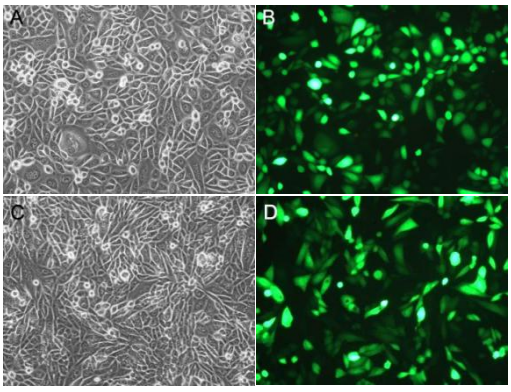


图 2. Lipo6000™转染试剂(A，B)与Lipofectamine® 2000 Reagent (C, D)用EGFP表达质粒转染HEK293T细胞后的实拍效果图。



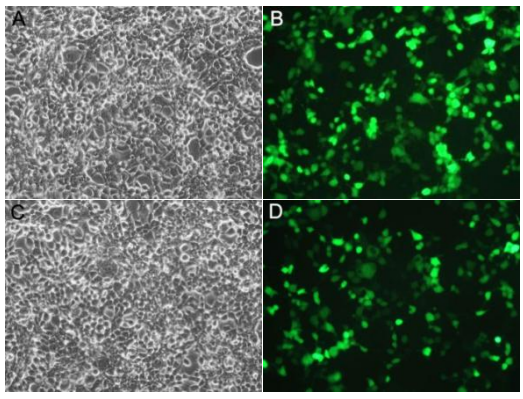


图3. Lipo6000™转染试剂(A，B)与Lipofectamine® 2000 Reagent (C，D)用EGFP表达质粒转染Hela细胞后的实拍效果图。

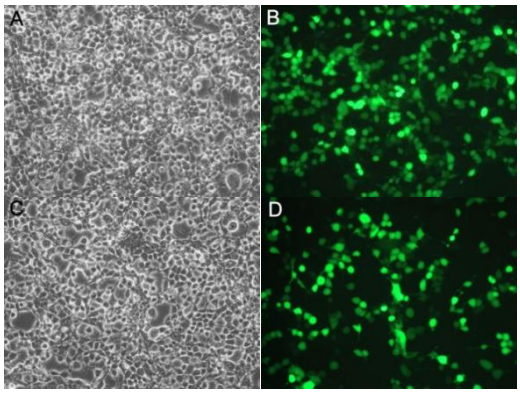


图4. Lipo6000™转染试剂(A，B)与Lipofectamine® 2000 Reagent (C，D)用EGFP表达质粒转染NIH3T3细胞后的实拍效果图。

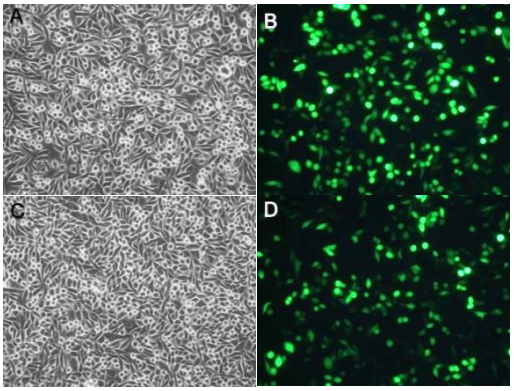


图5. Lipo6000™转染试剂(A, B)与Lipofectamine® 2000 Reagent (C, D)用EGFP表达质粒转染HEK293FT细胞后的实拍效果图。

图6. Lipo6000™转染试剂(A, B)与Lipofectamine® 2000 Reagent (C, D)用EGFP表达质粒转染CHO细胞后的实拍效果图。

- 对于六孔板，一个包装的C0526-0.5ml、C0526-1.5ml和C0526-7.5ml转染试剂大约可以分别转染100个、300个和1500个孔；对于24孔板，一个包装的C0526-0.5ml、C0526-1.5ml和C0526-7.5ml转染试剂大约可以分别转染500个、1500个和7500个孔。

包装清单：

产品编号	产品名称	包装
C0526-0.5ml	Lipo6000™转染试剂	0.5ml
C0526-1.5ml	Lipo6000™转染试剂	1.5ml
C0526-7.5ml	Lipo6000™转染试剂	5×1.5ml
—	说明书	1份

保存条件：

4°C保存。长期不使用可以-20°C保存。

注意事项：

- 使用高纯度的DNA或RNA有助于获得较高的转染效率。对于质粒，可以使用碧云天生产的质粒大量抽提试剂盒(D0026)进行抽提，以保证可以获得较高的转染效率。
- 转染前细胞必须处于良好的生长状态。
- 需自备不含抗生素的无血清培养液或Opti-MEM®培养液或普通的DMEM培养液。
- Lipo6000™转染试剂不能vortex或离心，宜缓慢晃动混匀。
- Lipo6000™转染试剂使用后请立即盖好盖子，避免长时间暴露在空气中，影响转染效率。
- 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. DNA转染：

a. 细胞培养(以六孔板为例，其它培养板或培养皿可参考六孔板)：在转染前一天(18-24小时)按照每孔约20-70万细胞(具体的细胞数量据细胞类型、大小和细胞生长速度等而定)接种到六孔板内进行培养，使第二天细胞密度能达到约70-90%。

b. 在进行下述转染步骤前，把培养有细胞的六孔板每孔换成2ml新鲜培养液(含有血清，不含抗生素)。可以使用含有血清并含有抗生素的新鲜培养液，但抗生素的存在对于有些细胞容易导致转染后出现一定的细胞毒性。

c. 参考下表，对于待转染的六孔板中每一个孔的细胞，取两个洁净无菌离心管，分别加入125μl不含抗生素和血清的DMEM培养液(高糖DMEM或低糖DMEM均可)或Opti-MEM® Medium，然后于其中一管加入2.5μg质粒DNA，并用枪轻轻吹打混匀；另一管加入5μl Lipo6000™转染试剂，用枪轻轻吹打混匀，请特别注意不可Vortex或离心。室温静置5分钟后(通常最长不宜超过25分钟)，将含有DNA的培养液用枪轻轻加入含Lipo6000™转染试剂的培养液中，轻轻颠倒离心管或者用枪轻轻吹打混匀，室温静置5分钟(室温存放6小时内稳定)。

	96-well	48-well	24-well	12-well	**6-well**	6cm dish	10cm dish
Lipo6000™转染试剂	0.2μl	0.5μl	1μl	2μl	**5μl**	10μl	30μl
无血清培养液或Opti-MEM® Medium	5μl	12.5μl	25μl	50μl	**125μl**	250μl	750μl

DNA	100ng	250ng	500ng	1μg	**2.5μg**	5μg	15μg
无血清培养液或Opti-MEM® Medium	5μl	12.5μl	25μl	50μl	**125μl**	250μl	750μl
稀释好的Lipo6000™转染试剂和DNA分别室温静止放置5分钟，随后两者混合并混匀再室温静止放置5分钟							
每孔加入的混合物的量	10μl	25μl	50μl	100μl	**250μl**	500μl	1500μl
按照上述用量每孔均匀滴加Lipo6000™转染试剂和DNA的混合物，4-6小时后更换培养液或直接继续培养							

注1：对于六孔板中一个孔的细胞，Lipo6000™转染试剂的用量可以在3-12.5μl范围内进行适当调节，DNA用量建议固定在2.5μg，但也可以在1-4μg的范围内进行适当调节。通常质粒用量(μg)和Lipo6000™(μl)的用量比例为1:2或1:3比较常用，如有必要可以在1:0.5-1:5的范围内优化转染效果，上表推荐的比例为1:2，此时Lipo6000™的用量相对较少，既经济又高效。最佳的转染条件，因不同的细胞类型和培养条件而有所不同，可以在上述推荐范围内自行优化转染条件。

注2：质粒的浓度宜控制在0.5-5μg/μl范围内。

注3：对于多个孔转染相同数量相同质粒的情况可以把每个孔所需的Lipo6000™转染试剂和DNA混合物分别配制，然后一起混合在同一个离心管内，后续混匀并孵育5分钟后，可以按照推荐用量滴加到细胞培养器皿内。

注4：对于其它培养板或培养器皿，各种试剂的用量可以按照细胞培养器皿的培养面积按比例进行换算。如果转染寡核苷酸或RNA等可以参考转染DNA的条件进行。

d. 无论是贴壁细胞还是悬浮细胞，按照六孔板每孔250μl Lipo6000™转染试剂-DNA混合物的用量，均匀滴加到整个孔内，随后轻轻混匀。

e. 为达到最高的转染效率，细胞在转染后培养4-6小时后宜更换为新鲜的完全培养液(对于Hela细胞，推荐在转染4小时后更换培养液，对于NIH3T3、CHO、HEK293T和HEK293FT细胞，推荐在转染6小时后更换培养液)。

f. 继续培养约24-48小时后，即可用适当方式检测转染效果，例如荧光检测、Western、ELISA、报告基因等，或加入适当的筛选药物如G418等进行稳定细胞株的筛选。

2. siRNA转染：

a. 细胞培养(以六孔板为例，其它培养板或培养皿可参考六孔板)：在转染前一天(18-24小时)按照每孔约20-70万细胞(具体的细胞数量据细胞类型、大小和细胞生长速度等而定)接种到六孔板内进行培养，使第二天细胞密度能达到约30-50%。

b. 在进行下述转染步骤前，把培养有细胞的六孔板每孔换成2ml新鲜培养液(含有血清，不含抗生素)。可以使用含有血清并含有抗生素的新鲜培养液，但抗生素的存在对于有些细胞容易导致转染后出现一定的细胞毒性。

c. 参考下表，对于待转染的六孔板中每一个孔的细胞，取两个洁净无菌离心管，分别加入125μl不含抗生素和血清的DMEM培养液(高糖DMEM或低糖DMEM均可)或Opti-MEM® Medium，然后于其中一管加入100pmol siRNA，并用枪轻轻吹打混匀；而另一管加入5μl Lipo6000™转染试剂，用枪轻轻吹打混匀，请特别注意不可Vortex或离心。室温静置5分钟后(通常最长不宜超过25分钟)，将含有siRNA的培养液用枪轻轻加入含Lipo6000™转染试剂的培养液中，轻轻颠倒离心管或者用枪轻轻吹打混匀，室温静置5分钟(室温存放6小时内稳定)。

	96-well	48-well	24-well	12-well	**6-well**	6cm dish	10cm dish
Lipo6000™转染试剂	0.2μl	0.5μl	1μl	2μl	**5μl**	10μl	30μl
无血清培养液或Opti-MEM® Medium	5μl	12.5μl	25μl	50μl	**125μl**	250μl	750μl
siRNA	4pmol	10pmol	20pmol	40pmol	**100pmol**	200pmol	600pmol
无血清培养液或Opti-MEM® Medium	5μl	12.5μl	25μl	50μl	**125μl**	250μl	750μl
稀释好的Lipo6000™转染试剂和siRNA分别室温静止放置5分钟，随后两者混合并混匀再室温静止放置5分钟							
每孔加入的混合物的量	10μl	25μl	50μl	100μl	**250μl**	500μl	1500μl
按照上述用量每孔均匀滴加Lipo6000™转染试剂和siRNA的混合物，4-6小时后更换培养液或直接继续培养							

注1：对于六孔板中一个孔的细胞，Lipo6000™转染试剂的用量可以在2.5-7.5μl范围内进行适当调节，siRNA用量可以在50-250pmol的范围内进行适当调节。通常siRNA用量(pmol)和Lipo6000™(μl)的用量比例为20:1，如有必要可以在10:1-40:1的范围内优化转染效果，上表推荐的比例为20:1，此时Lipo6000™的用量相对较少，既经济又高效。最佳的转染条件，因不同的细胞类型和培养条件而有所不同，可以在上述推荐范围内自行优化转染条件。

注2：siRNA的推荐浓度为20μM，常用的浓度范围为10-50μM。

注3：对于多个孔转染相同数量相同质粒的情况可以把每个孔所需的Lipo6000™转染试剂和siRNA混合物分别配制，然后一起混合在同一个离心管内，后续混匀并孵育5分钟后，可以按照推荐用量滴加到细胞培养器皿内。

注4：对于其它培养板或培养器皿，各种试剂的用量可以按照细胞培养器皿的培养面积按比例进行换算。如果转染寡核苷酸或RNA等可以参考转染DNA的条件进行。

d. 无论是贴壁细胞还是悬浮细胞，按照六孔板每孔250μl Lipo6000™转染试剂-siRNA混合物的用量，均匀滴加到整个孔内，随后轻轻混匀。

e. 为达到最高的转染效率，细胞在转染后培养4-6小时后宜更换为新鲜的完全培养液(对于Hela细胞，推荐在转染4小时后更换培养液，对于NIH3T3、CHO、HEK293T和HEK293FT细胞，推荐在转染6小时后更换培养液)。

f. 继续培养3-5天后，即可用适当方式检测siRNA对于靶基因的下调效果，例如qPCR、Western、ELISA、报告基因等。

常见问题：

1. 转染效率低：
   a. 优化质粒与Lipo6000™转染试剂比例，对于难转染的细胞，可适当加大质粒用量。
   b. 应用高纯度、无菌、无污染物的质粒进行转染，DNA纯度方面A_{260}/A_{280}比值要接近1.8，通常宜控制在1.8-1.9范围内，偏低则有可能有蛋白污染，偏高则有可能有RNA污染。可以使用碧云天生产的质粒大量抽提试剂盒(D0026)进行抽提，以保证可以获得较高的转染效率。
   c. 贴壁细胞转染时状态良好，细胞密度达30-50%时才可进行转染，过稀可能影响转染效率，细胞密度达到50-90%时通常不会影响转染效率。不同细胞的最佳转染密度需要自行摸索。悬浮细胞 宜在对数生长期进行转染。
   d. 需使用无抗生素和无血清培养液配制Lipo6000™转染试剂和质粒或siRNA等的混合物。
   e. 转染后培养时间不足，而被误以为转染效率偏低。不同细胞转染后至显著表达所需要培养的时间通常为24-48小时。
   f. 检查细胞是否有支原体感染，支原体感染会影响细胞增殖，并很可能影响转染效率。
   g. 如果没有检测到目的蛋白表达，应该仔细核对转染质粒的测序结果，确保测序结果和读码框完全正确。
   h. 如果靶基因的敲减(knockdown)效果欠佳，应该考虑尝试设计不同的siRNA。
2. 细胞毒性较大：
   a. 缩短转染时间，在转染后较短时间内更换新鲜的细胞培养液。
   b. 减少质粒用量，按照比例减少 Lipo6000™转染试剂。
   c. 检查是否转染时细胞密度太低。

附录：

常用多孔板和培养皿的尺寸、培养面积、细胞培养量和推荐的培养体积等相关数据表：

Multiple Well Plates or Dishes	Single Well Only for Plates					
	Diameter (Bottom, mm)*	Growth Area (cm^2)*	Average Cell Yield	Total Well Volume (ml)	Working Volume (ml)	Recommended Volume (ml)
6 well	34.8	9.5	9.5×10^5	16.8	1.9-2.9	2
12 well	22.1	3.8	3.8×10^5	6.9	0.76-1.14	1
24 well	15.6	1.9	1.9×10^5	3.4	0.38-0.57	0.5
48 well	11.0	0.95	9.5×10^4	1.6	0.19-0.285	0.25
96 well	6.4	0.32	3.2×10^4	0.36	0.10-0.20	0.1
384 well	2.7	0.056	5.6×10^3	0.112	0.025-0.050	0.030
1536 well	1.63 × 1.63**	0.025	2.5×10^3	0.0125	0.005-0.010	0.010
3.5 cm dish	34	9	9.0×10^5	NA	1.8-2.7	2
6 cm dish	52	21	2.1×10^6	NA	4.2-6.3	5
10 cm dish	8.4	55	5.5×10^6	NA	11-16.5	12
15cm dish	14	152	1.5×10^7	NA	30.4-45.6	35
24.5cm dish	22.4 × 22.4**	500	5.0×10^7	NA	100-150	120

*Diameter and growth area may vary depending on the manufacturer, and the listed sizes are from Corning.
**These wells or dishes are square.

相关产品：

产品编号	产品名称	包装
C0508	磷酸钙法细胞转染试剂盒	>200次
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C0518-1ml	Lipo293F™转染试剂	1ml
C0518-10ml	Lipo293F™转染试剂	10ml
C0518-100ml	Lipo293F™转染试剂	100ml
C0521-0.5ml	Lipo293™转染试剂	0.5ml
C0521-1.5ml	Lipo293™转染试剂	1.5ml
C0521-7.5ml	Lipo293™转染试剂	5×1.5ml
C0526-0.5ml	Lipo6000™转染试剂	0.5ml
C0526-1.5ml	Lipo6000™转染试剂	1.5ml
C0526-7.5ml	Lipo6000™转染试剂	5×1.5ml
C0533-0.5ml	Lipo8000™转染试剂	0.5ml

C0533-1.5ml	Lipo8000™转染试剂	1.5ml
C0533-7.5ml	Lipo8000™转染试剂	5×1.5ml
C0551-0.5ml	LipoInsect™转染试剂	0.5ml
C0551-1.5ml	LipoInsect™转染试剂	1.5ml
C0551-7.5ml	LipoInsect™转染试剂	5×1.5ml

使用本产品的文献：

1. Cai T, Liu Y, Xiao J. Long noncoding RNA MALAT1 knockdown reverses chemoresistance to temozolomide via promoting microRNA-101 in glioblastoma. CANCER MED-US. 2018 Apr;7(4):1404-1415.
2. Gao X, Zhao H, Diao C, Wang X, Xie Y, Liu Y, Han J, Zhang M. miR-455-3p serves as prognostic factor and regulates the proliferation and migration of non-small cell lung cancer through targeting HOXB5. BIOCHEM BIOPH RES CO. 2017 Nov 21. pii: S0006-291X(17)32302-1.
3. Xu S, Zhang L, Cheng X, Yu H, Bao J, Lu R. Capsaicin inhibits the metastasis of human papillary thyroid carcinoma BCPAP cells through the modulation of the TRPV1 channel. Food Funct. 2017 Nov 29.
4. Yang F, Xiao Z, Zhang S. Knockdown of miR-194-5p inhibits cell proliferation, migration and invasion in breast cancer by regulating the Wnt/β-catenin signaling pathway. Int J Mol Med. 2018 Dec;42(6):3355-3363.
5. Sun J, Huang P, Liang J, Li J, Shen M, She X, Feng Y, Luo X, Liu T, Sun X. Cooperation of Rel family members in regulating A β 1-40-mediated pro-inflammatory cytokinesecretion by retinal pigment epithelial cells. Cell Death Dis. 2017 Oct 12;8(10):e3115.
6. Zhang CX, Chen J, Cai L, Wu J, Wang JY, Cao LF, Zhou W, Chen TX. DNA induction of MDM2 promotes proliferation of human renal mesangial cells and alters peripheral B cells subsets in pediatric systemic lupus erythematosus. Mol Immunol. 2018 Feb;94:166-175.
7. Zhao G, Han C, Zhang Z, Wang L, Xu J. Increased expression of microRNA-31-5p inhibits cell proliferation, migration,and invasion viaregulating Sp1 transcription factor in HepG2 hepatocellular carcinoma cell line. BIOCHEM BIOPH RES CO. 2017 Aug 19;490(2):371-377.
8. Zhang Y, Tang L. Inhibition of breast cancer cell proliferation and tumorigenesis by long non-coding RNA RPPH1down-regulation of miR-122 expression. Cancer Cell Int. 2017 Nov 21;17:109.
9. Zhang W, Zhang X, Qu S. Cysteine Scanning Mutagenesis of TM4b-4c Loop of Glutamate Transporter EAAT1 Reveals Three Conformationally Sensitive Residues. Mol Pharmacol. 2018 Jul;94(1):713-721.
10. Wei X, Zhao T, Ai K, Li H, Jiang X, Li C, Wang Q, Yang J, Zhang R, Yang J. Role of scavenger receptor from Octopus ocellatus as a co-receptor of Toll-like receptor in initiation of TLR-NF-κB signaling during anti-bacterial response. Dev Comp Immunol. 2018 Jul;84:14-27.
11. Wang Z, Lv Z, Li C, Shao Y, Zhang W, Zhao X. An invertebrate β-integrin mediates coelomocyte phagocytosis via activation of septin2 and 7 but not septin10. Int J Biol Macromol. 2018 Jul 1;113:1167-1181.
12. Wang Y, Zhao Z, Wei F, Luo Z, Duan Y. Combining autophagy-inducing peptides and brefeldin A delivered by perinuclear-localized mesoporous silica nanoparticles: a manipulation strategy for ER-phagy. Nanoscale. 2018 May 10;10(18):8796-8805.
13. Zhan XY, Zhang Y, Zhai E, Zhu QY, He Y. Sorting nexin-1 is a candidate tumor suppressor and potential prognostic marker in gastric cancer. PeerJ. 2018 May 29;6:e4829.
14. He J, Zhang B, Gan H. CIDEC Is Involved in LPS-Induced Inflammation and Apoptosis in Renal Tubular Epithelial Cells. Inflammation. 2018 Oct;41(5):1912-1921.
15. Zhou X, Yan T, Huang C, Xu Z, Wang L, Jiang E, Wang H, Chen Y, Liu K, Shao Z, Shang Z. Melanoma cell-secreted exosomal miR-155-5p induce proangiogenic switch of cancer-associated fibroblasts via SOCS1/JAK2/STAT3 signaling pathway. J EXP CLIN CANC RES. 2018 Oct 3;37(1):242.
16. Zhang L, Feng M, Li Z, Zhu M, Fan Y, Chu B, Yuan C, Chen L, Lv H, Hong Z, Hong D. Bulleyaconitine A prevents Ti particle-induced osteolysis via suppressing NF-κB signal pathway during osteoclastogenesis and osteoblastogenesis. J Cell Physiol. 2018 Sep;233(9):7067-7079.
17. Wei X, Mo X, An F, Ji X, Lu Y. 2',4'-Dihydroxy-6'-methoxy-3',5'-dimethylchalcone, a potent Nrf2/ARE pathway inhibitor, reverses drug resistance by decreasing glutathione synthesis and drug efflux in BEL-7402/5-FU cells. Food Chem Toxicol. 2018 Sep;119:252-259.
18. Chou X, Ding F, Zhang X, Ding X, Gao H, Wu Q. Sirtuin-1 ameliorates cadmium-induced endoplasmic reticulum stress and pyroptosis through XBP-1s deacetylation in human renal tubular epithelial cells. Arch Toxicol. 93(4):965-986.
19. Li L, Li L, Zhou X, Yu Y, Li Z, Zuo D, Wu Y. Silver nanoparticles induce protective autophagy via Ca2+/CaMKKβ/AMPK/mTOR pathway in SH-SY5Y cells and rat brains. Nanotoxicology. 13(3):369-391.
20. Zhu D, Huang R, Fu P, Chen L, Luo L, Chu P, He L, Li Y, Liao L, Zhu Z, Wang Y. Investigating the Role of BATF3 in Grass Carp (Ctenopharyngodon idella) Immune Modulation: A Fundamental Functional Analysis. Int J Mol Sci. 20(7). pii: E1687.
21. Luo S, Li Z, Mao L, Chen S, Sun S. Sodium butyrate induces autophagy in colorectal cancer cells through LKB1/AMPK signaling. J Physiol Biochem. 75(1):53-63.
22. Zhang W, Zhang X, Qu S. Substrate-Induced Motion between TM4 and TM7 of the Glutamate Transporter EAAT1 Revealed by Paired Cysteine Mutagenesis. Mol Pharmacol. 95(1):33-42.
23. Wang S, Liu S, Xu L, Zhu X, Liu W, Tian L, Chen Y, Wang Y, Nagendra BVP, Jia S, Liang L, Huo FQ. The upregulation of EGFR in the dorsal root ganglion contributes to chronic compression of dorsal root ganglions-induced neuropathic pain in rats. Mol Pain. 15:1744806919857297.
24. Zhu D, Li Y, Huang R, Luo L, Chen L, Fu P, He L, Li Y, Liao L, Zhu Z, Wang Y. Molecular characterization and functional activity of Prx1 in grass carp (Ctenopharyngodon idella). FISH SHELLFISH IMMUN. 90:395-403.
25. Yu Y, Li Z, Guo R, Qian J, Zhang H, Zhang J, Zhao X, Wang S, Wang Y. Ononin, sec-O- β -d-glucosylhamaudol and astragaloside I: antiviral lead compounds identified via high throughput screening and biological validation from traditional Chinese medicine Zhongjing formular. Pharmacol Res. 145:104248.
26. Han L, Ding J, Wang H, Zuo R, Quan Z, Fan Z, Liu Q, Chang Y. Molecular characterization and expression of SiFad1 in the sea urchin (Strongylocentrotus intermedius). Gene. 705:133-141.
27. Hou Y, Li X, Peng S, Yao J, Bai F, Fang J. Lipoamide Ameliorates Oxidative Stress via Induction of Nrf2/ARE Signaling Pathway in PC12 Cells. J AGR FOOD CHEM. 67(29):8227-8234.
28. Tan Y, Ma Z, Jin Y, Zong R, Wu J, Ren Z. MicroRNA 4651 regulates nonsense-mediated mRNA decay by targeting SMG9 mRNA. Gene. 701:65-71.
29. Shen X, Zhang J, Zhang X, Wang Y, Hu Y, Guo J. Retinoic Acid-Induced Protein 14 (RAI14) Promotes mTOR-Mediated Inflammation Under Inflammatory Stress and Chemical Hypoxia in a U87 Glioblastoma Cell Line. Cell Mol Neurobiol. 39(2):241-254.
30. Wei YL, Yang WX. Kinesin-14 motor protein KIFC1 participates in DNA synthesis and chromatin maintenance. Cell Death Dis. 10(6):402.
31. Zhu D, Fu P, Huang R, Xiong L, Wang Y, He L, Liao L, Li Y, Zhu Z, Wang Y. Molecular characterization, tissue distribution and functional analysis of galectin 1-like 2 in grass carp (Ctenopharyngodon idella). FISH SHELLFISH IMMUN. 94:455-463.

32. Xu N, Bo Q, Shao R, Liang J, Zhai Y, Yang S, Wang F, Sun X. Chitinase-3-Like-1 Promotes M2 Macrophage Differentiation and Induces Choroidal Neovascularization in Neovascular Age-Related Macular Degeneration. INVEST OPHTH VIS SCI. 60(14):4596-4605.
33. Shen J, Wang J, Du J, Wang L, Zhou X, Chang X, Li Z, Zhai X, Zuo D, Wu Y. A novel ALK inhibitor ZYY inhibits Karpas299 cell growth in vitro and in a mouse xenograft model and induces protective autophagy. TOXICOL APPL PHARM. 383:114781.
34. Wei YL, Yang T, Kovacs T, Yang WX. C-terminal kinesin motor es-KIFC1 regulates nuclear formation during spermiogenesis in Chinese mitten crab Eriocheir sinensis. Gene. 719:144074.
35. Yang Y, Zhang M, Jin C, Ding Y, Yang M, Wang R, Zhou Y, Zhou Y, Li T, Wang K, Hu R. Absent in melanoma 2 suppresses epithelial-mesenchymal transition via Akt and inflammasome pathways in human colorectal cancer cells. J Cell Biochem. 120(10):17744-17756.
36. Gong HL, Tao Y, Mao XZ, Song DY, You D, Ni JD. MicroRNA-29a suppresses the invasion and migration of osteosarcoma cells by regulating the SOCS1/NF-κB signalling pathway through negatively targeting DNMT3B. Int J Mol Med. 44(4):1219-1232.
37. Lou K, Huang P, Ma H, Wang X, Xu H, Wang W. Orlistat increases arsenite tolerance in THP-1 derived macrophages through the up-regulation of ABCA1. Drug Chem Toxicol.
38. Yang Y, Li N, Qiu J, Ge H, Qin X. Identification of the Repressive Domain of the Negative Circadian Clock Component CHRONO. Int J Mol Sci. 21(7). pii: E2469.
39. Liang L, Zhang J, Tian L, Wang S, Xu L, Wang Y, Guo-Shuai Q, Dong Y, Chen Y, Jia H, Yang X, Yuan C. AXL signaling in primary sensory neurons contributes to chronic compression of dorsal root ganglion-induced neuropathic pain in rats. Mol Pain. 16:1744806919900814.
40. Gao X, Zhao H, Diao C, Wang X, Xie Y, Liu Y, Han J, Zhang M. miR-455-3p serves as prognostic factor and regulates the proliferation and migration of non-small cell lung cancer through targeting HOXB5. BIOCHEM BIOPH RES CO. 2017 Nov 21. pii: S0006-291X(17)32302-1.
41. Gao X, Zhao H, Diao C, Wang X, Xie Y, Liu Y, Han J, Zhang M. miR-455-3p serves as prognostic factor and regulates the proliferation and migration of non-small cell lung cancer through targeting HOXB5. BIOCHEM BIOPH RES CO. 2017 Nov 21. pii: S0006-291X(17)32302-1.
42. Gao X, Zhao H, Diao C, Wang X, Xie Y, Liu Y, Han J, Zhang M. miR-455-3p serves as prognostic factor and regulates the proliferation and migration of non-small cell lung cancer through targeting HOXB5. BIOCHEM BIOPH RES CO. 2017 Nov 21. pii: S0006-291X(17)32302-1.
43. Xu S, Zhang L, Cheng X, Yu H, Bao J, Lu R. Capsaicin inhibits the metastasis of human papillary thyroid carcinoma BCPAP cells through the modulation of the TRPV1 channel. Food Funct. 2017 Nov 29.
44. Xu S, Zhang L, Cheng X, Yu H, Bao J, Lu R. Capsaicin inhibits the metastasis of human papillary thyroid carcinoma BCPAP cells through the modulation of the TRPV1 channel. Food Funct. 2017 Nov 29.
45. Xu S, Zhang L, Cheng X, Yu H, Bao J, Lu R. Capsaicin inhibits the metastasis of human papillary thyroid carcinoma BCPAP cells through the modulation of the TRPV1 channel. Food Funct. 2017 Nov 29.
46. Sun J, Huang P, Liang J, Li J, Shen M, She X, Feng Y, Luo X, Liu T, Sun X. Cooperation of Rel family members in regulating A β 1-40-mediated pro-inflammatory cytokinesecretion by retinal pigment epithelial cells. Cell Death Dis. 2017 Oct 12;8(10):e3115.
47. Sun J, Huang P, Liang J, Li J, Shen M, She X, Feng Y, Luo X, Liu T, Sun X. Cooperation of Rel family members in regulating A β 1-40-mediated pro-inflammatory cytokinesecretion by retinal pigment epithelial cells. Cell Death Dis. 2017 Oct 12;8(10):e3115.
48. Sun J, Huang P, Liang J, Li J, Shen M, She X, Feng Y, Luo X, Liu T, Sun X. Cooperation of Rel family members in regulating A β 1-40-mediated pro-inflammatory cytokinesecretion by retinal pigment epithelial cells. Cell Death Dis. 2017 Oct 12;8(10):e3115.
49. Zhao G, Han C, Zhang Z, Wang L, Xu J. Increased expression of microRNA-31-5p inhibits cell proliferation, migration,and invasion viaregulating Sp1 transcription factor in HepG2 hepatocellular carcinoma cell line. BIOCHEM BIOPH RES CO. 2017 Aug 19;490(2):371-377.
50. Zhao G, Han C, Zhang Z, Wang L, Xu J. Increased expression of microRNA-31-5p inhibits cell proliferation, migration,and invasion viaregulating Sp1 transcription factor in HepG2 hepatocellular carcinoma cell line. BIOCHEM BIOPH RES CO. 2017 Aug 19;490(2):371-377.
51. Zhao G, Han C, Zhang Z, Wang L, Xu J. Increased expression of microRNA-31-5p inhibits cell proliferation, migration,and invasion viaregulating Sp1 transcription factor in HepG2 hepatocellular carcinoma cell line. BIOCHEM BIOPH RES CO. 2017 Aug 19;490(2):371-377.
52. Gao X, Zhao H, Diao C, Wang X, Xie Y, Liu Y, Han J, Zhang M. miR-455-3p serves as prognostic factor and regulates the proliferation and migration of non-small cell lung cancer through targeting HOXB5. BIOCHEM BIOPH RES CO. 2018 Jan 1;495(1):1074-1080.
53. Zhang Y, Tang L. Inhibition of breast cancer cell proliferation and tumorigenesis by long non-coding RNA RPPH1down-regulation of miR-122 expression. Cancer Cell Int. 2017 Nov 21;17:109.
54. Zhang Y, Tang L. Inhibition of breast cancer cell proliferation and tumorigenesis by long non-coding RNA RPPH1down-regulation of miR-122 expression. Cancer Cell Int. 2017 Nov 21;17:109.
55. Zhang Y, Tang L. Inhibition of breast cancer cell proliferation and tumorigenesis by long non-coding RNA RPPH1down-regulation of miR-122 expression. Cancer Cell Int. 2017 Nov 21;17:109.
56. Xu S, Zhang L, Cheng X, Yu H, Bao J, Lu R. Capsaicin inhibits the metastasis of human papillary thyroid carcinoma BCPAP cells through the modulation of the TRPV1 channel. Food Funct. 2018 Jan 24;9(1):344-354.
57. Haiqin Huang, Kang Sha, Hanitrarimalala Veroniaina, Ziheng Wu, Zhenghong Wu, Xiaole Qi. Ca 2+ participating self-assembly of an apoferritin nanostructure for nucleic acid drug delivery. Nanoscale. doi: 10.1039/d0nr00547a.
58. Xiang Ren, Ying-Xia Jing, Zhi-Wen Zhou, Qi-Ming Yang. MiR-17-5p inhibits cerebral hypoxia/reoxygenationinjury by targeting PTEN through regulation of PI3K/AKT/mTOR signaling pathway. Int J Neurosci. doi: 10.1080/00207454.2020.1806836.
59. Lu Yang, Yukai Jing, Wenjie Wang, Wenjing Ying, Li Lin, Jiang Chang, Li Luo, Danqing Kang, Panpan Jiang, Ju Liu, Qiuyue Chen, Heather Miller, Andrés A Herrada, Masato Kubo, Jinqiao Sun, Chaohong Liu. DOCK2 couples with LEF-1 to regulate B cell metabolism and memory response. BIOCHEM BIOPH RES CO. doi: 10.1016/j.bbrc.2020.05.152.
60. Xiang-Kun Wang, Xi-Wen Liao, Xin Zhou, Chuang-Ye Han, Zi-Jun Chen, Cheng-Kun Yang, Jian-Lu Huang, Jian-Yao Wang, Jun-Qi Liu, Hua-Sheng Huang, Shu-Tian Mo, Xin-Ping Ye, Guang-Zhi Zhu, Tao Peng. Oncogene UBE2I enhances cellular invasion, migration and proliferation abilities via autophagy-related pathway resulting in poor prognosis in hepatocellular carcinoma. Am J Cancer Res.
61. Yu Wang, Peihong Zhou, Ping Li, Fengxia Yang, Xue-Qiang Gao. Long non-coding RNA H19 regulates proliferation and doxorubicin resistance in MCF-7 cells by targeting PARP1. Bioengineered. doi: 10.1080/21655979.2020.1761512.
62. Weili Wang, Zhaoyuan Zhang, Xingyi Kuang, Dan Ma, Jie Xiong, Tingting Lu, Yaming Zhang, Kunling Yu, Siyu Zhang, Jishi Wang, Qin Fang. 4SC-202 induces apoptosis in myelodysplastic syndromes and the underlying mechanism. Am J Transl Res.
63. Zhengjun Wang, Jie Yan, Fan Yang, Dengyun Wang, Yuan Lu, Li Liu. MicroRNA-326 prevents sepsis-induced acute lung injury via targeting TLR4. FREE RADICAL RES. doi: 10.1080/10715762.2020.1781847.
64. Yanting You, Qiuxing He, Hanqi Lu, Xinghong Zhou, Liqian Chen, Huaxi Liu, Zibin Lu, Dongyi Liu, Yanyan Liu, Daming Zuo, Xiuqiong Fu, Hiuyee Kwan, Xiaoshan Zhao. Silibinin Induces G2/M Cell Cycle Arrest by Activating

Drp1-Dependent Mitochondrial Fission in Cervical Cancer. Front Pharmacol. doi: 10.3389/fphar.2020.00271.

65. Zhenfei Ding, Wei Lu, Ce Dai, Wei Huang, Fuen Liu, Wenshan Shan, Chao Cheng, Jiegou Xu, Zongsheng Yin, Wei He. The CRD of Frizzled 7 exhibits chondroprotective effects in osteoarthritis via inhibition of the canonical Wnt3a/β-catenin signaling pathway. Int Immunopharmacol. doi: 10.1016/j.intimp.2020.106367.
66. Denghui Zhu, Rong Huang, Pengfei Chu, Liangming Chen, Yangyu Li, Libo He, Yongming Li, Lanjie Liao, Zuoyan Zhu, Yaping Wang. Characterization and expression of galectin-3 in grass carp (Ctenopharyngodon idella). Dev Comp Immunol. doi: 10.1016/j.dci.2019.103567.
67. Cong Han, Qian Du, Lei Zhu, Nannan Chen, Le Luo, Qiao Chen, Jiatong Yin, Xingchen Wu, Dewen Tong, Yong Huang. Porcine DNAJB6 promotes PCV2 replication via enhancing the formation of autophagy in host cells. Vet Res. doi: 10.1186/s13567-020-00783-z.
68. Jingyi Tan, Wenfeng Xu, Lei Lei, Hui Liu, Hong Wang, Xian Cao, Man Xu. Inhibition of Aurora Kinase A by Alisertib Reduces Cell Proliferation and Induces Apoptosis and Autophagy in HuH-6 Human Hepatoblastoma Cells. ONCOTARGETS THER. doi: 10.2147/OTT.S228656.
69. Zhao-Peng Wang, Yan Che, Heng Zhou, Yan-Yan Meng, Hai-Ming Wu, Ya-Ge Jin, Qing-Qing Wu, Sha-Sha Wang, Yuan Yuan. Corosolic acid attenuates cardiac fibrosis following myocardial infarction in mice. Int J Mol Med. doi: 10.3892/ijmm.2020.4531.
70. Chengsheng Li, Xiaoyi Zhong, Wenyu Xia, Jin He, Hua Gan, HongFei Zhao, Yunfeng Xia. The CX3CL1/CX3CR1 axis is upregulated in chronic kidney disease and contributes to angiotensin II-induced migration of vascular smooth muscle cells. Microvasc Res. doi: 10.1016/j.mvr.2020.104037.
71. Xu Fan, Min Zhu, Fen Qiu, Wenbo Li, Minghua Wang, Yang Guo, Xueyan Xi, Boyu Du. Curcumin may be a potential adjuvant treatment drug for colon cancer by targeting CD44. Int Immunopharmacol. doi: 10.1016/j.intimp.2020.106991.
72. Xiang-Kun Wang, Xi-Wen Liao, Cheng-Kun Yang, Zheng-Qian Liu, Quan-Fa Han, Xin Zhou, Lin-Bo Zhang, Teng Deng, Yi-Zhen Gong, Jian-Lu Huang, Rui Huang, Chuang-Ye Han, Ting-Dong Yu, Hao Su, Xin-Ping Ye, Tao Peng, Guang-Zhi Zhu. Oncogene PLCE1 may be a diagnostic biomarker and prognostic biomarker by influencing cell cycle, proliferation, migration, and invasion ability in hepatocellular carcinoma cell lines. J Cell Physiol. doi: 10.1002/jcp.29596.
73. Chengjie Xia, Wenyi Tang, Ping Geng, Haiyan Zhu, Wei Zhou, Hai Huang, Pei Zhou, Xunlong Shi. Baicalin down-regulating hepatitis B virus transcription depends on the liver-specific HNF4α-HNF1α axis. TOXICOL APPL PHARM. doi: 10.1016/j.taap.2020.115131.
74. Wei Zhang, Weiduo Hou, Mo Chen, Erman Chen, Deting Xue, Chenyi Ye, Weixu Li, Zhijun Pan. Upregulation of Parkin Accelerates Osteoblastic Differentiation of Bone Marrow-Derived Mesenchymal Stem Cells and Bone Regeneration by Enhancing Autophagy and β-Catenin Signaling. Front Cell Dev Biol. doi: 10.3389/fcell.2020.576104.
75. Qin Jiang, Dong-Yuan Su, Zhen-Zhen Wang, Chang Liu, Ya-Nan Sun, Hong Cheng, Xiu-Miao Li, Biao Yan. Retina as a window to cerebral dysfunction following studies with circRNA signature during neurodegeneration. Theranostics. doi: 10.7150/thno.51550.
76. Meng Zhao, Yizhuo Wang, Ling Li, Shuyun Liu, Chengshi Wang, Yujia Yuan, Guang Yang, Younan Chen, Jingqiu Cheng, Yanrong Lu, Jingping Liu. Mitochondrial ROS promote mitochondrial dysfunction and inflammation in ischemic acute kidney injury by disrupting TFAM-mediated mtDNA maintenance. Theranostics. doi: 10.7150/thno.50905.
77. Xingyi Kuang, Jie Xiong, Tingting Lu, Weili Wang, Zhaoyuan Zhang, Jishi Wang. Inhibition of USP1 induces apoptosis via ID1/AKT pathway in B-cell acute lymphoblastic leukemia cells. Int J Med Sci. doi: 10.7150/ijms.47597.
78. Ya-Nan Sun, Ban Liu, Jia-Jian Wang, Xiu-Miao Li, Jun-Ya Zhu, Chang Liu, Jin Yao, Yu-Ling Zhong, Qin Jiang, Biao Yan. Identification of aberrantly expressed circular RNAs in hyperlipidemia-induced retinal vascular dysfunction in mice. Genomics. doi: 10.1016/j.ygeno.2020.09.055.
79. Dongmei Mai, Rongqing Chen, Ji Wang, Jiawei Zheng, Xiuping Zhang, Shaogang Qu. Critical amino acids in the TM2 of EAAT2 are essential for membrane-bound localization, substrate binding, transporter function and anion currents. J Cell Mol Med. doi: 10.1111/jcmm.16212.
80. Ze-Hui Shi, Xiao-Yan Han, Mu-Di Yao, Chang Liu, Qin Jiang, Biao Yan. Differential MicroRNA Expression Pattern in Endothelial Progenitor Cells During Diabetic Retinopathy. Front Cell Dev Biol. doi: 10.3389/fcell.2021.773050.
81. Xin Zhang, Can Hu, Yu-Pei Yuan, Peng Song, Chun-Yan Kong, Hai-Ming Wu, Si-Chi Xu, Zhen-Guo Ma, Qi-Zhu Tang. Endothelial ERG alleviates cardiac fibrosis via blocking endothelin-1-dependent paracrine mechanism. Cell Biol Toxicol. doi: 10.1007/s10565-021-09581-5.
82. Wenxi Zhou, Yu Zhou, Xinli Chen, Tingting Ning, Hongyi Chen, Qin Guo, Yiwen Zhang, Peixin Liu, Yujie Zhang, Chao Li, Yongchao Chu, Tao Sun, Chen Jiang. Pancreatic cancer-targeting exosomes for enhancing immunotherapy and reprogramming tumor microenvironment. Biomaterials. doi: 10.1016/j.biomaterials.2020.120546.
83. Kandi Xu, Huize Han, Yexin Luo, Hong Ye, Hongxia Lin, Lei Ni. The Angiotensin-Converting Enzyme Inhibitory State Promotes the Transformation of Non-Small Cell Lung Cancer Blood Supply Pattern Toward Vasculogenic Mimicry Formation. Front Oncol. doi: 10.3389/fonc.2021.663671.
84. Bin Han, Qiaohong Wei, Fan Wu, Han Hu, Chuan Ma, Lifeng Meng, Xufeng Zhang, Mao Feng, Yu Fang, Olav Rueppell, Jianke Li. Tachykinin signaling inhibits task-specific behavioral responsiveness in honeybee workers. Elife. doi: 10.7554/eLife.64830.
85. Lan Jin, Yunhe Chen, Dan Cheng, Zhikai He, Xinyi Shi, Boyu Du, Xueyan Xi, Yujing Gao, Yang Guo. YAP inhibits autophagy and promotes progression of colorectal cancer via upregulating Bcl-2 expression. Cell Death Dis. doi: 10.1038/s41419-021-03722-8.
86. Jia-Bao Hou, Qian-Ni Shen, Xing Wan, Xu-Ke Liu, Yuan Yu, Mei Li, Wen-Wei Gao, Bo Zhao. Ubiquitin-Specific Protease 29 Exacerbates Cerebral Ischemia-Reperfusion Injury in Mice. Oxid Med Cell Longev. doi: 10.1155/2021/6955628.
87. Yangyu Li, Rong Huang, Liangming Chen, Yangyang Li, Yongming Li, Lanjie Liao, Libo He, Zuoyan Zhu, Yaping Wang. Characterization of SR-B2a and SR-B2b genes and their ability to promote GCRV infection in grass carp (Ctenopharyngodon idellus). Dev Comp Immunol. doi: 10.1016/j.dci.2021.104202.
88. Kai Hang, Li Ying, Jinwu Bai, Yibo Wang, Zhihui Kuang, Deting Xue, Zhijun Pan. Knockdown of SERPINB2 enhances the osteogenic differentiation of human bone marrow mesenchymal stem cells via activation of the Wnt/β-catenin signalling pathway. Stem Cell Res Ther. doi: 10.1186/s13287-021-02581-6.
89. Ling Li, Shuyun Liu, Yijie Zhou, Meng Zhao, Yizhuo Wang, Chengshi Wang, Peng Lou, Rongshuang Huang, Liang Ma, Yanrong Lu, Ping Fu, Jingping Liu. Indispensable role of mitochondria in maintaining the therapeutic potential of curcumin in acute kidney injury. J Cell Mol Med. doi: 10.1111/jcmm.16934.
90. Jing Guo, Shuai He, Yongjie Zhu, Wei Yu, Dong Yang, Xudong Zhao. Humanized CD30-Targeted Chimeric Antigen Receptor T Cells Exhibit Potent Preclinical Activity Against Hodgkin's Lymphoma Cells. Front Cell Dev Biol. doi: 10.3389/fcell.2021.775599.
91. Rongzhe Zhu, Xiaochen Liu, Qiupeng Xue, Xiaoru Dong, Tianyi Zhang, Yan Jiang. Ethanol potentiates mirtazapine-induced cardiotoxicity by inducing dysfunctional autophagy via HMGB1-dependent Akt/mTOR signaling pathway. Toxicol Lett. doi: 10.1016/j.toxlet.2022.01.008.
92. Jiahui Zou, Luyao Yu, Yinxing Zhu, Shuaike Yang, Jiachang Zhao, Yaxin Zhao, Meijun Jiang, Shengsong Xie, Hailong Liu, Changzhi Zhao, Hongbo Zhou. Transportin-3 Facilitates Uncoating of Influenza A Virus. Int J Mol Sci. doi: 10.3390/ijms23084128.
93. Jiwei Shen, Yuting Meng, Kunlun Wang, Minghuan Gao, Jianan Du, Junfang Wang, Zengqiang Li, Daiying Zuo, Yingliang Wu. EML4-ALK G1202R mutation induces EMT and confers resistance to ceritinib in NSCLC cells via activation of

STAT3/Slug signaling. Cell Signal. doi: 10.1016/j.cellsig.2022.110264.

94. Youran Li, Minna Wu, Shanshan Xu, Hua Huang, Lei Yan, Yunfei Gu. Colorectal cancer stem cell-derived exosomal long intergenic noncoding RNA 01315 (LINC01315) promotes proliferation, migration, and stemness of colorectal cancer cells. Bioengineered. doi: 10.1080/21655979.2022.2065800.
95. Faying Fang, Weizhi Xu, Jian Zhang, Jin Gu, Gaoyi Yang. Ultrasound microbubble-mediated RNA interference targeting WNT1 inducible signaling pathway protein 1(WISP1) suppresses the proliferation and metastasis of breast cancer cells. Bioengineered. doi: 10.1080/21655979.2022.2068738.
96. Jiong Jiang, Yan Cheng, Shejiao Dai, Baicang Zou, Xiaoyan Guo. Suppression of rhomboid domain-containing 1 produces anticancer effects in pancreatic adenocarcinoma through affection of the AKT/GSK-3β/β-catenin pathway. Environ Toxicol. doi: 10.1002/tox.23541.
97. Yi Dai, Lan Hu. HSPB1 overexpression improves hypoxic-ischemic brain damage by attenuating ferroptosis in rats through promoting G6PD expression. J Neurophysiol. doi: 10.1152/jn.00306.2022.
98. Kaiyan Lou, Ping Huang, Huijuan Ma, Xiaolei Wang, Huan Xu, Wei Wang. Orlistat increases arsenite tolerance in THP-1 derived macrophages through the up-regulation of ABCA1. Drug Chem Toxicol. doi: 10.1080/01480545.2019.1683571.
99. Xiaoli Yin, Yinghao Ren, Weitao Luo, Meiqiu Liao, Lin Huang, Xueqi Zhuang, Yuan Liu, Weina Wang. Nemo-like kinase (NLK) gene regulates apoptosis via the p53 signaling pathway in Litopenaeus vannamei under low-temperature stress. Dev Comp Immunol. doi: 10.1016/j.dci.2022.104378.
100. Biao Wang, Xueyi Li, Ming Li, Yan Geng, Na Wang, Yaofeng Jin, Wen Zhang, Ke Xu, Jing Wang, Li Tao, Simin Lai, Kunyi Wu, Jing Lei, Jing Wang, Ting Zhou, Ke Li, Yanjiong Chen, Li Xue. Dopamine D3 receptor signaling alleviates mouse rheumatoid arthritis by promoting Toll-like receptor 4 degradation in mast cells. Cell Death Dis. doi: 10.1038/s41419-022-04695-y.
101. Fan Wu, Xiaoling Yuan, Weili Liu, Lijun Meng, Xiuru Li, Xiang Gao, Shuting Zhou, Lei Fang, Duonan Yu. Deletion of the miR-144/451 cluster aggravates lethal sepsis-induced lung epithelial oxidative stress and apoptosis. Ann Transl Med. doi: 10.21037/atm-22-1024.
102. Xinyue Zhao, Jiaxi Liu, Dongdong Jin, Chenchen Ren, Li Yang, Yuanhang Zhu, Changhao Huang, Leilei Ding, Zimeng Wu, Ke Shen, Zhen'an Zhang, Huanhuan Chen, Nannan Wang. EphA2 Promotes the Development of Cervical Cancer through the CXCL11/PD-L1 Pathway. J Oncol. doi: 10.1155/2022/4886907.
103. Qianying Tao, Yuxin Lu, Yingxue Qi, Die Yu, Jiayi Gu, Yifei Zhu, Chencheng Shi, Xin Liang. Hypoxia promotes the expression of Von Willebrand factor in breast cancer cells by up-regulating the transcription factor YY1 and down-regulating the hsa-miR-424. Eur J Pharmacol. doi: 10.1016/j.ejphar.2022.175308.
104. Tian-Yuan Zhai, Meng Dou, Yu-Bo Ma, Hong Wang, Fang Liu, Lian-Dong Zhang, Tie Chong, Zi-Ming Wang, Li Xue. miR-20b-5p is a novel biomarker for detecting prostate cancer. Oncol Lett. doi: 10.3892/ol.2022.13546.
105. Guanru Li, Qi Xu, Demin Cheng, Wenqing Sun, Yi Liu, Dongyu Ma, Yue Wang, Siyun Zhou, Chunhui Ni. Caveolin-1 and Its Functional Peptide CSP7 Affect Silica-Induced Pulmonary Fibrosis by Regulating Fibroblast Glutaminolysis. Toxicol Sci. doi: 10.1093/toxsci/kfac089.
106. Shiyu Huang, Yanguang Hou, Min Hu, Juncheng Hu, Xiuheng Liu. Clinical significance and oncogenic function of NR1H4 in clear cell renal cell carcinoma. BMC Cancer. doi: 10.1186/s12885-022-10087-4.
107. Ruirui Jia, Jiamei Lin, Jin You, Shi Li, Ge Shan, Chuan Huang. The DEAD-box helicase Hlc regulates basal transcription and chromatin opening of stress-responsive genes. Nucleic Acids Res. doi: 10.1093/nar/gkac684.
108. Jie-Ying Zhu, Min Chen, Wang-Jing Mu, Hong-Yang Luo, Liang Guo. Higd1a facilitates exercise-mediated alleviation of fatty liver in diet-induced obese mice. Metabolism. doi: 10.1016/j.metabol.2022.155241.
109. Hang Yang, Zuotian Huang, Yunhai Luo, Dengliang Lei, Ping Yan, Ai Shen, Wenbin Liu, Dewei Li, Zhongjun Wu. TRIM37 exacerbates hepatic ischemia/reperfusion injury by facilitating IKKγ translocation. Mol Med. doi: 10.1186/s10020-023-00653-2.

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