



碧云天生物技术/Beyotime Biotechnology  
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## SDS裂解液

产品编号	产品名称	包装
P0013G	SDS裂解液	100ml

### 产品简介:

- 碧云天生产的SDS裂解液(SDS Lysis Buffer)是一种比较强烈的细胞组织裂解液。SDS裂解液裂解得到的蛋白样品可以用于常规的PAGE、Western、免疫沉淀(immunol precipitation, IP)、免疫共沉淀(co-IP)和ELISA等。
- 本产品可以用于动物、植物的细胞或组织样品,也可以用于真菌或细菌样品。
- 关于碧云天生产的不同的裂解液的主要特点和差异,以及如何选择裂解液可参考我们的相关网页:  
<http://www.beyotime.com/support/lysis-buffer.htm>。
- SDS裂解液的主要成分为50mM Tris (pH8.1), 1% SDS, 以及sodium pyrophosphate,  $\beta$ -glycerophosphate, sodium orthovanadate, sodium fluoride, EDTA, leupeptin等多种抑制剂。可以有效抑制蛋白降解。
- 用SDS裂解液裂解得到的蛋白样品,可以用碧云天生产的BCA蛋白浓度测定试剂盒(P0009/P0010/P0010S/P0011/P0012/P0012S)测定蛋白浓度。由于含有较高浓度的去垢剂,不能用Bradford法测定由本裂解液裂解得到样品的蛋白浓度。

### 包装清单:

产品编号	产品名称	包装
P0013G	SDS裂解液	100ml
—	说明书	1份

### 保存条件:

-20°C保存,一年有效。

### 注意事项:

- 为取得最佳的使用效果,尽量避免过多的反复冻融。可以适当分装后使用。
- 需自备PMSF。PMSF(ST506)可以向碧云天订购。也可以选购总体效果更佳的碧云天生产的P1045/P1046 蛋白酶磷酸酶抑制剂混合物(通用型, 50X), 或者根据具体用途选择P1048/P1049 蛋白酶磷酸酶抑制剂混合物(通用型, 质谱兼容, 50X)、P1050/P1051蛋白酶磷酸酶抑制剂混合物(哺乳动物样品抽提用, 50X)、P1055/P1056 蛋白酶磷酸酶抑制剂混合物(植物样品抽提用, 50X)、P1060/P1061 蛋白酶磷酸酶抑制剂混合物(真菌或酵母抽提用, 50X)、P1065/P1066 蛋白酶磷酸酶抑制剂混合物(细菌抽提用, 50X)。如果无需检测磷酸化蛋白,也可以选不含磷酸酶抑制剂的蛋白酶抑制剂化合物。
- 裂解样品的所有步骤都需在冰上或4°C进行。
- 关于裂解液的选择,一方面可以参考我们的相关网页: <http://www.beyotime.com/support/lysis-buffer.htm> 选择合适的裂解液;另一方面也需要通过一些预实验来摸索最佳的适合您实验条件的裂解液。
- 如果使用本SDS裂解液用于ChIP实验,在对超声后基因组DNA大小进行检测时,如果采用琼脂糖凝胶中添加NA-Red、NA-Green、Gel-Red或Gel-Green等安全染料或使用含该类安全染料的DNA上样缓冲液的方式,由于电泳时SDS会与此类染料结合形成异常条带,条带通常在600-1000bp左右,因此会对超声后基因组DNA大小的判断造成一定的影响。建议采用“电泳完毕后对琼脂糖凝胶染色”的方式进行条带大小的检测,使用该方法不会有异常条带出现,不影响对超声后基因组DNA大小的判断,而且条带大小更准确。
- 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. 对于培养细胞样品:

- 融解 SDS 裂解液,混匀。取适当量的裂解液,在使用前数分钟内加入 PMSF,使 PMSF 的最终浓度为 1mM,或者根据实验需要加入适当的上述蛋白酶磷酸酶抑制剂混合物。
- 对于贴壁细胞:去除培养液,用 PBS、生理盐水或无血清培养液洗一遍(如果血清中的蛋白没有干扰,可以不洗)。按照 6 孔板每孔加入 150-250 微升裂解液的比例加入裂解液。用枪吹打下,使裂解液和细胞充分接触。通常裂解液接触动物细胞 1-2 秒后,细胞就会被裂解。植物细胞宜在冰上裂解 2-10min。如果用于 ChIP,初步裂解后需在冰浴上继续裂解 10 分钟。  
对于悬浮细胞:离心收集细胞,轻轻vortex或者弹击管底以把细胞尽量分散开。按照6孔板每孔细胞加入150-250微升裂解液的比例加入裂解液。再用手指轻弹以充分裂解细胞。如果细胞量较多,必需分装成50-100万细胞/管,然后再裂

解。充分裂解后应没有明显的细胞沉淀。如果用于ChIP，初步裂解后需在冰浴上继续裂解10分钟。

**对于细菌或酵母：**对于1ml菌液或酵母液，离心去上清，如果有必要可以使用PBS洗涤一次，充分去除液体后，轻轻vortex或者弹击管底以把细菌或酵母尽量弹散。加入100-200微升裂解液，轻轻vortex或者弹击管底以混匀，冰上裂解2-10min。如果希望获得更好的裂解效果，细菌和酵母可以分别使用溶菌酶和破壁酶(Lyticase)消化，然后再使用本裂解液进行裂解。

**裂解液用量说明：**通常6孔板每孔细胞或者1ml的菌液或酵母液中的细菌和酵母量加入150微升裂解液已经足够，但如果细胞密度非常高可以适当加大裂解液的用量到200微升或250微升。每100万动物细胞用100微升本产品裂解后获得的上清，其蛋白浓度约为2-4mg/ml，不同细胞有所不同。

c. 充分裂解后，10000-14000g 离心 3-5 分钟，取上清，即可进行后续的 PAGE、Western 和 ChIP 等操作。

## 2. 对于组织样品：

a. 把组织剪切成细小的碎片。

b. 融解 SDS 裂解液，混匀。取适当量的裂解液，在使用前数分钟内加入 PMSF，使 PMSF 的最终浓度为 1mM，或者根据实验需要加入适当的上述蛋白酶磷酸酶抑制剂混合物。

c. 按照每 20 毫克组织加入 150-250 微升裂解液的比例加入裂解液。(如果裂解不充分可以适当添加更多的裂解液，如果需要高浓度的蛋白样品，可以适当减少裂解液的用量。)

d. 用玻璃匀浆器匀浆，或使用碧云天生产的 E6600 TissueMaster™手持式组织研磨仪研磨，直至充分裂解。也可以把组织样品冷冻后液氮研磨，研磨充分后加入裂解液进行裂解。如果用于 ChIP，初步裂解后需在冰浴上继续裂解 10 分钟。

e. 充分裂解后，10000-14000g 离心 3-5 分钟，取上清，即可进行后续的 PAGE、Western 和 ChIP 等操作。每 20mg 冻存的小鼠肝脏组织用 200 微升本裂解液裂解后获得的上清，其蛋白浓度约为 15-25mg/ml，不同状态的不同组织有所不同。

f. 如果组织样品本身非常细小，可以适当剪切后直接加入裂解液裂解，通过强烈 vortex 使样品裂解充分。然后同样离心取上清，用于后续实验。直接裂解的优点是比较方便，不必使用匀浆器或研磨设备，缺点是不如匀浆或研磨那样裂解得比较充分。

## 附录：碧云天生产的各种裂解液主要特点、差异和选择

首先请参考下表，了解各种裂解液的主要特点和差异。

产品编号	P0013	P0013B	P0013C	P0013D	P0013F	P0013G	P0013J	P0013K
产品名称	Western及IP细胞裂解液	RIPA裂解液(强)	RIPA裂解液(中)	RIPA裂解液(弱)	NP-40裂解液	SDS裂解液	Western及IP细胞裂解液(无抑制剂)	RIPA裂解液(强, 无抑制剂)
有效裂解成分	1% Triton X-100	1% Triton X-100, 1% deoxycholate, 0.1% SDS	1% NP-40, 0.5% deoxycholate, 0.1% SDS	1% NP-40, 0.25% deoxycholate	1% NP-40	1% SDS	1% Triton X-100	1% Triton X-100, 1% deoxycholate, 0.1% SDS
裂解强度	温和	强	中	温和	温和	强	温和	强
对膜蛋白的提取	一般	很好	较好	一般	一般	很好	一般	很好
对胞浆蛋白的提取	很好	很好	很好	很好	很好	很好	很好	很好
对核蛋白的提取	较好	很好	较好	较好	较好	很好	较好	很好
胞浆磷酸化蛋白提取	很好	很好	很好	很好	很好	很好	很好	很好
细胞核转录因子提取	很好	很好	很好	很好	很好	很好	很好	很好
含蛋白酶抑制剂	是	是	是	是	是	是	否	否
含磷酸酯酶抑制剂	是	是	是	是	是	是	否	否
不同物种样品兼容性	高	高	高	高	高	高	高	高
主要用途	WB, IP, co-IP	WB, IP	WB, IP	WB, IP, co-IP	WB, IP, co-IP	WB, ChIP	WB, IP, co-IP	WB, IP

➤ 用于普通的Western、IP或co-IP，我们推荐使用Western及IP细胞裂解液(P0013)，该裂解液已被国内各大研究机构广泛使用，发表大量SCI论文，用户普遍反映很好。裂解细胞或组织后，没有非常粘滞的透明状DNA团块形成，不必采用超声处理等就可以非常理想地用于后续操作。另外该裂解液裂解的产物也适合用于磷酸化蛋白的Western检测。

➤ 对于某些特殊蛋白的IP，如果发现Western及IP细胞裂解液(P0013)效果不是非常理想，可以尝试用RIPA裂解液(强、中或弱)或NP-40裂解液。如果发现IP的时候背景很高，即非特异的蛋白也被IP下来，则需要选用裂解强度较高的裂解液，例如RIPA裂解液(强或中)。如果发现目的蛋白无法被IP下来，则说明裂解液的强度过强，可以使用较为温和的裂解液例如RIPA裂解液(弱)或NP-40裂解液。

➤ 对于某些难溶解蛋白的Western，如果发现Western及IP细胞裂解液(P0013)效果不是非常理想，可以尝试使用裂解强度更高的裂解液例如RIPA裂解液(强、中)或SDS裂解液。使用RIPA裂解液(强)的用户也非常多，发表了大量SCI论文。

➤ 用于特定用途需要自行添加特定抑制剂或不需要添加抑制剂时，可以考虑选购P0013J或P0013K。P0013J在很多时候可以兼容酶活性和生物小分子的检测，对于特定的酶或生物小分子的检测是否兼容需要自行测试，碧云天不提供具体的应用信息。P0013J的裂解能力比P0013K弱一些，但用于酶活性和生物小分子时，P0013J的兼容性通常会更好一些。

## 使用本产品的文献：

1. Zhang XT, Song TB, Du BL, Li DM, Li XM. Caspase-3 antisense

oligodeoxynucleotides inhibit apoptosis in gamma-irradiated human

- leukemia HL-60 cells. Apoptosis. 2007 Apr;12(4):743-51.
2. Shen Y, Yang X, Dong N, Xie X, Bai X, Shi Y. Generation and selection of immunized Fab phage display library against human B cell lymphoma. Cell Res. 2007 Jul;17(7):650-60.
  3. Zhang JQ, Zhao XK, He J, Zhu L, Wang XJ. Expression and role of FGFR2 in bladder transitional cell carcinoma. China Medical Engineering. Sep.2007 Sep;Vol.15(9):720-725.
  4. Guo M, Huang T, Cui Y, Pan B, Shen A, Sun Y, Yi Y, Wang Y, Xiao G, Sun G. PrPC interacts with tetraspanin-7 through bovine PrP154-182 containing alpha-helix 1. Biochem Biophys Res Commun. 2008 Jan 4; 365(1):154-7.
  5. Wei Y, Weng D, Li F, Zou X, Young DO, Ji J, Shen P. Involvement of JNK regulation in oxidative stress-mediated murine liver injury by microcystin-LR. Apoptosis. 2008 Aug;13(8):1031-42.
  6. Han ZB, Ren H, Zhao H, Chi Y, Chen K, Zhou B, Liu YJ, Zhang L, Xu B, Liu B, Yang R, Han ZC. Hypoxia-inducible factor (HIF)-1 alpha directly enhances the transcriptional activity of stem cell factor (SCF) in response to hypoxia and epidermal growth factor (EGF). Carcinogenesis. 2008 Oct;29(10):1853-61.
  7. Tang Z, Yang J, Liu X, Wang Y, Peng S. Polyaspartoyl-L-arginine enhances prostacyclin synthesis in rat aortic endothelial cells. Eur J Pharmacol. 2008 Dec 28;601(1-3):124-8.
  8. Nie W, Yan H, Li S, Zhang Y, Yu F, Zhu W, Fan F, Zhu J. Angiotensin-(1-7) enhances angiotensin II induced phosphorylation of ERK1/2 in mouse bone marrow-derived dendritic cells. Mol Immunol. 2009 Jan;46(3):355-61.
  9. Fang Z, Wang Q, Cao W, Feng Q, Li C, Xie L, Zhang R. Investigation of phosphorylation site responsible for CaLP (P. fucata) nucleocytoplasmic shuttling triggered by overexpression of p21Cip1. Mar Biotechnol (NY). 2009 Mar-Apr;11(2):270-9.
  10. Qin ZX, Zhu HY, Hu YH. Effects of lysophosphatidylcholine on beta-amyloid-induced neuronal apoptosis. Acta Pharmacol Sin.2009 Apr; 30(4):388-95.
  11. Song L, Kong M, Ma Y, Ba M, Liu Z. Inhibitory effect of 8-(3-chlorostyryl) caffeine on levodopa-induced motor fluctuation is associated with intracellular signaling pathway in 6-OHDA-lesioned rats. Brain Res.2009 Jun 18;1276:171-9.
  12. Zhang DL, Chen YQ, Jiang X, Ji TT, Mei B. Oxidative damage increased in presenilin1/presenilin2 conditional double knockout mice. Neurosci Bull.2009 Jun;25(3):131-7.
  13. Liu RT, Zou LB, Lü QJ. Liguiritigenin inhibits Abeta(25-35)-induced neurotoxicity and secretion of Abeta(1-40) in rat hippocampal neurons. Acta Pharmacol Sin.2009 Jul;30(7):899-906.
  14. Liu J, Zhou R, He Q, Li WI, Zhang T, Niu B, Zheng X, Xie J. Almodulin kinase II activation of mitogen-activated protein kinase in PC12 cell following all-trans retinoic acid treatment. Neurotoxicology. 2009 Jul; 30(4):599-604.
  15. Yu B, Miao ZH, Jiang Y, Li MH, Yang N, Li T, Ding J. c-Jun protects hypoxia-inducible factor-1alpha from degradation via its oxygen-dependent degradation domain in a nontranscriptional manner. Cancer Res.2009 Oct 1;69(19):7704-12.
  16. Hua W, Jiang J, Rong X, Wu R, Qiu H, Zhang Y, Chen Q. The dual role of the cystathionine gamma-lyase/hydrogen sulfide pathway in CVB3-induced myocarditis in mice. Biochem Biophys Res Commun.2009 Oct 23;388(3):595-600.
  17. Hang PZ, Zhao J, Wang YP, Sun LH, Zhang Y, Yang LL, Zhao N, Sun ZD, Mao YY, Du ZM. Reciprocal regulation between M3 muscarinic acetylcholine receptor and protein kinase C-epsilon in ventricular myocytes during myocardial ischemia in rats. Naunyn Schmiedebergs Arch Pharmacol. 2009 Nov;380(5):443-50.
  18. Li H, Zhang L, Huang Q. Differential expression of mitogen-activated protein kinase signaling pathway in the hippocampus of rats exposed to chronic unpredictable stress. Behav Brain Res.2009 Dec 14;205(1):32-7.
  19. Xu SB, Liu XH, Li BH, Zhang Y, Yuan J, Yuan Q, Li PD, Yang XZ, Li F, Zhang WJ. DNA methylation regulates constitutive expression of Stat6 regulatory genes SOCS-1 and SHP-1 in colon cancer cells. J Cancer Res Clin Oncol.2009 Dec;135(12):1791-8.
  20. Chen Y, Wang J, Yao Y, Yuan W, Kong M, Lin Y, Geng D, Nie R. CRP regulates the expression and activity of tissue factor as well as tissue factor pathway inhibitor via NF-kappaB and ERK 1/2 MAPK pathway. FEBS Lett. 2009;583(17):2811-8.
  21. Li J, Tian T, Wang XY, Li F, Ren GS. Expression and Clinical Significance of REGγ in Gastric Cancer Tissue and Various Differentiated Gastric Cancer Cell Lines. Clin Oncol Cancer Res.(2009) 6: 208-213.
  22. Yu X, Huang Y, Hu Q, Ma L. Hyperhomocysteinemia stimulates hepatic glucose output and PEPCK expression. Acta Biochim Biophys Sin (Shanghai).2009;41(12):1027-32.
  23. Cao BY, Yang YP, Luo WF, Mao CJ, Han R, Sun X, Cheng J, Liu CF. Paeoniflorin, a potent natural compound, protects PC12 cells from MPP+ and acidic damage via autophagic pathway. J Ethnopharmacol. 2010; 131(1):122-9.
  24. Liu J, Wang A, Li L, Huang Y, Xue P, Hao A. Oxidative stress mediates hippocampal neuron death in rats after lithium-pilocarpine-induced status epilepticus. Seizure.2010;19(3):165-72.
  25. Li C, Xing G, Dong M, Zhou L, Li J, Wang G, Zou D, Wang R, Liu J, Niu Y. Beta-asarone protection against beta-amyloid-induced neurotoxicity in PC12 cells via JNK signaling and modulation of Bcl-2 family proteins. Eur J Pharmacol.2010;635(1-3):96-102.
  26. Li H, Zhang L, Fang Z, Lin L, Wu C, Huang Q. Behavioral and neurobiological studies on the male progeny of maternal rats exposed to chronic unpredictable stress before pregnancy. Neurosci Lett. 2010; 469(2):278-82.
  27. Qian J, Zhai A, Kao W, Li Y, Song W, Fu Y, Chen X, Zhang Q, Wu J, Li H, Zhong Z, Ling H, Zhang F. Modulation of miR-122 on persistently Borna disease virus infected human oligodendroglial cells. Antiviral Res. 2010;87(2):249-56.
  28. Chen W, Hou J, Yin Y, Jang J, Zheng Z, Fan H, Zou G. alpha-Bisabolol induces dose- and time-dependent apoptosis in HepG2 cells via a Fas- and mitochondrial-related pathway, involves p53 and NFkappaB. Biochem Pharmacol .2010;80(2):247-54.
  29. Li XC, Tong GX, Zhang Y, Liu SX, Jin QH, Chen HH, Chen P. Neferine inhibits angiotensin II-stimulated proliferation in vascular smooth muscle cells through heme oxygenase-1. Acta Pharmacol Sin.2010;31(6):679-86.
  30. Tu XK, Yang WZ, Wang CH, Shi SS, Zhang YL, Chen CM, Yang YK, Jin CD, Wen S. Zileuton reduces inflammatory reaction and brain damage following permanent cerebral ischemia in rats. Inflammation. 2010;33(5):344-52.
  31. Sheng R, Gu ZL, Xie ML, Zhou WX, Guo CY. Epigallocatechin gallate protects H9c2 cardiomyoblasts against hydrogen dioxides- induced apoptosis and telomere attrition. Eur J Pharmacol.2010;641(2-3):199-206.
  32. Teng Y, Wang X, Wang Y, Ma D. Wnt/beta-catenin signaling regulates cancer stem cells in lung cancer A549 cells. Biochem Biophys Res Commun.2010;392(3):373-9.
  33. Liu HY, Jia XQ, Gao LX, Ma YY. Hepatocyte growth factor regulates HLX1 gene expression to modulate HTR-8/SVneo trophoblast cells. Reprod Biol Endocrinol.2012 Sep 18;10:83.
  34. Wu K, Liu Y, Lv Y, Cui L, Li W, Chen J, Liang NC, Li L. Ent-11α-hydroxy-15-oxo-kaur-16-en-19-oic-acid induces apoptosis and cell cycle arrest in CNE-2Znasopharyngeal carcinoma cells. Oncol Rep.2013 Jun;29(6):2101-8.
  35. Han ZB, Yang Z, Chi Y, Zhang L, Wang Y, Ji Y, Wang J, Zhao H, Han ZC. MicroRNA-124 Suppresses Breast Cancer Cell Growth and Motility by Targeting CD151. Cell Physiol Biochem.2013 Jun 4;31(6):823-832.
  36. Luo Y, Hu Y, Zhang M, Xiao Y, Song Z, Xu Y. EtBr-induced selective degradation of mitochondria occurs via autophagy. Oncol Rep. 2013 Sep;30(3):1201-8.
  37. Tang Y, Luo C, Cheng A, Lu S, Xu J, Fu T, Gan R. Expression of latent membrane proteins in Epstein Barr virus-transformed lymphocytes in vitro. Mol Med Rep. 2014 Aug;10(2):1117-21.
  38. Zhou Y, Pan DS, Shan S, Zhu JZ, Zhang K, Yue XP, Nie LP, Wan J, Lu XP, Zhang W, Ning ZQ. Non-toxic dose chidamide synergistically enhances platinum-induced DNA damage responses and apoptosis in Non-Small-Cell lung cancer cells. Biomed Pharmacother. 2014 May;68(4):483-91.
  39. Wu W, Wang Y, Xu Y, Liu Y, Wang Y, Zhang H. Dysregulated activation of c-Src in gestational trophoblastic disease contributes to its aggressive progression. Placenta. 2014 Oct;35(10):824-30.
  40. Wang Z, Li Q, Zhang B, Lu Y, Yang Y, Ban D, Zhang H. Single nucleotide polymorphism scanning and expression of the FRZB gene in pig populations. Gene. 2014 Jun 15;543(2):198-203.
  41. Yu XL, Jing T, Zhao H, Li PJ, Xu WH, Shang FF. Curcumin inhibits expression of inhibitor of DNA binding 1 in PC3 cells and xenografts. Asian Pac J Cancer Prev. 2014;15(3):1465-70.
  42. Gao X, Zhang J, Zhang J, Zou H, Liu J. Identification of rat respiratory

- mucosa stem cells and comparison of the early neural differentiation potential with the bone marrow mesenchymal stem cells in vitro. *Cell Mol Neurobiol.* 2014 Mar;34(2):257-68.
43. Liu R, Liu X, Zheng Y, Gu J, Xiong S, Jiang P, Jiang X, Huang E, Yang Y, Ge D, Chu Y. MicroRNA-7 sensitizes non-small cell lung cancer cells to paclitaxel. *Oncol Lett.* 2014 Nov;8(5):2193-2200.
  44. Zhai R1, Kan X, Wang B, Du H, Long Y, Wu H, Tao K, Wang G, Bao L, Li F, Zhang W. miR-152 suppresses gastric cancer cell proliferation and motility by targeting CD151. *Tumour Biol.* 2014 Nov;35(11):11367-73.
  45. Zhang C, Yang X, Zhang Q, Yang B, Xu L, Qin Q, Zhu H, Liu J, Cai J, Tao G, Ma J, Ge X, Zhang S, Cheng H, Sun X. Berberine radiosensitizes human nasopharyngeal carcinoma by suppressing hypoxia-inducible factor-1 $\alpha$  expression. *Acta Otolaryngol.* 2014 Feb;134(2):185-92.
  46. Gao Y, Luo LH, Li S, Yang C. miR-17 inhibitor suppressed osteosarcoma tumor growth and metastasis via increasing PTEN expression. *Biochem Biophys Res Commun.* 2014 Feb 7;444(2):230-4.
  47. Wang X, Gui L, Zhang Y, Zhang J, Shi J, Xu G. Cystatin B is a progression marker of human epithelial ovarian tumors mediated by the TGF- $\beta$  signaling pathway. *Int J Oncol.* 2014 Apr;44(4):1099-106.
  48. Chen SX, Xu XE, Wang XQ, Cui SJ, Xu LL, Jiang YH, Zhang Y, Yan HB, Zhang Q, Qiao J, Yang PY, Liu F. Identification of colonic fibroblast secretomes reveals secretory factors regulating colon cancer cell proliferation. *J Proteomics.* 2014 Aug 10;110C:155-171.
  49. Xiang Y, Zheng K, Zhong M, Chen J, Wang X, Wang Q, Wang S, Ren Z, Fan J, Wang Y. Ubiquitin-proteasome-dependent slingshot 1 downregulation in neuronal cells inactivates cofilin to facilitate HSV-1 replication. *Virology.* 2014 Jan 20;449:88-95.
  50. Lin Q, Xu H, Chen X, Tang G, Gu L, Wang Y. Helicobacter pylori cytotoxin-associated gene A activates tumor necrosis factor- $\alpha$  and interleukin-6 in gastric epithelial cells through P300/CBP-associated factor-mediated nuclear factor- $\kappa$ B p65 acetylation. *Mol Med Rep.* 2015 Oct;12(4):6337-45.
  51. Zhu C, Zhao Y, Zhang Z, Ni Y, Li X, Yong H. MicroRNA-33a inhibits lung cancer cell proliferation and invasion by regulating the expression of  $\beta$ -catenin. *Mol Med Rep.* 2015 May;11(5):3647-51.
  52. Lv X, Zhang L, Zhu Y, Said HM, Shi J, Xu G. Regulative Effect of Nampt on Tumor Progression and Cell Viability in Human Colorectal Cancer. *J Cancer.* 2015 Jul 16;6(9):849-58.
  53. Xing N, Qiao T, Zhuang X, Yuan S, Zhang Q, Xu G. CpG oligodeoxynucleotide 7909 enhances radiosensitivity via downregulating Oct-4 expression in radioresistant lung cancer cells. *Onco Targets Ther.* 2015 Jun 12;8:1443-9.
  54. Pang X, Wang Z, Chai Y, Chen H, Li L, Sun L, Jia H, Wu H, Yang T. A Novel Missense Mutation of NOG Interferes With the Dimerization of NOG and Causes Proximal Symphalangism Syndrome in a Chinese Family. *Ann Otol Rhinol Laryngol.* 2015 Sep;124(9):745-51.
  55. Yan J, Zhou Y, Chen D, Li L, Yang X, You Y, Ling X. Effects of mitochondrial translocation of telomerase on drug resistance in hepatocellular carcinoma cells. *J Cancer.* 2015 Jan 5;6(2):151-9.
  56. Li JW, He SY, Feng ZZ, Zhao L, Jia WK, Liu P, Zhu Y, Jian Z, Xiao YB. MicroRNA-146b inhibition augments hypoxia-induced cardiomyocyte apoptosis. *Mol Med Rep.* 2015 Nov;12(5):6903-10.
  57. Zou D, Liu P, Chen K, Xie Q, Liang X, Bai Q, Zhou Q, Liu K, Zhang T, Zhu J, Mi M. Correction: Protective Effects of Myricetin on Acute Hypoxia-Induced Exercise Intolerance and Mitochondrial Impairments in Rats. *PLoS One.* 2015 Jul 15;10(7):e0133336.
  58. Liu X, Jiang X, Liu R, Wang L, Qian T, Zheng Y, Deng Y, Huang E, Xu F, Wang JY, Chu Y. B cells expressing CD11b effectively inhibit CD4<sup>+</sup> T-cell responses and ameliorate experimental autoimmune hepatitis in mice. *Hepatology.* 2015 Nov;62(5):1563-75.
  59. Li Y, Xu G, Huang K, Wang J, Zhang J, Liu J, Wang Z, Chen G. Alteration of ASIC1 expression in clear cell renal cell carcinoma. *Onco Targets Ther.* 2015 Aug 14;8:2121-7.
  60. Yang YR, Li YX, Gao XY, Zhao SS, Zang SZ, Zhang ZQ. MicroRNA-137 inhibits cell migration and invasion by targeting bone morphogenetic protein-7 (BMP7) in non-small cell lung cancer cells. *Int J Clin Exp Pathol.* 2015 Sep 1;8(9):10847-53.
  61. Zhang H, Fan Q. MicroRNA-205 inhibits the proliferation and invasion of breast cancer by regulating AMOT expression. *Oncol Rep.* 2015 Oct;34(4):2163-70.
  62. Li J, Meng H, Cao W, Qiu T. MiR-335 is involved in major depression disorder and antidepressant treatment through targeting GRM. *Neurosci Lett.* 2015 Oct 8;606:167-72.
  63. Qin X, Yan M, Zhang J, Xu Q, Lv Z, Chen W. Establishment of a highly metastatic buccal squamous cell carcinoma cell line from a Sprague-Dawley Rat. *Arch Oral Biol.* 2015 Nov 10;62:1-9.
  64. Tang Y, Lu S, Gan X, Liu F, Zhang Y, Luo C, Pan Y, Hong L, Gan R. Expression of LMP and EBNA genes in Epstein-Barr virus-associated lymphomas in Hu-PBL/SCID mice. *Oncol Rep.* 2016 Feb;35(2):905-11.
  65. Guo Y, Zhao P, Guo G, Hu Z, Tian L, Zhang K, Sun Y, Zhang X, Zhang W, Xing M. Effects of Arsenic Trioxide Exposure on Heat Shock Protein Response in the Immune Organs of Chickens. *Biol Trace Elem Res.* 2016 Jan;169(1):134-41.
  66. Xiong H, Luo T, He W, Xi D, Lu H, Li M, Liu J, Guo Z. Up-regulation of miR-138 inhibits hypoxia-induced cardiomyocyte apoptosis via down-regulating lipocalin-2 expression. *Exp Biol Med (Maywood).* 2016 Jan;241(1):25-30.
  67. Ruan W, Wang P, Feng S, Xue Y, Li Y. Long non-coding RNA small nucleolar RNA host gene 12 (SNHG12) promotes cell proliferation and migration by upregulating angiominin gene expression in human osteosarcoma cells. *Tumour Biol.* 2016 Mar;37(3):4065-73.
  68. Piao JM, Wu W, Yang ZX, Li YZ, Luo Q, Yu JL. MicroRNA-381 Favors Repair of Nerve Injury Through Regulation of the SDF-1/CXCR4 Signaling Pathway via LRRc4 in Acute Cerebral Ischemia after Cerebral Lymphatic Blockage. *Cell Physiol Biochem.* 2018;46(3):890-906.
  69. Liang ZG, Yao H, Xie RS, Gong CL, Tian YM. MicroRNA-20b-5p promotes ventricular remodeling by targeting the TGF- $\beta$ /Smad signaling pathway in a rat model of ischemia-reperfusion injury. *Int J Mol Med.* 2018 Aug;42(2):975-987.
  70. Tong Y, Yu Z, Zhang R, Ding X, Chen Z, Li Q. WISP1 mediates lung injury following hepatic ischemia reperfusion dependent on TLR4 in mice. *BMC Pulm Med.* 2018 Dec 6;18(1):189.
  71. Wang M, Shi G, Bian C, Nisar MF, Guo Y, Wu Y, Li W, Huang X, Jiang X, Bartsch JW, Ji P, Zhong J. UV 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.
  72. Wang LJ, Han X, Li CC, Zhang CY. Single-ribonucleotide repair-mediated ligation-dependent cycling signal amplification for sensitive and specific detection of DNA methyltransferase. *Chem Sci.* 2018 Jun 18;9(28):6053-6061.
  73. Li H, Lu H, Lv M, Wang Q, Sun Y. Parthenolide facilitates apoptosis and reverses drug-resistance of human gastric carcinoma cells by inhibiting the STAT3 signaling pathway. *Oncol Lett.* 2018 Mar;15(3):3572-3579.
  74. Feng S, Zhou Q, Yang B, Li Q, Liu A, Zhao Y, Qiu C, Ge J, Zhai H. The effect of S100A6 on nuclear translocation of Cdc42BP1/SIP in colon cancer cells. *PLoS One.* 2018 Mar 13;13(3):e0192208.
  75. Li Q, Han Y, Du J, Jin H, Zhang J, Niu M, Qin J. Alterations of apoptosis and autophagy in developing brain of rats with epilepsy: Changes in LC3, P62, Beclin-1 and Bcl-2 levels. *Neurosci Res.* 2018 May;130:47-55.
  76. Tian J, Shen R, Yan Y, Deng L. miR-186 promotes tumor growth in cutaneous squamous cell carcinoma by inhibiting apoptotic protease activating factor-1. *Exp Ther Med.* 2018 Nov;16(5):4010-4018.
  77. Wang H, Luo Y, Qiao T, Wu Z, Huang Z. Luteolin sensitizes the antitumor effect of cisplatin in drug-resistant ovarian cancer via induction of apoptosis and inhibition of cell migration and invasion. *J Ovarian Res.* 2018 Nov 19;11(1):93.
  78. Li Y, Duan F, Zhou X, Pan H, Li R. Differential responses of GC-1 spermatogonia cells to high and low doses of bisphenol A. *Mol Med Rep.* 2018 Sep;18(3):3034-3040.