Xiuping Chen (陳修平)

Ph.D.

CONTACT INFORMATION

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EDUCATION

Degree	Institution	Subject	Year
Ph.D.	Peking Union Medical College & Tsinghua University, China	Pharmacology	2007
Msc.	Zunyi Medical University, China	Pharmacology	2004
B.Med	Jining Medical College, China	Clinical medicine	2001

WORKING EXPERIENCE

Year	Position	Institution
2021.8-present	Full Professor	State Key Laboratory of Quality Research in Chinese Medicine (SKL-QRCM), Institute of Chinese Medical Sciences (ICMS), University of Macau (UM), Macau SAR, China
2015.8-2021.7	Associate Professor	SKL-QRCM, ICMS, UM, Macau SAR, China
2010.8-2015.7	Assistant Professor	SKL-QRCM, ICMS, UM, Macau SAR, China
2008.7-2010.7	Postdoctoral	ICMS, UM, Macau SAR, China
2007.11-2008.6	Postdoctoral	Texas A&M University, University of Missouri-Columbia, Texas, Columbia, USA

RESEARCH INTERESTS

Preclinical study of natural products regulating programmed cell death

We mainly focus on the preclinical development of natural products that regulate programmed cell death (PCD). By using integrated platforms, we have identified natural products with distinct mechanisms of action to induce PCD. We demonstrate that 2-methoxy-6-acetyl-7-methyljuglone (MAM), a type of quinone, induces cell-type dependent PCD dependent on ROS, caspase, RIPK1, or NQO1. We report for the first time that the form of PCD induced by MAM is distinct from any other types of PCD reported, and highly dependent on NQO1-mediated ROS production. We term this novel type of PCD as noptosis. We are still working on the underlying mechanisms and signaling that lead to noptosis. The therapeutic potential of noptosis is also being explored.

Development of epithelial-mesenchymal transition inhibitors

Epithelial-mesenchymal transition (EMT) is of pivotal importance in controlling tumor metastasis and organ fibrosis. By using the tumor growth factor β1-stimulated EMT model, we have identified a number of natural products as potent EMT inhibitors. Further study is ongoing to evaluate the therapeutic potential of these candidates on in vivo metastasis and organ fibrosis models.

TEACHING EXPERIENCE

Ph.D. course	Advanced pharmacology (CMED8010)
Master course:	Introduction to Chinese Medicine (CMED7002)
Undergraduate course	Exploring Chinese Medicine (GEST2003), Pharmacology (HSCI2007)

NATIONAL AND REGIONAL AWARDS

Title	Awardee	Year
Second prize of Macao Science and Technology Awards	Macau SAR, China	2014
17th SERVIER Young Pharmacologist Award	Chinese Pharmacological Society and SERVIER France	2013
Second prize of Macao Science and Technology Awards	Macau SAR, China	2012

PUBLICATIONS

> 150 SCI publications in peer-reviewed journals (>15,000 citations and the h-index=65).
Entire publication list:
Google Schloar: https://scholar.google.com/citations?hl=zh-CN&pli=1&user=aE3WiqoAAAAJ

INVITED KEYNOTE SPEECH

Title	Conference	Venue	Year
Tanshinones: Promising Lead Compounds From *Salvia Miltiorrhiza* Bunge (Danshen)	The 5th IUPHAR World Conference on The Pharmacology of Natural Products	Hyderabad, India.	2019
MAM, A Small Molecular Necroptosis Inducer from Natural Herb	The 18th World Congress of Basic and Clinical Pharmacology	Kyoto, Japan	2018
MAM, a natural naphthoquinone, induces necroptosis in colon cancer cells	International Union of Basic and Clinical Pharmacology-Natural Produces Section Conference	Aberdeen, UK	2017

PROFESSIONAL AFFILIATION

Position	Organization	Year
Member	Royal Society of Biology	2023-present
Council member	Chinese Pharmacological Society (CPS)	2021-present
Life Member	Chinese Society for Cell Biology	2017-present

PUBLICATIONS

> 150 SCI papers (>15,000 citations and the h-index=65).
Entire publication list:
Google Schloar: https://scholar.google.com/citations?hl=zh-CN&pli=1&user=aE3WiqoAAAAJ

Selected publication:

1. Zhong BL, Zhang YF, Zheng HY, Chen Q, Lu HD, **Chen XP**. SP600125, a selective JNK inhibitor, is a potent inhibitor of NAD(P)H: quinone oxidoreductase 1 (NQO1). Acta Pharmacol Sin. 2024 Nov 25. doi: 10.1038/s41401-024-01418-1.
2. Hou Y, Wang H, Wu J, Guo H, **Chen X**. Dissecting the pleiotropic roles of reactive oxygen species (ROS) in lung cancer: From carcinogenesis toward therapy. Med Res Rev. 2024 Jul;44(4):1566-1595.
3. Yu J, Zhong B, Zhao L, Hou Y, Ai N, Lu JJ, Ge W, **Chen X**. Fighting drug-resistant lung cancer by induction of NAD(P)H:quinone oxidoreductase 1(NQO1)-mediated ferroptosis. *Drug Resist Updat*. 2023 Sep;70:100977. doi:10.1016/j.drup.2023.100977.
4. Wang X, Shi W, Wang X, Lu JJ, He P, Zhang H, **Chen X**. Nifuroxazide boosts the anticancer efficacy of palbociclib-induced senescence by dual inhibition of STAT3 and CDK2 in triple-negative breast cancer. Cell Death Discov. 2023 Sep 26;9(1):355. doi: 10.1038/s41420-023-01658-w.

5. Wu C, Duan F, Yang R, Dai Y, **Chen X**, Li S. 15, 16-Dihydrotanshinone I protects against ischemic stroke by inhibiting ferroptosis via the activation of nuclear factor erythroid 2-related factor 2. *Phytomedicine*. 2023 Jun;114:154790. doi: 10.1016/j.phymed.2023.154790.
6. Xiao Q, Zhong B, Hou Y, Wang M, Guo B, Lin L, Zhou Y, **Chen X**. Fighting cancer by triggering non-canonical mitochondrial permeability transition-driven necrosis through reactive oxygen species induction. *Free Radic Biol Med*. 2023Jun;202:35-45. doi: 10.1016/j.freeradbiomed. 2023.03.020
7. Zhao L, Zhong B, Zhu Y, Zheng H, Wang X, Hou Y, Lu JJ, Ai N, Guo X, Ge W, Ma YY, **Chen X**. Nitrovin (difurazone), an antibacterial growth promoter, induces ROS-mediated paraptosis-like cell death by targeting thioredoxin reductase 1 (TrxR1). *Biochem Pharmacol*. 2023 Apr;210:115487. doi: 10.1016/j.bcp.2023.115487.
8. Zhong B, Zhao L, Yu J, Hou Y, Ai N, Lu JJ, Ge W, **Chen X**. Exogenous iron impairs the anti-cancer effect of ascorbic acid both in vitro and in vivo. *J Adv Res*. 2023 Apr;46:149-158. doi: 10.1016/j.jare. 2022.06.011.
9. Zhou Y, Xiang S, Zheng H, Hou Y, Wang Y, Li CC, Wu Q, Shi J, **Chen X**. Neferine Suppresses Experimental Colitis-Associated Colorectal Cancer by Inhibition of NF-[Formula: see text]B p65 and STAT3. *Am J Chin Med*. 2022;50(5):1387-1400. doi:10.1142/S0192415X22500598.
10. Wang X, Wang X, Zhu Y, **Chen X**. ADME/T-based strategies for paraquat detoxification: Transporters and enzymes. *Environ Pollut*. 2021 Dec 15;291:118137. doi: 10.1016/j.envpol. 2021. 118137.
11. Hou Y, Liu R, Xia M, Sun C, Zhong B, Yu J, Ai N, Lu JJ, Ge W, Liu B, **Chen X**. Nannocystin ax, an eEF1A inhibitor, induces G1 cell cycle arrest and caspase-independent apoptosis through cyclin D1 downregulation in colon cancer in vivo.*Pharmacol Res*. 2021 Nov;173:105870. doi: 10.1016/j. phrs. 2021.105870.
12. Zhou Y, Zhong B, Min X, Hou Y, Lin L, Wu Q, Shi J, **Chen X**. Therapeutic potential of isobavachalcone, a natural flavonoid, in murine experimental colitis by inhibiting NF-κB p65. *Phytother Res*. 2021 Oct;35(10):5861-5870. doi:10.1002/ptr.7246.
13. Yu J, Zhong B, Zhao L, Hou Y, Wang X, **Chen X**. Receptor-interacting serine/threonine-protein kinase 1 (RIPK1) inhibitors Necrostatin-1 (Nec-1) and 7-Cl-O-Nec-1 (Nec-1s) are potent inhibitors of NAD(P)H: Quinone oxidoreductase 1 (NQO1). *Free Radic Biol Med*. 2021 Sep;173:64-69. doi:10. 1016/j.freeradbiomed.2021.07.017.
14. Zhong B, Yu J, Hou Y, Ai N, Ge W, Lu JJ, **Chen X**. A novel strategy for glioblastoma treatment by induction of noptosis, an NQO1-dependent necrosis. *Free Radic Biol Med*. 2021 Apr;166:104-115. doi:10.1016/j.freeradbiomed.2021.02.014.
15. Wang M, Lin L, Lu JJ, **Chen X**. Pharmacological review of isobavachalcone, a naturally occurring chalcone. *Pharmacol Res*. 2021 Mar;165:105483. doi:10.1016/j.phrs.2021.105483.
16. Sun C, Zhao W, Wang X, Sun Y, **Chen X**. A pharmacological review of dicoumarol: An old natural anticoagulant agent. *Pharmacol Res*. 2020 Oct;160:105193. doi: 10.1016/j.phrs.2020.105193.
17. Yu J, Zhong B, Xiao Q, Du L, Hou Y, Sun HS, Lu JJ, **Chen X**. Induction of programmed necrosis: A novel anti-cancer strategy for natural compounds. *Pharmacol Ther*. 2020 Oct;214:107593.doi: 10.1016/j.pharmthera.2020.107593.
18. Zhao W, Li C, Zhang H, Zhou Q, Chen X, Han Y, **Chen X**. Dihydrotanshinone I Attenuates Plaque Vulnerability in Apolipoprotein E-Deficient Mice: Role of Receptor-Interacting Protein 3. *Antioxid Redox Signal*. 2021 Feb 10;34(5):351-363. doi: 10.1089/ars.2019.7796.
19. Min X, Zeng X, Zhao W, Han Z, Wang Y, Han Y, Pei L, **Chen X**. Cryptotanshinone protects dextran sulfate sodium-induced experimental ulcerative colitis in mice by inhibiting intestinal inflammation. *Phytother Res*. 2020 Oct;34(10):2639-2648.doi: 10.1002/ptr.6693.
20. Yu J, Zhong B, Jin L, Hou Y, Ai N, Ge W, Li L, Liu S, Lu JJ, **Chen X**. 2-Methoxy-6-acetyl-7 -methyljuglone (MAM) induced programmed necrosis in glioblastoma by targeting NAD(P)H: Quinone oxidoreductase 1 (NQO1). *Free Radic Biol Med*. 2020 May 20;152:336-347. doi: 10.1016 /j.freeradbiomed.2020.03.026.

21. Liu X, Zhang Y, Gao H, Hou Y, Lu JJ, Feng Y, Xu Q, Liu B, **Chen X**. Induction of an MLKL mediated non-canonical necroptosis through reactive oxygen species by tanshinol A in lung cancer cells. *Biochem Pharmacol*. 2020 Jan;171:113684. doi:10.1016/j.bcp.2019.113684.
22. **Chen X**, Yu J, Zhong B, Lu J, Lu JJ, Li S, Lu Y. Pharmacological activities of dihydrotanshinone I, a natural product from *Salvia miltiorrhiza* Bunge. *Pharmacol Res*. 2019 Jul;145:104254. doi: 10.1016 /j.phrs.2019.104254.
23. Sun W, Yu J, Gao H, Wu X, Wang S, Hou Y, Lu JJ, **Chen X**. Inhibition of Lung Cancer by 2-Methoxy-6-Acetyl-7-Methyljuglone Through Induction of Necroptosis by Targeting Receptor-Interacting Protein 1. *Antioxid Redox Signal*. 2019 Jul 10;31(2):93-108. doi: 10.1089/ars. 2017.7376.
24. Wu C, Chen J, Yang R, Duan F, Li S, **Chen X**. Mitochondrial protective effect of neferine through the modulation of nuclear factor erythroid 2-related factor2 signalling in ischaemic stroke. *Br J Pharmacol*. 2019 Feb;176(3):400-415. doi: 10.1111/bph.14537.
25. Wu X, Guo Y, Min X, Pei L, **Chen X**. Neferine, a Bisbenzylisoquinoline Alkaloid, Ameliorates Dextran Sulfate Sodium-Induced Ulcerative Colitis. *Am J Chin Med*. 2018;46(6):1263-1279. doi: 10.1142/ S0192415X18500660.
26. Luo W, Liu X, Sun W, Lu JJ, Wang Y, **Chen X**. Toosendanin, a natural product, inhibited TGF-β1 -induced epithelial-mesenchymal transition through ERK/Snail pathway. *Phytother Res*. 2018 Oct;32 (10):2009 -2020. doi: 10.1002/ptr.6132.
27. Yu J, Wang C, Kong Q, Wu X, Lu JJ, **Chen X**. Recent progress in doxorubicin- induced cardiotoxicity and protective potential of natural products. *Phytomedicine*. 2018 Feb 1;40:125-139. doi: 10.1016/ j.phymed.2018.01.009.
28. Yuan R, Hou Y, Sun W, Yu J, Liu X, Niu Y, Lu JJ, **Chen X**. Natural products to prevent drug resistance in cancer chemotherapy: a review. *Ann N Y Acad Sci*. 2017 Aug;1401(1):19-27. doi: 10.1111/nyas.13387.
29. Gao H, Liu X, Sun W, Kang N, Liu Y, Yang S, Xu QM, Wang C, **Chen X**. Total tanshinones exhibits anti-inflammatory effects through blocking TLR4 dimerization via the MyD88 pathway. *Cell Death Dis*. 2017 Aug 17;8(8):e3004. doi: 10.1038/cddis.2017.389.
30. Gao H, Cui Y, Kang N, Liu X, Liu Y, Zou Y, Zhang Z, Li X, Yang S, Li J, Wang C, Xu QM, **Chen X**. Isoacteoside, a dihydroxyphenylethyl glycoside, exhibits anti-inflammatory effects through blocking toll-like receptor 4 dimerization. *Br J Pharmacol*. 2017 Sep;174(17):2880-2896. doi: 10.1111/ bph.13912.
31. Wu X, Gao H, Sun W, Yu J, Hu H, Xu Q, **Chen X**. Nepetoidin B, a Natural Product, Inhibits LPS-stimulated Nitric Oxide Production via Modulation of iNOS Mediated by NF-κB/MKP-5 Pathways. *Phytother Res*. 2017 Jul;31(7):1072-1077. doi:10.1002/ptr.5828.
32. Sun W, Wu X, Gao H, Yu J, Zhao W, Lu JJ, Wang J, Du G, **Chen X**. Cytosolic calcium mediates RIP1/RIP3 complex-dependent necroptosis through JNK activation and mitochondrial ROS production in human colon cancer cells. *Free Radic Biol Med*. 2017 Jul;108:433-444. doi: 10.1016/ j.freeradbiomed. 2017.04.010.
33. Zhao W, Feng H, Sun W, Liu K, Lu JJ, **Chen X**. Tert-butyl hydroperoxide (t-BHP) induced apoptosis and necroptosis in endothelial cells: Roles of NOX4 and mitochondrion. *Redox Biol*. 2017Apr;11:524 -534. doi:10.1016/j.redox.2016.12.036.
34. Sun W, Wang S, Zhao W, Wu C, Guo S, Gao H, Tao H, Lu J, Wang Y, **Chen X**. Chemical constituents and biological research on plants in the genus Curcuma. *Crit Rev Food Sci Nutr*. 2017 May 3;57(7):1451-1523. doi:10.1080/10408398.2016.1176554.
35. Zhang X, Zhao W, Wang Y, Lu J, **Chen X**. The Chemical Constituents and Bioactivities of Psoralea corylifolia Linn.: A Review. *Am J Chin Med*. 2016;44(1):35-60. doi: 10.1142/S0192415X16500038.
36. 33: Sun W, Bao J, Lin W, Gao H, Zhao W, Zhang Q, Leung CH, Ma DL, Lu J**, Chen X**. 2-Methoxy -6-acetyl-7-methyljuglone (MAM), a natural naphthoquinone, induces NO-dependent apoptosis and necroptosis by H2O2-dependent JNK activation in cancer cells. *Free Radic Biol Med*. 2016 Mar;92: 61 -77. doi: 10.1016/j.freeradbiomed.2016.01.014.

37. **Chen X**, Guo J, Bao J, Lu J, Wang Y. The anticancer properties of *Salvia miltiorrhiza* Bunge (Danshen): a systematic review. *Med Res Rev*. 2014 Jul;34(4):768-94. doi: 10.1002/med.21304.
38. **Chen X**, Lu J, Bao J, Guo J, Shi J, Wang Y. Adiponectin: a biomarker for rheumatoid arthritis? *Cytokine Growth Factor Rev*. 2013 Feb;24(1):83-9. doi: 10.1016/j.cytogfr.2012.07.004.
39. **Chen X**, Pei L, Zhong Z, Guo J, Zhang Q, Wang Y. Anti-tumor potential of ethanol extract of Curcuma phaeocaulis Valeton against breast cancer cells. *Phytomedicine*. 2011 Nov 15;18(14): 1238-43. doi: 10.1016/j.phymed.2011.06.017.
40. **Chen X**, Zhang H, McAfee S, Zhang C. The reciprocal relationship between adiponectin and LOX-1 in the regulation of endothelial dysfunction in ApoE knockout mice. *Am J Physiol Heart Circ Physiol*. 2010 Sep;299(3):H605-12. doi:10.1152/ajpheart.01096.2009.

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