

Betty Yuen Kwan Law



Position: Associate Professor

Faculty: State Key Laboratory of Quality Research in Chinese Medicine,
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Research Areas

Molecular and Chemical Biology; Autophagy in neurodegenerative disorders&Cancer. Educated and obtained Ph.D. degree in The University of Hong Kong. Currently working as an associate professor in the Macau University of Science and Technology (State Key Laboratory of Quality Research in Chinese Medicines). Research focuses includes the identification of novel autophagic enhancers from Chinese medicinal herbs, for example, the rhizome of *Alisma orientale* and *Radix Polygalae*, which may work as a potential therapeutic agent via the induction of autophagic signaling pathway; study on the therapeutic applications of the identified autophagic modulators by using both *in vitro* and *in vivo* approaches; identification of novel autophagic enhancers to modulate neurodegenerative disorders through the removal of mutant or mis-folded proteins by autophagy. Research findings published in SCI journals included *Pharmacology and Therapeutics, Pharmacological Research, EBioMedicine, Frontiers in Pharmacology, Cell Death & Diseases, Hepatology, Molecular Cancer Therapeutics, Molecules, Phytomedicine, Scientific Reports, International Journal of Molecular Sciences (IJMS), Oncotarget and Autophagy.*

Academic Qualifications

2009. 10 Ph.D., The University of Hong Kong, Hong Kong

2003. 12 M.Sc., Hong Kong University of Science and Technology, Hong Kong

2001. 6 B.Sc., Hong Kong University of Science and Technology, Hong Kong

Professional Chronology

- 2017.7- present Associate Professor, Macau University of Science and Technology
2011.9 - 2017.6 Assistant Professor, Macau University of Science and Technology
2011.3 - 2011.8 Postdoctoral Fellow, Hong Kong Baptist University
2010.5 - 2011.2 Research Associate, The University of Hong Kong
2010.5 - 2011.2 Honorary Research Associate, The Chinese University of HK
2009.11- 2010.4 Research Assistant I, The University of Hong Kong

Academic Awards

- ◇ Eli Lilly Asia Outstanding Graduate Thesis Award 禮來亞洲傑出論文獎 2010
- ◇ Bank of China (BOC, Macau Branch) Excellent Research Award 中銀(澳門)學術研究優秀獎 2015
- ◇ Zhongzhu Awards for Life Science Recognizing First Prize in Research 中珠醫療生命科學科研一等獎 2016
- ◇ Zhongzhu Awards for Life Science Recognizing First Prize in Service 中珠醫療生命科學服務一等獎 2017

Representative Publications

1. Hui-Miao Wang, Li Qun Qu, Jerome P. L. Ng, Wu Zeng, Lu Yu, Lin Lin Song, Vincent Kam Wai Wong, Cheng Lai Xia*, **Betty Yuen-Kwan Law ***, Natural Citrus flavanone 5-demethylnobiletin stimulates melanogenesis through the activation of cAMP/CREB pathway in B16F10 cells. *Phytomedicine*. Jan 2022
2. Lai J#, Tang Y#, Yang F, Chen J, Huang FH, Yang J, Wang L, Qin D, **Betty Yuen-Kwan Law ***, Wu AG*, Wu JM*. Targeting autophagy in ethnomedicine against human diseases. *J Ethnopharmacology*. 2022 Jan 10; 282: 114516.
3. Minsong Guo#, Fengdan Zhu#, Wenqiao Qiu#, GanQiao, **Betty Yuen-Kwan Law**, LuYu, JianmingWu, YongTang, ChonglinYu, Dalian Qin*, Xiaogang Zhou*, AnguoWu*. High-throughput screening for amyloid- β binding natural small-molecules based on the combinational use of bilayer interferometry and UHPLC-DAD-Q/TOF-MS/MS. *Acta Pharmaceutica Sinica B*. 2021, <https://doi.org/10.1016/j.apsb.2021.08.030>.
4. Bin Tang, Wu Zeng, Lin Lin Song, Hui Miao Wang, Li Qun Qu, Hang Hong Lo, Lu Yu, An Guo Wu, Vincent KamWai Wong* and **Betty Yuen Kwan Law***. Extracellular Vesicle Delivery of Neferine for the Attenuation of Neurodegenerative

- Disease Proteins and Motor Deficit in an Alzheimer's Disease Mouse Model. *Pharmaceuticals* 2022, 15, 83. <https://doi.org/10.3390/ph15010083>. Volume 176, February 2022, 106082
5. Wai kit Leong, Guo xin Huang, Wei lin Liao, Wen Rui Xia, Xiao ang Li, Zi ren Su Liang Liu, Qiang Wu, Vincent Kam Wai Wong, **Betty Yuen Kwan Law**, Cheng lai Xia, Xiao ling Guo, Imran Khan W.L and Wendy Hsiao. Traditional Patchouli essential oil modulates the host's immune responses and gut microbiota and exhibits potent anti-cancer effects in ApcMin ⁺/+ mice. *Pharmacological Research*. Volume 176, February 2022, 106082.
 6. Wen-Qiao Qiu; Wei Ai; Feng-Dan Zhu; Yue Zhang; Min-Song Guo; **Betty Yuen-Kwan Law**; Jian-Ming Wu; Vincent Kam-Wai Wong; Yong Tang; Lu Yu; Qi Chen; Chong-Lin Yu; Xiao-Gang Zhou; Da-Lian Qin, Anguo Wu. Polygala saponins inhibit NLRP3 inflammasome-mediated neuroinflammation via SHP2-Mediated mitophagy. *Free Redical Biology & Medicine*. 2021 Dec 20;179:76-94.
 7. Paolo Coghi, Jerome P. L. Ng, Onat Kadioglu, **Betty Yuen Kwan Law**, Alena Congling Qiu, Mohamed E.M. Saeed, Xi Chen, Chi Kio Ip, Thomas Efferth*, Liang Liu* and Vincent Kam Wai Wong*. Synthesis, computational docking and biological evaluation of celastrol derivatives as dual inhibitors of SERCA and P-glycoprotein in cancer therapy. *Eur J Med Chem*. 2021 Nov 15;224:113676..
 8. Xi Chen, Hui Zhang, Wu Zeng, Nick Wang, Hang Hong Lo, Chi Kio Ip, Li Jun Yang, W.L. Wendy Hsiao, Wai Man Sin, Chenglai Xia, **Betty Yuen Kwan Law*** and Vincent Kam Wai Wong*. Far infrared irradiation suppresses experimental arthritis in rats by down-regulation of genes involved in inflammatory response and autoimmunity. *Journal of Advanced Research*. 2021 Sept 1; <https://doi.org/10.1016/j.jare.2021.08.015>.
 9. Li Jun Yang*, Rui Hong Chen*, Sami Hamdoun, Paolo Coghi, Jerome Pak Lam Ng, David Wei Zhang, Xiaoling Guo, Chenglai Xia, Betty Yuen Kwan Law# and **Vincent Kam Wai Wong#**. Corilagin prevents SARS-CoV-2 infection by targeting RBD-ACE2 binding. *Phytomedicine*. 2021 Jul;87:153591.
 10. Ivo Ricardo de Seabra Rodrigues Dias, Hang Hong Lo, Kaixi Zhang, **Betty Yuen Kwan Law**, Ali Adnan Nasim, Sookja Kim Chung#, Vincent Kam Wai Wong#, Liang Liu#. Potential therapeutic compounds from traditional Chinese medicine targeting endoplasmic reticulum stress to alleviate rheumatoid arthritis. *Pharmacol Res*. 2021 Aug;170:105696.
 11. Rui Hong Chen*, Li Jun Yang*, Sami Hamdoun, Sookja Kim Chung, Christopher Wai-kei Lam, Kai Xi Zhang, Xiaoling Guo, Chenglai Xia, **Betty Yuen Kwan Law#** and Vincent Kam Wai Wong#. 1,2,3,4,6-Pentagalloyl glucose, a RBD-ACE2

- binding inhibitor to prevent SARS-CoV-2 infection. *Frontier in Pharmacology*. 04 March 2021.
12. Wu Zeng, An Guo Wu, Xiao-Gang Zhou, Imran Khan, Rui Long Zhang, Hang Hong Lo, Li Qun Qu, Lin Lin Song, Xiao Yun Yun, Hui Miao Wang, Juan Chen, Jerome P.L. Ng, Fang Ren, Si Yu Yuan, Lu Yu, Yong Tang, Guo Xin Huang, Vincent Kam Wai Wong, Sookja Kim Chung, Simon Wing Fai Mok, Da Lian Qin, Hua Lin Sun, Liang Liu*, W.L. Wendy Hsiao*, **Betty Yuen Kwan Law***. Saponins isolated from *Radix polygalae* extend lifespan by modulating complement C3 and gut microbiota. *Pharmacological Research*. 170 (2021) 105697.
 13. Hualin Sun, Junjie Sun, Ming Li, Lei Qian, Lilei Zhang, Ziwei Huang, Yuntian Shen, **Betty Yuen-Kwan Law**, Liang Liu* and Xiaosong Gu*. Transcriptome Analysis of Immune Receptor Activation and Energy Metabolism Reduction as the Underlying Mechanisms in Interleukin-6-Induced Skeletal Muscle Atrophy. *Frontiers In Immunology*. 06 September 2021.
 14. Li Jun Yang*, Rui Hong Chen*, Sami Hamdoun, Paolo Coghi, Jerome Pak Lam Ng, David Wei Zhang, Xiaoling Guo, Chenglai Xia, **Betty Yuen Kwan Law#** and Vincent Kam Wai Wong#. Corilagin prevents SARS-CoV-2 infection by targeting RBD-ACE2 binding. *Phytomedicine*. 2021 Jul;87:153591.
 15. Ivo Ricardo de Seabra Rodrigues Dias, Hang Hong Lo, Kaixi Zhang, **Betty Yuen Kwan Law**, Ali Adnan Nasim, Sookja Kim Chung#, Vincent Kam Wai Wong#, Liang Liu#. Potential therapeutic compounds from traditional Chinese medicine targeting endoplasmic reticulum stress to alleviate rheumatoid arthritis. *Pharmacol Res*. 2021 Aug;170:105696.
 16. Xiaoang Li, Imran Khan, Wenrui Xia, Guoxin Huang, Liang Liu, **Betty Yuen Kwan Law**, Lin Yin, Weilin Liao, Waikit Long, Ruixuan Han, Vincent Kam Wai Wong, Chenglai Xia, Xiaoling Guo, Wendy Hsiao. Icaritin enhances youth-like features by attenuating the declined gut microbiota in the aged mice. *Pharmacol Res*. 2021 Jun;168:105587.
 17. Wu Zeng*, **Betty Y.K. Law***, Vincent K.W. Wong, Denise S.B. Chan, Simon W.F. Mok, Joyce J.Y. Gao, Rebecca K.Y. Ho, Xu Liang, Jia H. Li, Ming T. Lee, Weng L. Yoon, Michael P. Smolinski, Johnson Y.N. Lau, Christopher W.K. Lam#, and Manson Fok#. HM30181A, a potent P-glycoprotein inhibitor, potentiates absorption and *in vivo* anti-tumor efficacy of paclitaxel in an orthotopic brain tumor model. *Cancer Biology & Medicine* 2020. DOI: 10.20892/j.issn.2095-3941.2020.0128.
 18. Hai-Bo Yu, Sheng-Tao Cheng, Fang Ren, Yong Chen, Xiao-Feng Shi, Vincent Kam Wai Wong, **Betty Yuen Kwan Law**, Ji-Hua Ren, Shan Zhong, Wei-Xian Chen, Hong-Mei Xu, Zhen-Zhen Zhang, Jie-Li Hu, Xue-Fei Cai, Yuan Hu, Wen-Lu Zhang, Quan-Xin Long, Lin He, Zhong-Wen Hu, Hui Jiang, Hong-Zhong Zhou, Ai-Long Huang, Juan

- Chen. SIRT7 restricts HBV transcription and replication through catalyzing desuccinylation of histone H3 associated with cccDNA minichromosome. *Clinical Science*. 2021 Jun 25;135(12):1505-1522.
19. Jerome P. L. Ng, Paolo Coghi, [Betty Yuen Kwan Law](#), Liang Liu* and Vincent Kam Wai Wong*. The present and future synthetic strategies of structural modifications of sinomenine. *Organic Chemistry Frontiers*. Issue 24, 2020.
 20. Sheng-Tao Cheng, Jie-Li Hu, Ji-Hua Ren, Hai-Bo Yu, Shan Zhong, Vincent Kam Wai Wong, [Betty Yuen Kwan Law](#), Wei-Xian Chen, Hong-Mei Xu, Zhen-Zhen Zhang, Xue-Fei Cai, Yuan Hu, Wen-Lu Zhang, Quan-Xin Long, Fang Ren, Hong-Zhong Zhou, Ai-Long Huang *, Juan Chen1*. Dicoumarol, an NQO1 inhibitor, blocks cccDNA transcription by promoting degradation of Hbx. *Journal of Hepatology* 2020 Sep 25;S0168-8278(20)33661-8. doi: 10.1016/j.jhep.2020.09.019.
 21. Rui Xiong, Xiao-Gang Zhou, Yong Tang, Jian-Ming Wu, Yue-Shan Sun, Jin-Feng Teng, Rong Pan, [Betty Yuen-Kwan Law](#), Ya Zhao, Wen-Qiao Qiu, Xiu-Ling Wang Sha Liu, Yi-Ling Wang, Lu Yu, Chong-Lin Yu, Qi-Bing Mei, Da-Lian Qin, An-Guo Wu. Lychee Seed Polyphenol Protects the Blood-Brain Barrier through Inhibiting A β (25-35)-Induced NLRP3 Inflammasome Activation via the AMPK/mTOR/ULK1-Mediated Autophagy in bEnd.3 Cells and APP/PS1 Mice. *Phytotherapy Research* 2020; 1–20. DOI: 10.1002/ptr.6849.
 22. An-Guo Wu, Xiao-Gang Zhou, Gan Qiao, Lu Yu, Yong Tang, Lu Yan, Wen-Qiao Qiu, Rong Pan, Chong-Lin Yu, [Betty Yuen-Kwan Law*](#), Da-Lian Qin*, Jian-Ming Wu*. Targeting microglial autophagic degradation in NLRP3 inflammasome-mediated neurodegenerative diseases. *Ageing Research Reviews*. 65 (2021) 101202.
 23. An-Guo Wu#, Rong Pan#, [Betty Yuen-Kwan Law#](#), Yong Tang, Jian-Ming Wu, Chang-Long He, Vincent Kam-Wai Wong, Chong-Lin Yu, Xiao-Gang Zhou, Da-Lian Qin. Targeting autophagy as a therapeutic strategy for identification of ligandans from *Peristrophe japonica* in Parkinson's disease. *Signal Transduction and Targeted Therapy* 2021: 6:67.
 24. Hu-Qiang He, Yuan-Qing Qu, [Betty Yuen Kwan Law](#), Cong-ling Qiu, Yu Han, Ivo Ricardo de Seabra Rodrigues Dias, Yong Liu, Jie Zhang, An-Guo Wu, Cheng-Wen Wu, Simon Wing Fai Mok, Xin Cheng, Yan-Zheng He* and Vincent Kam Wai Wong *. AGEs-induced calcification and apoptosis in human vascular smooth muscle cells is reversed by inhibition of autophagy. *Front Pharmacol*. 2021 Oct 20;12:692431
 25. Ni Zhang, Hui Zhang, [Betty Yuen Kwan Law](#), Ivo Ricardo De Seabra Rodrigues Dias, Cong Ling Qiu, Wu Zeng, Hu Dan Pan, Li Qun Qu, Xi Chen, Qi Huang, Wei Zhang, Li Jun Yang, Lu Yu, Yu Han, Guo Xin Huang, Hui Miao Wang, Xiao Lei Sun, Yun Zhang, Hu Qiang He, Wei Dan Luo, Yao Xiao, Vincent Kam Wai Wong & Liang Liu. Sirtuin 5 deficiency increases disease severity in rats with

- adjuvant-induced arthritis. *Cellular & molecular immunology*. DOI 10.1038 Feb 2020.
26. Na-Na Tao, Zhen-Zhen Zhang, Ji-Hua Ren, Juan Zhang, Yu-Jiao Zhou, Vincent Kam Wai Wong, [Betty Yuen Kwan Law](#), Sheng-Tao Cheng, Hong-Zhong Zhou, Wei-Xian Chen, Hong-Mei Xu, Juan Chen. Overexpression of ubiquitin-conjugating enzyme E2 L3 in hepatocellular carcinoma potentiates apoptosis evasion by inhibiting the GSK3 β /p65 pathway. *Cancer Letters* 2020 Jul 1;481:1-14. doi: 10.1016/j.canlet.2020.03.028. Epub 2020 Apr 5.
 27. Rui Long Zhang, Hang Hong Lo, Cheng Lei, Nikki Ip, Juan Chen*, [Betty Yuen-Kwan Law*](#). Current pharmacological intervention and development of targeting IVIG resistance in Kawasaki Disease. *Current Opinion in Pharmacology*. 2020, 54:1–10
 28. Qi Huang, Li Ping Bai, [Betty Yuen Kwan Law](#), Haoming Xiong, Xiaobo Zhou, Riping Xiao, Simon Wing Fai Mok, Liang Liu* and Vincent Kam Wai Wong*. Novel ginsenoside derivative 20(S)-Rh2E2 suppresses tumor growth and metastasis in vivo and in vitro via intervention of cancer cell energy metabolism. *Cell Death & Disease*. 11, Article number: 621 (2020).
 29. Imran Khan, Xiao-ang Li, [Betty Yuen Kwan Law](#), Ka In U, Bao Quan Pan, Cheng Lei* & WL Wendy Hsiao. Correlation of gut microbial compositions to the development of Kawasaki disease vasculitis in children. *Future Microbiology*. 2020.10.2217/fmb-2019-0301.
 30. Yun Zhang*, Linlin Guo*, [Betty Yuen Kwan Law](#), Xiaobo Liang, Ning Ma, Guofeng Xu, Xiaoyun Wang, Xiefang Yuan, Hongmei Tang, Qi Chen, Vincent Kam Wai Wong# and Xing Wang#. Resveratrol decreases cell apoptosis through inhibiting DNA damage in bronchial epithelial cells. *International Journal of Molecular Medicine* DOI: 10.3892/ijmm.2020.4539
 31. Su-Wei Xu, [Betty Yuen Kwan Law](#), Steven Li Qun Qu, Sami Hamdoun, Juan Chen, Wei Zhang, Jian-Ru Guo, An-Guo Wu, Simon Wing Fai Mok, David Wei Zhang, Chenglai Xia, Yoshikazu Sugimoto, Thomas Efferth*, Liang Liu* and Vincent Kam Wai Wong*. SERCA and P-glycoprotein inhibition and ATP depletion are necessary for celastrol-induced autophagic cell death and collateral sensitivity in multidrug-resistant tumor cells. *Pharmacological Research*. 2020 Mar; 153:104660. doi: 10.1016/j.phrs.2020.104660. 2020 Jan 23.
 32. Ming yue Rao, Chen lin Gao, Jing Hou, Junling Gu, [Betty Yuen Kwan Law*](#), Yong Xu*. Non-digestible Carbohydrate and the Risk of Colorectal Neoplasia: A Systematic Review. *Nutrition and Cancer*. 2020 Mar 22;1-14. doi: 10.1080/01635581.2020.1742360.

33. Bin Tang, Hang Hong Lo, Cheng Lei, Ka In U, Wen-Luan Wendy Hsiao, Xiaoling Guo, Jun Bai, Vincent Kam-Wai Wong*, **Betty Yuen-Kwan Law***. Adjuvant Herbal Therapy for Targeting Susceptibility Genes to Kawasaki Disease: An Overview of Epidemiology, Pathogenesis, Diagnosis and Pharmacological Treatment of Kawasaki Disease. *Phytomedicine*. 2020 Mar.
34. Jin-Feng Teng, Qi-Bing Mei, Xiao-Gang Zhou, Yong Tang, Wen-Qiao Qiu, Rui Xiong, Rong Pan, **Betty Yuen-Kwan Law**, Vincent Kam Wai Wong, Chong-Lin Yu, Feng Zhang, Jian-Ming Wu *, Da-Lian Qin *, An-Guo Wu *. Polyphyllin VI Induces Caspase 1-Mediated Pyroptosis via the Induction. *Cancers* 2020, 12(1), 193; <https://doi.org/10.3390/cancers12010193>.

Book Chapter

1. **Betty Yuen Kwan Law#**, Vincent Wong Kam Wai. **Book title:** Autophagy in Current Trends in Cellular Physiology and Pathology; **Chapter title:** Autophagy In Multidrug-Resistant Cancers (MDR) *Chapter 20 Page 435-454*; ISBN 978-953-51-2726-0; *InTech Publishing*, Croatia. June 2016.
2. Simon Wing Fai Mok, **Betty Yuen Kwan Law**, Vincent Kam Wai Wong and Liang Liu* (2018). Immunotherapeutic approaches of rheumatoid arthritis and the implication on novel interventions for refractoriness, Immunotherapy, Dr. Seyyed Shamsadin Athari (Ed.), InTech, ISBN 978-953-51-6100-4. Feb 2018.

Teaching Modules

Under-graduate courses (UG)

- Biochemistry
- Biochemistry(Laboratory)
- Biochemistry & Molecular Biology
- Biochemistry & Molecular Biology (Laboratory)
- Pharmacological lab (Laboratory) (Course coordinator)

Post-graduate courses (PG)

- Modern Biotechnology
- Clinical Pharmacology
- Professional English (Course coordinator)

- Pharmaceutical English (*Course coordinator*)
- Clinical English on Chinese medicine (*Course coordinator*)

Editorial Board membership

- Elsevier Pharmacological Research, *Consulting editor*
- MDPI, *Molecules*, *Guest Editor*

Professional Qualifications and positions

- ✧ Member of the Macau Laboratory Technologist Association (MLTA, Macao)
- ✧ Member of Organisation for Oncology and Translational Research (OOTR, HK)
- ✧ Postgraduate student management committee, MUST (Deputy officer)
- ✧ Holder of the “Certificate in Teaching and Learning in Higher Education” (Educational Development Centre, MUST)
- ✧ Executive Council Member of the Board of Specialty Committee of Immunology of Traditional Chinese Medicine of the World Federation of Chinese Medicine Societies.
- ✧ Executive Council Member of Council of the International Consortium for Rheumatology Research