

LI TING



Position: Associate Professor, M.D., Ph.D.

Faculty: Macau Institute for Applied Research in Medicine and Health State

Key Laboratory of Quality Research in Chinese Medicines

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Teaching Modules: Pharmacology, Experiments of Herbal Pharmacology, Microbiology and immunology, Pharmacology of Chinese Materia Medica

Research Areas: 1) investigation of the effect of natural products on Th17 differentiation to modulate the inflammatory and autoimmune disorders; 2) identification of novel drug target by application of proteomics and bioinformatics in the research of Chinese medicine; 3) study on synergistic effect and underlying mechanism of the interaction between natural products and western drugs; 4) research and development of new drugs and products from Chinese medicines and herbs for the treatment of arthritis, and inflammatory diseases.

Dr. Li obtained her M.D. degree in Traditional Chinese Medicine from Anhui University of Traditional Chinese Medicine in 2002 and M.Phil. degree from Guangzhou University of Traditional Chinese Medicine in 2005. She then achieved my Ph.D. from Hong Kong Baptist University in 2010, followed by one year of postdoctoral training at School of Chinese Medicine, Hong Kong Baptist University. In Sept. 2011, Dr. Li joined the State Key Laboratory of Quality Research in Chinese Medicines and the Macau Institute for Applied Research in Medicine and Health, Macau University of Science and Technology as an assistant professor. As principal investigator, Dr. Li has obtained 5 grants from the Science & Technology Development Fund (FDCT) of Macao SAR, and 1 grant from the Macao Foundation of Macao SAR. She has published 30 SCI articles, been granted 9 international patents. She has been awarded the First prize of the Nature and Science Category of 2014 Ministry of Education Higher Education Outstanding Scientific Research Output Awards, the First prize of 2016 Macau Scientific and Technological Achievement Award, and BOC Excellent Research Award of 2017 Macau University of Science and Technology.

Education:

- 2010.2 **Hong Kong Baptist University**
Ph.D. (Pharmacology)
- 2005.7 **Guangzhou University of Traditional Chinese Medicine**
M. Phil. (Pharmacology)
- 2010.2 **Anhui University of Traditional Chinese Medicine, Hefei, China**
M.D (Chinese Medicine)

Professional Chronology:

- 2016.7- present **Macau University of Science and Technology**
Associate Professor (Macau Institute for Applied Research in Medicine and Health, State Key Laboratory of Quality Research in Chinese Medicine)
- 2011.9- 2016.7 **Macau University of Science and Technology**
Assistant Professor (Macau Institute for Applied Research in Medicine and Health, State Key Laboratory of Quality Research in Chinese Medicine)
- 2010.6- 2011.8 **Hong Kong Baptist University**
Post-doctoral-fellow (School of Chinese Medicine)
Research area: Immunology and pharmacology of Chinese medicines
- 2010.2- 2010.4 **Hong Kong Baptist University**
Research assistant (School of Chinese Medicine)
Research area: Immunology and pharmacology of Chinese medicines
- 2007.1- 2010.1 **Hong Kong Baptist University**
Teaching assistant for undergraduate students in laboratory course of molecular biology and immunology.
- 2005.9- 2006.12 **Hong Kong Baptist University**
Research assistant (School of Chinese Medicine)
Research area: Immunology and pharmacology of Chinese medicines
- 2002.9- 2005.7 **Guangzhou University of Traditional Chinese Medicine**
Teaching assistant for postgraduate students in the course of molecular biology and immunology.

Teaching Experience:

- 1) Herbal Pharmacology, as a subject coordinator, for the students in the program of Bachelor of Pharmacy in Chinese Medicine
- 2) Experiments of Herbal Pharmacology, as a subject coordinator, for the students in the program of Bachelor of Pharmacy in Chinese Medicine
- 3) Microbiology and immunology, as a subject lecturer, for the students in the program of Bachelor of Pharmacy in Chinese Medicine

- 4) Biochemistry & Molecular Biology, as a subject lecturer, for the students in the program of Bachelor of Pharmacy in Chinese Medicine
- 5) Practicum, as a subject lecturer, for the students in the program of Bachelor of Pharmacy in Chinese Medicine
- 6) Pharmacology of Chinese Materia Medica, as a subject lecturer, for the students in the program of Master of Integrated Traditional Chinese & Western Clinical Medicine
- 7) Herbal Pharmacology, as a subject lecturer, for the PhD students
- 8) Methodology of Pharmacological Experiment, as subject lecturer, for the postgraduate students

Granted patents :

- 1) Novel binding site of IKK-beta. Australian Innovation Patent No. 2013101130; Granted on 5 Sept 2013.
- 2) Development of a new formula overcoming thymus atrophy with concomitantly enhancement of anti-inflammatory effect of dexamethasone, Australian Innovation Patent No. 2014100379; Granted on 1 May 2014.
- 3) Development of a new formula overcoming thymus atrophy with concomitantly enhancement of anti-inflammatory effect of dexamethasone, US Utility Patent No. 9,018,196; Granted on 28 Apr 2015.
- 4) Isoliquiritigenin suppresses human T lymphocyte activation via targeting on cysteine 46 of I κ B α Kinase. Australian Innovation Patent No. 2015100662; Granted on 28 May 2015.
- 5) Limonoids for treating autoimmune diseases field. Australian Innovation Patent No. 2017100026; Granted on 9 Jan 2017.
- 6) Method to treat anaphylactoid reaction; Australian Innovation Patent No. 2017100973; Granted on 17 July 2017.
- 7) Method of treating rheumatoid arthritis. Australian Innovation Patent No. 2017101103; Granted on 14 August 2017.
- 8) Method of treating an autoimmune disease. Australian Innovation Patent No. 2017101742; Granted on 12 Dec 2017.
- 9) Transgenic model for delay-type hypersensitivity (DTH) and use thereof, US Utility Patent No 9,955,676; Granted on 2 May 2018.

Publications:

- 1) Yang F Su X, Pi J, Liao K, Zhou H, Sun Y, Liu J, Guo X, Jiang J, Jin H, Cai J, **Li T**[#], Liu L[#], Atomic force microscopy technique used for assessment of the anti-arthritis effect of licochalcone A *via* suppressing NF- κ B activation, *Biomedicine & Pharmacotherapy*. 2018 Jul;103:1592-1601. ([#]co-corresponding author).
- 2) Pan H, Guo R, Zhu J, Wang Q, Ju Y, Xie Y, Zheng Y, Wang Z, **Li T**, Liu Z, Lu L, Li F, Tong B, Xiao L, Xu X, Li R, Yuan Z, Yang H, Wang J, Kristiansen K, Jia H, Liu L. A gene catalogue of the Sprague-Dawley rat gut metagenome. *Gigascience*. 2018 May 1;7(5). doi: .1093/gigascience/gy055.
- 3) Su X*, **Li T***, Liu Z, Huang Q, Liao K, Ren R, Lu L, Qi X, Wang M, Chen J, Zhou H, Leung EL, Pan H, Liu J, Wang H, Huang L, Liu L. Licochalcone A activates Keap1-Nrf2 signaling to

- suppresses arthritis via phosphorylation of p62 at serine 349. *Free Radic Biol Med.* 2017 Dec 9. pii: S0891-5849(17)31236-4. (*co-first author).
- 4) Jin H, Pi J, Zhao Y, Jiang J, **Li T**, Zeng X, Yang P, Evans CE, Cai J. EGFR-targeting PLGA-PEG nanoparticles as a curcumin delivery system for breast cancer therapy. *Nanoscale.* 2017 Nov 2;9(42):16365-16374.
 - 5) Zhou H, Liu JX, Luo JF, Cheng CS, Leung EL, Li Y, Su XH, Liu ZQ, Chen TB, Duan FG, Dong Y, Zuo YH, Li C, Lio CK, **Li T**, Luo P, Xie Y, Yao XJ, Wang PX, Liu L. Suppressing mPGES-1 expression by sinomenine ameliorates inflammation and arthritis. *Biochem Pharmacol.* 2017 Oct 15;142:133-144.
 - 6) Huang L.F., Dong Y., Wu J. L., Wang P.X., Zhou H., **Li T**[#] and Liu L[#], Sinomenine-induced histamine release-like anaphylactoid reactions are blocked by tranilast via inhibiting NF-κB signaling. *Pharmacol Res.* 2017 Nov;125(Pt B):150-160. ([#]co-corresponding author).
 - 7) Chen J.Y., Zhu G.Y., Su X.H., Wang R., Liu J., **Li T**[#] and Liu L[#], 7-Deceaylgedunin suppresses proliferation of macrophages and inflammation through activation of Keap1/Nrf2/HO-1 signaling. *Oncotarget.* 2017 Jul 5;8(33):55051-55063. ([#]co-corresponding author).
 - 8) Chen Y. N., Li H. F., Li M. F., Niu S., B., Wang J. X., Shao H., W., **Li T**[#], **Wang H**[#]. Salvia miltiorrhiza polysaccharide activates T Lymphocytes of cancer patients through activation of TLRs mediated -MAPK and -NF-κB signaling pathways. *Journal of Ethnopharmacology.* 2017 Feb 20. pii: S0378-8741(16)31471-4. ([#]co-corresponding author)
 - 9) Pan H, Li R, **Li T**, Wang J, Liu L, Whether Probiotic Supplementation Benefits Rheumatoid Arthritis Patients: A Systematic Review and Meta-Analysis. *Engineering.* 2017 February, 3 (1):115-121.
 - 10) Su X, Huang Q, Chen J, Wang M, Pan H, Wang R, Zhou H, Zhou Z, Liu J, Yang F, **Li T**[#], **Liu L**[#] Calycosin suppresses expression of pro-inflammatory cytokines via the activation of p62/Nrf2-linked heme oxygenase 1 in rheumatoid arthritis synovial fibroblasts. *Pharmacol Res.* 2016 Nov;113 (Pt A):695-704. ([#]co-corresponding author)
 - 11) Yan FG, Yang F, Wang R, Yao XJ, Bai LP, Zeng X, Huang JJ, Wong VK, Lam CW, Zhou H, Su XH, Liu J, **Li T**[#], Liu L[#] Isoliquiritigenin suppresses human T lymphocyte activation via covalently binding cysteine 46 of IκB Kinase. *Oncotarget.* 2016 Sep 10. doi: 10.18632 ([#]co-corresponding author).
 - 12) Fan DS, Zhu GY, Li T, Jiang ZH, Bai LP. Dimacrolide Sesquiterpene Pyridine Alkaloids from the Stems of *Tripterygium regelii*. *Molecules.* 2016, 21(9), 1146.
 - 13) Wang R, Pi J, Su X, Liu J, Zeng X, Wong I, Huang L, Zhou H, Cai J, **Li T**[#], Liu L[#]. Dihydromyricetin suppresses inflammatory responses in vitro and in vivo through inhibition of IKKβ activity in macrophages. *Scanning.* 2016 Aug 3. ([#]co-corresponding author). [SCI impact factor 2015: 1.3, ranked 29st in 56 journals (51.8%) of category INSTRUMENTS & INSTRUMENTATION]
 - 14) Jin H, Pi J, Yang F, Jiang J, Wang X, Bai H, Shao M, Huang L, Zhu H Yang P, Li L, **Li T**, Cai J1, Chen ZW. Folate-Chitosan Nanoparticles Loaded with Ursolic Acid Confer Anti-Breast Cancer Activities in vitro and in vivo. *Sci Rep.* 2016 Jul 29;6:30782.

- 15) Huang LF, Pi J, Wu JL, Zhou H, Cai JY, **Li T**[#], Liu L[#], A rapid and sensitive assay based on particle analysis for cell degranulation detection in basophils and mast cells. *Pharmacol Res*, 2016 Jun 21;111:374-383. ([#]co-corresponding author). [SCI impact factor 2015: 4.816, ranked 27st in 253 journals (10.7%) of category PHARMACOLOGY & PHARMACY]
- 16) Parhira S, Zhu GY, Li T, Liu L, Bai LP, Jiang ZH. Inhibition of IKK- β by epidioxysterols from the flowers of *Calotropis gigantea* (Niu jiao gua). *Chin Med*. 2016 Mar 2;11:9.
- 17) Li T*, Wong VK*, Jiang ZH, Jiang SP, Liu Y, Wang TY, Yao XJ, Su XH, Yan FG, Liu J, Leung EL, Yi XQ, Wong YF, Zhou H, Liu L. Mutation of cysteine 46 in IKK-beta increases inflammatory responses. *Oncotarget*. 2015 Oct 13;6(31):31805-19. (*co-first author).
- 18) Zhang X, Zhang D, Jia H, Feng Q, Wang D, Liang D, Wu X, Li J, Tang L, Li Y, Lan Z, Chen B, Li Y, Zhong H, Xie H, Jie Z, Chen W, Tang S, Xu X, Wang X, Cai X, Liu S, Xia Y, Li J, Qiao X, Al-Aama JY, Chen H, Wang L, Wu QJ, Zhang F, Zheng W, Li Y, Zhang M, Luo G, Xue W, Xiao L, Li J, Chen W, Xu X, Yin Y, Yang H, Wang J, Kristiansen K, Liu L, Li T, Huang Q, Li Y, Wang J. The oral and gut microbiomes are perturbed in rheumatoid arthritis and partly normalized after treatment. *Nat Med*. 2015 Aug;21(8):895-905.
- 19) Huang L, **Li T**, Zhou H, Qiu P, Wu J, Liu L. Sinomenine potentiates degranulation of RBL-2H3 basophils via up-regulation of phospholipase A2 phosphorylation by Annexin A1 cleavage and ERK phosphorylation without influencing on calcium mobilization. *Int Immunopharmacol*. 2015 Oct;28(2):945-51.
- 20) Wang R, Zhang CY, Bai LP, Pan HD, Shu LM, Kong AN, Leung EL, Liu L[#], **Li T**[#]. Flavonoids derived from liquorice suppress murine macrophage activation by up-regulating heme oxygenase-1 independent of Nrf2 activation. *Int Immunopharmacol*. 2015 Oct;28(2):917-24. ([#]co-corresponding author).
- 21) Leung EL, Wong VK, Jiang ZH, **Li T**, Liu L. Integrated network-based medicine: the role of traditional Chinese medicine in developing a new generation of medicine. *Science*. 2014 Dec, 346 (6216 Suppl), S16-S18.
- 22) Pi J, **Li T**, Liu J, Su X, Wang R, Yang F, Bai H, Jin H, Cai J Detection of lipopolysaccharide induced inflammatory responses in RAW264.7 macrophages using atomic force microscope. *Micron*. 2014 Oct;65:1-9.
- 23) Wong VK*, **Li T***, Law BY, Ma ED, Yip NC, Michelangeli F, Law CK, Zhang MM, Lam KY, Chan PL and Liu L. Saikosaponin-d, a novel SERCA inhibitor induces autophagic cell death in apoptosis-defective cells. 2013 Jul 11;4:e720. (*co-first author).
- 24) **Li T**, Yan F, Wang R, Zhou H, Liu L. Shikonin Suppresses Human T Lymphocyte Activation through Inhibition of IKK β Activity and JNK Phosphorylation. *Evid Based Complement Alternat Med*.2013:379536.
- 25) Ding R, Tang J, Gao H, **Li T**, Zhou H, Liu L, Yao XS. New methymycin derivatives of *Streptomyces venezuelae* ATCC 15439 and their inhibitory effects on human T cell proliferation mediated by PMA/ionomycin. *Arch Pharm Res*. 2012 Sep;35(9):1567-72.[SCI impact factor 2011: 1.592, ranked 38th in 59 journals (64.4%) of category MEDICINAL CHEMISTRY]

- 26) Zhu L, Lu JG, **Li T**, Zhu GY, Han QB, Hsiao WL, Liu L, Jiang ZH. Immunosuppressive decalin derivatives from red yeast rice. *J Nat Prod.* 2012 Apr 27;75(4):567-71. [SCI impact factor 2012: 3.285, ranked 27st in 190 journals (14.87%) of category PLANT SCIENCES]
- 27) Yi XQ, **Li T**, Wang JR, Wong VK, Luo P, Wong IY, Jiang ZH, Liu L, Zhou H. Total ginsenosides increase coronary perfusion flow in isolated rat hearts through activation of PI3K/Akt-eNOS signaling. *Phytomedicine.* 2010 Nov;17(13):1006-15.
- 28) Wong VK, Cheung SS, **Li T**, Jiang ZH, Wang JR, Dong H, Yi XQ, Zhou H, Liu L. Asian ginseng extract inhibits in vitro and in vivo growth of mouse lewis lung carcinoma via modulation of ERK-p53 and NF-κB signaling. *J Cell Biochem.* 2010 Nov 1;111(4):899-910.
- 29) **Li T**, Wong VK, Yi XQ, Wong YF, Zhou H, Liu L. Matrine induces cell anergy in human Jurkat T cells through modulation of mitogen-activated protein kinases and nuclear factor of activated T-cells signaling with concomitant up-regulation of anergy-associated genes expression. *Biol Pharm Bull.* 2010;33(1):40-6.
- 30) **Li T**, Wong VK, Yi XQ, Wong YF, Zhou H, Liu L. Pseudolaric acid B suppresses T lymphocyte activation through inhibition of NF-kappaB signaling pathway and p38 phosphorylation. *J Cell Biochem.* 2009 Sep 1;108(1):87-95.
- 31) Wong VK, Zhou H, Cheung SS, **Li T**, Liu L. Mechanistic study of saikosaponin-d (Ssd) on suppression of murine T lymphocyte activation. *J Cell Biochem.* 2009 May 15;107(2):303-15.

Academic Membership:

Executive Council Member	The First Board of Specialty Committee of Immunology of Traditional Chinese Medicine of World Federation of Chinese Medicine Societies, 2014.12 - 2018.12
Member	Clinical Pharmacology and Toxicology Committee of Chinese Association of Integrative Medicine, 2017.11-
Member	Committee of Immunology of Traditional Chinese Medicine of Chinese Society of Immunology

Peer review for international SCI journals

- 1) *Frontier in Pharmacology* 2017-
- 2) *Biomedicine & Pharmacotherapy* 2017-
- 3) *Pharmacological Research* 2016-
- 4) *Phytomedicine* 2015-
- 5) *Plos One* 2015-
- 6) *ACS Medicinal Chemistry Letters* 2013-

Awards:

- 1) BOC Excellent Research Award of 2017 Macau University of Science and Technology
- 2) First prize of Natural Science Award of Macau, 2016, Macau.

- 3) First prize of the Nature and Science Category of 2014 Ministry of Education Higher Education Outstanding Scientific Research Output Awards (the 8th awardee) for Studies on the network-based modulatory mechanism of the holistic therapy of traditional Chinese medicine, the Ministry of Education of the People's of Republic China, 1 Dec. 2014, Beijing, China.
- 4) Oral presentation awards, the 4th Hong Kong - Macau Postgraduate Symposium on Chinese Medicine, Hong Kong, 2008.