

## Biography of Xing-Xing FAN



<b>Position</b>	Associate Professor
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Since 2017, Dr. Xing-Xing FAN started to be an assistant professor in State Key Laboratory of MUST engaging in the research field of anti-inflammation and anti-cancer. His research area includes cancer metabolism, molecular target therapy and cancer immunotherapy. He has published many high-impact articles in the field of anti-inflammatory and anti-tumor, including *Nano-micro-Letters*, *Seminar in cancer biology*, *Nature communication*, *BMC medicine*, *Pharmacol Ther*, *Antioxid Redox Signal*, *Pharmacol Res*, *Cell Death Dis* and etc. Dr. Fan obtained more than 10 US and Australia patents with the works related to the discovery of novel inhibitors of EGFR or new anti-cancer metabolism. He is associate editor of *Heliyon* and guest editor of *Pharmacological Research*, *Vaccines* and *Frontiers in pharmacology*.

### ***Academic Qualifications***

2014. 07 Ph.D., Chinese Medicines, Macau University of Science and Technology, Macau

2010.7 M.Sc., Pathogenesis, Tianjin Medical University, China

2007.7 M.D., Clinical Medicine, Tianjin Medical University, China

### ***Professional Chronology***

2023.7-present Associate Professor, Macau University of Science and Technology  
2017.9- 2023.6 Assistant Professor, Macau University of Science and Technology

### ***Representative publication within 5 years***

#### ➤ **Papers published as *Corresponding author\** or *First author*<sup>#</sup>**

- (1) Longitudinal high-dimensional analysis identifies biomarkers of response to anti-PD-1 immunotherapy. *Nature Communications*. volume 14, Article number: 5115 (2023). **IF=17.7**
- (2) DMU-212 against EGFR-mutant non-small cell lung cancer via AMPK/PI3K/Erk signaling pathway. *Heliyon*. 2023 Apr 26;9(5):e15812. **IF=4.0**.
- (3) Overcoming Suppressive Tumor Microenvironment by Vaccines in Solid Tumor. *Vaccines (Basel)*. 2023 Feb; 11(2): 394. **IF=7.8**.
- (4) Tumor PKC $\delta$  instigates immune exclusion in EGFR-mutated non-small cell lung cancer. *BMC Medicine*. volume 20, Article number: 470 (2022). **IF=11.806**.
- (5) Holistic immunomodulation for small cell lung cancer. *Seminars in cancer biology*. 2022 Dec 2; S1044-579X (22)00245-0. **IF= 17.012**.
- (6) Down-regulating Nrf2 by tangeretin reverses multiple drug resistance to both chemotherapy and EGFR tyrosine kinase inhibitors in lung cancer. *Pharmacol Res*. 2022 Dec;186:106514. **IF= 10.330**.
- (7) FDRdb: a manually curated database of fibrotic disease-associated RNAome and high-throughput datasets. *Database (Oxford)*. 2022 Nov 11;2022:baac095. **IF=5.80**.
- (8) Bacteria-based nanodrug for anticancer therapy. *Pharmacological Research*, 106282. **IF= 10.330**.
- (9) PA-MSHA Induces Inflamed Tumor Microenvironment and Sensitizes Tumor to Anti-PD-1 Therapy, *Cell Death & Disease*. 2022 Nov 7;13(11):931. **IF= 9.685**.
- (10) Chelerythrine ameliorates rheumatoid arthritis by modulating the AMPK/mTOR/ULK-1 signaling pathway. *Phytomedicine*, 154140. **IF= 6.65**.
- (11) Decoding Lung Cancer at Single-Cell Level. *Front Immunol*. 2022; 13: 883758. **IF= 8.786**.
- (12) Nanotechnology-based chimeric antigen receptor T-cell therapy in treating solid tumor, *Pharmacological Research*, 106454. **IF= 10.330**.
- (13) Pyronaridine induces apoptosis in non-small cell lung cancer cells by upregulating death receptor 5 expression and inhibiting epidermal growth factor receptor. *Chem Biol Drug Des*. 2022 Jan;99(1):83-91. **IF= 2.873**.

- (14) Low-dimensional nanomaterials enabled autoimmune disease treatments: Recent advances, strategies, and future challenges. *Coordination Chemistry Reviews*. 2020, 213697. **IF= 22.367.**
- (15) ROS-Responsive Berberine Polymeric Micelles Effectively Suppressed the Inflammation of Rheumatoid Arthritis by Targeting Mitochondria. *Nano-Micro Letters*. volume 12, Article number: 76 (2020). **IF=16.264.**
- (16) Roles of Ion fluxes, metabolism and redox balance in cancer therapy. *Antioxidants & Redox Signaling*, Vol. 34, No. 14. **IF=7.005.**
- (17) Chelidone selectively inhibits the growth of gefitinib-resistant non-small cell lung cancer cells through the EGFR-AMPK pathway. *Pharmacol Res*. 2020 Sep; 159: 104934. **IF=7.650.**
- (18) Current strategies against COVID-19. *Chinese Medicine*. 2020 Jul 9. **IF=5.422.**
- (19) miR-20b promotes growth of non-small cell lung cancer through a positive feedback loop of the Wnt/ $\beta$ -catenin signaling pathway, *International Journal of Oncology*, 2020, 56 (2), 470-479. **IF=5.884.**
- (20) Novel therapeutic strategy for cancer and autoimmune conditions: Modulating cell metabolism and redox capacity. *Pharmacol Ther*. 2018 Jun 25. pii: S0163-7258(18)30112-8. **IF=9.396.**
- (21) Long-term Efficacy of Chinese Medicine Bushen Capsule on Cognition and Brain Activity in Patients with Amnesic Mild Cognitive Impairment. *Pharmacol Res*. 2019 Aug; 146:104319. **IF=5.893.**
- (22) Proscillaridin A induces apoptosis and suppresses non-small-cell lung cancer tumor growth via calcium-induced DR4 upregulation. *Cell Death Dis*. 2018 Jun 13;9(6):696. **IF=5.959.**
- (23) Suppression of lipogenesis via ROS/ AMPK signaling for treating malignancy and over proliferative diseases. *Antioxid Redox Signal*. 2017 Aug 4. **IF=6.530.**

➤ **Representative Papers published as Co-author**

- (1) Ying Xie, Wei-Yu Meng, Run-Ze Li, Yu-Wei Wang, Xin Qian, Chang Chan, Zhi-Fang Yu, Xing-Xing Fan, Mei-Fang Wang, Elaine Lai-Han Leung. Early lung cancer diagnostic biomarker discovery by machine learning methods. *Transl Oncol*. 2021 Jan;14(1):100907. **IF=4.010.**
- (2) Ze-Bo Jiang, Ju-Min Huang, Ya-Jia Xie, Wenjun Wang, Xiao-Jun Yao, Xing-Xing Fan, Qi-Biao Wu, Chun Xie, Mei-Fang Wang, Elaine Lai-Han Leung. Evodiamine suppresses non-small cell lung cancer by elevating CD8<sup>+</sup>T cells and downregulating the MUC1-C/PD-L1 axis. *J Exp Clin Cancer Res*. 2020 Nov 19;39(1):249. **IF=11.161.**

- (3) Elaine Lai-Han Leung, Hu-Dan Pan, Yu-Feng Huang, Xing-Xing Fan, Wan-Ying Wang, Fang He, Jun Cai, Hua Zhou, Liang Liu. The Scientific Foundation of Chinese Herbal Medicine against COVID-19. *Engineering (Beijing)*. 2020 Oct;6(10):1099-1107. IF=7.553.
- (4) Hui You, Yi-Zhong Zhang, Huan-Ling Lai, Dan Li, Fu-Gang Duan, Xing-Xing Fan, Xiao-Jun Yao, Elaine Lai-Han Leung, Mei-Fang Wang. Prognostic significance of tumor poliovirus receptor and CTLA4 expression in patients with surgically resected non-small-cell lung cancer. *J Cancer Res Clin Oncol*. 2020 Jun;146(6):1441-1450. IF=4.553.
- (5) Masayuki Wada, Hongyu Zhang, Liu Fang, Jia Feng, Charlotte Olivia Tse, Wenli Zhang, Qi Chen, Xing-Xing Fan, Xun Jiang, Yupo Ma. Characterization of an Anti-CD5 Directed CAR T-Cell against T-Cell Malignancies. *Stem Cell Rev Rep*. 2020 Apr;16(2):369-384. IF=5.739.
- (6) Lulu E Yan, Hongyu Zhang, Masayuki Wada, Liu Fang, Jia Feng, Lai-Han Leung, Xing-Xing Fan, Lisa Senzel, Xun Jiang, Yupo Ma, William Tse. Targeting Two Antigens Associated with B-ALL with CD19-CD123 Compound Car T Cell Therapy. *Stem Cell Rev Rep*. 2020 Apr;16(2):385-396. IF=5.739.
- (7) Yuwei Wang, Qianqian Wang, Xing-Xing Fan, Qi Biao Wu, Elaine Lai-Han Leung, Yang Ye, Xiaojun Yao. Discovery of a novel protein kinase C activator from *Croton tiglium* for inhibition of non-small cell lung cancer. *Phytomedicine*. 2019 Dec; 65:153100. IF=4.268.
- (8) Fu-Gang Duan, Mei-Fang Wang, Ya-Bing Cao, Dan Li, Run-Ze Li, Xing-Xing Fan, Imran Khan, Huan-Ling Lai, Yi-Zhong Zhang, Liang Liu, Yi-Jun Tang, Elaine Lai-Han Leung. MicroRNA-421 confers paclitaxel resistance by binding to the KEAP1 3'UTR and predicts poor survival in non-small cell lung cancer. *Cell Death Dis*. 2019 Oct 28;10(11):821. IF=6.304.
- (9) Elaine Lai-Han Leung, Lian Xiang Luo, Ying Li, Zhong-Qiu Liu, Lan Lan Li, Dan Feng Shi, Ying Xie, Min Huang, Lin Lin Lu, Fu Gang Duan, Ju Min Huang, Xing-Xing Fan, Zhong Wen Yuan, Jian Ding, Xiao Jun Yao, David C Ward, Liang Liu. Identification of a new inhibitor of KRAS-PDE $\delta$  interaction targeting KRAS mutant non-small cell lung cancer. *Int J Cancer*. 2019 Sep 1;145(5):1334-1345. IF=4.757.
- (10) Yize Zhang, Chae Young Han, Fu Gang Duan, Xing-Xing Fan, Xiao-Jun Yao, Robin J Parks, Yi-Jun Tang, Mei-Fang Wang, Liang Liu, Benjamin K Tsang, Elaine Lai-Han Leung. p53 sensitizes chemoresistant non-small cell lung cancer via elevation of reactive oxygen species and suppression of EGFR/PI3K/AKT signaling. *Cancer Cell Int*. 2019 Jul 19; 19:188. IF=4.175.
- (11) Run-Ze Li, Xing-Xing Fan, Dan-Feng Shi, Guo-Yuan Zhu, Yu-Wei Wang, Lian-Xiang Luo, Hu-Dan Pan, Xiao-Jun Yao, Elaine Lai-Han Leung, Liang Liu. Identification of a new pyruvate kinase M2 isoform (PKM2) activator for the treatment of non-small-cell

- lung cancer (NSCLC). *Chem Biol Drug Des.* 2018 Nov;92(5):1851-1858. IF=2.584.
- (12) Elaine Lai Han Leung, Lian Xiang Luo, Zhong Qiu Liu, Vincent Kam Wai Wong, Lin Lin Lu, Ying Xie, Ni Zhang, Yuan Qing Qu, Xing-Xing Fan, Ying Li, Min Huang, Dai Kai Xiao, Jun Huang, Yan Ling Zhou, Jian Xing He, Jian Ding, Xiao Jun Yao, David C Ward, Liang Liu. Inhibition of KRAS-dependent lung cancer cell growth by deltarasin: blockage of autophagy increases its cytotoxicity. *Cell Death Dis.* 2018 Feb 13;9(2):216. IF=6.340.
- (13) Chun Xie, Ying Li, Lan-Lan Li, Xing-Xing Fan, Yu-Wei Wang, Chun-Li Wei, Liang Liu, Elaine Lai-Han Leung, Xiao-Jun Yao. Identification of a New Potent Inhibitor Targeting KRAS in Non-small Cell Lung Cancer Cells. *Front Pharmacol.* 2017 Nov 14; 8:823. IF=4.225.
- (14) Lian-Xiang Luo, Ying Li, Zhong-Qiu Liu, Xing-Xing Fan, Fu-Gang Duan, Run-Ze Li, Xiao-Jun Yao, Elaine Lai-Han Leung, Liang Liu. Honokiol Induces Apoptosis, G1 Arrest, and Autophagy in KRAS Mutant Lung Cancer Cells. *Front Pharmacol.* 2017 Apr 11; 8:199. IF=4.225.
- (15) Lian-Xiang Luo, Xing-Xing Fan, Ying Li, Xia Peng, Yin-Chun Ji, Wendy Wen-Luan Hsiao, Liang Liu, Elaine Lai-Han Leung, Xiao-Jun Yao. Identification of mitoxantrone as a new inhibitor of ROS1 fusion protein in non-small cell lung cancer cells. *Medchemcomm.* 2017 Jan 26;8(3):621-624. IF=2.807.
- (16) Su-Wei Xu, Betty Yuen Kwan Law, Simon Wing Fai Mok, Elaine Lai Han Leung, Xing-Xing Fan, Paolo Saul Coghi, Wu Zeng, Chung-Hang Leung, Liang Liu, Vincent Kam Wai Wong. Autophagic degradation of epidermal growth factor receptor in gefitinib-resistant lung cancer by celastrol. *Int J Oncol.* 2016 Oct;49(4):1576-88. IF=3.899.
- (17) Ze-Bo Jiang, Jun Huang, Chun Xie, Xia Li, Liping Liu, Jiayi He, Hui Pan, Liyan Huang, Xing-Xing Fan, Xiao-Jun Yao, Ying Xie, Na Li, Liang Liu, Jian-Xing He, Elaine Lai-Han Leung. Combined use of PI3K and MEK inhibitors synergistically inhibits lung cancer with EGFR and KRAS mutations. *Oncol Rep.* 2016 Jul;36(1):365-75. IF=3.417.
- (18) Yi-Ze Zhang, Xi Chen, Xing-Xing Fan, Jian-Xing He, Jun Huang, Da-Kai Xiao, Yan-Ling Zhou, Sen-You Zheng, Jia-Hui Xu, Xiao-Jun Yao, Liang Liu, Elaine Lai-Han Leung. Compound Library Screening Identified Cardiac Glycoside Digitoxin as an Effective Growth Inhibitor of Gefitinib-Resistant Non-Small Cell Lung Cancer via Downregulation of  $\alpha$ -Tubulin and Inhibition of Microtubule Formation. *Molecules.* 2016 Mar 18;21(3):374. IF=3.267.
- (19) Elaine Lai-Han Leung, Xing-Xing Fan, Maria Pik Wong, Zhi-Hong Jiang, Zhong-Qiu Liu, Xiao-Jun Yao, Lin-Lin Lu, Yan-Ling Zhou 1, Li-Fong Yau, Vicky Pui-Chi Tin, Liang Liu. Targeting Tyrosine Kinase Inhibitor-Resistant Non-Small Cell Lung Cancer by Inducing Epidermal Growth Factor Receptor Degradation via Methionine 790

Oxidation. *Antioxid Redox Signal*. 2016 Feb 10;24(5):263-79. IF=7.413.

- (20) Zhong-Wen Yuan, Elaine Lai-Han Leung, Xing-Xing Fan, Hua Zhou, Liang Liu, Ying Xie. Quantitative evaluation of berberine subcellular distribution and cellular accumulation in non-small cell lung cancer cells by UPLC-MS/MS. *Talanta*. 2015 Nov 1; 144:20-8. IF=3.325.

### ***Patents***

- (1) A novel treatment of Gefitinib-resistant non-small-cell lung cancer using sanguinarine. Leung EL, **Fan XX**, Liu L. (US patent provisional filed; Australia patent awarded for 8 years-2014100435)
- (2) The new application of an alkaloid derived from a Chinese herbal for treatment of cancer by inhibiting cholesterol synthesis and fatty acid oxidation. Leung EL, **Fan XX**, Liu L, Wu JL. (US patent provisional filed; Australia patent awarded for 8 years-2014100831)
- (3) Methods for Novel Drug Discovery, Treatment and Selective Targeting for Gefitinib-Resistant Non-Small-Cell Lung Cancer Harboring T790M Mutation. Leung EL, Liu L and **Fan XX** (US patent awarded-US 9439898 B2; Australia patent awarded for 8 years-2014100614)
- (4) The application of (Z)3,4,5,4'-tetramethoxystilbene (TMS) in Gefitinib-resistant non-small-cell lung cancer cells. Leung EL, **Fan XX**, Liu L and Jiang ZB (US patent provisional filed; Australia patent awarded for 8 years-2015100187)
- (5) Hydroxynaphthoquinone compounds (shikonin) for treating of non-small cell lung cancer. Liu L, Leung EL, Li X, **Fan XX** (US patent filed; Australia patent awarded for 8 year-2016100891)

### ***Awards***

- (1) 2021 Bank of China Research Excellent award
- (2) 2018 First prize of Natural Science of the Ministry of Education
- (3) 2017 Second Prize of Zhongzhu Medical Life Science Research Award