

Deciphering myeloid (progenitor) cell function and communication in (tumor) tissues

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Curriculum vitae

Xin Lei was born in Sichuan Province, China on November 23rd, 1991. After completing her high school education at Mianyang High School in Sichuan Province, she started her university education with clinical medicine major at Sun-Yat Sun University in Guangdong Province, China. She was selected for a special program where she was able to obtain bachelor, master and doctor degrees of clinical medicine in 8 years (2009-2017). During her master and doctor education, she performed internships both in the lab and hospital. For her research internship, she studied mechanism of epithelial mesenchymal transition in hepatocellular carcinoma in the lab of Prof. Jun Min at Department of Hepatobiliary Surgery, Sun-Yat Sen Memorial Hospital, China. For her medical internship, she learned treatment guidelines and surgical skills for gastroenterological and breast cancers under the guidance of Dr. Kai Chen and Prof. Fengxi Su at Sun-Yat Sen Memorial Hospital, China.

Upon completion of her internships, both resulting in scientific publications, Xin started residence training in the First Affiliated Hospital of Sun-Yat Sen University. There, she developed her interest in tumor immunology and immunotherapy. Later on, she received a scholarship which supported her research in the group of Prof. Jannie Borst at the Netherlands Cancer Institute from 2017 to 2019. During this time, her research was mainly focused on myelopoiesis and myeloid neoplasia. Since 2019, Xin continued her work in the group of Dr. Yanling Xiao in Prof. Jannie Borst's lab as a PhD candidate at the Leiden University Medical Center. She studied the molecular mechanisms and ligand-receptor interactions guiding the cross-talk between dendritic cells and T-cells in the context of cancer. In parallel, she also studied myelopoiesis upon inflammation and genetic mutation.

Now, having completed her PhD, Xin wishes to expand her research focus to a broader scope of immunology, not only focus on immune-oncology, but also chronic inflammation and autoimmune diseases.

PhD portfolio

List of publications

Published or accepted

- X. Lei, D. C. de Groot, M. J. P. Schoenmaekers-Welters, T. de Wit, E. Schrama, H. van Eenennaam, S.J. Santegoets, T. Oosenbrug, A. van der Veen, J. L. Vos, C. L. Zuur, N. F. C. C. de Miranda, H. Jacobs, S. H. van der Burg, J. Borst, Y. Xiao. CD4⁺ T-cells produce IFN-I to license cDC1 for induction of cytotoxic T-cell activity in human tumors. *Cellular and Molecular Immunology* 2024. DOI: 10.1038/s41423-024-01133-1
- X. Lei, I. Khatri, T. de Wit, I. de Rink, M. Nieuwland, R. Kerkhoven, H. van Eenennaam, C. Sun, A. D. Garg, J. Borst, Y. Xiao. CD4⁺ helper T-cells endow cDC1 with cancer-impeding functions in the human tumor micro-environment. *Nat. Commun.* 2023, 14, 217. DOI: 10.1038/s41467-022-35615-5.
- X. Lei, Y. Wang, C. Broens, J. Borst, Y. Xiao. Immune checkpoints targeting dendritic cells for antibody-based modulation in cancer. *International Review of Cell and Molecular Biology* 2024 (382):145-179. DOI: 10.1016/bs.ircmb.2023.07.006.
- X. Lei, J. Palomero, I. de Rink, T. de Wit, M. van Baalen, Y. Xiao, J. Borst. Flagellin/TLR5 stimulate myeloid progenitors to enter lung tissue and to locally differentiate into macrophages. *Front. Immunol.* 2021 (12) e621665 DOI: 10.3389/ fimmu.2021.621665.
- Y. Xiao, A. G. S. van Halteren, X. Lei, J. Borst, E. Steenwijk,.... J. Borst. Bone marrow-derived myeloid progenitors are driver mutation carriers in both high- and low-risk Langerhans cell histiocytosis. *Blood* (2020) 136 (19): 2188–2199. DOI: 10.1182/blood.2020005209.
- B. Miao, Z. Hu, R. Mezzadra, L. Hoeijmakers, A. Fauster,....X. Lei,....C. U. Blank, T. N.M. Schumacher, C. Sun. CMTM6 shapes antitumor T cell response through modulating protein expression of CD58 and PD-L1. *Cancer Cell* 2023, 41: 1-12. DOI: 10.1016/j.ccell.2023.08.008
- H. Zhu, J. Roelands, E. I. Ahmed, I. Stouten, R. Hoorntje,....X. Lei,....P. J. J. Kunnpen. Spatial distribution of T cell subsets in tumor tissue holds predictive value for colon cancer outcomes and refines the immunologic constant of rejection genomic signature. *Front. Immunol.* 2024. DOI: 10.3389/fimmu.2024.1293618

- Q. Han, L. Lv, J. Wei, X. Lei, H. Lin,.... J. Min. Vps4A mediates the localization and exosome release of β-catenin to inhibit epithelial mesenchymal transition in hepatocellular carcinoma. *Cancer Letters* 2019, 457:47-59. DOI: 10.1016/j. canlet.2019.04.035.
- L. Tan, Y. Sun, L. Zhu, X. Lei, D. Liang,... K. Chen, S. Li. Risk factors of catheterrelated thrombosis in early-stage breast cancer patients: a single-center retrospective study. *Cancer Manage and Research*. 2019; 11:8379-89. DOI: 10.2147/CMAR. S212375.
- X. Lei, F. Tao, S. Luo, Y. Sun, L. Zhu, K. Chen, S. Li. Evaluation of guidelines regarding surgical treatment of breast cancer using the AGREE Instrument: a systematic review. *BMJ Open* 2017; 7:e014883. DOI: 10.1136/bmjopen-2016-014883.
- N. Mülling, F. Behr, G. Heieis, K. Boss, S. Duikeren,....X. Lei,....R. Arens. Metabolic reinvigoration of cytomegalovirus-specific CD8⁺ T cells by targeting the NADase CD38. J Clin Invest. Accepted.

In preparation, under review or under revision

- 1. X. Lei, Y. Wang, T. de Wit, E. Schrama, M. de Boer,....J. Borst, Y. Xiao. Human progenitor-derived cDC1-like cells as a platform to detect and optimize CTL-based anti-tumor immunity. *Manuscript in preparation*.
- J. Busselaar, D. M. T. Bosma, X. Lei; Y. Xiao, J. Borst. PD-1⁺TCF-1⁺ stem-like CD8⁺ T cells found in cancer and chronic infection become effector CTLs upon CD4⁺ T-cell help. *Submitted*.

Conferences and presentations

2024	Oral presentation
	Dutch Tumor Immunology meeting, the Netherlands
2023	Poster presentation
	European macrophage and dendritic cell society 2023 @ VIB conference, Belgium
2023	Poster presentation
	ENII EFIS EJI Summer School on Advanced Immunology, Italy
2022	Poster presentation
	British society of immunology, United Kingdom
2022	Poster presentation
	Keystone Symposia Conference (Advances in Checkpoints Immunology from
	Autoimmunity to Oncology to Infectious), Canada
2022	Oral presentation
	Dutch Society for Immunology annual meeting, the Netherlands
2021	Oral presentation
	European Congress of Immunology, online
2021	Oral presentation
	Dutch Society for Immunology annual meeting, online
2019	Poster presentation
	Dutch Society for Immunology annual meeting, the Netherlands

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