XINGYU CHEN, MD, MSc

Cancer Genomics | Tumor Immunology | Computational Biology & AI | Single-Cell & Spatial Multi-Omics

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PROFESSIONAL PROFILE

- Developing AI-enabled computational and multi-omics approaches to understand how genomic alterations, tumor–immune interactions, and cellular ecosystems drive cancer progression and therapeutic response.
- Lead/co-lead author of two Nature studies on Y-chromosome loss in cancer and antitumor immunity, with additional Nature and Nature Immunology publications on T-cell exhaustion and cytotoxic $CD8^+$ T-cell differentiation.
- Experienced in cancer genomics, large-scale single-cell and spatial multi-omics, translational modeling, radiogenomics, and interdisciplinary cancer research, with a strong interest in translating computational discoveries into precision oncology.

26 peer-reviewed publications
12 first/co-first/co-corresponding author papers

1005 citations | h-index 17 | i10-index 21
Google Scholar, accessed July 10, 2026

4 Nature-family research articles: *Nature* (First author, 2025); *Nature* (Co-first author, 2023); *Nature* (Co-author, 2025); *Nature Immunology* (Co-author, 2026)

70+ manuscript reviews | U.S. patent application
Editorial service across oncology, immunology, and computational medicine

RESEARCH AND PROFESSIONAL APPOINTMENTS

Cedars-Sinai Medical Center, Los Angeles, CA
Center for Bioinformatics and Functional Genomics; Department of Urology; Samuel Oschin Comprehensive Cancer Institute

1) **Research Bioinformatician I (Research Collaboration Appointment) | August 2024 – Present**
2) **Research Bioinformatician I (Full-Time) | August 2023 – August 2024**
3) **Research Associate I | April 2022 – August 2022**
4) **Visiting Graduate Student | September 2021 – March 2022**
   - Lead computational analyses across cancer genomics and immunology projects integrating more than **1.2 million** single cells, spatial multi-omics datasets, and clinical cohorts comprising **>4,000 tumors**.
   - Led pan-cancer single-cell, spatial transcriptomics, and multi-omics analyses contributing to **four Nature-family publications**. Developed pan-cancer and tumor–immune ecosystem analyses supporting a **first-author Nature (2025)** paper, a **co-first-author Nature (2023)** paper, a **Nature Immunology (2026)** study, and additional translational investigations of immunotherapy response.
   - Built and standardized reproducible computational pipelines for **CosMx, CODEX, Xenium, ScRNA/ATAC-seq, and multi-omics integration**.
   - Developed an MRI/RNA-seq radiogenomic model for muscle-invasive bladder cancer staging and prognosis, contributing to **U.S. Patent Application No. 2024/0360518**.
   - Mentored junior researchers in computational genomics and project design, contributing to multiple conference abstracts and peer-reviewed publications.

Xiangya School of Medicine, Central South University, Changsha, China
Student Researcher, Oncology (Full-Time) | September 2020 – August 2021

- Conducted multi-omics and clinical-cohort analyses focused on tumor microenvironment biology, immunotherapy biomarkers, and genomic risk modeling.
- Led multiple first-author projects in bladder and ovarian cancer, resulting in publications in **Oncogene**, **Frontiers in Immunology**, **Frontiers in Oncology**, and related journals.

EDUCATION AND POSTGRADUATE TRAINING

Master of Medicine in Oncology **2020–2023**
Xiangya School of Medicine, Central South University, Changsha, China
• Outstanding Master's Thesis Award, Hunan Province (2023).

Doctoral Research Training **2024–2025**
Johns Hopkins University, Baltimore, MD
• Completed first-year doctoral coursework and laboratory rotations; training concluded in August 2025.

Medical Degree in Clinical Medicine **2015–2020**
Hunan University of Chinese Medicine, Changsha, China
• Five-year clinical medicine program; evaluated by WES as a U.S. **Doctor of Medicine (first professional degree in medicine).**

SELECTED RESEARCH CONTRIBUTIONS

Coordinated Y-chromosome loss across tumor and immune compartments

- Developed a pan-cancer computational framework integrating bulk transcriptomic data, more than one million single-cell profiles, and paired tumor-blood cohorts across 29 cancer types.
- Identified coordinated loss of the Y chromosome in malignant, stromal, and immune cells and demonstrated that concurrent epithelial and T-cell loss predicts the poorest survival.
- **First author, Nature** 642, 1041-1050 (2025).

Y-chromosome loss as a mechanism of immune evasion and treatment response

- Co-led human single-cell, clinical-cohort, and translational analyses demonstrating that Y-negative tumors promote T-cell exhaustion and immune escape.
- Helped establish loss of the Y chromosome as both an adverse prognostic factor and a marker of enhanced sensitivity to immune-checkpoint blockade.
- **Co-first author, Nature** 619, 624-631 (2023).

Proteotoxic stress and T-cell exhaustion

- Led pan-cancer human single-cell dataset assembly, integrative analysis, and immunotherapy-cohort validation connecting proteotoxic stress programs with T-cell exhaustion, immune evasion, and therapy resistance.
- **Co-author, Nature** 647, 1025-1035 (2025).

SELECTED PEER-REVIEWED PUBLICATIONS

Selected from 26 peer-reviewed papers. # Equal contribution; † Co-corresponding author. Applicant name is shown in **bold**.

1. **Chen X**, Shen Y, Choi S, Abdel-Hafiz HA, Basu M, Hoelzen L, et al. Concurrent loss of the Y chromosome in cancer and T cells impacts outcome. ***Nature***. 2025;642:1041-1050. doi:10.1038/s41586-025-09071-2. *Featured by NIH/NCI and multiple Nature research and commentary outlets.*
2. Abdel HA#, Schafer JM#, **Chen X#**, Xiao T, Gauntner TD, Li Z, et al. Y chromosome loss in cancer drives growth by evasion of adaptive immunity. ***Nature***. 2023;619:624-631. doi:10.1038/s41586-023-06234-x =. **Co-first author.** *Featured by NIH/NCI, Nature News & Views, Nature Podcast, and Nature Reviews Cancer.*
3. Wang Y, Ma A, Song NJ, Shan A, Aman Y, **Chen X**, et al. Proteotoxic stress response drives T cell exhaustion and immune evasion**.** ***Nature***. 2025;647:1025-1035. doi:10.1038/s41586-025-09539-1 . Led pan-cancer human single-cell analysis and immunotherapy cohort validation.

4. Xiao T, **Chen X**, Song NJ, et al. ZFP148 is a transcriptional repressor of cytolytic effector CD8+ T cell differentiation. ***Nature Immunology***. 2026;27:827-840. doi:10.1038/s41590-026-02461-2 IF: 27.6 Q1 B1.
5. **Chen X**, Sakatani T, Tanaka S, Contreras-Sanz A, Black PC, Rosser CJ, Furuya H. A Bladder Cancer–Associated Gene Signature for Exploratory qPCR-Based Survival Stratification in NAC-Treated Muscle-Invasive Bladder Cancer. ***Journal of Translational Medicine***. Accepted for publication, 2026.
6. Qureshi TA#, **Chen X#**, Xie Y, Murakami K, Sakatani T, Kita Y, et al. MRI/RNA-seq-based radiogenomics and artificial intelligence for more accurate staging of muscle-invasive bladder cancer. *International Journal of Molecular Sciences*. 2024;25:88. doi:10.3390/ijms25010088 .
7. Deng H, Tang F, Zhou M, Shan D, **Chen X†**, Cao K†. Identification and validation of N6-methyladenosine-related biomarkers for bladder cancer: implications for immunotherapy. *Frontiers in Oncology*. 2022;12:820242. **Co-corresponding author.**
8. **Chen X#**, Chen H#, Yao H, Zhao K, Zhang Y, He D, Zhu Y, et al. Turning up the heat on non-immunoreactive tumors: pyroptosis influences the tumor immune microenvironment in bladder cancer. *Oncogene*. 2021;40:6381-6393.
9. **Chen X**, Xu R, He D, Zhang Y, Chen H, Zhu Y, Cheng Y, et al. CD8+ T-effector and immune-checkpoint signatures predict prognosis and responsiveness to immunotherapy in bladder cancer. *Oncogene*. 2021;40:6223-6234.
10. **Chen X#**, Chen H#, He D, Cheng Y, Zhu Y, Xiao M, et al. Analysis of tumor microenvironment characteristics in bladder cancer: implications for immune-checkpoint inhibitor therapy. *Frontiers in Immunology*. 2021;12:672158.
11. **Chen X#**, Lan H#, He D, Xu R, Zhang Y, Cheng Y, et al. Multi-omics profiling identifies risk hypoxia-related signatures for ovarian cancer prognosis. *Frontiers in Immunology*. 2021;12:645839.
12. **Chen X#**, Lan H#, He D, Wang Z, Xu R, Yuan J, Xiao M, et al. Analysis of autophagy-related signatures identified two distinct subtypes for evaluating the tumor immune microenvironment in ovarian cancer. *Frontiers in Oncology*. 2021;11:616133.
13. **Chen X**, Jin Y, Gong L, He D, Cheng Y, Xiao M, et al. Bioinformatics analysis finds immune gene markers related to the prognosis of bladder cancer. *Frontiers in Genetics*. 2020;11:607.
14. **Chen X**, Luo Y, Wang M, Sun L, Huang K, Li Y, et al. Wuhu decoction regulates dendritic-cell autophagy in the treatment of respiratory syncytial virus-induced mouse asthma. *Medical Science Monitor*. 2019;25:5389-5400.

Complete publication record: Google Scholar

PROFESSIONAL SERVICE AND LEADERSHIP

Scientific Leadership

- Co-Leader, Tumorigenesis and Molecular Imaging & Theranostics Working Groups, Prostate Cancer Foundation Young Investigator Community, 2024 - Present.

Editorial Roles

- Editorial roles with iMeta, Acta Pharmaceutica Sinica B, and Journal of Translational Internal Medicine.
- Review Editor, Frontiers in Urology (Urologic Oncology).

Peer Review

- Ad hoc reviewer for more than 60 manuscripts, including submissions to iMeta, Seminars in Cancer Biology, Communications Medicine, Computer Methods and Programs in Biomedicine, and Frontiers in Immunology.

PATENT

- Radiogenomic Signatures in Bladder Cancer Patients and Uses Thereof. U.S. Patent Application No. 2024/0360518, published October 2024. Co-inventor; developed an MRI/RNA-seq predictive framework for bladder-cancer staging, prognosis, and treatment stratification.

SELECTED PRESENTATIONS

- **Invited Talk**, "The Role of Y Chromosome Loss in Immune Modulation and Tumorigenesis," Prostate Cancer Foundation Young Investigator Tumorigenesis Working Group, June 2025.
- **Poster**, "Mitochondrial Metabolic Reprogramming Orchestrates Tumor-Immune Crosstalk and Dictates Disease Outcomes in Primary Prostate Cancer," 32nd PCF Scientific Retreat, October 2025.
- **Two Breakthrough Abstract oral presentations**, American Urological Association Annual Meeting, 2023: neuronal-subtype biology and radiogenomics in muscle-invasive bladder cancer.
- **Two first-author abstracts**, American Society of Clinical Oncology Annual Meeting, 2023: neuronal-subtype biology and radiogenomics in muscle-invasive bladder cancer.
- **Abstract**, "Y Chromosome Loss Promotes Neuroendocrine Differentiation in Bladder Cancer," American Urological Association Annual Meeting, 2025.

HONORS AND AWARDS

- Outstanding Master's Thesis Award, Hunan Province, 2023.
- National Graduate Scholarship, Ministry of Education of China, 2020, 2021, and 2022 (three-time recipient).
- Dean's Merit Scholarship, Central South University, 2022.
- Outstanding Undergraduate Graduate in Innovation, Hunan Province, 2020.
- National Second Prize, 5th National Basic Medical Innovation Forum (Team Leader), 2019.

MENTORSHIP AND TEACHING

- Primary mentor to one MD research fellow and one MSc bioinformatician at Cedars-Sinai Medical Center, providing project design, computational genomics, multi-omics, scientific writing, and career-development training.
- Mentee projects contributed to three co-authored research outputs, including a Nature article and two conference abstracts, and supported completion of the MD trainee's graduation requirements.

TECHNICAL EXPERTISE

Genomic AI and Modeling	Deep learning; CNNs; genomic foundation models and sequence-to-function models (Enformer, Borzoi, DNABERT); random forest; LASSO-Cox regression; predictive modeling.
Programming	R; Python; Linux/Bash; Slurm; reproducible workflow development and large-scale data integration.
Multi-Omics	sc/snRNA-seq; spatial transcriptomics and proteomics; bulk RNA-seq; WGS/WES; ATAC-seq; DNA methylation; clinical-cohort integration.
Spatial Platforms	CosMx; CODEX; GeoMx; Visium; Xenium.
Experimental and Clinical	IHC/IF; western blot; Transwell assays; animal models; prostate and bladder clinical-sample processing.

LANGUAGES

- Chinese: Native | English: Full professional proficiency.

RESEARCH IDENTIFIERS AND ONLINE PROFILES

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