



## Xiaoming Zhang

Clinical Assistant Professor, Pathology

### CLINICAL OFFICE (PRIMARY)

- Pathology

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### Bio

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#### CLINICAL FOCUS

- Gynecologic Pathology
- Breast Pathology
- Anatomic and Clinical Pathology

#### ACADEMIC APPOINTMENTS

- Clinical Assistant Professor, Pathology

#### PROFESSIONAL EDUCATION

- Residency: University of Pennsylvania Health System (2021) PA
- Board Certification: Anatomic and Clinical Pathology, American Board of Pathology (2021)
- Fellowship, Stanford Medicine , Gynecology Pathology (2023)
- Fellowship, Stanford Medicine , Surgical Pathology (2022)
- Board Certification, American Board of Pathology , Anatomic & Clinical Pathology (2021)
- Residency, Hospital of the University of Pennsylvania , Anatomic and Clinical Pathology (2021)
- MD, Peking University Health Science Center (2013)

### Publications

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#### PUBLICATIONS

- **Expression of the antibody-drug conjugate targets TROP2, CLDN6, B7-H3, and DLL3 in mesonephric-like adenocarcinoma of the female genital tract.** *Gynecologic oncology*  
Zhang, X., Shahryari, J., Kingsley, L. G., McCluggage, W. G., Howitt, B. E.  
2026; 209: 62-68
- **Neonatal management and outcomes in the setting of disseminated coccidioidomycosis in pregnancy.** *Journal of perinatology : official journal of the California Perinatal Association*

- Darmawan, D. O., Mathew, R., Pasca, A. M., Aziz, N., Zhang, X., Kappagoda, S., Waldrop, A. R., Markwei, M., O'Brien, L. E.  
2026
- **Beyond Aberrant and Wild-Type: Correlating Challenging p53 IHC Patterns with TP53 Mutations in Gynecologic Tumors**  
Gao, H., Troxell, M., Longacre, T., Zhang, X.  
ELSEVIER SCIENCE INC.2026
  - **AI-enabled virtual spatial proteomics from histopathology for interpretable biomarker discovery in lung cancer.** *Nature medicine*  
Li, Z., Li, Y., Xiang, J., Wang, X., Yang, S., Zhang, X., Eweje, F., Chen, Y., Luo, X., Li, Y., Mulholland, J., Bergstrom, C., Kim, et al  
2026
  - **Heterogeneity and Scoring Reproducibility of Folate Receptor 1 Immunohistochemistry in High-grade Serous Carcinoma.** *International journal of gynecological pathology : official journal of the International Society of Gynecological Pathologists*  
Liang, B., Tenney, T. B., Han, L., Zhang, X., Wang, A., Barry-Holson, K. Q., Rosenzweig, E. R., Toland, A. M., Diver, E. J., Deutschman, E., Method, M., Sloss, C. M., Yang, et al  
2025
  - **Folate receptor alpha (FR $\alpha$ /FOLR1) and HER2 immunohistochemical staining in high-grade endometrial carcinoma with aberrant p53 expression.** *Histopathology*  
McHenry, A., Liang, B., Libert, D., Hammer, P. M., Tokuyama, M., Tenney, T., Zhang, X., Folkins, A., Longacre, T. A., Howitt, B. E.  
2025
  - **Automated cell annotation and classification on histopathology for spatial biomarker discovery.** *Nature communications*  
Li, Z., Mirjahanmardi, S. H., Sali, R., Eweje, F., Gopaulchan, M., Kloker, L., Zhang, X., Li, G., Jiang, Y., Li, R.  
2025; 16 (1): 6240
  - **Comparison of Endometrial Serous and Gastric HER2 Immunohistochemistry Scoring Schemes in Endometrial Carcinomas With Aberrant p53 Expression: Reproducibility and In Situ Hybridization Correlation.** *International journal of gynecological pathology : official journal of the International Society of Gynecological Pathologists*  
McHenry, A., Liang, B., Hammer, P. M., Libert, D., Mack, T., Tokuyama, M., Tenney, T., Zhang, X., Folkins, A., Longacre, T. A., Howitt, B. E.  
2025
  - **Foundation Model for Predicting Prognosis and Adjuvant Therapy Benefit From Digital Pathology in GI Cancers.** *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*  
Wang, X., Jiang, Y., Yang, S., Wang, F., Zhang, X., Wang, W., Chen, Y., Wu, X., Xiang, J., Li, Y., Jiang, X., Yuan, W., Zhang, et al  
2025: JCO2401501
  - **LONG-TERM SAFETY OF URETHRAL INJECTION OF PLURIPOTENT STEM CELL-DERIVED SMOOTH MUSCLE CELL PROGENITORS**  
Chen, B., Wang, Y., Wen, Y., Zhang, J., Darlene Tran, Briggs, M., Cipriano, A., Calicchio, A., Zhang, X.  
WILEY.2025: S23
  - **A vision-language foundation model for precision oncology.** *Nature*  
Xiang, J., Wang, X., Zhang, X., Xi, Y., Eweje, F., Chen, Y., Li, Y., Bergstrom, C., Gopaulchan, M., Kim, T., Yu, K. H., Willens, S., Olguin, et al  
2025
  - **SOX17 expression in mesonephric-like adenocarcinomas and mesonephric remnants/hyperplasia of the female genital tract: Expanding its utility as a Müllerian biomarker.** *Histopathology*  
Zhang, X., McCluggage, W. G., Howitt, B. E., Hirsch, M. S.  
2024
  - **Mapping spatial organization and genetic cell-state regulators to target immune evasion in ovarian cancer.** *Nature immunology*  
Yeh, C. Y., Aguirre, K., Laveroni, O., Kim, S., Wang, A., Liang, B., Zhang, X., Han, L. M., Valbuena, R., Bassik, M. C., Kim, Y. M., Plevritis, S. K., Snyder, et al  
2024
  - **High-grade Anaplastic Transformation of Ovarian Serous Borderline Tumor: A Distinctive Morphology With Abundant Dense Eosinophilic Cytoplasm and Dismal Prognosis.** *The American journal of surgical pathology*  
Zhang, X., Devereaux, K. A., Ryan, E., Fei, F., Kunder, C. A., Longacre, T. A.  
2024
  - **A pathologist-AI collaboration framework for enhancing diagnostic accuracies and efficiencies.** *Nature biomedical engineering*

Huang, Z., Yang, E., Shen, J., Gratzinger, D., Eyerer, F., Liang, B., Nirschl, J., Bingham, D., Dussaq, A. M., Kunder, C., Rojansky, R., Gilbert, A., Chang-Graham, et al  
2024

- **Scattering-Based Light Sheet Microscopy Imaging of HPV-Associated Squamous Lesions of the Anal Canal: A Proof-of-Principle Study.** *Modern pathology : an official journal of the United States and Canadian Academy of Pathology, Inc*  
Liang, B., Zhao, J., Kim, Y., Barry-Holson, K. Q., Bingham, D. B., Charville, G. W., Darragh, T. M., Folkins, A. K., Howitt, B. E., Kong, C. S., Longacre, T. A., McHenry, A. J., Toland, et al  
2024: 100493
- **Yield of the SEE-FIM Protocol for Fallopian Tube Specimens: A Retrospective and Cost Effectiveness Analysis of Cases from a Single Institution**  
Liang, B., Zhang, X., Cederloff, K., Folkins, A., Longacre, T.  
ELSEVIER SCIENCE INC.2024: S1195-S1196
- **High-Grade Transformation of Ovarian Serous Borderline Tumors: A Series and Literature Review, Emphasizing Distinctive Morphology with Abundant Dense Eosinophilic Cytoplasm, Driver Mutations, and Extremely Dismal Prognosis**  
Zhang, X., Devereaux, K., Ryan, E., Fei, F., Kunder, C., Longacre, T.  
ELSEVIER SCIENCE INC.2023: S1008-S1010
- **PTEN Deficiency in Tubo-Ovarian High-Grade Serous Carcinoma is Associated with Poor Progression-Free Survival and is Mutually Exclusive with CCNE1 Amplification.** *Modern pathology : an official journal of the United States and Canadian Academy of Pathology, Inc*  
Zhang, X., Wang, A., Han, L., Liang, B., Allard, G., Diver, E., Howitt, B. E.  
2023; 36 (5): 100106
- **ASSESSING ROBUSTNESS OF AN ARTIFICIAL INTELLIGENCE DERIVED HISTOLOGICAL BIOMARKER ACROSS DIFFERENT SITES OF DISEASE AND IN SERIAL SECTIONS IN TUBOOVARIAN HIGH-GRADE SEROUS CARCINOMA**  
Krishnan, R., Tiu, E., Krishna, V., Nimgaonkar, V., Bhambhvani, H., O'Donoghue, O., Vrabac, D., Joshi, A., Liang, B., Zhang, X., Han, L., Wang, A., Krishna, et al  
BMJ PUBLISHING GROUP.2022: A45-A46
- **PREDICTING RESPONSE TO PLATINUM-BASED CHEMOTHERAPY FOR TUBO-OVARIAN HIGHGRADE SEROUS CARCINOMA USING AN ARTIFICIAL INTELLIGENCE HISTOPATHOLOGY PLATFORM**  
Tiu, E., Krishna, V., Nimgaonkar, V., Krishnan, R., Bhambhvani, H., O'Donoghue, O., Vrabac, D., Joshi, A., Liang, B., Zhang, X., Han, L., Wang, A., Krishna, et al  
BMJ PUBLISHING GROUP.2022: A46-A47
- **Hepatic Macrophage Types Cluster with Disease Etiology in Chronic Liver Disease and Differ Compared to Normal Liver: Implications for Their Biologic and Diagnostic Role** *INTERNATIONAL JOURNAL OF SURGICAL PATHOLOGY*  
Zhang, X., Thompkins-Johns, A., Ziober, A., Zhang, P. J., Furth, E. E.  
2022: 10668969221099630
- **PTEN Loss in High-Grade Serous Carcinomas is Associated with Reduced Expression of Hormonal Receptors and Poor Progression-Free Survival, and Mutually Exclusive with CCNE1 Amplification**  
Zhang, X., Han, L., Liang, B., Wang, A., Howitt, B.  
SPRINGER NATURE.2022: 856-858
- **Keratin Granulomas in the Peritoneum on Frozen Section: A Case Report with Multiple Suspects and the Search for the Culprit.** *International journal of surgical pathology*  
Katsakhyan, L., Zhang, X., Reyes, M. C., Schwartz, L. E., Haggerty, A. F., Cooper, K.  
2022; 30 (1): 46-49
- **TP53 Mutation and Extraneural Metastasis of Glioblastoma: Insights From an Institutional Experience and Comprehensive Literature Review.** *The American journal of surgical pathology*  
Zhang, X., Katsakhyan, L., LiVolsi, V. A., Roth, J. J., Rassekh, C. H., Bagley, S. J., Nasrallah, M. P.  
2021; 45 (11): 1516-1526
- **Ionized Calcium Binding Adaptor Molecule 1 (IBA1).** *American journal of clinical pathology*  
Zhang, X., Wang, L. P., Ziober, A., Zhang, P. J., Bagg, A.  
2021; 156 (1): 86-99

- **Mutational spectrum in clinically aggressive low-grade serous carcinoma/serous borderline tumors of the ovary-Clinical significance of BRCA2 gene variants in genomically stable tumors.** *Gynecologic oncology*  
Zhang, X., Devins, K., Ko, E. M., Reyes, M. C., Simpkins, F., Drapkin, R., Schwartz, L. E., Yoon, J. Y.  
2021; 161 (3): 762-768
- **Vasculitis Involving the Gastrointestinal System Is Often Incidental but Critically Important.** *American journal of clinical pathology*  
Zhang, X., Furth, E. E., Tondon, R.  
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- **The significance of mucinous metaplasia in Warthin tumor: a frequent occurrence and potential pitfall.** *Human pathology*  
Zhang, X., Baloch, Z. W., Cooper, K., Zhang, P. J., Puthiyaveetil, R., LiVolsi, V. A.  
2020; 99: 13-26
- **Pancreatic schwannoma, an extremely rare and challenging entity: Report of two cases and review of literature.** *Pancreatology : official journal of the International Association of Pancreatology (IAP) ... [et al.]*  
Zhang, X., Siegelman, E. S., Lee, M. K., Tondon, R.  
2019; 19 (5): 729-737
- **Isolated Langerhans Cell Histiocytosis of the Lacrimal Gland in Conjunction With Mucosa-Associated Lymphoid Tissue Lymphoma and Elevated IgG4 Plasma Cells.** *Ophthalmic plastic and reconstructive surgery*  
Peck, T., Bagg, A., Zhang, X., Armstrong, B., Eagle, R. C., Milman, T.  
2019; 35 (4): e92-e94
- **[MicroRNA expression signature profile and its clinical significance in endometrioid carcinoma].** *Zhonghua bing li xue za zhi = Chinese journal of pathology*  
Wang, Y., Adila, S., Zhang, X., Dong, Y., Li, W., Zhou, M., Li, T.  
2014; 43 (2): 88-94
- **Down-regulation of miR-145 and miR-143 might be associated with DNA methyltransferase 3B overexpression and worse prognosis in endometrioid carcinomas.** *Human pathology*  
Zhang, X., Dong, Y., Ti, H., Zhao, J., Wang, Y., Li, T., Zhang, B.  
2013; 44 (11): 2571-80
- **[Vulvar intraepithelial neoplasia].** *Zhonghua bing li xue za zhi = Chinese journal of pathology*  
Dong, Y., Zhang, X., Zhao, F., Wang, C., Bi, H., Li, T.  
2013; 42 (8): 557-61
- **[Endometrial metaplasia].** *Zhonghua bing li xue za zhi = Chinese journal of pathology*  
Zhang, X., Dong, Y., Li, T.  
2013; 42 (8): 561-5
- **Analysis of 142 Northern Chinese patients with peripheral T/NK-Cell lymphomas: subtype distribution, clinicopathologic features, and prognosis.** *American journal of clinical pathology*  
Ren, Y. L., Nong, L., Zhang, S., Zhao, J., Zhang, X. M., Li, T.  
2012; 138 (3): 435-47
- **PIK3CA mutations in endometrial carcinomas in Chinese women: phosphatidylinositol 3'-kinase pathway alterations might be associated with favorable prognosis.** *Human pathology*  
Dong, Y., Yang, X., Wong, O., Zhang, X., Liang, Y., Zhang, Y., Wong, W., Nong, L., Liao, Q., Li, T.  
2012; 43 (8): 1197-205
- **[Correlations of p-AKT with PTEN, P53, HER-2 expressions in endometrial carcinoma and their relationship with patient survival].** *Beijing da xue xue bao. Yi xue ban = Journal of Peking University. Health sciences*  
Zhang, X., Liang, Y., Dong, Y., Zhang, Y., Wang, Y., Meng, Y., Li, T.  
2012; 44 (1): 135-41
- **[Significance of phosphoinositide 3 kinase/AKT pathway alterations in endometrial carcinoma].** *Zhonghua bing li xue za zhi = Chinese journal of pathology*  
Yang, X., Dong, Y., Zhang, X., Liang, Y., Zhang, Y., Meng, Y., Wang, Y., Wang, W., Nong, L., Li, T., Liao, Q.  
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