Stanford



Lu,Guolan

Assistant Professor of Urology

CONTACT INFORMATION

- **Administrative Contact**

  Tiffany Zhou - Administrative Associate

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Bio

ACADEMIC APPOINTMENTS

- Assistant Professor, Urology
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Young Investigator Award, Prostate Cancer Foundation (2026)
- SCI Innovation Awards, Stanford Cancer Institute (2026)
- Seed Grant Program, The Hirshberg Foundation for Pancreatic Cancer Research (2026)
- The Cancer League Research Award, The Cancer League (2026)
- NIH K99/R00 Pathway to Independence Award, NCI (2022-2027)
- Young Investigator Award, The Society for Immunotherapy of Cancer (SITC) (2023)
- Stanford Translational Medicine (TRAM) Scholar, Stanford (2022)
- Stanford Molecular Imaging Scholar (SMIS Fellow), Stanford (2018-2021)
- Student Travel Award, World Molecular Imaging Congress (WMIC) (2017)
- Outstanding Translational Research Award, Department of Biomedical Engineering at Georgia Institute of Technology and Emory University (2016)
- Rising Stars in Biomedical Engineering and Science, Massachusetts Institute of Technology, Cambridge (2016)
- Coulter Fellowship, The Wallace H. Coulter Foundation (2009-2012)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Georgia Institute of Technology and Emory University , Biomedical Engineering
- Master of Science, Georgia Institute of Technology , Electrical and Computer Engineering

LINKS

- My lab website: https://med.stanford.edu/guolanlulab.html

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The Lu Lab develops spatial omics and computational methods to measure, model, and predict how cells, tissues, and therapeutic agents interact in their native spatial context, and how these interactions drive disease progression and treatment response.

Current Research Areas:

• Joint spatial transcriptomics and spatial proteomics for mapping 2D and 3D tissue architecture in clinical samples

• Generative and foundation models for spatial and spatiotemporal omics analysis

• Single-cell drug–target–microenvironment mapping in human tumors

• Mechanisms of cancer progression, immune evasion, and therapeutic resistance

Teaching

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Frida Bjoerklund

Postdoctoral Faculty Sponsor

Changlin Li, Manuel Mastel, Kunyu Wang

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cancer Biology (PhD Program)
- Immunology (PhD Program)

Publications

PUBLICATIONS

- **Single-cell spatial pharmacobiology for imaging antibody-based therapies in solid tumors** *NATURE BIOTECHNOLOGY*
  Lu, G., Rosentha, E.
  2026

- **Single-cell spatial pharmacobiology identifies conserved stromal barriers to therapeutic antibody delivery in human solid tumors.** *Nature biotechnology*
  Lu, G., Hickey, J. W., Haist, M., Qin, X., Zhao, E., Naveed, A., Forgo, E., Baertsch, M. A., Mani, L., Rovira-Clavé, X., Finegersh, A., Goltsev, Y., Caraccio, et al
  2026

- **Lymph node colonization induces tissue remodeling via immunosuppressive fibroblast-myeloid cell niches supporting metastatic tolerance.** *Cancer cell*
  Haist, M., Baertsch, M. A., Reticker-Flynn, N. E., Lu, G., Kempchen, T. N., Chu, P., Vazquez, G., Chen, H., Sunwoo, J. B., Zhang, W., Laseinde, E., Adami, B., Zimmer, et al
  2026

- **High-throughput multiplexed serology via the mass-spectrometric analysis of isotopically barcoded beads.** *Nature biomedical engineering*
  Drainas, A. P., McIlwain, D. R., Dallas, A., Chu, T., Delgado-González, A., Baron, M., Angulo-Ibáñez, M., Trejo, A., Bai, Y., Hickey, J. W., Lu, G., Lu, S., Pineda-Ramirez, et al

2025

- **Spatially Segregated Macrophage Populations Predict Distinct Outcomes In Colon Cancer.** *Cancer discovery*
  Matusiak, M., Hickey, J. W., van IJzendoorn, D. G., Lu, G., Kidzinski, L., Zhu, S., Colburg, D. R., Luca, B., Phillips, D. J., Brubaker, S. W., Charville, G. W., Shen, J., Loh, et al
  2024

- **Highly multiplexed spatial profiling with CODEX: bioinformatic analysis and application in human disease.** *Seminars in immunopathology*
  Kuswanto, W., Nolan, G., Lu, G.
  2022

- **A real-time GPU-accelerated parallelized image processor for large-scale multiplexed fluorescence microscopy data.** *Frontiers in immunology*
  Lu, G., Baertsch, M. A., Hickey, J. W., Goltsev, Y., Rech, A. J., Mani, L., Forgo, E., Kong, C., Jiang, S., Nolan, G. P., Rosenthal, E. L.
  2022; 13: 981825

- **Tumour-specific fluorescence-guided surgery for pancreatic cancer using panitumumab-IRDye800CW: a phase 1 single-centre, open-label, single-arm, dose-escalation study.** *The lancet. Gastroenterology & hepatology*
  Lu, G., van den Berg, N. S., Martin, B. A., Nishio, N., Hart, Z. P., van Keulen, S., Fakurnejad, S., Chirita, S. U., Raymundo, R. C., Yi, G., Zhou, Q., Fisher, G. A., Rosenthal, et al
  2020

- **Translating a fluorescent DNA-repair inhibitor.** *Nature biomedical engineering*
  Lu, G., Rosenthal, E. L.
  2020; 4 (3): 247–49

- **Predicting Therapeutic Antibody Delivery into Human Head and Neck Cancers.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
  Lu, G., Fakurnejad, S., Martin, B. A., van den Berg, N. S., van Keulen, S., Nishio, N., Zhu, A. J., Chirita, S. U., Zhou, Q., Gao, R. W., Kong, C. S., Fischbein, N., Penta, et al
  2020

- **Co-administered antibody improves penetration of antibody-dye conjugate into human cancers with implications for antibody-drug conjugates.** *Nature communications*
  Lu, G., Nishio, N., van den Berg, N. S., Martin, B. A., Fakurnejad, S., van Keulen, S., Colevas, A. D., Thurber, G. M., Rosenthal, E. L.
  2020; 11 (1): 5667

- **Histopathology Feature Mining and Association with Hyperspectral Imaging for the Detection of Squamous Neoplasia.** *Scientific reports*
  Lu, G., Wang, D., Qin, X., Muller, S., Little, J. V., Wang, X., Chen, A. Y., Chen, G., Fei, B.
  2019; 9 (1): 17863

- **Detection and delineation of squamous neoplasia with hyperspectral imaging in a mouse model of tongue carcinogenesis** *Journal of Biophotonics*
  Lu, G., Wang, D., Qin, X., Muller, S., Wang, X., Chen, A. Y., Chen, Z. G., Fei, B.
  2018 ; 11 (3): e201700078

- **Detection of Head and Neck Cancer in Surgical Specimens Using Quantitative Hyperspectral Imaging.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
  Lu, G., Little, J. V., Wang, X., Zhang, H., Patel, M. R., Griffith, C. C., El-Deiry, M. W., Chen, A. Y., Fei, B.
  2017; 23 (18): 5426-5436

- **Deep convolutional neural networks for classifying head and neck cancer using hyperspectral imaging.** *Journal of biomedical optics*
  Halicek, M., Lu, G., Little, J. V., Wang, X., Patel, M., Griffith, C. C., El-Deiry, M. W., Chen, A. Y., Fei, B.
  2017; 22 (6): 60503

- **A Minimum Spanning Forest-Based Method for Noninvasive Cancer Detection With Hyperspectral Imaging** *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING*
  Pike, R., Lu, G., Wang, D., Chen, Z. G., Fei, B.
  2016; 63 (3): 653-663

- **Framework for hyperspectral image processing and quantification for cancer detection during animal tumor surgery** *JOURNAL OF BIOMEDICAL OPTICS*

Lu, G., Wang, D., Qin, X., Halig, L., Muller, S., Zhang, H., Chen, A., Pogue, B. W., Chen, Z. G., Fei, B.
2015; 20 (12)

- **Spectral-spatial classification for noninvasive cancer detection using hyperspectral imaging** *JOURNAL OF BIOMEDICAL OPTICS*
  Lu, G., Halig, L., Wang, D., Qin, X., Chen, Z. G., Fei, B.
  2014; 19 (10)
- **Semantic interpretation of robust imaging features for Fuhrman grading of renal carcinoma.** *Conference proceedings : ... Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual Conference*
  Champion, A., Lu, G., Walker, M., Kothari, S., Osunkoya, A. O., Wang, M. D.
  2014; 2014: 6446-9
- **Medical hyperspectral imaging: a review** *JOURNAL OF BIOMEDICAL OPTICS*
  Lu, G., Fei, B.
  2014; 19 (1)
- **Histological and molecular characterization of lateral extension in papillary urothelial carcinoma: implications for classification and management.** *Histopathology*
  Pacheco, R. R., Peterson, D. J., Thong, A., Shkolyar, E., Liao, J. C., Lu, G., Prado, K. B., Dong, F., Chan, E.
  2026
- **Quantitative dissection of the metastatic cascade at single colony resolution.** *Research square*
  Roberts, C., Xu, A., Fang, X., Visani, A., Peng, C. W., Qin, X., Chan, I. C., Dunterman, M., Giles, D. A., You, Y., Guppy, I., Yang, Z., Woodiwiss, et al
  2026
- **Feasibility of Panitumumab-IRDye800 molecular imaging for intraoperative tumor localization of lung cancer**
  Chang, C. C., Lu, G., Zhou, Q., van den Berg, N. S., Kim, J., Elliott, I., Guenthart, B., Liou, D., Backhus, L., Berry, M., Shrager, J., Ramchandran, K., Myall, et al
  MOSBY-ELSEVIER.2026: S163-S164
- **Histopathologic and spatial transcriptomic analyses of en bloc resections of de novo and recurrent bladder tumors.**
  Peterson, D., Pacheco, R., Lu, G., Liao, J. C., Dong, F., Chan, E., Prado, K.
  LIPPINCOTT WILLIAMS & WILKINS.2026
- **Quantitative dissection of the metastatic cascade at single colony resolution.** *bioRxiv : the preprint server for biology*
  Roberts, C., Xu, A., Fang, X., Visani, A., Peng, C. W., Qin, X., Chan, I. C., Dunterman, M., Giles, D. A., You, Y., Guppy, I., Yang, Z., Kim, et al
  2026
- **Spatial Dissection of the Bone Marrow Microenvironment in Multiple Myeloma By High Dimensional Multiplex Tissue Imaging**
  Baertsch, M., Brobeil, A., Hickey, J., Haist, M., Poos, A., Lu, G., Kuswanto, W., Schuerch, C., Voehringer, H., Huber, W., Mechtersheimer, G., Mueller-Tidow, C., Schirmacher, et al
  AMER SOC HEMATOLOGY.2023
- **A spatial map of human macrophage niches reveals context-dependent macrophage functions in colon and breast cancer.** *Research square*
  Matusiak, M., Hickey, J. W., Luca, B., Lu, G., Kidziński, L., Zhu, S., Colburg, D. R., Phillips, D. J., Brubaker, S. W., Charville, G. W., Shen, J., Nolan, G. P., Newman, et al
  2023
- **Metastatic and sentinel lymph node mapping using intravenously delivered Panitumumab-IRDye800CW.** *Theranostics*
  Krishnan, G., van den Berg, N. S., Nishio, N., Juniper, G., Pei, J., Zhou, Q., Lu, G., Lee, Y. J., Ramos, K., Iagaru, A. H., Baik, F. M., Colevas, A. D., Martin, et al
  2021; 11 (15): 7188-7198
- **EGFR-targeted intraoperative fluorescence imaging detects high-grade glioma with panitumumab-IRDye800 in a phase 1 clinical trial.** *Theranostics*
  Zhou, Q., van den Berg, N. S., Rosenthal, E. L., Iv, M., Zhang, M., Vega Leonel, J. C., Walters, S., Nishio, N., Granucci, M., Raymundo, R., Yi, G., Vogel, H., Cayrol, et al
  2021; 11 (15): 7130-7143
- **Molecular imaging of a fluorescent antibody against epidermal growth factor receptor detects high-grade glioma.** *Scientific reports*

Zhou, Q., Vega Leonel, J. C., Santoso, M. R., Wilson, C., van den Berg, N. S., Chan, C. T., Aryal, M., Vogel, H., Cayrol, R., Mandella, M. J., Schonig, F., Lu, G., Gambhir, et al

2021; 11 (1): 5710

- **Intraoperative Fluorescence-Guided Surgery in Head and Neck Squamous Cell Carcinoma.** *The Laryngoscope*

  Lee, Y. J., Krishnan, G., Nishio, N., van den Berg, N. S., Lu, G., Martin, B. A., van Keulen, S., Colevas, A. D., Kapoor, S., Liu, J. T., Rosenthal, E. L.

  2021; 131 (3): 529-534

- **EGFR-targeted intraoperative fluorescence imaging detects high-grade glioma with panitumumab-IRDye800 in a phase 1 clinical trial** *Theranostics*

  Zhou, Q., van den Berg, N. S., Rosenthal, E. L., Iv, M., Zhang, M., Vega Leonel, J. C., Walters, S., Nishio, N., Granucci, M., Raymundo, R., Yi, G., Vogel, H., Cayrol, et al

  2021; 11 (15): 7130-7143

- **FIRST-IN-HUMAN FLUORESCENCE GUIDED SURGERY OF HIGH-GRADE GLIOMAS USING PANITUMUMAB-IRDYE800**

  Zhou, Q., van den Berg, N., Nishio, N., Lu, G., Chirita, S., Raymundo, R., Yi, G., Vogel, H., Cayrol, R., Rosenthal, E., Li, G.

  OXFORD UNIV PRESS INC.2020: 52

- **Effect of Formalin Fixation for Near-Infrared Fluorescence Imaging with an Antibody-Dye Conjugate in Head and Neck Cancer Patients.** *Molecular imaging and biology*

  Kapoor, S., Lu, G., van den Berg, N. S., Krishnan, G., Pei, J., Zhou, Q., Martin, B. A., Baik, F. M., Rosenthal, E. L., Nishio, N.

  2020

- **Intraoperative Fluorescence-Guided Surgery in Head and Neck Squamous Cell Carcinoma** *LARYNGOSCOPE*

  Lee, Y., Krishnan, G., Nishio, N., van den Berg, N. S., Lu, G., Martin, B. A., van Keulen, S., Colevas, A. D., Kapoor, S., Liu, J. T. C., Rosenthal, E. L.

  2020

- **Optimal Dosing Strategy for Fluorescence-Guided Surgery with Panitumumab-IRDye800CW in Head and Neck Cancer** *MOLECULAR IMAGING AND BIOLOGY*

  Nishio, N., van den Berg, N. S., van Keulen, S., Martin, B. A., Fakurnejad, S., Zhou, Q., Lu, G., Chirita, S. U., Kaplan, M. J., Divi, V., Colevas, A. D., Rosenthal, E. L.

  2020; 22 (1): 156–64

- **Safety and Stability of Antibody-Dye Conjugate in Optical Molecular Imaging.** *Molecular imaging and biology*

  Pei, J. n., Juniper, G. n., van den Berg, N. S., Nisho, N. n., Broadt, T. n., Welch, A. R., Yi, G. S., Raymundo, R. C., Chirita, S. U., Lu, G. n., Krishnan, G. n., Lee, Y. J., Kapoor, et al

  2020

- **Endoscopic Fluorescence-Guided Surgery for Sinonasal Cancer Using an Antibody-Dye Conjugate.** *The Laryngoscope*

  Hart, Z. P., Nishio, N., Krishnan, G., Lu, G., Zhou, Q., Fakurnejad, S., Wormald, P. J., van den Berg, N. S., Rosenthal, E. L., Baik, F. M.

  2019

- **Targeting MMP-14 for dual PET and fluorescence imaging of glioma in preclinical models.** *European journal of nuclear medicine and molecular imaging*

  Kasten, B. B., Jiang, K., Cole, D., Jani, A., Udayakumar, N., Gillespie, G. Y., Lu, G., Dai, T., Rosenthal, E. L., Markert, J. M., Rao, J., Warram, J. M.

  2019

- **Optical molecular imaging can differentiate metastatic from benign lymph nodes in head and neck cancer.** *Nature communications*

  Nishio, N., van den Berg, N. S., van Keulen, S., Martin, B. A., Fakurnejad, S., Teraphongphom, N., Chirita, S. U., Oberhelman, N. J., Lu, G., Horton, C. E., Kaplan, M. J., Divi, V., Colevas, et al

  2019; 10 (1): 5044

- **Probe-based fluorescence dosimetry of an antibody-dye conjugate to identify head and neck cancer as a first step to fluorescence-guided tissue preselection for pathological assessment.** *Head & neck*

  Nishio, N., van Keulen, S., van den Berg, N. S., Lu, G., LaRochelle, E. P., Davis, S. C., Martin, B. A., Fakurnejad, S., Zhou, Q., Birkeland, A. C., Kaplan, M. J., Divi, V., Colevas, et al

  2019

- **Fluorescence molecular imaging for identification of high-grade dysplasia in patients with head and neck cancer.** *Oral oncology*

  Fakurnejad, S., van Keulen, S., Nishio, N., Engelen, M., van den Berg, N. S., Lu, G., Birkeland, A., Baik, F., Colevas, A. D., Rosenthal, E. L., Martin, B. A.

2019; 97: 50–55

- **The Clinical Application of Fluorescence-Guided Surgery in Head and Neck Cancer** *JOURNAL OF NUCLEAR MEDICINE*
  van Keulen, S., Nishio, N., Fakurnejad, S., Birkeland, A., Martin, B. A., Lu, G., Zhou, Q., Chirita, S. U., Forouzanfar, T., Colevas, A., van den Berg, N. S., Rosenthal, E. L.
  2019; 60 (6): 758–63

- **Optimal Dosing Strategy for Fluorescence-Guided Surgery with Panitumumab-IRDye800CW in Head and Neck Cancer.** *Molecular imaging and biology : MIB : the official publication of the Academy of Molecular Imaging*
  Nishio, N., van den Berg, N. S., van Keulen, S., Martin, B. A., Fakurnejad, S., Zhou, Q., Lu, G., Chirita, S. U., Kaplan, M. J., Divi, V., Colevas, A. D., Rosenthal, E. L.
  2019

- **The Clinical Application of Fluorescence-Guided Surgery in Head and Neck Cancer.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*
  van Keulen, S., Nishio, N., Fakurnejad, S., Birkeland, A., Martin, B. A., Lu, G., Zhou, Q., Chirita, S. U., Forouzanfar, T., Colevas, D., van den Berg, N. S., Rosenthal, E. L.
  2019

- **Rapid, non-invasive fluorescence margin assessment: Optical specimen mapping in oral squamous cell carcinoma.** *Oral oncology*
  van Keulen, S., van den Berg, N. S., Nishio, N., Birkeland, A., Zhou, Q., Lu, G., Wang, H., Middendorf, L., Forouzanfar, T., Martin, B. A., Colevas, A. D., Rosenthal, E. L.
  2019; 88: 58–65

- **Intraoperative Tumor Assessment Using Real-Time Molecular Imaging in Head and Neck Cancer Patients.** *Journal of the American College of Surgeons*
  Keulen, S. v., Nishio, N. n., Fakurnejad, S. n., van den Berg, N. S., Lu, G. n., Birkeland, A. n., Martin, B. A., Forouzanfar, T. n., Dimitrios Colevas, A. n., Rosenthal, E. L.
  2019

- **Rapid, non-invasive fluorescence margin assessment: Optical specimen mapping in oral squamous cell carcinoma** *ORAL ONCOLOGY*
  van Keulen, S., van den Berg, N. S., Nishio, N., Birkeland, A., Zhou, Q., Lu, G., Wang, H., Middendorf, L., Forouzanfar, T., Martin, B. A., Colevas, A., Rosenthal, E. L.
  2019; 88: 58–65

- **Selective modification of fluciclovine (F-18) transport in prostate carcinoma xenografts** *AMINO ACIDS*
  Tade, F., Wiles, W. G., Lu, G., Bilir, B., Akin-Akintayo, O., Lee, J. S., Patil, D., Yu, W., Gherasim, C., Fei, B., Moreno, C. S., Osunkoya, A. O., Teoh, et al
  2018; 50 (9): 1301–5

- **Determination of Tumor Margins with Surgical Specimen Mapping Using Near-Infrared Fluorescence.** *Cancer research*
  Gao, R. W., Teraphongphom, N. T., van den Berg, N. S., Martin, B. A., Oberhelman, N. J., Divi, V., Kaplan, M. J., Hong, S. S., Lu, G., Ertsey, R., Tummers, W. S., Gomez, A. J., Holsinger, et al
  2018

- **Ultrasound Imaging Technologies for Breast Cancer Detection and Management: A Review.** *Ultrasound in medicine & biology*
  Guo, R., Lu, G., Qin, B., Fei, B.
  2018; 44 (1): 37-70

- **Label-free reflectance hyperspectral imaging for tumor margin assessment: a pilot study on surgical specimens of cancer patients.** *Journal of biomedical optics*
  Fei, B., Lu, G., Wang, X., Zhang, H., Little, J. V., Patel, M. R., Griffith, C. C., El-Diery, M. W., Chen, A. Y.
  2017; 22 (8): 1-7

- **Functional MRI of the Eustachian Tubes in Patients With Nasopharyngeal Carcinoma: Correlation With Middle Ear Effusion and Tumor Invasion** *AMERICAN JOURNAL OF ROENTGENOLOGY*
  Mo, Y., Zhuo, S., Tian, L., Zhou, J., Lu, G., Zhang, Y., Liu, L.
  2016; 206 (3): 617-622