

Bo Li, PhD

Assistant Professor
CPRIT Scholar of Cancer Research
Lyda Hill Department of Bioinformatics
Department of Immunology
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Employment

Assistant Professor , Department of Bioinformatics and Department of Immunology, UT Southwestern Medical Center, Dallas TX	Nov 1 st , 2017- Present
Postdoctoral Research Fellow , Harvard School of Public Health, Boston MA Advisors: X. Shirley Liu and Jun S. Liu	2014-2017

Education

PhD of Bioinformatics , University of Michigan, Ann Arbor MI Advisor: Jun Z. Li	2009-2014
BS in Physics , Peking University, Beijing Advisor: Ouyang Qi	2005-2009

Grants

Center for Computational Medicine and Bioinformatics Pilot Project Grant	2012
CPRIT (Cancer Prevention Research Institute of Texas), PI, "Award for recruitment of first-time, tenure-track faculty members".	2017-2021
Circle of Friends Cancer Research grant	2018-2019
NCI R01 CA245318-01A1, PI, "Antigen-independent de novo prediction of cancer-associated T cells". <i>Direct budget: 227K per year.</i>	2020-2025
NCI/NIAID U01 AI156189, co-Investigator, "Finding the optimal balance of immunotherapy efficacy and toxicity".	2020-2025
(Pending) NCI R01 CA258524-01A1, contact PI, "Tracking Peripheral T-Cell Repertoire Changes for Preoperative and Early Ovarian Cancer Diagnosis". Impact score: 18 . Percentile: 2.0 . <i>Direct budget: 470K per year.</i>	2022-2027
(Pending) Tina's Wish Foundation Individual Investigator Award, PI, "Novel TCR biomarker for early ovarian cancer detection". Top 25%, invited submission. <i>Direct budget: 300K total.</i>	2022-2024

Honors and Awards

Harvard Chinese Life Science Yongjin Annual Distinguished Research	2017
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Award (<i>top 10 Chinese researchers at Harvard Medical School</i>)	
Rackham Pre-doctoral Fellowship	2013
Rackham International Research Awards	2010
Chun-Tsung Scholar	2007
<i>For outstanding research by undergraduate student</i>	
Benz Scholar	2005-2009
<i>Awarded to top three students for four years</i>	

Peer Reviewed Publications

*: authors contributed equally

§: corresponding author

Galen Gao, Dajiang Liu, Xiaowei Zhan, **Bo Li**§. KIRCLE: An Analysis of Variations in KIR Genes in The Cancer Genome Atlas and UK Biobank. *Under review at BMC Biology*. Biorxiv link: <https://www.biorxiv.org/content/10.1101/2021.09.02.458787v1.full>

Daria Beshnova*, Yan Fang*, Mingjian Du, Shuiqing Hu, Jianfeng Ye, Zhijian (James) Chen§, **Bo Li**§. Computational approach for binding prediction of SARS-CoV-2 with neutralizing antibodies. *Manuscript in submission to Plos Computational Biology*.

Xuexin Yu*, Wanrun Lin*, Alexandra Spirtos*, Yan Wang, Hao Chen, Jianfeng Ye, Jessica Parker, CiCi Liu, Yiyang Wang, Gabriella Quinn, Feng Zhou, Jayanthi Lea, **Bo Li**§, Wenxin Zheng§. Immune Evasion and Epithelial-to-Mesenchymal Transition in Fallopian Tube as an Early Event for Ovarian Cancer Development in Women with Germline BRCA1 Mutation. *Under review at Cell Reports*.

Christina Wong, **Bo Li**§. AutoCAT: Automated cancer-associated TCRs discovery from TCR-seq data. *Bioinformatics*, btab661 (2021)

Longchao Liu*, Jiahui Chen*, Hongyi Zhang*, Jianfeng Ye, Changzheng Lu, Yang-Xin Fu§ and **Bo Li**§. Concurrent delivery of immune checkpoint blockade improves tumor microenvironment for vaccine-generated immunity. *Under revision at Nature Cancer*

Hongyi Zhang, Xiaowei Zhan, **Bo Li**§. GIANA allows computationally-efficient TCR clustering and multi-disease repertoire classification by isometric transformation. *Nature Communications*, 12: 4699 (2021)

Yongsheng Li, Brandon Burgman, Daniel J McGrail, Ming Sun, Dan Qi, Sachet A Shukla, Erxi Wu, Anna Capasso, Shiaw-Yih Lin, Catherine J Wu, S Gail Eckhardt, Gordon B Mills, **Bo Li**, Nidhi Sahni, S Stephen Yi. Integrated genomic characterization of the human immunome in cancer. *Cancer Research*. 80(21): 4854-4867 (2020)

Taiwen Li, Jingxin Fu, Zexian Zeng, David Cohen, Jing Li, Qianming Chen, **Bo Li**, X Shirley Liu. TIMER2.0 for analysis of tumor-infiltrating immune cells. *Nucleic Acids Research*. 48(1):509-514. (2020)

Daria Beshnova, Jianfeng Ye, Oreoluwa Onabolu, Benjamin Moon, Wenxin Zheng, Yang-Xin Fu, James Brugarolas, Jayanthi Lea, **Bo Li**§. *De novo* prediction of cancer-associated TCRs for non-invasive cancer detection. *Science Translational Medicine*. 12, Issue 557, eaaz3738 (2020)

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- Tao Tao, Wanrun Lin, Yan Wang, Jing Zhang, Setsuko K Chambers, **Bo Li**, Jayanthi Lea, Yiyang Wang, Yue Wang, Wenxin Zheng. Loss of tubal ciliated cells as a risk for “ovarian” or pelvic serous carcinoma. *American Journal of Cancer Research*. 10(11): 3815–3827. (2020)
- Fathima Zumla Cader, Xihao Hu, Walter L. Goh, Kirsty Wienand, Jing Ouyang, Elisa Mandato, Robert Redd, Lee N. Lawton, Pei-Hsuan Chen, Jason L. Weirather, Ron C.J. Schackmann, **Bo Li**, Wenjiang Ma, Phillippe Armand, Scott J. Rodig, Donna Neuberg, X. Shirley Liu and Margaret A. Shipp. A peripheral immune signature of responsiveness to PD-1 blockade in patients with classical Hodgkin lymphoma. *Nature Medicine*. <https://doi.org/10.1038/s41591-020-1006-1> (2020)
- Hao-Dong Li, Changzheng Lu, He Zhang, Qing Hu, Junqiu Zhang, Ileana C Cuevas, Subhransu S Sahoo, Mitzi Aguilar, Elizabeth G Maurais, Shanrong Zhang, Xiaojing Wang, Esra A Akbay, Guo-Min Li, **Bo Li**, Prasad Koduru, Peter Ly, Yang-Xin Fu, Diego H Castrillon. A *Pole*^{P286R} mouse model of endometrial cancer recapitulates high mutational burden and immunotherapy response. *JCI Insight*. 5:14 (2020)
- Hongyi Zhang*, Longchao Liu*, Jian Zhang, Jiahui Chen, Jianfeng Ye, Sachet Shukla, Jian Qiao, Xiaowei Zhan, Catherine Wu, Yang-Xin Fu[§], **Bo Li**[§]. Investigation of antigen-specific T cell clusters in human cancers. *Clinical Cancer Research*. Mar 15;26(6):1359-1371 (2020)
- Yinghua Li*, **Bo Li***, Wei Li*, Yuan Wang, Seçkin Akgül, Daniel Treisman, Kevin Heist, Brianna Pierce, Benjamin Hoff, Cheng-Ying Ho, David Ferguson, Alnawaz Rehemtulla, SiyuanZheng, Brian Ross, Jun Li, and Yuan Zhu. Murine models of IDH-wild-type glioblastoma exhibit spatial segregation of tumor initiation and manifestation during evolution. *Nature Communications*. 11: 3669 (2020)
- Jian Zhang, Xihao Hu, Jin Wang, Avinash Das Sahu, David Cohen, Li Song, Zhangyi Ouyang, Jingyu Fan, Binbin Wang, Jingxin Fu, Shengqing Gu, Moshe Sade-Feldman, Nir Hacohen, Wuju Li, Xiaomin Ying[§], **Bo Li**[§], X Shirley Liu[§]. Immune receptor repertoires in pediatric and adult acute myeloid leukemia. *Genome Medicine* 11(1): 1-11 (2019).
- Xihao Hu*, Jian Zhang*, Jin Wang, Jingxin Fu, Taiwen Li, Xiaoqi Zheng, Binbin Wang, Shengqing Gu, Peng Jiang, Jingyu Fan, Xiaomin Ying, Jing Zhang, Michael C. Carroll, Kai W. Wucherpfennig, Nir Hacohen, Fan Zhang, Peng Zhang, Jun S. Liu[§], **Bo Li**[§], & X. Shirley Liu[§]. Landscape of B cell immunity and related immune evasion in human cancers. *Nat Genetics* 51:560-567 (2019)
- Xihao Hu*, Jian Zhang*, Jun S. Liu[§], **Bo Li**[§], X. Shirley Liu[§]. Evaluation of immune repertoire inference methods from RNA-seq data. *Nature Biotechnology* 36(11), 1034-1034 (2018)
- Peng Jiang, Shengqing Gu, Deng Pan, Jingxin Fu, Avinash Sahu, Xihao Hu, Ziyi Li, Nicole Traugh, Xia Bu, **Bo Li**, Jun Liu, Gordon J Freeman, Myles A Brown, Kai W Wucherpfennig, X Shirley Liu. Signatures of T cell dysfunction and exclusion predict cancer immunotherapy response. *Nat Medicine*, 24:1550-1558 (2018)
- Taiwen Li, Jingyu Fan, Binbin Wang, Qianming Chen, Jun S Liu, **Bo Li**[§] and X. Shirley Liu[§]. TIMER: A web-interface for comprehensive analysis of tumor-infiltrating lymphocytes. *Cancer Research* CAN-17-0307 (2017).

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- Bo Li**, Jun S Liu and X. Shirley Liu. Revisit linear regression-based deconvolution methods for tumor gene expression data. *Genome Biology*, 18:127 (2017).
- Bo Li**[§], Taiwen Li, Binbin Wang, Ruoxu Dou, Jun S Liu and X. Shirley Liu[§]. Ultrasensitive detection of TCR hypervariable region in solid-tissue RNA-seq data. *Nature Genetics*, 49(4):482-483 (2017).
- Bo Li**^{*}, Taiwen Li^{*}, Jean-Christophe Pignon, Binbin Wang, Jinzeng Wang, Sachet Shukla, Ruoxu Dou, Qianming Chen, F. Stephen Hodi, Toni K. Choueiri, Catherine Wu, Nir Hacohen, Sabina Signoretti, Jun S. Liu and X. Shirley Liu. Landscape of tumor-infiltrating T cell repertoire of human cancers. *Nature Genetics*, 48:725–732 (2016).
- Bo Li**, Eric Severson, Jean-Christophe Pignon, Taiwen Li, Haoquan Zhao, Jesse Novak, Peng Jiang, Hui Shen, Jon C. Aster, Scott Rodig, Sabina Signoretti, Jun S. Liu and X. Shirley Liu, Comprehensive analyses of tumor immunity: implications for cancer immunotherapy. *Genome Biology*, 17:174 (2016).
- Bo Li**, J. Z. Li, A general framework for analyzing tumor heterogeneity using DNA sequencing and SNP array data, *Genome Biology*, 15(9):473 (2014).
- Bo Li**, Yasin Senbabaoglu, Weiping Peng, Min-Lee Yang, Jishu Xu, and Jun Z. Li, Genomic Estimates of Aneuploid Content in Glioblastoma Multiforme and Improved Classification, *Clinical Cancer Research*, 18:5595 (2012).
- Bo Li**^{*}, Bin Shao^{*}, Chenlu Yu^{*}, Qi Ouyang and Hongli Wang, A mathematical model for cell size control in fission yeast, *Journal of Theoretical Biology*, 264(3): 771-781 (2010).
- Yinghua Li^{*}, **Bo Li**^{*}, Yuan Wang, Seçkin Akgül, Kevin A Heist, Benjamin Hoff, Cheng-Ying Ho, David O Ferguson, Alnawaz Rehemtulla, Brian D Ross, Jun Z. Li and Yuan Zhu. The origin and mechanism of distant dissemination of malignant glioma in conditional p53-mutant driven models of primary glioblastoma (*manuscript under review at Nature Cell Biology*)
- Chongzhi Zang^{*}, Tao Wang^{*}, Ke Deng, **Bo Li**, Sheng'en Hu, Qian Qin, Tengfei Xiao, Shihua Zhang, Clifford A. Meyer, Housheng Hansen He, Myles Brown, Jun S. Liu, Yang Xie, X. Shirley Liu. High-dimensional genomic data bias correction and data integration using MANCIE. *Nature Communications* 7:11305 (2016).
- Peng Jiang, Hongfang Wang, Wei Li, Chongzhi Zang, **Bo Li**, Yinling J Wong, Cliff Meyer, Jun S Liu, Jon C Aster, X Shirley Liu. Network analysis of gene essentiality in functional genomics experiments. *Genome Biology* 16:239 (2015).
- Casey M. Theriot, Mark J. Koenigsnecht, Paul E. Carlson Jr, Gabrielle E. Hatton, Adam M. Nelson, **Bo Li**, Gary B. Huffnagle, Jun Z. Li & Vincent B. Young, Antibiotic-induced shifts in the mouse gut microbiome and metabolome increase susceptibility to *Clostridium difficile* infection, *Nature Communications*, 5: 3114 (2014).
- Mark Kiel, T. Velusamy, D. Rolland, A. Sahasrabudde, F. Chung, N. Bailey, A. Schrader, **B. Li**, J. Li, A. Ozel, D. Bahler, B. Betz, D. Huebner-Chan, R. Miranda, L. Medeiros, M. Herling, M. Lim and K. Elenitoba-Johnson, Integrated genomic sequencing reveals mutational landscape of T-cell

prolymphocytic leukemia, *Blood*, 124(9): 1460–1472 (2013).

Book Chapters

“Computational deconvolution of tumor-infiltrating immune components with bulk tumor gene expression data” from **Bioinformatics for Cancer Immunotherapy**, Page 249-262 (2020)

Trainees

Binbin Wang: PhD candidate at Tongji University (2015-2017)
Taiwen Li, PhD: Visiting scholar from Sichuan University (2015-2017)
Jin Wang: PhD candidate at Tongji University (2016-2017)
Jingxin Fu: PhD candidate at Tongji University (2016-2017)
Jingyu Fan: PhD candidate at Tongji University (2016-2017)
Jian Zhang: PhD candidate at Beijing Institute of Basic Medical Sciences (2016-2018)
Xue Zou: Master student at Harvard School of Public Health (2016-2017)
Haoquan Zhao: Master student at Harvard School of Public Health (2015-2016)
Ruoxu Dou, MD: Visiting scholar from Sun Yat-sen University (2015-2016)
Jinzeng Wang: Master student at Tongji University (2015-2016)
Hongyi Zhang: Postdoc Researcher in Computational Biology (2018-present)
Xuexin Yu: Postdoc Researcher in Computational Biology (2019-present)
Daria Beshnova: Postdoc Researcher in Computational Biology (2018-present)
Jianfeng Ye: Research Associate (2018-present)
Jiahui Chen: Postdoc Researcher in Immunology (2018-2020)
Zhenhua Ren: Postdoc Researcher in Immunology (2018-present)
Galen Gao: Medical Student (2019-present)
Yan Fang: Graduate Student (2019-present)
Christina Wong: Intern Student (2020-present)

Professional Experience

Member, ASHG	2010-2014
Member, AACR	2014-Present
Member, AAI	2018-Present
Member, ENAR	2020-Present
<i>Ad hoc</i> reviewer for Science, Cell, Nature, Cancer cell, Genome Biology, PNAS, Nucleic Acid Research, Plos One, IEEE Signal Processing, Briefings in Bioinformatics, Nature Communications, Genome Medicine, Bioinformatics	2014-Present

Courses

Graduate Student Instructor	2011-2012
• HumGen544: Population and Statistical Genetics (University of Michigan)	
Guest Lecturer	
• Stat 115: Introduction to Computational Biology (Harvard University)	2015-2017
• IDS.S30: Statistical Modeling and Machine Learning: with applications in biology and medicine (MIT)	2016-2017
Course Advisor at UTSW	2018-present
• Introduction to Biostatistics BSCI-5106	
• Computational System Biology Graduate Program Seminar Series	

Scientific Presentations

2011, "Aberrant genome proportion in Glioblastoma Multiforme and revised classification", **Bo Li**,

Y. Senbabaoglu, W. Peng, J. Xu, J. Li, Keystone Symposia "Changing Landscape of the Cancer Genome", Boston, MA.

2011, "Aberrant genome proportion in Glioblastoma Multiforme and revised classification", **Bo Li**, Y. Senbabaoglu, W. Peng, J. Xu, J. Li American Society of Human Genetics Annual Meeting, Montreal, ON, Canada.

2011, "Genomic estimates of aneuploid content in Glioblastoma Multiforme and proposal of a new integrated classification", **Bo Li**, Y. Senbabaoglu, W. Peng, M. Yang, J. Xu, J. Li, The Cancer Genome Atlas' 1st Annual Scientific Symposium: Enabling Cancer Research Through TCGA, Washington DC.

2012, "Segment-Specific Aneuploid Content: Algorithm Development and Applications to Diverse Cancer Types", **Bo Li**, J. Z. Li, The Cancer Genome Atlas' 2nd Annual Scientific Symposium: Enabling Cancer Research Through TCGA, Crystal City, Virginia.

2013, "Genomic evidence of episodic clonal evolution in solid tumors", **Bo Li**, J. Z. Li, The Biology of the Genome, Cold Spring Harbor, New York.

2014, "Clonal heterogeneity analysis tool", Bioinformatics and Computational Biology, MD Anderson Cancer Center, Houston, TX, *invited speaker*

2015, "Comprehensive analyses of tumor immunity with implications to cancer immunotherapies", **Bo Li**, Eric Severson, Jean-Christophe Pignon, Taiwen Li, Haoquan Zhao, Jesse Novak, Peng Jiang, Hui Shen, Jon C. Aster, Scott Rodig, Sabina Signoretti, Jun S. Liu and X. Shirley Liu, AACR-NCI-EORTC molecular target meeting, Boston, MA, *invited speaker*

2015, "Computational approaches for understanding tumor-immune interaction and its clinical implications", Dana Farber Cancer Institute ImmunoOncology seminar, Boston, MA, *invited speaker*

2016, "Landscape of tumor-infiltrating T cell repertoire of human cancers", **Bo Li**, Taiwen Li, Jean-Christophe Pignon, Binbin Wang, Jinzeng Wang, Sachet Shukla, Ruoxu Dou, Qianming Chen, F. Stephen Hodi, Toni K. Choueiri, Catherine Wu, Nir Hacohen, Sabina Signoretti, Jun S. Liu and X. Shirley Liu, AACR annual meeting, New Orleans, LA

2016, "Computational approaches for understanding tumor-immune interactions", Annual retreat of Center for Functional Cancer Epigenetics, Dana Farber Cancer Institute, Boston, MA, *invited speaker*

2016, "Computational approaches for understanding tumor-immune interactions", Federation of Clinical Immunology Societies (FOCIS) annual meeting, Boston, MA, *invited speaker*

2016, "Computational approaches to understand tumor-immune interaction", Future of Cancer Science Symposium, MD Anderson Cancer Center, Houston, TX, *invited speaker*

2016, "Computational approaches to understand tumor-immune interaction", Harvard Medical School Chinese Scholars and Scientists Association (HMS-CSSA) Cancer immunotherapy symposium, *invited speaker*

2017, "Computational approaches to dissect tumor-immune interaction", UT Southwestern Medical

Center, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, UT MD Anderson Cancer Center, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, Massachusetts General Hospital, Harvard Medical School, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, Center for Data Science, Harvard Medical School, ***invited speaker***

2017, “Widespread B cell clonal expansion in human solid tumors”, Cold Spring Harbor Asian Conference, Precision Cancer Medicine: From targeted to immune therapies, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, Center for Quantitative Biology, Peking University, China, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, Center for Statistical Science, Tsinghua University, China, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, Beijing Institute of Genome, Chinese Academy of Science, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, CAS-MPG Partner Institute for Computational Biology, Shanghai Institute for Biological Sciences, Chinese Academy of Science, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, Department of Bioinformatics, Harbin Medical University, ***invited speaker***

2017, “Computational approaches to dissect tumor-immune interaction”, Department of Life Science, Harbin Institute of Technology, ***invited speaker***

2018, “Identification and systematic characterization of antigen-specific T cells in human cancers”, University of Michigan DCMB seminar, ***invited speaker***

2018, “Identification and systematic characterization of antigen-specific T cells in human cancers”, Chinese Biological Investigator Society biannual conference, ***invited speaker***

2019, “Antigen-independent *de novo* prediction of cancer- associated T cells”, HudsonAlpha Institute for Biotechnology Department seminar, ***invited speaker***

2019, “Antigen-independent *de novo* prediction of cancer- associated T cells”, American Association of Cancer Research annual conference, major symposium ***invited speaker***

2020, AIRR annual conference, ***invited speaker***

2021, ENAR annual conference, ***invited speaker***