

## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.

NAME Xu, Jian		POSITION TITLE Assistant Professor, Children's Research Institute, UT Southwestern Medical Center	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Fudan University	B.S.	2000	Biochemistry
Medical Center of Fudan University	M.S.	2003	Cancer Biology
University of California - Los Angeles, CA	Ph.D.	2008	Molecular Biology
Boston Children's Hospital, HHMI, Harvard Medical School	Postdoctoral Associate	2008-2012	Developmental Biology, Hematology/Oncology

### A. Personal Statement

My lab studies the molecular mechanisms that regulate gene expression in hematopoiesis and leukemia, particularly the mechanisms that control non-coding regulatory elements (e.g. transcriptional enhancers) and epigenetic regulators (e.g. Polycomb proteins). I also oversee the Children's Research Institute Sequencing Core Facility at UT Southwestern, which uses next-generation sequencing technologies to study cancer genetics and genomics. It is my long-term goal to elucidate the transcriptional and epigenetic mechanisms that control normal and malignant blood cell development.

### B. Positions and Honors

#### Positions and Employment

2000 - 2003 Graduate Student (M.S.), Medical Center of Fudan University, Shanghai  
2003 - 2008 Graduate Student (Ph.D.) in the laboratory of Dr. Stephen T. Smale, HHMI, UCLA  
2008 - 2011 Helen Hay Whitney-HHMI Fellow in the laboratory of Dr. Stuart H. Orkin, HHMI, Boston Children's Hospital, Harvard Medical School  
2012 - 2014 Instructor in Pediatric Hematology-Oncology, Harvard Medical School  
2014 - Assistant Professor in Children's Research Institute, CPRIT Scholar in Cancer Research, University of Texas Southwestern Medical Center

#### Honors and Awards

2000 Honor of 'Undergraduate Student with Distinction', Fudan University  
2003 Honor of 'Graduate Student with Distinction', Fudan University  
2007 Miyada Special Merit Award, UCLA  
2007 - 2008 CIRM (California Institute for Regenerative Medicine) Pre-Doctoral Fellowship  
2009 Presenter in 'Plenary Scientific Session', 51<sup>st</sup> ASH Annual Meeting, New Orleans  
2009, 2010 ASH Merit Award, American Society of Hematology  
2009 - 2012 Helen Hay Whitney Foundation-HHMI Post-Doctoral Fellowship  
2011 ASH Abstract Achievement Award, American Society of Hematology  
2012 Harvard Chinese Life Science Annual Distinguished Research Award  
2012, 2013 ASH Abstract Achievement Award, American Society of Hematology  
2011 - 2016 NIH/NIDDK Career Development Award (K01)  
2014 CPRIT Scholar in Cancer Research  
2015 American Society of Hematology Scholar Award – Junior Faculty  
2018 Outstanding Mentor Award, UT Southwestern Center for Translational Medicine  
2019 Leukemia & Lymphoma Society (LLS) Scholar Award

### C. Selected Peer-Reviewed Publications (Selected from 54 Publications)

- Xu J\***, Shao Z\*, Li D, Xie H, Kim W, Huang J, Taylor JE, Pinello L, Glass K, Jaffe JD, Yuan GC, and Orkin SH. Developmental control of Polycomb subunit composition by GATA factors mediates a switch to non-canonical functions. *Molecular Cell* 2015, 57(2):304-316. (\*equal contribution).
- Pinello L\*, **Xu J\***, Orkin SH, and Yuan GC. Analysis of chromatin state plasticity identifies cell-type specific regulators of H3K27me3 patterns. *PNAS* 2014, 111(3):E344-53. (\*equal contribution).
- Xu J**, Bauer DE, Kerényi MA, Vo TD, Hou S, Hsu YJ, Yao H, Trowbridge JJ, Mandel G, and Orkin SH. Corepressor-dependent silencing of fetal hemoglobin expression by BCL11A. *PNAS* 2013, 110:6518-6523.

- Xu J\***, Shao Z\*, Glass K, Bauer DE, Pinello L, Handel BV, Serena H, Stamatoyannopoulos JA, Mikkola HKA, Yuan GC, Orkin SH. Combinatorial assembly of developmental stage-specific enhancers controls gene expression programs during human erythropoiesis. *Developmental Cell* 2012, 23(4):796-811. (\*equal contribution).
- Xu J**, Peng C, Sankaran VG, Shao Z, Esrick EB, Chong BG, Ippolito GC, Fujiwara Y, Ebert BL, Tucker PW, Orkin SH. Correction of sickle cell disease in adult mice by interference with fetal hemoglobin silencing. *Science* 2011, 334(6058):993-996.
- Sankaran VG, **Xu J**, Byron R, Greisman HA, Fisher C, Weatherall DJ, Sabath DE, Groudine M, Orkin SH, Premawardhena A, Bender MA. A functional element necessary for fetal hemoglobin silencing. *New England Journal of Medicine* 2011, 365:807-814.
- Xu J**, Sankaran VG, Ni M, Menne TF, Puram RV, Kim W, Orkin SH. Transcriptional silencing of  $\gamma$ -globin by BCL11A involves long-range interactions and cooperation with SOX6. *Genes & Development* 2010, 24(8):783-798.
- Sankaran VG\*, **Xu J\***, Ragozy T, Ippolito GC, Walkley CR, Maika SD, Fujiwara Y, Ito M, Groudine M, Bender MA, Tucker PW, Orkin SH. Developmental and species-divergent globin switching are driven by BCL11A. *Nature* (Article) 2009, 460: 1093-1097. (\*equal contribution).
- Xu J**, Watts JA, Pope SD, Gadue P, Kamps M, Plath K, Zaret KS, and Smale ST. Transcriptional competence and the active marking of tissue-specific enhancers by defined transcription factors in embryonic and induced pluripotent stem cells. *Genes & Development* 2009, 23(24):2824-2838.
- Xu J**, Pope SD, Jazirehi AR, Attema JL, Papathanasiou P, Watts JA, Zaret KS, Weissman IL, and Smale ST. Pioneer factor interactions and unmethylated CpG dinucleotides mark silent tissue-specific enhancers in embryonic stem cells. *Proc. Natl. Acad. Sci. USA* 2007, 104: 12377-12382.

#### Reviews and Chapters (Selected from 7 Publications):

- Liu X, Zhang Y, Chen Y, Li M, Shao Z, Zhang MQ, **Xu J**. CAPTURE: In Situ Analysis of Chromatin Composition of Endogenous Genomic Loci by Biotinylated dCas9. *Current Protocols in Molecular Biology* 2018, 123:e64.
- Xu J**, Smale ST. Designing an enhancer landscape. *Cell* 2012, 151(5):929-931.
- Sankaran VG\*, **Xu J\***, Orkin SH. Advances in the understanding of haemoglobin switching. *British Journal of Haematology* 2010, 149(2):181-194. Review. (\*equal contribution).

#### Publications as an Independent Faculty (Selected from 21 Peer-Reviewed):

- Huang J, Liu X, Li D, Shao Z, Cao H, Zhang Y, Trompouki E, Bowman TV, Zon LI, Yuan GC, Orkin SH<sup>#</sup>, and **Xu J**<sup>#</sup>. Dynamic control of enhancer repertoires drives lineage and stage-specific transcription during hematopoiesis. *Developmental Cell* 2016, 36(1):9-23. (<sup>#</sup>corresponding author)
- Liu X, Zhang Y, Ni M, Cao H, Signer RAJ, Li D, Li M, Gu Z, Hu Z, Dickerson KE, Weinberg SE, Chandel NS, DeBerardinis RJ, Zhou F<sup>#</sup>, Shao Z<sup>#</sup>, **Xu J**<sup>#</sup>. Mitochondrial biogenesis in erythropoiesis is regulated by mTORC1-mediated protein translation. *Nature Cell Biology* 2017, 19:626-638. (<sup>#</sup>corresponding author).
- Liu X, Zhang Y, Chen Y, Li M, Zhou F<sup>#</sup>, Li K, Cao H, Ni M, Liu Y, Gu Z, Dickerson KE, Xie S, Hon GC, Xuan Z, Zhang MQ, Shao Z, **Xu J**<sup>#</sup>. In situ capture of chromatin interactions by biotinylated dCas9. *Cell* 2017, 170:1028-1043. (<sup>#</sup>corresponding author).
- Vo LT, Kinney MA, Liu X, Zhang Y, Barragan J, Sousa PM, Jha DK, Han A, Cesana M, Shao Z, North TE, Orkin SH, Doulatov S, **Xu J**, Daley GQ. Regulation of haematopoietic multipotency by EZH1. *Nature* 2018, 553:506-510.
- Huang J, Li K, Cai W, Liu X, Zhang Y, Orkin SH, **Xu J**<sup>#</sup>, Yuan GC<sup>#</sup>. Dissecting super-enhancer hierarchy based on chromatin interactions. *Nature Communications* 2018, 9:943. (<sup>#</sup>corresponding author).
- Gu Z, Liu Y, Cai F, Patrick M, Zmajkovic J, Cao H, Zhang Y, Tasdogan A, Chen M, Qi L, Liu X, Li K, Lyu J, Dickerson KE, Chen W, Ni M, Merritt ME, Morrison SJ, Skoda RC, DeBerardinis RJ, **Xu J**. Loss of EZH2 reprograms BCAA metabolism to drive leukemic transformation. *Cancer Discovery* 2019, (in press). DOI:10.1158/2159-8290.CD-19-0152.