Curriculum Vitae

Kunhua Qin, Ph.D.

Citizenship: China
Birth Date: Nov 3rd, 1987
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WORK ADDRESS:

Children's Hospital of Philadelphia,
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EDUCATION:

2005-2009 B. Sc. (Biotechnology), Zhengzhou University, China
2009-2012 M. Sc. (Cancer Biology), Nankai University, China
2012-2018 D. Phil. (Molecular Medicine), University of Texas Health Science Center at San Antonio, TX, USA

WORKING EXPERIENCE:

2012 Senior Scientist, BeiGene, Beijing, China
2018-current Research Postdoc, Children's Hospital of Philadelphia (Mentor: Gerd A Blobel)

RESEARCH INTERESTS:

Epigenetic regulatory mechanisms in development and disease
Development and application of novel gene and epigenome editing tools

RESEARCH EXPERIENCE:

2018/7-current *Postdoc, Dr. Gerd Blobel lab at Children's Hospital of Philadelphia and Penn Epigenetic Institute, PA*

1. Performed several domain-focused CRISPR genetic screens in an adult-type erythroid cell line to identify novel fetal hemoglobin regulators
2. Validated screen hits in hematopoiesis *ex vivo* and *in vivo* models
3. Characterized the regulation of globin gene expression using a combination of biochemistry, molecular biology, genomics, and genetics
4. Co-developed two genome editing tools to perturb globin gene expression

2014/1-2018/5 *Graduate student, Dr. Pei Wang Lab*, *UT Health San Antonio, TX*

1. Generated several gene mutant mice strains to study pancreas development and function
2. Uncovered the physiology function of a histone deacetylase SIRT6 in pancreatic beta cells
3. Performed molecular profiling of gene mutant mouse pancreatic beta cells using RNA-seq and ChIP-seq

2012/9-2014/1 *Rotation student, labs of Drs. Tom Boyer, Rong Li, and Tyler Curiel, Department of Molecular Medicine, UT Health San Antonio, TX*

1. Established an *in vitro* kinase assay to screen inhibitors of the Mediator kinase module.
2. Investigated the kinetics of BRCA1 and RNA polymerase II chromatin binding following depleting NELF complex.
3. Established a cellular model to investigate the impact of B7-H1 blockade on Treg proliferation and apoptosis.

2009/9-2012/6 *Master student, Dr. Rong Xiang Lab, Department of Immunology at Nankai University, Tianjin, China*

1. Generated OCT4 overexpression and loss-of-function models in several cancer cell lines
2. Uncovered the role of OCT4 in regulating migration and metastasis of tumor cells.

HONORS AND AWARDS:

2017 MMED Annual Retreat Research Award, The University of Texas Health Science Center at San Antonio
2009 - 2012 Graduate Student Fellowship, Nankai University
2011 National Scholarship for Academic Excellence, Nankai University
2007 Merit Student Award, Zhengzhou University

PUBLICATIONS (#co-first , *co-corresponding):

1. Zhen Zhang, Amy E. Baxter, Diqiu Ren, **Kunhua Qin**, Zeyu Chen, Sierra McDonald, Hua Huang, Chad A. Komar, Peter F. Bailer, Jared B. Parker, Gerd A. Blobel, Rahul M. Kohli, E. John Wherry*, Shelley L. Berger*, Junwei Shi*. Efficient engineering of human and mouse primary cells using peptide-assisted genome editing. ***Nature Biotechnology***. 2023 Apr 24. doi: 10.1038/s41587-023-01756-1. Online ahead of print. PMID: 37095348.

2. **Qin K#*,** Lan X#, Huang P#, Sarri MS, Khandros E, Keller CA, Giardine B, Abdulmalik O, Shi J, Hardison RC, Blobel GA*. Molecular basis of polycomb group protein-mediated fetal hemoglobin repression. ***Blood***. 2023 Mar 9:blood.2022019578. doi: 10.1182/blood.2022019578. Online ahead of print. PMID: 36893455.

3. Yifan Wu#, **Kunhua Qin**#, Kevin Lopez, Jun Liu, Michael Nipper, Janice J Deng, Xue Yin, Logan Ramjit, Zhengqing Ye, Pei Wang*. Hippo pathway-mediated YAP1/TAZ inhibition is essential for proper pancreatic endocrine specification and differentiation. ***Elife***. Under revision. [preprint]. 2022 May. doi: 10.1101/2022.05.31.494216.

4. Huang P, Peslak SA, Ren R, Khandros E, **Qin K**, Keller CA, Giardine B, Bell HW, Lan X, Sharma M, Horton JR, Abdulmalik O, Chou ST, Shi J, Crossley M, Hardison RC,

Cheng X, Blobel GA*. HIC2 controls developmental hemoglobin switching by repressing BCL11A transcription. ***Nat Genet.*** 2022 Sep;54(9):1417-1426. doi: 10.1038/S41588-022-01152-6.

5. **Qin K,** Huang P, Feng R, Keller CA, Peslak SA, Khandros E, Saari MS, Lan X, Mayuranathan T, Doerfler PA, Abdulmalik O, Giardine B, Chou ST, Shi J, Hardison RC, Weiss MJ, Blobel GA*. Dual function NFI factors control fetal hemoglobin silencing in adult erythroid cells. ***Nat Genet.*** 2022 Jun;54(6):874-884. doi: 10.1038/S41588-022-01076-1.
6. Lan X, Ren R, Feng R, Ly LC, Lan Y, Zhang Z, Aboreden N, **Qin K**, Horton JR, Grevet JD, Mayuranathan T, Abdulmalik O, Keller CA, Giardine B, Hardison RC, Crossley M, Weiss MJ, Cheng X, Shi J, Blobel GA*. ZNF410 Uniquely Activates the NuRD Component CHD4 to Silence Fetal Hemoglobin Expression. ***Mol Cell.*** 2021 Jan 21;81(2):239-254.e8. doi: 10.1016/j.molcel.2020.11.006.
7. Huang P, Peslak SA, Lan X, Khandros E, Yano JA, Sharma M, Keller CA, Giardine B, **Qin K**, Abdulmalik O, Hardison RC, Shi J, Blobel GA*. The HRI-regulated transcription factor ATF4 activates BCL11A transcription to silence fetal hemoglobin expression. ***Blood.*** 2020 Jun 11;135(24):2121-2132. doi: 10.1182/blood.2020005301.
8. **Qin K,** Zhang N, Zhang Z, Nipper M, Zhu Z, Leighton J, Xu K, Musi N, Wang P*. SIRT6-mediated transcriptional suppression of Txnip is critical for pancreatic beta cell function and survival in mice. ***Diabetologia.*** 2018 Apr;61(4):906-918. doi: 10.1007/S00125-017-4542-6.
9. Pan H, **Qin K**, Guo Z, Ma Y, April C, Gao X, Andrews TG, Bokov A, Zhang J, Chen Y, Weintraub ST, Fan JB, Wang D, Hu Y, Aune GJ, Lindsey ML, Li R*. Negative elongation factor controls energy homeostasis in cardiomyocytes. ***Cell Rep.*** 2014 Apr 10;7(1):79-85. doi: 10.1016/J.CELREP.2014.02.028.
10. Shen L, **Qin K**, Wang D, Zhang Y, Bai N, Yang S, Luo Y, Xiang R, Tan X*. Overexpression of Oct4 suppresses the metastatic potential of breast cancer cells via Rnd1 downregulation. ***Biochim Biophys Acta.*** 2014 Nov;1842(11):2087-95. doi: 10.1016/j.bbadis.2014.07.015.
11. Hu J, **Qin K**, Zhang Y, Gong J, Li N, Lv D, Xiang R, Tan X*. Downregulation of transcription factor Oct4 induces an epithelial-to-mesenchymal transition via enhancement of Ca2+ influx in breast cancer cells. ***Biochem Biophys Res Commun.*** 2011 Aug 12;411(4):786-91. doi: 10.1016/j.bbrc.2011.07.025.

CONFERENCE PRESENTATION:

2020 62nd ASH Annual Meeting (Virtual), Oral presentation: Control of Fetal Hemoglobin Levels by NFI Transcription Factors.

2021 St. Jude Children's Research Hospital, Collaborative Research Consortium on Novel Gene Therapies for Sickle Cell Disease (Virtual), Oral presentation: Control of Fetal Hemoglobin Levels by NFI Transcription Factors.

2022 64th ASH Annual Meeting, New Orleans, LA. Poster presentation: Mechanisms of Polycomb Group Protein-Mediated Fetal Hemoglobin Silencing.

REFERENCES:

Gerd Blobel, M.D., Ph.D.
Frank E. Weise III Professor of Pediatrics
The Children's Hospital of Philadelphia

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