Elucidating DUX4-mediated molecular mechanisms underlying FSHD pathophysiology using multiomics approaches

Zheng, D.

List of publications

Peer-reviewed Publications

1. Deng Z, **Zheng D**, Son J, Du W, McKimpson WM, Liu Q, Accili D. Effect of Weight-Neutral Treatment With Semaglutide or Tirzepatide on β-Cell Identity in db/db Mice. *Acta physiologica*. 2026 Jan;242(1):e70141.

2. **Zheng D**, van den Heuvel A, Balog J, Willemsen IM, Kloet S, Tapscott SJ, Mahfouz A, van der Maarel SM. DUX4 activates common and context-specific intergenic transcripts and isoforms. *Science Advances*. 2025;11(19):eadt5356.

3. Franken M, van der Wal E, **Zheng D**, den Hamer B, van der Vliet PJ, Lemmers RJ, van den Heuvel A, Dorn AL, Duivenvoorden CG, in't Groen SL, Freund C. Three-dimensional tissue engineered skeletal muscle modelling facioscapulohumeral muscular dystrophy. *Brain*. 2025;148(5):1723-39.

4. **Zheng D**, Wondergem A, Kloet S, Willemsen I, Balog J, Tapscott SJ, Mahfouz A, van den Heuvel A, van der Maarel SM. snRNA-seq analysis in multinucleated myogenic FSHD cells identifies heterogeneous FSHD transcriptome signatures associated with embryonic-like program activation and oxidative stress-induced apoptosis. *Human Molecular Genetics*. 2024;33(3):284-98.

5. Liu LP, **Zheng D**, Xu ZF, Zhou HC, Wang YC, Zhou H, Ge JY, Sako D, Li M, Akimoto K. Transcriptomic and functional evidence show similarities between human amniotic epithelial stem cells and keratinocytes. *Cells*. 2021;11:70.

6. Furuya K, Zheng YW, Sako D, Iwasaki K, **Zheng D**, Ge JY, Liu LP, Furuta T, Akimoto K, Yagi H, Hamada H. Enhanced hepatic differentiation in the subpopulation of human amniotic stem cells under 3D multicellular microenvironment. *World Journal of Stem Cells*. 2019;11(9):705.

7. Liu LP, Li YM, Guo NN, Li S, Ma X, Zhang YX, Gao Y, Huang JL, **Zheng D**, Wang LY, Xu H. Therapeutic potential of patient iPSC-derived iMelanocytes in autologous transplantation. *Cell Reports*. 2019;27(2):455-66.

8. Chen L, Wang SC, Ma CH, **Zheng D**, Du ZJ, Wang GY. Ascidiaceibacter salegens gen. nov., sp. nov., isolated from an ascidian. *Antonie van Leeuwenhoek*. 2018;111(9):1687-95.

Manuscripts Under Review

9. van den Heuvel A, **Zheng D**, Pasteuning-Vuhman S, Boertje-van der Meulen J, Brouwer E, de Meijer E, Wondergem A, Kloet S, van der Maarel SM. Single-myofiber RNA-sequencing reveals myofiber-level transcriptomic heterogeneity and DUX4 activation in FSHD muscle biopsies. *Communications Biology*. In revision, 2025.

Curriculum vitae

Dongxu Zheng was born on May 5th, 1993, in Renqiu, China. He completed his secondary education at Renqiu No. 1 Middle School in 2012. In the same year, he began his undergraduate studies in Biotechnology at Harbin Institute of Technology (Weihai), China, where he developed a strong interest in molecular biology. He obtained his Bachelor of Science degree in 2016.

Seeking to broaden his expertise, Dongxu pursued a Master of Science degree in Biomedical Engineering at Columbia University in the City of New York, USA, from 2017 to 2018. Following his graduation, he was awarded a Japanese Government (MEXT) Scholarship and joined the University of Tsukuba, Japan, as a research student in regenerative medicine. He later worked as a bioinformatics technician at the Fifth Affiliated Hospital of Guangzhou Medical University, China. These diverse research experiences solidified his interest in understanding disease mechanisms through integrative approaches.

In March 2020, Dongxu began his PhD research at the Department of Human Genetics, Leiden University Medical Center, the Netherlands, under the supervision of Prof. Silvère M. van der Maarel, Dr. Anita van den Heuvel, and Dr. Ahmed Mahfouz. His doctoral research focused on elucidating the molecular mechanisms underlying facioscapulohumeral muscular dystrophy (FSHD) at single-cell resolution. The findings of his research are presented in this thesis.

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