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RESEARCH EXPERIENCE

Post-doctoral Fellow (*Supervisor: Prof. Bin LIN*) *Jan.2025–Present*
Centre for Eye and Vision Research, Hong Kong

- *Cutting-edge gene therapy delivery system for ocular diseases*: conducting pioneering research on the development of adeno-associated viruses (AAV) specifically engineered to target microglia, with the goal of treating retinal degenerative diseases.
- *Advanced scRNA-seq application in eye disease research*: employing scRNA-seq technology to uncover the underlying mechanisms of various eye diseases at single cell level, including retinal diseases, corneal diseases, and myopia.

Research Postgraduate (*Supervisor: Prof. Bin LIN*) *Sept.2020–Jan.2025*
Hong Kong Polytechnic University, Hong Kong

- Exploring neurodegeneration and neuroprotection in animal models of human retinal diseases such as retinitis pigmentosa and glaucoma. Unlike conventional approaches directly targeting photoreceptors or retinal ganglion cells, my research introduced a novel strategy centered on modulating neuroimmune cells, especially microglia. I identified and investigated several critical molecules, including CD33, Trem2, TAK1. By targeting them, I aimed to not only understand but also manipulate microglial behaviors to provide neuroprotection in retinal diseases.

Research Postgraduate (*Supervisor: Prof. Yan WANG*) *Nov.2017–June.2019*
Tianjin Eye Hospital and Institute, Ophthalmology & Optometry key laboratory in Tianjin

- Investigate the mechanobiological property of human corneal keratocytes.

EDUCATION

PhD in Visual Neuroscience *Sept.2020-Jan.2025*
Hong Kong Polytechnic University, Hong Kong
School of Optometry, Faculty of Health and Social Sciences (FHSS)
Cum. GPA: 3.75/4.3; Faculty Distinguished Thesis Award of FHSS.

Combined program for Bachelor/Master's Degree in Clinical Medicine *Sept.2011-June.2019*
Tianjin Medical University, Tianjin, China
Cum. GPA: 3.53/4.0. (Ranking: Top 1/91)

WORK EXPERIENCE

Full-time Research Assistant (*Supervisor: Prof. Bin LIN*) *Nov.2019-Aug. 2020*
Hong Kong Polytechnic University, Hong Kong

Ophthalmology Residency *Nov.2017-June. 2019*
Tianjin Eye Hospital, Tianjin, China

PUBLICATIONS

Journal papers

1. **Zhang J**, Yang W, Wu J, Lin B. Understanding TAK1 deficiency in microglia: Dual mechanisms for microglia-mediated photoreceptor protection in a mouse model of retinitis pigmentosa. (*Proc Natl Acad Sci U S A*, IF:9.3, Accept)
2. Li R, **Zhang J**, Wang Q, Fan J, Lin B. CX3CR1/STAT3/Ackr1 signaling regulates the selective vulnerability of cone photoreceptors in the retina. (*Exp & Mol Med*, IF: 9.5, Under review)
3. Li R, **Zhang J**, Wu J, Fan J, Lin B. Novel insights into the dual functions of TREM2 in regulating photoreceptor survival in retinitis pigmentosa. (*Mol Neurodegener*, IF: 14.9, Under review)
4. Kong Y, Yue M, Xu C, **Zhang J**, Hong H, et al. RGMb drives macrophage infiltration to aggravate kidney disease. *Proc Natl Acad Sci U S A*. 2025 Mar 18;122(11):e2418739122.
5. Yang S, Deng H, **Zhang J**, Zhang T, Xue C, Wang X, Wang Y. Spatial heterogeneity of corneal biomechanical properties in myopia at nanoscale: A preliminary study. *Exp Eye Res*. 2025 Apr;253:110277.
6. **Zhang J**, Yu H, Man MQ, Hu L. Aging in the dermis: Fibroblast senescence and its significance. *Aging Cell*. 2024 Feb;23(2):e14054.
7. **Zhang J**, Wu J, Lu D, To CH, Lam TC, Lin B. Retinal Proteomic Analysis in a Mouse Model of Endotoxin-Induced Uveitis Using Data-Independent Acquisition-Based Mass Spectrometry. *Int J Mol Sci*. 2022;23(12):6464.
8. Li R, **Zhang J**, Wang Q, Cheng M, Lin B. TPM1 mediates inflammation downstream of TREM2 via the PKA/CREB signaling pathway. *J Neuroinflammation*. 2022;19(1):257.
9. Yang S, **Zhang J**, Tan Y, Wang Y. Unraveling the mechanobiology of cornea: From bench side to the clinic. *Front Bioeng Biotechnol*. 2022 Oct 3;10:953590.
10. **Zhang J**, Zhu Q, Zhang S, Wu J, Huang J, Li M, Wang X, Man MQ, Hu L. Double knockout of vitamin D receptor and its coactivator mediator complex subunit 1 unexpectedly enhances epidermal permeability barrier function in mice. *Biochim Biophys Acta Mol Cell Res*. 2021 Nov;1868(12):119131.
11. **Zhang J**, Yang S, Tan Y, Wang Y. Effects of Mechanical Compression on Cell Morphology and Function in Human Corneal Fibroblasts. *Curr Eye Res*. 2021 Oct;46(10):1467-1473.

Conference papers

1. Wu J, Li R, **Zhang J**, Fan J, Lin B. Inhibition of Microglial CSF1R signaling ameliorates neuroinflammation and photoreceptor degeneration in retinitis pigmentosa. Paper presented at **ARVO 2024**, Seattle, WA, USA. *Invest. Ophthalmol. Vis. Sci*. 2024;65(7):1300.
2. **Zhang J**, Wu J, Lin B. CD33 regulates the inflammatory response and mitochondrial activity of microglial cells in the rd10 mouse model of retinitis pigmentosa. Paper presented at **ARVO 2023**, New Orleans, LA, USA. *Invest. Ophthalmol. Vis. Sci*. 2023;64(8):2421.
3. **Zhang J**, Yang W, Lin B. Homozygous and heterozygous TAK1-deficiency differentially affect microglial responses in the rd10 mouse model of retinitis pigmentosa. Paper presented at **Neuroscience 2023**, Washington D.C., USA
4. Li R, Wu J, **Zhang J**, Lin B. CX3CR1 deficiency induces glial cell reactivity and cone photoreceptor loss in the retina via the Stat3 signal pathway. Paper presented at **ARVO 2023**, New Orleans, LA, USA.
5. Li R, Wu J, Fan J, **Zhang J**, Lin B. Trem2 deficiency in microglia ameliorated neuroinflammation and photoreceptor loss at middle- and later-stages of retinitis pigmentosa disease. Paper presented at **Neuroscience 2023**, Washington D.C., USA
6. Yang W, **Zhang J**, Lin B. TAK1 mediates inflammatory responses in the rd10 mouse model of retinitis pigmentosa. Paper presented at **ARVO 2020**, Online. *Invest. Ophthalmol. Vis. Sci*. 2020;61(7):681.