Huakun Li

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EDUCATION

Nanyang Technological University (NTU) Singapore
School of Chemistry, Chemical Engineering and Biotechnology
Ph.D. Aug. 2021 – Mar. 2026

Zhejiang University (ZJU) Hangzhou, China
College of Optical Science and Engineering
B.E. Sept. 2017 – June 2021

- Overall GPA: 91.72/100; **Rank: 1/116**
- Graduation with Distinction

RESEARCH EXPERIENCE

Postdoctoral Scholar-Employee at UCLA, USA June 2026 – present

Visiting Student Researcher at Stanford University, USA July 2024 – Aug. 2024

Graduate Researcher/Student Assistant at NTU, Singapore Aug. 2021 – Oct. 2025

RESEARCH INTERESTS

Retinal circuits; Functional retinal imaging; Interferometric imaging; Cell biophysics.

PROFESSIONAL SERVICE

Independent reviewer for *Biomedical Optics Express*, *Optics Letters*, *Optics Express*, *Optics & Laser Technology*, *BioMedical Engineering OnLine*, *Applied Optics*, and *Journal of Optics*.

JOURNAL ARTICLES († EQUAL CONTRIBUTION)

Preprint

1. T. Liu†, **H. Li**†, V. P. Pandiyan, K. Chen, P. Bharadwaj, B. J. Wendel, D. Mustafi, J. R. Chao, T. Ling, R. Sabesan, In vivo elastography of the human retina using light-evoked intrinsic actuation. *bioRxiv*, 2026.05.01.722017 (2026).

Published

1. **H. Li**, C. E. Weiss†, V. P. Pandiyan†, D. Nanni†, T. Liu, P. W. Kung, B. Tan, V. A. Barathi, L. Schmetterer, R. Sabesan, T. Ling, Optoretinography reveals rapid rod photoreceptor movement upon rhodopsin activation. ***Light: Science & Applications (IF:23.4)*** 15, 58 (2026).
2. V. Bellemo†, **H. Li**†, B. Tan, X. Liu, T. Ling, L. Schmetterer, Phase-corrected complex averaging improves signal-to-noise ratio for in vivo retinal imaging using optical coherence tomography. *APL Photonics* 11, 026108 (2026).
3. Z. Liu, L. Chen, **H. Li**, B. Tan, X. Chen, L. Schmetterer, T. Ling, Uncertainty principle-guided intra-volume motion correction in full-field swept-source OCT for phase-stable retinal imaging. *Optics Express* 34, 26535-26552 (2026).
4. C. L. Anyi, H. You, **H. Li**, K. L. Goh, T. Ling, Label-free mapping of subcellular dynamics using wide-field interferometric scattering microscopy and spectral exponent analysis. *PhotoniX Life* 1, 11 (2026).
5. Y. Zhuo†, **H. Li**†, M. Bhuckory, D. Pham-Howard, D. Palanker, Interferometric imaging of the reversible rhodopsin dynamics in the living rat eye. ***Nature Communications (IF:15.7)*** 16, 10730 (2025).
6. **H. Li**†, Y. Zhuo†, V. P. Pandiyan, M. A. Zaman, T. Ling, R. Sabesan, D. Palanker, On the physiological processes underlying optoretinography [Invited]. *Biomedical Optics Express* 16, 4333-4352 (2025). **(Invited review, Top Downloads from Oct.-Dec. 2025)**

7. L. Wei, C. L. Anyi, **H. Li**, H. Nie, B. Wen, T. Ling, Fast 3D localization of nano-objects in wide-field interferometric scattering microscopy via vectorial diffraction model-derived analytical fitting. ***npj Nanophotonics*** 2, 21 (2025).
8. Y. Zhuo, M. Bhuckory†, **H. Li**†, J. Hattori, D. Pham-Howard, D. Veysset, T. Ling, D. Palanker, Retinal thermal deformations measured with phase-sensitive optical coherence tomography in vivo. ***Light: Science & Applications (IF:23.4)*** 14, 151 (2025).
9. **H. Li**, B. Tan, V. P. Pandiyan, V. A. Barathi, R. Sabesan, L. Schmetterer, T. Ling, Phase-restoring subpixel image registration: enhancing motion detection performance in Fourier-domain optical coherence tomography. *Journal of Physics D: Applied Physics* 58, 145102 (2025).
10. H. You, **H. Li**, T. Ling, Electromechanical deformation of biological neurons: an intrinsic marker for label-free functional neuroimaging. *Journal of Physics D: Applied Physics* 58, 053002 (2025).
11. B. Tan†, **H. Li**†, Y. Zhuo, L. Han, R. Mupparapu, D. Nanni, V. A. Barathi, D. Palanker, L. Schmetterer, T. Ling, Light-evoked deformations in rod photoreceptors, pigment epithelium and subretinal space revealed by prolonged and multilayered optoretinography. ***Nature Communications (IF:15.7)*** 15, 5156 (2024).
12. L. Yao†, **H. Li**†, K. Liu, Z. Zhang, P. Li, Endoscopic optical coherence tomography angiography using inverse SNR-amplitude decorrelation features and electrothermal micro-electro-mechanical system raster scan. *Quantitative Imaging in Medicine and Surgery* 12, 3078-3091 (2022). **(Cover Page)**
13. **H. Li**, K. Liu, T. Cao, L. Yao, Z. Zhang, X. Deng, C. Du, P. Li, High performance OCTA enabled by combining features of shape, intensity, and complex decorrelation. *Optics Letters* 46, 368-371 (2021). **(Editor's Pick)**
14. **H. Li**, K. Liu, L. Yao, X. Deng, Z. Zhang, P. Li, ID-OCTA: OCT angiography based on inverse SNR and decorrelation features. *Journal of Innovative Optical Health Sciences* 14, 2130001 (2021). **(Cover Page, Top 10 JIOHS Featured Articles in 2021)**
15. Y. Zhang†, **H. Li**†, T. Cao, R. Chen, H. Qiu, Y. Gu, P. Li, Automatic 3D adaptive vessel segmentation based on linear relationship between intensity and complex-decorrelation in optical coherence tomography angiography. *Quantitative Imaging in Medicine and Surgery* 11, 895-906 (2021).
16. K. Liu, T. Zhu, L. Yao, Z. Zhang, **H. Li**, J. Ye, P. Li, Noninvasive OCT angiography-based blood attenuation measurements correlate with blood glucose level in the mouse retina. *Biomedical Optics Express* 12, 4680-4688 (2021).
17. R. Chen, L. Yao, K. Liu, T. Cao, **H. Li**, P. Li, Improvement of Decorrelation-Based OCT Angiography by an Adaptive Spatial-Temporal Kernel in Monitoring Stimulus-Evoked Hemodynamic Responses. *IEEE Trans. Med. Imaging* 39, 4286-4296 (2020).

CONFERENCE PROCEEDINGS

1. L. Wei, C. L. Anyi, H. Li, H. Nie, B. Wen, and T. Ling, High-throughput 3D localization with aberration estimation in interferometric scattering microscopy via an approximate interferometric point spread function model, Digital Holography and 3-D Imaging (Optica Publishing Group), p. Tu5A.4 (2026).
2. M. A. Zaman, Y. Zhuo, **H. Li**, M. B. Bhuckory, D. Pham-Howard, T. Ling, and D. V. Palanker, Reversible isomerization of rhodopsin imaged in-vivo with phase-sensitive OCT (SPIE, 2026). **(Pascal RoI Award finalist)**
3. H. Xie, J. Xie, **H. Li**, and T. Ling, "Quantitative Phase Imaging of Live Cells Using Quadriwave Lateral Shearing Interferometry with Large Shear Ratio," 2025 IEEE Photonics Conference.
4. B. Tan, **H. Li**, Y. Zhuo, L. Han, R. Mupparapu, V. A. Barathi, D. Palanker, L. Schmetterer, and T. Ling, Optoretinography reveals comprehensive nanoscopic dynamics of the outer retina in rodents (SPIE, 2024). **(Pascal RoI Award finalist)**
5. B. Tan, **H. Li**, V. A. Barathi, L. Schmetterer, and T. Ling, In-vivo optophysiology in rodent eyes using phase-sensitive optical coherence tomography (ECBO, 2023).

CONFERENCE ABSTRACTS

1. T. Liu, **H. Li**, K. Chen, V. P. Pandiyan, B. J. Wendel, T. Ling, and R. Sabesan, "Laterally referenced optoretinography (ORG) reveals absolute light-evoked displacements in the human retina," Invest. Ophthalmol. Vis. Sci. 67, 2798-2798 (2026).
2. T. Ling, D. Nanni, **H. Li**, P. W. Kung, B. Tan, V. A. Barathi, and L. Schmetterer, "Investigating optoretinography signal variation in sodium iodate-treated mice," Invest. Ophthalmol. Vis. Sci. 67, 3580-3580 (2026).
3. **H. Li**, D. Nanni, P. W. Kung, V. A. Barathi, B. Tan, L. Schmetterer, and T. Ling, "Optoretinography in rodents reveals rod photoreceptor movements associated with rhodopsin activation," Invest. Ophthalmol. Vis. Sci. 66, 3670-3670 (2025).
4. Y. Zhuo, **H. Li**, M. B. Bhuckory, and D. V. Palanker, "Reversible isomerization of rhodopsin imaged in a living eye with phase-sensitive OCT," Invest. Ophthalmol. Vis. Sci. 66, 3665-3665 (2025).
5. T. Ling, **H. Li**, D. Nanni, V. A. Barathi, B. Tan, and L. Schmetterer, "Investigating the onset of phototransduction in rodents via optoretinography," Invest. Ophthalmol. Vis. Sci. 65, 3901-3901 (2024).
6. **H. Li**, B. Tan, Y. Zhuo, L. Han, R. Mupparapu, V. Barathi, L. Schmetterer, and T. Ling, Unsupervised extraction of light-evoked outer retina dynamics in rodents with spatial heterogeneity (SPIE, 2024).
7. T. Ling, B. Tan, **H. Li**, Y. Zhuo, L. Han, R. Mupparapu, V. A. Barathi, D. Palanker, and L. Schmetterer, Spatially-resolved phase signal extraction in OCT reveals distinct light-evoked responses of photoreceptors and retinal pigment epithelium (SPIE, 2024).
8. **H. Li**, B. Tan, V. Pandiyan, V. Barathi, R. Sabesan, L. Schmetterer, and T. Ling, Subpixel motion correction for phase-sensitive optical coherence tomography (SPIE, 2023).
9. T. Ling, **H. Li**, B. Tan, V. Pandiyan, V. Barathi, R. Sabesan, and L. Schmetterer, Phase-restoring subpixel image registration and automated signal extraction for optoretinography using phase-sensitive OCTs (SPIE, 2023).
10. B. Tan, **H. Li**, V. A. Barathi, L. Schmetterer, and T. Ling, "Imaging photoreceptor response in rodent eyes using phase-sensitive optical coherence tomography," Invest. Ophthalmol. Vis. Sci. 63, 4556 – F0470 (2022).
11. K. Liu, T. Zhu, L. Yao, Z. Zhang, **H. Li**, J. Ye, and P. Li, Noninvasive OCTA-based blood glucometry (SPIE, 2022).
12. R. Chen, L. Yao, K. Liu, T. Cao, **H. Li**, and P. Li, Improvement of decorrelation-based OCT angiography by an adaptive spatial-temporal kernel in monitoring stimulus-evoked hemodynamic responses (SPIE, 2021).

PATENTS

1. T. Ling, L. Schmetterer, B. Tan, **H. Li**, Machine learning-based optoretinography using phase-sensitive optical coherence tomography. PCT Application No. PCT/SG2024/050050, filed on 26 Jan. 2024.
2. T. Ling, **H. Li**, Phase-restoring translational shifting of multidimensional images. PCT Application No. PCT/SG2023/050286, filed on 25 Apr. 2023. Singapore Patent No. 11202405743Y, Issued.
3. **H. Li**, P. Li. Method and apparatus for quantitative processing of blood-flow imaging by incorporating vascular morphological features. Chinese Patent No. CN113706567B, Issued.
4. P. Li, **H. Li**. Method and system for optical coherence tomography angiography based on a multidimensional feature space. Chinese Patent No. CN112057049B, Issued.
5. P. Li, Y. Zhang, **H. Li**. Method and system for segmentation and quantification of microvascular blood-flow images based on a multidimensional feature space. Chinese Patent No. CN112396622B, Issued.

HONORS & AWARDS

Best Teaching Assistant Award — June 2025

The Second Prize in the "Challenge Cup" Academic Achievement Contest Among College Students in China	Mar. 2022
Graduation with Distinction, Zhejiang Province	June 2021
Graduation with Distinction, Zhejiang University	June 2021
The "Qizhen Cup" Top Ten New Academic Achievements at Zhejiang University	June 2021
The Grand Prize in the "Challenge Cup" Academic Achievement Contest Among College Students in Zhejiang Province	May 2021
National Scholarship from the Ministry of Education, China	Oct. 2020
Top Ten Students in the College of Optical Science and Engineering, Zhejiang University	Oct. 2019