



Wendy Liu, MD, PhD

Assistant Professor of Ophthalmology

CLINICAL OFFICE (PRIMARY)

- **Stanford Byers Eye Institute**

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Bio

BIO

Dr. Wendy Liu, MD, PhD, is a clinician-scientist and fellowship-trained glaucoma and cataract surgeon. Dr. Liu leads a translational research laboratory with the goal of finding new druggable targets in glaucoma treatment. Her research interests include the role of pressure sensing in the eye as it relates to the pathophysiology of glaucoma, and discovery of novel wound modulating agents for glaucoma surgery and ocular scarring.

Her clinical practice focuses on management of adult glaucoma and cataracts. She specializes in traditional glaucoma surgery as well as minimally-invasive glaucoma surgery, such as iStent, Hydrus, Xen, KDB, OMNI, and GATT. Her goal is to work together with patients to determine what the best treatment options are for them, so they can maintain the best vision and quality of life.

Dr. Liu graduated summa cum laude from Princeton University with a degree in Molecular Biology and certificates in biophysics, materials science and engineering. She received several awards for excellence in academics and research, including the Shapiro Award for Academic Excellence, the American Society for Microbiology Undergraduate Research Fellowship, and the Sigma Xi Book Award for the best senior thesis. She subsequently earned her MD with honors from Harvard Medical School in the Harvard-MIT Program in Health Sciences and Technology, and PhD in Neurobiology from Harvard University. At Harvard, she was awarded the Presidential Scholarship and Martha Gray Prize for Excellence in Research and a Howard Hughes Medical Institute research fellowship. She completed her ophthalmology residency at Massachusetts Eye and Ear, where she was awarded the Gragoudas Folkman Award for the best research grant proposal, and her glaucoma fellowship at Wills Eye Hospital.

Dr. Liu has published first-author articles in journals including New England Journal of Medicine, Nature, Proceedings of the National Academy of Sciences, and Current Biology. She is a member of the American Academy of Ophthalmology, the Association for Research in Vision and Ophthalmology, and the American Glaucoma Society.

CLINICAL FOCUS

- Ophthalmology
- Glaucoma

- Cataracts
- Minimally Invasive Surgical Procedures

ACADEMIC APPOINTMENTS

- Assistant Professor - University Medical Line, Ophthalmology
- Member, Bio-X
- Member, SPARK at Stanford
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- McCormick Faculty Award, Stanford University
- K08 Career Development Award, National Eye Institute
- Shaffer Grant Award, Glaucoma Research Foundation
- E. Matilda Ziegler Foundation Award, E. Matilda Ziegler Foundation for the Blind
- Career Development Award, Research to Prevent Blindness
- Young Clinician Scientist Grant, American Glaucoma Society
- Spark Translational Research Grant, Stanford University
- KL2 Career Development Award, Stanford University
- Mentoring for the Advancement of Physician Scientists Grant, American Glaucoma Society
- Heed Ophthalmic Foundation Residents Retreat, Heed Ophthalmic Foundation
- Gragoudas-Folkman Award, Massachusetts Eye and Ear
- Martha Gray Prize for Excellence in Research, Harvard Medical School
- Presidential Scholarship, Harvard Medical School
- International Student Research Fellowship, Howard Hughes Medical Institute
- Graduated Summa Cum Laude with Highest Honors in Molecular Biology, Princeton University
- Certificates in Biophysics, Materials Science and Engineering, Princeton University
- George Khoury '65 Prize for Academic Excellence, Princeton University
- Sigma Xi Book Award for best senior thesis in Molecular Biology, Princeton University
- Phi Beta Kappa, Princeton University
- Sigma Xi, Princeton University

PROFESSIONAL EDUCATION

- Board Certification, American Board of Ophthalmology , Ophthalmology
- Fellowship, Wills Eye Hospital , Glaucoma
- Residency, Massachusetts Eye and Ear , Ophthalmology
- Internship, Beth Israel Deaconess Medical Center , Internal Medicine
- MD, Harvard Medical School , Medicine
- PhD, Harvard University , Neurobiology
- AB, Princeton University , Molecular Biology

LINKS

- Lab Website: <https://med.stanford.edu/wendy-liu-lab.html>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Dr. Liu's research interests include the role of mechanosensation in the eye as it relates to the pathophysiology of glaucoma, with the goal of finding new druggable targets in glaucoma treatment.

Questions we are interested in studying include:

- 1) What are the ion channels that mediate pressure sensing in the eye?
- 2) What physiological roles do these channels play in the eye?
- 3) How do these ion channels mediate the development of ocular pathologies?

We study these questions using a combination of techniques including patch clamp electrophysiology, molecular biology, human genetics, and animal models of glaucoma and other ocular diseases.

** We are currently looking for postdoctoral fellows and researchers to join our group. Highly motivated candidates with expertise in techniques such as eye and brain histology, molecular and cellular biology, patch clamp electrophysiology, calcium imaging and animal handling experience are encouraged to apply.

Requirements: Completion of PhD, MD, or MD PhD training. Previous experience in vision or neuroscience research is ideal.

How to Apply: Please send a copy of your CV (please include list of publications, research skills, and contact for 3 references) to: Dr. Wendy Liu
wendywliu@stanford.edu **

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Min Gao, Julian Garcia

Doctoral Dissertation Reader (NonAC)

Emma Theisen

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Neurosciences (Phd Program)

Publications

PUBLICATIONS

- **Lens Capsule Deposit in an Eye with Prior Trabeculectomy.** *Ophthalmology. Glaucoma*
Gali, H., Liu, W. W.
2025

- **Antifibrotic Nanoparticle for Corneal Regeneration Following Traumatic Injuries**
Jang, K., Kang, N., Kim, H., Jiang, L., Seo, Y., Song, E., Chen, F., Han, U., Liu, W., Myung, D.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2025
- **Repurposing verteporfin and hyaluronic acid gel for ocular surface treatment to prevent corneal scarring**
Liu, W., Chen, F., Kang, N., Wungcharoen, T., Jiang, L., Basco, C., Garcia, J., Lin, D., Seo, Y., Jang, K., Myung, D.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2025
- **The role of Piezo2 in RGC survival and axon regeneration after optic nerve crush**
Garcia-Sanchez, J., Lin, D., Liu, W.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2025
- **Repurposing verteporfin and hyaluronic acid gel for ocular surface treatment to prevent corneal scarring.** *Journal of controlled release : official journal of the Controlled Release Society*
Chen, F., Kang, N. W., Wungcharoen, T., Jiang, L., Basco, C., Garcia-Sanchez, J., Lin, D., Seo, Y. A., Jang, K., Myung, D., Liu, W. W.
2025
- **Evaluation of Verteporfin as a Novel Antifibrotic Agent in a Rabbit Model of Glaucoma Filtration Surgery: A Pilot Study.** *Ophthalmology science*
Sun, M. T., Cotton, R. M., Charoenkijakorn, C., Garcia-Sanchez, J., Dalal, R., Xia, X., Lin, J. H., Singh, K., Goldberg, J. L., Liu, W. W.
2024; 4 (3): 100448
- **Glaucoma tube shunt surgery with repeat penetrating keratoplasty in an aphakic patient.** *American journal of ophthalmology case reports*
Chiang, B., Wai, K., Naranjo, A., Smith, S., Rose-Nussbaumer, J., Liu, W. W.
2024; 36: 102145
- **Amniotic membrane graft to patch an overfiltering trabeculectomy flap.** *American journal of ophthalmology case reports*
Yang, M. C., Sun, M. T., Liu, W. W.
2024; 36: 102128
- **Mechanosensitive ion channels in glaucoma pathophysiology.** *Vision research*
Garcia-Sanchez, J., Lin, D., Liu, W. W.
2024; 223: 108473
- **Verteporfin Restores Corneal Transparency after Injury**
Liu, W. W., Chen, F., Wungcharoen, T., Kang, N., Garcia, J., Basco, C., Seo, Y., Myung, D.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2024
- **Expression of *PIEZO1* and *PIEZO2* Mechanosensitive Ion Channels in the Ocular Anterior Segment.**
Garcia-Sanchez, J., Zhu, Y., Dalal, R., Sun, Y., Kapiloff, M., Goldberg, J., Liu, W. W.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2024
- **Differential expression of *PIEZO1* and *PIEZO2* mechanosensitive channels in ocular tissues implicates diverse functional roles.** *Experimental eye research*
Zhu, Y., Garcia-Sanchez, J., Dalal, R., Sun, Y., Kapiloff, M. S., Goldberg, J. L., Liu, W. W.
2023: 109675
- **Mechanosensitive ion channel gene survey suggests potential roles in primary open angle glaucoma.** *Scientific reports*
Liu, W. W., Kinzy, T. G., Cooke Bailey, J. N., Xu, Z., Hysi, P., Wiggs, J. L.
2023; 13 (1): 15871
- **Managing primary open-angle glaucoma in the setting of suboptimal surgical outcomes in the fellow eye.** *Journal of cataract and refractive surgery*
Huang, M. J., Samuelson, T. W., De Francesco, T., Levin, A., Sieck, E., Gazzard, G., Porter, M., Gallardo, M., Chang, R. T., Liu, W. W., Chaya, C., Gulati, S., Shah, et al
2023; 49 (7): 764
- **Managing primary open-angle glaucoma in the setting of suboptimal surgical outcomes in the fellow eye** *JOURNAL OF CATARACT AND REFRACTIVE SURGERY*
Chang, R. T., Liu, W. W.

2023; 49 (7): 767-768

- **Correlation between central visual field defects and stereopsis in patients with early to moderate visual field loss.** *Ophthalmology. Glaucoma*
Liu, W. W., Shalaby, W. S., Shiuey, E. J., Raghu, R., Petkovsek, D., Myers, J. S., Wizov, S. S., Spaeth, G. L., Shukla, A. G.
2023
- **4-year Surgical Outcomes of Gonioscopy-assisted Transluminal Trabeculotomy (GATT) in Patients with Open-angle Glaucoma.** *Ophthalmology. Glaucoma*
Liu, W. W., Petkovsek, D., Shalaby, W. S., Arbabi, A., Moster, M. R.
2023
- **Epigenetics in glaucoma: a link between histone methylation and neurodegeneration.** *The Journal of clinical investigation*
Liu, W. W., Sun, Y.
2023; 133 (15)
- **Epigenetics in glaucoma: a link between DNA methylation and neurodegeneration.** *The Journal of clinical investigation*
Liu, W. W., Sun, Y.
2022; 132 (21)
- **Differences in primary cilia amongst retinal ganglion cell subtypes**
Kowal, T., Dhande, O., Ning, K., Wang, B., Wang, Q., Liu, W., Berbari, N., Hu, Y., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2022
- **Distribution of prototypical primary cilia markers in subtypes of retinal ganglion cells.** *The Journal of comparative neurology*
Kowal, T. J., Dhande, O. S., Wang, B., Wang, Q., Ning, K., Liu, W., Berbari, N. F., Hu, Y., Sun, Y.
2022
- **Repair of Tube Erosion by Modifying the Tube Extender** *JOURNAL OF GLAUCOMA*
Liu, W. W., Werner, A., Chen, T. C.
2020; 29 (7): 604-606
- **Three-dimensional Neuroretinal Rim Thickness and Visual Fields in Glaucoma: A Broken-stick Model.** *Journal of glaucoma*
Liu, W. W., McClurkin, M., Tsikata, E., Hui, P. C., Elze, T., Celebi, A. R., Khoueir, Z., Lee, R., Shieh, E., Simavli, H., Que, C., Guo, R., de Boer, et al
2020; 29 (10): 952-963
- **Imaging Retinal Ganglion Cell Death and Dysfunction in Glaucoma.** *International ophthalmology clinics*
Liu, W. W., Margeta, M. A.
2019; 59 (4): 41-54
- **Diagnosing Myasthenia Gravis with an Ice Pack** *NEW ENGLAND JOURNAL OF MEDICINE*
Liu, W. W., Chen, A.
2016; 375 (19): E39
- **Thermosensory processing in the Drosophila brain** *NATURE*
Liu, W. W., Mazor, O., Wilson, R. I.
2015; 519 (7543): 353-+
- **Transient and Specific Inactivation of Drosophila Neurons In Vivo Using a Native Ligand-Gated Ion Channel** *CURRENT BIOLOGY*
Liu, W. W., Wilson, R. I.
2013; 23 (13): 1202-1208
- **Glutamate is an inhibitory neurotransmitter in the Drosophila olfactory system** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Liu, W. W., Wilson, R. I.
2013; 110 (25): 10294-10299
- **Organic-inorganic interfaces and spiral growth in nacre** *JOURNAL OF THE ROYAL SOCIETY INTERFACE*
Yao, N., Epstein, A. K., Liu, W. W., Sauer, F., Yang, N.
2009; 6 (33): 367-376

- **A Microfluidic Chamber for Analysis of Neuron-to-Cell Spread and Axonal Transport of an Alpha-Herpesvirus** *PLOS ONE*
Liu, W. W., Goodhouse, J., Jeon, N., Enquist, L. W.
2008; 3 (6): e2382