Stanford



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ACADEMIC CONTACT INFORMATION

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Bio

BIO

Dr. Wu is a board-certified ophthalmologist and a fellowship-trained specialist in oculoplastic and orbital surgery. This specialty is dedicated to care of the eyelid and other structures around the eye. It is also called ophthalmic plastic and reconstructive surgery.

Dr. Wu focuses his expertise on saving people's vision. He provides comprehensive, compassionate care for both adults and children with sight-threatening diseases and injuries of the eye and surrounding area. He treats tearing, eyelid drooping, thyroid eye disease, eyelid tumors, and other facial disorders. He also performs facial rejuvenation as well as reconstructive and aesthetic surgery procedures.

Dr. Wu is a national leader in advancing the use of stem cell therapy to treat conditions involving the eye and face. His research explores how stem cells can regenerate a patient's own tissues for potential transplant. His goal is to make regenerative medicine an accepted treatment for people worldwide suffering from diseases of the eye.

The National Eye Institute funded Dr. Wu's research to develop stem cell therapies to treat corneal blindness and regenerate the surface of the eye. He leads the Stanford Ophthalmic Stem Cell and Regenerative Medicine Laboratory and is developing leading-edge treatments for vision loss and eye disease.

He also has participated as a principal investigator in research projects including "The Human Eye Cell Atlas." The goal of this project is to create a reference atlas of all cell types in the human eye. Dr. Wu is also helping to lead a groundbreaking study of a strategy for reconstruction of the surface of the eye. These projects are among more than a dozen involving Dr. Wu that have explored innovations in medication and surgical technique for eye disorders.

He has co-authored articles on his research discoveries in JAMA Ophthalmology, Ophthalmic Plastic & Reconstructive Surgery, Clinical and Experimental Ophthalmology, Retina, Medical Research and Innovations, and many other peer-reviewed publications. He is an article reviewer for publications including the American Journal of Ophthalmology, Ophthalmic Plastic and Reconstructive Surgery, and Human Gene Therapy.

He also has contributed to chapters in the textbooks Ophthalmology and Ophthalmologic Oncology: Mount Sinai Expert Guides.

Dr. Wu has presented the findings of his research at numerous international, national, and local conferences. They include meetings of the North American Society of Academic Oculoplastic Surgeons, Endocrine Society, American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS), and others. Topics have included the stem cells and other approaches to perform regeneration procedures on the eye.

Dr. Wu has earned honors for his clinical, research, and academic achievements. He has won awards from the National Institutes of Health, American Society of Ophthalmic Plastic and Reconstructive Surgery, Icahn School of Medicine at Mount Sinai, the University of Washington, and Yale University.

CLINICAL FOCUS

- Ophthalmic Reconstructive & Facial Plastic Surgery
- Orbital Oncology
- Mohs Reconstruction & Eyelid Surgery
- Facial Nerve Palsy
- Thyroid Eye Disease
- Lacrimal and Tear Duct Surgery
- Eyelid Surgery and Reconstruction
- Ptosis Repair
- Ocular Surface Reconstruction
- Blepharoplasty
- Cosmetic Surgery & Treatments
- Pediatric Oculoplastics
- Ophthalmic Plastic and Reconstructive Surgery

ACADEMIC APPOINTMENTS

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

ADMINISTRATIVE APPOINTMENTS

• Director of Oculoplastics Research, Department of Ophthalmology, Stanford School of Medicine, (2017- present)

HONORS AND AWARDS

- Dr. Solomon Silver Award in Clinical Medicine, Icahn School of Medicine at Mount Sinai (2016)
- Excellence in Teaching Award, Icahn School of Medicine at Mount Sinai (2015)
- Faculty Council Award for Academic Excellence, Icahn School of Medicine at Mount Sinai (2015)
- Honorary Member, Romanian Association of Plastic Surgery (2015)
- Alpha Omega Alpha Honor Medical Society, Icahn School of Medicine at Mount Sinai (2013)

- ASOPRS Fellowship, American Society of Ophthalmic Plastic and Reconstructive Surgery (2009)
- Young Investigator Award, 1st International Conference on cGMP (2003)
- Biology of Aging Fellowship, National Institute of Health (1998)
- Parrett Scholarship, University of Washington (1998)
- Poncin Award, University of Washington (1998)
- Medical Scientist Training Program, National Institute of Health (1995)
- Richter Fellowship, Yale University (1994)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Fellow, American College of Surgeons (2016 present)
- Scientific Review Committee, Asia-Pacific Academy of Ophthalmology Congress (2016 2016)
- Information Technology Committee, American Society of Ophthalmic Plastic and Reconstructive Surgery (2015 present)
- Scientific Review Committee, Fight for Sight (2015 present)
- Education Committee, American Society of Ophthalmic Plastic and Reconstructive Surgery (2014 present)
- Advocacy and Public Outreach Committee, Association for Research in Vision and Ophthalmology (2013 present)
- Fellow, American Society of Ophthalmic Plastic and Reconstructive Surgery (2013 present)

PROFESSIONAL EDUCATION

- Residency: University of Utah Ophthalmology Residency (2009) UT
- Board Certification: Ophthalmology, American Board of Ophthalmology (2013)
- Fellowship: Toronto University Ocuplastic and Orbital Surgery Fellowship (2011) Canada
- Internship: University of Utah Internal Medicine Residency (2006) UT
- Medical Education: University of Washington School of Medicine (2005) WA
- PhD, University of Washington, Molecular and Cellular Biology
- BS, Yale University, Molecular Biophysics and Biochemistry

COMMUNITY AND INTERNATIONAL WORK

- Virtue Foundation Humanitarian Surgical Mission, Khovd, Mongolia
- Ophthalmology Outreach in Tanzania, Morogoro, Tanzania

LINKS

• Wu Research Team Web Site: http://med.stanford.edu/wu.html

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My goal is to perform translational research, bringing breakthroughs in stem cell biology and tissue engineering to clinical ophthalmology and reconstructive surgery. Over 6 million people worldwide are afflicted with corneal blindness, usually caused by chemical and thermal burns, ocular cicatricial pemphigoid, Stevens-Johnson syndrome, microbial infections, or chronic inflammation. These injuries often result in corneal vascularization, conjunctivalization, scarring, and opacification from limbal epithelial stem cell (LSC) deficiency (LSCD), for which there is currently no durable treatment. Bilateral LSCD is particular devastating not only because of lost quality of life and social productivity, but because unlike most retinal diseases that affect the aged, LSCD largely affects the relatively young. The most promising cure for bilateral LSCD is finding an autologous source of limbal epithelial cells for transplantation. Utilizing recent advances in the field of induced pluripotent stem cells (iPSC), my research aims to create a reliable and renewable source of limbal epithelial cells for potential use in treating human eye diseases. These cells will be grown on resorbable biomatrices to generate stable transplantable corneal tissue. These studies will serve as the basis for human clinical trials and make regenerative medicine a reality for those with sight-threatening disease. On a broader level, this experimental approach could serve as a paradigm for the creation of other transplantable tissue for use throughout the body. Stem cell biology has the potential to influence every field of medicine and will revolutionize the way we perform surgery.

Teaching

STANFORD ADVISEES

Med Scholar Project Advisor

Charbel Bou Khalil, Gun Min Youn

Postdoctoral Faculty Sponsor

Hala Dhowre, Aditi Swarup

Publications

PUBLICATIONS

- An organism-wide atlas of hormonal signaling based on the mouse lemur single-cell transcriptome. *Nature communications*
- Liu, S., Ezran, C., Wang, M. F., Li, Z., Awayan, K., Long, J. Z., De Vlaminck, I., Wang, S., Epelbaum, J., Kuo, C. S., Terrien, J., Krasnow, M. A., Ferrell, et al 2024; 15 (1): 2188
- Functional Oculofacial Abstracts. *Ophthalmic plastic and reconstructive surgery* Ali, M. J., Bernardini, F. P., Savar, A., Wu, A. Y., Tawfik, H. A. 2024; 40 (2): 233-234
- Research productivity and gender of research award recipients in international ophthalmology societies. *BMJ open ophthalmology* Nguyen, A. X., Venkatesh, D. S., Biyani, A., Ratan, S., Youn, G. M., Wu, A. Y. 2024; 9 (1)
- Functional Oculofacial Abstracts. *Ophthalmic plastic and reconstructive surgery* Ali, M. J., Bernardini, F. P., Savar, A., Wu, A. Y., Tawfik, H. A. 2024; 40 (1): 121-122
- BDNF and cAMP are neuroprotective in a porcine model of traumatic optic neuropathy. JCl insight Heng, K., Young, B. K., Li, B., Nies, A. D., Xia, X., Wen, R. R., Dalal, R., Bramblett, G. T., Holt, A. W., Cleland, J. M., Harris, J. N., Wu, A. Y., Goldberg, et al 2024
- Gender and research productivity of award recipients among Canadian national ophthalmology and affiliate subspecialty societies. *Women's health* (*London, England*) Nguyen, A. X., Zahedi-Niaki, G., Lando, L., Hutnik, C. M., Wu, A. Y.

2023; 19: 17455057231219613

• Regenerated Corneal Epithelium Expresses More #III-Tubulin After Chemical Injuries Compared to Mechanical Injuries. Translational vision science & technology

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- Evaluation of the Algerbrush II rotating burr as a tool for inducing ocular surface failure in a mouse model *MOLECULAR VISION* Shadmani, A., Jarin, T., Meng, X., Rajaendran, Y., Uzun, S., Wu, A. Y. 2023; 29: 256-265
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- Demographic and socioeconomic disparities in receipt of ophthalmology consultation for facial trauma. *BMJ open ophthalmology* Gervasio, K. A., Camarena, J., Hampton, J., Chopra, N., Kalosza, B., Shumate, L., Wu, A. Y. 2023; 8 (1)
- Ocular Symptoms in Adolescents and Young Adults With Electronic Cigarette, Cigarette, and Dual Use. *JAMA ophthalmology* Nguyen, A. X., Gaiha, S. M., Chung, S., Halpern-Felsher, B., Wu, A. Y. 2023
- Corneal and Limbal Alkali Injury Induction Using a Punch-Trephine Technique in a Mouse Model. *Journal of visualized experiments : JoVE* Shadmani, A., Dhowre, H. S., Ercal, O., Meng, X. Q., Wu, A. Y. 2023
- American Academy of Ophthalmology Clinical Practice Guidelines and Financial Disclosures-Where Is the Money Going?-Reply. JAMA ophthalmology Nguyen, A. X., Joly-Chevrier, M., Wu, A. Y. 2023
- Accuracy of Digital Image Analysis for Diagnosing IgG4 Related Ophthalmic Disease Charoenkijkajorn, C., Gill, H., Glory, B., Shi, W., Homer, N., Men, C., Kossler, A., Wu, A., Lin, J. ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
- Quantitative Characterization of Mechanical and Chemical-Induced Corneal Injury and Lacrimal Gland Response in Mouse Model Shadmani, A., Wu, A., Ercal, O. ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2023
- Orbital floor fractures in Taiwan: A 10-year nationwide population-based study. Taiwan journal of ophthalmology Lin, Y. C., Yim, C. K., Wu, A. Y., Hwang, D. K. 2023; 13 (2): 203-209
- Challenges Assessing Disparities in Patients Discharged After Firearm-Associated Ocular Injury. JAMA ophthalmology Wu, A. Y., Nguyen, A. X.
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- Single-cell transcriptomics of the ocular anterior segment: a comprehensive review. *Eye (London, England)* Ahsanuddin, S., Wu, A. Y. 2023
- Epidemiologic Pattern and Injury Mechanism of Intimate Partner Violence-Related Ocular Trauma in the US. JAMA ophthalmology Alik, M., Malik, M., Ashrafi, R., Wu, A. Y. 2023
- Financial Disclosures Reported by Industry Among Authors of the American Academy of Ophthalmology Clinical Practice Guidelines. JAMA ophthalmology

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- Influence of Age, Gender, and Wait-Times On Public Online Ratings of Glaucoma Physicians in the United States. *Journal of glaucoma* Kim, J. Y., Francisco, R., Wang, J., Liu, J. J., Stephenson, N. J., Khalil, C. B., Kim, D. H., Nguyen, A. X., Youn, G. M., Sun, Y., Wu, A. Y. 2023
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- Gender Gap in the Award Recipients of the Association for Research in Vision and Ophthalmology Ratan, S., Anne Xuan-Lan Nguyen, Biyani, A., Trinh, X., Sun, Y., Saleh, S., Wu, A.
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- Determination of Patient Sentiment and Emotion in Ophthalmology: Infoveillance Tutorial on Web-Based Health Forum Discussions. Journal of medical Internet research

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- Molecular mechanisms and treatments for ocular symblephara. *Survey of ophthalmology* Swarup, A., Ta, C. N., Wu, A. Y. 2021
- Orbital Fractures: Principles, Concepts and Management. Ophthalmic plastic and reconstructive surgery Swarup, A., Wu, A. Y. 2021; 36 (4): 425
- Longitudinal Gender Authorship Trends in Neurology Research Anne Xuan-Lan Nguyen, Yoffe, L., Li, A., Xuan-Vi Trinh, Kurian, J., Wu, A. LIPPINCOTT WILLIAMS & WILKINS.2021
- Impact of COVID-19 on longitudinal ophthalmology authorship gender trends. Graefe's archive for clinical and experimental ophthalmology = Albrecht von Graefes Archiv fur klinische und experimentelle Ophthalmologie Nguyen, A. X., Trinh, X., Kurian, J., Wu, A. Y. 2021
- Gender Authorship Trends in the Ophthalmic Plastic and Reconstructive Surgery Literature. *Ophthalmic plastic and reconstructive surgery* Gervasio, K. A., Sklar, B. A., Nguyen, A. X., Wu, A. Y. 2021
- Gender of Award Recipients in Major Ophthalmology Societies. American journal of ophthalmology Nguyen, A. X., Ratan, S., Biyani, A., Trinh, X. V., Saleh, S., Sun, Y., Wu, A. Y. 2021
- COVID-19 Recommendations From Ophthalmic and Plastic Reconstructive Surgery Societies Worldwide. Ophthalmic plastic and reconstructive surgery Nguyen, A. X., Gervasio, K. A., Wu, A. Y. 2020; 36 (4): 334–45
- Cannabis and the Cornea. Ocular immunology and inflammation Nguyen, A. X., Wu, A. Y. 2020: 1–6
- Differences in SARS-CoV-2 recommendations from major ophthalmology societies worldwide. *BMJ open ophthalmology* Nguyen, A. X., Gervasio, K. A., Wu, A. Y. 2020; 5 (1): e000525
- Training in and comfort with diagnosis and management of ophthalmic emergencies among emergency medicine physicians in the United States. *Eye* (London, England)

Uhr, J. H., Governatori, N. J., Zhang, Q. E., Hamershock, R. n., Radell, J. E., Lee, J. Y., Tatum, J. n., Wu, A. Y. 2020

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- Management and outcomes of proteasome inhibitor associated chalazia and blepharitis: a case series. BMC ophthalmology

Sklar, B. A., Gervasio, K. A., Leng, S., Ghosh, A., Chari, A., Wu, A. Y. 2019; 19 (1): 110

- Association between cannabis and the eyelids: A comprehensive review. Clinical & experimental ophthalmology Nguyen, A. X., Wu, A. Y. 2019
- Review of Ocular Manifestations of Joubert Syndrome. *Genes* Wang, S. F., Kowal, T. J., Ning, K., Koo, E. B., Wu, A. Y., Mahajan, V. B., Sun, Y. 2018; 9 (12)
- Review of Ocular Manifestations of Joubert Syndrome *GENES* Wang, S. F., Kowal, T. J., Ning, K., Koo, E. B., Wu, A. Y., Mahajan, V. B., Sun, Y. 2018; 9 (12)
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- RELATIONSHIP BETWEEN OBSTRUCTIVE SLEEP APNEA AND THE PRESENCE AND SEVERITY OF DIABETIC RETINOPATHY RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES Chang, A. C., Fox, T. P., Wang, S., Wu, A. Y. 2018; 38 (11): 2197–2206
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- Surgical loupe usage among oculoplastic surgeons in North America CANADIAN JOURNAL OF OPHTHALMOLOGY-JOURNAL CANADIEN D OPHTALMOLOGIE Wei, C., Wu, A. Y.

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- Gun trauma and ophthalmic outcomes. *Eye (London, England)* Chopra, N., Gervasio, K. A., Kalosza, B., Wu, A. Y. 2017
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