



Yang Sun, MD, PhD

Associate Professor of Ophthalmology

 NIH Biosketch available Online

CLINICAL OFFICES

- **Stanford Byers Eye Institute**

2452 Watson Ct

MC 5353

Palo Alto, CA 94303

Tel (650) 723-6995

Fax (650) 565-8297

Bio

BIO

Dr. Yang Sun MD.PhD. is an Associate Professor of Ophthalmology at Stanford University School of Medicine. Dr. Sun was a trainee in the Medical Scientist Training Program at Washington University School of Medicine at St. Louis. His clinical Ophthalmology training was at Stanford University and followed by a Heed fellowship in glaucoma at University of Michigan Ann Arbor.

Dr. Sun is a clinician-scientist with clinical specialty in glaucoma medical and surgical management, as well as cataract surgery. He practices at both Byers Eye Institute at Stanford as well as Palo Alto VA medical center. He is an NIH and VA funded investigator with the research focus on roles of inositol metabolism in eye development and disease. The current research interests in his lab include the elucidation of the mechanisms in cilia-mediated signaling in glaucoma and retinal degeneration.

CLINICAL FOCUS

- Ophthalmology

ACADEMIC APPOINTMENTS

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

ADMINISTRATIVE APPOINTMENTS

- Vice Chair, Academic Affairs, Ophthalmology, (2022- present)

HONORS AND AWARDS

- Laurie Kraus Lacob Faculty Scholar in Pediatric Translational Medicine, Child Health Research Institute (9/2018-8/2023)
- Translational Vision Summit finalist, ARVO (2017)

- American Glaucoma Society MAPS award, AGS (2012)
- Starr Shulman Travel fellowship, California Ophthalmology Society (2009)
- Heed Fellow, Heed Ophthalmic Foundation (2009)
- William Ellis Research Prize, Washington University in St. Louis (2005)
- Spencer T Olin Fellowship, Washington University in St. Louis (2003)
- Barry Goldwater Scholarship, U.S. Congressional Goldwater Scholarship foundation (1998)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, International Society for Eye Research (2016 - present)
- Member, Association for Research in Vision and Ophthalmology (2008 - present)
- Member, American Academy of Ophthalmology (2009 - present)
- Member, American Glaucoma Society (2009 - present)

PROFESSIONAL EDUCATION

- Residency: Stanford University Ophthalmology Residency (2009) CA
- Fellowship: University of Michigan Dept of Ophthalmology (2010) MI
- Internship: St Louis University School of Medicine (2006) MO
- Medical Education: Washington University in St Louis Registrar (2004) MO
- Board Certification: Ophthalmology, American Board of Ophthalmology (2011)
- Board Certification, Ophthalmology, American Board of Ophthalmology (2011)
- Fellowship, University of Michigan, Ann Arbor , Glaucoma (2010)
- Internship, St. Louis University (2006)
- Residency, Stanford University (2009)
- PhD, Washington University in St. Louis , Molecular Cell Biology (2004)
- MD, Washington University in St. Louis , Medicine (2004)

PATENTS

- Yang Sun. "United States Patent 941,601 Targeting Primary Cilia in Glaucoma Treatment", Aug 30, 2016

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

We are interested in the role of inositol phosphatases in eye development and disease, using both animal models and human disease tissue. We are a translational laboratory seeking to understand the basic function of proteins as well as developing therapeutic strategies for clinical trials.

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Tia Kowal, Chien Hui Lo, Veronica Ning, Qing Wang

Postdoctoral Research Mentor

Zhiquan Liu

Publications

PUBLICATIONS

- **NMNAT2 Is Downregulated in Glaucomatous RGCs and RGC-Specific Gene Therapy Rescues Neurodegeneration and Visual Function.** *Molecular therapy : the journal of the American Society of Gene Therapy*
Fang, F., Zhuang, P., Feng, X., Liu, P., Liu, D., Huang, H., Li, L., Chen, W., Liu, L., Sun, Y., Jiang, H., Ye, J., Hu, et al
1800
- **Drug delivery to the anterior segment of the eye: a review of current and future treatment strategies.** *International journal of pharmaceutics*
Mofidfar, M., Abdi, B., Ahadian, S., Mostafavi, E., Desai, T. A., Abbasi, F., Sun, Y., Manche, E. E., Ta, C. N., Flowers, C. W.
2021: 120924
- **Primary Cilia in Amacrine Cells in Retinal Development.** *Investigative ophthalmology & visual science*
Ning, K., Sendayen, B. E., Kowal, T. J., Wang, B., Jones, B. W., Hu, Y., Sun, Y.
2021; 62 (9): 15
- **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.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2021
- **OCRL regulates lysosome positioning and mTORC1 activity through SSX2IP-mediated microtubule anchoring.** *EMBO reports*
Wang, B., He, W., Prosseda, P. P., Li, L., Kowal, T. J., Alvarado, J. A., Wang, Q., Hu, Y., Sun, Y.
2021: e52173
- **Optogenetic Modulation of Intraocular Pressure in a Glucocorticoid-Induced Ocular Hypertension Mouse Model.** *Translational vision science & technology*
Kowal, T. J., Prosseda, P. P., Ning, K., Wang, B., Alvarado, J., Sendayen, B. E., Jabbehari, S., Stamer, W. D., Hu, Y., Sun, Y.
2021; 10 (6): 10
- **Optogenetic Modulation of Intraocular Pressure in a Glucocorticoid-Induced Ocular Hypertension Mouse Model** *TRANSLATIONAL VISION SCIENCE & TECHNOLOGY*
Kowal, T. J., Prosseda, P. P., Ning, K., Wang, B., Alvarado, J., Sendayen, B. E., Jabbehari, S., Stamer, W., Hu, Y., Sun, Y.
2021; 10 (6)
- **Chronic mild and acute severe glaucomatous neurodegeneration derived from silicone oil-induced ocular hypertension.** *Scientific reports*
Fang, F., Zhang, J., Zhuang, P., Liu, P., Li, L., Huang, H., Webber, H. C., Xu, Y., Liu, L., Dalal, R., Sun, Y., Hu, Y.
2021; 11 (1): 9052
- **Ab Interno vs. Ab Externo Microcatheter-Assisted Circumferential Trabeculotomy in Treating Patients With Primary Open-Angle Glaucoma.** *Frontiers in medicine*
Zhang, W., Wang, Y., Xin, C., Sun, Y., Cao, K., Wang, H., Wang, N.
1800; 8: 795172
- **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
- **Neuronal NMNAT2 Overexpression Does Not Achieve Significant Neuroprotection in Experimental Autoimmune Encephalomyelitis/Optic Neuritis.** *Frontiers in cellular neuroscience*
Liu, P., Huang, H., Fang, F., Liu, L., Li, L., Feng, X., Chen, W., Dalal, R., Sun, Y., Hu, Y.
2021; 15: 754651
- **An Open-Label Phase Ib Study to Evaluate Retinal Imaging After Short-term Use of the Balance Goggles System (BGS) in Patients with Glaucoma**
Li, Z., Knasel, C., Nunez, M., Beykin, G., Goldstein, A., Fisher, A. C., Singh, K., Sun, Y., Chang, R. T., Lee, W., Goldberg, J.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020
- **Comparison of Virtual Reality (PalmScan VF2000) Visual Fields Analyzer with Humphrey Visual Field in Glaucoma Patients**
Tran, E., Wan, L., Yan, W., Sun, Y., Chang, R.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2020

- **Optogenetic stimulation of phosphoinositides reveals a critical role of primary cilia in eye pressure regulation.** *Science advances*
Prosseda, P. P., Alvarado, J. A., Wang, B., Kowal, T. J., Ning, K., Stamer, W. D., Hu, Y., Sun, Y.
2020; 6 (18): eaay8699
- **Optogenetic stimulation of phosphoinositides reveals a critical role of primary cilia in eye pressure regulation** *SCIENCE ADVANCES*
Prosseda, P. P., Alvarado, J. A., Wang, B., Kowal, T. J., Ning, K., Stamer, W., Hu, Y., Sun, Y.
2020; 6 (18)
- **Defective INPP5E distribution in NPHP1-related Senior-Loken syndrome.** *Molecular genetics & genomic medicine*
Ning, K. n., Song, E. n., Sendayen, B. E., Prosseda, P. P., Chang, K. C., Ghaffarich, A. n., Alvarado, J. A., Wang, B. n., Haider, K. M., Berbari, N. F., Hu, Y. n., Sun, Y. n.
2020: e1566
- **Mouse gamma-Synuclein Promoter-Mediated Gene Expression and Editing in Mammalian Retinal Ganglion Cells.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*
Wang, Q. n., Zhuang, P. S., Huang, H. n., Li, L. n., Liu, L. n., Webber, H. C., Dalal, R. n., Siew, L. n., Fligor, C. M., Chang, K. C., Nahmou, M. n., Kreymerman, A. n., Sun, et al
2020
- **Oculocerebrorenal syndrome of Lowe: Survey of ophthalmic presentations and management.** *European journal of ophthalmology*
Ma, X. n., Ning, K. n., Jabbehdari, S. n., Prosseda, P. P., Hu, Y. n., Shue, A. n., Lambert, S. R., Sun, Y. n.
2020: 1120672120920544
- **Longitudinal Morphological and Functional Assessment of RGC Neurodegeneration After Optic Nerve Crush in Mouse.** *Frontiers in cellular neuroscience*
Li, L. n., Huang, H. n., Fang, F. n., Liu, L. n., Sun, Y. n., Hu, Y. n.
2020; 14: 109
- **Developmental Distribution of Primary Cilia in the Retinofugal Visual Pathway.** *The Journal of comparative neurology*
Alvarado, J. A., Dhande, O. S., Prosseda, P. P., Kowal, T. J., Ning, K. n., Jabbehdari, S. n., Hu, Y. n., Sun, Y. n.
2020
- **A Reversible Silicon Oil-Induced Ocular Hypertension Model in Mice.** *Journal of visualized experiments : JoVE*
Zhang, J., Fang, F., Li, L., Huang, H., Webber, H. C., Sun, Y., Mahajan, V. B., Hu, Y.
2019
- **A novel inducible and reversible mouse glaucoma model: Silicone Oil-Induced Ocular Hypertension Under-detected (SOHU)**
Zhang, J., Li, L., Huang, H., Webber, H., Li, S., Tang, P., Mahajan, V. B., Sun, Y., Zhang, M., Hu, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Neuroprotection of Retinal Ganglion Cells by AAV2-gamma-Synuclein Promoter-Mediated CRISPR/Cas9 Gene Editing**
Li, L., Wang, Q., Huang, H., Sun, Y., Goldberg, J. L., Hu, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **The Role of Phosphoinositides in Aqueous Humor Dynamics via Optogenetic Stimulation in the Trabecular Meshwork**
Alvarado, J., Prosseda, P., Ning, K., Kowal, T., Wang, B., Hu, Y., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Role of inositol phosphatase OCRL in microtubule nucleation: Implications for Oculocerebrorenal Syndrome of Lowe**
Kowal, T., Wang, B., Prosseda, P., Alvarado, J., He, W., Ning, K., Hu, Y., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Characterization of primary cilia in mouse retina during retinal development**
Ning, K., Kowal, T., Chang, K., Alvarado, J., Silva, R., Kreymerman, A., Mahajan, V. B., Hu, Y., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Oculocerebrorenal Syndrome of Lowe: Characterizations of Ocular Presentation and Management**
Ma, X., Ning, K., Kowal, T., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Ocular and systemic presentations of phosphoinositide signaling defects**

- Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **Silicone oil-induced ocular hypertension and glaucomatous neurodegeneration in mouse** *ELIFE*
Zhang, J., Li, L., Huang, H., Fang, F., Webber, H. C., Zhuang, P., Liu, L., Dalal, R., Tang, P. H., Mahajan, V. B., Sun, Y., Li, S., Zhang, et al
2019; 8
 - **Silicone oil-induced ocular hypertension and glaucomatous neurodegeneration in mouse.** *eLife*
Zhang, J., Li, L., Huang, H., Fang, F., Webber, H. C., Zhuang, P., Liu, L., Dalal, R., Tang, P. H., Mahajan, V. B., Sun, Y., Li, S., Zhang, et al
2019; 8
 - **AKT-dependent and -independent pathways mediate PTEN deletion-induced CNS axon regeneration.** *Cell death & disease*
Huang, H., Miao, L., Yang, L., Liang, F., Wang, Q., Zhuang, P., Sun, Y., Hu, Y.
2019; 10 (3): 203
 - **AKT-dependent and -independent pathways mediate PTEN deletion-induced CNS axon regeneration** *CELL DEATH & DISEASE*
Huang, H., Miao, L., Yang, L., Liang, F., Wang, Q., Zhuang, P., Sun, Y., Hu, Y.
2019; 10
 - **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)
 - **Considerations for ophthalmic applications of optogenetics** *ACTA OPHTHALMOLOGICA*
Wood, E. H., Kreymerman, A., Sun, Y., Drenser, K. A., Trese, M. T.
2018; 96 (8): E1037
 - **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)
 - **Coordination of Necessary and Permissive Signals by PTEN Inhibition for CNS Axon Regeneration** *FRONTIERS IN NEUROSCIENCE*
Zhang, J., Yang, D., Huang, H., Sun, Y., Hu, Y.
2018; 12
 - **Coordination of Necessary and Permissive Signals by PTEN Inhibition for CNS Axon Regeneration.** *Frontiers in neuroscience*
Zhang, J., Yang, D., Huang, H., Sun, Y., Hu, Y.
2018; 12: 558
 - **The role of inositol phosphatase OCRL in microtubule nucleation: Implications for Oculocerebrorenal Syndrome of Lowe**
Wang, B., Prosseda, P. P., He, W., Kowal, T., Alvarado, J. A., Ning, K., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
 - **Ocular and renal phenotypes of NPHP1 deletion in Senior Loken syndrome**
Ning, K., Song, E., Haider, K. M., Ghaffarieh, A., Alvarado, J. A., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
 - **Optogenetic Regulation of Aqueous Outflow in Mouse Trabecular Meshwork**
Alvarado, J. A., Prosseda, P. P., Luo, N., Wang, B., Ning, K., He, W., Kowal, T., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
 - **Single particle tracking of nicotinic acetylcholine receptors (AChRs): implication for the pathogenesis of ocular myasthenia gravis (MG)**
He, W., Sun, Y.
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
 - **Intraluminal Deposits Found in Glaucoma Tube Shunts Via Anterior Segment Ocular Coherence Tomography** *JOURNAL OF GLAUCOMA*
Alvarado, J. A., Srivastava, V., Sun, Y.
2018; 27 (3): E68–E71
 - **Proteomic analysis of the human retina reveals region-specific susceptibilities to metabolic-and oxidative stress-related diseases** *PLOS ONE*
Velez, G., Machlab, D. A., Tang, P. H., Sun, Y., Tsang, S. H., Bassuk, A. G., Mahajan, V. B.

2018; 13 (2): e0193250

- **Neuroprotection by eIF2 alpha-CHOP inhibition and XBP-1 activation in EAE/optic neuritis** *CELL DEATH & DISEASE*
Huang, H., Miao, L., Liang, F., Liu, X., Xu, L., Teng, X., Wang, Q., Ridder, W. H., Shindler, K. S., Sun, Y., Hu, Y.
2017; 8: e2936
- **Occult lens subluxation related to laser peripheral iridotomy A case report and literature review** *MEDICINE*
Hu, R., Wang, X., Wang, Y., Sun, Y.
2017; 96 (10)
- **Loss of OCRL increases ciliary PI(4,5)P2 in Lowe oculocerebrorenal syndrome.** *Journal of cell science*
Prosseda, P. P., Luo, N. n., Wang, B. n., Alvarado, J. A., Hu, Y. n., Sun, Y. n.
2017; 130 (20): 3447-54
- **Ocular Pathology of Oculocerebrorenal Syndrome of Lowe: Novel Mutations and Genotype-Phenotype Analysis.** *Scientific reports*
Song, E. n., Luo, N. n., Alvarado, J. A., Lim, M. n., Walnuss, C. n., Neely, D. n., Spandau, D. n., Ghaffarieh, A. n., Sun, Y. n.
2017; 7 (1): 1442
- **Primary cilia signaling mediates intraocular pressure sensation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Luo, N., Conwell, M. D., Chen, X., Kettenhofen, C. I., Westlake, C. J., Cantor, L. B., Wells, C. D., Weinreb, R. N., Corson, T. W., Spandau, D. F., Joos, K. M., Iomini, C., Obukhov, et al
2014; 111 (35): 12871-12876
- **STAT6-Mediated Keratitis and Blepharitis: A Novel Murine Model of Ocular Atopic Dermatitis** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Turner, M. J., DaSilva-Arnold, S., Luo, N., Hu, X., West, C. C., Sun, L., Hall, C., Bradish, J., Kaplan, M. H., Travers, J. B., Sun, Y.
2014; 55 (6): 3803-3808
- **Serum deprivation inhibits the transcriptional co-activator YAP and cell growth via phosphorylation of the 130-kDa isoform of Angiotensin II type 1 receptor by the LATS1/2 protein kinases** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Adler, J. J., Johnson, D. E., Heller, B. L., Bringman, L. R., Ranahan, W. P., Conwell, M. D., Sun, Y., Hudmon, A., Wells, C. D.
2013; 110 (43): 17368-17373
- **Compensatory Role of Inositol 5-Phosphatase INPP5B to OCRL in Primary Cilia Formation in Oculocerebrorenal Syndrome of Lowe** *PLOS ONE*
Luo, N., Kumar, A., Conwell, M., Weinreb, R. N., Anderson, R., Sun, Y.
2013; 8 (6)
- **Evidence of a role of inositol polyphosphate 5-phosphatase INPP5E in cilia formation in zebrafish** *VISION RESEARCH*
Luo, N., Lu, J., Sun, Y.
2012; 75: 98-107
- **OCRL localizes to the primary cilium: a new role for cilia in Lowe syndrome** *HUMAN MOLECULAR GENETICS*
Luo, N., West, C. C., Murga-Zamalloa, C. A., Sun, L., Anderson, R. M., Wells, C. D., Weinreb, R. N., Travers, J. B., Khanna, H., Sun, Y.
2012; 21 (15): 3333-3344
- **p38 phosphorylates Rb on Ser567 by a novel, cell cycle-independent mechanism that triggers Rb-Hdm2 interaction and apoptosis** *ONCOGENE*
Delston, R. B., Matatall, K. A., Sun, Y., Onken, M. D., Harbour, J. W.
2011; 30 (5): 588-599
- **Functional analysis of the p53 pathway in response to ionizing radiation in uveal melanoma** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*
Sun, Y., Tran, B. N., Worley, L. A., Delston, R. B., Harbour, J. W.
2005; 46 (5): 1561-1564