Stanford



Charles DeBoer, MD, PhD

Assistant Professor of Ophthalmology

CLINICAL OFFICE (PRIMARY)

- **Stanford Byers Eye Institute**
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Bio

BIO

Dr. DeBoer is a board-certified, fellowship-trained vitreoretinal surgeon with Stanford Health Care's Byers Eye Institute and a clinical instructor in the Department of Ophthalmology.

He specializes in retinal and macular diseases, treating a range of conditions such as retinal tears, diabetic retinopathy, retinal vein occlusions, macular pucker, macular hole, macular degeneration, retinal detachment, and other complex retinal conditions. Dr. DeBoer incorporates state-of-the-art treatments in personalized, comprehensive care plans for each of his patients. He is dedicated to training future vitreoretinal surgeons and passionate about helping patients through both direct care and research.

Dr. DeBoer's scientific background in micro- and nanofabrication, mechanical and electrical engineering, and medicine drives his research interests in implantable devices and surgical instruments. While completing his PhD, Dr. DeBoer co-invented a biomimetic accommodating intraocular lens (IOL) that treats both cataracts and presbyopia.

He continues researching microdevices, focusing on extended drug delivery from the lens capsule and microelectromechanical systems (MEMS)-enabled implantable devices. Dr. DeBoer's research experience spans topics such as material science, drug delivery, IOL design, microfabrication, 3D printing, and medical device design. He has received grant funding for his work and has 12 patents in the field of ophthalmology.

Dr. DeBoer's work has been published in peer-reviewed journals, including the American Journal of Ophthalmology. He has authored book chapters and presented to his peers at national and international meetings, including meetings of the American Society of Retina Specialists and the Association for Research in Vision and Ophthalmology.

Dr. DeBoer is a member of the American Academy of Ophthalmology and American Society of Retina Specialists. He is also part of the Society of HEED Fellows and Ronald G. Michels Fellowship Foundation.

CLINICAL FOCUS

- Retina Specialist

ACADEMIC APPOINTMENTS

- Assistant Professor-Univ Med Line, Ophthalmology
- Member, Bio-X

HONORS AND AWARDS

- Foundation Award, Ronald G. Michels Fellowship Foundation
- Fellow Teaching Award of the Year, Byers Eye Institute
- HEED Fellowship, Heed Ophthalmic Foundation
- Atwood Fellowship, California Institute of Technology

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, American Academy of Ophthalmology (2018 - present)
- Member, American Society of Retina Specialists (2021 - present)
- Member, Society of HEED Fellows (2021 - present)
- Member, Ronald G. Michels Fellowship Foundation (2022 - present)
- Member, Alpha Omega Alpha (2016 - present)
- Member, Phi Beta Kappa Society (2023 - present)
- Member, Sigma Xi, The Scientific Research Honor Society (2023 - present)

PROFESSIONAL EDUCATION

- Residency: USC Roski Eye Institute Ophthalmology Program (2021) CA
- Board Certification: Ophthalmology, American Board of Ophthalmology (2022)
- Fellowship: Stanford University Ophthalmology Fellowships (2023) CA
- Internship: Huntington Memorial Hospital Internal Medicine Residency (2018) CA
- Medical Education: University of Southern California Keck School of Medicine (2016) CA

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Wen Hong

Publications

PUBLICATIONS

- **Fabrication techniques for thin-walled silicone ocular implants using parylene-C coated 3D-printed molds.** *Discover polymers*
  Kim, H., Hong, W., Abdollahramezani, S., Raja, D., Wise, R., Coates, I., DeSimone, J. M., DeBoer, C.
  2026; 3 (1): 24

- **Safety and Biodistribution of Topical Laquinimod, an Immunomodulator Targeting Aryl Hydrocarbon Receptor: The LION Study.** *Ophthalmology science*
  El Feky, D., Akhavanrezayat, A., Mobasserian, A., Khan, H., Elaraby, O., Yavari, N., Halim, M. S., Tram Tran, A. N., Khatri, A., Kirimli, G. U., Tuong Than, N. T., Vahtola, E., Törngren, et al

2026; 6 (6): 101186

- **Tunable silicone nanomembrane enables controlled, sustained intraocular drug delivery**
  Abdollahramezani, S., Kim, H., Hong, W., Raja, D., DeBoer, C.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2026
- **Tunable Refillable Ocular Drug Delivery for Controlled Release**
  Kim, H., Kang, N., Myung, D., DeBoer, C.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2026
- **Parylene-C based long-term drug eluting device for pseudophakic patients**
  Hong, W., Kim, H., Abdollahramezani, S., Raja, D., DeBoer, C.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2026
- **A Simplified Classification for Age-Related Macular Degeneration Based on Optical Coherence Tomography.** *Ophthalmic surgery, lasers & imaging retina*
  Yeh, T. C., Lin, J. B., Mruthyunjaya, P., Leng, T., DeBoer, C., Sepah, Y. J., Almeida, D. R., Smith, S., Mahajan, V. B.
  2026: 1-7
- **119 Vitrectomy and immunosuppression enhance survival and engraftment of human ESC-derived retinal ganglion cells in a porcine model**
  Yu, Z., Li, B., Maxfield, S., Aggarwal, D., Nemani, S., Deboer, C., Xia, X., Luo, Z., Rao, M., Young, B., Goldberg, J.
  CELL PRESS.2026: 216-217
- **Regression of a Subretinal Proliferation Band with Intravitreal Methotrexate in Recurrent Retinal Detachment: A Case Report.** *Retinal cases & brief reports*
  Alkhabaz, A., Waiguru, J., Guo, L. Y., Sokol, J., Pan, C., DeBoer, C.
  2026
- **Bilateral Superior Branch Retinal Artery Occlusions in a Patient on Pembrolizumab.** *International medical case reports journal*
  Zhao, C. S., Mruthyunjaya, P., Narala, R., DeBoer, C. M.
  2026; 19: 584574
- **Implantable ocular therapeutic systems: an insight into their clinical potential in the long-term treatment of ocular diseases.** *Biofabrication*
  Kim, H., Kang, N. W., Hong, W., Abdollahramezani, S., Ngo, G. H., Raja, D., Peters, O., Mahajan, V. B., Myung, D., Deboer, C.
  2026
- **Biomechanical Modification of the Sclera: An Ex Vivo Study on Porcine Eyes.** *Investigative ophthalmology & visual science*
  Ross, A. K., Jang, K., Nahmou, M., Kim, H., DeBoer, C., Myung, D., Goldberg, J. L., Chiang, B.
  2026; 67 (2): 51
- **P-Score Variability as a Function of Retinopathy of Prematurity Severity.** *Investigative ophthalmology & visual science*
  Shah, S. V., Brant, A. R., Zhao, C. S., Wang, S. K., Lin, J. B., Koo, E., Cakir, B., Deboer, C. M., Ahya, A., Wallace, H., Moshfeghi, D. M.
  2026; 67 (2): 59
- **Management of large submacular hemorrhage in a patient undergoing neurosurgical intervention for moyamoya.** *Digital journal of ophthalmology : DJO*
  Zhao, C. S., Guo, L., Féliz, A., Toth, A., Mahajan, V. B., DeBoer, C. M.
  2025; 31 (4): 118-124
- **3D Bioprinting of Cellular Therapeutic Systems in Ophthalmology: from Bioengineered Tissue to Personalized Drug Delivery.** *Current ophthalmology reports*
  Kim, H., Ngo, G. H., Hong, W., Lee, S. H., Mahajan, V. B., DeBoer, C.
  2025; 13 (1): 10
- **A rare case of severe bilateral chorioretinal coccidioidomycosis in an immunocompromised pediatric patient with Takayasu Arteritis.** *American journal of ophthalmology case reports*
  Brant, A., Ghoraba, H., Soetikno, B., Mruthyunjaya, P., Nguyen, Q., Moshfeghi, D., Deboer, C., Hartnett, M. E.
  2025; 39: 102407
- **Foreign Body Presenting as Golden Hypopyon.** *Surgeries*

Alkhabaz, A., Guo, L. Y., DeBoer, C.
2025; 6 (3)

- **Evaluation of Refillable Drug-Eluting Intraocular Implant**
  Kim, H., Kang, N., Myung, D., Deboer, C.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2025
- **Mechanical Stress and Geographic Atrophy: Investigating the Role of Retinal Pigment Epithelium Disruptions in Age-Related Macular Degeneration**
  Raja, D., Kim, H., Moshfeghi, D., Deboer, C.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2025
- **Refillable Intraocular Drug-Eluting Implant.** *ACS applied materials & interfaces*
  Kim, H., Kang, N. W., Wise, R., Feliz, A., Myung, D., DeBoer, C.
  2025
- **IgG4-related ophthalmic disease presenting as posterior scleritis in a pediatric patient.** *Journal of ophthalmic inflammation and infection*
  Karaca, I., Bromeo, A. J., Mobasserian, A., Akhavanrezayat, A., DeBoer, C., Thng, Z. X., Hung, J. H., Yoo, W. S., Khatri, A., Yavari, N., Nguyen, B. T., El Feky, D., Yasar, et al
  2025; 15 (1): 34
- **In-clinic vitreous biopsy peel pack technique.** *International journal of retina and vitreous*
  DeBoer, C., Zhao, C., Mruthyunjaya, P., Mahajan, V. B., Wai, K. M., Sanislo, S. R.
  2025; 11 (1): 15
- **Retinal racemose hemangioma presenting with a chorioretinal anastomosis.** *American journal of ophthalmology case reports*
  Soetikno, B. T., Ghoraba, H., Brant, A., DeBoer, C., Guo, L., Shue, A., Hartnett, M. E.
  2024; 36: 102188
- **Emerging Oral Pharmaceuticals for Dry Age-Related Macular Degeneration: Mechanism of Action, Current Clinical Status, and Future Directions** *OPHTHALMIC SURGERY LASERS & IMAGING RETINA*
  Deboer, C. M. T., Rasmussen, D. K., Franco, J. A., Mahajan, V. B.
  2024; 55 (9): 528-534
- **Endogenous Fusarium Endophthalmitis after Bone Marrow Transplant: A Case Report and Literature Review.** *Vision (Basel, Switzerland)*
  Zhao, C. S., Wai, K., Koo, E. B., Rahimy, E., Mruthyunjaya, P., Mahajan, V. B., DeBoer, C. M.
  2024; 8 (3)
- **Simplified Clinic-Based Vitreous Biopsy Technique Using A Vitreous Cutter and Manual Actuation**
  DeBoer, C., Knapp, A. N., Wai, K., Mruthyunjaya, P., Mahajan, V. B., Sanislo, S.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2024
- **In-Office Vitreous Biopsy With a Vitreous Cutter and Manual Actuation** *OPHTHALMIC SURGERY LASERS & IMAGING RETINA*
  Deboer, C. M. T., Mahajan, V. B., Sanislo, S. R.
  2024; 55 (2): 116-118
- **Rapid Improvement in Lipid Maculopathy Following Faricimab Therapy in Recalcitrant Familial Exudative Vitreoretinopathy** *OPHTHALMIC SURGERY LASERS & IMAGING RETINA*
  Ghoraba, H. H., DeBoer, C., Moshfeghi, D. M.
  2023; 54 (7): 426-428
- **Novel oral medications for retinal disease: an update on clinical development.** *Current opinion in ophthalmology*
  DeBoer, C. M., Agrawal, R., Rahimy, E.
  2023
- **Case report: multidrug-resistant Pseudomonas keratitis and sequential endophthalmitis treated with chlorhexidine and Piperacillin-Tazobactam** *Journal of EuCornea*
  Lu, L., Shen, A., DeBoer, C., Mahajan, V., Lin, C., Rose-Nussbaumer, J.
  2023
- **Metastatic neuroendocrine tumors mimicking as primary ocular disease.** *American journal of ophthalmology case reports*

Shen, A., Haghighi, A., Liang, T., Lee, O., Gange, W., DeBoer, C., Akhter, M., Saber, M. S., Patel, V. R., Berry, J. L., Gokoffski, K. K.
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- **Ischemic index and distribution of retinal capillary non-perfusion in neovascular glaucoma** *FRONTIERS IN BIOSCIENCE-LANDMARK*
  DeBoer, C., Wong, B., Ameri, H.
  2022; 27 (1): 24
- **Controversies in ILM peeling**
  DeBoer , C., Leng, T.
  Retina Today.
  2022
- **Oral drug pipeline for retinal disease**
  DeBoer, C., Michalak, S., Rahimy, E.
  Retinal Physician.
  2022
- **Laser Therapy**
  DeBoer , C., Smith , S., Blumenkranz , M.
  ASRS, History of Retina, Milestones in Retina.
  2021
- **Effect of Angle Narrowing on Sectoral Variation of Anterior Chamber Angle Width The Chinese American Eye Study** *OPHTHALMOLOGY GLAUCOMA*
  Xu, B. Y., Pardeshi, A. A., Shan, J., DeBoer, C., Moghimi, S., Richter, G., McKean-Cowdin, R., Varma, R.
  2020; 3 (2): 130-138
- **3D printing novel PPE for response to COVID-19 related shortages**
  Fields , B., Demirjian, N., DeBoer, C., Stemen , D., Hwang , D.
  16th International Symposium on Medical Information Processing and Analysis.
  2020
- **Anterior Segment Optical Coherence Tomography: Applications for Clinical Care and Scientific Research** *ASIA-PACIFIC JOURNAL OF OPHTHALMOLOGY*
  Shan, J., DeBoer, C., Xu, B. Y.
  2019; 8 (2): 146-157
- **Biomimetic Accommodating Intraocular Lens Using a Valved Deformable Liquid Balloon** *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING*
  DeBoer, C. M. T., Lee, J. K., Wheelan, B. P., Cable, C., Shi, W., Tai, Y., Humayun, M. S.
  2016; 63 (6): 1129-1135
- **BIOMIMETIC ACCOMMODATING INTRAOCULAR LENS (IOL)**
  DeBoer, C., Do, H., Lee, J., Humayun, M., Tai, Y., IEEE
  IEEE.2012
- **A NEW DUAL PORT CUTTER SYSTEM FOR VITRECTOMY SURGERY** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
  Lima, L. H., DeBoer, C., McCormick, M., Kerns, R., Bhadri, P., Humayun, M. S.
  2010; 30 (9): 1515-1519
- **An improved understanding of vitreous cutting. In: Saxena S, Sadda S, eds**
  Chong , L., Magalhaes Jr, O., DeBoer, C.
  Emerging Technologies in Retinal Disease. St. Louis, MO: Jaypee Brothers Medical.
  2009
- **Guillotine performance: duty cycle analysis of vitrectomy systems.** *Retinal cases & brief reports*
  Magalhaes, O. J., Chong, L., DeBoer, C., Bhadri, P., Kerns, R., Barnes, A., Fang, S., Schor, P., Humayun, M.
  2009; 3 (1): 64-7
- **25-Gauge Instrumentation: Engineering Challenges and Tradeoffs** *VITREO-RETINAL SURGERY*

Barnes, A. C., DeBoer, C. M., Bhadri, P. R., Magalhaes, O., Kerns, R. M., McCormick, M. T., Chong, L. P., Humayun, M. S.
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- **Port geometry and its influence on vitrectomy** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
  DeBoer, C., Fang, S., Lima, L. H., McCormick, M., Bhadri, P., Kerns, R., Humayun, M.
  2008; 28 (8): 1061-1067

- **Vitreous dynamics - Vitreous flow analysis in 20-, 23-, and 25-gauge cutters** *RETINA-THE JOURNAL OF RETINAL AND VITREOUS DISEASES*
  Magalhaes, O., Chong, L., Deboer, C., Bhadri, P., Kerns, R., Barnes, A., Fang, S., Humayun, M.
  2008; 28 (2): 236-241

- **Performance analysis of new-generation vitreous cutters**
  Fang, S. Y., DeBoer, C. M. T., Humayun, M. S.
  SPRINGER.2008: 61-67

- **Evaluation of lens hardness in cataract surgery using high-frequency ultrasonic parameters in vitro** *ULTRASOUND IN MEDICINE AND BIOLOGY*
  Huang, C., Ameri, H., DeBoer, C., Rowley, A. P., Xu, X., Sun, L., Wang, S., Humayun, M. S., Shung, K.
  2007; 33 (10): 1609-1616

- **Evaluation of a stereoscopic camera-based three-dimensional viewing workstation for ophthalmic surgery** *AMERICAN JOURNAL OF OPHTHALMOLOGY*
  Bhadri, P. R., Rowley, A. P., Khurana, R. N., Deboer, C. M., Kerns, R. M., Chong, L. P., Humayun, M. S.
  2007; 143 (5): 891-892

- **A self-stabilizing lens ring for 25-gauge vitrectomy surgery** *AMERICAN JOURNAL OF OPHTHALMOLOGY*
  Chong, L. P., McCormick, M., DeBoer, C., Barnes, A.
  2007; 143 (2): 350-351

- **Micro machining techniques, fixturing, and end mill selection in high precision VMC parts**
  McCormick, M., DeBoer, C.
  Techical Papers - Society of Manufacturing Engineers.
  2006

- **Superconductivity (and magnetism) in the nickel borocarbides**
  Schmiedeshoff, G. M., De Boer, C., Tompkins, M. V., Beyermann, W. P., Lacerda, A. H., Smith, J. L., Canfield, P. C.
  SPRINGER/PLENUM PUBLISHERS.2000: 847-853