

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF OPHTHALMOLOGY AND VISUAL SCIENCES

Brenda L. Bohnsack, M.D., Ph.D., assistant professor of ophthalmology and visual sciences, Department of Ophthalmology and Visual Sciences, is recommended for promotion to associate professor of ophthalmology and visual sciences, with tenure, Department of Ophthalmology and Visual Sciences, Medical School.

Academic Degrees

M.D.	2006	Baylor University
Ph.D.	2004	Baylor University
B.A.	1999	Northwestern University

Professional Record

2012-present	Assistant Professor of Ophthalmology and Visual Sciences, University of Michigan
2015-present	Helmut F. Stern Career Development Professor, University of Michigan, Ann Arbor, MI
2010-2011	Clinical Lecturer of Ophthalmology and Visual Sciences, University of Michigan, Ann Arbor, MI

Summary of Evaluation:

Teaching: Dr. Bohnsack has a passion for teaching and has a particular talent for sharing her knowledge with others. She teaches all levels of trainees; undergraduate students, residents, fellows, allied health providers, orthoptists, and health care providers throughout the region as well as nationally through lectures and invited presentations. Dr. Bohnsack has trained numerous undergraduate and clinical fellows in her laboratory. Her undergraduate students started from the Undergraduate Research Opportunity Program but have stayed two to three years and have written their senior theses detailing their research projects receiving honors and gaining admission to their top choice of medical and graduate schools. In addition to training the fellows on the surgical management of childhood glaucoma and congenital eye diseases, she also mentors many of their research projects. Dr. Bohnsack routinely assists in the training of orthoptists both within the department and nationally. Her endeavors reach beyond ophthalmology, as she has given resident lectures and grand rounds presentations institutionally and in the Department of Family Medicine in the St. Joseph Mercy Hospital System. Her goal is to educate others on the early diagnoses, and signs and symptoms that are important to screen for during well-child examinations. In 2014, Dr. Bohnsack was appointed the director of the Pediatric Ophthalmology and Adult Strabismus Fellowship.

Research: Dr. Bohnsack's basic science and clinical research programs aim to understand the pathogenesis of congenital eye diseases in order to improve outcomes in affected children. Some of these diseases include primary congenital glaucoma, Axenfeld-Reiger syndrome, Peters anomaly, anterior segment dysgenesis, microphthalmia, sclerocornea and aniridia. Her laboratory

uses zebrafish to model congenital eye diseases in order to identify and study in real-time the molecular signals that regulate anterior segment development. The structures of the zebrafish eye are similar to their mammalian counterparts, and her laboratory has demonstrated evolutionary conservation and functional homology of different genes involved in zebrafish and human eye development. Dr. Bohnsack suffered two significant setbacks in her research, first by the requirement that CRISPR/Cas9 gene editing, instead of the use of morpholinos became a requirement for publishing and grant funding. Secondly, a laboratory technician bleached all her zebrafish tanks, resulting in the death of all her lines of fish, resulting in re-derivation from progenitor stocks she had saved. These obstacles did not deter Dr. Bohnsack from moving forward with her research, a testament to her determination and tenacity. She is routinely invited to present at major conferences at various national and international organizations such as the Gordon Research Conference, Macula Society, American Association of Pediatric Ophthalmology and Strabismus, and Association for Research in Ophthalmology and Vision.

In addition to her research, Dr. Bohnsack maintains an active clinical research program based on her management of children with glaucoma and congenital eye diseases. Due to the rarity of these diseases, she is one of few clinicians with a large enough clinical volume to report medical and surgical outcomes on these complex patients. She has published treatment algorithms for diseases including uveitic glaucoma, microphthalmia, aniridia, primary congenital glaucoma, microspherophakia, aphakic glaucoma, and congenital ectropion uvea, and has manuscripts currently under review that focus on glaucoma associated with Peters Anomaly, Hurlers syndrome, and Stickler syndrome. Dr. Bohnsack has published 31 peer-reviewed articles. She has been well-funded through the NIH, industry and foundations.

Recent and Significant Publications:

Lagrou L, Gilbert J, Hannibal M, Caird M, Thomas I, Moroi S, Bohnsack B: Altered corneal biomechanical properties in children with osteogenesis imperfecta. *Journal of the American Association for Pediatric Ophthalmology and Strabismus* 22(3) 183-187, 2018.

Chawla B, Swain W, Williams AL, Bohnsack B: Retinoic acid maintains function of neural crest-derived ocular and craniofacial structures in adult zebrafish. *Invest. Ophthalmol. Vis. Sci.* 59(5): 1924-1935, 2018.

Williams A, Eason J, Chawla D, Bohnsack B: *Cyp11b1* regulates ocular fissure closure in zebrafish. *Invest. Ophthalmol. Vis. Sci.* 58(2): 1084-1097, 2017.

Ozgonul C, Besirli C, Bohnsack B: Combined vitrectomy and glaucoma drainage device implantation surgical approach for complex pediatric glaucomas. *Journal of the American Association for Pediatric Ophthalmology and Strabismus* 21(2): 121-126, 2017.

Eason J, Williams AL, Chawla B, Apsey C, Bohnsack B: Differences in neural crest sensitivity to ethanol account for the infrequency of anterior segment defects in the eye compared with craniofacial anomalies in a zebrafish model of fetal alcohol syndrome. *Birth Defects Res.* 109(15): 1212-1227, 2017.

Service: Dr. Bohnsack currently serves on the Pediatric Uveitis Task Force of the American Association for Pediatric Ophthalmology and Strabismus. She is a member of the editorial board of *Journal of Pediatric Ophthalmology and Strabismus*, and is a journal reviewer for several high-impact journals including, the *Journal of Glaucoma*, *Ophthalmology*, and the *Journal of American Association of Pediatric Ophthalmology and Strabismus*. Departmentally, she serves on the Development Committee and Associate Chair Search Committee for the Department of Ophthalmology and Visual Sciences. Dr. Bohnsack established, developed, organized and led the University of Michigan Pediatric Eye Disease Support Group, which convenes every 6-12 months. The goal of this group is to disseminate information to parents to help them cope with the challenges of having a child with visual impairment and facilitate supportive relationships between parents. The support group has been enthusiastically received and has worked with other community groups such as Michigan Parents of Children with Visual Impairments and the Lions Club on special events.

External Reviewers:

Reviewer A: “Dr. Bohnsack has demonstrated considerable scholarly accomplishments...has made significant contributions to previously undiscovered mechanisms of anterior segment dysgenesis -- described for many years but not understood...it is a pleasure to see a junior clinician scientist with a strong interest in anterior segment and pediatric glaucoma...also wonderful to see a KO8 recipient proceed with RO1 application, which if successful puts her in a small minority.”

Reviewer B: “Brenda has a solid history of peer-reviewed publication over the past 18 years. These are all high quality articles that show a clear focus to her research program. Her academic activity extends into the clinical realm...with multiple clinical papers published...Given that pediatric glaucoma patients often have to be treated urgently/emergently, I think it makes her basic science publication record even more impressive...Dr. Bohnsack is clearly recognized as an authority by others in the field, given her impressive list of speaking invitations, both nationally and internationally...I believe Brenda is, hands down, the leader in the subspecialty of pediatric glaucoma.”

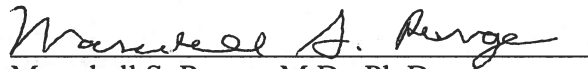
Reviewer C: “She is well recognized as an expert in the field of pediatric ophthalmology in general and specifically within the subspecialty areas of genetics and pediatric glaucoma. She has been the leading author on numerous basic science and clinical papers that have demonstrated superior insight into understanding the mechanisms of childhood glaucoma and she has promoted a strong understanding of treatment approaches through scientific papers, presentations, and courses. She is routinely seen on the platform at national and international meetings where her research and opinions are very well respected.”

Reviewer D: “Her academic & clinical progress has been a relentless march of quality. I consider her an important and valued member of the pediatric ophthalmology community contributing in the field of anterior segment diseases where in just over 6 years she is already considered an expert. Her focus is admirable and reflects on her commitment to impact the field. ...her efforts on the implantation of glaucoma drainage devices in difficult pediatric glaucoma took on one of the more difficult problems in our field. Her published articles are in the journals with the highest impact factor in our field.”

Reviewer E: “It is clear that Dr. Bohnsack is an engaged and impactful educator...gives lectures and invited presentations regionally as well as nationally... routinely invited to major conferences...Director of the Pediatric Ophthalmology and Adult Strabismus Fellowship which is acknowledged to be one of the premier pediatric ophthalmology training programs in the nation...she has elevated the reputation of the fellowship...gained national and international recognition as an expert in ocular neural crest biology and congenital eye diseases...been very successful in obtaining funding to support her research program...has built a unique congenital eye disease program at the University of Michigan that attracts patients from around the state and Midwest...very active in her service both to the department and nationally.”

Summary of Recommendation

Dr. Bohnsack has gained national and international recognition as an expert in ocular neural crest biology and congenital eye diseases, particularly as it relates to pediatric glaucoma. She consistently demonstrates the highest standards of departmental and institutional professionalism by her leadership, knowledge and compassion. I am pleased to recommend Brenda L. Bohnsack, M.D., Ph.D. for promotion to associate professor of ophthalmology and visual sciences, with tenure, Department of Ophthalmology and Visual Sciences, Medical School.



Marschall S. Runge, M.D., Ph.D.
Executive Vice President for Medical Affairs
Dean, Medical School

May 2019