Division of Ophthalmology

DIVISION PROFILE	
Number of Faculty	11
Number of Joint Appointment Faculty	4
Number of Fellows	
Clinical Fellows	9
Research Fellows	9
Number of Graduate Students	3
Number of Other Students (full and part-time)	1
Number of Support Personnel	35
Annual Total Grant Support (direct)	$948,000
Number of Peer Reviewed Publications	14
Patient Encounters	
Outpatient	16,992
Inpatient	1,046

FACULTY LISTING

Constance E. West, MD, Associate Professor, Division Director
James Augsburger, MD, FACS, Professor, Chairman, Department of Ophthalmology
Dean Bonsall, MD, MS, FACS, Assistant Professor
Nadean Brown, PhD, Assistant Professor
Tiffany Cook, PhD, Assistant Professor
Rashmi Hegde, PhD, Associate Professor
Adam Kaufman, MD, FACS, Associate Professor
Richard Lang, PhD, Professor, Emma and Irving Goldman Scholar
Sarah Lopper, OD, Clinical Instructor
Daniele Saltarelli, OD, Clinical Instructor
Michael Yang, MD, Assistant Professor

OVERVIEW

The Division of Pediatric Ophthalmology has four main areas of focus. The first part of the mission is to provide unparalleled care to infants, children, and adolescents. The second part is to educate medical students, residents, colleagues and allied health personnel of the medical center about diseases that affect children's vision. The third part is to further the service and research of the Abrahamson Pediatric Eye Institute (APEI). The Abrahamson Pediatric Eye Institute is linked to the division by being the first pediatric eye center dedicated exclusively to the advancement of care for children with eye disease through teaching, research, community outreach and education. APEI is involved in a variety of research and community education projects such as the vision screening program in Cincinnati/Northern Kentucky, basic science and clinical research in the field of visual development. The fourth part is to develop a strong research program in the division and APEI.

The division has a strong commitment to provide ophthalmic care in the community. The division evaluates and treats children with a wide range of eye and vision disorders. The division and Cincinnati Children's Hospital Medical Center (CCHMC) serve as a referral center for all significant children's eye trauma in the Tri-state area. Inpatient consultation services are provided for high-risk neonates and other patients that may have ocular problems.

Left to Right: (sitting) R. Lang, C. West, S. Lopper (standing) M. Yang, T. Cook, R. Hegde, D. Bonsall, D. Saltarelli, L. Hahn-Parrott

The Abrahamson Pediatric Eye Institute through the work of Carol Weinel, COA, vision screening coordinator, provided services to several health fairs. The health fairs were American Red Cross Back-to-School Health Fair, Northern Kentucky Back to School Health Fair and After School Adventures Health Fair. Carol Weinel was involved in screening over 1,200 children at the Cincinnati Public Schools and Northern Kentucky Head Start program.

In an attempt to meet the demand for ophthalmic care among low income school-age children, the Abrahamson Pediatric Eye Institute collaborated with Lenscrafters, Prevent Blindness Ohio and the Opticians Association of Ohio to provide an Eye Exam Event on November 8th and 9th, 2005. The collaborative efforts of all parties helped provide 698 eye exams. To accommodate this large volume of students over two days, the division closes to regular appointments.

HIGHLIGHTS

Dr. West teaches Ophthalmic Optics to residents from Central and South America during a Basic Science course in Puerto Rico. As there is no Spanish language textbook for optics, she has begun a Spanish translation of her book - Optica y Refraccion - along with a teaching slide set to better serve ophthalmology residents whose primary language is Spanish.

Dr. Bonsall has been working on IRB approval for Amblyopia Treatment Study 6 and 8 for PEDIG. The IRB has approved the ATS6 study. His goal is to have both studies in active recruitment by September.

Dr. Nadean Brown's research investigates the regulation and function of the transcription factors Pax6, Math5 and Hes1, using the mouse, frog, chick and fruit fly model systems. It is aimed at advancing our understanding of early eye specification, retinal ganglion cell formation and differentiation. The overall goal of these studies is to contribute information to the process of optic cup and nerve formation for potential therapeutic use in glaucoma, optic nerve aplasia/hypoplasia and diabetic conditions where the optic nerve is malformed or degenerated.

Dr. Tiffany Cook's laboratory is using the fruit fly model as a means to identify additional genes that may be involved in retina formation and maintenance in humans. These studies have led to the identification of several factors that affect the ability of photoreceptors to develop appropriately, causing severe visual impairment. Some of these factors are necessary for photoreceptor development and are mutated in patients suffering from Retinitis Pigmentosa, Leber's Congenital Amaurosis, and Cone-Rod Dystrophy. Her ongoing work is focused on better understanding how these factors function during retina development and maintenance.

Dr. Richard Lang continues to head the Visual Systems Research Group and is working to expand the group into a world-class research initiative. Dr. Lang manages a research lab with a major emphasis on ocular development. Dr. Lang's projects are divided into two specific areas of research. One group investigates the development of the lens. They are interested in inductive signaling and the role of cadherins in lens morphogenesis. The other group investigates the role of vessel development in the eye, and specifically the role of the Wnt pathway in postnatal blood vessel regression. Dr. Lang's group published five scientific papers, including an important article in the journal Nature on the Wnt pathway and its role in vascular patterning. Dr. Lang's reputation and his high-impact publications continue to elicit numerous requests to speak at institutions worldwide.

Dr. Sarah Lopper has been involved with the Rheumatology Division since 2001 and continues to evaluate over 95% of JRA patients to ensure treatment of the required slit-lamp examination at recommended intervals established by the American Academy of Pediatrics. A new collaborative effort with ENT and the Hearing, Deafness, and Research Center was started in 2005. Children who have been diagnosed with sensorineuronal hearing loss are part of a multi-disciplinary clinical effort to rule out associated ocular findings like Usher's Syndrome. Completion of the first year of collaboration with the Occupational Therapy and Physical Therapy Department provided children a clear clinical path for diagnosis and treatment opportunities.

Dr. Saltarelli is examining the utility of hyper-oxygen permeable rigid contact lenses in fitting infant eyes after cataract extraction. He currently has over 10 babies successfully using these lenses to treat their condition. The particular contact lens he studies has been FDA approved for up to 30 days of continuous wear in adults and has thus far proven to be a very safe and useful option for use in the pediatric population. He is also working with Dr. Sarah Lopper on approval for a project that will look at mandatory preschool eye exams in the state of Kentucky. This information is geared at analyzing the facts on a much contested new law requiring all children to undergo a formal eye exam prior to entering school.

Dr. Yang continued his work on predictive models of retinopathy of prematurity (ROP). His work demonstrated the importance of male gender and higher CRIB (Clinical Risk Index for Babies) illness severity score in predicting which babies, based on characteristics at birth, would develop severe ROP warranting surgery. He and his colleagues showed that male gender and higher CRIB score continue to be predictors even after accounting for eye findings at the first development of ROP and at the more severe prethreshold ROP. These models may be used to select low-risk infants for alternative screening protocols and that risk models can be used to increase the efficiency of screening while maintaining efficacy. This approach may reduce the number of eye examinations that premature infants have to undergo and minimize the risk of complications associated with eye examinations.

TRAINING

Matthew Appenzeller, MD	PL II	Medical University of South Carolina
Brenda Connors, MD	PL II	University of Cincinnati
Ryan Smith, MD	PL II	University of Cincinnati
Nariman Boyle, MD	PL III	American University of Beirut
Jasmeet Dhaliwal, MD	PL III	University of Illinois
Alice Kim, MD	PL III	Northeastern Ohio Universities College of Medicine
Corinna Pokorny, MD	PL III	Drexel University
Robert Sisk, MD	PL III	University of Kentucky
Scott Womack, MD	PL IV	Medical College of Virginia
Bharesh Kumar Chauhan, PhD		Oxford University, Oxford, England

Leigh-Ane Miller, PhD	University of Cincinnati, Cincinnati, Ohio
Jennifer Ondr, PhD	Washington University, St. Louis, Missouri
Virgilio Ponferrada, PhD	Wright State University, Dayton, Ohio
Sujata Rao, PhD	Cornell University, Ithaca, New York
Leigh Whitaker, PhD	SUNY Upstate Medical University, Syracuse, New York
Timothy Plageman, PhD	Ohio State University
Baotong Xie, PhD	Chinese Academy of Science

GRANTS, CONTRACTS AND INDUSTRY AGREEMENTS

Grant and Contract Awards

Annual Direct/Project Period Direct

Cook, T

Photoreceptor-Specific Gene Regulation by OTD/CRX in the Drosophilia Eye
E. Matilda Ziegler Foundation
12/01/04 – 11/30/07 $70,000/$210,000

Research to Prevent Blindness Career Development Award
Research to Prevent Blindness (University of Cincinnati subcontract)
01/01/05 – 12/31/08 $50,000/$200,000

Investigating the Role of Otd in Eye Development
Prevent Blindness Ohio
06/15/06 – 08/31/06 $3,000

Lang, R

A Cell Based Therapy for Cataracts
National Institutes of Health
R03 EY 014826 08/01/03 – 07/31/06 $100,000/$300,000

Molecular Regulation of Lacrimal Gland Branching
National Institutes of Health
R01 EY 014102 09/30/01 – 08/31/06 $225,000/$1,075,000

Developing Vision: WNTS in Programmed Vessel Regression
National Institutes of Health
R01 EY 015766 09/23/04 – 08/31/09 $250,000/$1,250,000

Developing Vision: Cadherin Function in Lens Morphogenesis
National Institutes of Health
R01 EY 016241 09/09/05 – 08/31/10 $250,000/$1,250,000

Current Year Direct $948,000

Industry Contracts

Current Year Direct Receipts $0

TOTAL $948,000

PUBLICATIONS

1. Correa ZM, Marcon IM, Augsburger JJ. Phacoemulsification surgery and foldable intraocular lens implantation in a child with regressed retinoblastoma. Eur J Ophthalmol 2005;15(6):821-2.

1. Park J, Bungay PM, Lutz RJ, Augsburger JJ, Millard RW, Sinha Roy A, Banerjee RK. Evaluation of coupled convective-diffusive transport of drugs administered by intravitreal injection and controlled release implant. J Control Release 2005;105(3):279-95.

2. Trichopoulos N, Augsburger JJ. Enucleation with unwrapped porous and nonporous orbital implants: a 15-year experience. Ophthal Plast Reconstr Surg 2005;21(5):331-6.

3. Trichopoulos N, Augsburger JJ. Neuroendocrine tumours metastatic to the uvea: diagnosis by fine needle aspiration biopsy. Graefes Arch Clin Exp Ophthalmol 2006;244(4):524-8.

4. Trichopoulos N, Augsburger JJ, Schneider S. Adenocarcinoma arising from congenital hypertrophy of the retinal pigment epithelium. Graefes Arch Clin Exp Ophthalmol 2006;244(1):125-8.

5. Brzezinski JAt, Brown NL, Tanikawa A, Bush RA, Sieving PA, Vitaterna MH, Takahashi JS, Glaser T. Loss of circadian photoentrainment and abnormal retinal electrophysiology in Math5 mutant mice. Invest Ophthalmol Vis Sci 2005;46(7):2540-51.

6. Le TT, Wroblewski E, Patel S, Riesenberg AN, Brown NL. Math5 is required for both early retinal neuron differentiation and cell cycle progression. Dev Biol 2006;295(2):764-78.

7. Lee HY, Wroblewski E, Philips GT, Stair CN, Conley K, Reedy M, Mastick GS, Brown NL. Multiple requirements for Hes 1 during early eye formation. Dev Biol 2005;284(2):464-78.

8. Cailhier JF, Sawatzky DA, Kipari T, Houlberg K, Walbaum D, Watson S, Lang RA, Clay S, Kluth D, Savill J, Hughes J. Resident pleural macrophages are key orchestrators of neutrophil recruitment in pleural inflammation. Am J Respir Crit Care Med 2006;173(5):540-7.

9. Dean CH, Miller LA, Smith AN, Dufort D, Lang RA, Niswander LA. Canonical Wnt signaling negatively regulates branching morphogenesis of the lung and lacrimal gland. Dev Biol 2005;286(1):270-86.

10. Lobov IB, Rao S, Carroll TJ, Vallance JE, Ito M, Ondr JK, Kurup S, Glass DA, Patel MS, Shu W, Morrisey EE, McMahon AP, Karsenty G, Lang RA. WNT7b mediates macrophage-induced programmed cell death in patterning of the vasculature. Nature 2005;437(7057):417-21.

11. Miller LA, Smith AN, Taketo MM, Lang RA. Optic cup and facial patterning defects in ocular ectoderm beta-catenin gain-of-function mice. BMC Dev Biol 2006;6:14.

12. Smith AN, Miller LA, Song N, Taketo MM, Lang RA. The duality of beta-catenin function: a requirement in lens morphogenesis and signaling suppression of lens fate in periocular ectoderm. Dev Biol 2005;285(2):477-89.

13. Yang MB, Donovan EF, Wagge JR. Race, Gender, and Clinical Risk Index for Babies (CRIB) score as predictors of severe retinopathy of prematurity. J Aapos 2006;10(3):253-61.

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