

Division Photo



Front row: M. Bodack, T. Cook, N. Brown, C. West, S. Lopper, M. Yang;
Second row: D. Bonsall, R. Lang, W. Motley, Z. Ahmed, R. North, D. Saltarelli

Division Data Summary

Research and Training Details

Number of Faculty	12
Number of Joint Appointment Faculty	1
Number of Research Fellows	5
Number of Research Students	2
Number of Support Personnel	5
Direct Annual Grant Support	\$1,140,266
Peer Reviewed Publications	11

Clinical Activities and Training

Number of Clinical Staff	8
Number of Clinical Students	2
Inpatient Encounters	635
Outpatient Encounters	20,963

Faculty Members

Constance E. West, MD, Associate Professor ; *Division Director*

James J. Augsburger, MD, FACS, Professor ; *Chairperson, Department of Ophthalmology*

Marie I. Bodack, OD, FAAO, FCOVD, Instructor Clinical

Dean J. Bonsall, MD, MS, FACS, Assistant Professor

Tiffany Cook, PhD, Assistant Professor

Adam H. Kaufman, MD, FACS, Associate Professor

Richard A. Lang, PhD, Professor ; *Emma & Irving Goldman Scholar and Head of the Visual Systems Group*

Sarah Lopper, OD, Instructor Clinical

William Walker Motley, MD, MS, Assistant Professor
Robert B. North, DO, MBA, FACS, Assistant Professor
Daniele Saltarelli, OD, Instructor Clinical
Michael B. Yang, MD, Assistant Professor

Joint Appointment Faculty Members

Nadean Brown, PhD, Professor

Significant Accomplishments in FY08

Richard Lang, Ph.D., Professor, Emma and Irving Goldman Scholar Chair

Dr. Richard Lang has been a Professor of Ophthalmology and Developmental Biology at Cincinnati Children's since 2001. Dr. Lang leads the Visual System 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.

His research explores fetal eye development and his current projects address the genetic control of lens and blood vessel development in the mouse. Dr. Lang recipient of both public and private funding and as of the end of fiscal year 2007, the National Institutes of Health have funded three projects in Dr. Lang's laboratory. Dr. Lang was awarded the Lew R. Wasserman Merit Award by the Research to Prevent Blindness Foundation for his work on programmed vessel regression. While Dr. Lang studies the development of the eye, these projects are divided into two specific areas of research. One group investigates the development of the lens. More specifically, they are interested in the role of cadherins in lens morphogenesis and are also working on a cell-based therapy for cataracts. The other group investigates the role of vessel development in the eye, and specifically the role of the visual system and to be able to apply that knowledge in the clinical setting.

Tiffany Cook, Ph.D.

Dr. Tiffany Cook's laboratory is interested in understanding the molecular basis of eye development, and how these processes are disrupted in disease states. Using the fruit fly *Drosophila melanogaster* as a model, she combines cellular, molecular, biochemical and genetic approaches to dissect the events underlying both retina and lens development. Dr. Cook's specific areas of research include color photoreceptor subtype specification in the *Drosophila* retina, cell-specific regulation of opsin gene expression, neural vs. non-neural cell fate decisions by the neural stem cell factor, Prospero, and mechanisms of cell-specific transcriptional activation and repression. In fiscal year 2008, two private career development awards and a R01 award from the National Eye Institute at the National Institutes of Health supported Dr. Cook's research.

Division Collaboration

Collaboration with Ophthalmology; Rheumatology

Collaborating Faculty: Sarah Lopper, OD; Rheumatology

Screening for Uveitis in children with Juvenile Idiopathic Arthritis (JIA)

Mentions in Consumer Media

Division Publications

1. Bu W, Mamedova A, Tan M, Xia M, Jiang X, Hegde RS. [Structural basis for the receptor binding specificity of Norwalk virus](#). *J Virol*. 2008; 82: 5340-7.
2. Hu S, Mamedova A, Hegde RS. [DNA-binding and regulation mechanisms of the SIX family of retinal determination proteins](#). *Biochemistry*. 2008; 47: 3586-94.
3. Hufnagel RB, Riesenberger AN, Saul SM, Brown NL. [Conserved regulation of Math5 and Math1 revealed by Math5-GFP transgenes](#). *Mol Cell Neurosci*. 2007; 36: 435-48.
4. Jackowska M, Bao R, Liu Z, McDonald EC, Cook TA, Friedrich M. [Genomic and gene regulatory signatures of cryptozoic adaptation: Loss of blue sensitive photoreceptors through expansion of long wavelength-opsin expression in the red flour beetle *Tribolium castaneum*](#). *Front Zool*. 2007; 4: 24.
5. Krishnamoorthy MK, Park J, Augsburger JJ, Banerjee RK. [Effect of retinal permeability, diffusivity, and aqueous](#)

- [humor hydrodynamics on pharmacokinetics of drugs in the eye](#). *J Ocul Pharmacol Ther.* 2008; 24: 255-67.
6. Liu Y, Henry GD, Hegde RS, Baleja JD. [Solution structure of the hDIg/SAP97 PDZ2 domain and its mechanism of interaction with HPV-18 papillomavirus E6 protein](#). *Biochemistry.* 2007; 46: 10864-74.
 7. Malik Rahman A, Augsburger JJ, Correa ZM. [Iridociliary melanoma associated with ocular melanocytosis in a 6-year-old boy](#). *J AAPOS.* 2008; 12: 312-3.
 8. Mazzoni EO, Celik A, Wernet MF, Vasiliauskas D, Johnston RJ, Cook TA, Pichaud F, Desplan C. [Iroquois complex genes induce co-expression of rhodopsins in Drosophila](#). *PLoS Biol.* 2008; 6: e97.
 9. Ranade SS, Yang-Zhou D, Kong SW, McDonald EC, Cook TA, Pignoni F. [Analysis of the Otd-dependent transcriptome supports the evolutionary conservation of CRX/OTX/OTD functions in flies and vertebrates](#). *Dev Biol.* 2008; 315: 521-34.
 10. Rao S, Lobov IB, Vallance JE, Tsujikawa K, Shiojima I, Akunuru S, Walsh K, Benjamin LE, Lang RA. [Obligatory participation of macrophages in an angiotensin 2-mediated cell death switch](#). *Development.* 2007; 134: 4449-58.
 11. Xie B, Charlton-Perkins M, McDonald E, Gebelein B, Cook T. [Senseless functions as a molecular switch for color photoreceptor differentiation in Drosophila](#). *Development.* 2007; 134: 4243-53.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Annual Direct / Project Period Direct

Bonsall, D

Pediatric Eye Disease Group

National Institutes of Health (Jaeb Center for Health Research)

U10 EY 011751

01/01/07 - 09/30/08

\$30,000 / \$30,000

Cook, T

Research to Prevent Blindness Career Development Award

Research to Prevent Blindness (University of Cincinnati)

01/01/05 - 12/31/08

\$50,000 / \$200,000

Pros/Prox1 and Lens Development

National Institutes of Health

R01 EY 017907

09/15/07 - 07/31/12

\$225,000 / \$1,125,000

Lang, R

Research to Prevent Blindness Lew R. Wasserman Award

Research to Prevent Blindness

07/01/07 - 06/30/08

\$60,000 / \$60,000

Developing Vision: WNTS In Programmed Vessel Regression

National Institutes of Health

R01 EY 015766

09/23/04 - 08/31/09

\$242,758 / \$1,250,000

Developing Vision: Cadherin Function in Lens Morphogenesis

National Institutes of Health

R01 EY 016241

09/09/05 - 08/31/10

\$242,758 / \$1,250,000

RhoGTPases in Early Eye Development

National Institutes of Health

R01 EY 017848

04/06/07 - 03/31/12

\$196,000 / \$1,075,000

Macrophages and Tumor Angiogenesis

National Institutes of Health (Albert Einstein College of Medicine)

R01 CA 131270

12/01/07 - 11/30/12

\$93,750 / \$468,750

Current Year Direct

\$1,140,266

Total \$1,140,266