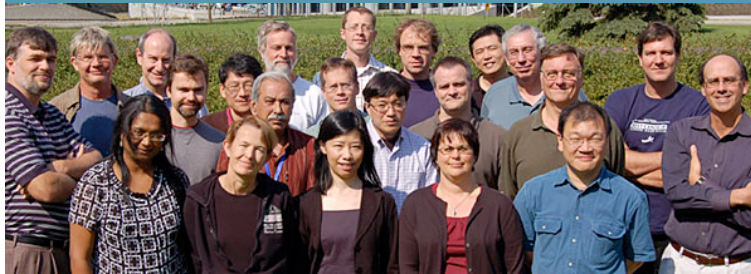


Developmental Biology

Division Photo



First Row: R. Hegde, J. Heasman, C-F. Chuang, N. Brown, A. Kuan;
Second Row: V. Kalinichenko, S. Sumanas, S. Dey, Y. Yoshida, C. Wylie, J. Degen; Third Row: V. Cleghon, M. Nakafuku, J. Wells, K. Campbell, M. Kofron; Fourth Row: B. Aronow, S. Potter, B. Gebelein, D. Wiginton; Fifth Row: A. Zorn, C. Chang

Division Data Summary

Research and Training Details

Number of Faculty	22
Number of Joint Appointment Faculty	11
Number of Research Fellows	41
Number of Research Students	20
Number of Support Personnel	42
Direct Annual Grant Support	\$5,252,700
Peer Reviewed Publications	90

Clinical Activities and Training

Number of Clinical Fellows	3
Number of Other Students	22

Faculty Members

Christopher C. Wylie, PhD, Professor ; *Director; Associate Chair for Basic Science*

Research Interests: Early Vertebrate Development, Xenopus, Mammal

Nadean Brown, PhD, Assistant Professor

Research Interests: Eye Development, Mouse And Drosophila

Kenneth Campbell, PhD, Associate Professor ; *Director, Molecular and Developmental Biology Graduate Program*

Research Interests: CNS Patterning, Mammal

Chiou-Fen Chuang, PhD, Assistant Professor

Research Interests: Nervous System, C. Elegans, Laterality

Vaughn Cleghon, PhD, Associate Professor

Research Interests: Kinase Function In Development, Signaling

Jay L. Degen, PhD, Professor

Research Interests: Hemostatic Factor Function, Mammal

Brian Gebelein, PhD, Assistant Professor

Research Interests: Transcriptional Regulation, Drosophila, Body Patterning, Nervous System

Janet Heasman, PhD, Professor
Research Interests: Early Vertebrate Development, Xenopus

Rashmi S. Hegde, PhD, Associate Professor
Research Interests: Protein Structure/Function

J. Matthew Kofron, PhD, Research Assistant Professor
Research Interests: Imaging Manager, Ectodermal Organ Development In Vertebrates, Xenopus

Chia-Yi Kuan, MD, PhD, Assistant Professor
Research Interests: Nervous System Patterning, Stroke, Cell Death, Mammal

James L. Lessard, PhD, Professor ; *Associate Director*
Research Interests: Muscle Development, Mammal

Hung-Chi Liang, PhD, Research Instructor
Research Interests: Affymetrix Core Manager

Xinhua Lin, PhD, Associate Professor
Research Interests: Cell Signaling, Drosophila

Christopher Mayhew, PhD, Research Assistant Professor
Research Interests: Human ES Biology and Differentiation

Masato Nakafuku, MD, PhD, Professor
Research Interests: Nervous System Patterning And Stem Cells, Mammal

S. Steven Potter, PhD, Professor ; *Director, Affymetrix Core*
Research Interests: Transcription Regulation And Kidney Development, Mammal

Saulius Sumanas, PhD, Assistant Professor
Research Interests: Vascular Development, Zebrafish

James M. Wells, PhD, Assistant Professor
Research Interests: Vertebrate Gut Development, Stem Cells, Mammal

Dan A. Wiginton, PhD, Associate Professor
Research Interests: Gut Differentiation, Mammal

Yutaka Yoshida, PhD, Assistant Professor
Research Interests: Nervous System, Cell Migration, Mammal, Chicken

Aaron Zorn, PhD, Assistant Professor
Research Interests: Vertebrate Gut Development, Xenopus, Mammal

Joint Appointment Faculty Members

Bruce Aronow, PhD, Professor
Pediatric Bioinformatics
Bioinformatics

Thomas Bartman, MD PhD, Assistant Professor
Pulmonary Biology and Neonatology
Cardiovascular Development, Zebrafish

Michael D. Bates, MD PhD, Assistant Professor
Gastroenterology, Hepatology, and Nutrition
Vertebrate Gut Development, Mammal

Tiffany Cook, PhD, Assistant Professor
Pediatric Ophthalmology
Eye Development, Drosophila

Sandra Degen, PhD, Professor
Research Administration
Director, Career Development

Prasad Devarajan, MD, Professor
Director, Nephrology and Hypertension
Urinary Tract Differentiation, Mammal

Vladimir Kalinichenko, MD PhD, Associate Professor
Pulmonary Biology and Neonatology
Transcriptional Regulation of Lung Embryonic Development

Richard A. Lang, PhD, Professor
 Director, Transgenic Core Facility, Pediatric Ophthalmology
 Visual System Development, Mammal

Jun Ma, PhD, Associate Professor
 Pediatric Bioinformatics
 Transcriptional Regulation, Drosophila

Noah F. Shroyer, PhD, Assistant Professor
 Gastroenterology, Hepatology, and Nutrition
 Vertebrate Gut Development, Mammal

Jeffrey A. Whitsett, MD, Professor
 Chief, Section of Neonatology, Perinatal, and Pulmonary Biology
 Respiratory System, Mammal

Trainees

- **Gail Deutsch, MD**, Faculty, Brown University, Asst. Professor, Pathology
- **Matthew Flick, PhD**, Faculty, Purdue University, Res. Asst. Prof., Rheumatology
- **Larry Patterson, MD**, Faculty, College of Medicine of Pennsylvania State University, Asst. Prof., Nephrology
- **Joseph Palumbo, MD**, Faculty, Penn State University College of Medicine, Asst. Prof., Hematology
- **Pramod Reddy, MBBS**, Faculty, Guntur Medical College and Siddhartha, Asst. Prof., Urology
- **Wenxia Zhang, PhD**, Vis. Res. Sc, Chinese Academy of Sciences, Peking University (end 1/25/08)
- **Tatyana Belenkaya, PhD**, Res. Assoc., Russian Academy of Science
- **Eric Brunskill, PhD**, Res. Assoc., University of Maryland
- **Weiming Bu, PhD**, Res. Assoc., Jilin University, China
- **Bharesh Chauhan*, PhD**, Res. Assoc., Oxford University, United Kingdom
- **Lisa Ehrman, PhD**, Res. Assoc., University of Cincinnati
- **Alfor Lewis, PhD**, Res. Assoc., University of Manchester, UK
- **Motoshi Nagao, PhD**, Res. Assoc., Tokyo Institute of Technology
- **Reena Rani, PhD**, Res. Assoc., Chatrapati Shahu Ji University, India
- **Michael Spencer, PhD**, Res. Assoc., University of Kentucky
- **John Szucsik, PhD**, Res. Assoc., University of Cincinnati (end 8/31/07)
- **Qinghua Tao, PhD**, Res. Assoc., Chinese Academy of Sciences
- **Jody White, PhD**, Res. Assoc., California Institute of Technology
- **Dianer Yang, PhD**, Res. Assoc., Chinese Academy of Sciences
- **Kevin Burns, PhD**, Res. Fellow, University of Cincinnati
- **Sang-Wook Cha, PhD**, Res. Fellow, Kyungpook National University, Korea
- **Chitra Dahia*, PhD**, Res. Fellow, Indian Institute of Science
- **Ying Feng, PhD**, Res. Fellow, University of Cincinnati (end 6/30/08)
- **Jing-Fen Han, PhD**, Res. Fellow, University of Medicine and Dentistry of New Jersey
- **Avedis Kazanjian*, PhD**, Res. Fellow, University of Louisville
- **Jay Kormish, PhD**, Res. Fellow, University of Calgary
- **Suh-Chin Lin, PhD**, Res. Fellow, University of Texas Health Sciences, San Antonio
- **Junbo Liu*, PhD**, Res. Fellow, Fudan University
- **Mayur Madhavan, PhD**, Res. Fellow, Miami University
- **Aygun Mamedova, PhD**, Res. Fellow, Moscow State University
- **Athanasia Nikolaou, PhD**, Res. Fellow, University of Melbourne, Australia
- **Jennifer Ondr*, PhD**, Res. Fellow, Washington University
- **Xiufang Pan*, PhD**, Res. Fellow, Beijing Medical University (end 5/30/08)
- **Timothy Plageman*, PhD**, Res. Fellow, University of Cincinnati
- **Virgilio Ponferrada*, PhD**, Res. Fellow, Wright State University
- **Sujata Rao*, PhD**, Res. Fellow, Cornell University
- **Debora Sinner, PhD**, Res. Fellow, University of Buenos Aires, Argentina

- **Jason Spence, PhD**, Res. Fellow, Miami University, Ohio
- **Yalikun Suofu, PhD**, Res. Fellow, University of Greifswald, Germany
- **Emmanuel Tadjuidje, PhD**, Res. Fellow, University of Goettengen, Germany
- **Kaori Takeshima, PhD**, Res. Fellow, Miyazaki University, Japan
- **Ilya Vilinsky, PhD**, Res. Fellow, Cornell University
- **Ronald Waclaw, PhD**, Res. Fellow, University of Cincinnati
- **Yihui Wu, PhD**, Res. Fellow, Peking University, China
- **Baotang Xie*, PhD**, Res. Fellow, Chinese Academy of Sciences
- **Yukiyo Yamamoto, PhD**, Res. Fellow, Hokkaido University, Japan (end 7/9/07)
- **Eun-Jin Yeo*, PhD**, Res. Fellow, Seoul National University, South Korea
- **Andrew Grande, MD**, Clin. Fellow, University of Cincinnati (end 6/30/08)
- **Alan Kenny, MD PhD**, Clin. Fellow, University of Rochester, School of Medicine and Dentistry
- **Eric Mullins, MD**, Clin. Fellow, University of Missouri - Columbia
- **Alessandro Cancelliere**, , Grad. Stud., University of Cincinnati - Neuroscience
- **Ying Feng**, , Grad. Stud., Xiamen University, China
- **Feng He***, , Grad. Stud., Institute of Biophysics, Chinese Academy of Sciences (end 1/30/08)
- **Robert Hufnagel**, , Grad. Stud., University of Cincinnati - PSTP and Neuroscience
- **Gengqiang Xie***, , Grad. Stud., Institute of Biophysics, Chinese Academy of Sciences (end 1/30/08)
- **Yongfei Yang**, , Grad. Stud., Peking University, China
- **Alison Boardman**, , Undergrad., Simpson University
- **Julie Bonn**, , Undergrad., University of Cincinnati
- **Jeeyeon Cha**, , Undergrad., University of Cincinnati
- **Felicia Ciamacco**, , Undergrad., University of Cincinnati
- **Dustin Dumont**, , Undergrad., University of Cincinnati
- **Elizabeth Eichhold**, , Undergrad., Xavier University
- **Uma Goyal**, , Undergrad., Arizona State University
- **Mansour Haque**, , Undergrad., University of Cincinnati
- **Lauren Head**, , Undergrad., Xavier University
- **Emily Huschart**, , Undergrad., Ohio State University
- **Steven Jung**, , Undergrad., University of Cincinnati
- **Annie Lu**, , Undergrad., University of Toronto
- **Meredith McAdams**, , Undergrad., Xavier University
- **Kyle McCracken**, , Undergrad., Xavier University
- **Nikhil Menon**, , Undergrad., Ohio State University
- **Susan Mittenzwei**, , Undergrad., Xavier University
- **Sakura Noda**, , Undergrad., Amherst College
- **Evan Pflum**, , Undergrad., Xavier University
- **Andrew Potter**, , Undergrad., University of Cincinnati
- **Ashley Riesenberg**, , Undergrad., University of Cincinnati
- **Farah "Yasmine" Waheed**, , Undergrad., University of Cincinnati
- **Chris Wolfe**, , Undergrad., Xavier University

Significant Accomplishments in FY08

Developmental Biology

The goals of the developmental biology division are to identify basic mechanisms of organogenesis, using different model organisms and cultured stem cell populations, and use these to develop potential therapies for childhood congenital disorders of organ formation. Three highlight publications were as follows.

Several division members are working to understand how the expression of some 30,000 genes is controlled during embryo development. In a seminal paper published this year, Brian Gebelein and his group showed that competition for the same binding sites by the Hox and Senseless transcription factors controls expression of specific genes that both

pattern the *Drosophila* nervous system, and control blood cell formation in humans, showing the evolutionary conservation of this ancient mechanism. *Li-Kroeger, D. et al. Developmental Cell 15: 298-308, 2008.*

Intercellular signaling controls all aspects of morphogenesis. Xinhua Lin studies how these signals are controlled, using Wnt and Hedgehog signaling ligands as examples. His work on cell surface proteoglycans has identified fundamental mechanisms by which the range of these signals is controlled. *Yan, D. and Lin, X. Nature Cell Biology 10: 761-3*

Understanding how adhesion, motility and contractility are coordinated during tissue morphogenesis is the focus of the research of Chris Wylie, who showed that inter-cellular signals known to control the amount of cortical actin in the early embryo do so by controlling the amount of the cell adhesion protein C-cadherin. Cadherins in turn act as scaffolds, and are rate-limiting for actin assembly. *Tao, Q., et al. Development 134: 2651-61, 2008*

Significant Publications in FY08

Belenkaya TY, Wu Y, Tang X, Zhou B, Cheng L, Sharma YV, Yan D, Selva EM, Lin X. The retromer complex influences Wnt secretion by recycling wntless from endosomes to the trans-Golgi network. *Developmental cell.* 2008 Jan;14(1):120-31.

Gabel CV, Antonie F, Chuang CF, Samuel AD, Chang C. Distinct cellular and molecular mechanisms mediate initial axon development and adult-stage axon regeneration in *C. elegans*. *Development (Cambridge, England).* 2008 Mar;135(6):1129-36.

Xie B, Charlton-Perkins M, McDonald E, Gebelein B, Cook T. Senseless functions as a molecular switch for color photoreceptor differentiation in *Drosophila*. *Development (Cambridge, England).* 2007 Dec;134(23):4243-53.

Tao Q, Nandadasa S, McCrean PD, Heasman J, Wylie C. G-protein-coupled signals control cortical actin assembly by controlling cadherin expression in the early *Xenopus* embryo. *Development (Cambridge, England).* 2007 Jul;134(14):2651-61.

Hu S, Mamedova A, Hegde RS. DNA-binding and regulation mechanisms of the SIX family of retinal determination proteins. *Biochemistry.* 2008 Mar 18;47(11):3586-94.

Division Highlights

Nadean Brown

The Brown laboratory reported that Notch signaling is essential to normal lens differentiation. Mutations in the Notch signaling pathway caused congenital lens dysgenesis and aphakia. *Rowan, S. et al. Developmental Biology 321: 111-122, 2008.*

Janet Heasman

Wnt signaling is known to play a critical role in regulating development and disease, but no previous studies have documented the importance of Wnt/Wnt interactions. We have shown this year that Wnt11 and 5a are both essential for axis formation in *Xenopus* embryos, and that they physically interact with each other to activate canonical and non-canonical Wnt signaling. *Cha SW, et al. Development. 2008 Oct 16.*

Alex Kuan

The Kuan laboratory reported that cerebral hypoxia-ischemia induces endogenous tissue-type plasminogen activator leading to severe damage to immature brains. This finding suggests a novel mechanism related to neonatal hypoxic-ischemic brain injury, such as cerebral palsy, in infants. *Adhami, F. et al. Am. J. Pathology 172: 1704-16, 2008*

James Lessard

Focuses on the organogenesis of the lower urinary tract, and is part of an NIH consortium study involving ten laboratories worldwide that is characterizing gene expression in the lower urinary tract. *McMahon et al. J. Am. Soc. Nephrol. 19: 667-71, 2008*

James Wells

Wnt signaling is essential for epithelial proliferation in the developing gut, and aberrant Wnt signaling leads to intestinal

neoplasia. The Wells lab identified a novel mechanism by which the Sox family of transcription factors control Wnt signaling in the developing gut. *Sinner et al. Mol. Cell Biol. 27: 7802-15, 2007.*

Division Collaboration

Collaboration with Pediatric Ophthalmology

Collaborating Faculty: Tiffany Cook

Transcription factor networks in fruit fly and mouse photoreceptors with Nadean Brown

Collaboration with Pediatric Ophthalmology

Collaborating Faculty: Richard Lang

Retinal vascular development with Nadean Brown

Collaboration with Pediatric Ophthalmology

Collaborating Faculty: Tiffany Cook

Understanding Sens/Gfi-1 function in Drosophila with Brian Gebelein

Collaboration with Gastroenterology, Hepatology, and Nutrition

Collaborating Faculty: Jorge Bezerra

Plasminogen activation and hepatic repair with Jay Degen

Collaboration with Hematology/Oncology

Collaborating Faculty: Joseph Palumbo

Mechanisms linking procoagulants to tumor cell metastasis with Jay Degen

Collaboration with Rheumatology

Collaborating Faculty: Sherry Thornton

Arthritic disease and the hemostatic system with Jay Degen

Collaboration with Nephrology and Hypertension

Collaborating Faculty: Prasad Devarajan

Implications of the ASK1/JNK pathway in ARF with Alex Kuan

Collaboration with Nephrology and Hypertension

Collaborating Faculty: Prasad Devarajan

Altered gene expression using microarrays in FSGS with Steve Potter

Collaboration with Immunobiology

Collaborating Faculty: Lee Grimes

Integration of Hox and Sens inputs in blood cells with Brian Gebelein

New tumor suppression pathways in leukemia with Brian Gebelein

Collaboration with Immunobiology

Collaborating Faculty: Lee Grimes

LSD1 inhibitor design with Rashmi Hegde

Collaboration with Human Genetics

Collaborating Faculty: Gregory Grabowski

Crystallographic studies of acid-beta-glucosidase with Rashmi Hegde

Collaboration with Infectious Diseases

Collaborating Faculty: Jason Jiang

Structure of Norwalk virus capsid proteins with Rashmi Hegde

Collaboration with Molecular Immunology

Collaborating Faculty: Christopher Karp

Structure-function studies of MD-2 with Rashmi Hegde

Collaboration with Pediatric Ophthalmology

Collaborating Faculty: Richard Lang

Structure of protein complexes involved in eye development with Rashmi Hegde

Collaboration with Experimental Hematology

Collaborating Faculty: Shyra Miller

Defining tumorigenesis role of eyes absent homolog 4 with Rashmi Hegde

Collaboration with Experimental Hematology

Collaborating Faculty: Yi Zheng

Rac and Cdc42 in mammalian brain development with Kenny Campbell, Alex Kuan, and Masato Nakafuku

Collaboration with Radiology

Collaborating Faculty: Scott Holland

Thrombosis and plasminogen activators in cerebral ischemia-hypoxia with Jay Degen and Alex Kuan

Collaboration with Pulmonary Biology and Neonatology; Pediatric Neurology

Collaborating Faculty: Beth Haberman; Tonya Phillip

tPA neurotoxicity in hypoxia-ischemic encephalopathy with Alex Kuan

Collaboration with Pediatric Neurology

Collaborating Faculty: Tracy Glauser

Association study of neuronal migration genes in pediatric epilepsy with Alex Kuan

Collaboration with Biomedical Informatics

Collaborating Faculty: Bruce Aronow

Genomic analysis in altered muscle with Jim Lessard

Collaboration with Pathology

Collaborating Faculty: Kevin Bove

Mouse models of actin-based myopathy with Jim Lessard

Collaboration with Pulmonary Biology and Neonatology

Collaborating Faculty: James Greenberg; Anne Akeson; Jeffrey Whitsett

Epithelial mesenchymal interactions in lung development with Jim Lessard

Collaboration with Gastroenterology, Hepatology, and Nutrition

Collaborating Faculty: Ajay Kaul

Altered myofilaments in chronic pseudo-obstruction with Jim Lessard

Collaboration with Gastroenterology, Hepatology, and Nutrition

Collaborating Faculty: Michael Bates

Hlx in enteric mesenchymal and neuronal development with Mike Bates

Collaboration with Pulmonary Biology and Neonatology

Collaborating Faculty: John Shannon

Regulation of pulmonary smooth muscle development with Jim Lessard

Collaboration with Pediatric Ophthalmology

Collaborating Faculty: Richard Lang

Role of Pygopus in Wnt signaling during mouse development with Xinhua Lin

Collaboration with Experimental Hematology

Collaborating Faculty: Yi Zheng

Role of Rac1 in brain development with Alex Kuan and Masato Nakafuku

Role of Cdc42 in neural stem cells during development with Alex Kuan and Masato Nakafuku

Collaboration with Anesthesiology

Collaborating Faculty: Steve Danzer

Neurogenesis in the adult hippocampus of epileptic brains with Masato Nakafuku

Collaboration with Biomedical Informatics

Collaborating Faculty: Jun Ma

PPitx2 homedomain with Steve Potter

Collaboration with Pathology

Collaborating Faculty: Gail Deutsch

Development of foregut organs in mice and human ES cell cultures with Jim Wells

Collaboration with Gastroenterology, Hepatology, and Nutrition

Collaborating Faculty: Noah Shroyer

Transcriptional control of pancreas and intestinal development with Jim Wells

Collaboration with Hematology/Oncology

Collaborating Faculty: Susanne Wells

Role of the DEK oncoprotein in development with Jim Wells

Collaboration with Pulmonary Biology and Neonatology

Collaborating Faculty: Jeffrey Whitsett

Role of Sox17 and Klf5 in lung and pancreas development with Jim Wells

Collaboration with Experimental Hematology

Collaborating Faculty: Yi Zheng

Analysis of RhoA mutant embryos with Jim Wells

Collaboration with Orthopedic Surgery

Collaborating Faculty: Atiq Durrani

Growth and differentiation of the postnatal vertebra and intervertebral disk with Chris Wylie

Collaboration with Pathology

Collaborating Faculty: Gail Deutsch

Mammalian foregut development with Aaron Zorn

Collaboration with Pulmonary Biology and Neonatology

Collaborating Faculty: Jeffrey Whitsett

Sox17 in lung development and repair with Aaron Zorn

Collaboration with Biomedical Informatics

Collaborating Faculty: Bruce Aronow

Global gene expression atlas of the developing kidney with Jim Lessard and Steve Potter

Division Publications

1. Aronow BJ. [Dysfunctional genomics: toward an integrative biology of disease and health--application to IBDs](#). *J Pediatr Gastroenterol Nutr*. 2008; 46 Suppl 1: E3-4.
2. Jegga AG, Inga A, Menendez D, Aronow BJ, Resnick MA. [Functional evolution of the p53 regulatory network through its target response elements](#). *Proc Natl Acad Sci U S A*. 2008; 105: 944-9.
3. Wong HR, Shanley TP, Sakthivel B, Cvijanovich N, Lin R, Allen GL, Thomas NJ, Doctor A, Kalyanaraman M, Tofil NM, Penfil S, Monaco M, Tagavilla MA, Odoms K, Dunsmore K, Barnes M, Aronow BJ. [Genome-level expression profiles in pediatric septic shock indicate a role for altered zinc homeostasis in poor outcome](#). *Physiol Genomics*. 2007; 30: 146-55.
4. Maeda Y, Suzuki T, Pan X, Chen G, Pan S, Bartman T, Whitsett JA. [CUL2 is required for the activity of hypoxia-inducible factor and vasculogenesis](#). *J Biol Chem*. 2008; 283: 16084-92.
5. 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.
6. Allen ZJ, 2nd, Waclaw RR, Colbert MC, Campbell K. [Molecular identity of olfactory bulb interneurons: transcriptional codes of periglomerular neuron subtypes](#). *J Mol Histol*. 2007; 38: 517-25.
7. Marsh ED, Minarcik J, Campbell KJ, Brooks-Kayal AR, Golden JA. [FACS-array gene expression analysis during early development of mouse telencephalic interneurons](#). *Dev Neurobiol*. 2008; 68: 434-45.
8. Yokota Y, Gashghaei HT, Han C, Watson H, Campbell KJ, Anton ES. [Radial glial dependent and independent dynamics of interneuronal migration in the developing cerebral cortex](#). *PLoS ONE*. 2007; 2: e794.

9. Zhou L, Bar I, Achouri Y, Campbell KJ, De Backer O, Hebert JM, Jones K, Kessaris N, de Rouvroit CL, O'Leary D, Richardson WD, Goffinet AM, Tissir F. [Early forebrain wiring: genetic dissection using conditional Celsr3 mutant mice](#). *Science*. 2008; 320: 946-9.
10. Gabel CV, Antonie F, Chuang CF, Samuel AD, Chang C. [Distinct cellular and molecular mechanisms mediate initial axon development and adult-stage axon regeneration in C. elegans](#). *Development*. 2008; 135: 1129-36.
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.
12. Degen JL, Bugge TH, Goguen JD. [Fibrin and fibrinolysis in infection and host defense](#). *J Thromb Haemost*. 2007; 5 Suppl 1: 24-31.
13. Flick MJ, LaJeunesse CM, Talmage KE, Witte DP, Palumbo JS, Pinkerton MD, Thornton S, Degen JL. [Fibrin\(ogen\) exacerbates inflammatory joint disease through a mechanism linked to the integrin alphaMbeta2 binding motif](#). *J Clin Invest*. 2007; 117: 3224-35.
14. Palumbo JS, Barney KA, Blevins EA, Shaw MA, Mishra A, Flick MJ, Kombrinck KW, Talmage KE, Souri M, Ichinose A, Degen JL. [Factor XIII transglutaminase supports hematogenous tumor cell metastasis through a mechanism dependent on natural killer cell function](#). *J Thromb Haemost*. 2008; 6: 812-9.
15. Palumbo JS, Degen JL. [Mechanisms linking tumor cell-associated procoagulant function to tumor dissemination](#). *Semin Thromb Hemost*. 2008; 34: 154-60.
16. Palumbo JS, Talmage KE, Massari JV, La Jeunesse CM, Flick MJ, Kombrinck KW, Hu Z, Barney KA, Degen JL. [Tumor cell-associated tissue factor and circulating hemostatic factors cooperate to increase metastatic potential through natural killer cell-dependent and-independent mechanisms](#). *Blood*. 2007; 110: 133-41.
17. Roszell NJ, Danton MJ, Jiang M, Witte D, Daugherty C, Grimes T, Girdler B, Anderson KP, Franco RS, Degen JL, Joiner CH. [Fibrinogen deficiency, but not plasminogen deficiency, increases mortality synergistically in combination with sickle hemoglobin SAD in transgenic mice](#). *Am J Hematol*. 2007; 82: 1044-8.
18. Souri M, Koseki-Kuno S, Takeda N, Degen JL, Ichinose A. [Administration of factor XIII B subunit increased plasma factor XIII A subunit levels in factor XIII B subunit knock-out mice](#). *Int J Hematol*. 2008; 87: 60-8.
19. Souri M, Koseki-Kuno S, Takeda N, Yamakawa M, Takeishi Y, Degen JL, Ichinose A. [Male-specific cardiac pathologies in mice lacking either the A or B subunit of factor XIII](#). *Thromb Haemost*. 2008; 99: 401-8.
20. Bagga A, Bakkaloglu A, Devarajan P, Mehta RL, Kellum JA, Shah SV, Molitoris BA, Ronco C, Warnock DG, Joannidis M, Levin A. [Improving outcomes from acute kidney injury: report of an initiative](#). *Pediatr Nephrol*. 2007; 22: 1655-8.
21. Bennett M, Dent CL, Ma Q, Dastrala S, Grenier F, Workman R, Syed H, Ali S, Barasch J, Devarajan P. [Urine NGAL predicts severity of acute kidney injury after cardiac surgery: a prospective study](#). *Clin J Am Soc Nephrol*. 2008; 3: 665-73.
22. Dent CL, Ma Q, Dastrala S, Bennett M, Mitsnefes MM, Barasch J, Devarajan P. [Plasma neutrophil gelatinase-associated lipocalin predicts acute kidney injury, morbidity and mortality after pediatric cardiac surgery: a prospective uncontrolled cohort study](#). *Crit Care*. 2007; 11: R127.
23. Devarajan P. [Proteomics for biomarker discovery in acute kidney injury](#). *Semin Nephrol*. 2007; 27: 637-51.
24. Devarajan P. [Neutrophil gelatinase-associated lipocalin: new paths for an old shuttle](#). *Cancer Ther*. 2007; 5: 463-470.
25. Devarajan P. [Proteomics for the investigation of acute kidney injury](#). *Contrib Nephrol*. 2008; 160: 1-16.
26. Devarajan P. [Neutrophil gelatinase-associated lipocalin \(NGAL\): a new marker of kidney disease](#). *Scand J Clin Lab Invest Suppl*. 2008; 241: 89-94.
27. Devarajan P, Parikh C, Barasch J. [Case 31-2007: a man with abdominal pain and elevated creatinine](#). *N Engl J Med*. 2008; 358: 312; author reply 313.
28. Han WK, Waikar SS, Johnson A, Betensky RA, Dent CL, Devarajan P, Bonventre JV. [Urinary biomarkers in the early diagnosis of acute kidney injury](#). *Kidney Int*. 2008; 73: 863-9.
29. Hirsch R, Dent C, Pfriem H, Allen J, Beekman RH, 3rd, Ma Q, Dastrala S, Bennett M, Mitsnefes M, Devarajan P. [NGAL is an early predictive biomarker of contrast-induced nephropathy in children](#). *Pediatr Nephrol*. 2007; 22: 2089-95.
30. Murray PT, Devarajan P, Levey AS, Eckardt KU, Bonventre JV, Lombardi R, Herget-Rosenthal S, Levin A. [A framework and key research questions in AKI diagnosis and staging in different environments](#). *Clin J Am Soc Nephrol*. 2008; 3: 864-8.
31. Nickolas TL, Barasch J, Devarajan P. [Biomarkers in acute and chronic kidney disease](#). *Curr Opin Nephrol Hypertens*. 2008; 17: 127-32.
32. Nickolas TL, O'Rourke MJ, Yang J, Sise ME, Canetta PA, Barasch N, Buchen C, Khan F, Mori K, Giglio J, Devarajan

- P, Barasch J. [Sensitivity and specificity of a single emergency department measurement of urinary neutrophil gelatinase-associated lipocalin for diagnosing acute kidney injury](#). *Ann Intern Med*. 2008; 148: 810-9.
33. Parikh CR, Devarajan P. [New biomarkers of acute kidney injury](#). *Crit Care Med*. 2008; 36: S159-65.
 34. Parikh CR, Edelstein CL, Devarajan P, Cantley L. [Biomarkers of acute kidney injury: early diagnosis, pathogenesis, and recovery](#). *J Investig Med*. 2007; 55: 333-40.
 35. Portilla D, Dent C, Sugaya T, Nagothu KK, Kundi I, Moore P, Noiri E, Devarajan P. [Liver fatty acid-binding protein as a biomarker of acute kidney injury after cardiac surgery](#). *Kidney Int*. 2008; 73: 465-72.
 36. Suzuki M, Ross GF, Wiers K, Nelson S, Bennett M, Passo MH, Devarajan P, Brunner HI. [Identification of a urinary proteomic signature for lupus nephritis in children](#). *Pediatr Nephrol*. 2007; 22: 2047-57.
 37. Suzuki M, Wiers KM, Klein-Gitelman MS, Haines KA, Olson J, Onel KB, O'Neil K, Passo MH, Singer NG, Tucker L, Ying J, Devarajan P, Brunner HI. [Neutrophil gelatinase-associated lipocalin as a biomarker of disease activity in pediatric lupus nephritis](#). *Pediatr Nephrol*. 2008; 23: 403-12.
 38. Wheeler DS, Devarajan P, Ma Q, Harmon K, Monaco M, Cvijanovich N, Wong HR. [Serum neutrophil gelatinase-associated lipocalin \(NGAL\) as a marker of acute kidney injury in critically ill children with septic shock](#). *Crit Care Med*. 2008; 36: 1297-303.
 39. Zappitelli M, Washburn KK, Arian AA, Loftis L, Ma Q, Devarajan P, Parikh CR, Goldstein SL. [Urine neutrophil gelatinase-associated lipocalin is an early marker of acute kidney injury in critically ill children: a prospective cohort study](#). *Crit Care*. 2007; 11: R84.
 40. Gebelein B, Mann RS. [Compartmental modulation of abdominal Hox expression by engrailed and sloppy-paired patterns the fly ectoderm](#). *Dev Biol*. 2007; 308: 593-605.
 41. Cha JY, Birsoy B, Kofron M, Mahoney E, Lang S, Wylie C, Heasman J. [The role of FoxC1 in early Xenopus development](#). *Dev Dyn*. 2007; 236: 2731-41.
 42. Tao Q, Nandadasa S, McCrea PD, Heasman J, Wylie C. [G-protein-coupled signals control cortical actin assembly by controlling cadherin expression in the early Xenopus embryo](#). *Development*. 2007; 134: 2651-61.
 43. White JA, Heasman J. [Maternal control of pattern formation in Xenopus laevis](#). *J Exp Zool B Mol Dev Evol*. 2008; 310: 73-84.
 44. 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.
 45. Hu S, Mamedova A, Hegde RS. [DNA-binding and regulation mechanisms of the SIX family of retinal determination proteins](#). *Biochemistry*. 2008; 47: 3586-94.
 46. 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.
 47. Adhami F, Yu D, Yin W, Schloemer A, Burns KA, Liao G, Degen JL, Chen J, Kuan CY. [Deleterious effects of plasminogen activators in neonatal cerebral hypoxia-ischemia](#). *Am J Pathol*. 2008; 172: 1704-16.
 48. Burns KA, Ayoub AE, Breunig JJ, Adhami F, Weng WL, Colbert MC, Rakic P, Kuan CY. [Nestin-CreER mice reveal DNA synthesis by nonapoptotic neurons following cerebral ischemia hypoxia](#). *Cereb Cortex*. 2007; 17: 2585-92.
 49. Kennedy NJ, Martin G, Ehrhardt AG, Cavanagh-Kyros J, Kuan CY, Rakic P, Flavell RA, Treistman SN, Davis RJ. [Requirement of JIP scaffold proteins for NMDA-mediated signal transduction](#). *Genes Dev*. 2007; 21: 2336-46.
 50. Klionsky DJ, Abeliovich H, Agostinis P, Agrawal DK, Aliev G, Askew DS, Baba M, Baehrecke EH, Bahr BA, Ballabio A, Bamber BA, Bassham DC, Bergamini E, Bi X, Biard-Piechaczyk M, Blum JS, Bredesen DE, Brodsky JL, Brumell JH, Brunk UT, Bursch W, Camougrand N, Cebollero E, Ceconi F, Chen Y, Chin LS, Choi A, Chu CT, Chung J, Clarke PG, Clark RS, Clarke SG, Clave C, Cleveland JL, Codogno P, Colombo MI, Coto-Montes A, Cregg JM, Cuervo AM, Debnath J, Demarchi F, Dennis PB, Dennis PA, Deretic V, Devenish RJ, Di Sano F, Dice JF, Difiglia M, Dinesh-Kumar S, Distelhorst CW, Djavaheri-Mergny M, Dorsey FC, Droge W, Dron M, Dunn WA, Jr., Duszenko M, Eissa NT, Elazar Z, Esclatine A, Eskelinen EL, Fesus L, Finley KD, Fuentes JM, Fueyo J, Fujisaki K, Galliot B, Gao FB, Gewirtz DA, Gibson SB, Gohla A, Goldberg AL, Gonzalez R, Gonzalez-Estevez C, Gorski S, Gottlieb RA, Haussinger D, He YW, Heidenreich K, Hill JA, Hoyer-Hansen M, Hu X, Huang WP, Iwasaki A, Jaattela M, Jackson WT, Jiang X, Jin S, Johansen T, Jung JU, Kadowaki M, Kang C, Kelekar A, Kessel DH, Kiel JA, Kim HP, Kimchi A, Kinsella TJ, Kiselyov K, Kitamoto K, Knecht E, Komatsu M, Kominami E, Kondo S, Kovacs AL, Kroemer G, Kuan CY, Kumar R, Kundu M, Landry J, Laporte M, Le W, Lei HY, Lenardo MJ, Levine B, Lieberman A, Lim KL, Lin FC, Liou W, Liu LF, Lopez-Berestein G, Lopez-Otin C, Lu B, Macleod KF, Malorni W, Martinet W, Matsuoka K, Mautner J, Meijer AJ, Melendez A, Michels P, Miotto G, Mistiaen WP, Mizushima N, Mograbi B, Monastyrska I, Moore MN, Moreira PI, Moriyasu Y, Motyl T, Munz C, Murphy LO, Naqvi NI, Neufeld TP, Nishino I, Nixon RA, Noda T, Nurnberg B, Ogawa M, Oleinick NL, Olsen LJ, Ozpolat B, Paglin S, Palmer GE, Papassideri I, Parkes M, Perlmutter DH, Perry G, Piacentini M, Pinkas-Kramarski R, Prescott M, Proikas-Cezanne T, Raben N, Rami A, Reggiori F, Rohrer B, Rubinsztein DC, Ryan KM, Sadoshima J, Sakagami H, Sakai Y, Sandri M, Sasakawa C, Sass

- M, Schneider C, Seglen PO, Seleverstov O, Settleman J, Shacka JJ, Shapiro IM, Sibirny A, Silva-Zacarin EC, Simon HU, Simone C, Simonsen A, Smith MA, Spanel-Borowski K, Srinivas V, Steeves M, Stenmark H, Stromhaug PE, Subauste CS, Sugimoto S, Sulzer D, Suzuki T, Swanson MS, Tabas I, Takeshita F, Talbot NJ, Talloczy Z, Tanaka K, Tanaka K, Tanida I, Taylor GS, Taylor JP, Terman A, Tettamanti G, Thompson CB, Thumm M, Tolkovsky AM, Tooze SA, Truant R, Tumanovska LV, Uchiyama Y, Ueno T, Uzategui NL, van der Klei I, Vaquero EC, Vellai T, Vogel MW, Wang HG, Webster P, Wiley JW, Xi Z, Xiao G, Yahalom J, Yang JM, Yap G, Yin XM, Yoshimori T, Yu L, Yue Z, Yuzaki M, Zabinryk O, Zheng X, Zhu X, Deter RL. [Guidelines for the use and interpretation of assays for monitoring autophagy in higher eukaryotes](#). *Autophagy*. 2008; 4: 151-75.
51. Weng DY, Zhang Y, Hayashi Y, Kuan CY, Liu CY, Babcock G, Weng WL, Schwemberger S, Kao WW. [Promiscuous recombination of LoxP alleles during gametogenesis in cornea Cre driver mice](#). *Mol Vis*. 2008; 14: 562-71.
 52. Rao S, Lobov IB, Vallance JE, Tsujikawa K, Shiojima I, Akunuru S, Walsh K, Benjamin LE, Lang RA. [Obligatory participation of macrophages in an angiopoietin 2-mediated cell death switch](#). *Development*. 2007; 134: 4449-58.
 53. Belenkaya TY, Wu Y, Tang X, Zhou B, Cheng L, Sharma YV, Yan D, Selva EM, Lin X. [The retromer complex influences Wnt secretion by recycling wntless from endosomes to the trans-Golgi network](#). *Dev Cell*. 2008; 14: 120-31.
 54. Yan D, Lin X. [Drosophila glypican Dally-like acts in FGF-receiving cells to modulate FGF signaling during tracheal morphogenesis](#). *Dev Biol*. 2007; 312: 203-16.
 55. Song Y, He F, Xie G, Guo X, Xu Y, Chen Y, Liang X, Stagljar I, Egli D, Ma J, Jiao R. [CAF-1 is essential for Drosophila development and involved in the maintenance of epigenetic memory](#). *Dev Biol*. 2007; 311: 213-22.
 56. Markey MP, Bergseid J, Bosco EE, Stengel K, Xu H, Mayhew CN, Schwemberger SJ, Braden WA, Jiang Y, Babcock GF, Jegga AG, Aronow BJ, Reed MF, Wang JY, Knudsen ES. [Loss of the retinoblastoma tumor suppressor: differential action on transcriptional programs related to cell cycle control and immune function](#). *Oncogene*. 2007; 26: 6307-18.
 57. Mayhew CN, Carter SL, Fox SR, Sexton CR, Reed CA, Srinivasan SV, Liu X, Wikenheiser-Brokamp K, Boivin GP, Lee JS, Aronow BJ, Thorgeirsson SS, Knudsen ES. [RB loss abrogates cell cycle control and genome integrity to promote liver tumorigenesis](#). *Gastroenterology*. 2007; 133: 976-84.
 58. Skaggs HS, Xing H, Wilkerson DC, Murphy LA, Hong Y, Mayhew CN, Sarge KD. [HSF1-TPR interaction facilitates export of stress-induced HSP70 mRNA](#). *J Biol Chem*. 2007; 282: 33902-7.
 59. Srinivasan SV, Mayhew CN, Schwemberger S, Zagorski W, Knudsen ES. [RB loss promotes aberrant ploidy by deregulating levels and activity of DNA replication factors](#). *J Biol Chem*. 2007; 282: 23867-77.
 60. Stengel KR, Dean JL, Seeley SL, Mayhew CN, Knudsen ES. [RB status governs differential sensitivity to cytotoxic and molecularly-targeted therapeutic agents](#). *Cell Cycle*. 2008; 7: 1095-103.
 61. Nakafuku M, Nagao M, Grande A, Cancelliere A. [Revisiting neural stem cell identity](#). *Proc Natl Acad Sci U S A*. 2008; 105: 829-30.
 62. Sugimori M, Nagao M, Parras CM, Nakatani H, Lebel M, Guillemot F, Nakafuku M. [Ascl1 is required for oligodendrocyte development in the spinal cord](#). *Development*. 2008; 135: 1271-81.
 63. Adam M, Murali B, Glenn NO, Potter SS. [Epigenetic inheritance based evolution of antibiotic resistance in bacteria](#). *BMC Evol Biol*. 2008; 8: 52.
 64. Bennett MR, Czech KA, Arend LJ, Witte DP, Devarajan P, Potter SS. [Laser capture microdissection-microarray analysis of focal segmental glomerulosclerosis glomeruli](#). *Nephron Exp Nephrol*. 2007; 107: e30-40.
 65. McMahon AP, Aronow BJ, Davidson DR, Davies JA, Gaido KW, Grimmond S, Lessard JL, Little MH, Potter SS, Wilder EL, Zhang P. [GUDMAP: the genitourinary developmental molecular anatomy project](#). *J Am Soc Nephrol*. 2008; 19: 667-71.
 66. Potter SS, Hartman HA, Kwan KM, Behringer RR, Patterson LT. [Laser capture-microarray analysis of Lim1 mutant kidney development](#). *Genesis*. 2007; 45: 432-9.
 67. Bell SM, Schreiner CM, Wert SE, Mucenski ML, Scott WJ, Whitsett JA. [R-spondin 2 is required for normal laryngeal-tracheal, lung and limb morphogenesis](#). *Development*. 2008; 135: 1049-58.
 68. Sumanas S, Gomez G, Zhao Y, Park C, Choi K, Lin S. [Interplay among Etsrp/ER71, Scl, and Alk8 signaling controls endothelial and myeloid cell formation](#). *Blood*. 2008; 111: 4500-10.
 69. Moore-Scott BA, Opoka R, Lin SC, Kordich JJ, Wells JM. [Identification of molecular markers that are expressed in discrete anterior-posterior domains of the endoderm from the gastrula stage to mid-gestation](#). *Dev Dyn*. 2007; 236: 1997-2003.
 70. Sinner D, Kordich JJ, Spence JR, Opoka R, Rankin S, Lin SC, Jonatan D, Zorn AM, Wells JM. [Sox17 and Sox4 differentially regulate beta-catenin/T-cell factor activity and proliferation of colon carcinoma cells](#). *Mol Cell Biol*. 2007; 27: 7802-15.

71. Spence JR, Wells JM. [Translational embryology: using embryonic principles to generate pancreatic endocrine cells from embryonic stem cells](#). *Dev Dyn*. 2007; 236: 3218-27.
72. Besnard V, Xu Y, Whitsett JA. [Sterol response element binding protein and thyroid transcription factor-1 \(Nkx2.1\) regulate Abca3 gene expression](#). *Am J Physiol Lung Cell Mol Physiol*. 2007; 293: L1395-405.
73. Brandt EB, Mingler MK, Stevenson MD, Wang N, Khurana Hershey GK, Whitsett JA, Rothenberg ME. [Surfactant protein D alters allergic lung responses in mice and human subjects](#). *J Allergy Clin Immunol*. 2008; 121: 1140-1147 e2.
74. Dave V, Wert SE, Tanner T, Thitoff AR, Loudy DE, Whitsett JA. [Conditional deletion of Pten causes bronchiolar hyperplasia](#). *Am J Respir Cell Mol Biol*. 2008; 38: 337-45.
75. Hardie WD, Davidson C, Ikegami M, Leikauf GD, Le Cras TD, Prestridge A, Whitsett JA, Korfhagen TR. [EGF receptor tyrosine kinase inhibitors diminish transforming growth factor-alpha-induced pulmonary fibrosis](#). *Am J Physiol Lung Cell Mol Physiol*. 2008; 294: L1217-25.
76. Hardie WD, Korfhagen TR, Sartor MA, Prestridge A, Medvedovic M, Le Cras TD, Ikegami M, Wesselkamper SC, Davidson C, Dietsch M, Nichols W, Whitsett JA, Leikauf GD. [Genomic profile of matrix and vasculature remodeling in TGF-alpha induced pulmonary fibrosis](#). *Am J Respir Cell Mol Biol*. 2007; 37: 309-21.
77. Ikegami M, Falcone A, Whitsett JA. [STAT-3 regulates surfactant phospholipid homeostasis in normal lung and during endotoxin-mediated lung injury](#). *J Appl Physiol*. 2008; 104: 1753-60.
78. Ikegami M, Scoville EA, Grant S, Korfhagen T, Brondyk W, Scheule RK, Whitsett JA. [Surfactant protein-D and surfactant inhibit endotoxin-induced pulmonary inflammation](#). *Chest*. 2007; 132: 1447-54.
79. Kida H, Mucenski ML, Thitoff AR, Le Cras TD, Park KS, Ikegami M, Muller W, Whitsett JA. [GP130-STAT3 regulates epithelial cell migration and is required for repair of the bronchiolar epithelium](#). *Am J Pathol*. 2008; 172: 1542-54.
80. Matsuzaki Y, Besnard V, Clark JC, Xu Y, Wert SE, Ikegami M, Whitsett JA. [STAT3 regulates ABCA3 expression and influences lamellar body formation in alveolar type II cells](#). *Am J Respir Cell Mol Biol*. 2008; 38: 551-8.
81. Tichelaar JW, Wesselkamper SC, Chowdhury S, Yin H, Berclaz PY, Sartor MA, Leikauf GD, Whitsett JA. [Duration-dependent cytoprotective versus inflammatory effects of lung epithelial fibroblast growth factor-7 expression](#). *Exp Lung Res*. 2007; 33: 385-417.
82. Wedig KE, Whitsett JA. [Down the primrose path: petechiae in a neonate exposed to herbal remedy for parturition](#). *J Pediatr*. 2008; 152: 140, 140 e1.
83. Xu Y, Ikegami M, Wang Y, Matsuzaki Y, Whitsett JA. [Gene expression and biological processes influenced by deletion of Stat3 in pulmonary type II epithelial cells](#). *BMC Genomics*. 2007; 8: 455.
84. Mir A, Kofron M, Heasman J, Mogle M, Lang S, Birsoy B, Wylie C. [Long- and short-range signals control the dynamic expression of an animal hemisphere-specific gene in Xenopus](#). *Dev Biol*. 2008; 315: 161-72.
85. Runyan C, Gu Y, Shoemaker A, Looijenga L, Wylie C. [The distribution and behavior of extragonadal primordial germ cells in Bax mutant mice suggest a novel origin for sacrococcygeal germ cell tumors](#). *Int J Dev Biol*. 2008; 52: 333-44.
86. Ajima R, Akiyama T, Usui M, Yoneda M, Yoshida Y, Nakamura T, Minowa O, Noda M, Tanaka S, Noda T, Yamamoto T. [Osteoporotic bone formation in mice lacking tob2; involvement of Tob2 in RANK ligand expression and osteoclasts differentiation](#). *FEBS Lett*. 2008; 582: 1313-8.
87. Arlotta P, Molyneaux BJ, Jabaudon D, Yoshida Y, Macklis JD. [Ctip2 controls the differentiation of medium spiny neurons and the establishment of the cellular architecture of the striatum](#). *J Neurosci*. 2008; 28: 622-32.
88. Kanda T, Yoshida Y, Izu Y, Nifuji A, Ezura Y, Nakashima K, Noda M. [PlexinD1 deficiency induces defects in axial skeletal morphogenesis](#). *J Cell Biochem*. 2007; 101: 1329-37.
89. Kirilenko P, Weierud FK, Zorn AM, Woodland HR. [The efficiency of Xenopus primordial germ cell migration depends on the germplasm mRNA encoding the PDZ domain protein Grip2](#). *Differentiation*. 2008; 76: 392-403.
90. Kirk EP, Sunde M, Costa MW, Rankin SA, Wolstein O, Castro ML, Butler TL, Hyun C, Guo G, Otway R, Mackay JP, Waddell LB, Cole AD, Hayward C, Keogh A, Macdonald P, Griffiths L, Fatkin D, Sholler GF, Zorn AM, Feneley MP, Winlaw DS, Harvey RP. [Mutations in cardiac T-box factor gene TBX20 are associated with diverse cardiac pathologies, including defects of septation and valvulogenesis and cardiomyopathy](#). *Am J Hum Genet*. 2007; 81: 280-91.

Grants, Contracts, and Industry Agreements

Grant and Contract Awards

Annual Direct / Project Period Direct

Allen, Z

The Role of FoxP2 in Olfactory Bulb Interneuron Neurogenesis		
National Institutes of Health		
F30 DC 008928	01/01/07 - 10/19/10	\$44,475 / \$164,089
Brown, N.		
Investigation of Mammalian Retinal Neuron Development		
National Institutes of Health		
R01 EY 013612	08/01/04 - 07/31/08	\$218,483 / \$925,000
Cell-Cell Signaling During Mammalian Early Eye Formation		
National Institutes of Health		
R01 EY 018097	04/01/08 - 03/31/12	\$250,000 / \$1,000,000
Campbell, K		
(Bridge) The Roles Gsh1 And Gsh2 Genes in Telencephalic Neurogenesis		
National Institutes of Health		
R56 NS 044080	07/01/07 - 06/30/08	\$250,000 / \$250,000
Regional Control of Telencephalic Neuronal Diversity		
National Institutes of Health		
R01 MH 069643	01/01/05 - 12/31/09	\$213,341 / \$1,125,000
Degen, J.		
Arthritic Disease and the Hemostatic System		
National Institutes of Health		
R01 AR 049822	02/01/04 - 01/31/09	\$211,396 / \$1,137,500
Hemostatic Factors as Determinants of Bacterial Virulence and Host Defense		
National Institutes of Health		
R01 HL 085357	07/01/06 - 06/30/11	\$242,750 / \$1,250,000
Cincinnati Rheumatic Disease Core Center - Core 2		
National Institutes of Health		
P30 AR 047363	09/01/06 - 06/30/11	\$53,570 / \$120,869
Gebelein, B		
Molecular Control of Blood Stem Cell Growth and Self-Renewal Genes		
American Cancer Society - Ohio		
	09/01/07 - 08/31/08	\$25,000 / \$25,000
New Tumor Suppression Pathways in Leukemia		
University of Cincinnati Cancer Center		
	09/01/07 - 10/01/08	\$20,000 / \$20,000
Hox Regulation of Sensory Organ Development in Drosophila		
National Institutes of Health		
R01 GM 079428	04/01/08 - 02/28/13	\$190,000 / \$950,000
Heasman, J		
Santa Cruz Scientific Research Meeting		
March of Dimes - National		
FY07636	04/01/08 - 09/30/08	\$2,000 / \$2,000
The Santa Cruz Meeting on Developmental Biology 2008		
National Institutes of Health		
R13 HD 058461	03/15/08 - 02/28/09	\$16,000 / \$16,000
Maternal Control Of Tissue Formation In Xenopus		
National Institutes of Health		
R01 HD 038272	04/01/04 - 03/31/09	\$209,074 / \$1,125,000
Hegde, R		
Mechanism of Action of Retinal Determination Proteins		
National Institutes of Health		
R01 EY 014648	09/01/04 - 08/31/09	\$218,483 / \$1,125,000

Kuan, C**Roles of Cdc42 in Neural Progenitor Proliferation and Embryonic Brain Tumors**

University of Cincinnati Cancer Center

09/01/07 - 10/01/08

\$40,000 / \$40,000

Vascular Effects of Amyloid- β Peptide Via Rac GTPase in Ischemia-Hypoxia

Alzheimer's Association

08/01/07 - 07/31/09

\$45,450 / \$90,900

tPA Neurotoxicity in Hypoxic-Ischemic Encephalopathy

National Institutes of Health

R21 NS 059668

04/01/08 - 03/31/10

\$131,250 / \$240,625

Apoptosis and Renewal of Neural Progenitor Cells

National Institutes of Health (Yale University School of Medicine)

R01 NS 038296

02/01/06 - 01/31/11

\$41,198 / \$207,227

Lessard, J**Murine Atlas of Genitourinary Smooth Muscle Development**

National Institutes of Health

U01 DK 070219

04/01/05 - 03/31/10

\$789,467 / \$2,633,673

Lessard, J

638,683

Aronow, B

130,001

Jegga, A

20,783

Lin, X**Molecular Mechanisms of Beta-Catenin Signaling**

American Heart Association - Ohio

0655393B

07/01/06 - 06/30/08

\$55,000 / \$110,000

Regulation of Hedgehog Distribution and Signaling

American Cancer Society - National

RSG0705101DDC

01/01/07 - 12/31/10

\$150,000 / \$600,000

Regulation of Wingless (Wg) Signaling and Morphogen Gradient Formation

National Institutes of Health

R01 GM 063891

07/01/07 - 06/30/11

\$190,000 / \$760,000

Potter, S**Global Gene Expression Atlas of the Developing Kidney**

National Institutes of Health

U01 DK 070251

09/30/04 - 07/31/09

\$243,215 / \$1,113,867

Development of Metanephric Mesenchyme

National Institutes of Health

R01 DK 061916

04/01/06 - 03/31/10

\$195,073 / \$820,000

Digestive Health Center - Bench to Bedside Research in Pediatric Digestive Diseases

National Institutes of Health

P30 DK 078391

06/01/08 - 05/31/09

\$68,476 / \$136,686

Wells, J.**Promoting Endodermal and Pancreatic Differentiation of Embryonic Stem Cells**

Juvenile Diabetes Research Foundation

11/01/03 - 10/31/08

\$100,000 / \$500,000

Mechanisms of Endoderm Specification Along the A-P Axis

National Institutes of Health

R01 GM 072915

05/01/06 - 04/30/11

\$184,490 / \$950,000

Wylie, C**Ectoderm Formation in the Early Xenopus Embryo**

National Institutes of Health R01 HD 045737	02/12/04 - 12/31/08	\$255,881 / \$1,298,955
Maternal Control of Actin Assembly in Xenopus Embryos		
National Institutes of Health R01 HD 044764	02/01/04 - 01/31/09	\$188,167 / \$1,012,500
Training Program in Organogenesis		
National Institutes of Health T32 HD 046387	05/01/06 - 04/30/11	\$209,561 / \$1,007,071
Zorn, A		
Molecular Basis of Liver Development		
National Institutes of Health R01 DK 070858	04/01/07 - 03/31/12	\$200,900 / \$1,025,000
Current Year Direct		\$5,252,700
Funded Collaborative Efforts		
Degen, J		
Cincinnati Rheumatic Disease Core Center		
National Institutes of Health Thompson, S	09/01/07 - 06/30/11	5 %
Hegde R		
Norway-Like Viruses and Their Receptors		
National Institutes of Health Jiang, J	08/01/05 - 01/31/10	10 %
Kuan, C-Y		
Implications of the ASK1/JNK Pathway in ARF		
National Institutes of Health Devarajan, P	04/01/05 - 03/31/10	5 %
Zorn, A		
Mechanisms of Endoderm Specification Along the A-P Axis		
National Institutes of Health Wells, J	05/01/06 - 04/30/11	10 %
Ectoderm Formation in Early Xenopus Embryos		
National Institutes of Health Wylie, C	02/12/04 - 12/31/08	5 %
		Total \$5,252,700

Molecular and Developmental Biology Graduate Program

The Graduate Program in Molecular and Developmental Biology is an interdepartmental program within the University of Cincinnati that offers the Ph.D. degree. It has been based in the Department of Pediatrics for over 35 years. Drs. Kenneth Campbell and Katherine Yutzey served as Directors of the Program with co-directors Drs. Jeffrey Whitsett - finance, Richard Lang - academics, Tim Le Cras - admissions, Tiffany Cook – recruitment, Jeff Robbins – faculty membership, and Tim Weaver– graduate studies.

There are 68 faculty members in the program. During the past year, there were 54 predoctoral students in the program, 7 of whom are pursuing M.D./Ph.D. degrees. Students and faculty continue to be productive as measured by their numbers of publications, presentations at meetings, honors and awards received. Grant support to faculty remains high.

During the past year, the University of Cincinnati continued to support the program by providing University Graduate Assistantships and funds appropriated from the Dean's office to support 9 first year students. The remaining students are supported through a variety of sources including Yates (1), Ryan Fellowships (3), American Heart Fellowships (3), NIH NRSA (2), NIH training grants (10), external grants to their advisors (16), and CHRF Special Purpose Funds to their

advisors (9).

The MDB Program provides an excellent research educational experience for students and has an excellent record in the placement of its graduates in scientific careers.

Molecular and Developmental Biology Graduate Program Students, 2007-2008

Student	Faculty Mentor	Admission
Faisal Adhami**	Chia-Yi Kuan	2003
Shailaja Akunuru	Yi Zheng	2006
Zegary Allen**	Kenneth Campbell	2004
William Baird**	Timothy Cripe	2006
Kevin Burns	Chia-Yi Kuan	2002
Ashley Cast	Rotation	2007
Heather Chapman	Rotation	2007
Gang Chen	Jeffrey Whitsett	2004
Michelle Combs	Katherine Yutzey	2004
Katherine (Russell) Eaton	Randy Sallee	2002
Jieqing Fan	Rotation	2007
Derek Garrison	Jeffrey Whitsett	2006
Gabriel Ghiaur	David Williams	2001
Nicole Glenn	Thomas Bartman	2006
Curtis Grace	Charles Vorhees	2003
Ying Gu	Christopher Wylie	2006
Yuanyuan Gu	Christopher Karp	2005
David Hahn	Timothy Weaver	2006
Anna Hake	Rotation	2007
Mary Horn	Rotation	2007
Shawna (Blaney) Hottinger	Jeffrey Robbins	2004
Amer Jameel	Timothy Weaver	2006
Diva Jonatan	James Wells	2006
Elizabeth (Haque) Kramer**	Timothy Le Cras	2005
Manish Kumar*	Robert Colbert	2005
Kristen Lipscomb	Woodrow Benson	2004
Wei Liu	Yi Zheng	2005
Thomas Lu**	Marc Rothenberg	2007
Rajat Madan	Christopher Karp	2001
Yoni Mahller**	Timothy Cripe	2002
Arturo Maldonado	Timothy Crombleholme	2004
Karunyakanth Mandapaka	Timothy Weaver	2005
Caitlin Maynard	Katherine Yutzey	2006
Elizabeth McDonald	Tiffany Cook	2004
Timothy Mead	Katherine Yutzey	2006
David Metzger	John Shannon	2002
Monique Morrison	Susanne Wells	2005
Elizabeth Mushaben	Rotation	2007
Sumeda Nandadasa	Christopher Wylie	2005
Zhenglei Pei	Kenneth Campbell	2004

Jennifer Peters	Randy Sallee	2002
Christopher Runyan**	Christopher Wylie	2003
Tori Schaefer	Michael Williams	2004
Kathy (Shair) Schroer	Gurjit Hershey	2004
Elaine (Howells) Shelton	Katherine Yutzey	2003
Emily Sites	Nancy Ratner	2005
Xiaofang Tang	Xinhua Lin	2006
Shiv Kumar Viswanathan	Woodrow Benson	2003
Mikah Wilson	Rotation	2007
Dong Yan	Xinhua Lin	2002
Jia You	Rotation	2007
Bo Zhou	Xinhua Lin	2006
Xuan Zhou	Rotation	2007
Hongyan Zhu	Marc Rothenberg	2004
*On Leave from Program **M.D./Ph.D. Students		

Students completing their PhD work

- **Faisal Adhami** "Differential Adult and Neonatal Response to Cerebral Ischemia-Hypoxia," August 7, 2007
- **Kevin Burns** "Genetic Detection of Neurogenesis and Astrocytic Transformation of Radial Glia," November 2, 2007
- **Katherine Eaton** "Neuropeptides in the Amygdala: Relevance to Stress," September 4, 2007
- **Gabriel Ghiaur** "The Role of Rho GTPases in Hematopoietic Stem Cell Biology: RhoA GTPase Regulates Adult HSC Engraftment and Rac1 GTPase is Important for Embryonic HSC Migration," November 12, 2007
- **Yonatan Mahller** "Development of Oncolytic HSV as an Anticancer Therapeutic for Extracranial Neural Tumors and Cancer Stem Cells," July 30, 2007
- **David Metzger** "The Role of the ETS Transcription Factor Elf5 in Lung Development," December 5, 2007
- **Christopher Runyan** "The Importance of Cell Death in Germ Cell Migration," August 15, 2007
- **Elaine Shelton** "The Roles of Twist1 and Tbx20 in Endocardial Cell Proliferation, Migration, and Differentiation During Endocardial Cushion Development," December 14, 2007.

Student Publications

During the past year, students from the Program authored or co-authored 29 articles.

1. Adhami F, Yu D, Yin W, Schloemer A, Burns KA, Liao G, Degen JL, Chen J, Kuan CY. **Deleterious effects of plasminogen activators in neonatal cerebral hypoxia-ischemia.** *Am J Pathol.* 2008 Jun;172(6):1704-16. Epub 2008 May 8.
2. Allen ZJ 2nd, Waclaw RR, Colbert MC, Campbell K. **Molecular identity of olfactory bulb interneurons: transcriptional codes of periglomerular neuron subtypes.** *J Mol Histol.* 2007 Dec;38(6):517-25. Epub 2007 Jul 12.
3. Burns KA, Ayoub AE, Breunig JJ, Adhami F, Weng WL, Colbert MC, Rakic P, Kuan CY. **Nestin-CreER mice reveal DNA synthesis by nonapoptotic neurons following cerebral ischemia hypoxia.** *Cereb Cortex.* 2007 Nov;17(11):2585-92. Epub 2007 Jan 27.
4. Maeda Y, Suzuki T, Pan X, Chen G, Pan S, Bartman T, Whitsett JA. **CUL2 is required for the activity of hypoxia-inducible factor and vasculogenesis.** *J Biol Chem.* 2008 Jun 6;283(23):16084-92. Epub 2008 Mar 27.
5. Akbar H, Kim J, Funk K, Cancelas JA, Shang X, Chen L, Johnson JF, Williams DA, Zheng Y. **Genetic and pharmacologic evidence that Rac1 GTPase is involved in regulation of platelet secretion and aggregation.** *J Thromb Haemost.* 2007 Aug;5(8):1747-55.
6. Eaton K, Sallee FR, Sah R. **Relevance of neuropeptide Y (NPY) in psychiatry.** *Curr Top Med Chem.* 2007;7(17):1645-59. Review.
7. Ghiaur G, Ferkowicz MJ, Milsom MD, Bailey J, Witte D, Cancelas JA, Yoder MC, Williams DA. **Rac1 is essential for intraembryonic hematopoiesis and for the initial seeding of fetal liver with definitive hematopoietic progenitor cells.** *Blood.* 2008 Apr 1;111(7):3313-21. Epub 2007 Dec 14.
8. Grace CE, Schaefer TL, Herring NR, Skelton MR, McCrea AE, Vorhees CV, Williams MT. **(+)-Methamphetamine increases corticosterone in plasma and BDNF in brain more than forced swim or isolation in neonatal rats.**

Synapse. 2008 Feb;62(2):110-21.

9. Sinner D, Kordich JJ, Spence JR, Opoka R, Rankin S, Lin SC, Jonatan D, Zorn AM, Wells JM. **Sox17 and Sox4 differentially regulate beta-catenin/T-cell factor activity and proliferation of colon carcinoma cells.** *Mol Cell Biol*. 2007 Nov;27(22):7802-15. Epub 2007 Sep 17.
10. Blanchard C, Mingler MK, Vicario M, Abonia JP, Wu YY, Lu TX, Collins MH, Putnam PE, Wells SI, Rothenberg ME. **IL-13 involvement in eosinophilic esophagitis: transcriptome analysis and reversibility with glucocorticoids.** *J Allergy Clin Immunol*. 2007 Dec;120(6):1292-300.
11. Divanovic S, Trompette A, Petiniot LK, Allen JL, Flick LM, Belkaid Y, Madan R, Haky JJ, Karp CL. **Regulation of TLR4 signaling and the host interface with pathogens and danger: the role of RP105.** *J Leukoc Biol*. 2007 Aug;82(2):265-71. Epub 2007 Apr 30. Review.
12. Machado FS, Esper L, Dias A, Madan R, Gu Y, Hildeman D, Serhan CN, Karp CL, Aliberti J. **Native and aspirin-triggered lipoxins control innate immunity by inducing proteasomal degradation of TRAF6.** *J Exp Med*. 2008 May 12;205(5):1077-86. Epub 2008 Apr 14.
13. Dragin N, Shi Z, Madan R, Karp CL, Sartor MA, Chen C, Gonzalez FJ, Nebert DW. **Phenotype of the Cyp1a1/1a2/1b1-/- triple-knockout mouse.** *Mol Pharmacol*. 2008 Jun;73(6):1844-56. Epub 2008 Mar 27.
14. Mahller YY, Vaikunth SS, Ripberger MC, Baird WH, Saeki Y, Cancelas JA, Crombleholme TM, Cripe TP. **Tissue inhibitor of metalloproteinase-3 via oncolytic herpesvirus inhibits tumor growth and vascular progenitors.** *Cancer Res*. 2008 Feb 15;68(4):1170-9.
15. Mahller YY, Sakthivel B, Baird WH, Aronow BJ, Hsu YH, Cripe TP, Mehrian-Shai R. **Molecular analysis of human cancer cells infected by an oncolytic HSV-1 reveals multiple upregulated cellular genes and a role for SOCS1 in virus replication.** *Cancer Gene Ther*. 2008 Jun 13.
16. Parvadia JK, Keswani SG, Vaikunth S, Maldonado AR, Marwan A, Stehr W, Erwin C, Uzvolgyi E, Warner BW, Yamano S, Taichman N, Crombleholme TM. **Role of VEGF in small bowel adaptation after resection: the adaptive response is angiogenesis dependent.** *Am J Physiol Gastrointest Liver Physiol*. 2007 Sep;293(3):G591-8. Epub 2007 Jun 21.
17. 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 Dec;134(23):4243-53. Epub 2007 Oct 31.
18. Metzger DE, Stahlman MT, Shannon JM. **Misexpression of ELF5 disrupts lung branching and inhibits epithelial differentiation.** *Dev Biol*. 2008 Aug 1;320(1):149-60. Epub 2008 May 10.
19. Mir A, Kofron M, Heasman J, Mogle M, Lang S, Birsoy B, Wylie C. **Long- and short-range signals control the dynamic expression of an animal hemisphere-specific gene in Xenopus.** *Dev Biol*. 2008 Mar 1;315(1):161-72. Epub 2007 Dec 27.
20. Tao Q, Nandadasa S, McCrea PD, Heasman J, Wylie C. **G-protein-coupled signals control cortical actin assembly by controlling cadherin expression in the early Xenopus embryo.** *Development*. 2007 Jul;134(14):2651-61. Epub 2007 Jun 13.
21. Runyan C, Gu Y, Shoemaker A, Looijenga L, Wylie C. **The distribution and behavior of extragonadal primordial germ cells in Bax mutant mice suggest a novel origin for sacrococcygeal germ cell tumors.** *Int J Dev Biol*. 2008;52(4):333-44.
22. Skelton MR, Williams MT, Schaefer TL, Vorhees CV. **Neonatal (+)-methamphetamine increases brain derived neurotrophic factor, but not nerve growth factor, during treatment and results in long-term spatial learning deficits.** *Psychoneuroendocrinology*. 2007 Jul;32(6):734-45. Epub 2007 Jul 2.
23. Schaefer TL, Skelton MR, Herring NR, Gudelsky GA, Vorhees CV, Williams MT. **Short- and long-term effects of (+)-methamphetamine and (+/-)-3,4-methylenedioxymethamphetamine on monoamine and corticosterone levels in the neonatal rat following multiple days of treatment.** *J Neurochem*. 2008 Mar;104(6):1674-85. Epub 2007 Nov 6.
24. Herring NR, Schaefer TL, Tang PH, Skelton MR, Lucot JP, Gudelsky GA, Vorhees CV, Williams MT. **Comparison of time-dependent effects of (+)-methamphetamine or forced swim on monoamines, corticosterone, glucose, creatine, and creatinine in rats.** *BMC Neurosci*. 2008 May 30;9:49.
25. Vorhees CV, Schaefer TL, Williams MT. **Developmental effects of +/-3,4-methylenedioxymethamphetamine on spatial versus path integration learning: effects of dose distribution.** *Synapse*. 2007 Jul;61(7):488-99.
26. Shelton EL, Yutzey KE. **Twist1 function in endocardial cushion cell proliferation, migration, and differentiation during heart valve development.** *Dev Biol*. 2008 May 1;317(1):282-95. Epub 2008 Feb 29.
27. Belenkaya TY, Wu Y, Tang X, Zhou B, Cheng L, Sharma YV, Yan D, Selva EM, Lin X. **The retromer complex influences Wnt secretion by recycling wntless from endosomes to the trans-Golgi network.** *Dev Cell*. 2008 Jan;14(1):120-31. Epub 2007 Dec 20.
28. Yan D, Lin X. **Drosophila glypican Dally-like acts in FGF-receiving cells to modulate FGF signaling during tracheal morphogenesis.** *Dev Biol*. 2007 Dec 1;312(1):203-16. Epub 2007 Sep 20.

29. Yang L, Wang L, Kalfa TA, Cancelas JA, Shang X, Pushkaran S, Mo J, Williams DA, Zheng Y. **Cdc42 critically regulates the balance between myelopoiesis and erythropoiesis.** *Blood*. 2007 Dec 1;110(12):3853-61. Epub 2007 Aug 16.

Student Honors

- **Allen, Z** Supported by Individual NRSA Fellowship
- **Baird, W** Supported by NIH Training Grant (UC-Stambook)
- **Burns, K** Supported by Individual NRSA Fellowship
- **Chapman, H** Supported by Yates Fellowship
- **Combs, M** Supported by American Heart Fellowship
- **Grace, C** Supported by NIH Training Grant (Teratology)
- **Hottinger, S** Supported by NIH Training Grant (UC-Schwartz)
- **Kramer, E** Supported by NIH Training Grant (Pulmonary and Cardiovascular Biology) and Ryan Fellowship
- **Lipscomb, K** Supported by American Heart Association Fellowship
- **Lu, T** Supported by NIH Training Grant (Organogenesis)
- **Maynard, C** Supported by NIH Training Grant (Pulmonary and Cardiovascular Biology)
- **McDonald, E** Supported by NIH Training Grant (Organogenesis)
- **Mead, T** Supported by NIH Training Grant (Teratology)
- **Metzger, D** Supported by NIH Training Grant (Pulmonary and Cardiovascular Biology)
- **Schaefer, T** Supported by NIH Training Grant (Teratology) and Ryan Fellowship
- **Shelton, E** Supported by American Heart Association Fellowship
- **Sites, E** Supported by NIH Training Grant (UC-Khan)
- **Yan, D** Supported by Ryan Fellowship

Richard A. Akeson Fellowship Fund

The Richard A. Akeson Fellowship and Memorial Lectureship Fund continues to support the Annual Richard Akeson Memorial Lectureship and travel by students in our graduate program to relevant courses and meetings in which they are presenting results of their research. Dr. Barry Gumbiner presented the Fourteenth Annual Richard Akeson Memorial Lectureship in conjunction with the annual Molecular and Developmental Biology Graduate Student Symposium in 2007.

The following students received funding from the Richard A. Akeson Fellowship and Memorial Fund for travel in 2007 - 2008:

Student	Meeting	Presentation	Date
Burns, Kevin	Society for Neuroscience	Oral	November 3 - 7, 2007
Combs, Michelle	Weinstein Cardiovascular Development Conference Houston, TX	Poster	May 15-18, 2008
Grace, Curtis	International Behavioral Neuroscience Society Annual Meeting St. Thomas, US Virgin Islands	Poster	June 17-22, 2008
Kramer, Elizabeth	American Thoracic Society International Meeting Toronto, Canada	Poster	May 17-20, 2008
Lipscomb, Kristen	ASHG Annual Meeting	Poster	October 23-27, 2007
McDonald, Elizabeth	Annual Drosophila Research Conference San Diego, CA	Poster	April 2-6, 2008
Mushaben, Elizabeth	6th ERS Lung Science Meeting Estoril, Portugal	Poster	March 14-16, 2008
Nandadasa, Sumeda	Physics and Biology of Morphogenesis Conference Santa Barbara, CA	Poster	March 3-7, 2008

Schaefer, Tori	International Brain Research Organization	Poster	July 12-17, 2007
Yan, Dong	2007 Midwest Drosophila Meeting	Oral	October 5-6, 2007
Zhou, Bo	49th Annual Drosophila Research Conference San Diego, CA	Poster	April 2-6, 2008