Developmental Biology

Cincinnati Children's

Division Details

Division Data Summary

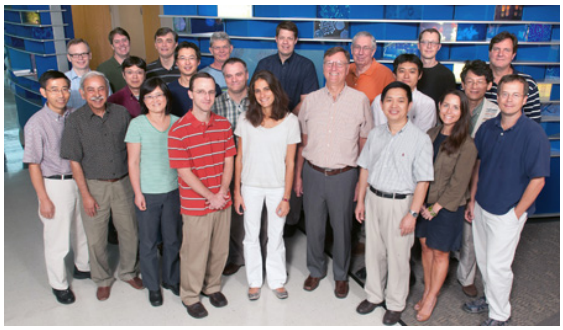
Research and Training Details

Number of Faculty	22
Number of Joint Appointment Faculty	17
Number of Research Fellows	51
Number of Research Students	35
Number of Support Personnel	36
Direct Annual Grant Support	$7,184,191
Direct Annual Industry Support	$77,000
Peer Reviewed Publications	76

Clinical Activities and Training

Number of Clinical Staff	0
Number of Clinical Fellows	3
Number of Other Students	15

Division Photo



Row 1: R Waclaw, G Guasch, C Wylie, X Lin
Row 2: Y Lan, K Campbell, S Namekawa, S Brugmann
Row 3: S Dey, Y Yoshida, S Cha, R Stottmann, D Wiginton, M Nakafuku, J Wells
Row 4: R Jiang, C Mayhew, S Crone, V Kalinichenko, V Cleghon, A Zorn, M Kofron

Significant Accomplishments

Protecting the Public

With 27 certified specialists in poison information and 51 staff certified in national incident management systems, our Drug and Poison Information Center is one of the largest in the country. Our center serves 20 Ohio counties with a combined population of 3.7 million. Our center regularly collaborates with county, regional and statewide medical response and disaster preparedness programs, including planning for the World Choir Games held in Cincinnati in July 2012. Our Health Alert Network sent Alert faxes to 60 regional hospitals on subjects such as blue green algae in local rivers, “bath salts,”and prescription drug abuse. The Center’s Pharmacovigilance and Medical Communication Units continues to gather and evaluate poison control data on a variety of public health issues such as food poisoning, water quality, concentrated laundry single use detergents, alcohol sanitizers, substance abuse patterns and terrorism preparedness.

Community Outreach and Education

Our center continued to implement programming to promote healthy drug- free lifestyles to youth, parents and communities. Our staff includes prevention specialists, health educators, pharmacists, other health care professionals and law enforcement officers who serve as positive role models. Last year, more than 27,000 people in Hamilton County have benefited from services including delinquency prevention and violence prevention issues among African-American youth populations. Our center also was significantly involved with Police Chief James Craig’s Children in Trauma Intervention Camp. We also use a People of Color Wellness Alliance Coalition Grant and a Grassroots Urban Mobilization Benefiting Ohio initiative to respond to health

disparities and wellness issues prevalent among African American and other minorities in Hamilton County. Our Center also was honored by a visit from the national “Drug Czar” Gil Kerlikowske, who held a press conference here to announce the nation’s new drug policy. The Center also was awarded a UC College of Pharmacy Training Fellowship to host a pharmacy student for the summer.

Staff Recognition

Prevention and education specialist Alton “Chris” Nelms, PhD, was honored with the 2012 Dr. Martin Luther King Jr. Humanitarian Award from Cincinnati Children’s. Julienne Closser and Michelle Bilinski earned specialist certification through the American Association of Poison Control Center and Sheila Goertemoeller received the highest grade nationwide on the association’s annual exam.

Significant Publications

Han, J., Miranda-Saavedra, D., Luebbering, N., Singh, A., Sibbet, G., Ferguson, M. A. and **Cleghon, V.** **Deep evolutionary conservation of an intramolecular protein kinase activation mechanism.** PLoS One 7(1): e29702.. 2012.

DYRKs (Dual Specificity Tyrosine phosphorylation-regulated Kinases) are a family of enzymes that are important in both normal development and disease. Their activity is interesting in that they act as kinases twice, first to activate themselves, and then to exert their functions. This paper is a careful study that follows the evolution of the DYRKs from their origins in early metazoa to present day organisms, and shows just how ancient this recently discovered two-step kinase activity is.

Li-Kroeger, D**.**, **Cook, T. A.**, **Gebelein, B.** **Integration of an abdominal Hox complex with Pax2 yields cell-specific EGF secretion from Drosophila sensory precursor cells**. *Development* 139(9): 1611-9. 2012.

DYRKs (Dual Specificity Tyrosine phosphorylation-regulated Kinases) are a family of enzymes that are important in both normal development and disease. Their activity is interesting in that they act as kinases twice, first to activate themselves, and then to exert their functions. This paper is a careful study that follows the evolution of the DYRKs from their origins in early metazoa to present day organisms, and shows just how ancient this recently discovered two-step kinase activity is.

Bush, J. O. and **Jiang, R.** **Palatogenesis: morphogenetic and molecular mechanisms of secondary palate development.** *Development* 139(2): 231-43. 2012.

This was a highly topical review article which described and discussed recent advances (many from the authors’ labs) in the formation of the hard palate. Despite the fact that cleft palate is a major morphogenetic disorder in humans, there has been little detailed molecular information of the mechanism of its normal morphogenesis. This has changed dramatically in recent years due to discoveries of genes involved in the process, and their genetic targeting in the mouse.

Dahia, C. L., Mahoney, E. and **Wylie, C**. . **Shh signaling from the nucleus pulposus is required for the postnatal growth and differentiation of the mouse intervertebral disc**. *PLoS One* 7(4): e35944. 2012.

Degenerative disc disease is a major clinical problem that affects some one in seven people, and for which there is no real cure. This paper describes the finding that the signaling protein Sonic hedgehog (Shh) controls growth and differentiation of the intervertebral disc in the mouse. This will provide a mechanistic basis for the development of biological therapies for age-related changes in the disc. It also provides an understanding, for the first time, of how intervertebral discs grow and differentiate.

Leslie, J. R., Imai, F., Fukuhara, K., Takegahara, N., Rizvi, T. A., Friedel, R. H., Wang, F., Kumanogoh, A. and **Yoshida, Y. Ectopic myelinating oligodendrocytes in the dorsal spinal cord as a consequence of altered**

semaphorin 6D signaling inhibit synapse formation.*Development* 138(18): 4085-95. 2011.

Degenerative disc disease is a major clinical problem that affects some one in seven people, and for which there is no real cure. This paper describes the finding that the signaling protein Sonic hedgehog (Shh) controls growth and differentiation of the intervertebral disc in the mouse. This will provide a mechanistic basis for the development of biological therapies for age-related changes in the disc. It also provides an understanding, for the first time, of how intervertebral discs grow and differentiate.

Division Publications

1. Basu RK, Standage SW, Cvijanovich NZ, Allen GL, Thomas NJ, Freishtat RJ, Anas N, Meyer K, Checchia PA, Lin R, Shanley TP, Bigham MT, Wheeler DS, Devarajan P, Goldstein SL, Wong HR. **Identification of candidate serum biomarkers for severe septic shock-associated kidney injury via microarray**. *Crit Care*. 2011; 15:R273.
2. Bennett MR, Piyaphanee N, Czech K, Mitsnefes M, Devarajan P. **NGAL distinguishes steroid sensitivity in idiopathic nephrotic syndrome**. *Pediatr Nephrol*. 2012; 27:807-12.
3. Bolte C, Zhang Y, Wang IC, Kalin TV, Molkentin JD, Kalinichenko VV. **Expression of Foxm1 transcription factor in cardiomyocytes is required for myocardial development**. *PLoS One*. 2011; 6:e22217.
4. Brunskill EW, Georgas K, Rumballe B, Little MH, Potter SS. **Defining the molecular character of the developing and adult kidney podocyte**. *PLoS One*. 2011; 6:e24640.
5. Brunskill EW, Sequeira-Lopez MLS, Pentz ES, Lin E, Yu J, Aronow BJ, Potter SS, Gomez RA. **Genes that confer the identity of the renin cell**. *Journal of the American Society of Nephrology*. 2011; 22:2213-2225.
6. Burns KA, Gutzwiller LM, Tomoyasu Y, Gebelein B. **Oenocyte development in the red flour beetle Tribolium castaneum**. *Dev Genes Evol*. 2012; 222:77-88.
7. Bush JO, Jiang R. **Palatogenesis: morphogenetic and molecular mechanisms of secondary palate development**. *Development*. 2012; 139:231-43.
8. Cha J, Hirota Y, Dey SK. **Sensing senescence in preterm birth**. *Cell Cycle*. 2012; 11:205-6.
9. Cha SW, Tadjuidje E, Wylie C, Heasman J. **The roles of maternal Vangl2 and aPKC in Xenopus oocyte and embryo patterning**. *Development*. 2011; 138:3989-4000.
10. Chang C, Hsieh YW, Lesch BJ, Bargmann CI, Chuang CF. **Microtubule-based localization of a synaptic calcium-signaling complex is required for left-right neuronal asymmetry in C. elegans**. *Development*. 2011; 138:3509-18.
11. Charlton-Perkins M, Brown NL, Cook TA. **The lens in focus: a comparison of lens development in Drosophila and vertebrates**. *Mol Genet Genomics*. 2011; 286:189-213.
12. Chiu H, Alqadah A, Chuang CF, Chang C. **C. elegans as a genetic model to identify novel cellular and molecular mechanisms underlying nervous system regeneration**. *Cell Adh Migr*. 2011; 5:387-94.
13. Czech KA, Bennett M, Devarajan P. **Distinct metalloproteinase excretion patterns in focal segmental glomerulosclerosis**. *Pediatr Nephrol*. 2011; 26:2179-84.
14. Dahia CL, Mahoney E, Wylie C. **Shh signaling from the nucleus pulposus is required for the postnatal growth and differentiation of the mouse intervertebral disc**. *PLoS One*. 2012; 7:e35944.
15. Daikoku T, Cha J, Sun X, Tranguch S, Xie H, Fujita T, Hirota Y, Lydon J, DeMayo F, Maxson R, Dey SK. **Conditional deletion of Msx homeobox genes in the uterus inhibits blastocyst implantation by altering uterine receptivity**. *Dev Cell*. 2011; 21:1014-25.
16. Dixit R, Zimmer C, Waclaw RR, Mattar P, Shaker T, Kovach C, Logan C, Campbell K, Guillemot F, Schuurmans C. **Ascl1 participates in cajal-retzius cell development in the neocortex**. *Cerebral Cortex*. 2011; 21:2599-2611.

17. Du A, McCracken KW, Walp ER, Terry NA, Klein TJ, Han A, Wells JM, May CL. **Arx is required for normal enteroendocrine cell development in mice and humans**. *Dev Biol*. 2012; 365:175-188.
18. Dyment NA, Kazemi N, Aschbacher-Smith LE, Barthelery NJ, Kenter K, Gooch C, Shearn JT, Wylie C, Butler DL. **The relationships among spatiotemporal collagen gene expression, histology, and biomechanics following full-length injury in the murine patellar tendon**. *Journal of Orthopaedic Research*. 2012; 30:28-36.
19. Gilbert S, Zhang R, Denson L, Moriggl R, Steinbrecher K, Shroyer N, Lin J, Han X. **Enterocyte STAT5 promotes mucosal wound healing via suppression of myosin light chain kinase-mediated loss of barrier function and inflammation**. *EMBO Mol Med*. 2012; 4:109-24.
20. Gu Y, Runyan C, Shoemaker A, Surani MA, Wylie C. **Membrane-bound steel factor maintains a high local concentration for mouse primordial germ cell motility, and defines the region of their migration**. *PLoS One*. 2011; 6:e25984.
21. Han J, Miranda-Saavedra D, Luebbering N, Singh A, Sibbet G, Ferguson MA, Cleghon V. **Deep evolutionary conservation of an intramolecular protein kinase activation mechanism**. *PLoS One*. 2012; 7:e29702.
22. Harding SD, Armit C, Armstrong J, Brennan J, Cheng Y, Haggarty B, Houghton D, Lloyd-MacGilp S, Pi X, Roochun Y, Sharghi M, Tindal C, McMahon AP, Gottesman B, Little MH, Georgas K, Aronow BJ, Potter SS, Brunskill EW, Southard-Smith EM, Mendelsohn C, Baldock RA, Davies JA, Davidson D. **The GUDMAP database--an online resource for genitourinary research**. *Development*. 2011; 138:2845-53.
23. He F, Ren J, Wang W, Ma J. **Evaluating the Drosophila Bicoid morphogen gradient system through dissecting the noise in transcriptional bursts**. *Bioinformatics*. 2012; 28:970-5.
24. Hirota Y, Cha J, Yoshie M, Daikoku T, Dey SK. **Heightened uterine mammalian target of rapamycin complex 1 (mTORC1) signaling provokes preterm birth in mice**. *Proc Natl Acad Sci U S A*. 2011; 108:18073-8.
25. Hochheiser H, Aronow BJ, Artinger K, Beaty TH, Brinkley JF, Chai Y, Clouthier D, Cunningham ML, Dixon M, Donahue LR, Fraser SE, Hallgrimsson B, Iwata J, Klein O, Marazita ML, Murray JC, Murray S, de Villena FPM, Postlethwait J, Potter S, Shapiro L, Spritz R, Visel A, Weinberg SM, Trainor PA. **The FaceBase Consortium: A comprehensive program to facilitate craniofacial research**. *Dev Biol*. 2011; 355:175-182.
26. Howell JC, Wells JM. **Generating intestinal tissue from stem cells: potential for research and therapy**. *Regen Med*. 2011; 6:743-55.
27. Ichijima Y, Sin HS, Namekawa SH. **Sex chromosome inactivation in germ cells: emerging roles of DNA damage response pathways**. *Cell Mol Life Sci*. 2012; 69:2559-72.
28. Kavanaugh GM, Wise-Draper TM, Morreale RJ, Morrison MA, Gole B, Schwemberger S, Tichy ED, Lu L, Babcock GF, Wells JM, Drissi R, Bissler JJ, Stambrook PJ, Andreassen PR, Wiesmüller L, Wells SI. **The human DEK oncogene regulates DNA damage response signaling and repair**. *Nucleic Acids Research*. 2011; 39:7465-7476.
29. Kazanjian A, Shroyer NF. **NOTCH Signaling and ATOH1 in Colorectal Cancers**. *Curr Colorectal Cancer Rep*. 2011; 7:121-127.
30. Kim J, Oh WJ, Gaiano N, Yoshida Y, Gu C. **Semaphorin 3E-Plexin-D1 signaling regulates VEGF function in developmental angiogenesis via a feedback mechanism**. *Genes Dev*. 2011; 25:1399-411.
31. Kohli V, Rehn K, Sumanas S. **Single cell fate mapping in zebrafish**. *J Vis Exp*. 2011; :e3172.
32. Krawczeski CD, Goldstein SL, Woo JG, Wang Y, Piyaphanee N, Ma Q, Bennett M, Devarajan P. **Temporal relationship and predictive value of urinary acute kidney injury biomarkers after pediatric cardiopulmonary bypass**. *J Am Coll Cardiol*. 2011; 58:2301-9.
33. Le TT, Conley KW, Mead TJ, Rowan S, Yutzey KE, Brown NL. **Requirements for Jag1-Rbpj mediated Notch signaling during early mouse lens development**. *Dev Dyn*. 2012; 241:493-504.
34. Lenton K, James AW, Manu A, Brugmann SA, Birker D, Nelson ER, Leucht P, Helms JA, Longaker MT. **Indian**

hedgehog positively regulates calvarial ossification and modulates bone morphogenetic protein signaling. *Genesis*. 2011; 49:784-96.

35. Leslie JR, Imai F, Fukuhara K, Takegahara N, Rizvi TA, Friedel RH, Wang F, Kumanogoh A, Yoshida Y. **Ectopic myelinating oligodendrocytes in the dorsal spinal cord as a consequence of altered semaphorin 6D signaling inhibit synapse formation**. *Development*. 2011; 138:4085-95.
36. Li-Kroeger D, Cook TA, Gebelein B. **Integration of an abdominal Hox complex with Pax2 yields cell-specific EGF secretion from Drosophila sensory precursor cells**. *Development*. 2012; 139:1611-9.
37. Liu CF, Aschbacher-Smith L, Barthelery NJ, Dyment N, Butler D, Wylie C. **Spatial and temporal expression of molecular markers and cell signals during normal development of the mouse patellar tendon**. *Tissue Eng Part A*. 2012; 18:598-608.
38. Liu Y, Sadikot RT, Adami GR, Kalinichenko VV, Pendyala S, Natarajan V, Zhao YY, Malik AB. **FoxM1 mediates the progenitor function of type II epithelial cells in repairing alveolar injury induced by Pseudomonas aeruginosa**. *Journal of Experimental Medicine*. 2011; 208:1473-1484.
39. Lu TX, Hartner J, Lim EJ, Fabry V, Mingler MK, Cole ET, Orkin SH, Aronow BJ, Rothenberg ME. **MicroRNA-21 limits in vivo immune response-mediated activation of the IL-12/IFN-gamma pathway, Th1 polarization, and the severity of delayed-type hypersensitivity**. *J Immunol*. 2011; 187:3362-73.
40. Lu TX, Sherrill JD, Wen T, Plassard AJ, Besse JA, Abonia JP, Franciosi JP, Putnam PE, Eby M, Martin LJ, Aronow BJ, Rothenberg ME. **MicroRNA signature in patients with eosinophilic esophagitis, reversibility with glucocorticoids, and assessment as disease biomarkers**. *J Allergy Clin Immunol*. 2012; 129:1064-75 e9.
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43. Matsuoka R, Chivatakarn O, Badea T, Samuels I, Cahill H, Katayama KI, Kumar SR, Suto F, Chédotal A, Peachey N, Nathans J, Yoshida Y, Giger R, Kolodkin A. **Class 5 transmembrane semaphorins control selective mammalian retinal lamination and function**. *Neuron*. 2011; 71:460-473.
44. McCracken KW, Howell JC, Wells JM, Spence JR. **Generating human intestinal tissue from pluripotent stem cells in vitro**. *Nat Protoc*. 2011; 6:1920-8.
45. Nandadasa S, Tao Q, Shoemaker A, Cha SW, Wylie C. **Regulation of Classical Cadherin Membrane Expression and F-Actin Assembly by Alpha-Catenins, during Xenopus Embryogenesis**. *PLoS One*. 2012; 7:e38756.
46. Noah TK, Donahue B, Shroyer NF. **Intestinal development and differentiation**. *Exp Cell Res*. 2011; 317:2702-10.
47. Palencia-Desai S, Kohli V, Kang J, Chi NC, Black BL, Sumanas S. **Vascular endothelial and endocardial progenitors differentiate as cardiomyocytes in the absence of Etsrp/Etv2 function**. *Development*. 2011; 138:4721-32.
48. Plantier L, Besnard V, Xu Y, Ikegami M, Wert SE, Hunt AN, Postle AD, Whitsett JA. **Activation of sterol-response element-binding proteins (SREBP) in alveolar type II cells enhances lipogenesis causing pulmonary lipotoxicity**. *J Biol Chem*. 2012; 287:10099-114.
49. Ponferrada VG, Fan J, Vallance JE, Hu S, Mamedova A, Rankin SA, Kofron M, Zorn AM, Hegde RS, Lang RA. **CRIM1 complexes with ss-catenin and cadherins, stabilizes cell-cell junctions and is critical for neural morphogenesis**. *PLoS One*. 2012; 7:e32635.
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51. Potter SS, Brunskill EW, Patterson LT. **Defining the genetic blueprint of kidney development**. *Pediatr*

Nephrol. 2011; 26:1469-78.

52. Powder KE, Ku YC, Brugmann SA, Veile RA, Renaud NA, Helms JA, Lovett M. **A cross-species analysis of microRNAs in the developing avian face**. *PLoS One*. 2012; 7:e35111.
53. Rehn K, Wong KS, Balciunas D, Sumanas S. **Zebrafish enhancer trap line recapitulates embryonic aquaporin 1a expression pattern in vascular endothelial cells**. *Int J Dev Biol*. 2011; 55:613-8.
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57. Srinivasan R, Ozhegov E, van den Berg YW, Aronow BJ, Franco RS, Palascak MB, Fallon JT, Ruf W, Versteeg HH, Bogdanov VY. **Splice variants of tissue factor promote monocyte-endothelial interactions by triggering the expression of cell adhesion molecules via integrin-mediated signaling**. *J Thromb Haemost*. 2011; 9:2087-96.
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63. Tadjuidje E, Wang TS, Pandey RN, Sumanas S, Lang RA, Hegde RS. **The EYA tyrosine phosphatase activity is pro-angiogenic and is inhibited by benzbromarone**. *PLoS One*. 2012; 7:e34806.
64. Tang X, Wu Y, Belenkaya TY, Huang Q, Ray L, Qu J, Lin X. **Roles of N-glycosylation and lipidation in Wg secretion and signaling**. *Dev Biol*. 2012; 364:32-41.
65. Teissier A, Griveau A, Waclaw RR, Campbell K. **Tangentially migrating transient glutamatergic neurons control neurogenesis and maintenance of cerebral cortical progenitor pools.**. *Cerebral Cortex*. 2012; 22:403-416.
66. Terrell D, Xie B, Workman M, Mahato S, Zelhof A, Gebelein B, Cook T. **OTX2 and CRX rescue overlapping and photoreceptor-specific functions in the Drosophila eye**. *Developmental Dynamics*. 2012; 241:215-228.
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69. Varisco BM, Ambalavanan N, Whitsett JA, Hagood JS. **Thy-1 Signals through PPARgamma to Promote Lipofibroblast Differentiation in the Developing Lung**. *Am J Respir Cell Mol Biol*. 2012; 46:765-72.
70. Whitsett JA, Kalinichenko VV. **Integrin α6β4 defines a novel lung epithelial progenitor cell: A step forward**

for cell-based therapies for pulmonary disease. *The Journal of Clinical Investigation*. 2011; 121:2543-2545.
71. Whitsett JA, Kalinichenko VV. **Notch and basal cells take center stage during airway epithelial regeneration**. *Cell Stem Cell*. 2011; 8:597-598.
72. Wong KS, Rehn K, Palencia-Desai S, Kohli V, Hunter W, Uhl JD, Rost MS, Sumanas S. **Hedgehog signaling is required for differentiation of endocardial progenitors in zebrafish**. *Dev Biol*. 2012; 361:377-91.
73. Wu Q, Song R, Ortogero N, Zheng H, Evanoff R, Small CL, Griswold MD, Namekawa SH, Royo H, Turner JM, Yan W. **The RNase III enzyme DROSHA is essential for microRNA production and spermatogenesis**. *J Biol Chem*. 2012; 287:25173-90.
74. Yoshida Y. **Semaphorin signaling in vertebrate neural circuit assembly**. *Front Mol Neurosci*. 2012; 5:71.
75. Zhou B, Wu Y, Lin X. **Retromer regulates apical-basal polarity through recycling Crumbs**. *Dev Biol*. 2011; 360:87-95.
76. Zou Y, Chiu H, Domenger D, Chuang CF, Chang C. **The lin-4 MicroRNA Targets the LIN-14 Transcription Factor to Inhibit Netrin-Mediated Axon Attraction**. *Sci Signal*. 2012; 5:ra43.

Faculty, Staff, and Trainees

Faculty Members

Christopher C. Wylie, PhD, Professor

Leadership Director; Associate Chair for Basic Science

Research Interests Early Vertebrate Development, Xenopus, Mammal

Nadean Brown, PhD, Associate Professor

Research Interests Eye Development, Mouse And Drosophila

Kenneth Campbell, PhD, Professor

Leadership Associate Director

Research Interests CNS Patterning, Mammal

Chieh Chang, PhD, Assistant Professor

Research Interests Nervous System, C. Elegans

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

Brian Gebelein, PhD, Assistant Professor

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

Geraldine Guasch, PhD, Assistant Professor

Research Interests Stem Cells in Epithelial Tissues and Their Role in Tumorigenesis, Transitional Epithelium and Anorectal Malformations

Janet Heasman, PhD, Professor

Research Interests Early Vertebrate Development, Xenopus

Rashmi S. Hegde, PhD, Professor

Leadership Director, Molecular and Developmental Biology Graduate Program

Research Interests Protein Structure/Function

Rulang Jiang, PhD, Professor

Research Interests Genetic Basis and Developmental Mechanisms of Structural Birth Defects; Mammalian Organogenesis

J. Matthew Kofron, PhD, Assistant Professor

Research Interests Imaging Manager, Ectodermal Organ Development In Vertebrates, Xenopus

Chia-Yi Kuan, MD, PhD, Associate Professor

Research Interests Nervous System Patterning, Stroke, Cell Death, Mammal

James L. Lessard, PhD, Professor

Research Interests Muscle Development, Mammal

Hung-Chi Liang, PhD, Instructor

Research Interests Affymetrix Core Manager

Xinhua Lin, PhD, Professor

Research Interests Cell Signaling, Drosophila

Christopher Mayhew, PhD, Assistant Professor

Leadership Co-Director, Stem Cell Core

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

Leadership 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, Associate Professor

Leadership Co-Director, Stem Cell Core

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, Associate Professor

Research Interests Vertebrate Gut Development, Xenopus, Mammal

Joint Appointment Faculty Members

Bruce Aronow, PhD, Professor (Pediatric Bioinformatics)

Research Interests Bioinformatics

Samantha Brugmann, PhD, Assistant Professor (Plastic Surgery)

Research Interests Molecular Basis for Craniofacial Development and Disease

Tiffany Cook, PhD, Assistant Professor (Pediatric Ophthalmology)

Research Interests Eye Development, Drosophila

Sudhansu Dey, PhD, Professor (Director, Reproductive Sciences)
Research Interests Reproductive Biology

Prasad Devarajan, MD, Professor (Director, Nephrology and Hypertension)
Research Interests Urinary Tract Differentiation, Mammal

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

Yu Lan, PhD, Associate Professor (Plastic Surgery)
Research Interests Genetic Control of Craniofacial Development, Mutant Mouse Models

Richard A. Lang, PhD, Professor (Director, Transgenic Core Facility, Pediatric Opthalmology)
Research Interests Visual System Development, Mammal

Jun Ma, PhD, Professor (Pediatric Bioinformatics)
Research Interests Transcriptional Regulation, Drosophila

Satoshi Namekawa, PhD, Assistant Professor (Reproductive Sciences)
Research Interests Germ Cells, Epigenetics, Reproduction, Mouse

Joo-Seop Park, PhD, Assistant Professor (Urology)
Research Interests Molecular Biology; Genetics

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

Rolf Stottmann, PhD, Assistant Professor
Research Interests Genetic Approaches to Understanding Human Congenital Defects Affecting the Face and Forebrain.

Ronald Waclaw, PhD, Assistant Professor (Experimental Hematology)
Research Interests Forebrain Progenitor Cell Differentiation

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

Trainees

- **Chitra Dahia*, PhD**, Facult, Indian Institute of Science
- **Jason Spence, PhD**, Facult, Miami University (end 9/30/11)
- **Kei-Ichi Katayama, PhD, DVM**, Vis Re, University of Tokyo
- **Eui Kyun Park, PhD**, Vis Re, Kyunpook National University
- **Masaki Ueno, PhD**, Vis Ob, Osaka University
- **Tatyana Belenkaya, PhD**, Res. A, Russian Academy of Science
- **Eric Brunskill, PhD**, Res. A, University of Maryland
- **Kevin Burns, PhD**, Res. A, University of Cincinnati
- **Sang-Wook Cha, PhD**, Res. A, Kyungpook National University, Korea
- **Bharesh Chauhan*, PhD**, Res. A, Oxford University, United Kingdom
- **Eunah Chung, PhD**, Res. A, Cornell University
- **Christina James-Zorn, PhD**, Res. A, University of Queenland, Australia
- **Junbo Lui*, PhD**, Res. A, Fudan University
- **Athanasia Nikolaou, PhD**, Res. A, University of Melbourne, Australia
- **Taeko Noah*, PhD**, Res. A, University of Nevada
- **Timothy Plageman*, PhD**, Res. A, University of Cincinnati

- **Virgilio Ponferrada, PhD**, Res. A, Wright State University
- **Sujata Rao*, PhD**, Res. A, Cornell University
- **Emmanuel Tadjuidje, PhD**, Res. A, University of Goettengen, Germany
- **Huirong Xie*, PhD**, Res. A, Vanderbilt University
- **Dianer Yang, PhD**, Res. A, Chinese Academy of Sciences
- **Sivan Bezalel*, PhD**, Res. F, University Medical School, Isreal
- **Yuqi Cai, PhD**, Res. F, Zhejiang University School of Medicine, Taiwan (end 8/26/11)
- **Ching-Fang Chang, PhD**, Res. F, University of Alabama
- **Zheng Chen, PhD**, Res. F, University of Groningen, Germany (end 8/26/11)
- **Tarsis Ferreira, PhD**, Res. F, Universidade Federal de Sao Paulo, Brazil
- **Amy Gresser, PhD**, Res. F, Harvard University
- **Yi-Wen Hsieh, PhD**, Res. F, University of California, Los Angeles
- **Fumiyasu Imai, PhD**, Res. F, Yokohama City University of Medicine, Japan
- **Shihai Jia, PhD**, Res. F, Shanghai Institute for Biological Sciences, China
- **Maximiliano Jimenez-Dalmaroni, PhD**, Res. F, University of Oxford, UK
- **Avedis Kazanjian*, PhD**, Res. F, University of Louisville
- **Vikram Kohli, PhD**, Res. F, University of Alberta, Canada
- **Chia-Feng Liu, PhD**, Res. F, University of Chicago at Urbana
- **Han Liu, PhD**, Res. F, University of Rochester
- **Alejandro Lopez Juarez, PhD**, Res. F, University of Mexico
- **Mayur Madhavan, PhD**, Res. F, Miami University
- **Sumathra Manokaran, PhD**, Res. F, North Dakota State University (8/31/11)
- **Paloma Merchan Sala, PhD**, Res. F, University of Murcia, Spain
- **Myung-Soon Moon, PhD**, Res. F, University of Wisconsin-Madison (end 1/14/12)
- **Jorge Munera, PhD**, Res. F, University of California, San Diego
- **Sumeda Nandadasa, PhD**, Res. F, University of Cincinnati (end 3/30/12)
- **Anna Raines, PhD**, Res. F, University of Wisconsin
- **Latasha Redmond, PhD**, Res. F, Virginia Commonwealth University
- **Kaushik Roychoudhury, PhD**, Res. F, Jadaypur University, India
- **Emily Shifley, PhD**, Res. F, Ohio State University
- **Xiaofei Sun*, PhD**, Res. F, Vanderbilt University
- **Yu-Yo Sun, PhD**, Res. F, Taipei Medial University, Taiwan
- **Jun Tang, PhD**, Res. F, Third Military Medical University, China (end 1/27/12)
- **Jennifer Tucker, PhD**, Res. F, University of Pennsylvania
- **Marcin Wlizla, PhD**, Res. F, University of Chicago
- **Baotang Xie*, PhD**, Res. F, Chinese Academy of Sciences
- **Jingyue Xu, PhD**, Res. F, Nanjing University, China
- **Eun-Jin Yeo*, PhD**, Res. F, Seoul National University, South Korea
- **Jing Zhou, PhD**, Res. F, Shanghai Institute for Biological Sciences, China
- **Yan Zou, PhD**, Res. F, Chinese Academy of Sciences
- **Jonathan Howell, MD PhD**, Clin., Indiana University
- **Alan Kenny, MD PhD**, Clin., University of Rochester, School of Medicine and Dentistry
- **Andrea Pardo, MD**, Clin., Johns Hopkins University
- **Douglas Brown*,** , Grad., University of Cincinnati - College of Medicine
- **Marion Brusadelli,** , Grad. , Luminy University, France
- **Michael Craig,** , Grad. , University of Cincinnati

- **Pauline Fritsch,** , Grad., Luminy University, France
- **Hanane Yahia,** , Grad., University of Paris Diderot, France
- **Brittany Bayne,** , Underg, University of Cincinnati
- **Kalyn Campbell,** , Underg, Xavier University (end 5/1/12)
- **Claudia Carrelli,** , Underg, University of Cincinnati
- **Matthew Carter,** , Underg, Miami University, Oxford, OH
- **Yanne Doucet,** , Underg, University of Mediterranee, France (end 8/10/12)
- **Abigail Evans,** , Underg, Ohio State University
- **Arif Ghasletwala,** , Underg, University of Cincinnati
- **Matthew Grazyk,** , Underg, Xavier University
- **Rachel Helping,** , Underg, University of Cincinnati (end 6/1/12)
- **Tiffany Hoang,** , Underg, California State University - Fullerton (PSTP Summer Student)
- **Sarah Kastner,** , Underg, Cincinnati State
- **Doug Meyer,** , Underg, College of Mount St. Joseph (end 12/13/11)
- **Mosep Okonny,** , Underg, University of Cincinnati
- **Alyna Williams,** , Underg, University of Cincinnati
- **Blair Wissel,** , Underg, Xavier University

Division Collaboration

Human Genetics » Rolf Stottmann

A translational approach towards the identification of causative genetic elements for ciliopathies with Samantha Brugmann

Ophthalmology » Zubair Ahmed

Conservation of photoreceptor development - from flies to humans with Tiffany Cook

Biomedical Informatics » Anil Jegga

Development with Respect to Endocannabinoid Signaling with SK Dey

Endocrinology » Stuart Handwerger

Role of Endocannabinoid in Uterine Decidualization with SK Dey

Molecular Immunology » Senad Divanovic

Role of Endocannabinoid in Preterm Birth with SK Dey

Pulmonary Biology » Jeff Whitsett

Role of KLF5 in Uterine Biology and Implantation with SK Dey

Plastic Surgery » Samantha Bruggmann

Generating Human Intestinal Organoids with an ENS with Jim Wells

Ophthalmology » Tiffany Cook

Determining the molecular interactions underlying cell-specific gene expression in the peripheral nervous system with Brian Gebelein

Immunobiology » H. Leighton Grimes

Assessing the role of Hox and Gfi-1 antagonism in regulating microRNA expression and blood cell proliferation during hematopoiesis and leukemia progression with Brian Gebelein

Ophthalmology » Tiffany Cook

Transcriptional control of cell type specification during Drosophila neurogenesis with Brian Gebelein

Colorectal Center; Urology » Marc Levitt, Alberto Pena, and Shumyle Alam

Using the Shh knock out mouse model to investigate the mechanism of persistent cloaca in human with Geraldine Guasch

Experimental Hematology » Ronald Waclaw

Studies on oligodendrocyte development in the telencephalon with Masato Nakafuku

Molecular Immunology » Senad Divanovic

Studies on the role of adult neurogenesis in obesity with Masato Nakfuku

Reproductive Sciences » SK Dey

To characterize reproductive defects in Hox mutant mice with Steve Potter

Plastic Surgery » Samantha Brugmann

Generating Human Intestinal Organoids with an ENS with Jim Wells

Urology » Joo-Seop Park

Transcriptome analysis of wnt signaling in liver development with Aaron Zorn

Grants, Contracts, and Industry Agreements

Grant and Contract Awards		Annual Direct
BROWN, N		
Investigation of Mammalian Retinal Neuron Development		
National Institutes of Health		
R01 EY 013612	08/01/09-12/31/11	$213,840
CAMPBELL, K		
Molecular Mechanisms Controlling Formation of Basal Ganglia Circuitry		
National Institutes of Health		
R01 MH 090740	04/01/10-01/31/15	$247,500
Roles of Gsh1 & Gsh2 in Telencephalic Neurogenesis		
National Institutes of Health		
R01 NS 044080	07/01/08-06/30/13	$214,375
CHANG, C		
Understanding MicroRNA Mechanisms for Age-Related Decline in Neuronal Regeneration		
Whitehall Foundation, Inc.		
	10/01/09-09/15/13	$71,338
Understanding MicroRNA Mechanisms for Developmental Decline in Axon Growth Ability		
March of Dimes		
	06/01/10-05/31/13	$58,933
CHUANG, C		
Molecular Mechanisms of Gap Junction-Mediated Olfactory Signaling		
Whitehall Foundation, Inc.		
	07/01/08-06/15/12	$75,000
Developmental Control of Olfactory Signaling in C. Elegans		
Alfred P Sloan Foundation (University of Cincinnati)		
	09/15/10-09/15/12	$25,000
CLEGHON, V		

Fundamental Mechanisms of Protein Kinase Activation Loop Autophosphorylation

National Institutes of Health
R01 GM 087374 04/15/10-02/28/14 $193,050

GEBELEIN, B

Hox Regulation of Sensory Organ Development in Drosophila
National Institutes of Health
R01 GM 079428 04/01/08-02/28/13 $186,219

GUASCH GRANGEON, G

Defining the Transcriptional and Signaling Networks Involved in Epithelial Cancers of Transitional Epithelia
The Sidney Kimmel Fdn of Cancer Res
07/01/11-06/30/13 $86,957

Defining the Role of Sox2 in Vaginal Atresia Disorder
March of Dimes
02/01/11-01/31/13 $68,182

Defining Transitional Zones Associated with Squamous Cell Carcinoma Development
Concern Foundation
07/01/10-06/30/12 $50,000

Using a Novel Mouse Model of Transitional Epithelial Tumor to Investigate Cancer Initiation and Progression
The V Foundation
11/01/11-10/31/13 $100,000

Digestive Health Center - P&F Study
National Institutes of Health
P30 DK 078392 06/01/12-05/31/17 $36,666

HEGDE, R

Molecular Mechanisms of Retinal Determination Proteins
National Institutes of Health
R01 EY 014648 04/01/10-03/31/13 $240,000

JIANG, R

Genetic Basis of Cleft Lip and Palate
National Institutes of Health
R01 DE 015207 07/01/11-01/31/13 $237,674

Molecular Genetic Analysis of Craniofacial Development
National Institutes of Health
R01 DE 013681 07/01/11-06/30/15 $484,292

KUAN, C

Rac GTPases in the Mammalian Brain Development
National Institutes of Health
R01 NS 056435 07/01/08-06/30/12 $196,000

White Matter Protection in Acute Ischemic Stroke
National Institutes of Health
R21 NS 074559 07/01/11-06/30/13 $150,000

LIN, X

Roles of Perlecan in Intestinal Stem Cell Development in Drosphilia
Mizutani Foundation for Blycoscience
04/01/12-03/31/13 $71,078

Roles of Retromer Complex in Development
National Institutes of Health
R01 GM 087517 03/01/10-02/28/14 $188,100

Regulation of Wingless (Wg) Signaling and Morphogen Gradient Formation
National Institutes of Health

R01 GM 063891	04/01/12-03/31/16	$200,000

NAKAFUKU, M

Endogenous CNTF Receptors and Adult, In Vivo Neurogenesis
National Institutes of Health(University of Cincinnati)

R01 NS 066051	07/01/09-06/30/14	$11,825

Molecular Control of Neurogenesis in the Adult Subventricular Zone
National Institutes of Health

R01 NS 069893	04/01/10-03/31/15	$296,057

POTTER, S

Generating Molecular Markers that Selectively Label Urothelial Sub-Populations
National Institutes of Health(Columbia University Medical Center)

U01 DK 094530	09/30/11-08/31/16	$32,000

Global Gene Expression Atlas of Craniofacial Development
National Institutes of Health

U01 DE 020049	09/21/09-04/30/14	$181,741

Digestive Health Center - Gene Expression Core
National Institutes of Health

P30 DK 078392	06/01/12-05/31/17	$54,695

POTTER, S / ARONOW, B

Nextgen Dissection of the Genomic Basis of Kidney Development
National Institutes of Health

RC4 DK 090891	09/30/10-09/29/13	$395,357

SHROYER, N

bHLH factor Regulation of Mammalian Retinal Neuron Development
University of California-Davis

	01/01/12-12/31/14	$57,000

SUMANAS, S

Molecular Mechanisms of Arterial-Venous Differentiation in Zebrafish
National Institutes of Health

R01 HL 107369	04/01/11-03/31/16	$250,000

Etv2 Functional Knockdown As a Novel Strategy for Inhibiting Tumor-Induced Angiogenesis
Cancer Free Kids

	05/01/12-04/30/13	$50,000

TUCKER, J

Molecular Mechanisms of Gap Junctional Intercellular Communication
American Cancer Society National

	01/01/11-12/31/12	$52,000

WELLS, J

3D Growth of Human Pancreatic Tissue from PSCs
National Institutes of Health(Vanderbilt University)

U01 DK 072473	08/01/11-07/31/12	$200,000

Human Endocrine Cell Development
National Institutes of Health

R01 DK 092456	04/07/12-02/28/17	$297,412

Cystic Fibrosis Foundation Research Development Program - Project 2
Cystic Fibrosis Foundation

	07/01/07-06/30/12	$80,000

WYLIE , C

A Developmentally-Based Tissue Engineering Approach to Improve Tendon Repair

National Institutes of Health

R01 AR 056943	07/10/09-06/30/14	$176,372
Cadherin-based Actin Assembly in the Xenopus Embryo		
National Institutes of Health		
R01 HD 044764	03/12/09-01/31/14	$197,208
Ectoderm Formation in the Early Xenopus Embryo		
National Institutes of Health		
R01 HD 045737	04/01/10-03/31/15	$199,200

YANG , D

Effects of PAI1 on the tPA-JNK-Bim Pathway in Neonatal Cerebral Hypoxia-Ischemia		
American Heart Association		
	07/01/10-06/30/12	$45,000

YOSHIDA, Y

Regulation of Sensory-Motor Connectivity by Semaphorin-Plexin Signaling		
National Institutes of Health		
R01 NS 065048	04/01/09-03/31/14	$214,375

ZORN, A

Collaborative Research: Ontology-Enabled Reasoning across Phenotypers from Evolution and Model Organisms		
National Science Foundation(University of South Dakota)		
DBI-1062542	07/01/11-06/30/15	$27,403
Mammalian Foregut and Liver Development		
National Institutes of Health		
R01 DK 080823	01/01/09-12/31/12	$240,572
Production, Validation and Distribution of the Xenopus ORFeome		
National Institutes of Health(University of Virginia)		
R01 HD 069352	08/01/11-05/31/16	$47,043
Xenbase: a Xenopus Model Organism Database		
National Institutes of Health		
P41 HD 064556	06/01/10-05/31/15	$684,727
	Current Year Direct	**$7,184,191**

Industry Contracts

WELLS, J

Eli Lilly and Company	$77,000
Total	**$7,261,191**

Additional Information

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 40 years. Drs. Timothy Weaver and Rashmi Hegde served as Directors of the Program with co-directors Drs. Jeffrey Whitsett - finance, Aaron Zorn - curriculum, Tim Le Cras - admissions, Edith Markoff – recruitment, Yi Zheng – faculty membership, and John Shannon– graduate studies.

There are 85 faculty members in the program. During the past year, there were 69 pre-doctoral students in the program, 9 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 6 first year students. The remaining students are supported through a variety of sources including Ryan Fellowships (3), NIH training grants (8), external grants to their advisors (40), CHRF Special Purpose Funds to their advisors (8) and funds from the Children's Hospital Research Foundation to the Graduate Program (1).

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, 2011-2012

Student	Faculty Mentor	Admission
Thomas Acciani	Timothy LeCras	2009
Shailaja Akunuru	Yi Zheng	2006
Amel Alqadah	Chiou-Fen Chuang	2010
Robyn Amos-Kroohs	Michael Williams	2009
Aria Attia	Jeffrey Whitsett	2010
David Balli	Vladimir Kalinichenko	2008
Kristin Bell	Noah Shroyer	2010
Katie Bezold	Rotating	2011
Gregory Bick	Paul Andreassen	2010
Caitlin (Maynard) Braitsch	Katherine Yutzey	2006
Adam Burr**	Jeff Molkentin	2009
Jeeyeon Cha**	Sudhansu K. Dey	2009
Heather Chapman	Kenneth Campbell	2007
Mark Charlton-Perkins	Tiffany Cook	2010
Mikah Coffindaffer-Wilson	Jaye Hove	2007
Jason Cowan	Stephanie Ware	2009
Angela Damen	Rotating	2011
Sharina Desai	Saulius Sumanas	2008
Tracy Dohn	Joshua Waxman	2009
Jieqing Fan	Richard Lang	2007
Ming Fang	Katherine Yutzey	2010
Alyssa Gallas	Rotating	2011
Chen Gao	Tanya Kalin	2010
Margaret Gardner	Kathryn Wikenheiser-Brokamp	2010
Nicole Glenn	Saulius Sumanas	2006
Vicky Gomez	Rotating	2011
Ying Gu	Christopher Wylie	2006
Zirong Gu	Yutaka Yoshida	2008
David Hahn	Timothy Weaver	2006
Lu Han	Rotating	2011
Jamie Havrilak	John Shannon	2008
Michael Hester	Steve Danzer	2009
Mary (Horn) Lee	Katherine Yutzey	2007
Diva Jonatan	James Wells	2006
Abigail (Bower) Kasberg	Steve Potter	2008
Jed Kendall**	Nancy Ratner	2011
Julie Lander**	Stephanie Ware	2011
David Li-Kroeger	Brian Gebelein	2008
Shan Lin	James Mulloy	2009
Wei Liu	Yi Zheng	2005
Mariana Louza	Aaron Zorn	2010
Thomas Lu**	Marc Rothenberg	2007
Bliss Magella	Rotating	2011
Amrita Mandal	Rotating	2011
Kate Maurer	Nadean Brown	2009
Heather McCauley	Geraldine Guasch	2009
Kyle McCracken**	James Wells	2010

Anna (Hake) Method	James Wells	2007
Monique Morrison	Susanne Wells	2005
Elizabeth Mushaben	Timothy LeCras	2007
Shenyue Qin	Rotating	2011
Megan Rost	Saulius Sumanas	2008
Shatrunjai Singh	Steve Danzer	2010
Tony Stefater**	Richard Lang	2008
Mardi Sutherland	Stephanie Ware	2008
Xiaofang Tang	Xinhua Lin	2006
David Terrell**	Jeffrey Robbins/Tiffany Cook	2008
Chelsea Tolentino	Tim Le Cras	2010
Juli Uhl	Brian Gebelein	2008
Sha Wang	Christopher Wylie	2009
Emily Wayman	Rotating	2011
Jiadi Xu	John Harley	2010
Jia You	Xinhua Lin	2007
Inuk Zandvakili**	Yi Zheng	2009
Zheng Zhang	Aaron Zorn	2008
Bo Zhou	Xinhua Lin	2006
Xuan Zhou	Yi Zheng	2007

**MD/PhD Students

Students completing their PhD work

- Wei Liu – “Rational targeting of Cdc42 in hematopoietic stem cell mobilization and engraftment,” April 15, 2011.
- Shailaja Akunuru – “Regulation of cancer stem cell activity and epithelial-mesenchymal transition by Rac1 in human lung adenocarcinoma cells,” June 10, 2011.
- Monique Morrison – “Repression of the HPV E6 and E7 oncogenes by E2: gone but not forgotten,” July 28, 2011.
- Mikah Coffindaffer-Wilson – “Lymphangiogenesis in the Developing Zebrafish.” August, 12, 2011.
- James “Tony” Stefater – “Regulation of vascular patterning by macrophages and microglia,” September 8, 2011.
- Ying Gu – “A Traveling Niche: The Role of Steel Factor in Mouse Primordial Germ Cell Development,” October 17, 2011.
- Bo Zhou – “The role of retromer in regulating apical-basal polarity and immune response in Drosphila,” January 20, 2012.
- Thomas Lu – “MicroRNA in the Pathogenesis of Allergic Inflammation,” January 24, 2012.
- David Li-Kroeger – “Integration of regional and neural transcription factors controls EGF signaling from sensory organ precursor cells during Drosophila development,” April 26, 2012.

Student Publications

During the past year, students from the Program authored or co-authored 41 articles.

Amos-Kroohs RM, Williams MT, Vorhees CV. **Neonatal methylphenidate does not impair adult spatial learning in the Morris water maze in rats**. *Neurosci Lett*. 2011 Sep 20;502(3):152-6. Epub 2011 Jul 20. PubMed PMID: 21798318; PubMed Central PMCID: PMC3167480.

Balli D, Ren X, Chou FS, Cross E, Zhang Y, Kalinichenko VV, Kalin TV. **Foxm1 transcription factor is required for macrophage migration during lung inflammation and tumor formation**. *Oncogene*. 2011 Dec 5. doi: 10.1038/onc.2011.549. [Epub ahead of print] PubMed PMID: 22139074; PubMed Central PMCID: PMC3297705.

Braitsch CM, Combs MD, Quaggin SE, Yutzey KE. **Pod1/Tcf21 is regulated by retinoic acid signaling and**

inhibits differentiation of epicardium-derived cells into smooth muscle in the developing heart. *Dev Biol*. 2012 Jun 9. [Epub ahead of print] PubMed PMID: 22687751.

Charlton-Perkins M, Brown NL, Cook TA. **The lens in focus: a comparison of lens development in Drosophila and vertebrates**. *Mol Genet Genomics*. 2011 Oct;286(3-4):189-213. Epub 2011 Aug 30. Review. PubMed PMID: 21877135.

Chen L, **Acciani T**, Le Cras T, Lutzko C, Perl AK. **Dynamic Regulation of PDGFRα Expression in Alveolar fibroblasts During Realveolarization**. *Am J Respir Cell Mol Biol*. 2012 May 31. [Epub ahead of print] PubMed PMID: 22652199.

Chiu H, **Alqadah A**, Chuang CF, Chang C. **C. elegans as a genetic model to identify novel cellular and molecular mechanisms underlying nervous system regeneration**. *Cell Adh Migr*. 2011 Sep-Oct;5(5):387-94. Review. PubMed PMID: 21975547; PubMed Central PMCID: PMC3218605.

Chou FS, Griesinger A, Wunderlich M, **Lin S**, Link KA, Shrestha M, Goyama S, Mizukawa B, Shen S, Marcucci G, Mulloy JC. **The THPO/MPL/Bcl-xL pathway is essential for survival and self-renewal in human pre-leukemia induced by AML1-ETO**. *Blood*. 2012 Feb 14. [Epub ahead of print] PubMed PMID: 22337712.

Coffindaffer-Wilson M, Craig MP, Hove JR. **Normal interstitial flow is critical for developmental lymphangiogenesis in the zebrafish**. *Lymphat Res Biol*. 2011;9(3):151-8. PubMed PMID: 22066745.

Daikoku T, **Cha J**, Sun X, Tranguch S, Xie H, Fujita T, Hirota Y, Lydon J, DeMayo F, Maxson R, Dey SK. **Conditional deletion of Msx homeobox genes in the uterus inhibits blastocyst implantation by altering uterine receptivity**. *Dev Cell*. 2011 Dec 13;21(6):1014-25. Epub 2011 Nov 17. PubMed PMID: 22100262; PubMed Central PMCID: PMC3241866.

Dohn TE, Waxman JS. **Distinct phases of Wnt/β-catenin signaling direct cardiomyocyte formation in zebrafish**. *Dev Biol*. 2012 Jan 15;361(2):364-76. Epub 2011 Nov 4. PubMed PMID: 22094017; PubMed Central PMCID: PMC3246556.

Du A, **McCracken KW**, Walp ER, Terry NA, Klein TJ, Han A, Wells JM, May CL. **Arx is required for normal enteroendocrine cell development in mice and humans**. *Dev Biol*. 2012 May 1;365(1):175-88. Epub 2012 Feb 24. PubMed PMID: 22387004; PubMed Central PMCID: PMC3322318.

Graham DL, **Amos-Kroohs RM**, Braun AA, Grace CE, Schaefer TL, Skelton MR, Williams MT, Vorhees CV. **Neonatal (+)-methamphetamine exposure in rats alters adult locomotor responses to dopamine D1 and D2 agonists and to a glutamate NMDA receptor antagonist, but not to serotonin agonists**. *Int J Neuropsychopharmacol*. 2012 Mar 6:1-15. [Epub ahead of print] PubMed PMID: 22391043.

Gu Y, Runyan C, Shoemaker A, Surani MA, Wylie C. **Membrane-bound steel factor maintains a high local concentration for mouse primordial germ cell motility, and defines the region of their migration**. *PLoS One*. 2011;6(10):e25984. Epub 2011 Oct 6. PubMed PMID: 21998739; PubMed Central PMCID: PMC3188585.

Hirota Y, **Cha J**, Yoshie M, Daikoku T, Dey SK. **Heightened uterine mammalian target of rapamycin complex 1 (mTORC1) signaling provokes preterm birth in mice**. *Proc Natl Acad Sci U S A*. 2011 Nov 1;108(44):18073-8. Epub 2011 Oct 24. PubMed PMID: 22025690; PubMed Central PMCID: PMC3207648.

Kramer EL, Hardie WD, **Mushaben EM**, Acciani TH, Pastura PA, Korfhagen TR, Hershey GK, Whitsett JA, Le Cras TD. **Rapamycin decreases airway remodeling and hyperreactivity in a transgenic model of noninflammatory lung disease**. *J Appl Physiol*. 2011 Dec;111(6):1760-7. Epub 2011 Sep 8. PubMed PMID: 21903885; PubMed Central PMCID: PMC3290353.

Lee MP, Yutzey KE. **Twist1 directly regulates genes that promote cell proliferation and migration in developing heart valves**. *PLoS One*. 2011;6(12):e29758. Epub 2011 Dec 29. PubMed PMID: 22242143; PubMed Central PMCID: PMC3248441.

Leslie JR, Imai F, **Zhou X**, Lang RA, Zheng Y, Yoshida Y. **RhoA is dispensable for axon guidance of sensory neurons in the mouse dorsal root ganglia**. *Front Mol Neurosci*. 2012;5:67. Epub 2012 May 22. PubMed PMID: 22661927; PubMed Central PMCID: PMC3357536.

Li-Kroeger D, Cook TA, Gebelein B. **Integration of an abdominal Hox complex with Pax2 yields cell-specific EGF secretion from Drosophila sensory precursor cells**. *Development*. 2012 May;139(9):1611-9. Epub 2012 Mar 21. PubMed PMID: 22438572; PubMed Central PMCID: PMC3317967.

Liu M, Bi F, **Zhou X**, Zheng Y. **Rho GTPase regulation by miRNAs and covalent modifications**. *Trends Cell Biol*. 2012 Jul;22(7):365-73. Epub 2012 May 7. PubMed PMID: 22572609; PubMed Central PMCID: PMC3383930.

Lu TX, Lim EJ, Wen T, Plassard AJ, Hogan SP, Martin LJ, Aronow BJ, Rothenberg ME.**MiR-375 is downregulated in epithelial cells after IL-13 stimulation and regulates an IL-13-induced epithelial transcriptome**. *Mucosal Immunol*. 2012 Jul;5(4):388-96. doi: 10.1038/mi.2012.16. Epub 2012 Mar 28. PubMed PMID: 22453679.

Lu TX, Hartner J, Lim EJ, Fabry V, Mingler MK, Cole ET, Orkin SH, Aronow BJ, Rothenberg ME. **MicroRNA-21 limits in vivo immune response-mediated activation of the IL-12/IFN-gamma pathway, Th1 polarization, and the severity of delayed-type hypersensitivity**. *J Immunol*. 2011 Sep 15;187(6):3362-73. Epub 2011 Aug 17. PubMed PMID: 21849676; PubMed Central PMCID: PMC3175642.

Lu TX, Sherrill JD, Wen T, Plassard AJ, Besse JA, Abonia JP, Franciosi JP, Putnam PE, Eby M, Martin LJ, Aronow BJ, Rothenberg ME. **MicroRNA signature in patients with eosinophilic esophagitis, reversibility with glucocorticoids, and assessment as disease biomarkers**. *J Allergy Clin Immunol*. 2012 Apr;129(4):1064-75.e9. Epub 2012 Mar 3. PubMed PMID: 22391115.

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Student Honors

- Acciani, T. – Supported by Choose Ohio First Scholarship
- Akunuru, S. – Supported by NIH Training Grant (Hematologic and Oncologic Diseases)
- Alqadah, A. – Supported by Choose Ohio First Scholarship
- Amos-Kroohs, R. –Supported by NIH Training Grant (Teratology)
- Balli, D. – Supported by Ryan Fellowship; Supported by NIH Training Grant (Pulmonary & Cardiovascular Biology)
- Bick, G. – Supported by Choose Ohio First Scholarship

- Cha, J. – Supported by NIH Training Grant (Perinatal Endocrinology); NHLBI Ruth L. Kirchenstein National Research Service Award for Individual Pre-doctoral MD/PhD Fellows
- Chapman, H. – Supported by NIH Training Grant (Teratology)
- Dohn, T. – Supported by Choose Ohio First Scholarship
- Gardner, M. – Supported by NIH Training Grant (Pulmonary & Cardiovascular Biology)
- Gu, Y. – Supported by Ryan Fellowship
- Hester, M. – Epilepsy Society Pre-doctoral Fellowship
- Kasberg, A. – Supported by NIH Training Grant (Teratology)
- Li-Kroeger, D. – Supported by Ryan Fellowship
- Lu, T. – NHLBI Ruth L. Kirchenstein National Research Service Award for Individual Pre-doctoral MD/PhD Fellows
- Sutherland, M. – Supported by NIH Training Grant (Pulmonary & Cardiovascular Biology)

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. Ronald Germain presented the Sixteenth Annual Richard Akeson Memorial Lectureship in conjunction with the annual Molecular and Developmental Biology Graduate Student Symposium in 2011.

In addition to the travel stipends, the program also instituted two new student achievement awards. The Akeson Award for Outstanding Contributions to the Graduate Program is awarded to a first or second year student with outstanding participation in student recruitment, hosting visiting seminar speakers, volunteering for University of Cincinnati events and other contributions. The Akeson Award for Academic Excellence is awarded to a student in the third year or beyond with a strong publication record, pre-doctoral fellowships, grants (both submitted and awarded) and presentations at national and international meetings. Nominations are accepted for both awards from MDB program faculty and students and awards are made in the spring. For 2012, the Akeson Award for Outstanding Contributions was awarded to Maria “Vicky” Gomez and the Akeson Award for Academic Excellence was awarded to Heather McCauley.

The following students received funding from the Richard A. Akeson Fellowship and Memorial Fund for travel in 2011 - 2012:

Student	Meeting	Presentation	Date
Zheng Zhang	Society for Developmental Biology 70th Annual Meeting *Chicago, Illinois*	Poster	7/20/11-7/24/11
Ying Gu	Society for Developmental Biology 70th Annual Meeting *Chicago, Illinois*	Poster	7/20/11-7/24/11
Sharina Desai	Society for Developmental Biology 70th Annual Meeting *Chicago, Illinois*	Poster	7/20/11-7/24/11
Nikki Glenn	Society for Developmental Biology 70th Annual Meeting *Chicago, Illinois*	Poster	7/20/11-7/24/11
Megan Rost	Society for Developmental Biology 70th Annual Meeting *Chicago, Illinois*	Poster	7/20/11-7/24/11
Mary Lee	Society for Developmental Biology 70th Annual Meeting *Chicago, Illinois*	Poster	7/20/11-7/24/11
Heather Chapman	Society for Developmental Biology 70th Annual Meeting *Chicago, Illinois*	Poster	7/20/11-7/24/11
Caitlin Braitsch	Society for Developmental Biology 70th Annual Meeting *Chicago, Illinois*	Poster	7/20/11-7/24/11

Jeeyeon Cha	44th Annual SSR Meeting *Portland, Oregon*	Poster	7/31/11-8/4/11
Heather McCauley	Montagna Symposium on the Biology of Skin *Stevenson, Washington*		