Experimental Hematology and Cancer Biology

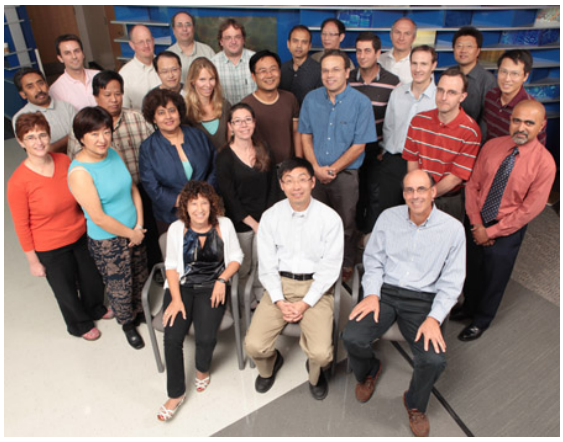
Cincinnati Children's

Division Details

Division Data Summary

Research and Training Details	
Number of Faculty	22
Number of Joint Appointment Faculty	14
Number of Research Fellows	33
Number of Research Students	15
Number of Support Personnel	89
Direct Annual Grant Support	$8,138,423
Direct Annual Industry Support	$121,107
Peer Reviewed Publications	90

Division Photo



Row 1: N Ratner, Y Zheng, J Degen
Row 2: D Pan, P Malik, MD Filippi, R Drissi, R Waclaw, A Kumar
Row 3: T Kalfa, R Meetei, S Wells, J Wu, J Mulloy, L Chow
Row 4: M Azam, F Guo, B DasGupta, N Nassar, G Huang
Row 5: D Starczynowski, M Flick, J Cancelas, P Andreassen, Q Pang, L Grimes

Division Highlights

Qishen Pang, PhD

Identification of leukemia-initiating cells (LICs) in FA AML patients and FA mice – We recently demonstrated that interleukin-3 receptor a (IL-3Ra) is a promising candidate as an LIC-specific antigen for FA AML. We are in the process of studying FA mouse LIC functionality using bone marrow transplantation assays.

Qishen Pang, PhD

Studies of the role ofFA proteins in protecting anti-oxidant genes from oxidative damage. – We showed that certain important genes functioning in anti-oxidant defense and reactive oxygen species (ROS) metabolism were significantly downregulated in FA samples compared to those of normal donors. We then demonstrated a novel role for the FA pathway in cellular antioxidant defense.

Qishen Pang, PhD

Studies of the natural antioxidant Salidroside in HSC maintenance. – Using several mouse models deficient for DNA repair pathways (including the FA pathway) known to be involved in oxidative DNA damage repair, we demonstrate that Salidroside protects quiescent HSPCs from oxidative stress-induced cycling through stimulation the activity of poly(ADP-ribose)polymerase-1 (PARP-1), a component of the base excision repair pathway.

Nancy Ratner, PhD

Hennigan et al. showed that the NF2 tumor suppressor regulates microtubule –based vesicle trafficking via the novel Rac, MLK and p38SAPK pathway.

Yi Zheng, PhD

We have published a series of studies related to rational design, screening and validation of lead inhibitors targeting RhoA GTPase and NOX2 enzymes, defining the pathologic roles of GTPases RhoA, Rac1 and Cdc42 in cancer and blood diseases, and revealing the essential signaling pathways of Rho GTPases in neural, eye, heart, and blood development.

Jose Cancelas, MD, PhD

Our research focus is on intrinsic and extrinsic (microenvironment) signals controlling stem cell function in hematopoietic tissues and in leukemia. Specific projects include: Rac GTPases inhibition in chronic myelogenous leukemia, Vav / Rac as a molecular target in pediatric acute lymphoblastic leukemia, and connexin-43 in bone marrow failure after cancer-related chemotherapy.

Jianqiang Wu

We have made progress in understanding the molecular mechanisms of Neurofibroma tumorigenesis under neurofibromatosis type 1, and established a preclinical therapeutic testing of neurofibroma in mouse.

Dao Pan

With collaboration with Dr. Clinton Joiner's group under NIH Sickle Cell Center, we co-published our study on K-Cl cotransporter gene expression during human and murine erythroid differentiation on *JBC*. Our study on the application of secreted Gaussia luciferase (Gluc) as a marker for in vivo bioluminescent monitoring of system protein delivery, as well as its natural biodistribution in mice has been published on Molecular Biotechnology.

Paul Andreassen

The Andreassen lab has discovered that a ubiquitin-dependent signaling pathway, involving the RNF8 E3 ubiquitin ligase and the RAP80 ubiquitin-binding protein, recruits the core machinery for homologous recombination to sites of DNA damage through PALB2.

Marie-Dominique Filippi

The overarching goal of the research program of Dr Filippi’s lab is to understand the molecular regulation of hematopoietic cell functions. Specifically, we have been investigating the role of cell shape and cytoskeleton reorganization in modulating hematopoietic stem cell self renewal and engraftment, and neutrophil migration and trafficking. To do so, we are using genetics knock out animal models of regulators of cytoskeleton, namely Rho GTPases, and state of the art microscopy techniques, including live cell imaging, and immunofluorescence microscopy and multispectral imaging flow cytometry (Amnis ImageStream). Recent major findings from our work is the identification of a new role for p190-B-RhoGAP as a regulator of hematopoietic stem cell self renewal and cell fate decision during cell division. Furthermore, we are now showing that p190-B does so by regulating cell shape and polarity that ultimately influences the balance of asymmetric/symmetric self renewal. Other research project is to dissect the process of cell migration in neutrophils. We have made majors contribution to this field. Notably, we recently showed that Cdc42 unexpectedly uses aMb2 integrin signaling for efficient directed migration. A further understanding of the mechanism underlying these functions may lead to novel protocol of stem cell expansion ex vivo and novel therapeutic approach to neutrophilic inflammation,

respectively.

Fukun Guo

We have made progress in studying the role of mTOR in stem cell/ progenitor cell differentiation, and in defining the role of Cdc42 and RhoA GTPases in T cell activation.

James Mulloy

Dissection of the molecular pathogenesis of MLL-fusion AML and AML1-ETO-associated AML. Showed the importance of the Rac/Bcl family of proteins in MLL-fusion AML and the possibility of targeting these proteins therapeutically. Defined the role that Thrombopoeitic/MPL/Bcl-xL plays downstream of the AML1-ETO oncogene.

Daniel Starczynowski

We performed an shRNA screen to identify modifiers of Lenalidomide, characterized movel TRAF6 transgenic knockout and overexpression mice, characterized a novel TIFAB knockout mouse, developed a novel xenograft model using MDS-derived patient cells. A research paper accepted on novel mechanisms of Bortezomib, and another research paper is being prepared for submission on targeting IRAK1 in MDS.

Carolyn Lutzko

I have made progress in developing gene therapy for patients with genetic diseases that are treatable through hematopoietic stem cell based therapies, developing iPSC lines from patient specific induced pluripotent stem cells to study the cell physiology of the disease and develop therapies, and designing new cell therapies for disease.

Ronald Waclaw

We are currently writing two manuscripts: One describing the effect of Shp2 (PTPN11) mutations on brain development, specifically in the development of myelinating oligodendrocytes. These findings are significant because Shp2 is mutated in the RAS related disorders, Noonan and LEOPARD syndrome. Patients in both of these syndromes exhibit neurocognitive defects. We hope to understand the neurodevelopmental abnormalities that occur when Shp2 mutations are expressed and that this will provide evidence towards the developmental basis of the behavioral phenotypes. The other manuscript is identifying the role of the Zic genes, which are zinc-finger transcription factors, in the forebrain. We have identified that a mouse model of Dandy-Walker syndrome (Zic1/4+/-) exhibits midline forebrain defects. This is significant because only cerebellar defects have been described in previous studies with this mouse.

Elke Grassman

My Lab has been awarded 2 large new contracts for work supporting gene transfer trials. This new work allows us to hire more staff and expand our services.

Johannes C.M. van der Loo

Contract manufacturing of research-grade and clinical grade viral vectors based on a fee-for-service model to support investigators locally, nationally and internationally with materials to support their research and phase I/II clinical trials.

Ruhikanta Meetei

We report the isolation and characterization of a novel 20-kDa FANCA-associated protein (FAAP20). We show that FAAP20 is an integral component of the FA nuclear core complex. We identify a region on FANCA that physically interacts with FAAP20, and show that FANCA regulates stability of this protein. FAAP20 contains a conserved ubiquitin-binding zinc-finger domain (UBZ), and binds K-63-linked ubiquitin chains in vitro. The FAAP20-UBZ domain is not required for interaction with FANCA, but is required for DNA-damage-induced chromatin loading of FANCA and the functional integrity of the FA pathway. These findings reveal critical roles for FAAP20 in the FA-BRCA pathway of DNA damage repair and genome maintenance.

Kakajan Komurov

We are interested in computational and experimental analyses of global molecular networks supporting tumorigenesis. Projects in the lab include development of novel computational tools and their use in integrated analyses of drug resistance networks alongside with experimentation.

Mathew Flick

Continued analysis of the pathogenesis of inflammatory arthritis including a publication highlighting the use of a novel targeting-agent with potential efficacy for diagnostic imaging and drug delivery. A new project has been initiated, funded by a Cincinnati Children's Hospital Medical Center DHC pilot and feasibility grant, to study the mechanisms by which coagulation factors drive the pathogenesis of fatty liver disease.

Jay Degen

Dr. J. L. Degen presented a “State-of-the-Art” lecture on Hemostatic Factors in Cancer at the American Society of Hematology (ASH) Conference in San Diego, December 10, 2011, as well as presented the Simon Karpatkin Memorial Lecture at the 6th International Conference on Thrombosis and Hemostasis Issues in Cancer, in Bergamo, Italy, April 20, 2012. In collaborative studies with investigators at the Rockefeller University, Dr. J. L. Degen’s laboratory has developed new insights into the cellular sources and biological importance of TGF-b1, a cytokine known to control cell proliferation, differentiation, immune cell function and thromboinflammatory disease process. Detailed studies reported in *Blood* of mice engineered to specifically lack platelet-derived TGF-b1 revealed that platelets contain the vast majority (>95%) of circulating TGF-b1, but the loss of platelet TGF-b1 does not alter hemostatic function in vivo. However, mice lacking platelet-derived TGF-b1 were found to be protected from the development of cardiac hypertrophy, fibrosis, and systolic dysfunction following a pressure overload challenge. Together with Dr. Punam Malik, interventions at the level of platelet-derived TGF-b1 are currently being explored as means of limiting cardiovascular pathologies associated with sickle cell disease.

Nicolas Nassar

My research focuses on understanding the structure/function relationship of signaling proteins involved in cancer propagation and initiation and on finding ways to inhibit them by targeted rational drug design. More specifically, we are targeting oncogenic Ras in cancer.

Theodosia Kalfa

The Kalfa lab had a significant publication in Blood demonstrating that erythroblast enucleation is a more complex process than previously thought requiring a multistep action of tubulin and filamentous actin, as well as lipid raft formation coordinated by Rac GTPases.

Lionel Chow

The Chow lab is studying a form of aggressive brain tumor called high-grade glioma. Using novel mouse models for this disease, we are investigating the molecular characteristics of different tumor subgroups as well as distinguishing features of invasive disease, which is responsible for treatment failure and patient mortality. We are also using these models to develop novel therapeutic approaches for this disease.

Benjamin Mizukawa

Our work demonstrating that Rac GTPase survival signaling through Bcl-2 proteins may be therapeutically targeted in MLL fusion-mediated acute myeloid leukemia was published in the journal *Blood*.

Janos Sumegi

Gene expression analysis of primary and secondary hemophagocytic lymphohistiocytosis. Molecular analysis of fusion oncogenes and their products in pediatric soft tissue sarcomas.

Punam Malik

We will be starting the clinical trial for gene therapy for Sickle Cell Disease. We have also began working on gene therapy for HLH with Drs. Jordan and Risma. A clinical trial for Sickle Nephropathy has begun.

Division Publications

1. Akbar H, Shang X, Perveen R, Berryman M, Funk K, Johnson JF, Tandon NN, Zheng Y. **Gene targeting implicates Cdc42 GTPase in GPVI and non-GPVI mediated platelet filopodia formation, secretion and aggregation**. *PLoS One*. 2011; 6:e22117.
2. Ali AM, Pradhan A, Singh TR, Du C, Li J, Wahengbam K, Grassman E, Auerbach AD, Pang Q, Meetei AR. **FAAP20: a novel ubiquitin-binding FA nuclear core complex protein required for functional integrity of the FA-BRCA DNA repair pathway**. *Blood*. 2012; 119:3285-94.
3. Bindels EM, Havermans M, Lugthart S, Erpelinck C, Wocjtowicz E, Krivtsov AV, Rombouts E, Armstrong SA, Taskesen E, Haanstra JR, Beverloo HB, Dohner H, Hudson WA, Kersey JH, Delwel R, Kumar AR. **EVI1 is critical for the pathogenesis of a subset of MLL-AF9-rearranged AMLs**. *Blood*. 2012; 119:5838-49.
4. Bosco EE, Kumar S, Marchioni F, Biesiada J, Kordos M, Szczur K, Meller J, Seibel W, Mizrahi A, Pick E, Filippi MD, Zheng Y. **Rational design of small molecule inhibitors targeting the Rac GTPase-p67(phox) signaling axis in inflammation**. *Chem Biol*. 2012; 19:228-42.
5. Cancelas JA. **Adhesion, migration, and homing of murine hematopoietic stem cells and progenitors**. *Methods Mol Biol*. 2011; 750:187-96.
6. Cancelas JA. **On how Rac controls hematopoietic stem cell activity**. *Transfusion*. 2011; 51 Suppl 4:153S-159S.
7. Cancelas JA, Rugg N, Fletcher D, Pratt PG, Worsham DN, Dunn SK, Marschner S, Reddy HL, Goodrich RP. **In vivo viability of stored red blood cells derived from riboflavin plus ultraviolet light-treated whole blood**. *Transfusion*. 2011; 51:1460-8.
8. Cancelas JA, Rugg N, Pratt PG, Worsham DN, Pehta JC, Banks K, Davenport RD, Judd WJ. **Infusion of P-Capt prion-filtered red blood cell products demonstrate acceptable in vivo viability and no evidence of neoantigen formation**. *Transfusion*. 2011; 51:2228-36.
9. Chauhan BK, Lou M, Zheng Y, Lang RA. **Balanced Rac1 and RhoA activities regulate cell shape and drive invagination morphogenesis in epithelia**. *Proc Natl Acad Sci U S A*. 2011; 108:18289-94.
10. Chernoguz A, Crawford K, Donovan E, Vandersall A, Berglund C, Cripe TP, Frischer JS. **EGFR inhibition fails to suppress vascular proliferation and tumor growth in a Ewing's sarcoma model**. *J Surg Res*. 2012;

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11. Chow LM, Baker SJ. **Capturing the molecular and biological diversity of high-grade astrocytoma in genetically engineered mouse models**. *Oncotarget*. 2012; 3:67-77.
12. Degen JL, Palumbo JS. **Hemostatic factors, innate immunity and malignancy**. *Thromb Res*. 2012; 129 Suppl 1:S1-5.
13. Dietz DM, Sun H, Lobo MK, Cahill ME, Chadwick B, Gao V, Koo JW, Mazei-Robison MS, Dias C, Maze I, Damez-Werno D, Dietz KC, Scobie KN, Ferguson D, Christoffel D, Ohnishi Y, Hodes GE, Zheng Y, Neve RL, Hahn KM, Russo SJ, Nestler EJ. **Rac1 is essential in cocaine-induced structural plasticity of nucleus accumbens neurons**. *Nat Neurosci*. 2012; 15:891-896.
14. Dorris K, Fouladi M, Davies SM, Perentesis JP, Lawrence JM, Chow LM, Assa'ad A, Uygungil B, Jodele S. **Severe allergic reactions to thiol-based cytoprotective agents mesna and amifostine in a child with a supratentorial primitive neuroectodermal tumor**. *J Pediatr Hematol Oncol*. 2011; 33:e250-2.
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28. Hoskins EE, Morreale RJ, Werner SP, Higginbotham JM, Laimins LA, Lambert PF, Brown DR, Gillison ML, Nuovo GJ, Witte DP, Kim MO, Davies SM, Mehta PA, Kovacic MB, Wikenheiser-Brokamp KA, Wells SI. **The Fanconi Anemia Pathway Limits Human Papillomavirus Replication**. *J Virol*. 2012; 86:8131-8.
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Faculty, Staff, and Trainees

Faculty Members

Yi Zheng, PhD, Professor

Leadership Division Director; Endowed Chair; Program Leader; Executive Co-Director, CBDI

Research Interests Signaling and Drug Discovery Program

Paul Andreassen, PhD, Assistant Professor

Research Interests Signaling and Drug Discovery Program

Jose Cancelas, MD, PhD, Associate Professor

Leadership Program Leader; Director, Flow Cytometry Core Facility

Research Interests Stem Cell Program

Jay Degen, PhD, Professor

Leadership Program Leader

Research Interests Hemostasis and Thrombosis Program

Marie-Dominique Filippi, PhD, Assistant Professor

Research Interests Stem Cell Program

Matthew Flick, PhD, Assistant Professor

Research Interests Hemostasis and Thrombosis Program

Elke Grassman, PhD, HCLD, Assistant Professor

Leadership Director, TTDSL

Research Interests Translational Core Laboratories

Fukun Guo, PhD, Assistant Professor

Research Interests Signaling and Drug Discovery Program

Kakajan Komurov, PhD, Assistant Professor

Research Interests Cancer Biology and Neural Tumors Program

Carolyn Lutzko, PhD, Associate Professor

Leadership Scientific Director of the Cell Processing and Manipulation Laboratory

Research Interests Translational Core Laboratories

Punam Malik, MD, Professor

Leadership Program Leader; Director of Translational Core Laboratory

Research Interests Hematology and Gene Therapy Program

Ruhikanta Meetei, PhD, Assistant Professor

Research Interests Signaling and Drug Discovery Program

Shyra Miller, PhD, Assistant Professor

Research Interests Cancer Biology and Neural Tumors Program

James Mulloy, PhD, Associate Professor

Leadership Program Leader

Research Interests Hematological Malignancy Program

Nicolas Nassar, PhD, Associate Professor

Research Interests Signaling and Drug Discovery Program

Dao Pan, PhD, Assistant Professor

Research Interests Hematology and Gene Therapy Program

Qishen Pang, PhD, Associate Professor

Research Interests Signaling and Drug Discovery Program

Nancy Ratner, PhD, Professor

Leadership Program Leader; Endowed Chair

Research Interests Cancer Biology and Neural Tumors Program

Daniel Starczynowski, PhD, Assistant Professor

Research Interests Hematological Malignancy Program

Johannes van der Loo, PhD, Associate Professor

Leadership Director, Aseptic Processing Laboratories; Director, Vector Production Facility; Chair, Institutional Biosafety Committee

Research Interests Translational Core Laboratories

Ronald Waclaw, , Assistant Professor

Research Interests Cancer Biology and Neural Tumors Program

Jianqiang Wu, MD, MS, Instructor

Research Interests Cancer Biology and Neural Tumors Program

Joint Appointment Faculty Members

Mohammed Azam, PhD, Assistant Professor (Cancer Pathology)

Research Interests Hematology Malignancy Program

Lionel Chow, MD, PhD, Assistant Professor (Oncology)

Research Interests Cancer Biology and Neural Tumors Program

Biplab DasGupta, PhD, Assistant Professor (Oncology)

Research Interests Cancer Biology and Neural Tumors Program

Rachid Drissi, PhD, Assistant Professor (Oncology)

Research Interests Cancer Biology and Neural Tumors Program

Hartmut Geiger, PhD, Associate Professor (Adjunct)

Research Interests Stem Cell Program

Leighton Grimes, PhD, Associate Professor (Immunobiology)

Research Interests Hematology Malignancy Program

Gang Huang, PhD, Assistant Professor (Cancer Pathology)

Research Interests Hematology Malignancy Program

Theodosia Kalfa, MD, PhD, Assistant Professor (Hematology)

Research Interests Hematology Malignancy Program

Ashish Kumar, MD, PhD, Assistant Professor (Bone Marrow Transplantation and Immune Deficiency)

Research Interests Hematology Malignancy program

Benjamin Mizukawa, MD, Instructor (Oncology)

Research Interests Hematological Malignancy Program

Eric Mullins, MD, Assistant Professor (Hematology)

Research Interests Hemostasis and Thrombosis Program

Joseph Palumbo, MD, Associate Professor (Hematology)

Research Interests Hemostasis and Thrombosis Program

Janos Sumegi, MD, PhD, Professor (Blood and Marrow Transplantation and Immune Deficiency)

Research Interests Hematology and Gene Therapy Program

Susanne Wells, PhD, Associate Professor (Oncology)

Research Interests Cancer Biology and Neural Tumors Program

Trainees

- **Shailaja Akunuru, PhD**, 2011, University of Cincinnati
- **Gregory Bick, MS**, 2010, University of Cincinnati
- **Gasilina Anjelika,** , 2011
- **Kyung-Hee Chang, PhD**, PGY-4, University of Florida
- **Wei Du, MD, PhD**, 2007, Graduate School of Medicine, Tohoku University, Japan
- **Marthe-Sandrine Eiymo Mwa Mpollo, Msc**, University of Toronto
- **Salim El-Amouri, PhD**, 2010, Medical University of South Carolina
- **Chris Evelyn, PhD**, 2009, University of Michigan-Ann Arbor
- **Yuxin Feng, PhD**, 2007, BioChain Institute
- **Susuma Goyama, PhD**, 2009, Graduate School of Medicine, University of Tokyo
- **Andrea Griesinger, MS**, 2010, Colorado School of Mines
- **Li Guo, PhD**, 2006, Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China
- **Robert Hennigan,**
- **Ashwini Hinge, PhD**, PL-2, National Center for Cell Science, Pune University of Pune, Mahrashtra, India
- **Novelle Kimmich, PhD**, UC Irvine
- **Sachin Kumar, PhD**, PL-2, Central Drug Research Institute (CDRI), Lucknow India
- **Leesa Sampson, PhD**, 2010, Vanderbilt University
- **Jie Li, PhD**, 2007, Academy of Sciences, China
- **Shan Lin, MS**, 2010, Tsinghua University, Beijing China
- **Kevin Link, PhD**, 2007, University of Cincinnati
- **Wei Liu, PhD**, 2011
- **Debra Mayes, PhD**, 2006, University of Arkansas for Medical Sciences
- **Rachel Oberst, BS**, PGY-V, University of Louisville
- **Nicholas Olshavsky, PhD**, 2010, University of Cincinnati
- **Jung-Young Park, PhD**, 2010, National Institutes of Health
- **Ami V. Patel, PhD**, 2009, University of Louisville
- **Deanna Patmore, BS**, PGY-V, Voorhees College
- **Aran Pradhan, PhD**, 2011, ICEGB, New Delhi, India
- **Joni Ullman Prasad,** , PGY-V, Ohio State University
- **Garrett Rhyasen, BSc**, PGY-2, University of Victoria, Canada
- **Amitava Sengupta, PhD**, 2008, Jadavpur University/Saha Institute of Nuclear Physics Kolkata, India
- **Haley Titus-Mitchell, MS**, PGY-II, Wright State University
- **Melinda Varney, PhD**, PDF, Marshall University, WV
- **Shiv Viswanathan, PhD**, 2003, University of Cincinnati
- **Inuk Zandvakili, MD, PhD**, 2009, The University of Western Ontario
- **Shuangmin Zhang, PhD**, PL-2, University of Texas

- **Xuan Zhou, PhD**, 2008
- **Benjamin Mizukawa, MD**, 2008, University of Utah School of Medicine
- **Thiyam Singh, PhD**, 2004, CDRI Lucknow India
- **Abdullah Ali, PhD**, 2005, IISC, Banglaore, India
- **Lisa Trump, PhD**, PG1, University of Illinois
- **Jing Fang, PhD**, Maine Medical Center
- **Junqi Yang, PhD**, PL-1, University of Cincinnati
- **Mei Dai, PhD**, 2010, Institute of Materia Medica, Chinese Academy of Sciences, P.R. China
- **Jing-Fen Han, PhD**, 2011, University of Medicine & Dentistry of New Jersey
- **John Lawrence, PhD**, 2011, University of Cincinnati
- **Tuan Dinh, PhD**, 2011, University of Cincinnati
- **Jed Kendall, BS**, PGY-II, Brigham Young University
- **Meghan Bromwell, PhD**, 2011, College of Mount St. Joseph
- **Meghan Brundage, MS**, PGY-VI, University of Cincinnati
- **Preeti Tandon, PhD**, 2011, University of Cincinnati
- **Mathieu Sertorio, PhD**, 2011, University Aix-Marseille II. INSERM, France
- **Kwangmin Choi, PhD**, 2010, Indiana University
- **Xiaoli Li, PhD**, 2011, Chinese Center for Disease Control and Prevention
- **Surya Amarachintha, PhD**, 2011, Bowling Green State University
- **Eri Taniguchi Ishikawa, PhD**, PGY-8, Kyoto University, Japan
- **Malav Madhu, MS**, 2011, Wright State University
- **Julia Tasset, BS**, 2011
- **Ramesh Nayak, PhD**, PGY-1, University of Texas at Tyler
- **Michelle Myles, BS**, 2011
- **Ashley Ficker, BS**, 2009, University of Cincinnati
- **Cuiping Zhang, PhD**, PGY-1, Peking Union Medical College, China
- **Ming Liu, PhD**, 2010
- **Xun Shang, PhD**, 2008
- **Matt Grogg, PhD**, 2010, University of Dayton
- **Kristy Stengel, PhD**, 2008
- **Ahmed Ramadan Salem Gomaa,**
- **Liang Li,**
- **Laura Murley,**
- **Swarnava Roy,** , 2010, NIH
- **Rajat Singhania,**
- **Yue Zhang,**
- **Harini Raghu, PhD**, 2009
- **Diamantis Konstantinidis, PhD**
- **Swati Tiwari,** , 2011, Delhi, India
- **Archana Shaesta,** , 2011, University of Kentucky

Division Collaboration

Division of Bone Marrow Transplant and Immune Deficiency » Stella Davies, Kasiani Myers, and Parinda Mehta

Oxidative stress and bone marrow failure in FA

Division of Endocrinology » Susan Rose

Endocrine defect in FA children

Division of Pediatric Gastroenterology, Hepatology and Nutrition » Kris Steinbrecher

Inflammatory responses in FA hematopoiesis

Division of Ophthalmology » Richard Lang

New DOD grant funded

Division of Radiology » Diana Lindquist

DOD grant; publication

Division of Oncology » John Perentesis

NIH grant; publication

Division of Developmental Biology » Alex Kuan and Yutaka Yoshida

Co-publications

Division of Molecular Cardiology » Jeff Molkentin

Co-publications

Division of Ophthomology » Richard Lang

Co-publications

Division of Oncology » Susa Wells

Co-publications

Division of Biomedical Informatics » Jarek Meller

Co-publications

Division of Hematology » Clinton Joiner and Theodosia Kalfa

Sickle Cell Center Grant

Division of Human Genetics » Greg Grabowski

CNS abnormality n murine MPSD type I model as well as Gauche disease model

Division of Reproductive Science » Satoshi Namekawa

Epigenetic regulation in Meiosis and DNA repair

Division of Infectious Diseases » Rhonda Cardin

Role of hematopoietic cells in mechanisms of latency of CMV. My role is to assist in the analysis of M33-mediated signaling by wild type and mutant CMV viruses, and in analysis of *akt* activation as a M33-mediated survival mechanism, especially in cells of the myeloid lineage, in which CMV establishes latency

Division of Molecular Immunology » Chris Karp

Role of ATF3 in neutrophil functions. My role of to assist in the analysis of the functions of neutrophils lacking ATF3 expression, in particular in neutrophil migration using ex vivo migration assays and in vivo lung inflammatory model. I am also directly helping Dr Karp's graduate student Nick in experiment design, analysis and interpretation.

Division of Pediatric Ophthalmology » Richard Lang

Provided reagents

Division of Critical Care Medicine » Basilia Zingarelli

Performed experiments

Division of Cellular and Molecular Immunology » Lee Grimes

Xenograft leukemia models

Division of Cellular and Molecular Immunology » Clair Chougnet and Julio Aliberti
Humanizing mice

Divisin of Bone Marrow Transplantation and Immunodeficiency » Ashish Kumar
Role of Meis1 in AML

Divisin of Pathology » Gang Huang
Role of RUNX1 in AML

Division of Rheumatology » John Harley
Immune response to EBV in humanized mice

Division of Hematology » Joe Palumbo
Role of thrombin in AML

Division of Cellular and Molecular Immunology » Lee Grimes
Interaction of TIFAB and GFI1

Division of Immunology » David Hildeman
Role of TRAF6 in T cells

Division of Pulmonary Medicine » Jeff Whitsett and Anne Karina Perl
Use flow cytometric analysis to identify lung stem cells: Investigator on U01 grant (PI: Whitsett)

Division of Pulmonary Medicine » Bruce Trapnell
Development of stem cell and gene therapies for hereditary Pulmonary Alveolar Proteinosis (Co-PI: T1 grant funded; Co-PI: R01 application pending)

Heart Institute » Jeff Robbins and Jeff Towbin
Differentiation of iPSC into cardiac lineages

Division of Molecular Cardiovascular Biology » Stephanie Ware
Studying the role of Zic3 derived cells in the forebrain. Zic3 is a midline gene and Dr. Ware's lab has generated a Zic3-lacZ mouse that reports dorsal medial midline progenitors in the brain. My lab is characterizing these cells.

Division of Neonatology and Pulmonary Biology » Vladimir Kalinichenko
studying the transcription factor Foxm1 in the development of forebrain neurons. Foxm1 expression is associated with high-grade compared to low-grade gliomas. My lab is studying the role of this gene in the proliferative “neurogenic” niche in the forebrain

Division of Oncology » Lionel Chow
Studying the role of Foxm1 in a genetic model of high-grade astrocytoma.

Division of Oncology » Biplab DasGupta
Studying the downstream mechanisms of abnormal Shp2 signaling caused from Shp2-GOF mutations observed in Noonan Syndrome.

Division of Human Genetics » Mehdi Keddache
Pluripotent cell line characterization for core grant

Division of Human Genetics » Kejian Zhang
Support development of specialized Fanconi Anemia testing

Division of Oncology » Parinda Mehta

Support of Fanconi Anemia Program

Division of Bone Marrow Transplantation and Immune Deficiency » Lisa Filipovich

Support of the SCID-X1 gene transfer trial

Division of Neonatology and Pulmonary Biology » Bruce Trapnell

Grant application to support hPAP gene therapy approach

Division of Ophthalmology » Richard Lang

New DOD grant; publication

Division of Radiology » Diana Lindquist

DOD grant; publication

Division of Oncology » John Perentesis

NIH grant; publication

Division of Bone Marrow Transplantation and Immune Deficiency » Stella Davies, Kasiani Myers, and Parinda Mehta

Oxidative stress and bone marrow failure in FA

Division of Endocrinology » Susan Rose

Endocrine defect in FA children

Division of Pediatric Gastroenterology » Kris Steinbrecher

Hepatology and nutrition: Inflammatory responses in FA hematopoiesis

Division of Radiology » Dianna Lindquist

Moue MRI imaging

Division of Oncology » Jose Cancelas

Role of Vav3 in acute lymphoblastic leukemia

Division of Neonatal and Pulmonary Biology » Jeffrey Whitsett

NIH grant research on transcriptional control of respiratory epithelial progenitor cells (KLF-5)

Division of Immunobiology » Lee Grimes

NIH grant research on transcriptional control of respiratory epithelial progenitor cells (KLF-5)

Division of Hematology » Theodosia Kalfa, Suvarnama Pushkaran, and Diamantis Konstantinidis

Signaling and cytoskeletal requirements in erythroblast enucleation

Division of Biostatistics & Epidemiology » MiOk Kim

This collaboration involves combining survival analysis with network analysis methodology to study requisite molecular networks driving glioblastoma tumorigenesis under specific oncogenic backgrounds.

Division of Rheumatology » Sherry Thornton

Hemostatic factors and arthritis pathogenesis

Division of Molecular Immunology » Senad Divanovic

Coagulation factors and the pathogenesis of fatty liver disease

Division of Hematology » Joseph Palumbo

This collaboration focuses on mechanism linking procoagulants to malignancy.

Division of Hematology » Eric Mullins

This collaboration focuses on the role of thrombin-mediated proteolysis in neuroinflammatory disease.

Division of Neurosurgery » Charles Stevenson

Xenograft models of pediatric brain tumors

Division of Pathology » Lili Miles

Evaluation of mouse high-grade gliomas

Division of Genetics » Mehdi keddache and Kejian Zhang

Development of a high-throughput gene chip for the diagnosis of known and discovery of new genetic mutations causing hemolytic anemia due to erythrocyte cytoskeleton disorders, e.g. spherocytosis, elliptocytosis

Division of Rheumatology » Alexei Grom and Michael Barnes

Expression analysis of hemophagocytic lymphohistiocytosis and macrophage activation syndrome

Division of Human Genetics » Kejian Zhang

Mutation analysis of hemaphagocytic lymphohistiocytotis and related disorders

Division of Bone Marrow Transplantation and Immunodeficiency » Lars Wagner

Analysis of minimal residual disease in patients with Ewing Sarcoma

Division of Allergy and Immunobiology; Division of Immunobiology » Kimberly Risma and Michael Jordan

Gene therapy for HLH

Division of Neonatology and Pulmonary Biology » Jeffrey Whitsett and Tim LeCras

Pulmonary pathology in Sickle Cell Disease

Heart Institute » Jeffrey Towbin, Michael Taylor, and Tom Kimball

Cardiac aspects of Sickle Cell Disease

Grants, Contracts, and Industry Agreements

Grant and Contract Awards		Annual Direct
ANDREASSEN, P		
FANCD2 Monoubiquitination in DNA Damage Responses		
National Institutes of Health		
R01 HL 085587	07/08/08-06/30/13	$225,000
AZAM, M		
To Study the Molecular Mechanisms of "BCR/ABL Addiction" in Chronic Myeloid Leukemia		
Leukemia Research Foundation		
	07/01/11-06/30/12	$100,000
Mitogenic Activities in Neurofibromatosis		
National Institutes of Health		
R01 CA155091	05/01/12-03/31/17	$207,500
CANCELAS-PEREZ, J		
Gap Junction Intercellular Communication in Bone Marrow		
Department of Defense Army		
W81XWH1110296	04/01/11-09/30/12	$33,063
Improving Stem Cell Mobilization by the EGFR Inhibitor Erlotinib		
National Institutes of Health(P2D Bioscience)		
R34 HL 108403	02/15/12-01/31/13	$98,337
Rac GTPase Inhibition in Chronic Myelogenous Leukemia		
National Institutes of Health		
R01 HL 087159	04/06/09-02/28/13	$247,500

CHOI, K

Regulation of Cellular Growth and Differentiation
National Institutes of Health(University of Cincinnat)
T32 CA 059268 | 12/6/11-12/5/12 | $49,998

DEGEN, J

Analysis of Staphylococcus Aureus Host Interactions
National Institutes of Health(Texas A & M)
R01 AI 020624 | 09/30/10-08/31/12 | $51,239

Thrombin-Mediated Proteolysis in Neuroinflammatory Disease
National Institutes of Health
R01 HL096126 | 08/01/09-04/30/13 | $247,500

DEGEN, J / MALIK P

Hemostatic Factors and Sickle Cell Disease
National Institutes of Health
R01 HL 112603 | 01/01/12-11/30/16 | $250,000

FILIPPI, M

Regulation of Hematopoietic Stem Cell Self Renewal
National Institutes of Health
R21 HL 104458 | 08/01/10-07/31/12 | $125,000

Regulation of Neutrophil Migration and Polarity
National Institutes of Health
R01 HL 090676 | 03/01/10-02/28/15 | $247,500

FLICK, M

Mechanisms Linking the Hemostatic Protease Thrombin to Arthritic Disease
National Institutes of Health
R01 AR 056990 | 08/10/09-07/31/14 | $171,072

Digestive Health Center - Pilot & Feasibility Study
National Institutes of Health
P30 DK 078392 (Bezerra) | 06/01/12-05/31/13 | $36,667

GEIGER, H

Activated Protein C for Treatment of Radiation Combined Injury
National Institutes of Health(Blood Center of Wisconsin, Inc.)
R33 AI 080557 | 09/13/10-08/31/13 | $79,070

HUANG, G

Molecular Mechanisms of Leukemogenesis Mediated by MLL-Partial Tandem Duplication (MLL-PTD)
Ohio Cancer Research Associates
07/01/11-06/30/13 | $27,273

Targeting the "Warburg Effect" in Cancer
Cancer Free Kids
06/01/12-05/31/13 | $20,000

LINK, K

Environmental Carcinogenesis and Mutagenesis
National Institutes of Health(University of Cincinnati)
T32 ES 007250 | 09/01/10-06/30/12 | $53,494

MALIK, P

Ameliorating Sickle Nephropathy and Pulmonary Hypertension
National Institutes of Health
R34 HL 108752 | 08/18/11-06/30/14 | $150,000

Cincinnati Cell Characterization Core
National Institutes of Health(University of Maryland)

U01 HL 099997 09/01/10-04/30/13 $354,674

Development of Safe and Efficient Gene Therapy Strategies
National Institutes of Health(Fred Hutchinson Cancer Research Center)
R01 HL 098489 01/21/10-12/31/14 $48,833

PlGF-HIF 1a-miRNA Axis in Sickle Pulmonary Hypertension
National Institutes of Health(University of Southern California)
R01 HL111372 01/01/12-12/31/16 $161,480

Cincinnati Cell Characterization Core - Per assay
National Institutes of Health(University of Maryland)
U01 HL 099997 09/01/10-04/30/13 $18,986

Cincinnati Center for Clinical/Translational Sciences & Training
National Institutes of Health(University of Cincinnati)
UL1 RR 026314 04/03/09-03/31/14 $40,294

MEETEI, R

Functional and Molecular Characterization of Two New Members of the Bloom Syndrome Complex
Ohio Cancer Research Associates
07/01/10-06/30/12 $27,272

MULLOY, J

Next Generation DNMT-1 Depletion Therapy for Leukemia
Department of Defense Army(Cleveland Clin Lerner Col of Med of CWRU)
W81XWH-09-1-0671 09/01/09-09/01/12 $141,405

Novel Therapeutic Target in Leukemia Stem Cells
Alex's Lemonade Stand Foundation
07/01/10-06/30/12 $100,000

Rac Signaling in MLL Leukemia
The Leukemia and Lymphoma Society
07/01/10-06/30/15 $104,762

NASSAR, N

Ras, Cycling and Inhibition
National Institutes of Health
R01 CA115611 03/01/11-02/28/13 $108,236

OLSHAVSKY, N

Regulation of Cellular Growth and Differentiation
National Institutes of Health(University of Cincinnati)
T32 CA59268 12/06/10-12/05/12 $32,303

PAN, D

Genetic Therapy for CNS Manifestations in MPS I via BBB-Targeted Protein Delivery
National Institutes of Health
R01 NS 064330 09/30/08-08/31/13 $214,375

PANG, Q

Role of FA Proteins in Hematopoiesis
National Institutes of Health
R01 HL 076712 04/01/10-03/31/15 $250,000

Role of Tumor Necrosis Factor in Leukemogenesis
The Leukemia and Lymphoma Society
07/01/08-06/30/13 $103,115

Targeted Improvement in Stem Cell Therapy for Leukemia and Bone Marrow Failure Syndromes
National Institutes of Health

R01 CA 157537	02/01/11-12/31/15	$207,500

PATEL, A

Identification and study of Novel Genes Critical to survival of MPNSTS
Department of Defense

W81XWH1110144	06/01/11-05/31/13	$50,000

RATNER, N

Cincinnati Center for Neurofibromatosis Research
National Institutes of Health

P50 NS 057531		09/15/08-06/30/13	$1,033,483
Ratner, N	Project A	$48,069	
Cripe, T	Project B	$106,147	
Rizvi, T	Project C	$81,328	
Perentesis, J	Project 1	$297,055	
Ratner, N	Project 2	$224,070	
Ratner, N	Project 3	$276,814	
		$	

Mitogenic Activities in Neurofibromatosis
National Institutes of Health

R01 NS 028840	09/15/11-07/31/16	$231,250

Modelling Brain Defects in NF1
Department of Defense

W81XWH1010116	04/01/10-03/31/13	$251,091

STARCZYNOWSKI, D

Deregulation of TIFAB in Myelodysplastic Syndrome
American Society of Hematology

	07/01/11-06/30/14	$50,000

Regulation and Function of TIFAB in Myelodysplastic Syndrome
Department of Defense

W81XWH1110468	06/01/11-05/31/14	$132,295

Identification and Characterization of Genes in del(5q) Myelodysplastic Syndrome
National Institutes of Health

R01 HL111103	12/05/11-11/30/16	$250,000

VAN DER LOO, J

AKTA Ready Liquid Chromatography System
National Institutes of Health

S10 RR 031721	07/01/11-06/30/12	$175,119

VARNEY, M

Environmental Carcinogenesis and Mutagenesis
National Institutes of Health(University of Cincinnati)

T32 ES 007250	05/01/12-04/30/14	$49,198

WU, J

STAT3 in Neurofibroma Tumorigenesis and Therapy
Department of Defense Army

W81XWH1110259	07/01/11-06/30/14	$129,364

STAT3 in Neurofibroma Tumorigenesis and Therapy
Ohio State University

	08/01/10-07/31/12	$49,205

ZHENG, Y/ GEIGER, H

Lineage Determination and Tissue HomeOstasis in the Aged Hematopoietic System
National Institutes of Health

R01 AG 040118	08/01/11-07/31/16	$225,000

ZHENG, Y

Cincinnati Center for Excellence in Molecular Hematology
National Institutes of Health

P30 DK 090971	09/30/10-06/30/15		$482,569
Zheng, Y	Admin Core	$89,909	
Grabowsky, G	Genomics and Genetics Core	$63,000	
Cancelas, J	Cell Analysis and Sorting Core	$65,112	
Malik, P	Translational Core	$165,412	
Mulloy, J	Xenotransplant and Transgenic Core	$68,766	
Zheng, Y	Summer Students	$30,370	

Rac GTPase-Specific Small Molecular Inhibitors
National Institutes of Health

R01 CA 141341	03/24/09-01/31/14	$165,237

Training Program in Pediatric Hematologic and Oncologic Diseases
National Institutes of Health

T32 HL 091805	09/01/08-08/31/13	$164,652

Rac GTPases in the Mammalian Brain Development
National Institutes of Health (CCHMC (Developmental Biology-Dr. Kuan))

R01 NS 056435	07/01/08-06/30/12	$165,237

ZHENG, Y / MULLOY J

Targeting Cdc42 in Leukemia Stem Cells
National Institutes of Health

R01 CA 150547	03/10/10-01/31/15	$201,275

Current Year Direct **$8,138,423**

Industry Contracts

FLICK, M

Novo Nordisk Pharmaceuticals	$53,159

MALIK, P

HemaQuest Pharmaceuticals, Inc	$4,719

MULLOY, J

Celgene Cellular Therapeutics	$63,229

Current Year Direct Receipts **$121,107**

Service Collaborations

GRASSMAN, E

Battelle	$183,361
Neogenomic	$11,593

Current Year Direct **$194,954**

Funded Collaborative Efforts

MALIK, P

Macrophage-based Human Gene Therapy for Hereditary PAP

National Institutes of Health
Trapnell, B 12/15/10-11/30/12 5%

Role of Anti-GM-CSF Antibodies in Myeloid Cell Function
National Institutes of Health
Trapnell, B 04/01/11-03/31/16 5%

ANDREASSEN, P

DNA Damage Response Pathways in Meiotic Sex Chromosome Inactivation
National Institutes of Health
Namekawa, F 08/01/11-07/31/16 7.5%

Total **$8,454,484**