Division Details

Division Data Summary

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Division Highlights

First clinical tumor profiling to guide therapy in relapsed leukemia

In a nationally unique program, the Division of Oncology is now creating molecular profiles of tumor cells from patients in real time in order to guide therapy. Initial efforts focus on relapsed leukemias, but the program will expand to include solid tumors. Although an array of novel molecularly targeted therapies are available to patients with relapsed and refractory cancers through consortium and investigator-initiated early phase clinical trials, it is sometimes unclear which therapies are most likely to show activity in a specific patient. Through the use of real-time tumor profiling technologies, Cincinnati Children’s oncologists can assess which molecular pathways are fueling the growth of each patient’s cancer and guide patients toward new drugs thought to be active in those pathways.

In a closely related initiative, the Childhood Cancer Drug Discovery Laboratory at Cincinnati Children’s is screening a library of more than 340,000 potential drugs against childhood and young adult cancer cells collected through our specimen banking protocols to identify new candidate drugs. Simultaneously, we are using our specimen libraries to profile large numbers of cancer cells, identifying molecular signatures that may be represent new druggable targets.

National awards recognize early-career faculty as among the next generation of leaders in translational oncology
Early-career faculty in the Division of Oncology continue to earn national recognition and substantial grant support for their translational cancer research programs. Lionel Chow, MD, PhD, Assistant Professor of Pediatrics in the Division of Oncology and a member of the Brain Tumors Program, received a prestigious Sontag Foundation Distinguished Scientist Award. The award, given to just five researchers nationally each year, provides $600,000 to support Dr. Chow’s work on molecular targeting in high-grade astrocytoma. The Chow lab works to develop novel animal models of high-grade brain tumors and to identify and develop new targeted therapies, focusing on the PI3-Kinase/AKT/MTOR pathway.

Christine Phillips, MD, Assistant Professor of Clinical Pediatrics and a member of the Leukemia/Lymphoma Program, has received an AACR-FNAB Career Development Award for Translational Cancer Research to support her work to elucidate a genetic model of cytarabine sensitivity in children with acute myeloid leukemia.

Neuro-Oncology Program Launches International Diffuse Intrinsic Pontine Glioma Registry

Professor of Pediatrics and Medical Director of Neuro-Oncology Maryam Fouladi, MD, MSc, is the principal investigator of the newly launched International Diffuse Intrinsic Pontine Glioma (DIPG) Registry, a cooperative project to build a comprehensive registry of demographic, clinical, radiographic, and pathology data for DIPG, a rare pediatric brain tumor with a very poor prognosis. The registry is linked to a bioinformatics repository of molecular data generated from analysis of tumor samples. CCHMC is the coordinating center for the North American operations of the registry. The registry has embarked on two initial research projects: a study of long-term survivors of DIPG to attempt to correlate key clinical, radiographic, pathologic, and biological characteristics with outcome, and the first-ever epidemiological study to determine incidence patterns of DIPG in North America for 2000 – 2010. Collaborating investigators in Europe, Australia, and Asia expect to launch the registry in these regions in the upcoming year.

Significant Publications


The purpose of this study was to estimate the maximum-tolerated dose (MTD), describe dose-limiting toxicities (DLTs), and characterize pharmacokinetic properties of MK-0752, a gamma secretase inhibitor, in children with refractory or recurrent CNS malignancies. Twenty-three eligible patients were enrolled: 10 males (median age, 8.1 years; range, 2.6 to 17.7 years) with diagnoses of brainstem glioma (n = 6), ependymoma (n = 8), medulloblastoma/primary neuroectodermal tumor (n = 4), glioblastoma multiforme (n = 2), atypical teratoid/rhabdoid tumor (n = 1), malignant glioma (n = 1), and choroid plexus carcinoma, (n = 1). Seventeen patients were fully evaluable for toxicity. No DLTs occurred in the three patients enrolled at 200 mg/m(2)/dose. At 260 mg/m(2)/dose, DLTs occurred in two of six patients, both of whom experienced grade 3 ALT and AST. There were no grade 4 toxicities; non-dose-limiting grade 3 toxicities included hypokalemia and lymphopenia. Population pharmacokinetic values (% coefficient of variation) for MK-0752 were apparent oral clearance, 0.444 (38%) L/h/m(2); apparent volume of distribution, 7.36 (24%) L/m(2); and k(a), 0.358 (99%) hr(-1). Conclusion MK-0752 is well-tolerated in children with recurrent CNS malignancies. The recommended phase II dose using the 3 days on followed by 4 days off schedule is 260 mg/m(2)/dose once daily.


The objective was to develop instruments that measure the severity of infantile hemangiomas (Hemangioma Severity Scale [HSS]) and the complications of infantile hemangiomas for longitudinal use (Hemangioma Dynamic Complication Scale [HDCS]). The HSS and the HDCS were developed through the collaborative effort of members of the Hemangioma Investigator Group Research Core, an expert multi-institutional research group. After development of the scales, 13 pediatric dermatologists used the HSS to score 20 different hemangiomas. In addition, 12 pediatric dermatologists used the HDCS to score hemangioma-related complications for 24 clinical scenarios. Interrater and intrarater reliability was measured for both scales. For the HSS, interrater reliability and intrarater reliability exceeded 99%. Similarly, the HDCS had a high rate of interrater agreement; for individual items, agreement among raters was 67% to 100%, with most clinical scenarios demonstrating greater than 90% agreement. Intrarater reliability was excellent for all individual items of the HDCS. The HSS and the HDCS are reliable scales that can be used to measure the severity of infantile hemangiomas, including the severity of complications for longitudinal use.


The Rac family of small Rho GTPases coordinates diverse cellular functions in hematopoietic cells including adhesion, migration, cytoskeleton rearrangements, gene transcription, proliferation, and survival. The integrity of Rac signaling has also been found to critically regulate cellular functions in the initiation and maintenance of hematopoietic malignancies. Using an in vivo gene targeting approach, we demonstrate that Rac2, but not Rac1, is critical to the initiation of acute myeloid leukemia in a retroviral expression model of MLL-AF9 leukemogenesis. However, loss of either Rac1 or Rac2 is sufficient to impair survival and growth of the transformed MLL-AF9 leukemia. Rac2 is known to positively regulate expression of Bcl-2 family proteins toward a prosurvival balance. We demonstrate that disruption of downstream survival signaling through antiapoptotic Bcl-2 proteins is implicated in mediating the effects of Rac2 deficiency in MLL-AF9 leukemia. Indeed, overexpression of Bcl-xL is able to rescue the effects of Rac2 deficiency and MLL-AF9 cells are exquisitely sensitive to direct inhibition of Bcl-2 family proteins by the BH3-mimetic, ABT-737. Furthermore, concurrent exposure to NSC23766, a small-molecule inhibitor of Rac activation, increases the apoptotic effect of ABT-737, indicating the Rac/Bcl-2 survival pathway may be targeted synergistically.


Expression of the high-risk human papillomavirus (HPV) E6 and E7 oncogenes is essential for the initiation and maintenance of cervical cancer. The repression of both was previously shown to result in activation of their respective tumor suppressor targets, p53 and pRb, and subsequent senescence induction in cervical cancer cells. Consequently, viral oncogene suppression is a promising approach for the treatment of HPV-positive tumors. One well-established method of E6/E7 repression involves the reexpression of the viral E2 protein which is usually deleted in HPV-positive cancer cells. Here, we show that, surprisingly, bovine papillomavirus type 1 (BPV1) E2 but not RNA interference-mediated E6/E7 repression in HPV-positive cervical cancer cells stimulates cellular motility and invasion. Migration correlated with the dynamic formation of cellular protrusions and was dependent upon cell-to-cell contact. While E2-expressing migratory cells were senescent, migration was not a general feature of cellular senescence or cell cycle arrest and was specifically observed in HPV-positive cervical cancer cells. Interestingly, E2-expressing cells not only were themselves motile but also conferred increased motility to admixed HeLa cervical cancer cells. Together, our data suggest that repression...
of the viral oncogenes by E2 stimulates the motility of E6/E7-targeted cells as well as adjacent nontargeted cancer cells, thus raising the possibility that E2 expression may unfavorably increase the local invasiveness of HPV-positive tumors.


Identification of nodal involvement is important for treatment planning in patients with rhabdomyosarcoma, and is facilitated by sentinel node biopsy. Although it is employed primarily for extremity tumors, we report using sentinel node biopsy in a patient with parameningeal rhabdomyosarcoma arising in the ethmoid sinus. Lymphoscintigraphy with single photon emission computed tomography following injection of tracer at the tumor site helped identify contralateral cervical node involvement not previously recognized by physical exam, cross sectional imaging, or other functional imaging. This case demonstrates how information from sentinel node identification and biopsy can change therapy recommendations in patients with parameningeal rhabdomyosarcoma.

Division Publications


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**Faculty, Staff, and Trainees**

**Faculty Members**

**John Perentesis, MD, FAAP,** Professor

**Leadership** Deb Kleisinger Endowed Chair of Novel Cancer Treatments; Executive Co-Director, Cancer and Blood Diseases Institute; Director, Division of Oncology; Director, Leukemia/Lymphoma Program; Cincinnati Children's Principal Investigator, Children's Oncology Group (COG); Cincinnati Children's Principal Investigator, National Cancer Institute Pediatric Phase I Consortium

**Research Interests** New anticancer drug development; molecular oncogenesis and pharmacogenetics in high risk leukemia, lymphoma and pediatric cancers

**Michael Absalon, MD, PhD,** Assistant Professor

**Leadership** Director, Medical Education Program; Associate Director, Leukemia/Lymphoma Program

**Research Interests** New therapeutics; relapsed leukemia and lymphoma, post-transplant lymphoproliferative disease, T-cell lymphoma

**Denise M. Adams, MD,** Professor

**Leadership** Medical Director, Comprehensive Hemangiomas and Vascular Malformation Clinic; Director, Hematology/Oncology Fellowship Program

**Research Interests** Angiogenesis, endothelial cell proliferation, vascular anomalies, mTOR inhibition as a therapeutic approach to complex vascular anomalies

**Karen Burns, MD,** Assistant Professor

**Leadership** Clinical Director, Cancer Survivor Center

**Research Interests** Childhood cancer survival; fertility preservation and outcomes; adolescent and young adult outcomes and quality of life

**Lionel Chow, MD,** Assistant Professor

**Research Interests** Molecular genetics of pediatric high-grade glioma, animal models of brain tumors, translational therapeutics for gliomas

**Timothy Cripe, MD, PhD,** Professor
Leadership Research Director, Musculoskeletal Tumor Program; Co-Medical Director, Office for Clinical and Translational Research; Director of Pilot and Collaborative Studies, Center for Clinical and Translational Science and Training

Research Interests Mechanistic, preclinical, and clinical studies of oncolytic virotherapy, antiangiogenesis, and signal transduction inhibitors for sarcomas, neuroblastoma and other pediatric solid tumors

Biplab Dasgupta, PhD, Assistant Professor
Research Interests Brain development, energy metabolism, brain cancer

Rachid Drissi, MD, Assistant Professor
Research Interests Replicative senescence, telomere disruption signaling to DNA damage pathways

Maryam Fouladi, MD, FRCP, Professor
Leadership Medical Director, Neuro-Oncology Program; Cincinnati Children's Principal Investigator, Collaborative Ependymoma Research Network (CERN)
Research Interests Novel drug development for the treatment of children with recurrent or poor prognosis brain tumors

James I. Geller, MD, Associate Professor
Leadership Medical Director, Kidney and Liver Tumors Program; Co-Medical Director, Retinoblastoma Program
Research Interests Developmental therapeutics for pediatric solid tumors, especially liver and kidney tumors and retinoblastoma

Adrienne Hammill, MD, Assistant Professor
Research Interests New approaches to the assessment and treatment of hemangiomas and vascular malformations

Trent Hummel, MD, Instructor
Research Interests New therapeutics in neuro-oncology; diffuse intrinsic pontine glioma, neurofibromatosis type 1 and 2 related tumors, biomarker development

Beatrice Lampkin, MD, Professor Emerita
Research Interests Blood and bone marrow morphology and the significance thereof in relationship to patients' case histories

Benjamin Mizukawa, MD, Instructor
Research Interests Pediatric leukemia and lymphoma; role of small Rho GTPases in leukemogenesis and leukemic stem cell biology and their potential as therapeutic targets in acute myeloid leukemia

Rajaram Nagarajan, MD, Assistant Professor
Leadership Outpatient and Inpatient Clinical Director; Director of Cancer Control and Outcomes Research, Cancer Survivor Center
Research Interests Bone tumors; functional and quality of life outcomes following cancer therapy

Maureen O'Brien, MD, Assistant Professor
Leadership Associate Director, Leukemia/Lymphoma Program
Research Interests High-risk acute lymphoblastic leukemia; novel therapies for relapsed leukemia and lymphoma; complications of leukemia therapy

Christine Phillips, MD, Instructor
Research Interests Developmental therapeutics for acute myeloid leukemia; pharmacogenomics of cytarabine
and other chemotherapeutic agents

Lars Wagner, MD, Associate Professor

**Leadership** Medical Director, Musculoskeletal Tumor Program; Cincinnati Children's Principal Investigator, Sarcoma Alliance for Research Through Collaboration (SARC)

**Research Interests** Developmental therapeutics for neuroblastoma, sarcomas, and brain tumors

Brian D. Weiss, MD, Associate Professor

**Leadership** Associate Director for Safety and Compliance, Cancer and Blood Diseases Institute; Medical Director, Neuroblastoma Program; Cincinnati Children's Principal Investigator, New Approaches to Neuroblastoma Therapy Consortium (NANT)

**Research Interests** Targeted agents for neurofibromatosis type 1-related malignancies (including plexiform neurofibromas, optic pathway gliomas, and juvenile myelomonocytic leukemia); chemotherapy safety

Susanne Wells, MD, Associate Professor

**Leadership** Director, Epithelial Carcinogenesis and Stem Cell Program

**Research Interests** Epithelial malignancies, human papillomavirus biology and new targets of the HPV E6/E7 oncogenes, the role of epithelial stem cells in carcinogenesis

Joint Appointment Faculty Members

Mi-Ok Kim, PhD, Associate Professor (Center for Epidemiology and Biostatistics)

Ahna Pai, PhD, Assistant Professor (Adherence Psychology)

Saulius Sumanas, PhD, Assistant Professor (Developmental Biology)

Mary Sutton, MD, Associate Professor (Neurology)

Clinical Staff Members

- Carina Braeutigam, MD
- Vasudha Narayanaswamy, MD

Trainees

- Michael Bishop, MD, PL-VI, Children's Mercy Hospital, Kansas City
- Christopher Dandoy, MD, PL-V, Miami Children's Hospital
- Kathleen Dorris, MD, PL-VII, Children's Memorial Hospital, Northwestern University
- Sarah Fitzgerald, MD, PL-VI, Rainbow Babies & Children's Hospital/University of Cleveland
- Dawn Pinchasik, MD, PL-V, Children's Hospital of Pittsburgh
- Jennifer Pope, MD, PL-VI, Medical College of Wisconsin
- Ralph Salloum, MD, PL-V, Detroit Medical Center/Wayne State University
- Jennifer Williams, MD, PL-V, T.C. Thompson Children's Hospital/University of Tennessee

Division Collaboration

**Behavioral Medicine and Clinical Psychology; Human Genetics; Neurology; Pathology; Physical Medicine and Rehabilitation; Radiology** » M. Ernst, L. Bao, T. Smolarek, M. Sutton, R. McMasters, J. Mo, D. Pruitt, and M. Gelfand

- Leukemia/Lymphoma Program clinical multidisciplinary care (J. Perentesis, M. Absalon, K. Burns, A. Hammill, M. O'Brien, C. Phillips)

**Biomedical Informatics; Biostatistics and Epidemiology; Clinical Pharmacology; Pathology; Radiology** » B.
Aronow, M. Kim, A. Vinks, D. Witte, M. Gelfand, and A. Towbin
Scholar Training Program in Pediatric Oncology Developmental Therapeutics and Clinical Pharmacology, funded by the Hyundai Hope on Wheels Foundation (J. Perentesis, M. Fouladi)

Adolescent Medicine; Behavioral Medicine and Clinical Psychology; Biostatistics and Epidemiology; Human Genetics; Neurology; Physical Medicine and Rehabilitation » L. Ayensu-Coker, D. Drotar, M. Kim, S. Knapke, R. Hopkin, M. Sutton, and D. Pruitt
Scholar Training Program in Cancer Survivorship, funded by the Hyundai Hope on Wheels Foundation (J. Perentesis, K. Burns, R. Nagarajan)

Surgical Services » R. Azizkhan and G. Tiao
Surgical services for oncology patients; Children's Oncology Group clinical research activities

UC Department of Radiation Oncology » J. Breneman and R. Lavigne
Radiation oncology clinical services for oncology patients; Children's Oncology Group clinical research activities

Human Genetics » L. Bao and T. Smolarek
Genetic services for oncology patients; Children's Oncology Group clinical research activities

Pathology » D. Witte, M. Collins, J. Yin, J. Mo, R. McMasters, and L. Miles
Pathology services for oncology patients; Children's Oncology Group clinical research activities

Behavioral Medicine and Clinical Psychology » D. Drotar and A. Pai
Adherence research; "Promoting Treatment Adherence in Adolescent Leukemia" (NIH)

Radiology » M. Gelfand and A. Towbin
Nuclear medicine services for oncology patients; Children's Oncology Group clinical research activities

Endocrinology » S. Rose and M. Rutter
Endocrinology services for oncology patients; Children's Oncology Group and other clinical research activities

Physical Medicine and Rehabilitation » D. Pruitt
Rehabilitation services for oncology patients; Children's Oncology Group and other clinical research activities

Biomedical Informatics; Human Genetics; Developmental and Behavioral Pediatrics; Biostatistics and Epidemiology » B. Aronow, T. Smolarek, D. Schonfeld, and M. Kim
Down syndrome leukemia research: etiology and risk factors, pharmacogenetics of therapy and outcomes (J. Perentesis)

Pathology; Radiology; Surgical Services » M. Gelfand, S. Sharp, A. Towbin, J. Yin, and T. Maugins
Clinical services for neuroblastoma patients; clinical research related to neuroblastoma (J. Perentesis, B. Weiss)

University of Cincinnati Drug Discovery Center » R. Papoian
Pediatric leukemia, solid tumor, and brain tumor drug discovery screening (J. Perentesis, B. Weiss, M. Absalon, M. O'Brien)

Neurosurgery; Pathology; Radiology » T. Maugins, J. Yin, M. Gelfand, and S. Sharp
Neuroblastoma Program: (B. Weiss, R. Nagarajan)


Human Genetics; Neurology; Clinical Pharmacology; Radiology; Neurosurgery; Ophthalmology; Orthopaedic Surgery; Physical Medicine and Rehabilitation; Pathology » E. Schorry, R. Hopkin, A. Vinks, A.
Multidisciplinary clinical services for patients with neurofibromatosis; clinical research related to
neurofibromatosis, including national clinical trial of mTOR inhibition to treat NF1-related plexiform
neurofibromas (B. Weiss, J. Perentesis, T. Hummel)

Experimental Hematology and Cancer Biology; Pathology; University of Cincinnati Department of Cancer
and Cell Biology; University of Minnesota » N. Ratner, M. Collins, G. Thomas, S. Kozma, and D. Largaespada
Cincinnati Center of Neurofibromatosis Research (P50) (J. Perentesis, T. Cripe)

Pathology » L. Miles
ACNS0822: a randomized phase II/III study of suberoylanilide hydroxamic acid (SAHA) (IND# 71976) and local
irradiation or temozolomide and local irradiation or arsenic trioxide and local irradiation followed by maintenance
bevacizumab (IND# 7921) and irinotecan in children with newly diagnosed high-grade glioma (M. Fouladi, R.
Drissi)

Human Genetics » X. Qi
Testing SapC nanoparticle for anti-glioma activity in vivo (L. Chow)

Pathology » L. Miles
Characterization of murine brain tumors and collection of pediatric glioma samples (L. Chow)

Neurosurgery » C. Stevenson
Xenograft models of pediatric brain tumors (L. Chow)

Obstetrics and Gynecology » L. Ayensu-Coker
Fertility Consultation Service for oncology patients (K. Burns)

Obstetrics and Gynecology; Christ Hospital » L. Ayensu-Coker and S. Lindheim
Cincinnati chapter of the Oncofertility Consortium

UC Department of Cancer and Cell Biology Proteomics Core » K. Greis
Phosphoproteomic analysis of glioblastoma (B. DasGupta)

UC Drug Discovery Center » R. Papoian
Small molecule inhibition of AMP kinase (B. DasGupta)

Developmental Biology » K. Campbell
Understanding the role of AMP kinase in mammalian forebrain development (B. DasGupta)

Pathology » K. Setchell
Analysis of metabolites and nucleotides in the developing brain (B. DasGupta)

Imaging Research Center » D. Lindquist
Proton and phosphorus MRS to examine brain metabolites in the postnatal brain (B. DasGupta)

Neurology; Ophthalmology; Radiology » D. Rose, C. West, and J. Leach
Visual pathway research for children with retinal or optic pathway tumors (J. Geller)

Ophthalmology » J. Augsburger
A pilot study of intravenous topotecan and vincristine in combination with subconjunctival carboplatin for
patients with a history of bilateral retinoblastoma and refractory/recurrent intraocular disease (IND# 104,942) (J.
Geller)

Human Genetics; Pathology; Surgical Services » N. Leslie, A. Gupta, and G. Tiao
Screening children affected by hepatoblastoma for familial adenomatous polyposis (FAP) and a retrospective
review of clinical and pathology features of children with hepatoblastoma with or without FAP (J. Geller)
Human Genetics » N. Leslie
Pediatric Hereditary Cancer Predisposition Clinic (J. Geller)

Surgical Services; Gastroenterology, Hepatology and Nutrition; Developmental Biology; Radiology; Pathology » J. Nathan, M. Alonso, F. Ryckman, G. Tiao, M. Leonis, J. Bucuvalas, K. Campbell, A. Towbin, K. Kukreja, K. Bove, and A. Gupta
Liver transplantation clinical services and clinical research activities for hepatoblastoma patients (J. Geller)

Nephrology; UC Division of Hematology/Oncology » J. Bissler, M. Czyzk-Krzeska, O. Rixe, and G. Thomas
UC/CCHMC Renal Tumor Working Group (J. Geller)

Infectious Diseases; Investigational Pharmacy; Radiology; Crusade Labs » B. Connelly, M. Cloughessy, D. Lagory, J. Racadio, A. Towbin, M. Brown, and J. Connor
Phase I trial of HSV1716 (J. Geller)

Infectious Diseases; Investigational Pharmacy; Radiology; Experimental Hematology and Cancer Biology; Jennerex Biotherapeutics » B. Connelly, M. Cloughessy, D. Lagory, J. Racadio, A. Towbin, H. van der Loo, and D. Kirn
Phase I trial of JX-594 (J. Geller)

Radiology; General and Thoracic Surgery; Pathology » A. Towbin, D. von Allmen, and K. Bove
Director: Multidisciplinary Solid Tumor Board - a weekly educational session pertaining to solid tumors, for all levels of care providers (J. Geller).

Radiology; Ophthalmology » T. Abruzzo and J. Augsburger
Protocol Chair: CCHMC IARB1 – (IND# 111358) - A Pilot Study of Intra-Ophthalmic Artery Topotecan Infusion for the Treatment of Retinoblastoma (J. Geller).

Pediatric General and Thoracic Surgery; Immunobiology; Molecular Immunology; Pulmonary Medicine; Bioceros » J. Frischer, D. Hildeman, S. Divanovic, E. Janssen, and L. Boon
Proangiogenic inflammatory response to oncolytic HSV injection in preclinical models (T. Cripe)

Immunobiology; Molecular Immunology » D. Hildeman and E. Janssen
Role of dendritic cells is sensing oncolytic HSVs in cancer (T. Cripe)

Pathology; The Ohio State University; University of Pittsburgh » M. Collins, A. Chiocca, B. Kaur, J. Gloriosos, and W. Goins
Receptor-mediated resistance to oncolytic HSV in neuroblastoma (T. Cripe)

Experimental Hematology and Cancer Biology; Biostatistics and Epidemiology; Radiology; Washington University in St. Louis; Harvard University; University of California, San Francisco; House Research Institute; National Institutes of Health » N. Ratner, J. Wu, M. Kim, D. Lindquist, D. Gutmann, K. Cichowski, K. Shannon, M. Giovannini, A. McClatchey, and E. Dombi
Children's Tumor Foundation Neurofibromatosis Preclinical Consortium (T. Cripe)

General and Thoracic Surgery; Biomedical Informatics » T. Crombleholme and B. Aronow
Development of a midkine-regulated oncolytic Herpes virus (T. Cripe)

Experimental Hematology and Cancer Biology; Pathology » N. Ratner, J. Cancelas, and M. Collins
EYA4 in MPNST (T. Cripe)

Immunobiology » D. Hildeman
Regulatory T cells in oncolytic HSV virotherapy (T. Cripe)

Surgical Services; Otolaryngology; Dermatology; Radiology; Pathology; Cardiology; Gastroenterology,

Hemangioma and Vascular Malformation Center, clinical services and clinical research, including a clinical trial of rapamycin and sirolimus for complicated vascular anomalies, a vascular tumor registry, and a vascular anomaly tissue repository (D. Adams, A. Hammill)

Gastroenterology, Hepatology and Nutrition; Radiology; Nephrology; Cardiology; Pathology » N. Yazigi, A. Brody, J. Goebel, R. Spicer, K. Uzark, and D. Witte

Post-Transplant Lymphoproliferative Disease Working Group (M. Absalon)

Pathology » D. Witte

Cincinnati Children's to develop an assay for High-grade patents eligibility (R. Drissi)

Center for Professional Excel Rsch & EBP » R. Pickler

Local and Systemic Responses and Epi-Genetic Influences on Preterm Birth among Hispanic Women (R. Drissi)

Biology » G. Guasch

To determine telomerase activity and telomere length in cells over-expressing hTERT (R. Drissi)

Grants, Contracts, and Industry Agreements

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<td>CHOW, L Micro-RNA Expression in Pediatric High-Grade Glioma Bear Necessities Pediatric Cancer Fdn - 08/01/11-07/31/12</td>
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<td>Molecular Targeting of High-Grade Astrocytoma The Sontag Foundation - 10/01/11-09/30/15</td>
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<td>Molecular Targeting of Pediatric High-Grade Glioma St. Baldrick's Foundation 07/01/11-06/30/14</td>
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<td>Acidic Phospholipid-Selective Treatment for Neuroblastoma</td>
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<td>DORRIS, K</td>
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<td>DRISSI, R</td>
<td>Biology Studies in the First Phase I Trial of a Telomerase Inhibitor in Children with Refractory or Recurrent Solid Tumors and Lymphomas</td>
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<td>FOULADI, M</td>
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<td>Establishment of an International Diffuse Intrinsic Pontine Glioma (DIPG) Registry</td>
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<td>HAMMILL, A</td>
<td>Ontogeny and Quantitative Multimodal Skin Imaging of Infantile Hemangiomas</td>
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### Virotherapy on Primary Neuroblastoma Cells

- **WANG, P-Y**
- **Alex's Lemonade Stand Foundation**
- **07/01/10-06/30/12**
- **$41,250**

### Fanconi Anemia and HPV Transformation

- **WELLS, S**
- **National Institutes of Health**
- **R01 CA 102357**
- **09/28/09-08/31/14**
- **$191,834**

### Industry Contracts

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOULADI, M</td>
<td>Genentech, Inc</td>
<td>$30,800</td>
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<td>GELLER, J</td>
<td>Bayer HealthCare Pharmaceuticals, Inc.</td>
<td>$25,000</td>
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<td>WEISS, B</td>
<td>CHLA - NANT</td>
<td>$15,574</td>
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<td>ABSALON, M</td>
<td>Children's Healthcare of Atlanta</td>
<td>$3,332</td>
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<td>CRIPE, T</td>
<td>Jennerex Biotherapeutics</td>
<td>$88,250</td>
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<td>WAGNER, L</td>
<td>Abraxis BioScience, LLC</td>
<td>$16,178</td>
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<td></td>
<td>Amgen, Inc</td>
<td>$1,016</td>
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</table>

### Current Year Direct Receipts

- **$1,789,135**

### Funded Collaborative Efforts

- **WELLS, S**
  - **Fanconi Anemia as a Model for Susceptibility to Human Papillomavirus Infection**
  - **National Institutes of Health**
  - **Butsch-Kovacic**
  - **07/01/11-06/30/16**
  - **3%**

### Total

- **$1,969,285**