

CURRICULUM VITAE

NAME Charles Keller, MD

DATE 12/27/2017

PRESENT POSITION AND ADDRESS

Academic Rank: Scientific Director
Member

Department/ Pediatric Cancer Biology
Division: Children's Cancer Therapy Development Institute

Professional 12655 S.w. Beaverdam Road-WEST
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II. EDUCATION

Undergraduate and Graduate (Include Year, Degree, and Institution):

1988 – 1989 Junior Year Abroad, University of Edinburgh
1990 B.S.E. in Biomedical Engineering, m.c.l. with honors, Tulane University
1995 M.D., Baylor College of Medicine

Postgraduate (Include Year, Degree, and Institution):

1992 – 1993 Predoctoral Fellow in the Dept. of Cell Biology, Baylor College of Medicine
1995 Predoctoral Research Fellow, MD Anderson Cancer Center
1995 - 1998 Intern and Resident, Baylor College of Medicine
1996 – 1998 Postdoctoral Research Fellow, MD Anderson Cancer Center
1998 – 2001 Fellowship, Pediatric Hematology-Oncology, University of Utah

Certification (Include Board, Number, Date, and Recertification):

American Board of Pediatrics (Pediatrics), Certified 10/1998 (#064728), Recertified 01/2006, exp.12/31/2012
American Board of Pediatrics (Pediatric Hematology-Oncology), Certified 11/2004 (#001799) exp.12/31/2011

Licenses (Include State, Date, Status, Number, and Renewal Date):

Medicine - State of Texas, Inactive, #K4721, start 10/2005, exp. 08/31/2015 (now inactive)
Medicine - State of Utah, Active, #360961-1205, start 10/2005, exp. 01/31/2020

III. PROFESSIONAL EXPERIENCE

Children's Cancer Therapy Development Institute (cc-tdi.org)

Scientific Director; Member

July 2014 - Current

Colorado State University

Affiliate Faculty, Department of Clinical Sciences

July 2014 - Current

Southwest Foundation for Biomedical Research
Adjunct Assistant Scientist, Department of Genetics

December 2006 - Current

Portland Shriners Hospital for Children Research Center
Adjunct Member

July 2013 - Current

Consultant, NCI CTEP [Pediatric Preclinical Testing Program](#)

2010 – 2015

PREVIOUS APPOINTMENTS

Academic (Include Year, Position, and Institution):

Oregon Health & Science University (OHSU)

Associate Professor (Provisional), Department of Pediatrics

July 2010 – July 2011

Associate Professor, Department of Pediatrics

July 2011 – Dec 2014

Tarshis Endowed Professorship

2010 - 2014

Founding Faculty Member, Pediatric Cancer Biology Program

July 2010 – Dec 2012

Founder, Pediatric Preclinical Testing Initiative (Keller laboratory)

July 2010 – Dec 2014

Faculty Member, OHSU Program in Cancer Biology

2011 – 2014

Adjunct Faculty, Department of Cell & Developmental Biology (graduate school mechanism)

2011 – 2014

Member, Knight Cancer Institute (Solid Tumor Program)

2010 – 2014

Member, Oregon Stem Cell Center

2010 – 2014

University of Texas Health Science Center at San Antonio (UTHSCSA)

Assistant Professor, Department of Cellular & Structural Biology

January 2005 – 2010

Investigator, Greehey Children's Cancer Research Institute

Adjunct Assistant Professor, Department of Pediatrics

Director, Small Animal Imaging Resource Facility at GCCRI

Director, Mouse Histology Resource Facility at GCCRI

Member, San Antonio Cancer Institute (SACI)

Core Faculty, UTSA/UTHSCSA Joint Graduate Program in Biomedical Engineering

July 2008 – 2010

Faculty, Center for Biomedical Neuroscience

July 2008 – 2010

Leader, GCCRI Pediatric Preclinical Testing Initiative

July 2008 – 2010

Director, Small Animal Imaging Program, Inst. for Integration of Medicine & Science (CTSA)

January 2009 – 2010

University of Utah

Instructor, Division of Hematology-Oncology, Department of Pediatrics

August 2001 – 2005

NCI K08-Funded Mentored Physician-Scientist, Capecchi Laboratory

August 2001 – 2005

Adjunct Assistant Professor, Department of Bioengineering

March 2004 – 2006

Associate Member, Utah Center for Advanced Imaging Research

November 2003 – 2005

Director, University of Utah Small Animal Imaging Core Facility

November 2002 – 2005

Industry Experience

Numira Biosciences (www.numirabio.com)

Salt Lake City, UT

Co-Founder, Consultant

This bioengineering company commercializes some of the conditional mouse genetic and small animal imaging tools developed in my laboratory (UPSTO AO-UTSK:412US/10902073 Notice of Allowance 01/24/2012).

First Ascent Biomedical (www.firstascentbio.com)

Portland, OR

Co-Founder, Consultant

This biomedical company develops computational predictions of effective drug combinations for relapsed solid tumor cancer patients, canine and human.

IV. SCHOLARSHIP

As a physician-scientist, my laboratory is devoted to the development of novel molecular therapies for advanced childhood tumors associated with high morbidity or mortality. The long-term emphasis of my laboratory's research

is molecularly-targeted therapies to halt progression or induce regression for gross residual disease, metastatic disease and relapsed disease. To achieve these goals, my laboratory has traditionally utilized physiologically-accurate, genetically-engineered mouse models (GEMMs) of soft tissue sarcomas including alveolar & embryonal rhabdomyosarcoma and non-rhabdomyosarcoma soft tissue sarcomas (NRSTS) as well as medulloblastoma. In parallel, we also develop primary tumor cell cultures of pediatric cancers for preclinical validation studies. Our approach has been to study these childhood cancers in the context of development and muscle biology. By providing the scientific community a centralized knowledge base and experimental resources of validated and credentialed models, we hope to recruit not only cancer biologists but also developmental biologists, muscle biologists and engineers to the investigation of these devastating soft tissue sarcomas.

Our publications that highlight the leadership our group has sought to demonstrate by way of the disease models we have developed and investigated to uncover basic science & translational opportunities in sarcoma. Some of our sentinel findings include the first demonstration that **many translocation-mediated oncogenes are not expressed at a constant level, but are expressed in a cell-cycle phase specific manner** (G2 in the case of Pax3:Foxo1). We have also established that tumor-initiating mutations such as Pax3:Foxo1 are dispensable for tumor maintenance, but critically important for treatment resistance and tumor evolution through a process called **checkpoint adaptation**, which is borrowed by cancer cells from yeast. And although it might have seemed improbable at the onset, the **cell-of-origin** studies conducted by our laboratory have been the most informative in the development of potential new therapies for sarcomas. Specifically, the *PLoS Genetics* and *Genes & Development* publications below have resulted in **3 clinical trial concepts and trials** for adults and children with rhabdomyosarcoma and the open pediatric phase I trial for entinostat [NCT02780804/ADV1513 (*nb.* a phase IB cohort expansion for rhabdomyosarcoma is actively being planned)].

Contribution to Science

1. My basic science research program in the biology of pediatric cancers has been focused on sarcomas. This has required a knowledge and engagement with normal developmental biology, as well as normal stem cell biology – particularly of muscle. Efforts to bridge these areas has led to frequent multi-disciplinary collaborations, in each case having diagnostic or therapeutic implications. We have made the first demonstration that **normal stem cells** (muscle stem cells) **are co-opted to facilitate cancer progression** (metastasis of muscle cancer).
2. Model system development was an important early aspect of our laboratory. These technologies are key features of the mouse models being characterized by this grant application. At 5-11 alleles per model, our work is “genetically fine-tuned” to cover the spectrum of soft tissue sarcomas. We also work diligently to share these models.
3. With mentoring from predecessors including Peter J. Houghton, I have taken the responsibility to make basic & preclinical pediatric cancer research tangible at the national clinical trial level. This includes not only developing expertise in preclinical research, but also taking a leadership role in this area. Engagement of pharmaceutical companies, academic investigators and the public have been a key activity in this regard. *For example, the 13 institution International DIPG Preclinical Consortium that I led as co-chair of the CNS-DVL committee of the Children’s Oncology Group has led to the Nature Medicine publication below, as well as a Phase I study of panobinostat (NCT02717455).* This Nature Medicine paper also highlights a chemical screen – genomics integration approach which we pioneered with engineering colleague, Dr. Ranadip Pal (a co-investigator of this application). In other examples, we have worked diligently to improve materials for childhood cancer research by coordinating research autopsy programs with the families and the community. Furthermore, the mission to provide real-time, validated pediatric cancer R&D to clinical trial investigators has been the motivation for starting our non-profit biotech (cc-TDI.org).
4. Uncovering promising targeted therapies for childhood cancers has been an active area of our laboratory’s investigations. We reach out to investigators in many fields for these studies.

Grants and Contracts:

Federal

NIH/NCI R01CA189299-01A1 Keller (PI) 08/11/15 – 08/10/20

Cytokine- and Satellite Cell-mediated Muscle Disease Promotion

This project's major goals are determine mechanisms of IL-4R and muscle stem cell mediated metastasis.

Role: PI

NIH/NCI P01CA165995-01A1 Houghton (PI/PD) 06/01/13 – 02/28/18

NF-kB Regulation of a Metabolic Shift in Childhood Sarcomas

The major goal of this project is to test the role of the Warburg Effect in cancer progression of sarcomas.

Role: Co-Investigator

Other Support

No number Keller (PI) 08/01/16 – 07/31/18

St. Baldrick's Foundation

Mechanisms and Interventions for Medulloblastoma Metastasis

The major goals of this project is to support investigate the IGF1-metalloprotease axis in medulloblastoma.

Role: PI

No number Keller (PI) 07/01/16 – 06/30/17

CURE Childhood Cancer Foundation; Rally Foundation

Functional Genomics of Anaplastic Wilms' Tumor

The major goals of this project is to characterize the biology of the anaplastic version of Wilms' tumor.

Role: PI

No number Keller (PI) 10/01/16 – 09/30/17

B+ Foundation; Rally Foundation

Elucidating the role of Osteopontin in Rhabdomyosarcoma Progression

The major goals of this project is to characterize the tole of this secreted protein in rhabdomyosarcoma.

Role: PI

Important relationships not associated with funding

Novartis

Strategic Research Alliance / Rhabdomyosarcoma

bidirectional materials exchange

Regeneron

Strategic Research Alliance / Rhabdomyosarcoma

materials exchange

GlaxoSmithKline

Strategic Research Alliance / Orphan Kinases in Pediatric Cancer

materials exchange

Roche

Strategic Research Alliance / Kinase Inhibitors for Sarcoma

materials exchange

Recently Completed Support

NSF PFI:AIR-TT: 1500234 Pal (PI) 08/15/15 – 01/17/17

Design of functionally-tested, genomics-informed personalized cancer therapy drug treatment plans

The major goals of this project is to estimate toxicity of 2-drug combinations for personalized cancer therapy.

Role: Co-Investigator

No number Keller (PI) 08/01/15 – 07/31/16
 St. Baldrick's Foundation
Overcoming Checkpoint Adaptation in Rhabdomyosarcoma by Epigenetic Approach
 The major goals of this project is to support the ADV1513 phase I clinical trial and a related phase II clinical trial concept ARST1622 for high risk, newly diagnosed rhabdomyosarcoma.
 Role: PI

No number Keller (PI) 01/01/15 – 12/31/16
 Alex's Lemonade Stand Foundation
Moving EphB4 Therapeutics to Pediatric Phase I/II Trials
 These preclinical studies tested the viability of VasG3 and sEphB4 as therapies for cooperative group trials.
 Role: PI

No number Keller (PI) 07/01/15 – 06/30/17
 CURE Foundation
CUREfast: Accelerating Research with Families
 The major goals of this project is to generate autopsy- and biopsy-derived research resources including patient-derived xenografts.
 Role: PI

R01 Guttridge (PI/PD) Keller (PI, 1.2 calendar) 12/01/10 – 11/30/15
 NIH/NCI 1R01CA143082-01A1 annual direct costs: \$102,960
Elucidating the role of NFkB signaling in Rhabdomyosarcoma
 The major goal of this project is to study the role of NFkB in rhabdomyosarcoma initiation and progression.

SPORE Development Pgm Grant Langenau (PI) Keller (co-Inv, 0.6 cal) 04/01/14-03/31/15
 NIH / SARC Consortium (SARC 5-U54-CA168512) annual direct costs: \$40,000
GSK3-beta inhibitors as Novel Therapy for the Treatment of Relapsed Rhabdomyosarcoma
 The major goal of this project is to develop a preclinical strategy to decreasing rhabdomyosarcoma self-renewal.

P41 Center for Integrative Biomedical Computing Johnson (PI); Whitaker (co-PI)
 University of Utah Keller (Tier 1 Collaborator, no effort or funds)
 NIH/NCRR, 5P41RR012553-09 08/01/11 – 7/31/15
National Center for Integrative Biological Computing services only
 The major goal of this project is to develop software tools for biological analysis and simulation in collaboration with biologists.

R01 Keller (PI; no cost extension 2/13) 04/22/08 – 01/31/14
 NIH/NCI 5R01CA133229-06
Therapeutic Targets in Alveolar Rhabdomyosarcoma
 The major goal of this project is to test whether PDGFR-A is responsible for tumor progression. Dr. Keller is responsible for all aspects of this study. Total award for the entire period: \$1,039,896 dir + \$499,150 indirect.

R01 Administrative Supplement Keller (PI) 07/23/10 – 01/31/13
 NIH/NCI R01CA133229-04S2
Therapeutic Targets in Alveolar Rhabdomyosarcoma
 The major goal of this supplement is to increase public awareness of pediatric cancer sarcoma care and research in the Pacific Northwest. This grant made possible by the Carolyn Price Walker Act. Total award for the entire period: \$94,118 direct + \$49,882 indirect.

R01 Administrative Supplement Keller (PI) 10/01/09 – 07/31/11
 NIH/NCI R01CA133229-02S1
Therapeutic Targets in Alveolar Rhabdomyosarcoma
 The major goal of this supplement is to create a helicobacter-free animal colony. Total award for the entire period: \$102,598 direct + \$49,760 indirect.

Drug Testing Agreement Houghton(PI) Keller(Consultant, 0.6 cal. mo.) 11/01/10 – 10/31/14
NCI / CTEP private consulting agreement

Pediatric Preclinical Testing Program at OHSU

The major goal of this project is to test molecularly-targeted drugs for efficacy in genetically-engineered mouse models of rhabdomyosarcoma and medulloblastoma. Philanthropy will be needed to complete funding.

Grant Agreement Keller (PI, 1.8 cal) 11/01/13-04/04/15
Lyla Nsouli Foundation annual direct costs: \$199,124

Next Steps in the Rapid Preclinical Development of a Targeted Therapy Combination for DIPG

The major goal of this project is preclinical validation of brainstem glioma drug combinations. Total award for entire period is \$298,687 original award + \$85,000 supplement (direct).

Grant Agreement Keller (PI, 1.2 cal) 12/31/13-12/30/15
Alex's Lemonade Stand Foundation annual direct costs: \$112,500

Moving EphB4 Therapeutics to Pediatric Phase I/II Trials

The major goal of this project is to perform preclinical studies of VasG3 in eRMS (not aRMS), to test EphB4-MSA for eRMS and aRMS, and to evaluate EphB4 & EphrinB2 expression in osteosarcoma. Total award for the entire period is \$225,000 direct.

Grant Agreement Keller (PI, no effort) 01/01/14 – 12/31/15
LiveLikeBella and ThumbsUpForLane Foundations annual direct costs: \$90,000

The Lane-Bella Project

This grant from the LiveLikeBella Foundation and ThumbsUpForLane Foundation will facilitate preclinical testing of the VasG3 antibody (Vasgene Therapeutics) for alveolar rhabdomyosarcoma. Total award for the entire period is \$180,000 direct.

Pilot Grant Keller (PI, 0.6 cal mo) 09/15/12 – 09/14/14
Rally Foundation annual direct costs: \$82,511

The Rally Foundation Legacy Gift Pilot Program

The major goal of this project is to develop patient-derived primary tumor cultures and xenograft models for distribution through the Children's Oncology Group. Total award for the entire period is \$165,022 direct.

Damon Runyon-Sohn Pediatric Fellowship Lara Davis(PI); Keller(Mentor) 07/01/13 - 06/30/14
Damon Runyon Cancer Research Foundation

It has been negotiated to have concurrent DRF and SBF awards

Osteosarcoma as a proof-of-concept model for personalized cancer therapy

The major goal of this Early Career Award Program project is to determine targeted therapy combinations for osteosarcoma for dogs. This project has scientific but not budgetary overlap with Dr. Davis' SBF award. Total award for the entire period is \$186,000 direct.

St Baldrick's AYA Fellowship Lara Davis(PI); Keller(Mentor) 07/01/12 – 06/30/14
St. Baldrick's Foundation

Osteosarcoma as a proof-of-concept model for personalized cancer therapy

The major goal of this Early Career Award Program project is to determine targeted therapy combinations for osteosarcoma for dogs. This project has scientific but not budgetary overlap with Dr. Davis' DRF award. Total award for the entire period is \$181,896 direct.

AAO-HNSF Resident Grant Mathew Geltzeiler (PI); Keller(Mentor) 07/01/13 - 06/30/14
American Academy of Otolaryngology-Head/Neck Surgery

AAO-HNSF Saidee Keller Memorial Resident Research Grant: Personalized Cancer Care for Head and Neck Malignancy

The major goal of this award is personalized cancer therapy for head & neck cancer. Total award for the entire period is \$10,000 direct.

Janssen (Centyrex venture of Johnson & Johnson) 08/01/13 - 05/22/15

Sponsored Research Agreement

early termination on account of drug formulation issues at Centyrex.

Preclinical Oncology Models Validated for IL-4IL-12 Mediated Metastasis

The major goal of this project is to validate DARPIn therapeutics in rhabdomyosarcoma. Total award for the entire period: \$44,514 direct + \$24,037 indirect.

OHSU Keller (PI, no effort)

12/01/11 – 11/30/13

Knight Cancer Institute

Translational Research Pilot Grant Award: Chemokine Regulation of the Leptomeningeal Metastasis of Medulloblastoma

The major goal is to determine the growth factors and cytokines responsible for leptomeningeal metastasis. Total award for the entire period: \$50,000 direct + no indirect.

NIH/NCRR Keller (PI)

04/01/10 – 03/31/11

1S10RR025687-01A1 (funded May 2010; PI changed due to move)

A Shared MicroCT Instrument For Virtual Histology Imaging of Bone and Soft Tissue

This proposal for a Skyscan 1172 ultra-high resolution microscopic computed tomography (microCT) instrument will enable biomedical researchers in South Texas and nationally to perform studies of the genetic, environmental or disease-associated basis for changes in bone and soft tissue architecture - including birth defects. Total award for the entire period: \$397,450 direct.

Research Grant Keller (PI, no effort)

02/01/12 – 10/31/13

Curesearch

Rapid Preclinical Development of a Targeted Therapy Combination for DIPG

The major goal of the supplement to this international collaboration is to add genome sequencing and adding new labs to the effort to develop a 2-drug targeted therapy for diffuse intrinsic pontine glioma. Total award for the entire period: \$25,000 direct+ no indirect.

Research Grant Keller (PI, no effort)

11/01/11 – 08/05/13

Lyla Nsouli Foundation

Rapid Preclinical Development of a Targeted Therapy Combination for DIPG

The major goal of the original \$28,000 supplement to this international collaboration is to add 2 European labs to the effort to develop a 2-drug targeted therapy for diffuse intrinsic pontine glioma. The addendum adding \$8,800 permits addition of Dr. Eric Raabe, Johns Hopkins University, to participate. Total award for the entire period: \$36,800 direct + no indirect.

Research Grant Keller (PI, no effort)

08/01/12 – 07/31/13

Curesearch – COG STS cmtc

COG-STS Preclinical Targeted Agent Trial Design Support Proposal

The major goal of this project is to test the functional significance of cMet and ALK inhibition in rhabdomyosarcoma and undifferentiated pleomorphic sarcoma (UPS) using Crizotinib. Total award for the entire period: \$40,000 direct+ no indirect.

Pilot Grant Keller (PI, no effort)

07/01/12 – 06/30/13

Rally Foundation

Next Steps in Targeted Therapy for Undifferentiated Sarcomas

The major goal of this project is to determine targeted therapy combinations for undifferentiated pleomorphic sarcoma using mouse primary cell cultures, *in vitro* and *in vivo* testing screens. Total award for the entire period: \$40,000 direct.

Research Grant Sakir Gultekin (PI), Keller (Co-Inv, writer), Nazemi (Co-Inv) 11/01/11 – 08/28/13

Lyla Nsouli Foundation

Centyryn and DARPIn Targets in Brainstem Gliomas

The major goal of this pilot project is to catalyze a venture philanthropy effort between the Lyla Nsouli Foundation, OHSU and Johnson & Johnson regarding a new type of biologic for treating diffuse intrinsic pontine glioma. Total award for the entire period: \$67,025 direct+ no indirect.

Research Grant Keller (PI, no effort) 11/01/11 – 11/30/13
ABC2

Rapid Preclinical Development of a Targeted Therapy Combination for DIPG

The major goal of the supplement to this international collaboration is to add genome sequencing and adding new labs to the effort to develop a 2-drug targeted therapy for diffuse intrinsic pontine glioma. Total award for the entire period: \$76,000 direct + \$7,600 indirect.

Research Grant Keller (PI, no effort) 11/01/11 – 10/31/12
Cure Starts Now Foundation

Rapid Preclinical Development of a Targeted Therapy Combination for DIPG

The major goal of this international collaboration is to develop a 2-drug targeted therapy for diffuse intrinsic pontine glioma. This activity is an extension of my role as Co-Chair of Brain Tumor Developmental Therapeutics for the Children's Oncology Group. Total award for the entire period: \$100,000 direct+ no indirect.

Pilot Grant Lara Davis(PI); Keller, (Mentor, no effort) 07/01/11 - 06/30/13
Thrasher Foundation

Targeted Drug Sensitivity into Improved Survival

The major goal of this Early Career Award Program project is to determine targeted therapy combinations for osteosarcoma for dogs. Total award for the entire period: \$26,750 direct.

Research Grant Keller (PI, no effort) 01/01/12 – 12/31/12
Joanna McAfee Childhood Cancer Foundation

60 by 60: Finding the Very Best Targeted Therapy Combination for Alveolar Rhabdomyosarcoma

The major goal is to screen a prototypic (representative) mouse alveolar rhabdomyosarcoma primary cell culture in a robotic drug screen using a drug library we have newly developed. Total award for the entire period: \$12,000 direct + no indirect.

Training Grant Aslam (PI), Druker (mentor), Keller (co-mentor, no effort) 07/01/11 – 06/31/12
Howard Hughes Medical Institute

Medical Research Fellows Program

The major goal is to determine whether tyrosine kinase inhibitor resistance evolves or is pre-existing. Total award for the entire period: \$39,000 direct + no indirect.

Umpqua Bank Award Lara Davis(PI); Keller, (Mentor, no effort) 2011/2012
Knight Cancer Institute

Umpqua Bank Pediatric Young Investigator Innovation Award

The major goal of this innovation award is to evaluate gravity-free 3D cultures of osteosarcoma cells. Total award for the entire period: \$10,000 direct.

OHSU Nazemia (PI) Keller (Mentor/Co-investigator, no effort) 07/01/11 – 06/30/12
Friends of Doernbecher (DCHF)

Functional Discovery of Therapeutic Targets in Diffuse Intrinsic Pontine Glioma (DIPG)

The major goal is to optimize growth conditions and preclinical kinase inhibitor testing of DIPG primary cell cultures. Total award for the entire period: \$30,000 direct + no indirect.

Rally Foundation

Targeted Therapy for Undifferentiated Sarcomas

The major goal of this project is to determine targeted therapy combinations for undifferentiated pleomorphic sarcoma using mouse primary cell cultures and *in vitro* screens. Total award, entire period: \$25,000 direct.

Pilot Grant Keller (PI, 0.3 calendar months) 11/01/08 – 12/31/10
National Brain Tumor Society

Proteasome Inhibitor-Mediated Reversal of Shh-Driven Tumorigenesis

The major goal of this project is to evaluate a novel mechanism of tumor suppressor inactivation in tumors,

specifically the most common brain tumor of early childhood, which may prove amenable to pharmacologic intervention. Total award for the entire period: \$173,000 direct.

Innovation Award Keller (PI, 0.3 calendar months) 07/01/08 – 06/30/11
Alex's Lemonade Stand Foundation

Therapeutics *In Ovo*

The major goal of this project is to develop high-throughput *in vivo* screening for drugs active against pediatric cancers. Total award for the entire period: \$195,750 direct + no indirect.

Hyundai Scholar Award Keller (PI, 0.15 calendar months) 10/01/10 – 11/02/11
Hyundai Hope on Wheels Program

Enhancing Clinical Trials in Children using Identical Preclinical Trials

The goal of this study is to maximize the biological knowledge obtained from a Children's Oncology Group clinical trial of IMC-A12 plus chemotherapy for metastatic rhabdomyosarcoma (ARST08P1). Total award for the entire period: \$100,000 direct + no indirect costs.

Hyundai Research Award Keller (PI, 0.15 calendar months) 10/01/10 – 11/02/11
Hyundai Hope on Wheels Program

Pediatric Preclinical Testing Program at OHSU

The major goal of this project is to test molecularly-targeted drugs for efficacy in genetically-engineered mouse models of rhabdomyosarcoma and medulloblastoma. Total award, entire period: \$50,000 direct + no indirect.

Publications/Creative Work (ORCID 0000-0003-2505-7487):

Peer-reviewed Scientific Publications

see also <http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/42717402/?sort=date&direction=descending>

2018

research publications

other collaborator-generated publications

2017

research publications

1. Cleary MM, Mansoor A, Settelmeyer T, Ijiri Y, Ladner KJ, Svalina MN, Rubin BP, Guttridge DC, Keller C. NF κ B signaling in alveolar rhabdomyosarcoma. **Dis Model Mech**. 2017 Sep 1;10(9):1109-1115. doi: 10.1242/dmm.030882 [PMID: [28883017](#), PMCID: PMC5611971]
2. Randolph ME, Cleary MM, Bajwa Z, Svalina MN, Young MC, Mansoor A, Kaur P, Bult CJ, Goros MW, Michalek JE, Xiang S, Keck J, Krasnoperov V, Gill P, Keller C. EphB4/EphrinB2 therapeutics in Rhabdomyosarcoma. **PLoS One**. 2017 Aug 17;12(8):e0183161. doi: 10.1371/journal.pone.0183161. eCollection 2017 [PMID: [28817624](#), PMC5560593]
3. Davis LE, Jeng S, Svalina MN, Huang E, Pittsenbarger J, Cantor EL, Berlow N, Seguin B, Mansoor A, McWeeney SK, Keller C. Integration of genomic, transcriptomic and functional profiles of aggressive osteosarcomas across multiple species. **Oncotarget**. 2017 Jul 25;8(44):76241-76256. doi: 10.18632/oncotarget.19532. eCollection 2017 Sep 29 [PMID: [29100308](#); PMC5652702]
4. Kevin Matlock, Noah Berlow, Charles Keller, Ranadip Pal. Combination therapy design for maximizing sensitivity and minimizing toxicity. **BMC Bioinformatics**. 2017 Mar 22;18(Suppl 4):116. doi: 10.1186/s12859-017-1523-1 [PMID [28361667](#)]
5. Bharathy N, Svalina MN, Settelmeyer TP, Cleary MM, Berlow NE, Airhart SD, Xiang S, Keck J, Hayden JB, Shern JF, Mansoor A, Lathara M, Srinivasa G, Langenau DM, Keller C. Preclinical Testing of the Glycogen Synthase Kinase-3 β Inhibitor Tideglusib for Rhabdomyosarcoma. **Oncotarget**. 2017 Jun 16; doi: 10.18632/oncotarget.18520 PMID [28679860](#), PMC5609896]
6. Cates J, Nevell* L, Prajapati SI, Nelon LD, Chang JY, Randolph ME, Wood B, Keller C*, Whitaker RT*. Shape analysis of the basioccipital bone in Pax7-deficient mice. **Scientific Reports** 2017 Dec 20;7(1):17955. doi: 10.1038/s41598-017-18199-9 [PMID: [29263370](#)] *co-corresponding authors

other collaborator-generated publications

7. Dey D, Bagarova J, Hatsell SJ, Armstrong KA, Huang L, Ermann J, Vonner AJ, Shen Y, Mohedas AH, Lee A, Eekhoff EM, van Schie A, Demay MB, Keller C, Wagers AJ, Economides AN, Yu PB. Two tissue-resident progenitor lineages drive distinct phenotypes of heterotopic ossification. **Sci Transl Med**. 2016 Nov 23;8(366):366ra163. [PMID [27881824](#)]
8. Ignatius MS, Hayes MN, Lobbardi R, Chen EY, McCarthy KM, Sreenivas P, Motala Z, Durbin AD, Molodtsov A, Reeder S, Jin A, Sindiri S, Beleyea BC, Bhere D, Alexander MS, Shah K, Keller C, Linardic CM, Nielsen PG, Malkin D, Khan J, Langenau DM. The NOTCH1/SNAIL1/MEF2C Pathway Regulates Growth and Self-Renewal in Embryonal Rhabdomyosarcoma. **Cell Rep**. 2017 Jun 13;19(11):2304-2318. doi: 10.1016/j.celrep.2017.05.061 [PMID: [28614716](#), PMC556307]

2016

research publications

9. Rishi Raj Rikhi, Kimberlee K. Spady, Ruth I. Hoffman, Michael S. Bateman, Max Bateman, Lisa Eason Howard. Hepatoblastoma: A Need for Cell Lines and Tissue Banks to Develop Targeted Drug Therapies. **Frontiers in Pediatrics | Pediatric Oncology**. <http://dx.doi.org/10.3389/fped.2016.00022> [PMID tba] **this is a Nanocourse 2015 publication, for which I played an mentor role*
10. Matthew Svalina, Ken Kikuchi, Jinu Abraham, Sangeet Lal, Monika Davare, Teagan Settelmeyer, Michael Young, Michael Young, Jennifer Peckham, Yoon-Jae Cho, Joel Michalek, Brian Hernandez, Melanie Jackson, Daniel Guillaume, Nathan Selden, Darell Bigner, Kellie Nazemi, Sarah Green, Christopher Corless, Sakir Gultekin, Atiya Mansoor, Brian P Rubin, Randy Woltjer, Charles Keller. IGF1R as a Key Target in High Risk, Metastatic Medulloblastoma. **Scientific Reports** 2016 Jun 3;6:27012. doi: 10.1038/srep27012 [[PMID 27255663](#)]
11. Rishi Rikhi#, Elizabeth M. Wilson#, Olivier Deas, Matthew N. Svalina, John Bial, Atiya Mansoor, Stefano Cairo, Charles Keller. Murine Model of Hepatic Breast Cancer. **Biochemistry and Biophysics Reports** 2016 December, 8:1–5. <http://dx.doi.org/10.1016/j.bbrep.2016.07.021> [PMID in progress]

other collaborator-generated publications

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 43. Wei Zheng, Lora T. Watts, Deborah Holstein, Eileen Grass, Charles Keller, Chris Walter, James D. Lechleiter. "In vivo neuroprotective role of astrocyte mitochondrial metabolism during Rose Bengal (RB)-induced cerebral infarcts in mouse cortex", **American Society for Neurochemistry**, March 2008, San Antonio, TX
 44. Eri Taniguchi, Charles Keller. "Therapeutic Targets in Rhabdomyosarcoma" (oral presentation), 11/10/2007 **Symposium on Advances in Cell Signaling, Cancer Prevention & Therapy**, November 2007, South Padre Island, TX
 45. Koichi Nishijo, Amanda McCleish, Chris Bjornson, Thomas Rando, Charles Keller. "Co-engineered Optical & Serological Biomarker System for Conditional Mouse Models: Implications for Muscle Stem Cell Biology" (oral presentation), **Society of Molecular Imaging Annual Meeting**, September 2007, Providence, RI
 46. Koichi Nishijo, Amanda McCleish, Charles Keller. "Satellite Cells as the Rhabdomyosarcoma Cell of Origin," **FASEB Conference: Skeletal Muscle Satellite and Stem Cells**, July 2007, Indian Wells, CA
Comment in Fabien Le Grand and Michael Rudnicki. "Satellite and stem cells in muscle growth and repair," meeting report. **Development** 134: 3953-3957 (2007)
 47. Andrew S. Brack, Michael J. Conboy, Sudeep Roy, Mark Lee, Calvin J. Kuo, Charles Keller, Thomas A. Rando. "Elevated Wnt signaling during aging alters the fate of myogenic stem cells leading to increased fibrosis and impaired muscle regeneration," **FASEB Conference: Skeletal Muscle Satellite and Stem Cells**, July 2007, Indian Wells, CA
 48. Sergio X. Vasquez, Ali N. Bahadur, Isabel Wu, Lisa Nevell, Matthew Hockin, Mario R. Capecchi, Charles Keller. "Volumetric Computed Tomography for Skeletal Analysis of Model Genetic Organisms," **Teratology Society 47th Annual Meeting**, Pittsburgh, PA 2007
 49. Ali N. Bahadur, Isabel Wu, Charles Keller. "Virtual Histology for Phenotypic Assessment of Fetuses," **Teratology Society 47th Annual Meeting**, Pittsburgh, PA 2007
 50. Julie F. Foley, Minsub Shim, Ali N. Bahadur, Charles Keller, Thomas Eling, "Microcomputed Tomography-based Virtual Histology to Assist in the Determination of Perinatal Embryonic Lethality in Cox2-Overexpressing Transgenic Mice," **Teratology Society 47th Annual Meeting**, Pittsburgh, PA 2007
 51. Koichi Nishijo, Min Jung Cho, Gary Chisholm, Stephen J. Qualman, Frederic G. Barr, Charles Keller. "Cross-species analysis of alveolar rhabdomyosarcoma," **AACR Mouse Models of Cancer meeting**, Cambridge, MA 2006
 52. Eri Taniguchi, Omar J. Rivera, Min Jung Cho, Benjamin R. Arenkiel, Ljiljana Milenkovic, Mario R. Capecchi, Mathew P. Scott, Charles Keller. "Loss of *Patched1* splice variant 1B is sufficient for Medulloblastoma formation in a conditional mouse model," **AACR Mouse Models of Cancer meeting**, Cambridge, MA 2006
 53. Ali Bahadur, David Weinstein, Duff Davis, David Lewis, Peter Kochunov, Charles Keller. "Cost-effective, Safe & Stealth Small Animal Imaging Chamber for Multimodality Imaging," **Society of Molecular Imaging 5th Annual Meeting**, Hawaii 2006
 54. Ali Bahadur, Mark Hansen, Mary Blandford, Mario Capecchi, Charles Keller. "Co-engineered Optical & Serological Biomarker System for Conditional Mouse Models," **Society of Molecular Imaging 5th Annual Meeting**, Hawaii 2006
 55. John T. Johnson, Mark S. Hansen, Isabel Wu, Lindsey J. Healy, Christopher R. Johnson, Greg M. Jones, Mario R. Capecchi, Charles Keller. "Virtual Histology of Transgenic Mouse Embryos for High-Throughput Phenotyping," **Teratology Society 46th Annual Meeting**, Tucson, AZ 2006 [LATE BREAKING ABSTRACT]
 56. Omar Rivera, Min Jung Cho, Benjamin R. Arenkiel, Ljiljana Milenkovic, Mario R. Capecchi, Mathew P. Scott, Charles Keller. "Medulloblastoma but not Rhabdomyosarcoma in a Conditional Mouse Model of

- Patched1* Haploinsufficiency,” **Proceedings of the American Association for Cancer Research**, Washington, DC 2006
57. Patrick Hawkes, Gordon Kindlmann, David Weinstein, Greg Jones, Charles Keller. “Practical Vessel Imaging by Computed Tomography in Live Transgenic Mouse Models for Human Tumors,” **Society for Molecular Imaging Annual Meeting**, Cologne, Germany 2005
 58. Charles Keller, Mark S. Hansen, Nabeel El-Bardeesy, Ronald DePinho, Mario R. Capecchi. “Gene Dosage determines Tumor Onset in *Pax3:Fkhr* expressing Alveolar Rhabdomyosarcomas in Mice,” **Proceedings of the American Association for Cancer Research**, Anaheim, CA 2005
 59. Charles Keller, Gary Gaufo, Mark Hansen, Cheryl Coffin, Mario Capecchi. “*Pax3:Fkhr* interferes with Embryonic Pax Function,” **Proceedings of the American Association for Cancer Research**, Orlando, FL 2004
 60. Gordon Kindlmann, Richard A. Normann, Arun Badi, James Bigler, Charles Keller, Richard Coffey, Greg M. Jones, Chris R. Johnson. Imaging of Utah Electrode Array, Implanted in Cochlear Nerve. **NIH Symposium on Biocomputation & Bioinformation Digital Biology: The Emerging Paradigm** on November 7, 2003 in Bethesda, Maryland
 61. Rebecca Scholl, Mary Blandford, Linda Ballard, Alex Tsodikov, Jalene Magee, Susana Williams, Margaret Robertson, Francis Ali-Osman, Richard Lemons, Charles Keller. “High Throughput Detection of Glutathione S-Transferase Polymorphic Alleles,” **American Society of Human Genetics Annual Meeting**, 2002
 62. Charles Keller, Kelly Keller, Stephen Shew, James German, Sharon E. Plon. “Growth Deficiency and Malnutrition in Bloom Syndrome” **American Society of Human Genetics Annual Meeting**, Denver, CO 1998
 63. Charles Keller, Francis Ali-Osman. “Antisense Oligonucleotides Targeting Glutathione S-Transferase Pi for the Reversal of Chemotherapy Resistance in Pediatric Malignant Gliomas,” **The American Academy of Pediatrics Annual Meeting**, New Orleans, LA, November 1997
 64. Charles Keller and Francis Ali-Osman. “Toxicity, Comparative Cellular Uptake, Cell Cycle Dependence of Uptake, Cell Cycle Effects, and Stability of an Antisense Oligonucleotide directed Against Glutathione S-Transferase Pi,” **Proceedings of the American Association for Cancer Research**, San Diego, CA 1997
 65. Charles Keller, Francis Ali-Osman. “Structural Specificity and RNase H Dependence of Antisense Oligodeoxynucleotide Translation Inhibition of a Recombinant Glutathione S-Transferase-pi,” **Proceedings of the American Association for Cancer Research**, Washington, D.C. 1996, 37:355
 66. Debananda Pati, Charles Keller, Mark Groudine, and Sharon E. Plon. “Isolation of a Human Forkhead Homolog which can Reconstitute the G2 Checkpoint in Yeast,” poster presentation at **The Cell Cycle Meeting**, Cold Spring Harbor Laboratory, CSH, NY, 1996 p. 169

Other

none

Invited Lectures, Conference Presentations or Professorships:

International and National

Practical Vessel & Lymphatic Imaging in Mice using Fenestra-Enhanced MicroCT (St. Louis, Missouri)	9/9/2004
Preclinical Evaluation of Tumor Vascular Networks, MD Anderson Cancer Center, (Dept of Experimental Diagnostic Imaging, MDACC, Houston, Texas)	5/10/2005
The next generation of preclinical mouse models of human cancer: a primer for radiologists (Fundamentals of Molecular Imaging Symposium, Kuala Lumpur, Malaysia)	7/17/2005
Biomarker Discovery through Genetically Engineered BioReporters (Millennium Pharmaceuticals, Boston, Massachusetts)	6/14/2006
Multimodality Imaging in Conditional Mouse Models of Human Disease (Genentech Pharmaceuticals, South San Francisco, CA)	7/19/2006

Three dimensional imaging of tissue architecture (Johnson & Johnson Regenerative Therapeutics, NJ)	8/08/2006
Advanced Tools for Reproductive Toxicology using microCT-based Virtual Histology (NIEHS, Research Triangle Park, North Carolina)	8/16/2006
Constructing and De-Constructing Pediatric Tumors, <i>in vivo</i> (Novartis, Boston, CA)	9/21/2006
Models, Mice, and Men: Diversifying the Portfolio (State of Utah Personalized Medicine Conference, Salt Lake City, UT)	12/06/2006
Constructing a Conditional Mouse Model of Classical Metastatic Medulloblastoma (The Preston Robert Tisch Brain Tumor Center, Duke University)	3/14/2007
Satellite Cells as the Rhabdomyosarcoma Cell of Origin (FASEB Conference: Skeletal Muscle Satellite and Stem Cells, Indian Wells, CA)	7/17/2007
Satellite Cells as the Cell of Origin of Rhabdomyosarcoma (The Ohio State University, Columbus, OH)	12/12/2007
Satellite Cells as the Cell of Origin of Rhabdomyosarcoma (Cleveland Clinic, Cleveland, OH)	12/13/2007
Therapeutic Targets in Rhabdomyosarcoma (Case Western Reserve University, Cleveland, OH)	12/14/2007
Rhabdomyosarcoma: Cell of Origin and Therapeutic Targets (St Jude Cancer Research Hospital, Memphis, TN)	2/05/2008
Childhood Muscle Cancer: Cell of Origin & Therapeutic Targets (Longwood Area Diabetes/Metabolism Seminar Series; Joslin Diabetes Center, Boston, MA)	3/20/2008
Rhabdomyosarcoma Subtypes and Cell of Origin in Humans and Mice (Oncogenomics Section, Pediatric Oncology Branch, NCI, NIH)	4/24/2008
Alveolar & Embryonal Rhabdomyosarcoma: Different Cell of Origin, Similar Therapeutic Target? (University of Minnesota)	5/27/2008
Optical & Serological Biomarker System for Muscle Stem Cell Fate Tracing: Implications for Cancer, Aging & Dystrophies (Melanoma Medical Oncology Group, MD Anderson Cancer Center, Houston)	7/07/2008
The Making of a Physician-Scientist, Part II. (Scott Carter Foundation Big Show (fundraiser event))	8/16/2008
Myogenic Interfaces of Academics & Pharma, incl., Distinguishing Muscle Cells by Small Metabolite Typing (Glaxo Smith Kline, Research Triangle Park, NC)	9/08/2008
PDGF Receptor A as a Target in Rhabdomyosarcoma: preclinical results from GEMs (Children's Oncology Group, Soft Tissue Sarcoma Cmte, Denver, CO)	10/24/2008
Testing Anti-Metastasis Drugs: better, faster, cheaper (Southwest Research Institute, San Antonio, TX)	12/01/2008
Rhabdomyosarcoma: Stem Cell & Myofiber Origins and Therapeutic Targets	2/05/2009

(Children's Oncology Group STS Biology Conference, Seattle, WA)

Rhabdomyosarcoma: Stem Cell & Myofiber Origins and Therapeutic Targets (Pediatric Cancer Biology Program, Department of Pediatrics, Stanford)	2/10/2009
Rhabdomyosarcoma: Cell(s) of Origins and Therapeutic Targets (Boston Biomedical Research Institute, Boston, MA)	3/18/2009
Cell of Origin determines Rhabdomyosarcoma Phenotype (Center for Childhood Cancer Research, The Children's Hospital of Philadelphia)	5/26/2009
Rhabdomyosarcoma Cell(s) of Origin & Therapeutic Targets (Oregon Health & Science University, Portland, OR)	7/14/2009
Brain Tumor Preclinical Therapeutics: Imaging as a Biomarker (Department of Radiology, UC-Denver, Denver, CO)	8/19/2009
Pediatric Tumors & the Millennium Pipeline: Mechanistic Insights and Therapeutic Targets (Millennium Pharmaceuticals, Cambridge, MA)	9/30/2009
Bortezomib inhibits Progression in Medulloblastoma (Ped. Neuro-Oncology Basic & Translational Research Conference, Asheville, NC)	10/02/2009
Receptor Tyrosine Kinase Switching in Rhabdomyosarcoma (Mayo Clinic – Jacksonville, FL)	10/16/2009
Studies with Animal Models in Rare Cancer (Workshop on Rare Cancers, NIH Off. Rare Dis. Res. & the Div. Cancer Prevention, NCI)	12/10/2009
The Surprising Oncogenic Potential of Satellite Cells and Activated Myoblasts (2010 FASEB Summer Conf. on Skeletal Muscle Satellite and Stem Cells, Carefree, AZ)	7/20/2010
Interleukin-4 Receptor as a Novel Therapeutic Target in Childhood Muscle Cancer (2010 Molecular Therapeutics of Cancer Research Conference, Princeton, NJ)	7/21/2010
Is Vorinostat synergistic with rhabdomyosarcoma backbone chemotherapy? Concept Testing. (Children's Oncology Group STS Biology Conference, COG Spring 2011 Meeting, Los Angeles, CA)	3/23/2011
Children's Oncology Group CNS Tumor Developmental Therapeutics Symposium (Children's Oncology Group STS Biology Conference, COG Spring 2011 Meeting, Los Angeles, CA)	3/25/2011
Interleukin-4 Receptor as a Novel Therapeutic Target in Childhood Muscle Cancer (Centyrex and Johnson & Johnson Oncology invited seminar, Philadelphia, PA)	6/30/2011
Stem Cell & Myoblast Origins of Alveolar & Embryonal Rhabdomyosarcoma (44th Annual Musculoskeletal Tumor Meeting Japanese Orthopaedic Association, Kyoto, Japan)	7/16/2011
Kinase Inhibitors for Sarcoma: Generalize, or Personalize? (Georgetown University Hospital Visiting Professorship, Washington, DC)	10/09/2011
Legacy Gift (Autopsy) Workshop (Children's Oncology Group Meeting, Atlanta, GA)	9/14/2011
Rapid Preclinical Development of a Targeted Therapy Combination for DIPG (Children's Oncology Group Meeting, Atlanta, GA)	9/15/2011

Epigenetically Determined & Pharmacologically Modified Myogenic Oncogene Regulation (Molecular mechanisms of muscle growth & wasting in health and disease, Centro Stefano Franscini, Ascona)	9/21/2011
Origins and Targets of Alveolar & Embryonal Rhabdomyosarcoma (Novartis Biomedical Research Institute, Boston, CA)	11/30/2011
Epigenetically Determined & Pharmacologically Modified Myogenic Oncogene Regulation (MD Anderson Cancer Center, Houston, TX)	12/20/2011
Ad Hoc Preclinical Consortia to Support Trial Design (Pediatric Brain Tumor Consortium, Dallas, TX)	3/05/2012
Development of Targeted Therapies for Undifferentiated Pleomorphic Sarcomas <i>with Jinu Abraham</i> (Children's Oncology Group Meeting, Minneapolis, MN)	3/28/2012
Ad Hoc Preclinical Consortia to Support Trial Design (Children's Oncology Group Meeting, Minneapolis, MN)	3/28/2012
Targeted Agent Combinations for high risk medulloblastoma (Children's Oncology Group Meeting, Minneapolis, MN)	3/29/2012
Integrative biology of rhabdomyosarcoma using genetic murine models (Pediatric Cancer Educ. Session) (American Association for Cancer Research, Chicago, IL)	3/30/2012
Origins & Targets of Childhood Muscle Cancer (Massachusetts General Hospital Cancer Center, Boston, MA)	4/11/2012
Kinase Inhibitors for Sarcoma: Generalize, or Personalize? (Stanford University Cancer Center, Palo Alto, CA)	4/17/2012
tumor cell of origin defines response to oncogene-targeted epigenetic therapies? (Institut Universitaire de Pathologie, University of Lausanne, Switzerland)	6/19/2012
targets of opportunity: EphB4 and IL-4R for rhabdomyosarcoma (STS session, Children's Oncology Group Meeting, Atlanta, GA)	9/13/2012
Ad Hoc Preclinical Consortia to Support Trial Design for DIPG (CNS session, Children's Oncology Group Meeting, Atlanta, GA)	9/14/2012
The Rally Foundation Legacy Gift Pilot Program (PATH session, Children's Oncology Group Meeting, Atlanta, GA)	9/15/2012
PDGFR β reverses EphB4 signaling in muscle cancer (Dept of Oncological Sciences, Mt. Sinai Medical School, NYC, NY)	2/27/2013
PDGFR β reverses EphB4 signaling in muscle cancer (Dept of Pediatric Oncology, Dana Farber Cancer Institute/Harvard, Boston, MA)	2/28/2013
cell-of-origin of rhabdomyosarcoma may influence drug response (Novartis, Cambridge, MA)	3/01/2013
Ad Hoc Preclinical Consortia to Support Trial Design for DIPG (CNS session, Children's Oncology Group Meeting, Atlanta, GA)	4/17/2013
Chimeric transcription factors & checkpoint adaptation as therapeutic targets in solid tumors (Minisymposium in Translational Oncology, University of Lausanne, Switzerland)	4/25/2013

Targeted Therapy for Cancer in Pets & Children: Generalize, or Personalize? (Flint Animal Cancer Center, Colorado State University, Ft. Collins, CO)	6/10/2013
Dynamic Pax3:Foxo1a oncogene expression drives checkpoint adaptation in rhabdomyosarcoma (Molecular mechanisms of muscle growth &wasting in health &disease conference, Ascona, Switzerland)	9/14/2013
cell-of-origin of rhabdomyosarcoma may influence drug response (Ottawa Hospital Research Institute, Ottawa, CA)	9/30/2013
Dynamic Pax3:Foxo1a oncogene expression drives checkpoint adaptation in rhabdomyosarcoma (Abramson Family Cancer Research Institute University of Pennsylvania Perelman School of Medicine, Philadelphia, PA)	10/01/2013
Ad Hoc Preclinical Consortia to Support Trial Design for DIPG (CNS session, Children's Oncology Group Meeting, Atlanta, GA)	10/10/2013
IL-4 receptor blockade abrogates satellite cell - rhabdomyosarcoma fusion and prevents tumor establishment (STS session, Children's Oncology Group Meeting, Atlanta, GA)	10/10/2013
2014- present, not updated	
<u>Regional and Local</u>	
Pathophysiology of Pediatric Cancer (Pediatric Oncology & Chemotherapy Workshop, Salt Lake City, Utah)	3/04/2003
Retinoblastoma: A New Era in Treatment (Pediatric Grand Rounds, University of Utah)	4/1999
Oncogenesis Meets Embryogenesis: Small Animal Imaging Tells Their Story (UCAIR, Salt Lake City, Utah)	11/13/2003
Constructing and De-Constructing Pediatric Tumors, <i>in vivo</i> (Department of Cellular & Structural Biology Seminar Series)	3/20/2005
Genetically encoding optical imaging reporters in mouse models of human disease (Second Annual Biophotonics Symposium at UTSA, San Antonio, Texas)	11/12/2005
Osteosarcoma Pulmonary Metastases: Outcomes Following Resection (Pediatric Orthopedic Tumor Board, Santa Rosa Hospital, San Antonio, Texas)	1/18/2006
Tissue and Cell Specific Multi-Modality Imaging in Mammals (Research Imaging Center, UTHSCSA)	6/03/2006
Methods in Animal Imaging (Department of Cellular & Structural Biology Annual Retreat)	10/17/2006
Trans-species Functional Genomics and Childhood Cancer (Department of Cellular & Structural Biology Seminar Series)	9/09/2006
Cross-species blueprinting of Childhood Muscle Cancers (Dept. of Genetics, Southwest Fdtn for Biomedical Research, San Antonio, TX)	12/14/2006
Mouse Models of Childhood Muscle Cancer (Kiwanas Club, San Antonio, TX)	6/22/2007

Multi-species Imaging for the Aging Researcher (Rodent Models in Biomedical Research Symposium, Nathan Shock Center for Aging Research, UTHSCSA)	3/25/2008
Alveolar & Embryonal Rhabdomyosarcoma: Different Cell of Origin, Similar Therapeutic Target (GCCRI seminar series (non-invited talk)... I directed this seminar series)	3/31/2008
An Overview of the Genetics, Genomics & Development Track (UTHSCSA Graduate Student Orientation)	8/29/2008
Apparent Haploinsufficiency in a Conditional Preclinical Model of Medulloblastoma (Department of Cellular & Structural Biology Seminar Series)	9/23/2008
Genetically Engineered Models of Childhood Cancer (UTSA-UTHSCSA Joint Program in Biomedical Engineering)	2/19/2009
Muscling in on Rhabdomyosarcoma Origins and Therapies (GCCRI Symposium: Genetics & Biology of Childhood Cancer, San Antonio, TX)	2/27/2009
Cytokines, Muscle Cancer and Myodifferentiation (GCCRI Seminar Series, UTHSCSA, San Antonio, TX)	1/25/2010
Role of Rb in Skeletal Muscle Stem Cell Pool Homeostasis (Cell & Developmental Biology Seminar Series, OHSU)	10/18/2010
Frontiers in Pediatric Neuro-Oncology (OHSU Department of Neurosurgery Grand Rounds)	8/01/2011
Targeting chemokines in metastatic medulloblastoma (OHSU Knight Cancer Institute Retreat, Portland, OR)	11/05/2012
OHSU Pediatric Cancer Biology Program (OHSU Knight Cancer Institute Retreat, Portland, OR)	11/05/2012
Targeting chemokines in metastatic medulloblastoma (OHSU Knight Cancer Institute Research in Progress conference, Portland, OR)	12/21/2012
PDGFR β reverses EphB4 signaling in muscle cancer (OHSU Ped Hem Onc Fellows lecture, Portland, OR)	4/22/2013
PDGFR β reverses EphB4 signaling in muscle cancer (Shriners Research Center, Portland, OR)	6/07/2013
Rhabdomyosarcoma: taking the lead to improving outcomes in advanced disease (OHSU Division of Pediatric Hematology-Oncology Grand Rounds)	7/17/2013
IL-4 receptor blockade abrogates satellite cell - rhabdomyosarcoma fusion and prevents tumor establishment (Shriners Research Retreat, Portland, OR)	9/29/2013
partnering with the community to find treatments... <i>cures?</i> (Marquam Hill Steering Committee)	10/16/2013

2014- present, not updated

Inventions & Patents:

1. Francis Ali-Osman, Gabriel Lopez-Berestein, John Buolamwini, Gamil Antoun, Hui-Wen Lo, **Charles Keller**

and Olanike Akande. *Method of identifying inhibitors of glutathione S-transferase (GST) gene expression*, US Patent Application 08/747,536, filed November 12, 1996, Issued October 19, 1999 (5,968,737) {Current U.S. Class: 435/6 ; 435/15; 435/193; 435/375; 435/91.31; 536/24.5; Field of Search:435/6,7.1,7.2,7.21,15,91.1,91.31,193,325,375;514/23, 44,183,359,364,374,378;536/24.5 935/33,34,36}

2. **Charles Keller**, Linda Ballard, Francis Ali-Osman, Richard Lemons. *High-Throughput Glutathione S-Transferase Polymorphic Allele Assay Design*, US Patent Application 10/296,012 Issued August 1, 2006 (7,083,923) {PCT/US01/22923, filed July 20, 2001; 371(c)(1),(2),(4) Date: November 20, 2002; PCT Pub. No.: WO02/08465; PCT Pub. Date: January 31, 2002; Current U.S. Class: 435/6 ; 435/91.2; 536/23.5; 536/24.31; 536/24.33; Current International Class: C12Q 1/68 (20060101); C07H 21/04 (20060101); C12P 19/34 (20060101)}

3. **Charles Keller** and Patrick J. Hawkes. *Imaging Reporters of Transgene Expression*, University of Utah (U-3724), US Patent Application 60/610,681, filed September 16, 2005 {PCT/US05/33073} [exclusively licensed to Numira Biosciences] U.S. Patent Application 20080260646-A1 (10/23/2008)

4. **Charles Keller**, Patrick J. Hawkes, Mario R. Capecchi. *Urinary markers of tumor progression for mouse models of cancer*, Invention Disclosure, University of Utah (U-3723)

5. **Charles Keller** and Douglas A. Bakan. *Functional Imaging Reporter System for Living Subjects*, Invention Disclosure, University of Texas Health Science Center at San Antonio [Closed; 2005.016.HSCS]

6. **Charles Keller**. *microCT-based Virtual Histology*, University of Texas Health Science Center at San Antonio, US Patent Application 60/762,327, filed January 26, 2006; patent US 8,553,836B2 [exclusively licensed to Accumorphix, Inc] Notice of Allowance 01/24/2012; related filings: Canadian Serial Number 2,640,572, filed June 28, 2008(OTTC Case No. 2005.036.HSCS); European Serial Number 07762817.0, filed Jan. 26, 2007 (OTTC Case No. 2005.036.HSCS)

7. **Charles Keller** and Ali Bahadur. *MultiModality Holder for Co-registered Anatomical and Small Animal Imaging*, Invention Disclosure, University of Texas Health Science Center at San Antonio, US Patent Application 60/762,327, filed January 26, 2006, patent US 8,189,737B2 [exclusively licensed to Numira Biosciences; 2005.040.HSCS]

8. **Charles Keller**. *Biomarker Discovery using Genetically-Engineered BioReporters, or, Methods and compositions for identifying biomarkers*, Invention Disclosure, University of Texas Health Science Center at San Antonio, US Patent Application 60/821,323, filed August 3, 2006, PCT/US2007/017322 [exclusively licensed to Numira Biosciences; 2006.008.HSCS] U.S. Patent Application 20080031816-A1 (02/07/2008)

9. **Charles Keller**. *Virtual D.A.R.T. (Developmental & Reproductive Toxicology), or, Methods, Compositions and Systems for Analyzing Imaging Data*, Invention Disclosure, University of Texas Health Science Center at San Antonio, US Patent Application 60/822,412, filed August 15, 2006, PCT/2007/076022 [exclusively licensed to Numira Biosciences; 2006.013.HSCS] U.S. Patent Application 20080240527 -A1 (08/15/2007)

10. **Charles Keller** and Ali Bahadur. *A novel optical contrast agent for diseased tissue in living subjects*. Invention Disclosure, University of Texas Health Science Center at San Antonio. US Patent Application, filed August 29, 2006 [Active Marketing; 2006.034.HSCS]

11. **Charles Keller** and Eri Taniguchi. *Use of Proteasome Inhibitors to Restore Hedgehog Signaling and Treat Hedgehog-driven Diseases*. Invention Disclosure, University of Texas Health Science Center at San Antonio [Closed; 2007.023.HSCS]

12. **Charles Keller**. *Murine Alveolar Rhabdomyosarcoma Cell Lines*. Invention Disclosure, University of Texas Health Science Center at San Antonio [Filed for MTA; 2007.029.HSCS]

13. **Charles Keller**. *Avian Bioreactor for Drug Development*. Invention Disclosure, University of Texas Health Science Center at San Antonio [Active Marketing; 2008.029.HSCS]

14. **Charles Keller**. *ROVAD (Retro Orbital Venous Access Device) for X-Ray/microCT Imaging Applications*. Invention Disclosure, University of Texas Health Science Center at San Antonio. [Active Marketing; 2008.031.HSCS]

15. **Charles Keller** and Suresh I. Prajapati. *Novel Near-infrared (NIR) contrast agents for imaging of diseased and injured tissue*. Invention Disclosure, University of Texas Health Science Center at San Antonio. [exclusively licensed to Numira Biosciences; 2008.032.HSCS]

16. **Charles Keller** and Ali N. Bahadur. *Graphic arts image production process using computer tomography*. US Patent Application 11/732,538, filed April 4, 2007 U.S. Patent Application 20070236496-A1 (10/11/2007)

17. Noah Berlow, **Charles Keller**, Lara E. Davis, Mathew Geltzeiler, Bernard Seguin, Ranadip Pal. *Target Inhibition Map Approach to Combination Therapy Design*, Invention Disclosure, OHSU (#1947)

18. Megan Radka Cleary, John Muschler, **Charles Keller**. *Directing targeted therapy to the tumor bed*, Invention Disclosure, OHSU (#1950)

Scholarship-related Honors:

National Science Foundation Biological Supercomputing Workshop Travel Award	1991
American Academy of Pediatrics Resident Research Grant	1996
University of Utah NIH T32 Hematology Training Grant	1999
American Association for Cancer Research Molec. Biol. in Oncology Travel Award	1999
National Children's Cancer Foundation Scott Carter Research Fellow	1999
Howard Hughes Medical Institute Postdoc. Research Fellowship for Physicians	2001
National Cancer Institute K08 Physician Scientist Training Award	2001
Children's Oncology Group Young Investigator Award (K08 elected in its place)	2001
San Antonio Business Journal Top 40 under Forty	2007
OHSU Technology Transfer Achievement Award	2012

V. SERVICE

Membership in Professional Societies:

American Academy of Pediatrics (Fellow since 2005)	1996 – 2010
American Association for Cancer Research (Active Member since 2005)	1996 – Current
Tumor Microenvironment Working Group (TME) Steering Committee	2011 – 2013
American Society for Pediatric Hematology-Oncology	2004- 2008
Teratology Society (Regular Member)	2006 - 2008
National Marrow Donor Program (marrow donor; registry member)	1994 – Current
National Cancer Institute <i>Provocative Questions</i> Workshop, Seattle (invited participant)	July 21, 2011

Granting Agency Review Work:

NCI TPM Study Section, ad hoc reviewer (10/31)	2017
NCI-I Study Section <i>Standing Cmte Member</i>	2011- 2015
NCI ZCA1 RTRB-A (J1) Study Section (Oct 12)	2011
NCI-F Study Section (June 23-24, 2009; February 22-23, 2011) <i>ad hoc reviewer</i>	2009, 2011
NCI ZCA1 RTRB-L(O1) Study Section (June 23), <i>ad hoc reviewer</i>	2009
Cancer League of Zurich	2012
Rally Foundation	2011,2013
ALSF	2017
St Baldrick's Foundation	2011
Italian Ministry of Health (NIH CSR referral), <i>ad hoc reviewer</i>	2009
National Science Foundation, <i>ad hoc reviewer</i>	2004
Cancer Research UK, <i>ad hoc reviewer</i>	2007
Genesis Oncology Trust, New Zealand, <i>ad hoc reviewer</i>	2008
North Carolina Biotechnology Center Science & Technology Development Pgm, <i>ad hoc reviewer</i>	2005
UTHSCSA Presidential Enhancement Research Funds, <i>ad hoc reviewer</i>	2008
UTHSCSA IIMS (CTSA) Pilot Projects, <i>ad hoc reviewer</i>	2009 - 2010
UTHSCSA IIMS/CTSA Mentored Research Career Development (KL2) Program, <i>ad hoc reviewer</i>	2010
OHSU Knight Cancer Institute Pilot Award Program, <i>ad hoc reviewer</i>	2010
Molecular mechanisms of muscle growth and wasting in health and disease, Ascona, <i>poster judge</i>	2011
OHSU Knight Cancer Institute Translational Pilot Award Program, <i>ad hoc reviewer</i>	2011

Editorial and Ad Hoc Review Activities:

Editorial Board, <u>Pediatric Blood & Cancer</u>	2009 - 2016
Editorial Board, <u>Stem Cell Research</u>	2011 - 2016

Editorial Board, Scientific Reports (NPG)
ad hoc reviewer, Nature
ad hoc reviewer, Nature Reviews Cancer
ad hoc reviewer, Cancer Cell
ad hoc reviewer, The Journal of Clinical Investigation
ad hoc reviewer, PNAS
ad hoc reviewer, Cancer Research
ad hoc reviewer, Oncogene
ad hoc reviewer, The FASEB Journal
ad hoc reviewer, Clinical Cancer Research
ad hoc reviewer, British Journal of Cancer
ad hoc reviewer, Molecular Cancer Research
ad hoc reviewer, Molecular & Cellular Biology
ad hoc reviewer, American Journal of Pathology
ad hoc reviewer, Journal of Pathology
ad hoc reviewer, Molecular Imaging
ad hoc reviewer, Stem Cell Research
ad hoc reviewer, Pediatrics
ad hoc reviewer, Sarcoma
ad hoc reviewer, Journal of Pediatric Hematology-Oncology
ad hoc reviewer, Cancer Letters
ad hoc reviewer, Medical Physics
ad hoc reviewer, The Anatomical Record
ad hoc reviewer, Transgenic Research
ad hoc reviewer, Lab Animal

2015 - Current

reviewer, *Principles of Development by Lewis Wolpert and Cheryll Tickle (4th ed.)*, Oxford University Press

Committees:

International/National

Roundtable Mentor, AACR Grant Writing Workshop	2015
Pediatric Brain Tumor Consortium , advisory member of the PBTC translational biology cmte	2012- Current
Children's Oncology Group (Full Member since 2010)	2001- Current
Member, Soft Tissue Sarcoma subcommittee	2009 - Current
Member, CNS Steering Committee	2011 - Current
Reviewer, Soft Tissue Sarcoma D9602 Biology Proposals	2009 - Current
Co-Chair, CNS-DVL (brain tumor therapeutics) subcommittee	2010 - Current
<i>ad hoc invitee</i> , Soft Tissue Sarcoma subcommittee	Fall 2008
<i>ad hoc invitee</i> , Soft Tissue Sarcoma rhabdomyosarcoma biology symposium	Feb 2009
<i>ad hoc invitee</i> , Soft Tissue Sarcoma subcommittee	Spring 2009
<i>ad hoc invitee</i> , CNS biology symposium	Aug 2009

Regional

none

Institutional

Oregon Health & Science University

YEAR(S)	COMMITTEE	POSITION
2010 - 2013	Inaugural Knight Cancer Institute Seminar Series (CME-accredited)	Director
2010 - 2012	Search Cmte: Assoc. Director, Knight Business Dvpmt	Member
2011 - 2012	Knight Translational Steering Cmte	Member
2011 - 2012	Knight Program Leaders & Shared Resource Directors Group	Member
2011 -	Childhood Cancer Registry for Familial and Sporadic Tumors (CCuRe-FAST)	P.I.
2011	Pediatric Cancer Clinical & Research Multidisciplinary Retreat (Sept 2011)	Organizer
2012- 2013	Core Advisory Committee for Transgenic Core	Member

2012- Oregon Child Health Research Center (OCHRC) K12 program Mentor

University of Texas Health Science Center at San Antonio (UTHSCSA)

YEAR(S)	COMMITTEE	POSITION
2005 - 2008	Research Imaging Steering Committee	Charter Member
2005 - 2008	Research Imaging Steering Committee	Charter Member
2005 - 2010	Core Optical Imaging Facility Advisory Cmte	Member
2005 - 2010	San Antonio Cancer Institute (SACI)	Member
2006 - 2010	Institutional Intellectual Property Cmte (IIPAC)	Member
2007 - 2008	Lab Animal Resources Internal Advisory Cmte	Member
2007 - 2008	South Texas Research Facility Programming	Member, Core Facilities
2007 - 2009	GCCRI Seminar Series (2007/2008, 2008/2009)	series director
2008 - 2010	RIC microPET/11.7T MRI Oversight Cmte	Member

Departmental

University of Texas Health Science Center at San Antonio (UTHSCSA)

YEAR(S)	COMMITTEE	POSITION
2006 - 2010	Genetics Track Recruitment Committee	Charter Member
2005 - 2008	Lab Animal Resources (LAR)	Departmental LAR Officer (CCRI)
2006 - 2010	Graduate Student Selection Cmte C&SB)	ad hoc member

Other Institutional Service

Dates	Type	Description	Role
01/2009-06/2010	University	Director, IIMS Small Animal Imaging Program	Director

This had been a MAJOR component of my early career service activities.

Director of the Small Animal Imaging Program for the Institute for Integration of Medicine & Science (CTSA) Award. My major activity had been education and outreach to UTHSCSA faculty, fellows and students. I also participated in the evaluation & review of TTR Supplement applications.

Workshops Organized:

Small Animal Imaging Workshop Small Animal Imaging Program, Institute for Integration of Medicine & Science (1UL1RR025767), “An Imaging Workshop For You!” (lectures by 9 intramural and extramural faculty). PURPOSE: To empower postdoctoral fellows, students, faculty and staff to access and utilize small animal imaging resources at UTHSCSA, with the goal of incorporating these enabling technologies into NIH grants. July 27, 2009 ** 109

Attendees **

Children’s Oncology Group Developmental Therapeutics “Preclinical Testing Symposium”, COG Spring 2011 Meeting Las Angeles, CA, March 2011

07/2008-06/2010	University	Leader, GCCRI Pediatric Preclinical Testing Initiative	Director
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At UTHSCSA, I had been Leader of this unique pediatric experimental therapeutics program – a program that now exists at OHSU in greater augmented form. The unusual feature of this drug testing program is that we employ genetically-engineered mice. The goal of this program is to test potential new therapies for childhood cancer as a Resource Facility (service). We can test any compound from OHSU or non-OHSU academic investigators in our mouse models of childhood cancers for \$10,400 plus indirect costs.

An important feature is that results are reported directly to the Children’s Oncology Group (COG) in order to design better clinical trials for children with cancer. I am a Full Member of the COG Soft Tissue Sarcoma committee and Co-Chair of the COG CNS Developmental Therapeutics subcommittee. The PPTI is a MAJOR COMPONENT of my SERVICE to this national organization.

The PPTI has required not only creating technical infrastructure, but also creating a tremendous legal and administrative framework coordinating the first UTHSCSA Oncomouse licensing agreement with Dupont in alignment with the NCI Cancer Therapy Evaluation Program (CTEP) leadership. Our successful launch was the result of 2 years of building strong relationships with the Vice President for Research, Legal Affairs, the Office of Development, the Office of Sponsored Programs, and the South Texas Technology Management office at UTHSCSA. The implementation of the PPTI at OHSU was considerably smoother as a result of our precedents.

At UTHSCSA, the program received no GCCRI financial support, and operated with only the support of philanthropy and pilot grants I have generated for the PPTI. At OHSU, this program is supported by an annual budget of \$250,000 from the Doernbecher Children's Hospital Foundation.

<u>Dates</u>	<u>Type</u>	<u>Description</u>	<u>Role</u>
05/2008-06/2010	University	Director, Mouse Histology Resource Facility at GCCRI	Director

This has been an important component of my service activities.

The GCCRI Histology Resource Facility was establishing in May 2008 to provide custom histology and immunohistochemistry services to investigators using transgenic animal models, veterinary animals, or human tissue. Special attention is given to the orientation of specimens, especially embryos and fetuses.

The Technical Director, Michelle Brady has over 23 years professional experience in Histology and Immunohistochemistry. As scientific director, I brought expertise as a physician-scientist specializing in genetically engineered mouse models of childhood cancer. To the core facility I brought my invention of microCT-based Virtual Histology, an *en bloc* quantitative method of examining the anatomical structures of rodent embryos, fetuses, and tissue biopsies. We had worked closely in collaboration with veterinary pathologist, Martha Hanes, DVM, who provided interpretation of samples.

**** Histology Facility Customers 2008 - 2009 ****

Alex Bishop (GCCRI, UTHSCSA) 76 paraffin slides, 846 frozen slides, 16 immunohistochemistries

S.J. Gao (GCCRI, UTHSCSA) 831 paraffin slides

Luiz Penalva (GCCRI, UTHSCSA) 15 frozen slides, 8 immunohistochemistries

Manjeet Rao (GCCRI, UTHSCSA) 352 paraffin slides, 80 frozen slides

Vivienne Rebel (GCCRI, UTHSCSA) 482 paraffin slides, 4 immunohistochemistries, 472 special stains

Zhi-Min Yuan (GCCRI, UTHSCSA) 808 paraffin slides

<u>Dates</u>	<u>Type</u>	<u>Description</u>	<u>Role</u>
03/2005-06/2010	University	Director, Small Animal Imaging Resource Facility at GCCRI	Director

This has been a **MAJOR SERVICE ACTIVITY** for my early career.

**** The Facility ****

The small animal imaging facility at GCCRI was established by myself for facilitating anatomic and molecular multi-modality imaging to enhance the study of cell migration and intracellular signaling in live animals, tissue samples and cell cultures. The facility has been equipped with a small animal computed tomography (microCT) scanner, a Xenogen IVIS Spectrum Optical Scanner, a High-Frequency Ultrasound and a 20MHz ultrasound transducer that has a focal depth of 18mm and a 35MHz high-resolution transducer with a focal depth of 8mm and 5mm. Resources were made available to investigators throughout UTHSCSA and at other academic institutions.

**** Equipment Grant Writing to Meet UTHSCSA Campus User Needs ****

To bring a needed specimen microscopic computed tomography instrument to UTHSCSA and the South Texas academic community, I was awarded an S10 NCRR Large Equipment grant as PI(1S10RR025687-01A1, awarded in 2010 just prior to my move to OHSU).

**** Educational Activities Organized ****

UTHSCSA Mouse Users Workshop: “Genotyping, Phenotyping, Informatics & Imaging.” (lectures by David Shaw, Jackson Laboratories; Beth Goins, UTHSCSA Dept of Radiology; Victoria Frohlich, UTHSCSA Optical Imaging Facility; Chris Thibodeau, Numira Biosciences) July 2007

**** UTHSCSA Imaging Leadership ****

I was a charter member of the Research Imaging Steering Committee, established by the Office of the Vice President for Research, which met monthly with assignments of increasing the availability and utilization of Imaging Resources at UTHSCSA. The committee successfully fulfilled its mission in Fall 2008 with the reorganization of Imaging under the School of Medicine and the Department of Radiology.

Beginning in January 2009 I became Director of the Small Animal Imaging Program for the Institute for Integration of Medicine & Science(CTSA, NIH/NCRR 1U54RR024387)

**** GCCRI Imaging Facility Customers 2005- 2010 ****

UTHSCSA

Alex Bishop, D. Phil. (Dept. of Cellular & Structural Biology, UTHSCSA), “Tumor imaging using Luciferin .” (pilot scans awarded: 44 ; scans performed: 44 optical scans)

Babtunde Oyajobi, MD, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), “Effect on tumors of the skeleton (project leader).” (pilot scans awarded: 8 ; scans performed: 8 microCT scans)

Bandana Chatterjee, Ph.D. and Santanu Bose, Ph.D. (Departments of Molecular Medicine and Microbiology, UTHSCSA), “RSV as an Anti-Tumor Agent.” (pilot scans awarded: 23 ; scans performed: 23 optical scans)

Bastos Renata, MD (Dept. of Surgery, UTHSCSA), “Prototyping an Intra-Aortic Shunt.” (pilot scans awarded: 4 ; scans performed: 4 microCT scans)

Bennett T. Amaechi, BS, BDS, MS, PhD (Department of Community Dentistry, UTHSCSA), “Caries Assessment: Establishing mathematical link of clinical and benchtop method.” (pilot scans awarded: 12 ; scans performed: 12 microCT scans, 1 Imaging consultation / Support letter)

Beth Goins, Ph.D. (Dept. of Radiology, UTHSCSA), “Targeted Therapies for Myeloma and Metastatic Bone Cancer.” (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

Brian A. Herman, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), “Aging and Apoptosis.” (pilot scans awarded: 4 ; scans performed: 4 microCT scans)

Claire Shipman (Dept. of Cellular & Structural Biology, UTHSCSA) "Rat Trabecular Bone Study," (pilot scans awarded: 12 ; scans performed: 0)

Daniel P. Nicoletta, Ph.D. (Southwest Research Institute), “A Pedigreed Baboon Model for the Genetics of Cortical Bone Material Properties.” And “A Unified Constitutive Model for Trabecular Bone” and “Effect of aging on the osteocyte lacuna microenvironment” (pilot scans awarded: na ; scans performed: 524 microCT scans, 2 Imaging consultations)

Ellen Kraig, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), “Bimodal Optical Imaging of T-cells in vivo.” (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

Florent Elefteriou, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), “Contrast enhanced microCT.” (pilot scans awarded: 14 ; scans performed: 14 microCT scans)

Frank J. Weaker, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), “Gross Anatomy Teaching Enhancements: The Interactive Skull.” (pilot scans awarded: 43 ; scans performed: 43 microCT scans)

Greg Mundy, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), “skeletal analysis using microCT.” (pilot scans awarded: 15 ; scans performed: 15 microCT scans)

Guangming Zhong, Ph.D. (Dept. of Microbiology, UTHSCSA), “Mechanism of Chlamydia Pneumoniae Exacerbation of Atherosclerosis.” (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

Hareesh Nair, Ph.D. (Dept. of Ob-Gyn, UTHSCSA), “Comparison of tumor and non-tumor mice using GFP .” (pilot scans awarded: 23 ; scans performed: 23)

Howard Tz-Ho Wang, M.D. (Dept. of Surgery, UTHSCSA), “Pre-adipocyte precursors for reconstruction of calvarial defects.” (pilot scans awarded: 28 ; scans performed: 28 microCT scans)

James Lechleiter, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), “In vivo neuroprotective role of Ca²⁺ stimulated astrocyte mitochondrial metabolism during aging.” (pilot scans awarded: 320; scans performed: 320 optical scans, 1 Imaging consultation/Support letter)

Kenneth Hargreaves (Endodontics, Dental School, UTHSCSA), Project Planning (pilot scans awarded na ; scans performed: 1 Imaging consultation)

Kristine Vogel, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), "Skeletal analysis of mice." (pilot scans awarded: 2 ; scans performed: 2 microCT scans)

Lourdes Fortepiani, Ph.D. (Barshop Institute, UTHSCSA), "Cardiovascular & renal mechanisms of post-menopausal hypertension." (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

Luiz Penalva, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), "GFP imaging of cells." (pilot scans awarded: 20 ; scans performed: 20 optical scans)

LuZhe Sun, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), "Targeting transforming growth factor β for cancer treatment." (pilot scans awarded: 100 ; scans performed: 11 optical scans, 1 Imaging consultation)

Maryanne Herzig, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), "Ultrasound imaging of mouse organs." (pilot scans awarded: 21 ; scans performed: 21 ultrasound scans)

Michael C. Naski, M.D. (Dept. of Pathology, UTHSCSA), "Effect of NFATs on Chondrocytes." (pilot scans awarded: 55 ; scans performed: 55 microCT scans)

Mohan Natarajan, Ph.D. (Radiation Oncology, UTHSCSA), "Preplanning Meeting." (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

Natalia Schlabritz-Loutsevitch (Dept. of Obstetrics and Gynecology, UTHSCSA), "Vasculature of the Primate Placenta" and "Nutrient restriction: Placental and Fetal Brain and Renal outcomes and mechanisms." (pilot scans awarded: 24; scans performed: 24 microCT scans)

Paula Shireman, M.D. (Dept. of Surgery, UTHSCSA), "Chemokines and Immune Cells in Hind Limb Ischemia." (pilot scans awarded: 668 ; scans performed: 660 optical scans, 8 microCT scans)

Peter T. Gakunga, BDS, MS, PhD (Department of Orthodontics, UTHSCSA) "interventional Imaging Pilot Project," (pilot scans awarded: na ; scans performed: 1 microCT)

Qitao Ran, Ph.D. (Dept. of Cellular & Structural Biology, Barshop Institute for Longevity and Aging Studies, UTHSCSA), "Mitochondrial ROS and development of breast cancer." Project Planning / Letter of Support (pilot scans awarded na ; scans performed: 1 Imaging consultation/ Support letter)

Ricardo Aguiar, MD, Ph.D. Dept. of Med/Hematology & Med Oncology, UTHSCSA), "Intersection of CAMP-PDE4B signals and survival pathways." (pilot scans awarded: na ; scans performed: 90 optical scans)

Robert Ferry, MD (College of Medicine, The University of Tennessee Health Science Center), "Virtual Histology of Pancreas." (pilot scans awarded: 2 ; scans performed: 2 microCT scans)

Rong Li, Ph.D. (Dept. of Molecular Medicine, UTHSCSA), "Imaging of Defective Mammary Development in MMTV-Cre/Cobral Conditional Knockout Mice." (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

Seema Ahuja, MD (Dept. of Medicine -Renal Diseases, UTHSCSA), "Chemokines in the pathogenesis of experimental arthritis" and "Role of CCR5 in EPC biology and atherosclerosis." (pilot scans awarded: 20 ; scans performed: 14 optical scans, 24 microCT scans)

Senlin Li, MD. (Dept. of Medicine -Infect Disease, UTHSCSA), "Macrophage-mediated Gene Therapy of Atherosclerosis." (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

Shou Chen, MD, Ph.D. (Dept. of Pediatric Dentistry, UTHSCSA), "Visualization of mice molars." (pilot scans awarded: na ; scans performed: 6 microCT scans)

Shou-Jiang Gao, Ph.D. (Dept. of Pediatrics, UTHSCSA), "Xenograft Model of Kaposi Sarcoma." (pilot scans awarded: 141 ; scans performed: 137 optical scans, 4 microCT scans)

Stephen Harris, Ph.D. (Depts. of Periodontics and Cellular & Structural Biology, UTHSCSA), "Role and Mechanism of BMP4 and BMP2 Action and Signaling in Bone." (pilot scans awarded: na ; scans performed: 15 microCT scans)

Susan L. Naylor, Ph.D. (Dept. of Cellular & Structural Biology, UTHSCSA), "Mouse models for cancer progression: Semaphorin knockouts." (pilot scans awarded: 30 ; scans performed: none yet)

Susan Padalecki, Ph.D. (Dept. of Urology, UTHSCSA), "Hyaluronic Acid as a Target for Intervention in Prostate Cancer Metastases." (pilot scans awarded: 30 ; scans performed: 30 microCT scans)

Thomas Folks (Southwest National Primate Research Center) and Rama Ratnam (UTSA), Project Planning / Letter of Support (pilot scans awarded na ; scans performed: 1 Imaging consultation)

Todd Bredbenner, Ph.D. (Southwest Research Institute), "Three-dimensional Strain Mapping in Highly Porous Structures." (pilot scans awarded: 1 ; scans performed: 1 microCT scans)

William W. Morgan, Ph.D. (Dept. of Cellular & Structural Biology), "Imaging for a Mouse Model of Parkinson's Disease." (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

Xiao Dong Chen, Ph.D. (Dept. of Restorative Dentistry, UTHSCSA), "MicroCT analysis of mice femur." (pilot scans awarded: na ; scans performed: 28 microCT scans)

Yoneda Toshiyuki, DDS, Ph.D. (Dept. of Medicine -Endocrinology, UTHSCSA), "Monitoring luciferase signal in

xenographed tumor model.” (pilot scans awarded: 26 ; scans performed: 26 optical scans)
 Luke Norton, Ph.D. (Department of Medicine/Diabetes Division), "Measurement of Changes in Mouse Bodyfat" (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Rajam Ramamurthy, M.D. (Department of Pediatrics/Neonatology Division), "Developmental Features following Prematurity" (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Sumathy Mohan, M.D. (Department of Pathology), "Imaging the Migration Kinetics of Endothelial Stem Cells" (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Thomas Jansson, M.D., Ph.D. (Department of OB/GYN), "Imaging of Metabolite Transport across the Placenta" (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Ethan Rosenberg, M.D. (Department of Anesthesiology), "Imaging TNF Signaling following iRNA in vivo" (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Victor Sylvia Ph.D & Douglas Cornet. (Department of Orthopedics), "Fluid diffusion in bone and soft tissue" (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 David Sahar, MD (Department of Plastic Surgery), "Imaging Repair by Stem Cells of the Rat Calvaria " (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Luiz Penalva, PhD, and Donald McEwen, PhD (Departments of Cellular & Structural Biology and Biochemistry), "Optical Imaging of an Orthotopic Model of Medulloblastoma" (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Z. David Sharp, PhD, and Carolina Livi, PhD (Departments of Molecular Medicine), "Optical Imaging of a Transgenic Model of Lymphoma" (pilot scans awarded: na ; scans performed: 1 Imaging consultation)

ACADEMIC (non-UTHSCSA)

Dolf Segers, Dept. Biomedical Engineering, Thoraxcenter, Erasmus MC, Vessel Contrast Project (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Don R. Hilbelink, Ph.D. (University of South Florida), “Virtual histology of embryonic development of organ systems.” (pilot scans awarded: na ; scans performed: 1 Imaging consultation)
 Hidemi Kanazawa, MD. (Department of Developmental Biology, Washington University School of Medicine), Academic Project (pilot scans awarded: 5 ; scans performed: 5 microCT scans)
 Jonathan Butcher, Ph.D. (Department of Biomedical Engineering, Cornell University), “Investigating the role of mechanical forces in the regulation of heart valve development and disease.” (pilot scans awarded: 15 ; scans performed: 15 microCT scans)
 Linda Stephenson, Ph.D. (University of Nevada), “microCT of mice.” (pilot scans awarded: 15 ; scans performed: 15 microCT scans)
 Matthew Tocheri, (Smithsonian Institute), “Study of primate wrist bones” (pilot scans awarded: 21 ; scans performed: 21 microCT scans)
 Richard R. Behringer, Ph.D. (University of Texas M.D. Anderson Cancer Center), “An Atlas of Bat Embryonic & Fetal Development.” (pilot scans awarded: 5 ; scans performed: 5 microCT scans)
 Thomas H. Kunz, Ph.D., (Biology Department, Boston University), “Bat Vasculature in vivo” (pilot scans awarded: 12; scans performed: 12 microCT scans)

Community Service:

Kiwanis Children’s Fair, St. Helens, OR	2010
Board of Directors, Northwest Sarcoma Foundation	2011 - 2012
Scientific Advisory Board, CureSearch for Children’s Cancer	2011 - 2012
Scientific Advisory Board, Lyla Nsouli Foundation for Children's Brain Cancer Research	2011 - Current
Scientific Advisory Board, Chair, focusonrhabdo.org	2014 - Current
Advisory Board, Northwest Sarcoma Foundation	2014 - Current
Co-Organizer, Cold Spring Harbor Laboratory Banbury Center meeting on rhabdomyosarcoma	2014 - Current

Founding Organizer, [Pediatric Cancer Biology Nanocourse for the Community](#) (2011 -)

Nanocourse Publications:

1. Lara E. Davis, Motomi, [Charles Keller](#). Personalized Cancer Care: Opportunities and Challenges in Pediatric Neuro-Oncology. **Pediatric Blood & Cancer**, 2012 Jul 15;59(1):1-2, [[PMID 22162198](#)]

2. Sandra E. Smith#, John C. Waller#, Isaiah A. Bingham, Danah M. Jewett, M. Simone Nsouli, John J. Mackintosh. A diffuse intrinsic pontine glioma roadmap: Guiding research toward a cure. **Pediatric Blood & Cancer**, 2014 Jan 30. doi: 10.1002/pbc.24923. *epub ahead of print* [[PMID 24481909](https://pubmed.ncbi.nlm.nih.gov/24481909/)]
3. Rishi Raj Rikhi, Kimberlee K. Spady, Ruth I. Hoffman, Michael S. Bateman, Max Bateman, Lisa Easom Howard. Hepatoblastoma: A Need for Cell Lines and Tissue Banks to Develop Targeted Drug Therapies. *Frontiers in Pediatrics | Pediatric Oncology*. <http://dx.doi.org/10.3389/fped.2016.00022> [PMID tba]

Clinical Responsibilities:

None.

VI. TEACHING

See separate Educators Portfolio.