CURRICULUM VITAE

JENNIFER A. SANDERS, Ph.D.

Business or Mailing Address	Division of Pediatric Endocrinology and Metabolism, Rhode Island Hospital, 593 Eddy Street, Providence, RI 02903
Business Telephone Number	401-444-5802
Business Fax Number	401-444-2534
Electronic Mail Address	Jennifer_Sanders@brown.edu

EDUCATION

Undergraduate	**B.S.** Dickinson College, Carlisle, PA *Cum Laude* Major: Biology May 1999
Graduate School	**Ph.D.** Brown University, Providence, RI Molecular Biology, Cell Biology, and Biochemistry May 2005 Thesis Title: "Regulation of the c-Myc/Max/Mad Network During Liver Development" Advisor: Dr. Philip A. Gruppuso

POSTGRADUATE TRAINING

Postdoctoral Fellowship	Gastroenterology, Brown University and Rhode Island Hospital May 9, 2005 to June 30, 2007

POSTGRADUATE HONORS AND AWARDS

Honorable Mention, National Science Foundation Graduate Research Fellowship, 2001

Graduate Training Fellowship, NIH Grant 5T32GM007601, "Training in Molecular and Cell Biology and Biochemistry" (P.I. – Gerbi, SA)

Postdoctoral Fellowship, NIH Grant 5T32DK060415, "Research Training Program in Gastroenterology" (P.I. – Wands, JR)

Elected Member, Society for Pediatric Research, 2014

ACADEMIC APPOINTMENTS

Research Associate, Department of Pediatrics, Brown Medical School, 2005-2007

Assistant Professor (Research), Department of Pediatrics, Brown Medical School, 2007-

HOSPITAL APPOINTMENTS

Research Associate, Rhode Island Hospital	2007-
Scientist, Rhode Island Hospital	2011-

UNIVERSITY COMMITTEES

MCB Graduate Program Retreat Committee, 2000
Formative Center for Children's Environmental Health Seminar Committee, 2010-2013

HOSPITAL COMMITTEES

Member, Central Research Facilities Safety Committee, 2014
Associate Chair, Biohazards and Laboratory Safety Committee, 2014

MEMBERSHIP IN SOCIETIES

Member, American Association for Cancer Research, 2003-Present

Member, American Society for Biochemistry and Molecular Biology, 2005-2009

Member, American Society for Investigational Pathology, 2010-Present

JOURNAL PEER REVIEW (with year of first review)

Heaptology	2007
Pediatric Research	2009
Journal of Cellular Biochemistry	2011
Regulatory Toxicology and Pharmacology	2011
Experimental and Molecular Pathology	2012

ORIGINAL PUBLICATIONS IN PEER-REVIEWED JOURNALS (*, Corresponding Author)

1. Awad MM, **Sanders JA**, Gruppuso PA. 2000. A potential role for p15(Ink4b) and p57(Kip2) in liver development. *FEBS Letters* 483(2-3):160-4.

2. **Sanders JA** and Gruppuso PA. 2005. Nucleolar localization of hepatic c-Myc: A potential mechanism for c-Myc regulation. *Biochimica et Biophysica Acta* 1743(1-2):141-50.

3. **Sanders JA** and Gruppuso PA. 2006. Coordinated regulation of c-Myc and Max in rat liver development. *Am J Physiol* 290: G145-155.

4. **Sanders JA***, Lakhani A, Phornphutkul C, Wu K-Y, Gruppuso PA. 2008. The effect of rapamycin on DNA synthesis in multiple tissues from late gestation fetal rats and postnatal rats. *Am J Physiol Cell Physiol* 295(2):C406-13.

5. Gruppuso PA, Tsai S-W, Boylan JM, **Sanders JA**. 2008. Hepatic Translation control in late gestation fetal rat. *Am J Physiol Regul Integr Comp Physiol* 295(2): R558-67.

6. Yoo JS, Jimenez RH, **Sanders JA**, Boylan JM, Brautigan DL, Gruppuso PA. 2008. The α4-Containing form of protein phosphatase 2A in liver and hepatic cells. *J Cell Biochem* 105(1):290-300.

7. Jimenez RH, Boylan JM, Lee J, Francesconi M, Castellani G, **Sanders JA**, Gruppuso PA. 2009. Rapamycin response in tumorigenic and non-tumorigenic hepatic cell lines. *PLoS One*. 2009 Oct 9;4(10):e7373.

8. Jimenez RH, Lee J-S, Francesconi M, Castellani G, Neretti N, **Sanders JA**. Sedivy JM, Gruppuso PA: Regulation of Gene Expression in Hepatic Cells by the Mammalian Target of Rapamycin (mTOR). *PLoS One* 5(2): e9084, 2010.

9. Gruppuso PA, Boylan JM, **Sanders JA**. The physiology and pathophysiology of rapamycin resistance: Implications for Cancer. *Cell Cycle* 10(7): 1050-1058, 2011.

10. **Sanders JA*,** Schorl C, Sedivy J, Gruppuso PA. Postnatal liver growth and regeneration are independent of *c-myc* in a mouse model of conditional hepatic *c-myc* deletion. *BMC Physiology* 12(1), 2012.

11. **Sanders JA*,** Brilliant KE, Clift D, Patel A, Cerretti B, Mills DR, Gruppuso PA, Hixson DC. 2012. The inhibitory effects of rapamycin on the oval cell response and development of preneoplastic foci in the rat. *Experimental and Molecular Pathology* 93(1): 40-49, 2012.

12. Garcia B, Francois-Vaughan H, Onikoyi O, Kostadinov S, De Paepe ME, Gruppuso PA, **Sanders JA**. 2014. Xenotransplantation of human fetal adipose tissue: a model of in vivo adipose tissue expansion and adipogenesis. *J Lipid Research* [epub ahead of print].

BOOK CHAPTERS

1. **Sanders JA,** Boylan JM, Gruppuso PA: Liver Development in the Late Gestation Rodent Fetus. In: *Advances in Medicine and Biology,Vol. 46*. Bernhardt LV (ed). Nova Science Publishers, Hauppauge, NY, 2012.

2. **Sanders JA** and Hixson DC: Rodent models for assessing the role of stem cells in liver development, regeneration and carcinogenesis. In: Stem Cells Handbook II. Humana Press, NY, 2013.

3. **Sanders JA** and Gruppuso PA: Translation and Hepatobiliary Cancers. In: Protein Translation and Cancer: Applications in Medicine. Springer. In Press

PUBLICATIONS SUBMITTED OR IN PREPARATION

1. Francois-Vaughan H, Brilliant K, Parry N, Gruppuso PA, **Sanders JA**. mTOR Signaling is Critical to the Development of Preneoplastic Foci in a Model of Progenitor-Marker Positive Hepatocellular Carcinoma. Under Review at *Hepatology*.

2. Spade DJ, McDonnell EV, Heger N, **Sanders J**, Saffarini C, Gruppuso PA, DePaepe ME, Boekelheide K. Xenotransplantation of Human Fetal Testis and Other Fetal Tissues to Study Reproductive and Developmental Toxicity. Submitted to Birth Defects Research Part B.

3. Huse S, Gruppuso PA, **Sanders JA**. The effect of regional changes in gobal methylation on gene expression during human fetal liver development.

ABSTRACTS

1. Sanders JA and Gruppuso PA. “c-Myc protein expression and localization during rat liver development” Experimental Biology. New Orleans, LA, 2002.

2. Sanders JA and Gruppuso PA. “Novel regulation of the c-myc/max/mad network in rat liver” American Association for Cancer Research. Washington, D.C., 2003.

3. Sanders JA and Gruppuso PA. “Nucleolar localization of c-Myc and regulation of Max expression in liver: A potential mechanism for controlling c-Myc function." 12th International Conference on Second Messengers and Phosphoproteins. Montreal, Canada, 2004.

4. Sanders JA, Lakhani A, Phornphutkul C, Wu KY, Gruppuso PA.“Cell proliferation in multiple rat tissues in vivo is rapamycin resistant” Experimental Biology. Washington, D.C., 2007.

5. Onikoyi O, Brilliant K, Hixson DC, Gruppuso PA, Sanders JA. “Characterization of the expression of a panel of candidate growth regulating gene in hepatic oval cells.” RI research Alliance. Providence, RI, 2009.

6. Jimenez R, Lee JS, Francesconi M, Castellani G, Nerreti N, Sedivy J, Gruppuso P, Sanders JA.“Regulation of gene expression in hepatic cells by mTOR.” Rat Genomic Models, Cold Spring arbor, NY, 2009.

7. Jimenez R, Sanders JA, Lee JS, Francesconi M, Castellani G, Nerreti N, Sedivy J, Gruppuso P.“Regulation of gene expression by mTOR complex 1.” AACR special conference on Cancer Epigenetics. San Juan, Puerto Rico, 2010.

8. Sanders JA, Brilliant K, Hixson DC, Gruppuso PA. “Effect of rapamycin on oval cell abundance in two models of liver injury.” FASEB Summer Research Conference on Liver Biology, Snowmass Village, CO, 2010.

9. Sanders JA, Brilliant K, Clift D, Mills D, Gruppuso PA, Hixson DC. “Inhibitory effects of rapamycin in the oval cell response and development of preneoplastic foci.” Rhode Island IDeA, Newport, RI, 2011.

10. Francois H, Brilliant K, Mills D, Sanders JA. “A critical role for mTOR in the initiation of progenitor-derived hepatocellular carcinoma” IDeA Washington, D.C. 2012.

11. Francois H, Brilliant K, Mills D, Sanders JA. “mTOR inhibition is an effective chemopreventative strategy in a rodent model of experimental carcinogenesis” FASEB Summer Research Conference: Liver Biology: Fundamental Mechanisms & Translational Applications. Snowmass, CO, 2012.

12. Sanders JA, Brilliant K, Francois-Vaughan H, Mills D. “Targeting mTOR signaling for the prevention of progenitor-derived hepatocellular carcinoma”Experimental Biology. Boston, MA, 2013.

13. Sanders JA, Onikoyi O, Gruppuso PA. “An in vivo model for human fetal adipose tissue development.” Experimental Biology. Boston, MA, 2013.

14. Francois-Vaughan H, Brilliant K, Adebayo AO, Parry NMA, Gruppuso PA, Sanders JA. “mTOR signaling is critical to the development and expansion of preneoplastic foci in a rodent model of progenitor-marker positive hepatocellular carcinoma.” AACR: Targeting the PI3K-mTOR network in cancer. Philadelphia, PA, 2014.

INVITED PRESENTATIONS

“Targeting mTOR Signaling for the prevention of progenitor-derived hepatocellular carcinoma”, NERIC Conference, University of Delaware, 2013.

“mTOR signaling and HCC”, NERIC Conference, University of Delaware, 2013.

GRANTS

ACTIVE

R01DK100301-01 Sanders/Gruppuso (PI) 05/01/2014 to 02/28/2018
NIH/NICHD
“The Fetal Hepatocyte Phenotype and Cell Based Therapy for Liver Disease”
This project focuses on identifying the epigenetic signature of fetal hepatocytes and elucidating the functional role of this signature in the ability of fetal progenitor cells to repopulate an injured adult liver.

R01 HD 24455 Gruppuso (PI) 4/01/1989 to 03/31/2017
NIH (NICHD)
Novel Approaches to Understanding the Nutrient Regulation of Fetal Somatic Growth
Role: Co-Investigator
This project focuses on growth promoting signal transduction mechanisms in late gestation fetal liver development. The present cycle focuses on the role of mTOR in ribosomal biogenesis and on the proteomic analysis of PP6, a Ser/Thr protein phosphatase that may be a component of the mTOR pathways, and on the mechanisms by which mTOR regulates cell cycle progression in hepatocytes.

PENDING RESEARCH SUPPORT

R01DK103595-01 Sanders/Gruppuso (PI) 09/01/2014 to 08/31/2019
NIH/NICHD
“Human Fetal Adipogeneses and Metabolic Programming”

This project uses a novel xenotransplantation model to investigate the role of the nutrient environment in the epigenetic regulation of fetal white adipose tissue development.

COMPLETED RESEARCH SUPPORT (Past Three Years)

P20 RR017695-06A2 Ramratnam (PI) 07/10/2009 to 04/30/2014
NIH (NCRR)
COBRE Center for Cancer Research Development
Growth Regulation of Liver Progenitor Cells
Role: Project 5 PI
This project focuses on the signal transduction pathways that regulate the growth and proliferation of cells capable of repopulating an injured adult liver. These studies will focus on mitogenic signaling pathways found to be differentially regulated in fetal and adult liver.

COBRE for Cancer Signaling Networks Sanders (PI) 06/06/2013 to 03/31/2014
Pilot Fund Grant
This pilot project focuses on determining the role of mTOR in global gene expression during the progression of progenitor-derived hepatocellular carcinoma.

P20 ES018169-01 Boekelheide (PI) 02/15/2010 to 02/14/2013
NIH (NIEHS) & EPA
Formative Center for the Evaluation of Enivronmental Impacts on Fetal Development
Liver and the Metabolic Syndrome
Role: Project 1 Co-Investigator
This project focuses on the development of a xenotranplantation model where human fetal liver is transplanted into immunodeficient rats. This model will be used to assess the effect of arsenic on the human fetal liver epigenome.

Oh Zopi Sanders (PI) 04/01/2012 to 03/30/2013
Women and Infants Hospital
Development of a Xenotransplant Model to Study Adipose Tissue Remodeling
This project focuses on the development of a xenotransplantation model where mouse adipose tissue is transplanted into immunodeficient rats. This model will be used to assess normal and pathological white adipose tissue remodeling.

COBRE for Cancer Research Development 01/01/2011 to 9/31/2012
Core Facilities Supplement
Role: PI
This supplement provides funding for the performance of imaging mass spectrometry studies on oval cells and preneoplastic foci to determine the effect of rapamycin on protein expression and localization.

Department of Pediatrics Sanders (PI) 10/01/2010-9/30/2011
Rhode Island Hospital
Establishment of a rat liver slice model to study oval cell biology
This project focuses on the establishment of liver slice model in order to study the effect of rapamycin on oval cell biology.

UNIVERSITY TEACHING

Lecturer, Integrated Medical Sciences I, Scientific Foundations of Medicine

Warren Alpert Medical School, Brown University, 2008-2011

Visiting Lecturer, Genetics
Department of Biology, Connecticut College, 2006

Instructor, Molecular Basis of Human Disease
Summer and Continuing Studies, Brown University, Summer 2006-2007
(Course Director – Responsible for course design and lectures as well as all administration and grading)

Instructor, Waging War on Cancer
Summer and Continuing Studies, Brown University, Summer 2005-2007
(Course Director – Responsible for course design and lectures as well as all administration and grading)

Instructor, Cancer Biology: An evolving Puzzle
Continuing Education, Brown University, Summer 2013-Present
(Course Director – Responsible for course design and lectures as well as all administration and grading)

Teaching Assistant, Medical and Regulatory Biochemistry
Brown University, Spring 2001

Teaching Assistant, Genetics
Brown University, Fall 2000

Sheridan Center for Teaching and Learning, Brown University, Providence, RI
Teaching Certificate I: Sheridan Teaching Seminar, 2004
Teaching Certificate II: Classroom Tools Seminar, 2005
Teaching Certificate III: Professional Development, 2005

<u>Doctoral Thesis Committees</u>
Current Students, JS as member of advisory committee, 3
Past Students, JS as member of advisory committee, 2

<u>Fellowship Research Committees</u>
Current Fellows, JS as member of advisory committee, 1

<u>Undergraduate Thesis Committees</u>

Graduated Students, JS as member of advisory committee, 4
Current Students, JS as member of advisory committee, 1
Current Students, JS as advisor, 1

<u>Undergraduate and Medical Student Trainees</u>
Past Students, 5
Current Students, 1