Biographical Profile

Philip A. Gruppuso, MD

Position/Title

Division of Pediatric Endocrinology, Rhode Island Hospital

Professor of Pediatrics
Professor of Molecular Biology, Cell Biology and Biochemistry (Research), Brown University

Education

BA, Union College, Schenectady, NY; Arts (Music)

MD, University of Rochester, Rochester, NY; Medicine

In His Own Words

My own laboratory research has focused largely on late gestation liver development, signal transduction, translation control and cell cycle control. As a K-award recipient following my clinical training, I began my career as a basic researcher by focusing on protein phosphatases and broader aspects of growth factor signal transduction. When I established my own laboratory, I combined my cell biology and biochemistry experience with a previously developed expertise in fetal and perinatal metabolism. The result was a focus on the physiology of liver development and liver growth regulation. As of about ten years ago, my work expanded to encompass aspects of liver cancer biology. I have served on numerous NIH review panels. I have served as a trainer in two of Brown's graduate programs, Pathobiology and MCB (Molecular and Cell Biology, and Biochemistry), and I served as co-director then director of Brown's MD/PhD Program for fifteen years. Beginning in August of 2005, I served as the Associate Dean for Medical Education at Brown University. My tenure ended in June of this year, thus allowing me to devote my full energy to laboratory research. I developed a broad knowledge of curriculum and student evaluation, and I was responsible for grant-making programs within the medical school aimed at supporting scholarly work by students and junior scientists.

Work History

1977 to 1980	Resident in Pediatrics, Rhode Island Hospital and Brown University
1980 to 1981	Chief Resident in Pediatrics, Rhode Island Hospital and Brown University
1981 to 1983	Fellow, Pediatric Endocrinology, Rhode Island Hospital and Brown University
1983 to 1989	Assistant Professor of Pediatrics and Biochemistry (Research), Brown University
1987 to 2005	Director, Division of Pediatric Endocrinology, Rhode Island Hospital
1989 to 1994	Associate Professor of Pediatrics and Biochemistry (Research), Brown University
1994 to Present	Professor of Pediatrics, Brown University
1994 to Present	Professor of Mol Biol/Cell Biol/Biochem (Research), Brown University
1998 to 2002	Associate Director, Brown University MD/PhD Program
2001 to 2004	Vice-Chair (Research), Department of Pediatrics, Brown Univeristy
2002 to 2013	Director, MD/PhD Program, Brown University
2005 to 2013	Associate Dean for Medical Education, Brown University

Other Background and Professional Associations

1988	Member, Society for Pediatric Research
1989	NICHD Study Group, "Pregnancy, Birth and the Infant Research Plan"
1991	NIDDK Ad Hoc P01 Review Committee
1993 – 1999	Charles H. Hood Foundation, Child Health Advisory Committee
1994	Member, American Pediatric Society
1999	Ad hoc member, Molecular Biology Study Section
2000 – 2004	Editorial Board, Journal of Clinical Endocrinology and Metabolism
2000, 2002	Ad hoc member, Human Embryology and Development Study Section

2005 – 2010	Editorial Board, Pediatric Research
2007	Wellcome Trust Grant Review Panel
2004 – 2009	Member, Pregnancy and Neonatology Study Section (formerly HED-1)

Honors

1983 – 1988	Recipient, NIDDK Special Emphasis Research Career Award
1986	Recipient, Basil O'Connor Research Scholar Award, March of Dimes
1996	American Academy of Pediatrics, Award for Excellence in Research

Selected Peer-Reviewed Publications

1. Leeds P, Kren BT, Boylan JM, Betz NA, Steer CJ, Gruppuso PA, Ross J: Developmental regulation of CRD-BP, an RNA-binding protein that stabilizes c-myc mRNA in vitro. Oncogene 14:1279-1286, 1997.
2. Boylan JM, Gruppuso PA: Uncoupling of hepatic, EGF-mediated mitogen activated protein kinase activation in the fetal rat. J Biol Chem 273:3784-3790, 1998.
3. Boylan JM, Anand P, Gruppuso PA: Ribosomal protein S6 phosphorylation and function during late gestation liver development in the rat. J Biol Chem 276:44457-44463, 2001.
4. Embree-Ku M, Gruppuso PA: The role of nuclear factor-κB in late gestation liver development in the rat. Hepatology 42:326-34, 2005.
5. Sanders JA, Gruppuso PA: Coordinated regulation of c-Myc and Max in rat liver development. Am J Physiol 290:G145-G155, 2006. [PMCID: PMC2518428]
6. Gruppuso PA, Tsai S-W, Boylan JM, Sanders JA: Hepatic translation control in the late gestation fetal rat. Am J Physiol Regul Integr Comp Physiol 295:R558-R567, 2008. [PMCID: PMC2519922]
7. Jimenez RH, Boylan JM, Lee J-S, Francesconi M, Castellani G, Sanders JA, Gruppuso PA: Rapamycin response in tumorigenic and non-tumorigenic hepatic cell lines. PLoS ONE 4:e7373m, 2009. [PMCID: PMC2756589]
8. Jimenez RH, Lee J-S, Francesconi M, Castellani G, Neretti N, Sanders JA, Sedivy J, Gruppuso PA: Regulation of gene expression in hepatic cells by the mammalian target of rapamycin (mTOR). PLoS ONE 5:e9084, 2010. [PMCID: PMC2816708]
9. Green EP, Borkan JM, Pross SH, Adler SR, Nothnagle M, Parsonnet J, Gruppuso PA: Encouraging Scholarship: Medical School Programs to Promote Student Inquiry beyond the Traditional Medical Curriculum. Acad Med 85:409-418, 2010
10. Demirkan G, Yu K, Boylan JM, Salomon AR, Gruppuso PA: Phosphoproteomic Profiling of In Vivo Signaling in Liver by the Mammalian Target of Rapamycin Complex 1 (mTORC1). PLoS ONE 6:e21729, 2011. [PMCID: PMC3125343]
11. Gruppuso PA, Boylan JM, Sanders JA: The physiology and pathophysiology of rapamycin resistance: Implications for cancer. Cell Cycle 10:1050-1058, 2011. [PMCID: PMC3100882]
12. Sanders JA, Brilliant KE, Clift D, Patel A, Cerretti B, Claro P, Mills DR, Hixson DC, Gruppuso PA: The inhibitory effect of rapamycin on the oval cell response and development of preneoplastic foci in the rat. Exp Mol Path 93:40-49, 2012.
13. Demirkan G, Salomon AR, Gruppuso PA: Phosphoproteomic analysis of liver homogenates. Methods Mol Biol 909:151-163, 2012.
14. 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, NY, 2012.
15. Sanders JA, Schorl C, Patel A, Sedivy JM, 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. [PMCID: PMC3353165]

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Ongoing Support

R01 HD024455-24 (Gruppuso) 04/01/1989 – 03/31/2017
NIH/NICHD
Novel Approaches to Understanding the Nutrient Regulation of Fetal Somatic Growth
This project focuses on growth promoting signal transduction mechanisms in late gestation fetal liver development. The present cycle focuses on the role of cyclin E and Ser/Thr protein phosphatases in modulating the effects of the nutrient-sensing mTOR signal transduction pathway.
Role: PI

P20 ES018169-03 (Boekelheide) 04/15/2010 – 02/14/2014
NIH/NIEHS, EPA
Formative Center for the Evaluation of Environmental Impacts on Fetal Development
This Center focuses on collecting human fetal tissues to correlate morphological and molecular biomarkers with exposures to common environmental pollutants and stressors. There are three projects that will examine xenotransplanted tissues as models for dysregulation of tissue differentiation and epigenetic programming by environmental agents. Research Project 1 is guided by the hypothesis that alterations in the fetal environment induce epigenetic changes in fetal liver that predispose to metabolic syndrome in the adult human. The direct costs shown above are for Project 1. The overall project is presently in a no-cost extension.
Role: Subproject PI

P20 RR017695-10 (Ramratnam) 09/30/2002 – 04/30/2014
NIH/NCRR
COBRE Center for Cancer Research Development
This project encompasses collaborative endeavors focused on stem cells in liver/GI cancer. Expanding basic cancer research is the primary mission of the CCRD. Fostering interactions between basic scientists and clinical oncologists through innovative programs driven by clinical observation is also a high priority. The subproject for which Dr. Jennifer Sanders serves as PI focuses on the mitogenic signaling phenotype of bipotent hepatic progenitors isolated from fetal and adult liver and how these pathways are influenced by the adult liver microenvironment.
Role: Subproject Faculty Mentor

T35 HL094308-03 (Gruppuso) 08/01/09 – 07/31/14
NIH/NHLBI
Alpert Medical School Summer Research Program
This grant supports six medical students to do basic or translational research on cardiopulmonary disease during the summer after their first year of medical school.
Role: PI

R25 HD068835-03 (Marantz/Gruppuso) 05/19/11 – 04/30/16
NIH/NICHD
Strengthening Behavioral & Social Science in Medical School Education
This collaborative grant with Albert Einstein College of Medicine supports cooperative curriculum development in population heath and the implementation of scholarly programs at both schools. P. Gruppuso is Co-PI and director of the component of the program at Brown University.
Role: Co-PI

COBRE Center for Cancer Signaling Networks 6/6/2013 – 3/31/2014
Institutional Pilot Fund Grant
This pilot project focuses on determining the role of mTOR in regulating global gene expression and mRNA translation during late gestation liver development.
Role: Subproject Faculty Mentor

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Past Support

P20 RR024484 (Chen) 09/15/2007 to 07/31/2012
NIH/NCRR
COBRE for Skeletal Health and Repair

The goal of this project is to establish a multi-disciplinary translational research center focusing on cartilage and joint health. The projects encompass clinical, biological, and engineering research fields. Projects 1 and 2 analyze how long bones are built up during skeletal development. Projects 3 and 4 examine how joint cartilage degenerates in adult joint diseases. Project 5 studies how to repair and re-build healthy joint cartilage.

Role: Subproject Faculty Mentor

Pending

1R01CA177637-01 (Sanders) 07/01/2013 to 06/30/2018
NIH/NCI
Targeting mTOR Signaling for Chemoprevention of Progenitor-Derived HCC

The major goals of this project are to elucidate the role of the mTOR signaling pathway in the development and progression of progenitor-derived hepatocellular carcinoma and to determine if rapamycin is an effective chemopreventative agent for this type of liver cancer. P. Gruppuso is a co-investigator on this project.

Role: Co-Investigator

1 R01 DK100301-01 (Sanders) 07/01/2013 – 06/30/2018
NIH/NIDDK
The Fetal Hepatocyte Phenotype and Cell-Based Therapy for Liver Disease

This project will test the hypothesis that an epigenetic phenotype confers on fetal hepatocytes the capacity to repopulate an injured adult liver. In first review, the application was scored and received a percentile of 13. If not funded, the application will be resubmitted in the fall of 2013.

Role: Co-PI