

BIOGRAPHICAL SKETCH

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Rebecca A. Simmons, M.D

POSITION TITLE

Associate Professor in Pediatrics

REBECCA_SIMMONS



EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Arizona, Tucson	B.S.	1978	Biology
University of Arizona, Tucson	M.D.	1983	Medicine

DOB: 3/30/1956

A. Positions and Honors.

Professional Experience

1983-86 Pediatric Residency, University of Arizona Medical Center, Tucson
1986-89 Neonatal-Perinatal Medicine Fellowship, Cardiovascular Research Institute, San Francisco,
1989-96 Attending Neonatologist, Children's Memorial Hospital, Chicago
1993-96 Director, Neonatal-Perinatal Medicine Fellowship Program, Children's Memorial Hospital
1997-current Attending Neonatologist, Children's Hospital Philadelphia
1997-current Attending Neonatologist, Hospital University Pennsylvania

Faculty Appointments:

1989-1997 Assistant Professor of Pediatrics, Northwestern University School of Medicine, Chicago
1997-2005 Assistant Professor Pediatrics, University Pennsylvania School of Medicine, Philadelphia
2005-present Associate Professor Pediatrics, University Pennsylvania School of Medicine

Other Experience and Professional Memberships

1997 Ad Hoc Reviewer NIH Program Project Grant
1998-01 Ad Hoc Reviewer NIH Study Section HED-1
2000 Ad Hoc Reviewer March of Dimes
2000 Ad Hoc Reviewer NIH Study Section Maternal Child Health Research Subcommittee
2000-current Ad Hoc Reviewer Medical Research Council, Great Britain
2002-2006 NIH Study Section Member Pregnancy and Neonatology
2007-current American Diabetes Association Study Section Member

Honors and Awards

1978 Magna cum laude, B.S., University of Arizona
1987 Young Investigator Award California Lung Association
1992 Sutherland Award for Outstanding Young Clinical, Investigator, Midwest Society for Pediatric Research
1994-current The Society for Pediatric Research
1998-2003 President of Perinatal Nutrition & Metabolism Club (Pediatric Academic Society)
1996-current Perinatal Research Society

Councilor, 1998-2001

President 2005-2006

2004-current American Pediatric Society

2006 William Wells Award for outstanding research in Mitochondria Biology, Michigan State University

2008 Edwin Gresham Award, Indiana University School of Medicine

2009 Boyd Orr Award, Royal Nutrition Society, Edinburgh, Scotland

B. Selected peer-reviewed publications

1. Simmons RA, Gounis AS, Bangalore SA, Ogata ES. Intrauterine growth retardation: fetal glucose transport is diminished in lung but spared in brain. *Pediatr Res* 1992 31: 59-63.
2. Unterman TG, Simmons RA, Glick RP, Ogata ES. Circulating levels of insulin, insulin-like growth factor-I (IGF-I), IGF-II and IGF-binding proteins in the small for gestational age fetal rat. *Endocrinology* 1993; 132: 327-336.
3. Simmons RA, Flozak AS, Ogata ES. Glucose regulates Glut 1 function and expression in fetal rat lung and muscle in vitro. *Endocrinology* 1993; 132: 2312-2318.
4. Simmons RA, Flozak AS, Ogata ES. The effect of insulin and IGF-I upon glucose transport in normal and small for gestational age fetal rats. *Endocrinology* 1993; 133: 1361-1368.
5. Atkins V, Flozak AS, Ogata ES, Simmons RA. The effects of severe maternal diabetes upon glucose transport in the fetal rat. *Endocrinology* 1994; 135: 409-415.
6. Lane RH, Flozak AS, Ogata ES, Simmons RA. Altered hepatic gene expression in the growth-retarded rat: analysis by differential display polymerase chain reaction. *Pediatric Res* 1996; 39: 390-394.
7. Lane RH, Flozak AS, Simmons RA. Measurement of GLUT mRNA in liver of fetal and neonatal rats using a novel method of quantitative polymerase chain reaction. *Biochem and Mol Med* 1996; 59: 192-199.
8. Hart CD, Flozak AS, Simmons RA. Modulation of glucose transport in fetal rat lung: a sexual dimorphism. *Am J Respir Cell Mol Biol* 1998; 19: 63-70.
9. Lane RH, Simmons RA. Intrauterine growth retardation alters mitochondrial gene expression and function in fetal and juvenile rat skeletal muscle. *Pediatr Res* 1998; 43: 563-570.
10. Lane RH, Crawford SE, Flozak AS, Simmons RA. Localization and quantification of glucose transporters in liver of growth retarded fetal and neonatal rats. *Am J Physiol* 1998; 276: E135-E142.
11. Rajakumar PA, He J, Simmons RA, Devaskar SU. Effect of uteroplacental insufficiency upon brain neuropeptide Y and corticotropin-releasing factor gene expression and concentrations. *Pediatr Res* 1998; 44: 168-174.
12. Lane, RH and Simmons RA. Effects of chronic hyperglycemia upon the fetus and newborn. *Seminars in Perinatology*, 1998.
13. Simmons, RA. Cell glucose transport handling during fetal and neonatal development in Polin, RA, Fox, WW (Eds.) *Fetal and Neonatal Physiology*, W.B. Saunders, Philadelphia, 1998.
14. Simmons, RA. Glucose Transport in Cowett R (Ed) *Principles of Perinatal-Neonatal Metabolism*, Second Edition, Springer-Verlag, New York, 1998.
15. Simmons, RA. Neonatal Hypoglycemia in Workbook in *Practical Neonatology*, W.B. Saunders, Philadelphia, 1999.
16. Simmons, RA. Hyaline Membrane Disease in *Encyclopedia of Reproduction*. Academic Press, Volume 4, 1999.
17. Barr M Jr. DeSesso JM. Lau CS. Osmond C. Ozanne SE. Sadler TW. Simmons RA. Sonawane BR. Workshop to identify critical windows of exposure for children's health: cardiovascular and endocrine work group summary. Review, *Environmental Health Perspectives* 108: Suppl 3:569-71, 2000.
18. Reid GJ, Lane RH, Flozak AS, Simmons RA. Placental expression of glucose transporter proteins – 1 and 3 (Glut-1, Glut-3) in fetal growth retardation. *Am J Obstetr and Gynecol* 1999; 180: 1017-1023.
19. Simmons RA, Templeton L, Gertz S, Niu H. Intrauterine growth retardation leads to type II diabetes in adulthood in the rat. *Diabetes* 2001; 50: 2279-2286.
20. Boloker J, Gertz S, and Simmons RA: Offspring of Diabetic Rats Develop Obesity and Type II Diabetes in Adulthood: *Diabetes*: 51: 1499-1506, 2002.

21. Reid GJ, Flozak AS, and Simmons RA: Placental expression of Insulin-like-growth factors and binding proteins in placenta of growth retarded rats: *J Soc Gynecol Invest* 9: 210-4, 2002.
22. Pallotto, JA and Simmons, RA: Neonatal Hypoglycemia in *Current Pediatric Therapy*. W.B. Saunders, Philadelphia, 2002, pp 295-298.
23. Stoffers DA, Desai BM, Ng DD, and Simmons RA: Neonatal Exendin-4 Prevents the Development of Diabetes Mellitus in the Intrauterine Growth Retarded Rat: *Diabetes* 52: 734-740, 2003.
24. Selak MA, Storey BT, Peterside IE, Simmons RA: Impaired Oxidative Phosphorylation in Skeletal Muscle Contributes to Insulin Resistance and Hyperglycemia: *American Journal of Physiology* 285:E130-E137, 2003.
25. Simmons, RA: Cell glucose transport handling during fetal and neonatal development in Polin, RA. and Fox, WW (Eds.) *Fetal and Neonatal Physiology*, W.B. Saunders, Philadelphia, pp 487-492, 2003.
26. Simmons RA: Fetal Origins of Adult Disease in *Avery's Diseases of the Newborn*. HW Taeusch, RA Ballard, CA Gleason (Eds.), WB Saunders, Philadelphia, 285:E130-E137, 2003.
27. Simmons RA: Carbohydrate Metabolism and Glycogen Accretion in the Newborn 2nd Edition of *Neonatal Nutrition and Metabolism*. Cambridge University Press. WW Hay, P Thureen, (Eds.) 2003, in press.
28. Peterside IE, Selak MA, Simmons RA: Impaired oxidative phosphorylation in hepatic mitochondria of growth retarded rats alters glucose metabolism: *American Journal of Physiology* 285:E1258-1264, 2003.
29. Chennathukuzhi V, Stein JM, Abel T, Donlon S, Allman DM, Seykora J, Simmons RA, and Hecht NB: Mice deficient for TB-RBP exhibit a coordinate loss of Trax, a loose skin phenotype, reduced fertility, altered gene expression in the brain and behavioral defects: *Molecular and Cellular Biology* 23:6419-6434, 2003.
30. Vuguin P, Raab E, Liu B, Barzilai N, Simmons RA: Hepatic Insulin Resistance Precedes the Development of Diabetes in a Model of Intrauterine Growth Retardation: *Diabetes* 53:2617-2622, 2004.
31. Simmons RA: Fetal Origins of Adult Disease: Concepts and Controversies: *Trends Endocrinol Metab.* 16:390-4, 2005.
32. Simmons RA, Suponitsky-Kroyter I, Selak MA: Progressive accumulation of MtDNA mutations and decline of mitochondrial function lead to β -cell failure. *J Biol Chem* 280: 28785-28791, 2005.
33. Stefan M, Ji H, Simmons RA, Cummings DE, Ahima RS, Friedman MI, Nicholls RD. Hormonal and metabolic defects in a Prader-Willi syndrome mouse model with neonatal failure to thrive. *Endocrinology* 146:4377-4385, 2005.
34. Simmons R: The perinatal programming of obesity. *Experimental Gerontology*, 40: 863-866, 2005.
35. Simmons RA: Fetal Origins of Adult Disease: Role of oxidative stress, *Free Radical Biology and Medicine*, 40:917-922, 2006.
36. Hoe FM, Thornton P, Wanner LA, Steinkrauss L, Bhatia P, Simmons RA, Stanley CA: Clinical Features and Insulin Regulation in Infants with a Syndrome of Prolonged Neonatal Hyperinsulinism. *J Pediatr*, 148:207-212, 2006.
37. Simmons RA. Developmental Origins of Beta-Cell Failure in Type II Diabetes: The Role of Epigenetic Mechanisms. *Pediatr Res.* 61:64-67, 2007.
38. Simmons RA. Developmental origins of diabetes: the role of epigenetic mechanisms. *Curr Opin Endocrinol Diabetes Obes.* 14:13-16, 2007.
39. Park JH, Stoffers DA, Nicholls, RD, Simmons RA: Developmental Origins of Type 2 Diabetes: Progressive Epigenetic Modifications Silence Pdx1. *J Clin Invest.* 118:2316-24, 2008.
40. Wang X, Vatamaniuk MZ, Wang S, Roneker CA, Simmons RA, Lei XG: Overexpressing Cellular Glutathione Peroxidase-1 in Mice Deregulates Pancreatic Insulin Synthesis and Secretion. *Diabetologia*, 51:1515-1524, 2008.
41. Ham JN, Crtchlow MF, Desai BM, Simmons RA*, Stoffers DA*. Exendin-4 normalizes islet vascularity in intrauterine growth retarded rats: potential role of VEGF, *Pediatr Res*, 66:42-6, 2009. *Co-senior authors
42. French H, Reid M; Mamontov P, Simmons, RA*, Grinspan J. Oxidative stress disrupts oligodendrocyte maturation. *J Neurosci Res.* 2009, in press. *Co-senior authors.

43. Raab EL, Vuguin PM, Stoffers DA, Simmons RA. "Neonatal Exendin-4 Treatment Reduces Oxidative Stress and Prevents Hepatic Insulin Resistance in Intrauterine Growth Retarded Rats. Am J Physiol Regulatory, Integrative and Comparative Physiology, 297:1785-1794, 2009.
44. Thompson RF, Fazzari MJ, Niu H, Barzilai N, Simmons RA*, Greally JM* Experimental IUGR induces alterations in DNA methylation and gene expression in pancreatic islets of rats. J Biol Chem, 2010, in press. *Co-senior authors
45. Gatford KL, Simmons RA, De Blasio MJ, Robinson JS, Owens JA. Placental programming of postnatal diabetes and impaired insulin action after IUGR. Placenta, 2010, in press