

**Robert D. Roghair, M.D.**  
**Carver College of Medicine Curriculum Vitae**  
July 2024

**EDUCATION AND PROFESSIONAL HISTORY**

**Degrees Earned**

1990-1995 B.S. with Highest Distinction, Pharmacy, University of Iowa, Iowa City, IA  
1995-1999 M.D., Medicine, University of Iowa, Iowa City, IA

**Postgraduate**

1999-2002 Residency, Pediatrics, University of Iowa, Iowa City, IA  
2002-2005 Fellowship, Neonatology, University of Iowa, Iowa City, IA

**Licenses**

exp. 2025 MD, Iowa Board of Medicine; 36165

**Certifications**

exp. 2027 Neonatal-Perinatal Medicine, American Board of Pediatrics; 4350

**Professional Development**

2023-2024 Team Leader, Stead Family Department of Pediatrics, Institute for Healthcare Improvement, Pursuing Equity Learning Network, monthly virtual meetings

**Employment History**

2005-2006 Associate, Pediatrics, Neonatology, University of Iowa, Iowa City, IA  
2006-2011 Assistant Professor, Pediatrics, Neonatology, University of Iowa, Iowa City, IA  
2011-2018 Associate Professor (with tenure), Pediatrics, Neonatology, University of Iowa, Iowa City, IA  
2014-present **Director, Iowa Medical Student Research Program (IMSRP)**, University of Iowa Carver College of Medicine, University of Iowa, Iowa City, IA  
2018-present **Professor (with tenure)**, Pediatrics, Neonatology, University of Iowa, Iowa City, IA

**Honors and Awards**

1991 Phi Eta Sigma Freshman Honor Society, University of Iowa, Iowa City, IA  
1994 Omicron Delta Kappa Honor Society, University of Iowa, Iowa City, IA  
1996 Iowa Medical Student Summer Research Fellowship  
1998-present **Alpha Omega Alpha Honor Society**, University of Iowa, Iowa City, IA  
2002 Teacher of the Year, Pediatrics Resident, University of Iowa, Iowa City, IA  
2003 NIH Pediatric Research Loan Repayment Program (LRP) Award  
2003 NIH Young Investigator Travel Award

- 2005 NIH Pediatric Research LRP Competitive Renewal
- 2005 Postdoctoral Fellow Research Award, Carver College of Medicine Research Week, University of Iowa, Iowa City, IA
- 2006 Pediatric Academic Societies' Young Investigator's Travel Award
- 2007-present **François M. Abboud Cardiovascular Research Center**, member
- 2007 NIH Pediatric Research LRP Second Competitive Renewal
- 2008-present **Fraternal Order of Eagles Diabetes Research Center**, member
- 2011-present **Obesity Research and Education Initiative**, member
- 2015 PAS Annual Meeting, Moderator, Fetal Origins of Adult Disease
- 2017 PAS Annual Meeting, Moderator, Neonatal Cardiac Physiology

## TEACHING

### Course Teaching

- 2008-2010 Case Based Learning I (Fall Semester for M1 Students), Facilitator, Carver College of Medicine, University of Iowa, Iowa City, IA
- 2010-2011 Case Based Learning II (Spring Semester for M1 Students), Facilitator, Carver College of Medicine, University of Iowa, Iowa City, IA
- 2015-present **Medical Student Research Fellowships**, Med:8005:0600, Carver College of Medicine, University of Iowa, Iowa City, IA; **Course Director and Primary Instructor**, facilitates summer as well as year-long medical student research opportunities with annual enrolment of ~100 students
- 2015-present **Research Skills Seminar**, Med:8074:0600, Carver College of Medicine, University of Iowa, Iowa City, IA, **Course Originator and Lead Instructor**, 1 credit hour Fall Semester elective course for medical students with an annual enrolment of ~30 students

### Other Teaching Contributions

#### Non-course Teaching

- 2005-present **Clinical teaching of residents, students and nurses/neonatal nurse practitioners in the Special Care Nurseries** – 10 weeks per year, University of Iowa, Iowa City, IA
- 2015-2023 Medical Student Responsible Conduct of Research, Carver College of Medicine, University of Iowa, Iowa City, IA; Lead Instructor and Small Group Facilitator, 8 hour summer lecture series with didactic and case-based sessions for ~80 rising M2 students, once each year; personally delivered annual presentations on Mentorship and Research Misconduct
- 2022-present **Methods for Enhancing Reproducibility**, Carver College of Medicine, University of Iowa, Iowa City, IA; **Series originator and Lead Instructor**, interactive 10-hour summer series with faculty-led seminars and faculty-guided journal clubs for summer medical students appointed to a NIH T35 training grant with annual enrolment of ~28 students

#### Institutional Conferences

- 2005–2012 Pediatric Resident Core Curriculum, University of Iowa, Iowa City, IA

2005, 2006: Neonatal Procedures;  
2007, 2008, 2009: Evaluation of the Ill Newborn;  
2010, 2016: Fluid and Electrolyte Management in Neonatology;  
2011, 2012: Research During Residency and Beyond  
2024 Pediatric First Year Fellow Retreat, University of Iowa, Iowa City, IA  
2024: Identifying a Research Mentor and Project

**Mentoring and Student Supervision** (for longer than a one month elective)

Post-Doctoral Residents, Fellows and/or Faculty

2007-2010 **Gwen Erkonen**, Pediatric Critical Care Fellow  
Grants Received  
2008-2010: Children's Miracle Network Trainee Grant  
Awards Received  
2008: Pediatric Academic Societies' Travel Award  
2010: Pediatric Academic Societies' Travel Award  
Current Position  
Attending Physician, Pediatric Advanced Care Team, Nicklaus Children's Hospital

2008-present **Sarah Haskell**, Pediatric Resident, Pediatric Critical Care Fellow, **Faculty**  
Grants Received  
2009-2011: T32 HL007121 (PI: Abboud)  
2010-2011: Children's Miracle Network Trainee Grant  
2011-2015: K12 HD027748 (PI: Hirsch)  
2018-2021: K08 HL141528  
2020-2025: R01 HL146363  
Awards Received  
2010: Richard D. Rowe Award, Society for Pediatric Research for outstanding cardiovascular presentation  
2011: Pediatric Academic Societies' Travel Award  
Current Position  
Associate Professor with Tenure, University of Iowa  
Division Director, Pediatric Critical Care  
Past-President, Midwest Society of Pediatric Research

2010-2011 **Gary Kummet**, Neonatology Fellow  
Grants Received  
2011-2012: T32 HL007121 (PI: Abboud)  
Current Position  
Neonatologist, Mercy Medical Center, Des Moines, IA

2011-2014 **Lauritz Meyer**, Neonatology Fellow  
Grants Received

- 2013-2014: Children's Miracle Network Trainee Grant
- Awards Received
- 2013: Mead Johnson Perinatal and Developmental Medicine Travel Award
- 2013: Metcuff Award, Midwest Society for Pediatric Research for outstanding presentation by a fellow
- Current Position
- Assistant Professor, University of South Dakota, Sioux Falls, SD
- 2011-2013 **Ugochi Ugo**, Pediatric Resident
- Current Position
- Assistant Professor, University of Tennessee
- 2012-2013 **Suneeti Gupta**, Pediatric Resident
- Current Position
- Neonatologist, Athens, GA
- 2015-2018 **Baiba Steinbrekera**, Neonatology Fellow
- Grants Received
- 2017-2018: Children's Miracle Network Trainee Grant
- Awards Received
- 2017: Stead Family Department of Pediatrics Clinical Research Award
- Current Position
- Assistant Professor, University of Wisconsin, Milwaukee, WI
- 2018-2022 **Trassanee Chatmethakul**, Neonatology Fellow
- Current Position
- Assistant Professor, University of Oklahoma, Oklahoma City, OK

#### Graduate Students

- 2017 – 2021 **Réka Anna Vass**, Clinical Medical Sciences, University of Pécs, Hungary
- Research towards PhD conducted while a Visiting Scholar
- Grants Received
- 2019: New National Excellence Scholarship
- 2019: János László Doctoral Scholarship
- Current Position
- Ob/Gyn Resident, University of Pécs, Hungary

#### Medical Students

- 2010-2012 **Ben Dexter**, Carver College of Medicine
- Grants Received
- 2010: CCOM Summer Research Stipend
- 2011: CCOM Summer Research Stipend
- Awards Received

- 2011: Melvin Marcus Clinical Research Award  
Current Position  
Pediatrician, Mankato, MN
- 2011-2013 **Holly Engelstad**, Carver College of Medicine  
Awards Received  
2012: Pediatrics Research Day Best Abstract Award  
Current Position  
Assistant Professor, Vanderbilt University
- 2014 **Kate Pitz**, Carver College of Medicine  
Grants Received  
2014: CCOM Summer Research Stipend  
Current Position  
OB/Gyn Resident, University of Missouri
- 2014 **Olivia Rice**, Carver College of Medicine  
Grants Received  
2014: CCOM Summer Research Stipend  
Current Position  
Orthopaedics Resident, Carolinas Medical Center
- 2015 **Madeline Knott**, Carver College of Medicine  
Grants Received  
2015: CCOM Summer Research Stipend  
Honors Received  
Graduation with Research Distinction  
Current Position  
Family Physician, Soddy-Daisy, TN
- 2015 **Payton Strawser**, Carver College of Medicine  
Grants Received  
2015: CCOM Summer Research Stipend  
Current Position  
Orthopaedic Surgery Resident, UNLV

Undergraduate and/or High School Students

- 2006-2008 **Lindsay Dallas**, University of Iowa, Biomedical Engineering  
Grants Received  
2008: Strong Children's Research Center Summer Fellowship,  
University of Rochester, Rochester, NY  
Current Position  
Pediatrician, Blank Children's Hospital, Des Moines
- 2007-2009 **Elise Hsu**, Iowa City West High; Tufts University, Biology  
Grants Received  
2009: ARRA Supplement, NIH Summer Research Opportunities

for High School and Undergraduate Students (K08 HD050359-03S1; PI: Roghair)

- Current Position  
Anesthesia Resident, Loyola, IL
- 2008-2011 **Gregory Hermann**, University of Iowa, Public Health  
Current Position  
Radiation-Oncologist, OSF HealthCare
- 2009-2015 **Vivian Zhou**, Iowa City West High; Washington University, Neuroscience  
Grants Received  
2010: ARRA Supplement, NIH Summer Research Opportunities for High School and Undergraduate Students (K08 HD050359-04S1; PI: Roghair)  
2013: American Heart Association Midwest Affiliate, Undergraduate Student Research Fellowship  
Current Position  
Otolaryngology Resident, University of Iowa
- 2010-2012 **Catherine Zhang**, University of Iowa, Integrative Physiology  
Grants Received  
2010: American Heart Association Midwest Affiliate, Undergraduate Student Research Fellowship  
Current Position  
Gyn-Onc Fellow, University of Wisconsin
- 2010-2014 **Charles Ni**, University of Iowa, Pharmacy  
Grants Received  
2010: ARRA Supplement, NIH Summer Research Opportunities for High School and Undergraduate Students (K08 HD050359-04S1; PI: Roghair)  
Current Position  
Clinical Pharmacist, Dana-Farber
- 2011-2015 **Jinny Guo**, University of Iowa, Pharmacy  
Current Position  
Pharmacist, VAMC, Portland, OR
- 2011-2013 **Alise Miller**, Iowa City West High; Luther College, Biology  
Current Position  
Principal Financial Group, Des Moines, Iowa
- 2012-2014 **Kaisen Yao**, Iowa City West High; Washington University, Biology  
Grants Received  
2013: Society for Vascular Surgery, Student Research Fellowship  
Current Position  
Orthopaedic Surgery Resident, Lenox Hill Hospital
- 2015-2017 **Anthony Zhang**, University of Iowa, Engineering  
Current Position

- Anesthesia Resident, USC
- 2017-2020 **Lauren Vasilakos**, University of Iowa, Performing Arts  
Current Position  
Medical Student, University of Minnesota
- 2017-2019 **Edvin Rosic**, University of Toledo, Medicinal & Biological Chemistry  
Current Position  
Family Medicine Resident, University of Iowa
- 2018-2019 **Daniel Dagle**, Iowa State Univ, Mechanical Engineering  
Current Position  
Graduate student, University of Iowa
- 2018-2019 **Erica Hsu**, Iowa City West High; Dennison University, Biology  
Current Position  
Medical Student, University of Iowa
- 2021-2023 **Jordan Ewald**, University of Iowa, Biomedical Engineering  
Grants Received  
2021: Premed Student Summer Research Internship  
Current Position  
MD/PhD student, University of Wisconsin – Madison

#### PhD Thesis Committees

- 2016 **Kristin Claflin**, Pharmacology, member

### **SCHOLARSHIP/PROFESSIONAL PRODUCTIVITY**

#### **Publications**

1. **Roghair RD**, Lamb FS, Bedell KA, Smith OM, Scholz TD, and Segar JL. Late gestation betamethasone enhances coronary artery responsiveness to angiotensin II in fetal sheep. *Am J Physiol Regul Integr Comp Physiol* 2004; 286:R80-R88.
2. **Roghair RD**, Lamb FS, Miller FJ, Scholz TD, and Segar JL. Early gestation dexamethasone programs enhanced postnatal ovine coronary artery vascular reactivity. *Am J Physiol Regul Integr Comp Physiol* 2005; 288:R46-R53.
3. **Roghair RD**, Segar JL, Sharma RV, Zimmerman MC, Jadadeesha DK, Segar EM, Scholz TD, and FS Lamb. Newborn lamb coronary artery reactivity is programmed by early gestation dexamethasone prior to the onset of systemic hypertension. *Am J Physiol Regul Integr Comp Physiol* 2005; 289:R1169-76.
4. Segar JL, **Roghair RD**, Segar EM, Scholz TD, and FS Lamb. Early gestation dexamethasone alters baroreflex and vascular responses in newborn lambs prior to hypertension. *Am J Physiol Regul Integr Comp Physiol* 2006; 291:R481-R488.
5. **Roghair RD**, Aldape G. Naturally-occurring perinatal growth restriction in mice programs cardiovascular and endocrine function in a sex- and strain-dependent manner. *Pediatr Res* 2007; 62:399-404.
6. **Roghair RD**, Segar JL, Kilpatrick RA, Segar EM, Scholz TD, Lamb FS. Murine aortic reactivity is programmed equally by maternal low protein diet or late gestation

- dexamethasone. *J Matern Fetal Neonatal Med* 2007;20:833-41.
7. **Roghair RD**, Miller Jr. FJ, Scholz TD, Lamb FS, Segar JL. Endothelial superoxide production is altered in sheep programmed by early gestation dexamethasone exposure. *Neonatology* 2008; 93:19-27.
  8. **Roghair RD**, Miller Jr. FJ, Scholz TD, Lamb FS, Segar JL. Coronary constriction to angiotensin II is enhanced by endothelial superoxide production in sheep programmed by dexamethasone. *Pediatr Res* 2008;63:370-4.
  9. Von Bergen NH, Koppenhafer SL, Spitz DR, Volk KA, Patel SS, **Roghair RD**, Lamb FS, Segar JL, Scholz TD. Fetal programming alters reactive oxygen species production in sheep cardiac mitochondria. *Clin Sci (Lond)* 2009;116:659-68.
  10. **Roghair RD**, Segar JL, Volk KA, Chapleau MW, Dallas LM, Sorenson AR, Scholz TD, Lamb FS. Vascular nitric oxide and superoxide anion contribute to sex-specific programmed cardiovascular physiology in mice. *Am J Physiol Regul Integr Comp Physiol* 2009; 296:R651-62.
  11. Segar EM, Norris AW, Yao JR, Hu S, Koppenhafer SL, **Roghair RD**, Segar JL, Scholz TD. Programming of growth, insulin resistance and vascular dysfunction in offspring of late gestation diabetic rats. *Clin Sci (Lond)* 2009;117:129-38.
  12. Hermann GM, Miller RL, Erkonen GE, Dallas LM, Hsu E, Zhu V, **Roghair RD**. Neonatal catch-up growth increases diabetes susceptibility but improves behavioral and cardiovascular outcomes of low birth weight male mice. *Pediatr Res* 2009; 66:53-8.
  13. Volk KA, **Roghair RD**, Jung F, Scholz TD, Lamb FS, Segar JL. Coronary endothelial function and vascular smooth muscle proliferation are programmed by early gestation dexamethasone exposure in sheep. *Am J Physiol Regul Integr Comp Physiol* 2010; 298:R1607-14.
  14. Hermann GM, Dallas LM, Haskell SE, **Roghair RD**. Neonatal macrosomia is an independent risk factor for adult metabolic syndrome. *Neonatology* 2010; 98:238-244.
  15. Erkonen GE, Hermann GM, Miller RL, Thedens DL, Nopoulos PC, Wemmie JA, **Roghair RD**. Neonatal leptin administration alters regional brain volumes and blocks neonatal growth restriction-induced behavioral and cardiovascular dysfunction in male mice. *Pediatr Res* 2011; 69:406-412.
  16. **Roghair RD**, Wemmie JA, Volk KA, Scholz TD, Lamb FS, Segar JL. Maternal antioxidant blocks programmed cardiovascular and behavioral stress responses in adult mice. *Clin Sci (Lond)* 2011; 121:427-36.
  17. Kummet GJ, Haskell SE, Hermann GM, Ni C, Volk KA, Younes AK, Miller AK, **Roghair RD**. Neonatal SSRI exposure programs a hypermetabolic state in adult mice. *J Nutr Metab* 2012:431574.
  18. Hermann GM, Cushman TR, Miller RL, **Roghair RD**. Maternal antioxidant improves the neurodevelopmental outcomes of low birth weight mice. *Vitam Trace Elem, Vitam Trace Elem* 2012; S1:001. doi:10.4172/2167-0390.S1-001
  19. Katkhuda R, Peterson ES, **Roghair RD**, Norris AW, Scholz TD, Segar JL. Sex-specific programming of hypertension in offspring of late gestation diabetic rats. *Pediatr Res* 2012; 72:352-61. (contribution: study design, data interpretation and manuscript preparation)
  20. **Roghair RD**, Volk KA, Lamb FS, Segar JL. Impact of maternal dexamethasone on coronary PGE2 production and prostaglandin-dependent coronary reactivity. *Am J Physiol Regul Integr Comp Physiol* 2012; 303:R513-9.
  21. Haskell SE, Hermann GM, Reinking BE, Volk KA, Peotta VA, Zhu V, **Roghair RD**.



- Sertraline exposure leads to small left heart syndrome in adult mice. *Pediatr Res* 2013; 73:286-93.
22. Haskell SE, Peotta VA, Reinking BE, Hermann GM, **Roghair RD**. Impact of neonatal sertraline exposure on the post-myocardial infarction outcomes of adult male mice. *J Cardiovasc Pharmacol*. 2013; 62:479-84.
  23. Engelstad HJ, **Roghair RD**, Calarge CA, Colaizy TT, Stuart S, Haskell SE. Perinatal outcomes of pregnancies complicated by maternal depression with or without SSRI therapy. *Neonatology* 2013; 105:149-154. (contribution: study design, data interpretation and manuscript preparation)
  24. Guo JJ, Stoltz DA, Zhu V, Volk KA, Segar JL, McCray Jr. PB, **Roghair RD**. Genotype-specific alterations in vascular smooth muscle cell function in cystic fibrosis piglets. *J Cystic Fibrosis* 2014; 13:251-9.
  25. Dexter BC, Rahmouni K, Cushman T, Hermann GM, Ni C, Nopoulos PC, Thedens DL, **Roghair RD**. Neonatal leptin deficiency reduces frontal cortex volumes and programs adult hyperactivity in mice. *Behav Brain Res* 2014; 263:115-21.
  26. Peotta VA, Bhandary P, Ogu U, Volk KA, **Roghair RD**. Reduced blood pressure of CFTR-F508del carriers correlates with diminished arterial reactivity rather than circulating blood volume in mice. *PLoS One* 2014; 9:e96756.
  27. Meyer LR, Zhu V, Miller A, **Roghair RD**. Growth restriction, leptin, and the programming of adult behavior in mice. *Behav Brain Res* 2014; 275C:131-135
  28. Shankaran S, Laptook AR, Pappas A, McDonald SA, Das A, Tyson JE, Poindexter BB, Schibler K, Bell EF, Heyne RJ, Pedroza C, Bara R, Van Meurs KP, Grisby C, Huitema CM, Garg M, Ehrenkranz RA, Shepherd EG, Chalak LF, Hamrick SE, Khan AM, Reynolds AM, Laughon MM, Truog WE, Dysart KC, Carlo WA, Walsh MC, Watterberg KL, Higgins RD; Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. Effect of depth and duration of cooling on deaths in the NICU among neonates with hypoxic ischemic encephalopathy: a randomized clinical trial. *JAMA* 2014; 312:2629-39. (collaborator role on network study)
  29. Mueller CA, Eme J, Burggren WW, **Roghair RD**, Rundle SD. Challenges and opportunities in developmental integrative physiology. *Comp Biochem Physiol A Mol Integr Physiol* 2015; 184:113-24. Review. (contribution: conceptual design and manuscript preparation)
  30. Haskell SE, Peotta V, Reinking BE, Zhang C, Zhu V, Kenkel EJ, **Roghair RD**. Oral oestrogen reverses ovariectomy-induced morning surge hypertension in growth-restricted mice. *Clin Sci (Lond)*. 2016; 130:613-23.
  31. Peotta V, Rahmouni K, Segar JL, Morgan DA, Pitz KM, Rice OM, **Roghair RD**. Neonatal growth restriction-related leptin deficiency enhances leptin-triggered sympathetic activation and central angiotensin II receptor-dependent stress-evoked hypertension. *Pediatr Res* 2016; 80:244-51.
  32. Steinbrekera B, **Roghair RD**. Modeling the impact of growth and leptin deficits on the neuronal regulation of blood pressure. *J Endocrinol* 2016; 231:R47-60.
  33. Meyer LR, Dexter B, Lo C, Kenkel E, Hirai T, **Roghair RD**, Haskell SE. Perinatal SSRI exposure permanently alters cerebral serotonin receptor mRNA in mice but does not impact adult behaviors; *J Matern Fetal Neonatal Med* 2018; 31:1393-1401. (contribution: study design, data interpretation and manuscript preparation)
  34. Haskell SE, Lo C, Kent ME, Eggleston TM, Volk KA, Reinking BE, **Roghair RD**. Cardiac outcomes after perinatal sertraline exposure in mice; *J Cardiovasc Pharmacol* 2017;

70:119-127.

35. Knott MH, Knott MH, Haskell SE, Strawser PE, Rice OM, Bonthius NT, Movva VC, Reinking BE, **Roghair RD**. Neonatal growth restriction slows cardiomyocyte development and reduces adult heart size. *Anat Rec (Hoboken)*. 2018; 301:1398-1404.
36. Chatmethakul T, **Roghair RD**. Risk of hypertension following perinatal adversity: IUGR and prematurity. *J Endocrinol*. 2019; 242:T21-T32.
37. Ansah DA, Reinking BE, Colaizy TT, **Roghair RD**, Haskell SE. A prospective study evaluating the effects of SSRI exposure on cardiac size and function in newborns. *Neonatology*. 2019; 115:320-327. (contribution: study design, data interpretation and manuscript preparation)
38. Steinbrekera B, Colaizy TT, Vasilakos LK, Johnson KJ, Santillan DA, Haskell SE, **Roghair RD**. Origins of neonatal leptin deficiency in preterm infants. *Pediatr Res*. 2019; 85:1016-1023.
39. Vass RA, **Roghair RD**, Bell EF, Colaizy TT, Johnson KJ, Schmelzel ML, Walker JR, Ertl T. Pituitary glycoprotein hormones in human milk before and after pasteurization or refrigeration. *Nutrients*. 2020; 12:687. (contribution: study design, data interpretation, manuscript preparation and submission as corresponding author)
40. Gaddam RR, Jacobsen VP, Kim YR, Gabani M, Jacobs JS, Dhuri K, Kumar S, Kassar M, Li Q, Bahal R, **Roghair R**, Irani K, Vikram A. Microbiota-governed microRNA-204 impairs endothelial function and blood pressure decline during inactivity in db/db mice. *Sci Rep*. 2020; 10:10065. (contribution: study design, data interpretation and manuscript preparation)
41. Vass RA, Bell EF, Colaizy TT, Schmelzel ML, Johnson KJ, Walker JR, Ertl T, **Roghair RD**. Hormone levels in preterm and donor human milk before and after Holder pasteurization. *Pediatr Res*. 2020; 88:612-617.
42. Laptook AR, Shankaran S, Barnes P, Rollins N, Do BT, Parikh NA, Hamrick S, Hintz SR, Tyson JE, Bell EF, Ambalavanan N, Goldberg RN, Pappas A, Huitema C, Pedroza C, Chaudhary AS, Hensman AM, Das A, Wyckoff M, Khan A, Walsh MC, Watterberg KL, Faix R, Truog W, Guillet R, Sokol GM, Poindexter BB, Higgins RD; Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. Limitations of conventional magnetic resonance imaging as a predictor of death or disability following neonatal hypoxic-ischemic encephalopathy in the late hypothermia trial. *J Pediatr*. 2021; 230:106-111. (collaborator role on network study)
43. Vass RA, Kiss G, Bell EF, **Roghair RD**, Miseta A, Bódis J, Funke S, Ertl T. Breast milk for term and preterm infants-own mother's milk or donor milk? *Nutrients* 2021; 13:424. (contribution: study design, manuscript preparation and revision)
44. Chalak LF, Pappas A, Tan S, Das A, Sánchez PJ, Laptook AR, Van Meurs KP, Shankaran S, Bell EF, Davis AS, Heyne RJ, Pedroza C, Poindexter BB, Schibler K, Tyson JE, Ball MB, Bara R, Grisby C, Sokol GM, D'Angio CT, Hamrick SEG, Dysart KC, Cotten CM, Truog WE, Watterberg KL, Timan CJ, Garg M, Carlo WA, Higgins RD; Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network. Association of increased seizures during rewarming with abnormal neurodevelopmental outcomes at 2-year follow-up: a nested multisite cohort study. *JAMA Neurol*. 2021; 78:1484-1493. (collaborator role on network study)
45. Dagle JM, Rysavy MA, Hunter SK, Colaizy TT, Elgin TG, Giesinger RE, McElroy SJ, Harmon HM, Klein JM, McNamara PJ, Rabe GK, Bell EF, Thomas BA, Bischoff AR, Rios DR, Lindower JB, Bermick JR, Lee SS, Wong SW, **Roghair, RD**, Morgan-Harris AT, Niwas R, Arikat S, Boly TJ, Segar JL. Cardiorespiratory management of infants born at

22 weeks' gestation: the Iowa approach. *Semin Perinatol* 2022; 46:151545. (contribution: conception and revision)

46. Vasilakos LK, Steinbrekera B, Santillan DA, Santillan MK, Brandt DS, Dagle D, **Roghair RD**. Umbilical cord blood leptin and IL-6 in the presence of maternal diabetes or chorioamnionitis. *Front. Endocrinol* 2022; 13:836541.
47. Kent ME, Hu B, Eggleston TM, Squires RS, Zimmerman KA, Weiss RM, **Roghair RD**, Lin F, Cornell RA, Haskell SE. Hypersensitivity of zebrafish htr2b mutant embryos to sertraline indicates a role for serotonin signaling in cardiac development. *J Cardiovasc Pharmacol* 2022; 80:261-9. (contribution: conception, data interpretation and manuscript revision)
48. Chatmethakul T, Schmelzel ML, Johnson KJ, Walker JR, Santillan DA, Colaizy TT, **Roghair RD**. Postnatal leptin levels correlate with breast milk leptin content in infants born before 32 weeks gestation. *Nutrients* 2022; 14:5224.
49. Vass RA, Bell EF, **Roghair RD**, Kiss G, Funke S, Bokor S, Molnár D, Miseta A, Bódis J, Kovács K, Ertl T. Insulin, testosterone, and albumin in term and preterm breast milk, donor milk, and infant formula. *Nutrients* 2023; 15:1476.
50. **Roghair RD**, Colaizy TT, Steinbrekera B, Vass RA, Hsu E, Dagle D, Chatmethakul T. Neonatal leptin levels predict the early childhood developmental assessment scores of preterm infants. *Nutrients*. 2023; 15:1967.
51. Ewald JT, Steinbrekera B, Bermick JR, Santillan DA, Colaizy TT, Santillan MK, **Roghair RD**. Inflammatory biomarker profiles in very preterm infants within the context of preeclampsia, chorioamnionitis and clinically diagnosed postnatal infection. *Pediatr Reports* 2023; 15:483-493.

## Grants

### Active

“Medical Student Summer Research Program”

NIH/NHLBI

T35 HL166206

\$143,398

**3/1/23-2/29/28**

**Robert D. Roghair, M.D. (PI)**

0% effort

Funds 3 month-long summer research experiences for 16 rising M2 students engaged in Heart, Lung, Blood or Sleep-related research.

“Sedentary behavior, physical activity, and 24-hour behavior in pregnancy and offspring health: The Pregnancy 24/7 Offspring Study”

NIH/NHLBI

R01 HL164662

\$702,700

**4/17/23-2/29/28**

Whitaker, Kara and Barone Gibbs, Bethany (MPI)

5% effort or 0.6 calendar months (Role: collaborator)

The overall goal is to examine the associations of sedentary behavior and moderate-to-vigorous physical activity across pregnancy with offspring obesity risk and cardiovascular disease risk through 24 months.

“Iowa Medical Student Summer Research Program in trans-NIDDK Research”

NIH/NIDDK

T35 DK135446

\$102,689

**5/1/23-4/30/28**

**Robert D. Roghair, M.D. (PI)**

0% effort

Funds 3 month-long summer research experiences for 12 rising M2 students engaged on trans-NIDDK research.

### **Completed**

“Research Training Program in Pediatric Cardiology”

NIH Ruth L. Kirschstein National Research Service Award (NRSA),

T32 HL07413

6/30/02 – 6/29/04

Larry T. Mahoney, M.D. (PI)

100% effort (fellow on training grant)

“Corticosteroids in the Programming of Coronary Artery Disease”

Advancing Newborn Medicine Fellowship Grant Program (Forest Pharmaceuticals, Inc.)

2003-2004

**Robert D. Roghair, M.D. (PI)**

0% effort (fellow on training grant, no salary support)

“Physicians Training Program in Neonatal Biology”

NIH Ruth L. Kirschstein National Research Service Award (NRSA),

T32 HD041922

7/1/04 – 6/30/05

John A. Widness, M.D. (PI)

100% effort (fellow on training grant)

“Molecular and Cellular Research to Advance Childhood Health”

NIH Child Health Research Center Career Development Award

K12 HD027748

7/1/05 - 6/30/06

Michael Artman, M.D. (PI)

100% effort (CHRC scholar)

“Characterization of a murine model of fetal programming”

Children’s Miracle Network Research Grant

1/1/06 – 12/31/06

**Robert D. Roghair, M.D. (PI)**

0% effort (no salary support allowed)

“Pathways of fetal programming of coronary dysfunction”

NIH/NICHD

K08 HD050359

\$116,575

8/1/06-7/31/11

**Robert D. Roghair, M.D. (PI)**

80% effort (9.6 months); reduced to 50% effort on 8/1/10 due to R01

This study investigated the contribution of prostanoids and reactive oxygen species in coronary artery dysfunction programmed by early gestation dexamethasone administration in sheep.

“Pathways of fetal programming of coronary dysfunction”

NIH/NICHD

K08 HD050359-S1

8/1/09-10/31/10

**Robert D. Roghair, M.D. (PI)**

This administrative supplement from the American Recovery and Reinvestment Act supported summer research experiences for undergraduate and high school students.

“Developmental Origins of Central Blood Pressure Dysregulation”

Children’s Miracle Network Research Grant

1/1/09 – 6/30/10

**Robert D. Roghair, M.D. (PI)**

0% effort (no salary support allowed)

This grant investigated the role of neonatal leptin deficiency in the programming of stress-induced hypertension in mice.

“Effect of Perinatal SSRI Exposure on Adult Heart Rate Regulation”

American Heart Association, Midwest Affiliate

Undergraduate Student Research Fellowship

6/1/10 – 8/31/10

Ran Zhang (PI)

0% effort (Role: mentor and sponsor)

“Neonatal Growth and the Neurodevelopmental Origins of Hypertension”

NIH/NHLBI

R01 HL102659

\$250,000

8/1/10-5/31/16

**Robert D. Roghair, M.D. (PI)**

35% effort (4.2 calendar months)

This grant investigated the role of neonatal leptin deficiency in the programming of central angiotensin II-mediated hypertension.

“Molecular and Cellular Research to Advance Childhood Health”

NIH/NICHD

K12 HD027748

1/1/12-12/31/14

Hirsch (PI)

0% effort (Role: mentor)

This institutional training grant provides support to junior faculty members within the Department of Pediatrics.

“Impact of the CFTR- $\Delta$ F508 Mutation on Perinatal Cardiovascular Physiology”

Institute for Clinical and Translational Science Pilot Grant

7/1/12 – 6/30/13

**Robert D. Roghair, M.D. (PI)**

0% effort (no salary support allowed)

This grant investigated the effect of the  $\Delta$ F508 mutation on uterine and umbilical artery flow and umbilical smooth muscle cell calcium handling.

“Pregnancy as a Risk Factor for Hyperglycemia-Induced Vasculopathy”

Society for Vascular Surgery Foundation Student Research Fellowship

5/1/13 – 4/30/14

Kaisen Yao (PI)

0% effort (Role: mentor and sponsor)

“Leptin and the Programming of Sex-Specific Cardiovascular Disease”

American Heart Association, Midwest Affiliate

Undergraduate Student Research Fellowship

6/1/13 – 8/31/13

Vivian Zhu (PI)

0% effort (Role: mentor and sponsor)

“Short-term Training for Students in the Health Professions”

NIH/NHLBI

T35 HL007485

\$242,000

5/1/15-4/30/21 (NCE)

**Robert D. Roghair, M.D. (PI)**

0% effort

Funds 12 week summer research experiences for 32 rising M2 students.

“Leptin Deficiency of Prematurity”

Children’s Miracle Network Research Grant

7/1/17 – 6/30/18

Baiba Steinbrekera, M.D. (PI)

0% effort (Role: mentor and sponsor)

“Gut-microbiota sensitive vascular microRNA-204 (mir-204) promotes diabetes-associated non-dipping hypertension”

UI Center for Hypertension Research Pilot Project

\$50,000

7/1/17 – 6/30/18

**Roghair RD and Vikram A (co-PI)**

0% effort

“Maternal and neonatal determinants of critically important hormone levels”

UI Premed Student Summer Research Internship

\$4000

6/1/21 – 7/31/21

0% effort (Role: mentor and sponsor)

## **Presentations**

1. “Early gestation dexamethasone programs enhanced coronary reactivity”. Brody Research Colloquium on Brain, Body Fluid Balance and Blood Pressure. University of Iowa Cardiovascular Center. February 2003
2. “Programming of coronary artery dysfunction by early gestation dexamethasone exposure”. 63rd Perinatal and Developmental Medicine Symposium, Marco Island, Florida. November 2003
3. “Prenatal programming of coronary artery disease”. Department of Pediatrics Combined Research Seminar. University of Iowa Carver College of Medicine. June 2004
4. “Programmed coronary artery dysfunction”. Child Health Research Centers Annual Retreat. Dear Valley, Utah. September 2005
5. “Fetal Programming of Cardiovascular Disease: Role of Reactive Oxygen Species” Cardiovascular Center Seminar. University of Iowa. January 2007
6. “Sex Differences in Fetal Programming of Metabolic and Cardiovascular Diseases”

- Organization for the Study of Sex Differences Annual Meeting. Toronto, Canada. June 2009
7. "Vascular nitric oxide and superoxide anion contribute to sex-specific programmed cardiovascular physiology in mice" Aspen Perinatal Biology Conference. Aspen, CO. August 2010
  8. "Vascular nitric oxide and superoxide anion contribute to sex-specific programmed cardiovascular physiology in mice" Environmental Health Sciences Research Seminar. Iowa City, IA. April 2012
  9. "Neurodevelopmental Origins of Hypertension" Frontiers in Pediatric Research, Iowa City, IA. January 2014
  10. "Evaluation of the ill newborn" Grand Rounds, Northeast Iowa Medical Education Foundation, Waterloo, IA. August 2014
  11. "Sex, stress, leptin and the programming of hypertension" Neonatology Grand Rounds. University of Colorado, Denver, CO. September 2014
  12. "Cardiac arrest: long-term implications of a heart left two sizes too small" Perinatal Research Center Conference. University of Colorado, Denver, CO. September 2014
  13. "Mitigating the Risks Associated with Accelerated or Deficient Perinatal Growth" APS Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology, San Diego, CA. October 2014
  14. "Neurodevelopmental Origins of Hypertension" University of Illinois-Chicago, Chicago, IL. October 2014
  15. "Developmental Origins of Health and Disease" University of Iowa Maternal-Fetal Medicine Conference, November 2014
  16. "Neurodevelopmental Origins of Hypertension" University of Iowa Diabetes Research Center Seminar, February 2015
  17. "Developmental Origins of Adult Cardiovascular Disease" University of Iowa Summer Undergraduate MSTP Research Seminar, June 2015
  18. "Cardiovascular Outcomes Following Intrauterine Undernutrition or Preterm Delivery" Aspen Perinatal Biology Conference. Snowmass, CO. August 2016
  19. "Translational Cardiovascular Investigations in Sheep and Transgenic Pigs" Michigan State University, Lansing, MI, March 2017
  20. "Addressing Disparities in the Receipt of Human Milk Associated with Maternal Race, Ethnicity, and Preferred Language" Children's and Women's Services Nursing Conference, Cedar Rapids, IA, October 2024

### Areas of Research Interest

The Roghair lab investigates the developmental origins of adult cardiometabolic disease across a number of model systems. This work originated with the realization that an adverse perinatal environment increases the risk of adult hypertension and obesity.

<https://roghair.lab.uiowa.edu/research>

- **Prematurity:** As a neonatologist, Dr. Roghair is driven to help bring a brighter future to premature infants. Premature infants are at an increased risk of hypertension, diabetes and obesity, and the risks are greatest in those born at the earliest gestations. With survival rates exceeding 90% for infants born as early as 23 weeks gestation, we are addressing critical knowledge gaps including longitudinal growth and body composition analysis, evidence-based nutritional recommendations and strategies to improve long-



term cardiometabolic health. Our proposals leverage key clinical data, critical basic science discoveries and an interdisciplinary team of professionals to investigate quality improvement strategies and innovative therapeutic applications that could transform neonatal management with a positive impact on long-term cardiometabolic health. The figure on my website shows the profound leptin deficiency that develops following preterm delivery with postnatal levels far below the reference levels obtained from umbilical cord blood at the same gestation.

- **Growth Restriction:** Mouse models of natural growth restriction and diet-based perturbations of the perinatal environment are currently being studied as they relate to cardiovascular, behavioral and metabolic outcomes. The second Figure on our website demonstrates a normalization of adult learning when neonatal growth restriction-related leptin deficiency is prevented with neonatal leptin supplementation.
- **SSRI Exposure:** A significant percentage of pregnant women receive antidepressants during pregnancy. Although short-term side effects are manageable, there is emerging evidence intrauterine SSRI exposure may program adult cardiovascular and behavioral outcomes. Utilizing complementary mouse models and epidemiological studies, we are defining the molecular underpinnings of this “post-SSRI syndrome”.
- **Cystic Fibrosis:** Our proximity to the cystic fibrosis research groups at the University of Iowa led to our observation that the most common cystic fibrosis-causing mutation (CFTR-deltaF508) significantly impacts vascular tone. We are now aggressively assessing the effect of CFTR on arterial function in a number of species, including mice, pigs and humans that carry a copy of the CFTR-deltaF508 mutation.

## SERVICE

### Professional Memberships

2005-present American Academy of Pediatrics (AAP)

2006-present Midwest Society for Pediatric Research (MWSPR)

2006-present American Physiological Society (APS)

2007-present Society for Pediatric Research (SPR)

**2023-present SPR JEDI Task Force, member**

**2023-present SPR representative to the DEI Committee of the Pediatric Academic Society (PAS) Annual Meeting**

**2024: Ambassador for students selected to attend the PAS Annual Meeting in Toronto as part of the “Welcome the Next Generation DEI Pilot Program”**

2013-present American Heart Association (AHA)

2021-present American Pediatric Society (APS)

### Professional Service

#### College Service

##### Committees

2009-present Carver College of Medicine, intramural grant reviewer

2022-present Diversability Employee Resource Group, member

##### Leadership roles

**2014-present Director, Medical Student Research Council**

**2022-present Advisor, Iowa Medical Students with Disabilities and Chronic Illness**

Department Service

Committees

2008-present Pediatrics Research Committee, member

2009-2012 Pediatrics Residency Recruitment, member

**2021-present Promotion Advisory Committee, member**

**2022-present Diversity, Equity and Inclusion Committee, liaison for Neonatology**

Leadership roles

2006-2012 Coordinator, Division of Neonatology Journal Club

2008-2012 Coordinator, Departmental Grand Rounds: Research Seminar Series

2013-2015 Director, Physician Scientist Training Pathway (PSTP)

2014-2016 Director, Neonatal Outreach, Division of Neonatology

**2022-present Founding Leader, JEDI Working Group for Neonatology**

Public Service

NIH Study Sections

2011 Scientific Review Group 2012/01 ZES1 LWJ-J (DI) convened to review NIEHS R21 applications in response to the FOA, "Dietary Influence on the Human Health Effects of Environmental Exposures"

2015 Pregnancy and Neonatology Study Section [PN]

2017 Pregnancy and Neonatology Study Section [PN]

2017 Integrated Review Group ZRG1 F06-A 20 convened to review submissions to the Endocrinology, Metabolism, Nutrition & Reproductive Sciences (EMNR) Fellowship Panel

2018 Pregnancy and Neonatology Study Section [PN]

2018 CSR Anonymization Study (EMNR IRG)

2022 Scientific Review Group 2022/08 ZHD1 DSR-K (91) convened to review NICHD Loan Repayment Program applications

2023 Scientific Review Group 2023/08 ZHD1 DSR-K (90) convened to review NICHD Loan Repayment Program applications

2024 NHLBI Special Emphasis Panel to review T35 applications submitted to the Ruth L. Kirschstein National Research Service Award (NRSA) Short-Term Institutional Research Training Grant (PA-23-080) funding opportunity

Journal Reviewer

American Journal of Physiology - Endocrinology and Metabolism

American Journal of Physiology - Heart and Circulatory Physiology

American Journal of Physiology - Regul, Integr and Comp Physiol

Antioxidants and Redox Signaling

Applied Microbiology

Autonomic Neurosci Basic and Clinical

BMC Genomics

BMC Physiology  
Cardiology  
Children  
Circulation  
Circulation Research  
Clinical and Experimental Hypertension  
Comparative Biochemistry and Physiology  
Current Hypertension Reviews  
Data in Brief  
Diabetes  
Early Human Development  
Experimental Physiology  
Expert Review of Endocrinology and Metabolism  
Foods  
Frontiers in Endocrinology – Pediatric Endocrinology  
Frontiers in Neurology  
Frontiers in Pediatrics - Neonatology  
**Frontiers in Physiology - Developmental & Metabolic Physiology**  
    **2021-present: Associate Editor**  
    2022-23: Guest Editor: Model Organisms in Physiology  
    2022-23: Guest Editor: Bioenergetic Profile in Pediatrics  
Global Pediatrics  
Healthcare  
Heliyon  
Hormone and Metabolic Research  
Hormones and Behavior  
Hypertension  
International Journal of Environmental Research and Public Health  
International Journal of Molecular Science  
Jornal de Pediatria  
Journal of American Heart Association  
Journal of Applied Physiology  
Journal of Cystic Fibrosis  
Journal of Developmental Origins of Health and Disease  
Journal of Endocrinology  
Journal of Maternal Fetal and Neonatal Medicine  
Journal of Neonatal-Perinatal Medicine  
Journal of Pediatric Biochemistry  
Journal of Pediatric Genetics  
Journal of Pediatric Neurology  
Journal of Physiology

Journal of the Renin Angiotensin Aldosterone System  
Life Sciences  
Molecular and Cellular Biochemistry  
Molecular and Cellular Endocrinology

**Nutrients**

**2021-present: Section Editor for Pediatric Nutrition**

2022: Guest Editor: Complementary Feedings

2023: Guest Editor: Benefits of Breastfeeding

Nutrition Reviews  
Pediatric Reports  
Pediatric Research  
Pediatrics  
Physiological Genomics  
PLOS One  
Reproductive Sciences  
Veterinary Sciences  
Women's Health  
Yale Journal of Biology and Medicine

Clinical Assignments

University of Iowa Hospitals and Clinics, Iowa City, Iowa  
Staff the neonatal intensive care units 2 to 3 months a year

Covenant Medical Center, Waterloo, Iowa  
Genesis Medical Center, Davenport, Iowa  
Mercy Medical Center, Cedar Rapids, Iowa  
Provide NICU coverage at each location, as needed