

CURRICULUM VITAE

PERSONAL:

Name: Juan A. Arroyo
6897 S Jordan Village Rd
West Jordan, UT 84048
Email: jarroy@gmail.com

EDUCATION

1990 University of Puerto Rico, Mayaguez, PR
B.S. Chemistry
2003 Southern Illinois University-School of Medicine Springfield, IL
Ph.D. Molecular Biology, Microbiology and Biochemistry

PROFESSIONAL EXPERIENCE

Brigham Young University, Provo UT
Assistant Professor May 2012- present

University of Kansas Medical Center, Kansas City, KS
Assistant Professor December 2009- May 2012

University of Colorado at Denver and Health Sciences Center, Aurora, CO
Assistant Professor July 2007–Nov 2009
Instructor/Fellow May 2005-July 2007

Kansas University Medical Center, Kansas City, KS 2003-2004
Post-doctoral Fellow

Southern Illinois University, Springfield, IL 1999-2003
Graduate Assistant

Nature's Sunshine Products, Spanish Fork, UT 1997-1999
QA Scientist

Laidlaw Environmental Services, CLIVE, UT 1995- 1997
Chemist/ Scientist

InterAmerican University, Puerto Rico 1991-1992
Chemistry Instructor

AWARDS AND HONORS

1999-2002 Illinois Minority graduate incentive program (IMGIP) fellowship

2001 3rd place in the Southern Illinois University School of Medicine Alpha Omega Alpha
SIUC Chapter of Sigma Xi - Combined Research Symposium, Springfield, IL

- 2002 Travel award for outstanding abstract presentation in The First Brown-Linkoping Conference on Basic and Clinical Aspects of Reproductive Immunology, Providence, RI
- 2003 Travel award for outstanding abstract presentation in The 23rd Annual Meeting of the American Society for Reproductive Immunology, New Haven, CT
- 2003 Travel award for abstract presentation in The 36th Annual Meeting of the Society for the Study of Reproduction, Cincinnati, OH.
- 2004 Travel award for poster presentation in The 24th Annual Meeting of the American Society for Reproductive Immunology, Saint Louis, MO

GRANT AWARDS

- 2003 F31 NIH-NSRA fellowship award title: Function of Placenta Growth Factor in Human Trophoblast. Application number: 1 F31 HD043692-01A1, priority score: 172. Fellowship awarded but rejected due to a previous acceptance of post doctoral fellowship
- 2003-2004 Received a Reproductive Biology training grant for Postdoctoral training-University of Kansas Medical center
- 2005-2006 Received a Reproductive Biology training grant for Postdoctoral training-University of Colorado at Denver and Health Sciences Center
- 2006-2008 Minority Supplement fellowship- Determination of Mitochondrial number in the Villi of the Human Placenta
- 2006-2008 NIH Loan repayment program award

CURRENT SUPPORT

Clinical Innovator Grant (2016-2019), Co-PI
Flight Attendant Medical Research Institute RAGE and SAGE: Modeling secondhand smoke-induced COPD and therapeutic modalities

PENDING GRANTS AND FELLOWSHIPS

National Institute of Health R15, PI

Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)
The induction of preeclampsia by novel growth arrest-specific 6 (Gas6)-mediated mechanisms.

INSTITUTIONAL GRANTS AND FELLOWSHIPS

Myriad Award of Excellence in Learning Leadership for faculty promoting excellence in undergraduate research (2016-2017) PI

COMPLETED RESEARCH SUPPORT

1K99HD055054-01A2 (PI: Juan Arroyo, PhD)
5/1/09-4/31/15
NIH/NICHD

Apoptosis in an ovine model of intrauterine growth restriction (IUGR)

This project involves the study of apoptosis pathways during gestation during IUGR. Role:

PI

5 RO1 HD34837 (PI: Frederick C Battaglia, MD)

2/1/02 – 1/31/08; no cost extension

NIH

Fetal Velocimetry & Amino Acid Transport in Pregnancy

This project involves clinical studies of amino acid and carbohydrate transport in pregnant women.

Role: Co-Investigator

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

2000-present	Member, Society for the Study of Reproduction
2012-present	Member, American physiological Society
2000-present	Member, American society for reproductive immunology

PATENTS AND INVENTIONS

Provisional Patent filed Aug 2016 (Provisional patent; Inhibition of AXL receptor in the treatment of preeclampsia.

PUBLICATIONS (peer reviewed)

1. Torry DS, **Arroyo J**, Mukherjea D, and Torry RJ. Function of placenta growth factor: Implications for Abnormal Placentation. J Society for Gynecologic Investigation. 2003 May; 10(4): 178-88.
2. **Arroyo J**, Torry RJ, and Torry DS. Differential Regulation of Placenta Growth Factor (PlGF)- Mediated Signal Transduction in Human Primary Term Trophoblast and Endothelial Cells. Placenta. 2004 May; 25(5): 379-86.
3. **Arroyo J**, Konno T, Khalili D, and Soares M J. A Simple in Vivo Approach to Investigate Invasive Trophoblast Cells. Int. J. of Dev. biology 2005; 49:977-980.
4. **Arroyo J**, Anthony R, Parker T, and Henry G. Differential Expression of Placental and Vascular Endothelial Nitric Oxide Synthase (eNOS) in an Ovine Model of Fetal Growth Restriction. Am J of Obst. and Gynecology 2006; 195(3): 771-7.
5. Konno T, Rempel LA, **Arroyo JA**, and Soares M J. Pregnancy in the Brown Norway Rat. A Model for Investigating the Genetics of Placentation. Biol Reprod. 2007 Apr; 76(4): 709-18.
6. Ziebell Bradley, Russell Anthony, Thomas Parker, Timothy Regnault, Henry Galan and **Juan Arroyo**. Ovine Endothelial Nitric Oxide Synthase Message: Ontogeny and Effect of HT in an IUGR Model. Am J Obstet Gynecol. 2007 Oct; 197(4): 420.e1-5.
7. **Arroyo JA**, Anthony Russell and Henry Galan. Decreased X-linked Inhibitor of Apoptosis Protein (XIAP) in an Ovine Model of Fetal Growth Restriction. Am J Obstet Gynecol. 2008 Jul; 199(1): 80.e1-8.
8. **Arroyo JA**, Cecilia Teng, Frederick Battaglia and Henry Galan. Determination of the NAFT5/TonEBP Transcription Factor in the Human and Ovine Placenta. Syst Biol Reprod Med. 2009 Aug; 55(4): 164-70.

9. **Arroyo JA**, Brown Laura, Galan Henry. Placental mTOR and related signaling pathways in an Ovine Model of Intrauterine Growth Restriction (IUGR). *Am J Obstet Gynecol*. 2009 Dec; 201(6): 616.e1-7.
10. **Arroyo JA**, Russell Anthony, Thomas Parker, and Henry Galan. eNOS, NO, and the activation of ERK and AKT signaling at mid-gestation and near-term in an ovine model of intrauterine growth restriction. *Syst Biol Reprod Med*. 2010 Feb; 56(1): 62-73.
11. **Arroyo JA**, Cun Li, Natalia Schlabritz-Loutsevitch, Tom McDonald, Peter Nathanielsz, and Henry L Galan. Increased placental XIAP and caspase 3 is associated with increased placental apoptosis in a baboon model of maternal nutrient reduction (MNR). *Am J Obstet Gynecol*. 2010 Oct; 203(4): 364.
12. Park M, Henry L. Galan, and **Juan A. Arroyo** Effect of hypoxia on endothelial nitric oxide synthase, NO production, intracellular survival signaling (p-ERK1/2 and p-AKT) and apoptosis in human term trophoblast. *Am J Reprod Immunol*. 2011 Apr; 65(4): 407-1.
13. **Arroyo JA**, Garcia-Jones P, Teng C, Battaglia F, and Henry Galan. Placental TonEBP/NFAT5 Osmolyte Regulation in an Ovine Model of Intrauterine Growth Restriction (IUGR). *Biol Reprod*. 2012 Mar 30; 86(3): 94
14. Bahr, B, Galan H and **Juan Arroyo**. Decreased Expression of Activated Placental Heat Shock Protein 27 in Human and Ovine Intrauterine Growth Restriction (IUGR). *Placenta*. 2014 Jun; 35(6):404-10.
15. **Arroyo JA**, Price M, Straszewski-Chavez S, Torry R, Mor G, and Torry D. XIAP protein is induced by Placenta Growth Factor (PlGF) and decreased during preeclampsia in trophoblast cells. *Syst Biol Reprod Med*. 2014 Oct; 60(5):263-73.
16. Bahr B, Price M, Merrill D, Mejia C, Call L, Bearss D and **Juan Arroyo**. Different expression of placental pyruvate kinase in normal, preeclamptic and intrauterine growth restriction pregnancies. *Placenta*. 2014 Sep 16. pii: S0143-4004(14)00781-4.
17. Knuth A, Liu L, Nielsen H, Merrill D, Torry D., and **Juan Arroyo**. Placenta Growth Factor (PlGF) induces invasion and activates p70 during Rapamycin treatment in trophoblast cells. *Am J Reprod Immunol*. 2014 Oct 1.
18. Lee G, Price M, Mejia C, Galan H, and **Juan Arroyo**. Increased trophoblast expression of NFAT5/TonEBP in preeclamptic placentas and in hyperosmolar treated BeWo cells. *Eur J Obstet Gynecol Reprod Biol*. 2014 Dec; 183: 37-43.
19. Aguilar C^{1,2,3}, Stark MR⁴, **Arroyo JA**⁴, Standing MD⁵, Rios S², Washburn T⁴, Sites JW Jr¹. Placental morphology in two sympatric Andean lizards of the genus *Liolaemus* (Reptilia: Liolaemidae). *J Morphol*. 2015 Oct;276(10):1205-17. doi: 10.1002/jmor.20412.
20. Jimenez FR¹, Belgique ST, Lewis JB, Albright SA, Jones CM, Howell BM, Mika AP, Jergensen TR, Gassman JR, Morris RJ, **Arroyo JA**, Reynolds PR. Conditional pulmonary over-expression of Claudin 6(Cldn6) during embryogenesis delays lung morphogenesis. *Int J Dev Biol*. 2015 Jul 22.

21. Alexander K, Nelson M, Howell B, Mejia C, Jones C, Reynolds P, and **Juan A. Arroyo**. Differential Receptor for Advanced Glycation End-Products (RAGE) Expression in Preeclamptic, Intrauterine Growth Restricted, and Gestational Diabetic Placentas. *Am J Reprod Immunol. Am J Reprod Immunol.* 2015 Dec 19.
22. Kimball R, Wayment M, Merrill D, Wahlquist T, Reynolds P, **Juan A. Arroyo**. Hypoxia reduces placental mTOR activation in a hypoxia-induced model of intrauterine growth restriction (IUGR). *Physiol Rep.* 2015 Dec; 3(12).
23. Mejia C, Lewis J, Jordan C, Mejia J, Ogden C, Monson T, Winden D, Watson M, Reynolds PR, **Juan A. Arroyo**. Decreased activation of placental mTOR family members is associated with the induction of intrauterine growth restriction by secondhand smoke in the mouse. *Cell Tissue Res.* 2016 Sep 9
24. Lewis JB, Milner DC, Lewis AL, Dunaway TM, Egbert KM, Albright SC, Merrell BJ, Monson TD, Broberg DS, Gassman JR, Thomas DB, **Arroyo JA**, Reynolds PR. Up-Regulation of Claudin-6 in the Distal Lung Impacts Secondhand Smoke-Induced Inflammation. *Int J Environ Res Public Health.* 2016 Oct 17;13 (10).
25. Jimenez FR, Lewis JB, Belgique ST, Milner DC, Lewis AL, Dunaway TM, Egbert KM, Winden DR, **Arroyo JA**, Reynolds PR. Cigarette smoke and decreased oxygen tension inhibit pulmonary claudin-6 expression. *Exp Lung Res.* 2016 Dec 16:1-13.
25. Troy Monson, Tanner Wright, Henry L. Galan, Paul R Reynolds, and **Juan A. Arroyo**. Caspase dependent and independent mechanisms of apoptosis across gestation in a sheep model of placental insufficiency and intrauterine growth restriction. *Apoptosis.* 2017 Jan 12. doi: 10.1007/s10495-017-1343-9.

BOOK CHAPTERS

1. **Juan A. Arroyo** and Virginia D. Winn. Vasculogenesis and angiogenesis in the IUGR placenta. *Seminars in Perinatology, Intrauterine Growth restriction*, 2008 Jun; 32(3): 172-7.

CONTRIBUTIONS TO PROFESSIONAL MEETINGS (ABSTRACTS PUBLISHED):

1. **Arroyo J**, Hinrichs M and Torry DS. Regulation of Cellular Biology by Placenta Growth Factor (PlGF) in Human Trophoblast. (Selected for oral presentation) 22nd Annual Meeting of the American Society for Reproductive Immunology, Chicago, IL, June 9-12, 2002
2. **Arroyo JA**, Hinrichs M and Torry DS. Regulation of apoptosis and signal transduction in trophoblast by placenta growth factor (PlGF). (Select for oral presentation) The First Brown- Linkoping Conference on Basic and Clinical Aspects of Reproductive Immunology, Providence, RI November 2002.
3. **Arroyo J**, Hinrichs M and Torry DS. Regulation of Apoptosis by Placenta Growth Factor (PlGF) in Human Trophoblast. (Selected for oral presentation) 23rd Annual Meeting of the American Society for Reproductive Immunology, New Haven, CT, June 16-21, 2003
4. **Arroyo J**, Hinrichs M and Torry DS. Unique Signal Transduction Regulation by Placenta Growth Factor (PlGF) in Term Human Trophoblast. 23rd Annual Meeting of the American Society for Reproductive Immunology, New Haven, CT June 16-21, 2003.
5. **Arroyo J**, Hinrichs M and Torry DS. Placenta Growth Factor (PlGF) Induction of Signal Transduction and Protection from Apoptosis in Human Trophoblast. (Selected for oral presentation) 36th Annual

Meeting of the Society for the Study of Reproduction, Cincinnati, OH, July-18-23, 2003.

6. **Arroyo J**, Ruparsri A and Soares MJ. Analysis of the effect of maternal hypoxia on trophoblast cell invasion in vivo. 24th Annual Meeting of the American Society for Reproductive Immunology, Saint Louis, MO June 4-6, 2004.

7. **Arroyo J**, Ruparsri A and Soares MJ. An In Vivo Approach to investigate the regulation of Trophoblast cell invasion. (selected for oral presentation) 37th Annual Meeting of the Society for the Study of Reproduction, University of British Columbia, Vancouver, BC, Canada August 1-4, 2004.

8. **Arroyo J**, Hinrichs M and Torry DS. Placenta Growth Factor (PlGF) Induction of Signal Transduction and Protection from Apoptosis in Human Trophoblast. (Oral presentation) SACNAS National Conference, Austin, TX, October 2004.

9. **Juan A. Arroyo**, Russell Anthony, Thomas Parker, Gates Roe, Santosh Pandipati, and Henry Galan. Increase in Placental eNOS Expression in an Ovine Model of Fetal Growth Restriction. 26th annual society of maternal-fetal medicine conference in Miami, FL. Selected for oral presentation January 2006.

10. **Juan A. Arroyo**, Russell Anthony, Thomas Parker, Gates Roe, Santosh Pandipati, and Henry Galan. Altered eNOS Protein Content in Uterine and Umbilical Vessels in an Ovine Model of Fetal Growth Restriction. 26th annual society of maternal-fetal medicine conference in Miami, FL. Selected for poster presentation January 2006.

11. Galan H, Pandipati S, Cioffi-Ragan, Regnault T, Ferrazzi E, Beaty B, **Arroyo J**, Anthony R. Reduction of amniotic and allantoic fluid volume in an ovine model of fetal growth restriction. Presented at the 26th annual meeting of the Society for Maternal-Fetal Medicine, January 30- February 4, 2006, Miami, Florida. Abstract #460. Am J Obstet Gynecol; 193 (6): S135

12. Pandipati S, Giclas, Oka M, Nagaoka T, Homma N, McMurtry I, **Arroyo J**, Galan H. Activated complement molecules mediate abnormal vasoreactivity of maternal and fetal arteries

22. Juan Arroyo, Cecilia Teng, Bradley Ziebell, Henry Galan and Frederick Battaglia. Determination of the NAFT5/TonEBP Transcription Factor in the Human Placenta. Annual conference of the Society for Gynecological in Reno, NV. Selected for poster presentation March 2007.

23. **Juan Arroyo**, Bradley T. Ziebell and Henry L. Galan. Hypoxia and Hyperthermia Effect on Signal Transduction and Proliferation in Ovine Umbilical Vein Endothelial Cells. 28th annual society of maternal-fetal medicine conference in Dallas, TX. Selected for poster presentation January 28-February 2, 2008.

24. **Juan Arroyo**, Russell V. Anthony, Bradley T. Ziebell and Henry L. Galan. Effect of Hypoxia and Hyperthermia on eNOS Protein in Cultured Ovine Umbilical Vein Endothelial Cells. 28th annual society of maternal-fetal medicine conference in Dallas, TX. Selected for poster presentation January 28-February 2, 2008.

25. Mi-Hye Park, **Juan A. Arroyo** and Henry L. Galan. Effect of Hypoxia on Endothelial Nitric Oxide Synthase Expression and Nitric Oxide in Human Term Trophoblast and Endothelial Cells. 28th annual society of maternal-fetal medicine conference in Dallas, TX. Selected for poster presentation January 28- February 2, 2008.

26. Mi-Hye Park, **Juan A. Arroyo** and Henry L. Galan. Effect of Hypoxia on Proliferative Activity and Apoptosis in Human Term Trophoblast. 28th annual society of maternal-fetal medicine conference in Dallas, TX. Selected for poster presentation January 28- February 2, 2008.
27. **Juan A. Arroyo**, Bradley Ziebell, Mi-Hye Park, and Henry L. Galan. Hypoxia Does Not Affect mTOR Pathway in Cultured Human Trophoblast Cells. 55th Annual Scientific Meeting of the Society for Gynecologic Investigation in San Diego, CA. Selected for poster presentation March 26-29, 2008.
28. **Juan A. Arroyo**, Bradley Ziebell, and Henry L. Galan. Increased Expression of Phospho-mTOR, Phospho-p70, Phospho-AKT and Phospho-ERK in an Ovine Model of Fetal Growth Restriction. 55th Annual Scientific Meeting of the Society for Gynecologic Investigation in San Diego, CA. Selected for poster presentation March 26-29, 2008.
29. Pastora Garcia-Jones, Henry L. Galan, Bradley T. Ziebell, Frederick C. Battaglia and **Juan A. Arroyo**. Polyol Levels, but not Tonicity Enhancer Binding Protein, are Increased in the IUGR Sheep Placenta. Pediatric Academic Society (PAS) and Society for Pediatric Research (SPR) National Conference, Honolulu, HI. Selected for Poster presentation, May 2-6 2008.
30. Pastora Garcia-Jones, Henry L. Galan, Bradley T. Ziebell, Frederick C. Battaglia and **Juan A. Arroyo**. Role of the Transcription Factor NFAT5 in IUGR Sheep Placenta. Mead Johnson Nutritionals 72nd Perinatal & Developmental Medicine Symposium "The Neonatal Lung: Waiting to Inhale, Aspen, Colorado. Selected for Platform presentation, May 29-June 2, 2008.
31. **Juan A. Arroyo**, Virginia D. Winn, Bradley T. Ziebell and Henry L. Galan. Increased protein synthesis in preeclamptic villi is not regulated by the classical mTOR pathway, Chicago, IL. 28th annual meeting of the American Society for Reproductive Immunology. Selected for poster presentation, June 11-14th 2008.
32. **Juan Arroyo**, Bradley T. Ziebell, Pastora Garcia-Jones and Henry L. Galan. Increase in Placental Aldose Reductase but not NFAT5/ TonEBP Transcription Factor in an Ovine Model of IUGR. 29th annual society of maternal-fetal medicine conference in San Diego, CA. Selected for poster presentation January 26- January 31, 2009.
33. **Juan Arroyo**, Bradley T. Ziebell, and Henry L. Galan. Increase Placental Apoptosis is an Early Event in an Ovine Model of Intrauterine Growth Restriction. 29th annual society of maternal-fetal medicine conference in San Diego, CA. Selected for poster presentation January 26- January 31, 2009.
34. **Juan Arroyo**, Virginia D. Winn, Bradley T. Ziebell, and Henry L. Galan. XIAP, Caspase 3 and Apoptosis in the Preeclamptic Placenta. 29th annual society of maternal-fetal medicine conference in San Diego, CA. Selected for poster presentation January 26- January 31, 2009.
35. **Juan Arroyo**, Cun Li, Natalia Schlabritz-Loutsevitch, Tom McDonald, Bradley T. Ziebell, Peter Nathanielsz, and Henry L. Galan. Increased Placental Apoptosis and Increased X-linked Inhibitor of Apoptosis Protein in a Baboon Model of Maternal Nutrient Restriction. 29th annual society of maternal-fetal medicine conference in San Diego, CA. Selected for poster presentation January 26- January 31, 2009.
36. **Juan Arroyo**, Li C, Schlabritz-Loutsevitch N, McDonald T, Ziebell BT, Nathanielsz P, Galan H. Decreased p-ERK, but not p-JNK or p-AKT at term is associated with increased apoptosis and caspase 3

following maternal nutrient reduction in the baboon placenta (MNR). Oral and Poster presentation at the 29th Annual Meeting of the American Society for Reproductive immunology, June 5-9, 2009, in Orlando, FL, June 5-10, 2009.

37. **Arroyo JA**, Lee G, Oka M, Galan HL. Vasoreactivity in umbilical and uterine arteries in an ovine model of intrauterine growth restriction. Oral presentation at the 29th Annual meeting of the Society for Maternal- Fetal Medicine, Chicago, IL, February 1, 2010 - February 6, 2010.

38. Lee Gene, Galan H, Teng C, Battaglia F, **Arroyo J**. Hyperosmolarity increases inositol, sorbitol and NFAT5/TonEBP concentrations in trophoblast cells. Poster presentation at the 57th annual meeting of the Society for Gynecologic Investigation, Orlando, FL, March 24-27, 2010.

39. **Juan Arroyo**, Joseph Statwick and Henry Galan. Increase Placental Bcl2 but not HSP27 is an early event in an ovine model of intrauterine growth restriction (IUGR). Poster presentation at the 30th Annual Meeting of the American Society for Reproductive immunology, in Pittsburg, PA, May 17-20, 2010.

40. **Juan A. Arroyo**. The sheep as a model of intrauterine growth Restriction (IUGR). Post- graduate oral presentation at the 30th Annual Meeting of the American Society for Reproductive immunology, in Pittsburg, PA, May 17-20, 2010.

41. **Juan A. Arroyo**, Peter Nathanielsz and Henry L Galan. The impact of maternal nutrient reduction (MNR) on placental mTOR and signaling pathways in the baboon. Poster presentation at the 30th Annual Meeting of the American Society for Reproductive immunology, in Pittsburg, PA, May 17-20, 2010.

42. Amanda Graham, Donald S. Torry, and **Juan A. Arroyo**. Placenta Growth Factor (PGF) induces invasion and activates p70 during Rapamycin treatment in trophoblast cells. Accepted for poster presentation for the 59th annual meeting of the Society for Gynecologic Investigation, San Diego, CA, March 21-24, 2012.

43. **Juan Arroyo**. Decreased activation of Placental mTOR is Associated with Increase Invasive trophoblast 4EBP1 activation during Intrauterine Growth Restriction (IUGR) development in the Rat. Accepted for poster presentation at the 2013 Experimental Biology Annual meeting, Boston, MS, April 20-24, 2013.

44. Cody winters and **Juan Arroyo**. Hypoxia Induced Intrauterine Growth Restriction (IUGR) in the Rat. Accepted for poster presentation at the 2013 Experimental Biology Annual meeting, Boston, MS, April 20-24, 2013.

45. Matthew Price and **Juan Arroyo**. Decreased Activation of the X-linked inhibitor of Apoptosis Protein (XIAP) is Associated with Increased Apoptosis in the Preeclamptic Placenta. Accepted for poster presentation at the 2013 Experimental Biology Annual meeting, Boston, MS, April 20-24, 2013.

46. Dan Merrill, Brigham Bahr, and Juan Arroyo. Decreased Expression of Activated Placental Heat Shock Protein 27 in Human and Ovine Intrauterine Growth Restriction (IUGR). Accepted for poster presentation at the 2014 Experimental Biology Annual meeting, San Diego, CA, April 26-30, 2014.

47. Camilo Mejia, Matthew Price, and **Juan Arroyo**. Increased X-linked Inhibitor of Apoptosis

(XIAP)-Associated Factor 1 (XAF1) and decreased activation of the X-linked inhibitor of Apoptosis Protein (XIAP) are associated with increased apoptosis in the preeclamptic placenta at term. Accepted for poster presentation at the 2014 Experimental Biology Annual meeting, San Diego, CA, April 26-30, 2014.

48. Aleksander P. Mika, Brian Howell, Paul R. Reynolds and **Juan A. Arroyo**. Elevated apoptosis in ovine Intrauterine Growth Restriction (IUGR) is associated with increased caspase 3 and 9 and decreased telomerase activity. Poster at the 2015 Experimental Biology Annual meeting, Boston, MA, March 28th-April 1st, 2015.

49. Camilo A Mejia, Andrew Johnston, Rebecca Lutz, Paul R Reynolds and **Juan A Arroyo**. Inhibition of trophoblast invasion by the growth arrest-specific 6 (GAS6) protein. Poster at the 2015 Experimental Biology Annual meeting, Boston, MA, March 28th-April 1st, 2015.

50. Camilo A. Mejia, Brigham L. Bahr, Paul R. Reynolds, and **Juan A. Arroyo**. Nuclear and cytosolic expression of placental PKM2 in preeclampsia and intrauterine growth restriction. Poster at the 2015 Experimental Biology Annual meeting, Boston, MA, March 28th-April 1st, 2015.

51. Kristen Alexander, Joshua B. Lewis, Camilo Mejia, Brian Howell, Paul R. Reynolds and **Juan A. Arroyo**. Differential placental expression of the Receptor for Advanced Glycation End-Products (RAGE) in normal and complicated pregnancies. Poster at the 2015 Experimental Biology Annual meeting, Boston, MA, March 28th-April 1st, 2015.

52. Juan F. Mejia, Zachary Sitton, Camilo A. Mejia, Paul R. Reynolds and **Juan A. Arroyo**. Induction of intrauterine growth restriction (IUGR) by secondhand smoke (SHS): a role for the Receptor for Advanced Glycation End-products (RAGE) in the development of disease. Poster at the 2015 Society for the Study of Reproduction Annual meeting, San Juan, P.R., June 18-22nd, 2015.

53. Camilo A. Mejia, Troy Monson, Clinton Jordan, Benjamin T. Bikman, Paul R. Reynolds, and **Juan A. Arroyo**. Treatment with diet or insulin induces a different placental Ceramide expression during gestational diabetes mellitus (GDM). Poster at the 2016 Experimental Biology Annual meeting, San Diego, CA, April 2-6th, 2016.

54. Camilo A. Mejia, Paul R. Reynolds, and **Juan A. Arroyo**. Placental expression of NFAT5, SLC5A3, and aldose reductase in gestational diabetes mellitus. Poster at the 2016 Experimental Biology Annual meeting, San Diego, CA, April 2-6th, 2016.

55. Clinton J. Jordan, Joshua B. Lewis, Jared S. Bodine, Adam L. Lewis, Todd M. Dunaway, Kaleb M Egbert, Troy D. Monson, K. Connor Ogden, Tanner J. Wright, Camilo A. Mejia, Paul R. Reynolds and **Juan A. Arroyo**. Receptors for Advanced Glycation End-products (RAGE) inhibition protects from Intrauterine Growth Restriction (IUGR) during Second Hand Smoke (SHS) in Mice. Poster at the 2016 Experimental Biology Annual meeting, San Diego, CA, April 2-6th, 2016.

56. Joshua Lewis, Jared Bodine, Jason Gassman, Samuel Muñoz, Dallin Milner, Adam Lewis, Todd Dunaway, Kaleb Egbert, Connor Christiansen, Andrew Christiansen, Troy Monson, Dallin Broberg, **Juan A. Arroyo** and Paul R. Reynolds PR. Transgenic Up-Regulation of Claudin-6 Decreases Diesel Particulate Matter (DPM)-Induced Pulmonary Inflammation. Poster at the 2016 Experimental Biology Annual meeting, San Diego, CA, April 2-6th, 2016.

57. Joshua Lewis, Jared Bodine, Dallin Milner, Adam Lewis, Todd Dunaway, Kaleb Egbert, Scott Albright, Brigham Merrill, Troy Monson, Marc Watson, Nathan Burstedt, Smith QK, Jason Gassman, Travis Jergenson, Bryan Chavarria, Dallin Broberg, Samuel Muñoz, Daniel Thomas, **Juan A. Arroyo** and

Paul R. Reynolds. Altered Inflammatory Responses In Tobacco Smoke-Exposed Mice That Over-Express The Tight Junctional Protein Claudin-6. Poster at the 2016 Experimental Biology Annual meeting, San Diego, CA, April 2-6th, 2016.

58. Jason Gassman, Joshua Lewis, Dallin Milner, Adam Lewis, Jared Bodine, Todd Dunaway, Troy Monson, Dallin Broberg, **Juan A. Arroyo** and Paul R. Reynolds. Spatial expression of Receptor for Advanced Glycation End-Products (RAGE) in diverse tissue and organ systems differs following exposure to secondhand cigarette smoke. Poster at the 2016 Experimental Biology Annual meeting, San Diego, CA, April 2-6th, 2016.

59. Dallin Milner, Joshua Lewis, Duane Winden, Jason Gassman, Troy Monson, Dallin Broberg, Samuel Muñoz SA, Kaleb Ehrhardt, **Juan A. Arroyo** and Paul R. Reynolds. Organic Cation Transporter Novel Type-1 (OCTN-1) And Pulmonary Responses to Secondhand Tobacco Smoke (SHS). Poster at the 2016 Experimental Biology Annual meeting, San Diego, CA, April 2-6th, 2016.

60. Camilo Mejia, Joshua B. Lewis Montana Wayment, Troy Monson, Paul Reynolds and **Juan Arroyo**. Growth arrest-specific 6 (Gas6)/AXL signaling induces preeclampsia. Poster at the 2016 at the International Federation of Placenta Associations Annual meeting, Portland, OR, September 13-16th, 2016.

61. Madison Mick, Stephanie Sue, Camilo Mejia, Shalene H. Wilcox, Paul R. Reynolds Juan Arroyo. Cigarette Smoke Extract Increases Invasion n Ca9-22 Gingival Cancer Cells. Oral presentation at the 2017, IADR/AADR/CADR General Session & Exhibition, San Francisco, CA, March 22-25, 2017.

62. Evan C. Whisenant, Bihishta Abdul Wase, Margaret A. Nguyen, Camilo Mejia, Shalene H. Wilcox, Paul R. Reynolds and Juan A. Arroyo. Gas6 Increases Invasion of Ca9-22 Gingival Cancer Cells. Poster presentation at the 2017, IADR/AADR/CADR General Session & Exhibition, San Francisco, CA, March 22-25, 2017.

63. Bihishta Abdul Wase, Margaret A. Nguyen, Evan C. Whisenant, Camilo Mejia, Shalene H. Wilcox, Paul R. Reynolds and Juan A. Arroyo. Inhibition of AXL Receptors Decreases Invasion of Ca9-22 Cells. Poster presentation at the 2017, IADR/AADR/CADR General Session & Exhibition, San Francisco, CA, March 22-25, 2017.

64. Stephanie Sue¹, Madison Mick¹, Paul R. Reynolds^{1,2}, Camilo Mejia², Shalene H. Wilcox¹, Juan Arroyo. Semi-Synthetic Glycoaminoglycan Ethers Inhibit Ca9-22 Cell Invasion Induced by CSE. Poster presentation at the 2017, IADR/AADR/CADR General Session & Exhibition, San Francisco, CA, March 22

REVIEWER FOR SCIENTIFIC JOURNALS

2004	Ad hoc reviewer for Journal of Clinical Endocrinology & Metabolism
2008	Ad hoc reviewer for Placenta
2008	Ad hoc reviewer for Biology of Reproduction
2009	Ad hoc reviewer for Placenta
2013	Ad hoc reviewer for Placenta
2015	Ad hoc reviewer for Biology of Reproduction
2015	Ad hoc reviewer for Placenta
2016	Ad hoc reviewer for Placenta
2016	Ad hoc reviewer for Biology of Reproduction
2016	Ad hoc reviewer for Plos One
2016	Ad hoc reviewer Reproductive Sciences

NATIONAL ADVISORY PANEL

National Institute of Allergy and Infectious Diseases (ZAI1-BDP-M-M1) - February 2012

TECHNIQUE PROFICIENCY AND RELATED PROJECTS

Brigham Young University

- Immunohistochemistry and Immunofluorescence
- Cell culture
- RNA and DNA isolation
- RT-PCR
- Western blot
- Trophoblast migration and invasion assays under normoxia and hypoxic conditions
- PCR

University of Kansas Medical center

- Immunohistochemistry
- DNA degradation studies for assessing placental apoptosis
- TUNEL assay
- Telomerase activity determination in the IUGR placenta
- NADPH determination in the IUGR placenta
- ENOS protein determination in an rat model of IUGR
- Cell culture
- RNA and DNA isolation
- RT-PCR
- Western blot
- Trophoblast migration assays under normoxia and hypoxic conditions

University of Colorado at Denver and Health Sciences Center

- ENOS protein determination in an Ovine Model of IUGR
- TUNEL assay for placental apoptosis
- Western blot for eNOS, XIAP, Caspases AKT and ERK proteins
- Protein analysis
- Immunoprecipitation
- DNA isolation
- RNA isolation
- Placental and vessels eNOS, Factor VIII immunohistochemistry
- Trophoblast Isolation
- Endothelial cell isolation
- Cell culture
- Blood flow measurements
- Blood Gas determination
- RT-PCR
- PCR
- Immunofluorescence
- Real Time PCR

- cGMP ELISA
- Blood Nitric Oxide determination
- ERK, JNK, AKT determination during Hypoxia and hyperthermia in endothelial cells and human trophoblast
- NO determination
- Immunocytochemistry
- Immunohistochemistry
- DNA degradation determination
- Gene array analysis

Kansas University Medical Center

- Isolation and characterization of the invasive trophoblast from the uterine mesometrial compartment from rats during normoxia and hypoxia conditions.
- In-situ hybridization and Northern blot analysis for the localization and expression of PIGF, VEGF and their receptor flt-1 in the rat placenta during normoxic and hypoxic conditions.
- Dot-blot array for the expression of Prolactin family members during hypoxia and normoxia.
- Responsible for the care of and tissue collection from Holtzman, Fisher 344, Dhal Salt Sensitive and Brown Norway Rats
- Genotyping of transgenic rats
- Detection and quantification alkaline phosphatase in the placenta and uterine mesometrial compartment of transgenic heat stable alkaline phosphatase mated animals.
- Manipulation and quantification of trophoblast invasion using transgenic rats expressing alkaline phosphatase during hypoxia and glucocorticoid treatment
- Isolation, culture and characterization of placental derived cells expressing heat stable alkaline phosphatase
- In-vitro and in-vivo differentiation of placental derived heat stable positive alkaline phosphatase cells
- RT-PCR
- Immunohistochemistry
- RNA and DNA isolation and purification
- Cell transfections

Southern Illinois University School of Medicine

- Molecular analysis of the signal transduction of placenta growth factor (PIGF) in human trophoblast.
- RNA and protein isolation
- Western Blot analysis of PIGF induced signal transducers
- RNase protection Assay for the analysis of anti-apoptotic genes regulated by PIGF in trophoblast
- Isolation and culture of trophoblast and human umbilical vein endothelial cells (HUVEC)
- RT-PCR
- Real Time PCR
- Responsible for the training and certification for the usage of the Hitachi Biosystems CCD Camera and the Cyclone phosphor imager and optiquant software

Nature's Sunshine Products

- Method Development and Sample Analysis using ICP for the determination of minerals contents.
- Material Safety Data Sheets Database update and input.
- GC\MS Method Development and Analysis of Essential Oils for Identification and Quality.
- UV/Vis Analysis for Quality of Raw materials active compounds. HPLC Analysis of Vitamin contents.

Laidlaw Environmental Services

- Wet Chemistry Analysis, including Fingerprinting, BTU, Ion Chromatography, Water Content and etc.
- PCB, Pesticide and Herbicide Extractions and Analysis using HP Gas Chromatograph 5890
- GC/MS - Semi-Volatile Extraction and Analysis.

InterAmerican University

- Supervised and organized different chemistry laboratories.
- Aided teaching Biology and Chemistry lectures as needed.