ROCíO MELISSA RIVERA, Ph.D. - CURRICULUM VITAE

Professor

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Education

- Ph.D., Reproductive Physiology, 2003
  Animal Molecular and Cell Biology Concentration
  University of Florida, Gainesville, Florida

- M.S., Reproductive Physiology, 1995
  Iowa State University, Ames, Iowa

- B.S., Animal Science, 1993
  Iowa State University, Ames, Iowa

- B.S., Dairy Science, 1993
  Iowa State University, Ames, Iowa

Academic Appointments

- Professor – Sept 2021 - present
- Associate Professor with tenure – September 2014 - 2021
- Director of Graduate Studies Division of Animal Sciences – August 2013 – July 2015
- Doctoral Faculty – February 2013
- Graduate Faculty – November 2007
- Assistant Professor – August 2007

Position Description

75% Research
15% Teaching
10% Service
0% Extension

Other Affiliations

- Reproductive Performance in Domestic Ruminants – Multistate Hatch Project - 7004137
- Member of the Interdisciplinary Reproduction and Health Group. 2017 – present
- Member/Organizer of the Epigenetics at Mizzou Group. 2014 - present
- Member of the Center for Reproductive Sciences. Institute for Reproductive Health and Regenerative Medicine. University Kansas Medical Center – 2014 - 2018.
- Member of the University of Missouri F21C Reproductive Biology Cluster. 2007 – 2020

Previous Employment

- Post-Doctoral Researcher - January 2004-July 2007
  University of Pennsylvania
  Dr. Richard Schultz Laboratory - Department of Biology
  Dr. Marisa Bartolomei Laboratory - Department of Cell & Developmental Biology, School of Medicine

- Ph.D. Student. 1999-2003.
  University of Florida
  Dr. Peter Hansen Laboratory - Department of Animal Sciences/Reproductive Physiology

- Laboratory Technician/Manager. 1996-2003
  University of Florida
  Dr. Peter Hansen Laboratory - Department of Animal Sciences/Reproductive Physiology

- Graduate Research Assistant. 1993-1995
  Iowa State University
  Dr. Stephen Ford Laboratory - Department of Animal Science/Reproductive Physiology

- Laboratory and Surgical Assistant. 1991-1993
  Iowa State University
  Dr. Stephen Ford Laboratory - Department of Animal Science/Reproductive Physiology

- Laboratory Assistant. 1991-1992
  Iowa State University
  Dr. Julie Jarvinen Laboratory - College of Veterinary Medicine/Pathology Department

Society Memberships

- American Association for the Advancement of Science – 2021- present
- International Embryo Technology Society, 2020 – present
- Epigenetics Society – 2017 - present
- Society for the Study of Reproduction. 1997 – present.

HONORS, PROFESSIONAL RECOGNITIONS, AND AWARDS

As MU Faculty member – extramural

- Keynote Speaker - 3rd Annual James J. Ireland Endowed Lectureship in Farm Animal Agricultural and Biomedical Research. Michigan State University. September 9th, 2024
- NIH Loan Repayment Program- Contraception and Infertility Research. 2024-2026.
- University of Gent, Belgium - Foreign postdoctoral Fellowship Host Dr. Ann Van Soom. Mobility Fund application for Foreign PostDoc - 2023-BO-01. June-July 2023
- Society for the Study of Reproduction and Canadian Fertility and Andrology Society exchange speaker, September 2022. Representing SSR at CFAS.
- Fulbright Senior Scholar at the University of Murcia, Spain. Reproductive Physiology Group. Sept-Dec 2019.
- NIH study section permanent member - Six-year member Cellular, Molecular and Integrative Reproduction Study Section. July 2018 - June 2024
- Highly cited paper (top 5) - *Epigenetics in fertilization and preimplantation embryo development*, published in 2013 is one of the most highly cited papers during 2014, 2015 and up until June 2016. Progress in Biophysics and Molecular. Recognized December 2016.
- Junior Faculty Burroughs Wellcome Award to attend the SSR Annual Meeting Grand Rapids, Michigan, July 19-23, 2014.
- NIH Loan Repayment Program- Contraception and Infertility Research. 2013-2014
- NIH Loan Repayment Program- Contraception and Infertility Research. 2010-2012

As MU Faculty member – intramural

- 2023 Mentor of CAFNR William Lamberson Distinguished Dissertation Awardee
- 2022 College of Agriculture Food and Natural Resources Graduate Mentor Award
- 2021 MU Graduate Faculty Mentor Award Minute- 24:45
- University of Missouri Cambio Center fellow – April 2020 - present
- Nominated and recognized for the University of Missouri Undergraduate Researcher "Mentor of the Year" – April 2018
- Nominated for the December 2017 Advisors Forum Shout Out Award.
- Mentor Recognition Breakfast hosted by Provost Garnett S. Stokes - April 19, 2016.
- 2015 MU Chancellor's Excellence Awards – Most Outstanding Advisor – Latinx Graduate and Professional Network
- University of Missouri Freshman Interest Group Co-Facilitator Spotlight Recognition. November 2013
- Undergraduate Research Mentor Award - University of Missouri Office of Undergraduate Research. 2010

As trainee

- FASEB MARC Fellow Oral Presenter Travel Awardee to participate in the 39th Annual Society for the Study of Reproduction Meeting. 2006.
- Sigma Xi - The Scientific Research Society, Graduate Student Research Award University of Florida Chapter. 2004.
- Elected as a member of Gamma Sigma Delta, the Agriculture Honor Society. 2004

- University of Florida Department of Animal Sciences Graduate Student of the Year – Ph.D. category. 2003.
- FASEB MARC Fellow Poster Presenter Travel Awardee to participate in the 36th Annual Society for the Study of Reproduction Meeting. 2003
- Ruska Award Recipient for outstanding student presentation in electron microscopy - Southeastern Electron Microscopy Society. 2002
- FASEB MARC Fellow Poster Presenter Travel Awardee to participate in the 35th Annual Society for the Study of Reproduction Meeting. 2002.
- USDA National Research Initiative Fellow - Presented at the 33rd Annual Meeting of the Society for the Study of Reproduction. 2000
- Superior Accomplishment Award Recipient – USPS Scientific/Technical, University of Florida Institute of Food & Agricultural Sciences. 1999.
- Elected as a member of the Florida Chapter of Sigma Xi, the Scientific Research Society. 1997.
- Nominated for Work-Study employee of the year at Iowa State University. 1994.
- Recipient of St Jude's Scholarship (St. Thomas Aquinas Catholic Student Center – Ames, Iowa). 1992.

Rivera Laboratory Trainees – Fellowships, awards, recognitions, and accomplishments relating to the laboratory's endeavors

1. Hector Nava-Trujillo – selected to give a webinar for the Morula trainee group of the International Embryo Technology Conference. June 24, 2025.
2. Hector Nava-Trujillo - selected as one of six recipients of the 2024 Peter Farin Travel Award to attend the International Embryo Technology Conference in January 2024, Denver Colorado.
3. Camryn Habben. Mizzou Forward Undergraduate Research Grant. University of Missouri. 2023-2024 Academic Year.
4. Camryn Habben. Honor's College 2023 Cherng Summer Scholars
5. Yahan Li. 2023 CAFNR William Lamberson Distinguished Dissertation Award
6. Godwin Iroanya - CAFNR Matching Assistantship. Aug 2022 – April 2023.
7. Hector Nava-Trujillo - SSR Burroughs Wellcome Fellow to attend the 55th Annual meeting of the Society for the Study of Reproduction. Spokane Washington, July 2022
8. Yahan Li selected for a Flash Talk during the 54th Annual Meeting, December 15-18, 2021, in St. Louis, Missouri.
9. Yahan Li finalist for the Trainee Research Award Poster Competition (Pre-Doctoral) at the SSR's 54th Annual Meeting, December 15-18, 2021, in St. Louis, Missouri.
10. Yahan Li selected to receive a 2021USDA–NIFA–AFRI to attend the SSR's 54th Annual Meeting, December 15-18, 2021, in St. Louis, Missouri.
11. Yahan Li - Abstract selected for an oral presentation at the DOHaD satellite meeting on the Developmental Origin of Domestic Animal Health and Diseases and Epigenetics (DADE). October 2021.
12. Yahan Li received the Dr. Roger L. Morrison Scholarship. College of Agriculture, Food & Natural Resources, University of Missouri. September 2021
13. Laura Lopez Jover – Master Thesis Top Honor. Master of Science in Biology and Technology of Reproduction. University of Murcia, Spain. Examined and graded by a panel of unrelated judges and chosen as the best thesis and defense from a class of 20 students. September 2020.

14. Edgar Soto Moreno - H.A. Herman Memorial A.I. Industry Scholarship, CAFNR 2020-2021.
15. Yahan Li – Abstract selected for an oral presentation at the 14th Annual Gilbert S. Greenwald Symposium on Reproduction and Regenerative Medicine. October 2017
16. Yahan Li - USDA–NIFA–AFRI Merit Award. 50th Annual Meeting of the Society for the Study of Reproduction. July 2017
17. Yahan Li - Larry Ewing Memorial Trainee Travel Fund. 50th Annual Meeting of the Society for the Study of Reproduction. 2017. July 2017
18. Yahan Li - Trainee Travel Award. The 13th Annual Gilbert S. Greenwald Symposium on Reproduction and Regenerative Medicine. October 2016
19. Zhiyuan Chen - Trainee Travel Award. The 13th Annual Gilbert S. Greenwald Symposium on Reproduction and Regenerative Medicine. October 2016
20. Zhiyuan Chen – Mizzou Epigenetics Symposium – one of two trainee abstracts selected for a platform presentation. Nov 9 2016.
21. Kira Marshall - 2016 MU Distinguished Master's Thesis Award Recipient.
22. Zhiyuan Chen - Trainee Poster Award (graduate student category) at the 11th Annual Gilbert S. Greenwald Symposium on Reproduction. Kansas City, KS. 2014
23. Kira Marshall – Mizzou Epigenetics Symposium – 3rd price – Poster Presenter. Nov 6 2014.
24. Zhiyuan Chen – Mizzou Epigenetics Symposium – abstract selected for the trainee oral presentation. Nov 6 2014.
25. Zhiyuan Chen - 2014 USDA-NIFA-AFRI Travel Fellow to attend SSR 47th Annual Meeting in July 2014
26. Zhiyuan Chen - 2013 MU Distinguished Master's Thesis Award Recipient. Award presented in April of 2014 and will be the official MU entry for the Midwestern Association of Graduate Schools annual thesis competition.
27. Zhiyuan Chen – Mizzou Advantage Travel Award. April 2014
28. Kira Marshall – Mizzou Advantage Travel Award. April 2014
29. Zhiyuan Chen - CAFNR - H.A. Herman Memorial A.I. Scholarship Recipient. 2013
30. Angela Schenewerk - Third place at the Rocky Mountain Reproductive Sciences Symposium with an oral presentation of her research. Loveland CO. April 2013
31. Verónica Negrón-Pérez – second place graduate student/postdoc category - Life Sciences Week Molecular & Cellular Biology section poster competition. April 2013
32. Laura Moon - selected as a Hughes Research Fellow for the 2013-2014 academic year.
33. Zhiyuan Chen - Trainee Poster Award (graduate student category) at the 9th Annual Gilbert S. Greenwald Symposium on Reproduction. Kansas City, KS. 2012
34. Zhiyuan Chen **-** Larry Ewing Memorial Trainee Travel Fund granted by the Society for the Study of Reproduction. 2012
35. Verónica Negrón-Pérez - Federation of American Societies for Experimental Biology (FASEB)/Maximizing Access to Research Careers (MARC) Program Poster/Oral Presentation Travel Award. 2012
36. Zhiyuan Chen – Division of Animal Sciences Graduate Student Forum Poster Competition 2nd Place - University of Missouri. 2012
37. Angela Schenewerk - Recipient of Miller Fellowship from the Division of Animal Sciences at the University of Missouri. 2011
38. Katherine Robbins – Division of Animal Sciences Graduate Student Forum Poster Competition 1st place - University of Missouri. 2011
39. Md. Almamun - Finalist Trainee Research Award Poster Competition. Society for the Study of Reproduction. Milwaukee, WI. 2010.
40. Tricia Rowlison - Life Sciences Undergraduate Research Program Fellow for academic year 2009-2010.

RESEARCH

Summary of Research Interest

The research conducted in my laboratory aims at understanding the mechanisms whereby manipulations of mammalian gametes and embryos result in alterations of the epigenome.

The laboratory is currently engaged in several research projects. The main projects are:

1) Effects of ART-induced loss-of-imprinting on bovine fetal growth
2) Identification of the molecular mechanisms involved in the acquisition of DNA methylation in mammalian oocytes.
3) Dissecting the molecular pathways involved in loss-of-imprinting as a result of mammalian embryo manipulation.

Current Active Collaborators

Departmental/MU

- Ahmed Balboula, Ph.D. - Division of Animal Sciences, University of Missouri.
- Allison Meyer – Division of Animal Sciences, University of Missouri
- Jianlin Cheng, Ph.D. - Department of Electrical Engineering and Computer Science University of Missouri
- David Beversdorf, M.D. Cognitive Neuroscience Laboratory, University of Missouri School of Medicine.

National

- Anna Denicol, DVM, PhD – Department of Animal Science, UC Davis
- Callum Donnely, DVM, PhD - Cornell College of Veterinary Medicine.
- Darren Hagen, Ph.D. - Division of Animal Sciences, University of Missouri.
- Jennifer Kalish, M.D., Ph.D. - University of Pennsylvania, Perelman School of Medicine. The Children's Hospital of Philadelphia.
- Peter Hansen, Ph.D. – Department of Animal Science University of Florida.
- Sofia Ortega, Ph.D. - Division of Animal Sciences, University of Wisconsin.

International

- Pilar Coy Fuster, Ph.D. Physiology of Reproduction University of Murcia, Spain
- Ann Van Soom, D.V.M., Ph.D. Ghent University, Department of Obstetrics, Reproduction and Herd Health
- Krishna Chaitanya Pavani, Ph.D. Ghent University, Department of Obstetrics, Reproduction and Herd Health

FUNDING

Pending
NIH RO1 Beversdorf (PI)
miRNA markers of neurodevelopmentally salient stress and pollutant exposure during pregnancy
Role = collaborator

Current Research Support

Extramural

- USDA Multistate Research Project: W4112 March 2024 - present
  Reproductive Performance in Domestic Ruminants.

- AFRI-NIFA 2022-67015-37086 Meyer (PD) 09/15/2022-09/14/27
  Project Title: Maternal versus fetal effects on partitioning of nutrients and their effect of epigenomic regulation
  Role = Co-PD

- AFRI-NIFA 2022-67015-36301 Balboula (PD) 01/01/2022-12/31/2026
  Project Title: Improving the Quality Of Preimplantation Bovine Embryos By Regulating Cathepsins
  Role = Co-PD

Completed Research Support

Extramural

- AFRI-NIFA - 2018-67015-27598 Rivera (PI) 03/01/2018 – 2/28/2023 (extension:2/24)
  Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Animal Species
  Project Title: Use of a Bovine Overgrowth Syndrome to Characterize the Molecular Etiology of BWS

- NIH – RO1/Dual R01HD092254-03 Lucy (PI) 07/01/2018 – 6/30/2023
  Project Title: Uterine microbiome: Functional significance in establishing the uterine program postpartum
  Role = Co-Investigator

- NIH – 2RO1HD062860-06 Kinsey (PI) 7/1/2017-6/30-2021 (extension 2022)
  Project Title: PYK2 function during fertilization
  Role = Co-Investigator

- NSF - 1615789 Ji (PI) 06/01/16 – 7/31/2020
  Project Title: Development of Statistical Methods for Analyzing Whole Genome Bisulfite Sequencing Experiment Data to Identify Differentially Methylated Regions
  Role = Co-PI

- NIH - R21HD080763 Timms (PI) 05/01/2015 – 03/31/2017
  Project Title: Developmental effects of endometriosis on fertility of future generations
  Role: CoI

- USDA Multistate Project No: W2171 2012-2013
  Germ Cell and Embryo Development and Manipulation for the Improvement of Livestock.

- R21HD062920-01 Rivera (PI) 9/2010 – 8/2012 (no cost extension – 5/2014)
  Establishment of a phenotypical model of adverse outcomes associated with ART
  The goal of this project was to develop a bovine model to develop a bovine model to study the etiology of the fetal overgrowth human syndrome Beckwith-Wiedemann.
  Role:PI

Intramural

- University of Missouri Research Council Rivera (PI) 07/1/2023 – 6/30/2024
  Project Title: Characterization of the involvement of follicle stimulating hormone and granulosa cells on the acquisition of DNA methylation of mouse oocytes.

- Joy of Discovery – CAFNR Rivera (PI) 01/01/2022-12/31/2023
  Project title: Dissecting the molecular pathways involved in loss-of-imprinting as a result of mammalian embryo manipulation

- MU International Center's Tricontinental Partnership Rivera (PI) June-July 2023
  (UM-Ghent, Belgium)

- University of Missouri Research Council. Rivera (PI) 3/2014-7/2015
  Chromatin contraction in aged oocytes in mice

- University of Missouri Research Council Rivera (PI) 11/2010-11/2012
  Is Biallelic Expression of the Imprinted Gene *H19* in Preimplantation Mouse Embryos the Result of a Molecular Clock Rather than Embryo Manipulation?

- University of Missouri Research Board Rivera (PI) 8/2009-11/2010
  Effects of assisted reproduction on genomic imprinting in bovine embryos.

PRESENTATIONS

Upcoming

1. Epigenoma y desarrollo fetal en bovinos: implicaciones de la produccion in vitro de embriones. Asociación Latinoamericana de Producción Animal. July 21, 2025.
2. Epigenetic changes following embryo manipulation: current evidence. 13th DOHaD World Congress. Buenos Aires Argentina. Sept, 2025.

3. Mendoza, Argentina

Rivera Laboratory Related Research Talks

Talks given abroad

4. University of Gent, Belgium – Faculty of Veterinary Medicine. July, 2023. Title: From phenotype to chromosome architecture: Large Offspring Syndrome in Ruminants
5. Invited Keynote Speaker - 11th International Ruminant Reproduction Symposium (IRRS) - Galway, Ireland. May 28th to June 1st, 2023. Title: Large offspring syndrome in ruminants: current status and prediction during pregnancy.
6. Invited Speaker - Université Laval, Québec. April 17, 2023. Title: Abnormal offspring syndrome: From phenotype to chromosome architecture.
7. Invited Exchange Speaker – Representing the Study of Reproduction with a research talk at the Canadian Fertility and Andrology Society Annual Meeting. Halifax, Canada. September 2022.
8. Physiology Department - University of Murcia. Title: ART, Age and the Epigenome. 2019. Murcia, Spain.
9. Department: Animal Reproduction. Instituto Nacional de Investigaciones Agrarias. Title: Disturbed Development: ART and the Epigenome. 2019. Madrid, Spain.
10. School of Agriculture & Food Sciences, University College Dublin. Title: Molecular Characterization of a congenital overgrowth syndrome induced by assisted reproduction. 2019. Dublin, Ireland. Also invited by Fulbright Ireland.
11. Opening Ceremony Master: Biology and Technology of Reproduction in mammals, University of Murcia. Title: Disturbed Development. Murcia, Spain. 2019.
12. School of Biosciences, University of Nottingham. Title: Epigenetic basis of congenital overgrowth syndromes in humans and animals: link to assisted reproduction. 2019. Nottingham, England.
13. Division of Pharmacy and Optometry, Faculty of Biology, Medicine and Health. University of Manchester. Title: Epigenetic basis of congenital overgrowth syndrome: link to assisted reproduction. 2019. Manchester, England.
14. Faculty of Veterinary Medicine, Ghent University. Title: Large Offspring Syndrome: Epigenetic impact and consequences in the industry sector. 2019. Ghent, Belgium.
15. Invited Speaker REP-BIOTECH European Joint Doctorate Program. Final Project Conference. Title: Large offspring syndrome: Epigenetic impact and consequences in the industry sector. 2019. Murcia, Spain.
16. Plenary Speaker. Animal Reproduction Branch of Chinese Association of Animal Science and Veterinary Congress. Title: Molecular characterization of a congenital overgrowth syndrome induced by assisted reproduction. Beijing, China. August 2017
17. Plenary Speaker: Primer Simposio Seremas: Genética Reproductiva. Title: La manipulación de embriones mamíferos previos a la implantación y su efecto en el imprinting genético. 2011. Auditorio Bayer, Buenos Aires, Argentina.
18. Plenary Speaker: Primer Simposio Seremas: Genética Reproductiva. Title: El efecto de las técnicas de reproducción asistida en el programa epigenético de ovocitos y embriones. 2011. Auditorio Bayer, Buenos Aires, Argentina.
19. Invited Speaker: Instituto de Biología y Medicina Experimental (CONICET). Title: ART, Age, and Epigenetics. 2011. Buenos Aires, Argentina.
20. Invited Speaker: V Catedra Nacional de Medicina Veterinaria y Zootecnia Aline S. de Aluja. Temática: Fertilidad Animal. Universidad Autónoma de Zacatecas. Title: Efectos epigenéticos de ovocitos y embriones antes de la implantación Parte I. 2010. Zacatecas, Mexico.

21. Invited Speaker: V Catedra Nacional de Medicina Veterinaria y Zootecnia Aline S. de Aluja. Temática: Fertilidad Animal. Universidad Autónoma de Zacatecas. Title: Efectos epigenéticos de ovocitos y embriones antes de la implantación Parte II. 2010. Zacatecas, Mexico.

Talks of international reach

22. Invited Speaker - 2023 AETA and CETA/ACTE Joint Convention. Orlando Florida. Title: Abnormal Calf Syndrome. October 2023.
23. Invited Speaker – Society for the Study of Reproduction Annual Meeting. Title: Abnormal offspring syndrome: From phenotype to chromosome architecture. July 2022, Spokane, Washington.
24. Reproduction in the Swamp. University of Florida, Gainesville, FL. Title: Abnormal offspring syndrome: From phenotype to chromosome architecture. January 14-16, 2022.
25. Primer Encuentro Académico Internacional en Ciencias Básicas Biomédicas. Universidad Nacional de Colombia. Title: Síndrome de Sobrecrecimiento: Influencia de la Epigenética en la Reproducción Asistida. November 17, 2020.
26. Keynote speaker. American Embryo Transfer Association & The Canadian Embryo Transfer Association Joint Annual Convention. Title: Genomic Imprinting, Epigenetics and Abnormal Offspring Syndrome. 2020. October 5-7, 2020. Online format (Zoom) due to COVID19
27. Reproseminars - International seminar series on male and female reproduction. Title: Of Cow and Mouse: Epigenetics Effects of ART. Zoom. August 27, 2020. Talk given to ~80 Reproductive Physiologists from ~10 countries.
28. Triennial Reproduction Symposium at the 2020 American Association of Animal Science. Epigenetic basis of congenital overgrowth syndrome in cattle: link to assisted reproduction. Virtual meeting due to COVID19, July 23, 2020.
29. Colorado State University “Save the Egg” group. Title: ART, AGE and the Epigenome. June 30, 2020. Via Zoom due to COVID19.
30. 46th Annual International Embryo Technology Society. Developmental Programming Associated with Assisted Reproduction. Title**:** Consequences of assisted reproductive techniques on the embryonic epigenome in cattle. New York, New York. January 2020
31. Molecular characterization of a congenital overgrowth syndrome induced by assisted reproduction. 2019. Cattle/Sheep/Goat workshop. Plant and Animal Genome Conference. San Diego, California.
32. Frontiers in Reproduction 2017 Symposium. Title: Molecular Characterization of a congenital overgrowth syndrome induced by assisted reproduction. 2017. Woods Hole, Massachusetts.
33. Invited Speaker: Target Meeting’s 2nd World Molecular and Cell Biology Online Conference. Animal Model Symposium. Title: Development of a Bovine Model to Study the Overgrowth Loss-of-Imprinting Syndrome Beckwith-Wiedemann. 2013.
34. Frontiers in Reproduction 2013 Symposium. Title: Large offspring syndrome: a bovine model for the human loss-of-imprinting overgrowth syndrome Beckwith-Wiedemann. 2013 Woods Hole, Massachusetts.
35. Frontiers in Reproduction 2010 Symposium. Title: Size-Dependent Acquisition of global DNA methylation in oocytes is altered by hormonal stimulation. 2010. Woods Hole, Massachusetts.
36. Invited Speaker: Frontiers in Reproduction Minisymposium - Society for the Study of Reproduction. Title: Epigenetic Effects of Manipulating Mouse Oocytes and Preimplantation Embryos. 2009. Pittsburgh, Pennsylvania.

Talks of national reach

37. Invited Keynote Speaker - 3rd Annual James J. Ireland Endowed Lectureship in Farm Animal Agricultural and Biomedical Research and RDSP Research Day. Michigan State University. Title: Abnormal Offspring Syndrome: From Phenotype To Chromosome Architecture. September 9th, 2024
38. Invited Speaker – UC Davis. Reproductive Biology Supergroup & Designated Emphasis in Reproductive Biology. Title: Congenital overgrowth syndrome: from phenotype to chromosome architecture. April 18, 2022.
39. Invited Speaker - Yale's Training Program in Genetics Annual Symposium. Title: Congenital overgrowth syndrome: from phenotype to chromosome architecture. May 3, 2022.
40. Invited Speaker. Reproductive Fluids in Fertilization and Early Embryonic Development - Physiology section. Midwest Section of the American Society of Animal Science. Title: Large Offspring Syndrome: Effects of in vitro Production on Embryo Epigenetics and Development. March 2021 – Omaha, Nebraska.
41. Reproductive biology seminar series - University of Illinois, Urbana-Champaign. Title: Of cow and mouse: ART and the Epigenome. October 7, 2020.
42. Marc program. New Mexico State University. Title: ART and the Epigenome. September 8, 2020.
43. Seminar: Obstetrics and Gynecology, Southern Illinois University. Title: Molecular characterization of a congenital overgrowth syndrome induced by assisted reproduction. 2018. Carbondale, Illinois.
44. University of Puerto Rico – Mayagüez. Title: Disturbed Development: Assisted Reproduction and the Epigenome. 2018. . Mayagüez, Puerto Rico.
45. Seminar Department of Animal and Range Sciences, New Mexico State University. Title: Molecular characterization of a congenital overgrowth syndrome induced by assisted reproduction. 2018. Las Cruces, New Mexico.
46. Molecular characterization of a congenital overgrowth syndrome induced by assisted reproduction. 2018. Seminar: Veterinary Medicine, Oklahoma State University. Stillwater, Oklahoma.
47. Disturbed Development: ART, AGE and the Epigenome. 2015. Seminar: Reproductive Physiology/Endocrinology. Department of Biomedical Sciences, Cornell University. Ithaca, New York.
48. Seminar: Department of Veterinary Physiology, College of Veterinary Medicine, Texas A&M University. Title: Disturbed Development: ART, AGE and the Epigenome. 2015. College Station, Texas.
49. Plenary Speaker: 17th Annual Florida International University Biomedical and Comparative Immunology Symposium. Title: Disturbed Development: Assisted Reproduction & the Epigenome. 2015. Miami, Florida.
50. Disrupted Development. 2014. Invited Speaker: Ernest E. Just Biomedical Society (EE Just) Spring Seminar. University of Pennsylvania. Philadelphia, Pennsylvania.
51. Seminar: Cell and Molecular Biology (CMB) Seminar series at the University of Texas - San Antonio. Title: Disrupted Development. 2014. San Antonio, Texas.
52. The Center for Reproductive Sciences. University of Kansas Medical Center, Chalk Talk. Title: Disturbed Development: ART, Age and the Epigenome. 2014. Kansas City, Kansas.
53. Invited Speaker: Summer Summit on Egg Quality: from model organisms & molecular mechanisms to clinical perspectives & applications. Title: Genomic imprinting and loss-of-

imprinting in bovine pre-and post-implantation embryos. 2013. Northwestern University. Chicago, Illinois.
54. Seminar: Department of Animal Science Oklahoma State University. Title: Large offspring syndrome an animal model for Beckwith-Wiedemann Syndrome. 2013. Stillwater, Oklahoma.
55. Seminar: Endocrine Disruption Discussion Group. University of Missouri. Title: Disrupted Development. 2013. Columbia, Missouri.
56. Seminar: Obstetrics, Gynecology, & Women's Health. Grand Rounds. University of Missouri. Title: ART and age alter the epigenetic program of oocytes, pre- and post-implantation embryos in mammals. 2012. Columbia, Missouri.
57. Plenary Speaker: Tenth Annual Research Symposium University of Florida Animal Molecular and Cell Biology Program Distinguished Lecturer. Title: ART and age alter the epigenetic program of oocytes, pre- and post-implantation embryos in mammals. 2012. St. Augustine, Florida.
58. Seminar: Department of Genetics, Rutgers, The State University of NJ. Title: Effects of Assisted Reproductive Technologies on the Epigenetic Program of Pre- and Post-Implantation Mouse Embryos. 2012. Piscataway, New Jersey.
59. Epigenetic alterations caused by superovulation and embryo culture. 2011. Invited Speaker: Advances in Reproductive Biology and Genetics: Redefining the Cell for the betterment of science, medicine and agriculture. University of Missouri. Columbia, Missouri.
60. Seminar: Department of Molecular & Integrative Physiology, University of Kansas Medical Center. Title: Effects of assisted reproductive technologies on the epigenetic program of pre- and post-implantation mouse embryos. 2009. Kansas City, KS. Kansas City, Kansas.
61. Invited Speaker: Greenwald Symposium. Title: The epigenetic program of preimplantation mouse embryos is altered by assisted reproductive technology procedures. 2009. Kansas City, Kansas.
62. Invited Speaker: Molecular Reproduction and Development Conference. Title: Effects of superovulation and/or culture on DNA methylation and expression of epigenetic modifiers in preimplantation mouse embryos. 2009. Providence, Rhode Island.
63. Invited Speaker: Ponce School of Medicine. Title: Manipulations of mouse embryos prior to implantation result in aberrant expression of imprinted genes on day 9.5 of development. 2008. Ponce, Puerto Rico.

Talks of local/regional reach

64. South Farm Virtual Field Day. Title: Overgrowth syndrome in cattle. October 2020.
65. University of Missouri Epigenetics Group Chalk Talk. Title: Disturbed Development: ART, Age and the Epigenome. 2015. Columbia, Missouri.

Panels and Forums

66. Session 9: Abnormal Calf Syndrome Case Reports and Panel Discussion Presented by Drs. Thomas Divers, Scott Larsen, Ky Pohler, John Prososki, and Rocío Rivera. 2023 AETA and CETA/ACTE Joint Convention. Orlando Florida. October 2023

Science (non-research related)

67. Epigenetic Influences on Perinatal Health: The nuts and bolts of Epigenetics. Perinatal Nursing Conference**.** Columbia Missouri. October 2015.
68. Epigenetics: the good, the bad and the ugly. 2017. Saturday Morning Science Series. Bond Life Science Center. University of Missouri. Columbia Missouri.

69. The nuts and bolts of Epigenetics: An animal Science perspective. Department of Animal Science. Oklahoma State University. Stillwater Oklahoma. May 2013.
70. The nuts and bolts of Epigenetics: An animal Science perspective. Division of Animal Sciences University of Missouri. Columbia, Missouri. April 2013.
71. 'What's the 'Epi' in Epigenetics? Evoblitz group. University of Missouri. Columbia, Missouri. October 2011

Non-Science Presentations

72. Sesión Informativa sobre Doctorado en USA (Ph.D. in the USA). 2019. University of Murcia. Murcia, Spain.
73. Presenter. Fulbright Opportunities for Faculty: STEM Fields webinar. Organized by the MU Office of International Programs. March, 2023

Interviews (Radio, Magazine, News, Blogs)

74. Women in Ag Science (WAgs) podcast. May 2024
75. CAFNR News. A Commitment to Social Responsibility and Public Service. January 2021.
76. Women in Ag Science Interview – October 2020
77. Cambio Center Podcast – March 2020 – Student Latino Community at Mizzou
78. The Big Electron – Radio. 2017. MU Graduate Student Directed Talk Show KCOU Columbia 88.1 FM and Podcast.
79. Medicina y Salud Publica - Blog- Puerto Rico – 2015. Los-metodos-de-reproduccion-asistida-tienen-incidencia-sobre-la-epigenetica-que-provoca-el-desarrollo-del-sindrome-de-beckwith-wiedemann-segun-cientifica-puertorriquena.
80. Illumination Magazine Profile. Magazine Spring/Summer 2015. Title: Epigenetic Explorer.
81. Science Daily - Blog. 2015. Genetic markers for fetal overgrowth syndrome discovered.
82. MU News Bureau - News. 2015. Genetic Markers for Fetal Overgrowth Syndrome
83. The Big Electron - Radio 2013. MU Graduate Student Directed Talk Show KCOU Columbia 88.1 FM

TEACHING

As MU Faculty

Sole/main/Co-instructor Instructor

- Study Abroad Italy Co-Instructor - AFNR 2191-03. Spring 2025. Travel Jan 7-18, 2025.
- Companion Animals – Honors Section. Animal Science 2140H. Spring 2025 – first offering
- Companion Animals. Animal Science 2140. Instructor/course coordinator. Spring 2016 – present.
- Reproductive Physiology Seminar Class - Animal Science 8413. Spring 2014. Sole instructor.
- Survey in Epigenetics. Animal Science 8415. Spring 2009 – present. Sole Instructor.
- Mizzou Advantage-Themed Freshman Interest Group Co-Facilitator – One Health, One Medicine. Fall 2013 – 2018
- Pre-Vet Freshman Interest Group Co-Facilitator - August 2008- Fall 2012.

Guest Lectures

- Epigenetic Origins of Adult Disease. AnSci 8434 – Spring 2021. Two lectures
- Topic – Undergraduate Research. AN_SCI 1010 - Orientation to Animal Sciences AN_SCI 1010 - Fall 2017 – present. One Lecture
- Instructor Epigenetics section – Molecular Biology II - BIOCHM 9432/BIO_SC 9432/MICROB 9432. Spring 2015 – 2019. 2 lectures and exam questions. The course has been discontinued.
- Epigenetics - the basics. Graduate course in Reproductive Biology. Veterinary School - University of Zacatecas, Mexico. Zacatecas, Mexico. October 2010.
  **Note: presentation given in Spanish*
- Animal Research. Pre-Veterinary Freshman Interest Group (Pro-Seminar course no = INTDSC 1001 - 095). University of Missouri. Columbia, Missouri. Fall 2010.

As Fulbright Senior Scholar

Master Program: Biology and Technology of Reproduction in mammals, University of Murcia. Murcia, Spain.

- M.S. Thesis Defense Judge - Paula Gallego. Extracellular Vesicles from oviduct and uterus fluid improve the quality of bovine embryos produced in vitro.
- M.S. Thesis Defense Judge - Marta Carrera Alesina. Contaminación bacteriana en muestras seminales humanas tras criopreservación.
- M.S. Thesis Defense Judge – Rocío Delgado Delgado. Efecto de la inhibición de proteasa sobre las propiedades físicas y la actividad biológica de los fluidos reproductivos porcinos.
- Lecture: Control of the estrous cycle in domestic animals with special focus in cow.
- Student seminar Coordinator:
  - Effects of steroid and steroid disrupting agents in testicle function.
  - Communications between cumulus cells and oocytes
  - Effects of heat stress on the female reproductive tract
- How to read the scientific literature and paper discussions (n = 3).

As Guest Lecturer - Abroad

- Invited Lecturer – Topic: Epigenetics. Master of Biology and Technology of Reproduction in mammals, University of Murcia, Spain. February 26-28, 2024. Murcia, Spain
- How to read the scientific literature and paper discussions – three lectures. Master of Biology and Technology of Reproduction in mammals, University of Murcia, Spain. Fall 2020.
- Student Seminar Coordinator. Master of Biology and Technology of Reproduction in mammals, University of Murcia, Spain. September 2020.
  - Communications between cumulus cells and oocytes
  - Effects of heat stress on the female reproductive tract
- Invited Lecturer – Topic: Genomic Imprinting. Master of Biology and Technology of Reproduction in mammals, University of Murcia, Spain. February 2019, 2020, 2021

As trainee

- Instructor - Techniques in Ruminant Reproduction – University of Florida. 1999-2002.
- Taught over 30 people the techniques required for producing bovine embryos in the laboratory as well as several other laboratory techniques. 1996-2003.
- Teaching Assistant – Animal Reproduction Laboratory – Iowa State University. 1996

Teaching/Mentoring/Professional Advice Related Talks, Panels, Forums

1. Invited Talk Title: “Preparing Mentees for Their Future”. This talk will be part of the Mentoring symposium titled “Mentoring That Works: Practical Strategies for Faculty and Graduate Success” at the National American Society of Animal Science meeting in Hollywood Florida, July 6-10, 2025
2. Student/Technician Session: Quality Control in the Embryo Laboratory: Perspectives from Industry and Academia. Presented by Drs. Peter Hansen and Rocío Rivera. 2023 AETA and CETA/ACTE Joint Convention. Orlando Florida. October 2023
3. Panel member - Interview Tips. The Mizzou SACNAS Chapter partnering with the IMSD/MARC program. December 2022.
4. Invited Speaker. Teaching and Extension Education Symposium II. Title: Beyond the Classroom: Community Engaged Learning in Animal Sciences. 2022 Midwest Animal Science Meeting, March 2022
5. Guest Speaker – University of Ponce, Puerto Rico pre-medical chapter of the American Medical Women's Association. October 2021
6. Guest Speaker - New Mexico State University’s MARC Program Virtual Presentation– October 2021
7. Panel member - Virtual Dissertation Bootcamp - Utilizing their advisor and committee members. University of Missouri Graduate School. August 2021.
8. Guest Speaker - CAFNR Connections. Club for providing opportunity for students of color in CAFNR. February 22, 2021
9. Discussion – Advisor vs Mentor – University of Missouri First-Year Scholars - Diversity fellowships from the Graduate School. Panel about Mentor/Advisor differences – University of Missouri Graduate School First-Year Scholars. Feb 12, 2021.
10. Panel member - Interview Tips. The Mizzou SACNAS Chapter partnering with the IMSD/MARC program. January 27, 2021.
11. Faculty Mentor Panel in Undergraduate Research. Office of Undergraduate Research University of Missouri. October 6, 2020.
12. Faculty Perspective. COMPASS (CAFNR’s Opportunity for Minorities: Promoting and Achieving Student Success) meeting. September 2020.
13. “Becoming a Faculty Member" Panelist for a workshop for the Discover Scholars Program. April, 2019. University of Missouri
14. Use of bioinformatics and computers in the lab’s research. 2016. Computer Science Institute for Young Women. University of Missouri - Supported by a MO EPSCoR contract with the National Science Foundation. Columbia, Missouri.
15. Latinos in Science Panel. 2014. MU Society of Hispanic Professional Engineers (SHPE) – University of Missouri. Columbia, Missouri.
16. Faculty Perspective. 2014. College Success Seminar Class (SSC 1150). Columbia, Missouri.
17. Pre-Veterinary Freshman Interest Group. 2011. Career exploration panel. University of Missouri. Columbia, Missouri
18. Faculty Perspective Panel. 2011. Exposure to Research for Science Students (EXPRESS) program. University of Missouri. Columbia, Missouri.
19. Female Perspectives on Careers in Animal Science. Division of Animal Sciences. Columbia, Missouri. Spring. 2009
20. Finding 'perfect' career a long journey. Nexus Graduate Student Association. Columbia, Missouri. Spring 2008

RESEARCH MENTORING/TRAINING

Post-Doc, Graduate and Undergraduate Student Research Mentoring/Training

Previous Visiting Scientists

Post-Doctoral

- Mohamed Aboul Ezz, PhD. Lecturer. Department of Theriogenology, Faculty of Veterinary Medicine, Mansoura University. October 2021 – April 2022
- Mohammad Reza Bakhtiarizadeh, Ph.D. Assistant Professor. Department of animal and poultry science Genetics and Animal Breeding. College of Aburaihan- University of Tehran- Iran. Summer 2018.

Pre-doctoral

- Zhoulin Wu – China Scholarship Council scholar 2019-2020. Ph.D. student at Sichuan Agricultural University, Chengdu Campus. Chengdu, China. November 2019 – present.

Current Trainees

Doctor of Philosophy

- Hector Nava Trujillo – June 2022 – present.
    - Graduate School Fellowship - Robert E. Waterston Doctoral Fellowship.
    - PhD Candidate as of August 2024.

Previous trainees

Doctor of Philosophy

- Yahan Li – Start date August 2018 – Defended April 2022. Graduated July 2022.
  Dissertation: Involvement of aberrant chromosome architecture and locus-specific vulnerability to DNA methylation epimutations in bovine large offspring syndrome.
  https://mospace.umsystem.edu/xmlui/handle/10355/69885
  Current position: Postdoctoral fellow, Dr. Marisa Bartolomei laboratory. University of Pennsylvania

- Zhiyuan Chen – Start date - May 2013 – Graduated – May 2017.
  Dissertation: Molecular Characterization of a congenital overgrowth syndrome induced by assisted reproduction
  https://mospace.umsystem.edu/xmlui/handle/10355/63805
  Current: Assistant Professor– Cincinnati Children's Hospital Medical Center
  Postdoctoral training: Dr. Yi Zhang's laboratory. Boston Children's Hospital/Harvard Medical School.

Master of Science - Thesis

Internal

- Bhaumik Patel – Start date August 2018 – Defense January 2021. Graduation May 2021.
  Thesis: Identification of large offspring syndrome during pregnancy through ultrasonography and maternal blood transcriptome analyses.
  Current position: Senior Research Associate at Molecular Medicine Research Institute. CA

- Yahan Li – Start date January 2016 – Defense July 2018.
  Thesis: Altered microRNA expression profiles in bovine fetuses with an assisted reproduction induced congenital overgrowth syndrome.
  https://mospace.umsystem.edu/xmlui/handle/10355/69885
  Current Position: Postdoctoral Fellow University of Pennsylvania
  Ph.D. – Rocío Rivera Laboratory – University of Missouri – July 2022

- Kira Marshall –Start date August 2013 - Defense July 2015.
  - Graduate School Fellowship Recipient 2013. Recipient of Miller Fellowship from the Division of Animal Sciences at the University of Missouri. 2013

  Thesis: The effects of aging and FSH on the epigenome of the mouse oocyte.
  https://mospace.umsystem.edu/xmlui/handle/10355/48667
  Current position: Ph.D. Candidate – Graduate School of Art and Sciences – Yale University
  Previous Position: Research Associate in Reproductive Physiology San Diego Zoo Global. San Diego, California.

- Angela Schenewerk – Start date August 2011 - Defense August 2013.
  Thesis: Effects of the Use of Assisted Reproduction and High Caloric Diet Consumption on Body Weight and Cardiovascular Health of Juvenile Mouse Offspring.
  https://mospace.umsystem.edu/xmlui/handle/10355/43021
  Current position: Research Assistant. Siteman Cancer Center. St Louis, Missouri.

- Verónica Negrón – Start Date August 2011 - Defense July 2013.
  Thesis: Determination of Allelic Expression of H19 in Pre- and Peri-Implantation Mouse Embryos. https://mospace.umsystem.edu/xmlui/handle/10355/40195
  Current Position: Assistant Researcher. Agricultural Experimental Station Gurabo/University of Puerto Rico Mayaguez, PR.
  Ph.D. – University of Florida – July 2017
  Postdoctoral - Virginia Tech University, Dr. Michelle Rhoads and Dr. Kiho Lee Laboratories.

- Zhiyuan Chen – Start Date August 2011 - Defense May 2013.
  Thesis: Large offspring syndrome: a bovine model for human loss-of-imprinting overgrowth syndrome Beckwith-Wiedemann.
  https://mospace.umsystem.edu/xmlui/handle/10355/37913
  Current position: Postdoctoral fellow, Dr. Yi Zhang's laboratory. Boston Children's Hospital/Harvard Medical School
  Ph.D. – Rocío Rivera Laboratory – University of Missouri – May 2017

- Katherine Robbins – Start Date August 2009 - Defense July 2011.
  Thesis: Establishment of a phenotypical model of adverse outcomes associated with assisted reproductive technologies.
  https://mospace.umsystem.edu/xmlui/handle/10355/14379
  Current Position: GeneDx
  Previous Position: Director Biomolecular Core Laboratory - Nemours A.I. duPont Hospital for Children- Wilmington, DE
  Ph.D. - Department of Biological Sciences, University of Delaware. 2016.

- Md. Almamun – Start Date March 2009 - Defense May 2011.
  Thesis: Characterization of the epigenetic effects of ovarian hyperstimulation in mouse oocytes. https://mospace.umsystem.edu/xmlui/handle/10355/14952
  Current Position: FDA's Center for Tobacco Products.
  Ph.D. Pathophysiology Area Program. University of Missouri. 2015
  PostDoctoral: Medical School/Boston Children Hospital Harvard University.

External

- Laura Lopez Jover. 2019 – July 2020. Master of Science student at the University of Murcia, Spain. Co-mentored with Dr. Sebastian Canovas from the University of Murcia.
  Thesis: Epigenetic Impact of assisted reproduction techniques in pigs.
  Current Position: ART clinic technician. Spain

Master of Science – non- thesis

- Edgar Soto-Moreno – January 2019 – July 2021.
  Current Position: PhD student- Ahmed Balboula Laboratory, Univ. of Missouri
- Chris Kim –August 2020 – December 2021.
  Current Position: Associate Scientist. Eurofins BioPharma Product Testing Columbia Inc.

Post Baccalaureate

- Chris Kim – January 2020 – June 2020.
  Current Position: Ph.D. student. Division of Animal Sciences. University of Missouri. Rivera Laboratory. Current Position – Research Associate Eurofins.

- Bhaumik Patel (current student in Masters of Public Health Program – University of Missouri veterinary Health Center) – May 2017 – July 2018
  Current Position: M.S. student. Division of Animal Sciences. University of Missouri. Rivera Laboratory.

- Franklin Echevarría– University of Missouri-Columbia (MU) PREP Scholars Program Fellow. August 2010 – July 2011.
  Ph.D. Neuroscience. Vanderbilt University. May 2017.
  Postdoctoral: Postdoctoral Fellow. Case Western Reserve University
  Current: Clinical Research Coord III. Department of Neurology. University of Florida.

Undergraduate (continued on to do graduate^/professional# education – [in Ph.D. program*, completed Ph.D**])

- Camryn Habben – January 2022 – May 2024. Biological Sciences
- Abbey LaPlant – February 2024 – present. Undergraduate Research Apprentice. Sophomore Animal Science.
- Selena Escutia – February 2023 – October 2023. Research Apprentice. Freshman Animal Science.
- Ashley Little – August 2022 – September 2022 Sophomore Animal Sciences
- Ruthanne Doebbler – October 2021 – March 2022. Sophomore Biological Sciences.
- Emma Goodwin - August 2021 – May 2022. Freshman Animal Science. Discovery Fellow
- Anna Hagedorn – August 2021 – December 2021. Senior Animal Science
- Maria Velez-Colon^ - Summer 2021. Undergraduate Researcher PRISE Scholar. University of Puerto Rico Ponce.
- Arelis Acevedo-Santiago^ - Summer 2021. Undergraduate Researcher PRISE Scholar. University of Puerto Rico Ponce.
- Marinel Ocasio-Rivera*. Summer 2021. Undergraduate Researcher PRISE Scholar. University of Puerto Rico Ponce.
- Faith Korpus – Research Apprentice. Summer 2021. Sophomore Animal Science
- Alondra Figueroa – Freshman Animal Science. January 2020-March 2020.
- Amanda Moreno – Sophomore Animal Science –May 2019 – March 2020.
- Kris Kim^ – Senior Biochemistry MU and Gyeongsang National University - South Korea – Start date May 2019 – December 2019.
- Monique Ferrell – Summer Intern Life Sciences Undergraduate Research Program Fellow – Lincoln University, Missouri –May 2019 - July 2019
- Ali Patten# – Senior Animal Science – Start Date August 2018 – May 2019.
- Carla Reyes Colon* (Miller Intern – University of Puerto Rico- Mayagüez). Miller Intern participating in the Life Sciences Undergraduate Research Opportunity Program - summer 2018.
- Olivia Styron (Junior/Senior - Biology Major) – October 2016 – July 2018
- Erin Hediger^ – (Junior – Biology Major) – October 2017 - present
- Logan Womack (Freshman - Animal Science Major) –January 2017 – August 2017
- Sean Utley – Department of Biochemistry. January 2016-May 2016.
- Collen Hayes – Agriculture – Truman University. August 2015 – December 2016.
- Collin Morris# – Department of Biological Sciences. August 2013 – December 2014.
- Jessica Holman - Division of Animal Sciences – September 2014 – December 2014.
- Laura Moon# – Department of Biological Engineering. Howard Hughes Medical Institute Apprentice and Fellow – August 2012 – May 2014.
- Lauren Anderson* – Division of Animal Sciences. December 2013 – May 2014.
- Jasmine Randle - EXPRESS Program student – February 2013 – September 2013.
- Jordan Thomas** (MU AnSci) - Spring 2010 – December 2011. B.S. Animal Science December 2011.
- Tricia Rowlison** (MU AnSci) - Fall 2008 to May 2010. B.S. Animal Science, May 2010.
- Rachel Zelenak^ (MU AnSci) – Fall 2008. B.S. Animal Science, December 2008.
- Emily Medlin** (North Carolina State University AnSci) - Miller Intern participating in the Life Sciences Undergraduate Research Opportunity Program -summer 2008.

Postdoctoral Mentoring

- Pavla Brachova, Ph.D. – Dr. Lane Christenson Laboratory – University of Kansas Medical Center. K99 award Mentor
- Sofia Ortega, Ph.D. – Dr. Spencer Laboratory – Preparing Future Faculty Mentor – 2017-2019.

Graduate Student Committees

Intramural

Current

- Samuel van Rhijn – Master of Science student in the Department of Animal Sciences – Stephanie McCkay Laboratory
- Ans Afzal - Doctor of Philosophy student. Department of Animal Sciences. Matt Lucy Laboratory.
- Don Cherry – Doctor of Philosophy student. Veterinary Pathobiology – Carolyn Henry Laboratory. Start date January 2025
- Nick Ahmed – Doctor of Philosophy student Department of Neuroscience – David Beversdorf Laboratory.
- Samantha Crist – MS - Veterinary radiation oncology resident, Jeff Bryan laboratory. 2023-present
- Ruth Opoku - Doctor of Philosophy student in Biological Sciences – Laura Schulz Laboratory. 2022-present.

M.S. – graduated

- Jessica Kincade - Master of Science student in the Department of Animal Sciences – Ahmed Balboula Laboratory
- Raissa Cecil - Master of Science student in the Department of Animal Sciences - Randall Prather Laboratory. Not present during the defense due to being on sabbatical.
- Jennifer Teson – Master of Science student in the Department of Animal Sciences - Randall Prather Laboratory. Defended October 2013.
- Julie Birt - Master of Science student in the Department of Animal Sciences - Kathy Sharpe-Timms Laboratory. Defended – December 2010.
- Kyle Dobbs - Master of Science student in the Department of Animal Sciences - Randall Prather laboratory. Defended - May 2010.

Ph.D. – graduated

- Ryan Finnerty – Doctor of Philosophy Translational Biosciences. Dr. Winuthayanon Lab. 2022 – 2024.
- Taeson Wu - Doctor of Philosophy student in the Department of Neuroscience – David Beversdorf Laboratory. 2018-May 2023.
- Celia Alpuche – Doctor of Philosophy candidate in the Department of Romance Language – Guadalupe Perez-Anzaldo Mentor. 2018-2022
- Max R. Highsmith, Doctor of Philosophy student in the Department of Mathematics. Jianlin (Jack) Cheng Laboratory. 2020 - 2021
- Jing Xie - Doctor of Philosophy student in the Department of Statistics. Tieming Ji Laboratory. 2019 – 2021.

- Rowen Karvas - Doctor of Philosophy candidate in the Department of Biological Sciences – Laura Schulz Laboratory. 2017-2020
- Rachel Richardson - Doctor of Philosophy student in the Department of Psychology - Todd Schachtman Laboratory – 2016-2019
- Reina Muro – Doctor of Philosophy candidate in the Department of Romance Language – Guadalupe Perez-Anzaldo Mentor. 2018
- Gerialisa Caesar - Doctor of Philosophy student in the Department of Biological Sciences – Laura Schulz Laboratory. 2013-2018.
- Ho-Hsiang Wu – Doctor of Philosophy student in the Department of Statistics. Tieming Ji Laboratory. 2015-2016
- Ming Tao Zao - Doctor of Philosophy student in the Department of Animal Sciences – Randall Prather Laboratory. 2010-2013
- Shawn Zimmerman - Doctor of Philosophy student in the Department of Animal Sciences - Peter Sutovsky Laboratory. 2009-2012.

Extramural

- Maricarmen Colon - Doctor of Philosophy student in the Department of Microbiology - Ponce School of Medicine, Ponce, PR - Dr. Idhaliz Flores laboratory. 2009-2012.

Other

- Haruyo Matsuyama - Doctor of Philosophy student in the Department of Biochemistry - Michael Roberts Laboratory. 2009-2012.

External Examiner

- Simone Lafontaine – Marc Andre Sirard Laboratory. University of Laval. PhD defense. April 18, 2023.

Faculty Mentoring

- Chair of faculty mentoring committee - Sofia Ortega, Ph.D. Assistant professor of Animal Science. March 2020 – July 2022

SERVICE

Department Service

Departmental Committees

- Promotion and Tenure Committee Chair – 2023-present
- Division of Animal Sciences Executive Committee – 2023 - present
- Miller Fellowship Committee Chair – August 2020 - present
- Graduate Student Grievance Committee – 2020 - 2021
- Awards Committee - September - 2019 - 2021
- Academic Affairs Committee – January 2019- 2021
- Position Search Committee: Animal Science Position Title: Assistant Professor - reproductive biology/genomics 2018
- Animal Science Newsletter committee – 2018 - to 2020
- Lawrence and Louise Stark Student Aid Fund committee chair – January 2018 to present
- Division of Animal Sciences Promotion and Tenure Committee – 2016 – present

- Miller Fellowship Committee Alternate – 2016 - 2020
- Animal Reproductive Biology Seminar Series Coordinator – May 2013 to August 2014
- Division of Animal Sciences Graduate Committee Chair – August 2013 – July 2015
- Division of Animal Sciences strategic planning effort – January 2012
- Division of Animal Sciences Director search committee – June 2011 – June 2012
- Department Graduate Committee – 2008 – 2016.
- Position Search Committee for job description ID: 1505331 - Department: Animal Science Position Title: Assistant Professor - reproductive biology/genomics 2008-2009.

Extension

- Regional Livestock Specialist In-Service Training. Presentation title - "Large Offspring Syndrome". Division of Animal Sciences University of Missouri. February 2019.
- Regional Livestock Specialist In-Service Training. Presentation title - "Epigenetics in livestock species: examples and opportunities". Division of Animal Sciences University of Missouri. February 2011.

Graduate and Undergraduate groups

- Graduate Forum PhD ePoster Judge – January 2021
- Academic Quadrathlon Oral Presentation judge – 2008-2016, 2020, 2021, 2023
- Graduate student travel fund committee judge - 2012, 2013, 2014
- Graduate student symposium poster presentation judge - 2008, 2011, 2014, 2015, 2021
- Graduate student symposium oral presentation judge – 2010

Undergraduate advising

- Academic Year 2024 - 2025 – 17 students
- Academic year 2023 - 2024 – 19 students
- Academic year 2022 - 2023 – 19 students
- Academic year 2021 - 2022 – 17 students
- Academic year 2020 - 2021 – 22 students
- Academic year 2019 - 2020 – 15 students
- Academic year 2018 - 2019 – 15 students
- Academic year 2017 - 2018 – 17 students
- Academic year 2016 - 2017 – 18 students
- Academic year 2015 - 2016 – 20 students
- Academic year 2014 - 2015 – 20 students
- Academic year 2013 - 2014 – 20 students
- Academic year 2012 - 2013 – 20 students
- Academic year 2011 - 2012 – 20 students
- Academic year 2010 - 2011 – 17 students
- Academic year 2009 - 2010 - 16 students
- Academic year 2008 - 2009 - 10 students

College (College of Agriculture food and Natural Resources)

- CAFNR Diversity and Inclusion committee member – 2019-2021.
- Search Committee - Director of CAFNR International Programs – Spring 2019
- Captive Wildlife Minor Internship Committee – 2018-present
- Co-Chair - Diversity and Inclusion committee –- November 2015 – 2019.

- CAFNR International Education Committee. 2016

University Service

- Graduate Faculty Senate. August 2025 – July 2028
- Mizzou Forward Undergraduate Training Grant Developer and co-lead – 2022 - present
- MU Grad School Recruiting – SACNAS 2022 – Puerto Rico – October 2022
- MU Faculty Council on University Policy - Executive Committee -– Aug 2022 - 2023
- MU Faculty Council on University Policy – Academic Affairs committee Chair, Aug 2022 - 23
- University of Missouri Research Council Review panel member. 2021-2024.
- Internal reviewer - University of Missouri Office of Service Learning – Program Review. December 2020-January 2021
- Board of Directors – Cambio Center, University of Missouri. Fall 2020 – present.
- Office of Undergraduate Research Program Review Meeting #2 (Mentors) - November 2020.
- MU Faculty Council on University Policy – Students Affairs committee, Sept 2020 – July 2022
- MU Faculty Council on University Policy - CAFNR representative – August 2020 – 2023
- Position Search Committee. Department: Obstetrics and Gynecology. University of Missouri School of Medicine. Position Title: Assistant Professor – Epigenetics in ObGyn. Spring-Fall - 2017
- MU Committee on Faculty Responsibility. 2016 – 2017
- Second Mizzou Epigenetics Day Symposium - Chair - August 2015 – Nov 2016.
- MU Life Sciences & Society Program 11th Annual Symposium. The Epigenetics Revolution: Nature, Nurture and What Lies Ahead - Organizing committee. April 2015
- University of Missouri Epigenetics Group monthly chalk talk coordinator – 2014 to present
- First Mizzou Epigenetics Day Symposium - Chair - May 2014 – Nov 6 2014.
- First Mizzou Epigenetics Day Symposium – Poster Judge. Nov 6 2014
- 2014 NIH Graduate & Professional School Fair, NIH campus in Bethesda, Maryland – July 16, 2014
- Undergraduate Research & Creative Achievements Forum – Judge 2014
- MU President Tim Wolfe Faculty Conversations - MU newly hired-newly tenured. April 2012, 2013
- Missouri Life Sciences Week at Mizzou Poster Presentation Judge – April 2013, April 2014
- Medical Pharmacology and Physiology Journal Club (course no. MPP9422). Oct. 2011.
- Undergraduate Research & Creative Achievements Forum – Head Judge. April 2011, 2012
- NIH's Initiative for Maximizing Student Diversity Program Advisory Committee. 2011-2015.
- Ethical Conduct of Research (BSC/BCH 8060) course - Ethical Conduct of Research class – February 2010 - present
- Association of Public and Land-grant Universities Academic Programs Summer Summit at The Pennsylvania State University – University of Missouri representative – June 2010.

Student Organization

- Interdisciplinary Reproduction and Health Group trainee association – Faculty Advisor – 2017 - 2020
- NEXUS: MU Graduate Student's Science Network – Faculty Advisor. October 2012 - 2015

- Latinx Graduate and Professional Network – Faculty Advisor. April 2011- October 2023

Faculty Organization

- Secretary - Voz Latina (Formerly HLAFSA): Hispano-American Faculty and Staff Association - August 2012 – February 2013
- Voz Latina (Formerly HLAFSA): Hispano-American Faculty and Staff Association – Member. February 2013 – present.

National/International

Professional Society (Society for the Study of Reproduction [SSR])

- Society for the Study of Reproduction – Board of Directors - July 2023 – July 2026
- Animal Developmental Origins of Health and Disease Workshop 2024 at SSR Co-Chair – 2023-2024.
- SSR Heritage Committee Chair–July 2022 - present
- SSR Heritage Committee Co-Chair– July 2021 – July 2022
- SSR Heritage Committee – July 2019 - 2021
- SSR Bylaws Committee Past Chair – 2018 - 2019
- SSR Bylaws Committee Chair – 2016-2018
- SSR Diversity Committee Co-Chair – 2014 - 2016
- SSR 2014–2015 Annual Meeting/Industrial Relations Subcommittee – 2014 - 2015
- SSR 2014–2015 Local Arrangements Committee – 2013 - 2015
- SSR Diversity Committee - 2013-2014
- SSR representative at the 2013 SACNAS National Conference - October 2013
- SSR Bylaws committee member – 2011-present
- SSR Minority Committee - 2013 - present
- SSR Membership Committee - 2011 – 2012.
- Member of the Trainee Affairs Committee Society for the Study of Reproduction - 2007-2008
- Member Minority Affairs Committee Society for the Study of Reproduction - 2006-2007
- Minisymposium [*Determinants of Preimplantation Embryonic Development*] Co-Chair for the 38th Annual Society for the Study of Reproduction Meeting - Quebec City, Canada - July 2005
- Member Education Committee Society for the Study of Reproduction - 2002-2004
- Platform Session [*Sperm-Egg Binding and Egg Activation*] Co-Chair for the 35th Annual Society for the Study of Reproduction Meeting - Baltimore, Maryland – 2002

Advisory Board

- External Advisory Board Member - AFRODITA (Advancing Fertility and Reproduction through Dedicated and Innovative Technological Applications) Doctoral Network. An European Union funded project. 2023-present

Mentoring

- 2020 Virtual Greenwald Symposium Trainee Mentor breakout sessions. October 2020
- Society for the Study of Reproduction "Lunch with the Mentor". Pittsburgh, PA 2009.

External Review – Promotion Package

- Promotion to Professor - University of Florida
- Promotion to Associate Professor - University of California Davis
- Promotion to Associate Professor - Utah State University
- Promotion to Associate Professor - DePaul University
- Promotion to Research Associate Professor - University of Miami

Editorial

- Editorial board – Academic Editor *PLOS Biology*. January 2020-present
- Editorial Board - Section Editor for the areas of developmental and reproductive epigenetics and epigenetics of aging. *Epigenetics Insights*. December 2018 - present
- Editorial Board – *Reproduction* – January 2015 to December 2018
- Editorial Review Board - *Environmental Epigenetics* – May 2015 - present
- Associate Editor – *Molecular Reproduction and Development* – July 2014 to present
- Guest Editor - Special Issue: From Germ Cell to Implantation: The Epigenetic Story. Molecular Reproduction and Development. Volume 81, Issue 2. February 2014
- Section Editor for the Embryo Culture section - International Embryo Transfer Society annual meeting. 2011.

National and International Meeting Judge

- Sigma Xi – Student Research Showcase: a competition for virtual research presentations. March 2013.

Reviewer

Grant Proposal Reviews

National

- USDA, National Institute of Food and Agriculture and Food Research Initiative Animal Health and Production and Animal Products: Animal Reproduction. 2021
- NIH - Cellular, Molecular and Integrative Reproduction Study Section, Center for Scientific Review – ***permanent member*** July 2018 - June 2024.
- NIH P50 Center for Research, Innovation and Training in Reproduction and Infertility - Jan-March 2018
- NIH - Cellular, Molecular and Integrative Reproduction Study Section – January-February 2018
- NIH study section - Developmental Origins of Health and Disease: Epigenetic Modification in Gametogenesis and Transgenerational Inheritance. 2015
- Agricultural Experiment Station - College of Agricultural Sciences. University of Puerto Rico-Mayaguez. Fall 2015.
- NIH P50 study section - Children's Environmental Health and Disease Prevention Research. 2015
- NIH study section - Developmental Origins of Health and Disease: Epigenetic Modification in Gametogenesis and Transgenerational Inheritance. 2014
- National Institute of Food and Agriculture, Animal Reproduction panel study section. 2010

International

- Canadian Institutes of Health Research "Catalyst Grant: Sex as a Variable in Biomedical Research "funding opportunity – January-April 2018
- Research Foundation Flanders (FWO) – July 2016.
- The Science Foundation Ireland (SFI) Investigators Programme. October 2015
- UK SBS Grants Pre-Awards – October 2014
- The Marsden Fund - Royal Society of New Zealand. 2013
- The SVSE6 Evaluation Committee of the French National Research Agency (ANR). 2013 edition of the "Blue Sky" (Blanc) program. 2013.
- Leaders Opportunity Fund of the Canada Foundation for Innovation. 2012.
- BARD the United States - Israel Binational Agricultural Research & Development Fund. 2008.

Conference-related Abstract and Manuscript Reviewer

- International Embryo Technology Society 2025 meeting – Abstract .
- Section Chair for Periconceptional/Fetal Programming, International Embryo Technology Society 2021-2022
- Abstract review panel for the 53rd Annual SSR Meeting (2020)
- Abstract review panel for the 49th Annual SSR Meeting (2016)
- Review manuscript – 9th International Ruminant Reproduction Symposium, 2014
- Abstract for the 9th International Ruminant Reproduction Symposium, 2014
- Review manuscript – American Association of Animal Science. 2012
- Abstracts for the 45th Annual Meeting of SSR - Epigenetics section SSR 2012
- Abstract review panel for the 35th Annual AAR Meeting (2002)

Manuscript Reviews – ongoing
Animal Reproduction, Biology of Reproduction, BMC Developmental Biology, Clinical Epigenetics, DNA and Cell Biology, Endocrinology, Environmental Epigenetics, Epigenetics, Epigenetics Insights, FASEB Journal, Fertility and Sterility, Human Molecular Genetics, Human Reproduction, Human Reproduction Update, International Journal of Andrology, Journal of Animal Science, Journal of Assisted Reproduction and Genetics, Livestock Science, Molecular and Cellular Endocrinology, Molecular Reproduction and Development, PLOS Biology, PLOS One, PLOS Genetics, PNAS, Reproduction, Reproductive Biomedicine Online, Reproduction, Fertility and Development, Reproductive Toxicology, Reproductive Biology and Endocrinology, Research Communications, Scientific Reports.

Professional Development

Extramural

- Frontiers in Reproduction, Marine Biological Laboratory, Woods Hole, MA (2007)
- The Genome Access Course, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY (2007)

Intramural

1. National Science Foundation Mizzou ADVANCE Mentoring Program. Fall 2009 - Spring 2010.

2. College of Agriculture Food and Natural Resources Teachers College. Spring 2009 - Spring 2010.
3. University of Missouri Grant Writing Institute. Summer 2008.
4. University of Missouri Colleague Circle Mentoring Program. Fall 2007 - Spring 2008.

Community Service

- Dog Therapy. Volunteer with PALS (UM Vet Health Center) and WAGS (UM Medical Center) by bringing my certified pet therapy dog to do hospital visits to patients. May 2017 – February 2020
- Columbia Aquatic Restoration Project - Columbia, MO - 2008 to 2010
- Unity Center of Columbia - Landscaping team co-chair - 2008 to 2010
- Bi-National Health week volunteer – Columbia, MO – 2007

Other Interests

- Columbia Civic Orchestra. Play the Viola. – Columbia, MO (2007-2019)
- Unity Center of Columbia hand bell/chime choir and quartet (2008-2014)
- 9th Street Philharmonic Orchestra. Viola. Columbia, MO (2008-2011)

Languages

- Spanish
- English

THESES

Ph.D.

Cellular, Subcellular, and Developmental responses of two-cell bovine embryos to a physiologically relevant heat shock. Dissertation. University of Florida. Gainesville, Florida. 2003.

M.S.

A comparison of preimplantation development of embryos from Chinese Meishan and Yorkshire pig breeds. Thesis. Iowa State University. Ames, Iowa. 1995.

PUBLICATIONS
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RIVERA LAB PUBLICATIONS

In preparation

- Chris Kim, Kira Marshall, Mamun Almamun, Christine Spinka, Veronica Negron, **Rocío Rivera***. Effects of Superovulation and Absence of FSHβ on Global DNA Methylation of Mouse Oocytes.

- Victor A. Absalon-Medina, Rodrigo V. Sala, Daniela C. Pereira, Vanessa C. Fricke, Iebu Devkota, Zachary L. Bonomo, Dailin M. Fuego, Michael McDonald, José M. Sánchez, Maria B. Rabaglino, Antonios Matsakas, Anastasios Vourekas, Xing Fu, **Rocio M. Rive**ra, Patrick Lonergan, Pablo J. Ross & Constantine A. Simintiras. Amniotic fluid metabolic biomarkers of fetal physiology and pregnancy success.

Submitted/Under Review

- Yahan Li, Anna Goldkamp, Ping Xao, Frimpong Boadu, Jianlin Cheng, Darren Hagen, Jennifer Kalish, and **Rocio Melissa Rivera***. Beckwith-Wiedemann syndrome and large offspring syndrome involve alterations in methylome, transcriptome, and chromatin configuration. MedRxiv – Dec 16, 2023. NAR Molecular Medicine. Revision

Editorial and other Publications

3. **Rivera RM*.** The epigenetic story. Mol Reprod Dev. 2014. PubMed PMID: 24519952.

4. Marshall, K.L. and **Rivera, R.M*.** When six is not a half dozen: Representation of changes in H4K5ac during meiotic progression in mouse oocytes. Visions: The Art of Science. *Mol Reprod Dev.* Volume 82, Issue 1, 2014

Reviews, Proceedings and Book Chapters

5. Nava-Trujillo H, Donelly C.G, **Rivera RM*. Abnormal offspring syndrome. Book Chapter:** Biotechnologies Applied to Animal Reproduction: Current Trends and Practical Applications for Reproductive Management. Editors: Gardon Juan Carlos and Katy Satue. 2025

6. **Nava-Trujillo H, Martínez Bello D,** Rivera RM*. 2023. Abnormal calf syndrome. Proceedings of 2023 AETA and CETA/ACTE Joint Convention. Orlando-Florida, US.

7. Hector Nava-Trujillo and **Rocío M Rivera***. Large offspring syndrome in ruminants: current status and prediction during pregnancy. *Animals*. 2023 PMID: 37567678

8. **Rivera, R.M***, Donnelly, C. G, Patel, B.N., Li, Y., and Soto-Moreno E.J. Abnormal Offspring Syndrome. Chapter 71, Bovine Reproduction. 2021

9. **Rivera, R.M***, and Donnelly, C. G. Genomic Imprinting, Epigenetics and Abnormal Offspring Syndrome. **Proceedings.** American Embryo Transfer Association & The Canadian Embryo Transfer Association Joint Annual Convention. October 2020

10. **Rivera, Rocio Melissa***. Consequences of assisted reproductive techniques on the embryonic epigenome in cattle. Reproduction, Fertility and Development, 2020. 32, 65–81.

11. Li Y, Donnelly CG, **Rivera RM***. Overgrowth Syndrome. Vet Clin North Am Food Anim Pract. 2019. Review. PMID:31103180

12. **Rivera, Rocio Melissa***. "The sperm meets the egg." Chapter 5. Pages 33-37. "Dairy Cattle Fertility," copyright 2020 by W.D. Hoard & Sons Company. ISBN 978-0-9960753-3-6 Library of Congress Control Number 2020903580

13. Tríbulo, Paula, **Rivera, Rocío M**., Ortega Obando, Martha Sofia, Jannaman, Elizabeth, and Hansen, Peter J. Production and Culture of the Bovine Embryo. Methods Mol Biol. 2019;2006:115-129. doi: 10.1007/978-1-4939-9566-0_8. PMID: 31230276

14. Marshall, K.L. and **Rivera, R.M*.** The effects of superovulation and reproductive aging on the epigenome of the oocyte and embryo. Review. Mol Reprod Dev. 2018 Review. PMID: 29280527

15. **Rivera RM*** and Ross, J. Epigenetics in fertilization and preimplantation embryo development. Special issue on Systems Biology and Reproductive Biology. Prog Biophys Mol Biol. 2013. Review. PubMed PMID: 2345446

16. Huffman, S.R., Almamun, Md., **Rivera, R.M*.** Methods in Molecular Biology, Imprinting Protocols, Chapter 13, Isolation of RNA and DNA from single preimplantation embryos and small number of mammalian oocytes for imprinting studies. Methods Mol Biol. 2012. PMID: 22907499

17. **Rivera, R.M*** and Bennett, L. Epigenetics in humans: an overview. Curr Opin Endocrinol Diabetes Obes. 2010. Review. PMID: 20962634.

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Refereed Journals

19. Brianna V. Becher, Nick I. Ahmed, Candice King, Jahnavi Godavarthi, Clark Bloomer, Rocio Rivera, Zohreh Talebizadeh, Jean Goodman, Rebecca Bond, Kennadie Long, Katelyn Weber, Malori Chrisman, Samantha Hunter, Nicole Takahashi, David Q. Beversdorf. miRNA markers of stress exposure in pregnancy in African American communities. Stresses 2025, 5(3), 41; https://doi.org/10.3390/stresses5030041

20. Fei Sun, Nourhan Nashat Ali, Daniela Londoño-Vásquez, Constantine A. Simintiras, Huanyu Qiao, M. Sofia Ortega, Yuksel Agca, Masashi M. Takahashi, **Rocio M. Rivera**, Andrew M. Kelleher, Peter Sutovsky, Amanda L. Patterson, Ahmed Z. Balboula. Increased DNA damage in full-grown oocytes is correlated with diminished autophagy activation. Nature Communications. 2024. PMID: 39487138

21. Taeseon Woo, Candice King, Nick I. Ahmed, Madison Cordes, Saatvika Nistala , Matthew J. Will, Clark Bloomer, Nataliya Kibiryeva, **Rocio Rivera**, Zohreh Talebizadeh, David Q. Beversdorf. microRNA as a maternal marker for prenatal stress-associated ASD, evidence from a murine model. J Pers Med. 2023. PMID: 37763179

22. Mohamed F. Abouelezz, Masashi Takahashi, **Rocio M. Rivera***, Ahmed Z. Balboula**.** Cathepsin L is crucial for bovine oocyte maturation and preimplantation embryo development. Current Biology. 2023. PMID: 37417221

23. Anna K. Goldkamp, Yahan Li, **Rocío M. Rivera**, Darren E. Hagen. Differentially expressed tRNA-derived fragments in bovine fetuses with assisted reproduction induced congenital overgrowth syndrome. Frontiers in Genetics. 2022. PMID: 36457750

24. **Rocío Melissa Rivera*** Anna Katherine Goldkamp, Bhaumik Narendrabhai Patel, Darren Erich Hagen, Edgar Joel Soto-Moreno, Yahan Li, Chris Kim, Cliff Miller, Fred Williams III, Elizabeth Jannaman, Yao Xiao, Paula Tribulo, Eliab Estrada-Cortés, Astrid Roshealy Brau-Rodríguez, Peter James Hansen, Zhoulin Wu, Christine Marie Spinka, Neal Martin, and Christine G. Elsik. Identification of large offspring syndrome during pregnancy through ultrasonography and maternal blood transcriptome analyses. Sci Rep. 2022 PMID: 35732675

25. Yahan Li, Jordana Sena-Lopes, Pilar Coy-Fuster, **Rocio Melissa Rivera***. Spontaneous and ART-induced large offspring syndrome: similarities and differences in DNA methylome. Epigenetics. 2022 PMID: 35466858

26. Yahan Li, Frimpong Boadu, Max R. Highsmith, Darren E. Hagen, Jianlin Cheng, and **Rocío Melissa Rivera*.** Allele-specific aberration of imprinted domain chromosome architecture associates with congenital overgrowth syndrome. iScience. 2022 PMID: 35542046

27. Anna K. Goldkamp, Yahan Li, Rocio M. Rivera, Darren E. Hagen. Characterization of tRNA Expression Profiles in Large Offspring Syndrome. BMC Genomics. 2022. PMID: 35392796

28. Soto-Moreno, E., Balboula, A., Spinka, C., and **Rivera, R.M.*** Serum supplementation during bovine embryo culture increases development and proliferation through autophagy and ER stress regulation. PLoS One. 2021. PMID: 34882691

29. Eldin Jasarevic, Patrick Hecht, Kevin Fritsche, David Geary, **Rocio Rivera**, David Beversdorf. Maternal DHA supplementation influences sex-specific disruption of placental gene expression following early prenatal stress. Biology of Sex Differences. 2021. PMID: 33422127.

30. Triant, Deborah, Le Tourneau, Justin, Diesh, Colin, Unni, Deepak, Shamimuzzaman, Md. Walsh, Amy, Gardiner, Jack, Gldkamp, Anna, Li, Yahan, Nguyen, Hung, Roberts,

Christina, Zhao, Zixiao, Alexander, Leeson, Decker, Jared, Schnabel, Robert, Schroeder, Steven, Sonstegard, Tad, Taylor, Jeremy, **Rivera, Rocio**, Hagen, Darren, Elsik, Christine. Using online tools at the Bovine Genome Database to manually annotate genes in the new reference genome. Animal Genetics. 2020. PMID: 32537769.

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34. Bakhtiarizadeha Mohammad Reza, Salehia, Abdolreza, **Rivera, Rocío M**. Genome-wide identification and analysis of A-to-I RNA editing events in bovine by transcriptome sequencing. PLoS One. 2018. PMID: 29470549

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36. Chen Z., Hagen, DE., Ji, T., Elsik, CG., **Rivera, RM***. Global misregulation of genes largely uncoupled to DNA methylome epimutations characterizes a congenital overgrowth syndrome. Sci Rep. 2017. PMID: 28978943

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39. Chen, Z., Hagen, DE., Elsik, CG., Ji, T., Moon, LE., Morris, CJ., and , **Rivera, RM.*** Characterization of global loss-of-imprinting in fetal overgrowth syndrome induced by assisted reproduction. Proc Natl Acad Sci USA. 2015. PMID: 25825726

40. Huffman, SR. Pak, Y, **Rivera, RM.***. Superovulation induces alterations in the epigenome of zygotes and results in differences in gene expression at the blastocyst stage in mice. Mol Reprod Dev. 2015. PMID: 25737418.

41. Mao, J., Zhao, MT., Spate, LD., Walters, EM., O'Gorman, C., Lee, K., Samuel, MS., Murphy, CN., Wells, K., **Rivera, RM**., and Randall S. Prather. Oxamflatin Treatment

Enhances Cloned Porcine Embryo Development and Nuclear Reprogramming. Cell Reprogram. 2015. PMID: 25548976

42. La Spina, FA, Romanato, M, Brugo-Olmedo, S, De Vincentiis S, Julianelli, V, **Rivera, RM**, Buffone, MG. Heterogeneous distribution of histone methylation in mature human sperm Journal of Assisted Reproduction and Genetics. J Assist Reprod Genet. 2014. PMID: 24221913

43. Ramirez-Perez, FI., Schenewerk, AL., Coffman, KL., Foote, C., Ji, T., **Rivera, RM**.*, and Martinez-Lemus, LA.*. Effects of the Use of Assisted Reproductive Technologies and an Obesogenic Environment on Offspring Resistance Artery Function and Diabetes Biomarkers. PLoS One. 2014. PMID: 25386661

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46. Negrón-Pérez, V.M., Echevarría, F.D., Huffman, S.R., and **Rivera, R.M***. Determination of Allelic Expression of *H19* in Pre- and Peri- Implantation Mouse Embryos. Biol Reprod. 2013. PMID: 23486912.

47. **Rivera, R.M*.** and Rinaudo P. Bovine preimplantation embryo development is affected by the stiffness of the culture substrate. Mol Reprod Dev. 2013. PMID: 23325633

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49. Robbins, KM, Chen, Z, Wells, KD, and **Rivera, RM***. Expression of KCNQ1OT1, CDKN1C, H19, and PLAGL1 and the methylation patterns at the KvDMR1 and H19/IGF2 imprinting control regions is conserved between human and bovine. J Biomed Sci. 2012. PubMed PMID: 23153226

PUBLICATIONS AS TRAINEE

50. **Rivera, RM**, Stein PS, Weaver JR, Mager J, Schultz RM, Bartolomei MS. Manipulations of mouse embryos prior to implantation result in aberrant expression of imprinted genes on day 9.5 of development. Hum Mol Genet. 2008. PubMed PMID: 17901045.

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55. Krininger III, CE, Block, J, Al-Katanani, YM, **Rivera, RM**, Chase Jr, CC, Hansen, PJ. Differences between Brahman and Holstein cows in response to estrous synchronization, superovulation and resistance of embryos to heat shock. Anim Reprod Sci. 2003 Sep 15;78(1-2):13-24. PMID: 12753779.

56. Block, J, Drost, M, Monson, RL, Rutledge, JJ, **Rivera, RM**, Paula-Lopes, FF, Ocón, OM, Hansen, PJ. Use of insulin-like growth factor-1 during embryo culture and treatment of recipients with gonadotropin-releasing hormone to increase pregnancy rates following the transfer of in vitro-produced embryos to heat-stressed, lactating cows. J Anim Sci. 2003. PMID: 12817508.

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59. Hansen, PJ, Drost, M**, Rivera, RM**, Paula-Lopes, FF, Al-Katanani, YM, Kriniger III, CE Chase, CC, Jr. Adverse impact of heat stress on embryo production: causes and strategies for mitigation. Theriogenology. 2001. Review. PMID: 11198091.

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63. **Rivera, RM**, Youngs, CR, Ford, SP. A comparison of the number of inner cell mass and trophectoderm cells of preimplantation Meishan and Yorkshire pig embryos at similar developmental stages. J Reprod Fertil. 1996. PMID: 8667335.

ABSTRACTS

RIVERA LAB

Oral Presentations

1. Nava-Trujillo H; Spinka, C; **Rivera RM.** Effect of bovine in vitro embryo production on fetal IGF system signaling. May 2025. University of Missouri Division of Animal Sciences Graduate Student Forum

2. Yahan Li, Frimpong Boadu, Max R. Highsmith, Darren E. Hagen, Jianlin Cheng, and **Rocío Melissa Rivera**. Investigation of bovine chromosome architecture and its involvement in large offspring syndrome. 54th Annual Meeting of the Society for the Study of Reproduction, St Louis, Missouri. December 2021

3. Li, Yahan, Highsmith, Max R.., Boadu, Frimpong, Cheng, Jianlin, **Rivera, Rocío Melissa**. Investigation of bovine chromosome architecture and its involvement in large offspring syndrome. DOHaD satellite meeting on the Developmental Origin of Domestic Animal Health and Diseases and Epigenetics. October 2021.

4. María Del Carmen Velez-Colon, M. Sofía Ortega, **Rocío Melissa Rivera**. Characterizing DNA methylation of the LGALS14 promoter in low- and high-fertility bulls and their conceptuses. 8th Annual Summer Research Internship Symposium Research Initiative for Scientific Enhancement (RISE)-Ponce, Puerto Rico. August 2021.

5. Marinel Ocasio-Rivera and **Rocío Melissa Rivera**. Characterization of imprinted gene *MEG3* in large offspring syndrome 8th Annual Summer Research Internship Symposium Research Initiative for Scientific Enhancement (RISE)-Ponce, Puerto Rico. August 2021.

6. María Del Carmen Velez-Colon, M. Sofía Ortega, **Rocío Melissa Rivera**. Characterizing DNA methylation of the LGALS14 promoter in low- and high-fertility bulls and their conceptuses. Undergraduate Research & Creative Achievements Forum. University of Missouri. July 2021.

7. Marinel Ocasio-Rivera and **Rocío Melissa Rivera**. Characterization of imprinted gene *MEG3* in large offspring syndrome. Undergraduate Research & Creative Achievements Forum. University of Missouri. July 2021.

8. Acevedo-Santiago and **Rocio Melissa Rivera**. Characterization of RTL1 imprinted gene expression in Large Offspring Syndrome. Undergraduate Research & Creative Achievements Forum. University of Missouri. July 2021.

9. Yahan Li, Darren E. Hagen, Zhiyuan Chen, Tieming Ji, and **Rocío Melissa Rivera**. Assessment of Misregulated microRNAs and Their Target mRNAs in an Assisted Reproduction-induced Congenital Overgrowth Syndrome in Bovine. The 14th Annual Gilbert S. Greenwald Symposium on Reproduction and Regenerative Medicine, University of Kansas Medical Center, Kansas City, Kansas, October, 2017

10. Zhiyuan Chen, Darren Hagen, Christine Elsik, Tieming Ji, **Rocío Melissa Rivera**. Characterization of genome-wide DNA methylation at base resolution in overgrowth syndrome induced by assisted reproduction. Mizzou Epigenetics Day 2016, University of Missouri, Columbia Missouri, November 2016

11. Chen, Z., Hagen, D., Elsik, C., Ji, T., and **Rivera, R.M**. Characterization of global gene expression and allele-specific expression of ART-induced overgrowth syndrome. Animal Sciences Graduate Research Forum, Columbia, Missouri, May 2015.

12. Chen, Z. Hagen, D., Childers, C., Elsik, C., Ji, T. and Rivera R.M. RNA-Sequencing Analysis of Large Offspring Syndrome in Bovine. Mizzou Epigenetics Symposium. University of Missouri, Columbia MO. November 6, 2014.

13. Chen, Z. Hagen, D., Childers, C., Elsik, C., Ji, T. and **Rivera R.M**. RNA-Sequencing Analysis of Large Offspring Syndrome in Bovine. Society for the Study of Reproduction 47th Annual Meeting, in Grand Rapids, Michigan. July 2014

14. **Rivera, RM.** 2013. Large offspring syndrome: a bovine model for the human loss-of-imprinting overgrowth syndrome Beckwith-Wiedemann. Frontiers in Reproduction 2013 Symposium.

15. **Rivera, RM**. 2013. Bovine fetuses with phenotypic characteristics similar to those reported for the human overgrowth condition Beckwith-Wiedemann Syndrome have biallelic expression of the imprinted gene Kcnq1ot1. TM's 2nd World Molecular & Cell Biology Online Conference

16. Schenewerk, A, Huffman, SR, Zhao, G, Martinez-Lemus, L, Rivera, RM. 2012. The Effect of Maternal high fat diet and art on Cardiovascular Outcome in Offspring. Biol Reprod; (1 Supplement) 39

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18. Negrón Pérez, V, Echevarría, FD, Huffman, SR., **Rivera, RM**. Determination of Allelic Expression of H19 in Pre- and Peri-Implantation Mouse Embryos. Animal Sciences Graduate Research Forum, Columbia, Missouri, May 2013.

19. **Rivera, RM.** 2010. Size-Dependent Acquisition of global DNA methylation in oocytes is altered by hormonal stimulation. Frontiers in Reproduction 2010 Symposium.

20. **Rivera, RM.** 2009. Epigenetics effects of manipulating mouse oocytes and preimplantation embryos. Biol Reprod*;* 81 (1 Supplement) 9.

21. **Rivera, RM.** 2009. The epigenetic program of preimplantation mouse embryos is altered by assisted reproductive technologies. The 6th Annual Gilbert S. Greenwald Symposium on Reproduction Abstract book.

Poster Presentations

22. Nava-Trujillo H; Spinka, C; **Rivera RM**. Effect of bovine in vitro embryo production on fetal IGF system signaling. Authors: University of Missouri Show Me Research Week. April, 2025.

23. Nava-Trujillo H; **Rivera RM**. Role of decreased IGF2R in the variation of weight of fetuses derived from in vitro produced embryos.Event: 20th Annual Gilbert S. Greenwald Symposium on Reproductive and Developmental Sciences. Kansas City, MO, USA November 7-8, 2024

24. Nava-Trujillo and **Rocio M Rivera**. Tittle: DNA methylation level of vulnerable genomic loci associated with large offspring syndrome. 50th Annual Conference of the International Embryo Technology Society. Denver Colorado. January, 2024.

25. Habben, Camryn, Ortega, Sofia, **Rivera, Rocio**. Confirming binding of CTCF in Putative CTCF Binding Sites surrounding the LGALS14 Gene in Fetal Bovine Tissues. Fall Research Day. University of Missouri. December 7, 2023.

26. Habben, Camryn, Ortega, Sofia, **Rivera, Rocio**. Confirming binding of CTCF in Putative CTCF Binding Sites surrounding the LGALS14 Gene in Fetal Bovine Tissues. Fall Research Day. University of Missouri. December 7, 2023.

27. Nava-Trujillo H and **Rivera RM**. DNA methylation level of two vulnerable genomic loci associated with large offspring syndrome. American Embryo Transfer Association Annual Conference. October 2023. Orlando FL.

28. Nava-Trujillo H and **Rivera RM**. DNA methylation level of two vulnerable genomic loci associated with large offspring syndrome. CAFNR Research Symposium. October 2023, Columbia MO.

29. Nava-Trujillo H and **Rivera RM**. Relationship between placental IGF2, and IGF2R and weight of bovine fetuses produced in vivo and in vitro. Animal Sciences Graduate Student Forum. August 2023, Columbia, MO.

30. Camryn Habben, M. Sofía Ortega, **Rocío Melisa Rivera**. Confirming binding of CTCF in Putative CTCF Binding Sites surrounding the LGALS14 Gene in Fetal Bovine Tissues. Life Sciences Undergraduate Research Opportunity Program Symposium - July 2023. Columbia, MO.

31. Nava-Trujillo H and **Rivera RM**. Relationship between placental IGF2, IGF2R, and PHLDA2 and weight of bovine fetuses produced in vivo and in vitro. 11th International Ruminant Reproduction Symposium. Jun 2023 Galway, Ireland.

32. Camryn Habben, Maria C. Velez Colon, M. Sofía Ortega, **Rocío Melisa Rivera**. Determining the cause of Downregulation of the LGALS14 gene in Conceptuses from Low-Fertility Bulls. Spring Research & Creative Achievements Forum/Show Me Research Week. April 2023, Columbia, MO

33. Nava-Trujillo H and **Rivera RM**. Relationship between placental IGF2, and IGF2R and weight of bovine fetuses produced in vivo and in vitro. Spring Research & Creative Achievements Forum/Show Me Research Week. April 2023, Columbia, MO.

34. Mohamed Aboul Ezz, Ahmed Balboula, **Rocio Rivera**. Characterization of Cathepsin L Role in Bovine Oocyte and Preimplantation Embryo Development. Division of Animal Science Graduate Student Forum. University of Missouri. August 2022.

35. Mohamed Aboul Ezz, Ahmed Balboula, **Rocio Rivera**. Characterization of Cathepsin L Role in Bovine Oocyte and Preimplantation Embryo Development. Society for the Study of Reproduction Annual Meeting. Spokane, Washington. July 2022.

36. Camryn Dyan Habben, Godwin Izuchukwu Iroanya, **Rocio Melissa Rivera**, Searching for DNA Sequence Polymorphisms Between C57BL/6J and CF1 Mice at the H19 Imprinted Locus. Undergraduate Research & Creative Achievements Forum. University of Missouri. July 2022.

37. Li, Yahan, Highsmith, Max R.., Boadu, Frimpong, Cheng, Jianlin, **Rivera, Rocío Melissa**. Investigation of bovine chromosome architecture and its involvement in large offspring syndrome. Society for the Study of Reproduction Annual Meeting. St Louis, MO. Dec 2021

38. Kim, Chris, Almamun, Mamun, and **Rivera, Rocio Melissa**. Effects of stage of the estrous cycle and superovulation on DNA methylation in mouse oocytes and granulosa cells. Society for the Study of Reproduction Annual Meeting. St Louis, MO. Dec 2021

39. Jessica Kincade, Avery Hlavacek, Rocio M. Rivera, Ahmed Z. Balboula. Central Nucleus Positioning in Murine Oocytes is Achieved by F-actin and Maintained by Microtubules to Avoid Erroneous Chromosome Segregation. Society for the Study of Reproduction Annual Meeting. St Louis, MO. Dec 2021

40. Li, Yahan, Highsmith, Max R.., Boadu, Frimpong, Cheng, Jianlin, **Rivera, Rocío Melissa**. Investigation of bovine chromosome architecture and its involvement in large offspring syndrome. DOHaD satellite meeting on the Developmental Origin of Domestic Animal Health and Diseases and Epigenetics. October 2021.

41. María Del Carmen Velez-Colon, M. Sofía Ortega, **Rocío Melissa Rivera**. Characterizing DNA methylation of the LGALS14 promoter in low- and high-fertility bulls and their conceptuses. Undergraduate Research & Creative Achievements Forum. University of Missouri. July 2021.

42. Marinel Ocasio-Rivera and **Rocío Melissa Rivera**. Characterization of imprinted gene *MEG3* in large offspring syndrome. Undergraduate Research & Creative Achievements Forum. University of Missouri. July 2021.

43. Acevedo-Santiago and **Rocio Melissa Rivera**. Characterization of RTL1 imprinted gene expression in Large Offspring Syndrome. Undergraduate Research & Creative Achievements Forum. University of Missouri. July 2021.

44. Yahan Li, Y., and **Rivera, R.M**. Investigation of bovine chromosome architecture and its involvement in large offspring syndrome. Division of Animal Sciences Virtual Graduate Research Forum, University of Missouri, Columbia. Missouri, January 2021

45. Chris Kim, Md.Almamun,and **Rocío Rivera**. Effects of superovulation on global DNA methylation in mouse oocytes. Division of Animal Sciences Virtual Graduate Research Forum, University of Missouri, Columbia. Missouri, January 2021

46. Bhaumik Patel, Christine Spinka, Darren Hagen, Christine Elsik, and **Rocío Melissa Rivera**. Efforts to identify large offspring syndrome by ultrasonography and maternal blood markers. Virtual MU Animal Science Graduate Forum. January 2021.

47. Soto-Moreno, E., Balboula, A., Spinka, C., and **Rivera, R**. Effects of serum supplementation of culture medium on bovine preimplantation embryo morphometry and autophagic activity. Division of Animal Sciences Virtual Graduate Research Forum, University of Missouri, Columbia. Missouri, January 2021

48. Edgar J. Soto-Moreno, Ahmed Balboula, Christine Spinka, and **Rocío Melissa Rivera**. Effects of serum supplementation of culture medium on bovine preimplantation embryo morphometry and autophagic activity. 2020 Virtual Symposium 17th Annual Gilbert S. Greenwald Symposium on Reproduction and Perinatal Research. October 8-9, 2020

49. Bhaumik Patel, Christine Spinka, Darren Hagen, Christine Elsik, and **Rocío Melissa Rivera**. Efforts to identify large offspring syndrome by ultrasonography and maternal blood markers. 2020 Virtual Symposium 17th Annual Gilbert S. Greenwald Symposium on Reproduction and Perinatal Research. October 8-9, 2020

50. Yahan Li and **Rocío Melissa Rivera**. Investigation of bovine chromosome architecture and its involvement in large offspring syndrome. 2020 Virtual Symposium 17th Annual Gilbert S. Greenwald Symposium on Reproduction and Perinatal Research. October 8-9, 2020

51. Edgar J. Soto-Moreno, Ahmed Balboula, Tieming Ji, and **Rocio Melissa Rivera** – Effects of serum supplementation of culture medium on bovine preimplantation embryo morphometry and autophagic activity. SSR 2020. Not presented due to COVID19.

52. Bhaumik Patel, Shun Rao, Tieming Ji, **Rocio Melissa Rivera** – Efforts to identify large offspring syndrome by ultrasonography and maternal blood markers. SSR 2020. Not presented due to COVID19.

53. Edgar J. Soto-Moreno, Ahmed Balboula, Tieming Ji, and **Rocio Melissa Rivera** – Effects of serum supplementation of culture medium on bovine preimplantation embryo

morphometry and autophagic activity. GPC – University of Missouri. 2020. Not presented due to COVID19.

54. Bhaumik Patel, Shun Rao, Tieming Ji, **Rocio Melissa Rivera** – Efforts to identify large offspring syndrome by ultrasonography and maternal blood markers. GPC – University of Missouri. 2020. Not presented due to COVID19.

55. Hagen, D.E., Goldkamp, AK, Ji, Tieming, **Rivera, RM**. Prediction and Quantitative Expression of tRNA Genes in Bovine Tissues. ISAG 2019. Lleida, Spain

56. Anna K. Goldkamp, Yahan Li, Qianbo Sun, Darren E. Hagen, **Rocio M. Rivera**, Lan Zhu. Differentially expressed tRNA fragments in bovine fetuses with assisted-reproduction induced congenital overgrowth syndrome. ISAG 2019. Lleida, Spain

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58. Monique Ferrell, Edgar Joel Soto-Moreno, **Rocío Melissa Rivera**. Identification of Molecular Pathways Involved in Congenital Fetal Overgrowth in Bovine. Life Sciences Undergraduate Research Opportunity Program Symposium - Summer 2019.

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