



Name: Bryan Ampey

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Major Professor: Dr. Ron Magness

Degree Objective: Ph.D. Endocrinology and Reproductive Physiology

Background: B.S. Biology, Morehouse College

Current Research Project: Normal pregnancy is associated with dramatic increases in uteroplacental, and fetoplacental blood flow to accommodate fetal growth. Blood flow to these compartments is intimately controlled by dramatic endothelium-mediated vasodilatation responses to vasoactive hormones (i.e. estrogen). In contrast preeclampsia, a hypertensive disorder of pregnancy, is characterized by maternal endothelial dysfunction, which affects the regulation of vasodilation responses. Enhanced vasodilatation during gestation is dependent upon UAEC cell-cell communication via Gap junctions to increase uterine blood flow via nitric oxide (NO). Shear stress as well as cyclic nucleotide (i.e. cAMP and cGMP) levels are significantly elevated and induce vasodilation via nitric oxide (NO) during pregnancy. Therefore, shear stress and cAMP and cGMP may be regulators of uteroplacental vasodilation. Although cyclic nucleotides are known to increase Gap junction assembly, the effects of shear stress or these cyclic nucleotides on the associated phosphorylation state of the specific gap junction protein Cx43 and endothelial Nitric Oxide Synthase (eNOS) that mediates the vasodilator NO is unknown. Therefore, we propose a direct mechanistic signaling link between posttranslational modifications of Cx43 and Gap junction assembly/function in UAECs as part of the adaptation mechanism(s) needed to maintain NO production, UBF, and fetal growth during gestation.

Honors:

FASEB-MARC Travel Award Winner for poster presented at the 47th Society for the Study of Reproduction (SSR) Annual Meeting, July 19–23, 2014. Grand Rapids, Michigan.

Larry Ewing Memorial Trainee Travel Fund (LEMTTF) winner. Poster presented at the 45th Annual meeting for the Society for the Study of Reproduction, August 12-15, 2012, State college, Pennsylvania.

Symposium Oral Presentation Award Winner for platform presentation at Endocrine Reproductive Physiology Program Symposium April 12, 2012, Madison, Wisconsin.

Grants Received:

NIH T32 Trainee; NIH Ruth L. Kirschstein National Research Service Award NIH T32-HD041921 May 2014

NIH R25 Scholar; National Institute of General Medical Sciences, IMSD Institutional Research Education Grant, "Training & Education to Advance Minorities in Science" (TEAM-Science) NIH R25 GM083252; September 2011-August 2013.



Genentech Foundation MS Dissertation Scholarship, September 2010- August 2011.

NIH R25 Scholar: National Institute of General Medical Sciences, NIGMS "Bridges to the Doctorate Program R25, MA-MS/PhD Bridge Graduate Grant September 2009- August 2010.

Publications:

Ampey, B.C., Morschauser, T.J., Lampe, P.D., Magness, R.R. (2014) Gap Junction Regulation of Vascular Tone: Implications of Modulatory Intercellular Communication during Gestation in "40th Anniversary of The Center for Perinatal Biology, Springer, New York, in press.

National Presentations:

Bryan C Ampey, Ian M Bird, Ronald R Magness. Cx43 Phosphorylation and the Functionality of Cx43 Gap Junctions are Moderated by Cyclic Nucleotide Activity in UAECs and HUVECs. Research presented at the XIX International Society for the Study of Hypertention in Pregnancy (ISSHP) World Congress, October 26-29, 2014, New Orleans, Louisiana.

Bryan C Ampey, Gladys E Lopez, Ian Bird, and Ronald R. Magness. Cyclic Nucleotide Inhibition Diminishes the Phosphorylation and Expression of Cx43 and eNOS in Uterine Artery Endothelial Cells from Pregnant Sheep. Research presented at the 47th Society for the Study of Reproduction (SSR) Annual Meeting, July 19–23, 2014. Grand Rapids, Michigan.

Bryan C Ampey, Gladys E Lopez, Ian Bird, and Ronald R. Magness. Phosphodiesterase Inhibitors Specific for cAMP and cGMP Differentially Modulate Stimulatory Phosphorylation State of Cx43 and eNOS in Uterine Artery Endothelial Cells during Gestation. Poster presented at the 61st Annual meeting for the Society for Gynecologic Investigation, March 26-29, 2014. Florence, Italy.

Bryan C Ampey, Gladys E Lopez, Ian M Bird, Ronald R Magness. ATP and Forskolin Stimulate Phosphorylation of Cx43 and eNOS in Uterine Artery Endothelial Cells via Pregnancy-specific Cyclic Nucleotide Mechanisms. Research presented at the 46th Society for the Study of Reproduction (SSR) Annual Meeting, July 22–26, 2013. Montréal, Québec, Canada.

Kwadernica C Rhea, Bryan C Ampey, and Ronald R. Magness. Cyclic Adenosine Monophosphate and Cyclic Guanosine Monophosphate Alter the Phosphorylation State of Connexin-43 Gap Junction and Endothelial Nitric Oxide Synthase Proteins in Ovine Uterine Artery Endothelial Cells of Pregnancy. Research presented at the Annual Biomedical Research Conference for Minority Students (ABRCMS) Annual Meeting 2012. San Jose, California.

Bryan C Ampey, Ethan J Schuler, Sheikh O Jobe, Daniel T Thoresen, Gladys E Lopez, Ian M Bird, Ronald R Magness. Shear Stress, cAMP, and cGMP Modulate the Pregnancy-Related Phosphorylation State of Cx43-Gap Junction and eNOS Proteins in Uterine Artery Endothelial Cells. Abstract accepted for poster presentation at the 45th Society for the Study of Reproduction (SSR) Annual Meeting, August 12 - August 15, 2012. State College, Pennsylvania.

Bryan C Ampey and Joseph C Chen. Global Transcriptional Analysis of the PodJ1 Morphologic Mutation in *Sinorhizobium meliloti*. Research presented at the Annual Biomedical Research Conference for Minority Students (ABRCMS) Annual Meeting 2010. Charlotte, North Carolina.

Other Presentations:



Bryan Ampey (2012). Shear Stress, cAMP, and cGMP Modulate the Pregnancy related Phosphorylation state of Cx43-gap Junction and eNOS Proteins in Uterine Artery Endothelial Cells. Research presented at the 2012 ERP Annual Symposium, April 12th, 2012, Madison, Wisconsin.

Service:

Endocrine Reproductive Physiology (ERP) Student Committee Member 2014-15

Endocrine Reproductive Physiology (ERP) Student Committee Member 2013-14

ERP Symposium Organizing Committee 2013-2014

ERP program Recruitment Advisory Committee 2013-2014

ERP program Recruitment Advisory Committee 2012-2013

SSR delegate ABCRMS conference 2012-2013