

ANIMAL MOLECULAR AND
CELLULAR BIOLOGY
GRADUATE PROGRAM

TWENTIETH ANNUAL
RESEARCH SYMPOSIUM



Fernandina Beach, Amelia Island
Florida

May 13-14, 2022



ANIMAL MOLECULAR
AND CELLULAR BIOLOGY

WELCOME

On behalf of all the faculty of the AMCB welcome to the 20th Annual Research Symposium of the AMCB.

This year's symposium heralds our return to a formal retreat outside of Gainesville following the global pandemic. In 2020 the AMCB Research Symposium was to include Professor Fuller Bazer as the Distinguished Lecturer; however, due to the pandemic the symposium was cancelled, and so it is with great pleasure we can invite Professor Bazer back as the 2022 AMCB Distinguished Lecturer.

This years symposium is held at the Hampton Inn & Suites Amelia Island-Historic Harbor Front in Fernandina Beach on Amelia Island. The area was first inhabited Timucuan Indian people and has changed hands between colonial powers several times. It is claimed that eight flags have flown over Amelia Island: French, Spanish, British, Floridian/Patriot, Green Cross, Mexican, Confederate, and United States. Originally named "Napoyca" by the Timucuan people, Amelia Island was named for Princess Amelia, daughter of King George II of Great Britain, while Fernandina Beach is named in honor of King Ferdinand VII of Spain. This year the sessions are named for the 4 rivers that converge at Fernandina Beach.

We are grateful for those who support the AMCB during the year including the College of Agricultural and Life Sciences, and the University of Florida Office of Research. Thank you to Renee Parks-James who continues to work hard for the AMCB program. In addition, the symposium would not have been possible without the efforts of Jasmine Corbit, Tracy Cawley and Debra Nagy – thank you for all your hard work.

The AMCB is all about intellectual, professional, and personal connections – we encourage all to engage fellow faculty and students during the breaks to build new insights and foster collaboration.

John Bromfield, Director
Geoff Dahl, Co-Director

AMCB 2022 DISTINGUISHED LECTURER



Fuller Bazer, Ph.D.

Department of Animal Science, Texas A&M University

Professor Bazer is a Regents Fellow, Distinguished University Professor, Presidential Impact Fellow and the O.D. Butler Chair in animal science/reproductive biology in the Department of Animal Science at Texas A&M University. Professor Bazer earned his Bachelor of Science in biology from Centenary College of Louisiana, his Master of Science in animal science from Louisiana State University and Ph.D. in animal science/reproductive biology from North Carolina State University. Professor Bazer was a Graduate Research Professor in the Department of Animal Sciences at University of Florida (1968-1992) before joining the faculty of Texas A&M University.

Professor Bazer's research in reproductive biology focuses on uterine biology and pregnancy, particularly pregnancy recognition signaling from the conceptus to the maternal uterus. Professor Bazer identified the pregnancy recognition signals of estradiol in swine and interferon tau in ruminants, as well as their mechanisms of action to ensure maintenance of ovarian corpora lutea for production of progesterone. Professor Bazer is now identifying roles of interferon tau that effect changes in gene expression in uterine epithelia critical to conceptus development including transporters for glucose, fructose and arginine that stimulate

proliferation, migration, and adhesion of trophoblast cells via the mechanistic target of rapamycin (mTOR) cell signaling pathway. He and his colleagues have identified roles of arginine for synthesis of polyamines and nitric oxide and discovered the arginine decarboxylase- agmatinase alternative pathway for synthesis of polyamines in ruminant conceptuses. The mechanism of action and potential therapeutic value of conceptus interferons and uterine-derived hematopoietic growth factors are areas of research with both pigs and sheep as models for human disease.

Professor Bazer's groundbreaking work has been recognized with numerous prestigious awards including the ASAS Physiology and Endocrinology Award (1980), AAAS Fellow (1988), ASAS Casida Award for Graduate Education (1995), Awards for Research (1990), Distinguished Service (2000), and Trainee Mentoring (2009) from SSR, and the SSR Carl Hartman Award (2004), the Wolf Prize in Agriculture (2003), the SRF Distinguished Research Award (2007), the IRRS Pioneer Award (2010), in addition to holding honorary Doctor of Science degrees from the University of Guelph (2004) and the University of Florida.

AMCB FACULTY

Mario Binelli, Department of Animal Sciences
Rafael S. Bisinotto, Department of Large Animal Clinical Sciences
John J. Bromfield, Department of Animal Sciences
Samantha A. Brooks, Department of Animal Sciences
Mary B. Brown, Department of Infectious Diseases and Immunology
Geoffrey E. Dahl, Department of Animal Sciences
Brad Daigneault, Department of Animal Sciences
Aria Eshaghi, Department of Infectious Diseases and Immunology
Antonio Faciola, Department of Animal Sciences
Angela Gonella-Diaza, Department of Animal Sciences
Klibs Galvão, Department of Large Animal Clinical Sciences
Peter J. Hansen, Department of Animal Sciences
Kwang Cheol (KC) Jeong, Department of Animal Sciences
Maureen Keller-Wood, Department of Pharmacodynamics
Raluca Mateescu, Department of Animal Sciences
Corwin Nelson, Department of Animal Sciences
David W. Pascual, Department of Infectious Diseases & Immunology
Fernanda M. Rezende, Department of Animal Sciences
José E.P. Santos, Department of Animal Sciences
Tracy Scheffler, Department of Animal Sciences
Charles E. Wood, Department of Physiology and Functional Genomics
Feng Yue, Department of Animal Sciences

Emeritus Faculty

Lokenga Badinga, Department of Animal Sciences
William C. Buhi, Departments of Obstetrics & Gynecology, Animal Sciences
Kenneth C. Drury, Department of Obstetrics & Gynecology
Michael J. Fields, Department of Animal Sciences
Daniel C. Sharp, Department of Animal Sciences
William W. Thatcher, Department of Animal Sciences

CURRENT AMCB STUDENTS

PhD Students

Temitope Mayowa Adeoti (Advisor: Santos)
Thiago Amaral (Advisor: Hansen)
Usman Arshad (Advisor: Santos)
Eliab Estrada Cortes (Advisor: Hansen)
Federico Cunha (Advisors: Brown & Galvão)
Ahmad Fraz (Advisor: Nelson)
McKenzie (Lane) Haimon (Advisor: Peter Hansen)
Froylan Sosa Hernandez (Advisor: Hansen)
Ali Husnain (Advisor: Santos)
Richard Lobo (Advisor: Faciola)
Maura McGraw (Advisor: Daigneault)
Phillip Martins Peixoto (Advisor: Bisinotto)
Masoor Sagheer (Advisor: Hansen)
Firmansyah Tri Saputra (Advisor: Nelson)
Efsthathios Sarmikasoglou (Advisor: Faciola)
Daniel Stanton (Advisor: Hansen)
Arslan Tariq (Advisor: Bromfield)
Yuhan Wen (Advisor: Nelson/Driver)
Yuting Zhai (Advisor: Jeong)

MS Students

Camila Jose Cuellar (Advisor: Hansen)
Kelly Anne Forbes (Advisor: Dahl)
Quinn Hoorn (Advisor: Hansen)
Huijia Liu (Advisor: Jeong)

GRADUATES OF THE AMCB, 2021-2022

Eliab Estrada Cortes, PhD (Advisor: Hansen)
*Researcher, Instituto Nacional de Investigaciones Forestales,
Agrícolas y Pecuarias (INIFAP), Mexico*

Laura May Jensen, MS (Advisor: Hansen)
PhD candidate, La Trobe University Australia

Melany De Carvalho Madrid (Advisor: Driver)
PhD candidate, University of Missouri

Michael B. Poindexter, PhD (Advisor: Nelson and Santos)

Paula Cardoso Molinari, PhD (Advisor: Bromfield)
Associate Scientist, DevLab Texas

Roney Zimpel, PhD (Advisor: Santos)

Segundo Casaro, MS (Advisor: Galvão)
PhD candidate, College of Veterinary Medicine at University of Florida

Surawich Jeensuk, MS (Advisor: Hansen)
Embryologist, Thailand

Weihong Gu, PhD (Advisor: Driver)
Postdoctoral Associate, Yale School of Medicine

HISTORY OF THE AMCB RESEARCH SYMPOSIUM

YEAR	LOCATION	DISTINGUISHED LECTURER
2003	Whitney Laboratory St. Augustine, Florida	Randy Prather University of Missouri
2004	Chinsegut Hill Brooksville, Florida	John Dobrinski USDA-ARS Beltsville, MD
2005	Chinsegut Hill Brooksville, Florida	Doug Stocco Texas Tech University
2006	Lake Wauburg Gainesville, Florida	Ina Dobrinski University of Pennsylvania
2007	Whitney Laboratory St. Augustine, Florida	Doug Bannerman USDA-ARS, Beltsville, MD
2008	Cedar Cove Beach & Yacht Club Cedar Key, Florida	Eckhard Wolf LMU Munich, Germany
2009	Plantation Golf Resort and Spa Crystal River, Florida	Dean Betts University of Western Ontario
2010	Whitney Laboratory St. Augustine, Florida	Marc-Andre Sirard Laval University
2011	Steinhatchee Landing Resort Steinhatchee, Florida	Kimberly Vonnahme North Dakota State Univ.
2012	Holiday Isle Oceanfront Resort St. Augustine, Florida	Rocío Rivera University of Missouri
2013	Harbor Front Hampton Inn Fernandina Beach, Florida	Martin Sheldon Swansea University
2014	Lakeside Inn Mount Dora, Florida	Cynthia Baldwin University of Massachusetts
2015	Jekyll Island Club Hotel Jekyll Island, Georgia	Pat Lonergan & Trudee Fair University College Dublin
2016	Chinsegut Hill Retreat Brooksville, Florida	Shawn Donkin Purdue University
2017	Safety Harbor Resort and Spa Safety Harbor, Florida	Kieran Meade Teagasc, Co. Meath, Ireland
2018	Plantation on Crystal River Crystal River Florida	Christopher Geyer East Carolina University
2019	International Palms Resort & Conf. Center Cocoa Beach, Florida	Brian O'Neill University of Iowa
2020	Cancelled – Covid19	Fuller Bazer Texas A&M
2021	Austin Cary Forest Gainesville, Florida	Liang Zhou University of Florida
2022	Hampton Inn & Suites, Fernandina Beach Amelia Island, Florida	Fuller Bazer Texas A&M

SCHEDULE OF EVENTS

Friday May 13, 2022

12:30 PM Geoff Dahl, AMCB Co-Director
Welcome and introduction

Session 1: St Marys River

Chairs: Phillip Martins Peixoto and Yuhan Wen

12:45 PM Temitope Adeoti, Dept of Animal Sciences

“Effect of replacing sulfate with hydroxy chloride sources of trace minerals on mineral metabolism, production, and reproduction in dairy cows.”

1:00 PM Usman Arshad, Dept of Animal Sciences

“Choline: An essential nutrient to improve the productive performance in dairy cows.”

1:15 PM Federico Cunha, Dept of Large Animal Clinical Sciences

“Metagenomics of dairy cow uterine disease: A systematic review.”

1:30 PM Caio Figueiredo, Dept of Large Animal Clinical Sciences

“Changes in uterine and serum metabolome associated with metritis in dairy cows.”

1:45 AM Kelly Forbes, Dept of Animal Sciences

“Impact of OmniGen AF in dry cows heat stressed with an electric blanket model.”

2:00 PM Ahmad Fraz, Dept of Animal Sciences

“Effect of supplementing rumen protected arginine on immune status of dairy cows in the transition period.”

2:15 PM BREAK

Session 2: Amelia River

Chairs: Efstathios Sarmikasoglou and Arslan Tariq

- 2:30 PM Lané Haimon, Dept of Animal Sciences
“Culture of bovine preimplantation embryos with choline chloride increases birth weight of the resultant calves.”
- 2:45 PM Quinn Hoorn, Dept of Animal Sciences
“Use of GWAS to identify candidate genomic regions associated with pregnancy success in Brangus heifers.”
- 3:00 PM Ali Husnain, Dept of Animal Sciences
“Cellular and molecular mechanisms of compromised fertility caused by endometrial inflammation in dairy cows.”
- 3:15 PM Huijia Liu, Dept of Animal Sciences
“Host genetic effects on cattle hindgut microbiota and its association with complex traits.”
- 3:30 PM Segundo Casaro, Dept of Large Animal Clinical Sciences
“Phenotypic characterization and activation status of blood myeloid and lymphoid cells in cows that develop metritis.”
- 3:45 PM BREAK

Session 3: 2022 AMCB Distinguished Lecture

Chair: Professor William Thatcher

- 4:00 PM Professor Fuller Bazer, Dept of Animal Science, Texas A&M University
“Interferon Tau: Initiator of transport of nutrients into the pregnant uterus to meet metabolic demands of the conceptus.”
- 5:00 PM Group Photo – Waterfront.
- 6:00 PM Dinner – Café Karibo: 27 N 3rd St, Fernandina Beach, FL.

Saturday May 14, 2022

6 – 9:00 AM Complimentary breakfast in the hotel.

Session 4: Bells River

Chairs: Daniel Stanton and Ali Husnain

- 8:30 AM Richard Lobo, Dept of Animal Sciences
“Inclusion of plant organic acids in dairy cow diets and their effects on ruminal microbiome and fermentation.”
- 8:45 AM Maura McGraw, Dept of Animal Sciences
“Functional characterization and environmental modulation of PPAR γ expression in bovine preimplantation embryo.”
- 9:00 AM Phillip Peixoto, Dept of Large Animal Clinical Sciences
“Evaluation of estrus behavior in non-lactating heifers and first lactation cows based on fertility traits.”
- 9:15 AM Masroor Sagheer, Dept of Animal Sciences
“Effect of feeding rumen protected choline (RPC) around the periconceptual period on fetal programming in beef cows.”
- 9:30 AM Firmansyah Saputra, Dept of Animal Sciences
“Effect of heat stress on immunity.”
- 9:45 AM Efstathios Sarmikasoglou, Dept of Animal Sciences
“Effects of different sources of LPS on primary bovine ruminal epithelial cells.”
- 10:00 AM BREAK

Session 5: Kingsley Creek

Chairs: Usman Ashad and Lané Haimon

- 10:15 AM Daniel Stanton, Dept of Animal Sciences
“RNAseq datasets reveal the lack of a functional clock in the mammalian preimplantation embryo.”
- 10:30 AM Arslan Tariq, Dept of Animal Sciences
“Maturation of bovine oocytes in inflammatory conditions reduces developmental competence and embryo quality in vitro.”
- 10:45 AM Yuhan Wen, Dept of Animal Sciences
“Efficacy of single-dose controlled release microparticles to enhance long-term protection.”
- 11:00 AM Rachel White, Teagasc & University College Dublin, Ireland
“Endometritis in the Irish dairy herd - Incidence, risk factors and treatment efficacy.”
- 11:15 AM Yuting Zhai, Dept of Animal Sciences
“Understanding genetic features associated with host specificity of Methicillin-resistant *Staphylococcus aureus* by a machine learning approach.”
- 11:30 AM John Bromfield, AMCB Director
Closing remarks – adjourn.

NOTES