

GEORGE W. SMITH

Director, MSU AgBioResearch | Professor, Animal Science |
Senior Associate Dean for Research, College of Agriculture and Natural Resources
<http://agbioresearch.msu.edu>

ACADEMIC AND ADMINISTRATIVE APPOINTMENTS

Dec 2021- present

Director of MSU AgBioResearch

- Provide strategic direction and administrative oversight for AgBioResearch operations, including authority over the annual budget (\$140,000,000 in FY24) and personnel decisions
- Serve as the primary legislative contact for decision-making and strategic intent on policy and funding issues at the federal and state levels
- Coordinate strategic direction and priorities for the CANR Director of Government and Stakeholder Relations in concert with the MSU Extension (MSUE) Director and CANR Dean
- Provide input into and oversee the strategic direction for research communications
- Represent AgBioResearch (or a designated representative) on federal, state, and commodity group-related Boards of Directors with an official appointment
- Represent AgBioResearch on the CANR Deans and Directors group, with designated authority for input on faculty reappointment, promotion, tenure, and joint funding decisions
- Represent AgBioResearch (or a designated representative) on campus-level committees with an official appointment or standing invitation
- In collaboration with the group director, serve as the administrative lead for establishing and overseeing the AgBioResearch Research Evaluation and Data Analytics team
- Serve as the administrative lead for the MSU agriculture climate resiliency program in collaboration with the MSUE Director
- Serve as the administrative lead for establishing and overseeing the MSU Center for PFAS Research and the MSU Center for Regenerative Agriculture
- Facilitate new biweekly AgBioResearch leadership team strategy meetings to ensure progress on long-term vision and annual goals
- Provided leadership for creating and implementing a new AgBioResearch administrative fellows program and a strategic partnership with North Carolina A&T State University in collaboration with other team members

Dec 2021- present

College of Agriculture and Natural Resources (CANR)
Senior Associate Dean for Research

- Develop and implement the research vision and direction for CANR
- Represent CANR in faculty startup negotiations
- Serve as the college liaison to the Office of Vice President for Research and Innovation and other colleges for research-related initiatives
- Evaluate faculty scholarship in the context of promotion and tenure
- Present at college workshops on demystifying reappointment, promotion, and tenure processes
- Provide leadership in space management, infrastructure, and strategic planning for CANR
- Serve as the point of contact for CANR Dean Millenbah in Dean's absence

Jan 2016 - Dec 2021 CANR Associate Dean for Research

- Developed and implemented the research vision and direction for CANR
- Represented CANR in faculty startup negotiations
- Served as the college liaison to the Office of Vice President for Research and Innovation and other colleges for research-related initiatives
- Evaluated faculty scholarship in the context of promotion and tenure
- Provided leadership in space management, infrastructure, and strategic planning for CANR

Jan 2016 – Dec 2016 CANR Interim Associate Dean for Research

Jan 2015 - Dec 2021 Associate Director, MSU AgBioResearch

- Contributed to the development and implementation of the research vision for AgBioResearch
- Served as the primary liaison to animal agriculture commodity groups
- Acted as the MSU AgBioResearch administrative lead for the Michigan Alliance for Animal Agriculture and its grants program
- Led AgBioResearch's fundamental research portfolio in plant, animal, and biomedical sciences and related areas
- Oversaw the AgBioResearch Office of Research Support
- Contributed to the administrative oversight (with the College of Natural Science) of campus plant growth facilities (greenhouses and growth chambers) and south campus animal farms (in collaboration with MSU Extension and CANR)
- Served as the liaison to MSU Technologies and MSU Business Connect for intellectual property and corporate-funded research issues
- Oversaw research evaluation and data analytics efforts
- Contributed with the Director to the overall leadership of AgBioResearch, including federal and state advocacy efforts, strategic direction, and budget and personnel decisions

July 2014 - Dec 2014 Acting Associate Director MSU AgBioResearch

Mar 2011 - Apr 2016 Co-Director, Michigan State University Reproductive and Developmental Sciences Program

July 2008 - present Professor of Animal Sciences in Reproductive Biology

Sep 2005 - July 2008 Director, Michigan State University Reproductive and Developmental Sciences Program

July 2003 - June 2008 Associate Professor of Animal Sciences in Reproductive Biology, Michigan State University

Sep 1997 - June 2003 Assistant Professor of Animal Sciences in Reproductive Biology, Michigan State University

ACTIVITIES IN ADMINISTRATIVE ROLE

Current Grant Support and Oversight (administrative role; \$37,067,023 total)

- Oct 2024 - Sept 2028 (\$6,100,000) **G.W. Smith.** Agriculture Climate Resiliency Program (positions and competitive grants program). State of Michigan funded initiative (FY2025) with funding provided through a grant from the Michigan Department of Agriculture and Rural Development (funds appropriated and grant/award processing ongoing).
- Dec 2023 - Sept 2027 (\$1,000,000) **G.W. Smith.** Agriculture Climate Resiliency Program (positions). The state of Michigan funded the initiative with funding from the Michigan Department of Agriculture and Rural Development.
- Dec 2023 - Sept 2027 (\$5,000,000) **G.W. Smith.** Agriculture Climate Resiliency Program (competitive grants). The state of Michigan funded the initiative with funding provided through a grant from the Michigan Department of Agriculture and Rural Development.
- May 2023 - June 2026 (\$3,000,000) G.W. Smith. Michigan Alliance for Animal Agriculture (M-AAA; FY 2023 Grants Program). PI responsibility transferred to James Averill in Fall 2023.
- April 2023 - June 2028 (\$550,000). D. Buhler, G.W. Smith, P. Duxbury, L Kempel, B. Puschner, A. DiSante. Michigan State University MTRAC, Michigan Economic Development Corporation.
- May 2022 - June 2025 (\$3,000,000) G.W. Smith. Michigan Alliance for Animal Agriculture (M-AAA; FY 2022 Grants Program). PI responsibility transferred to James Averill in Fall 2023.
- Oct 2021 - Sep 2026 (\$7,966,972) A Moore, C. Contag, M. Delano, D. Gage, E. Shapiro, G.W. Smith, V. Yuzbasiyan-Gurkan, K. Zinn. Large Animal Facility for Imaging and Image-guided Therapies at MSU. National Institutes of Health.

Completed Grant Support

- Sept 2020 - July 2023 (\$1,051,051) D. Buhler, **G.W. Smith**, P. Duxbury, L Kempel, B. Puschner, A. DiSante. Michigan State University MTRAC, Michigan Economic Development Corporation.
- May 2021 - June 2024 (\$3,000,000) **G.W. Smith.** Michigan Alliance for Animal Agriculture (M-AAA; FY 2021 Grants Program). PI responsibility transferred to James Averill in Fall 2023.
- Feb 2019 - April 2022 (\$2,000,000) **G.W. Smith.** Michigan Alliance for Animal Agriculture (M-AAA; FY 2019 Grants Program).
- Jan 2018 - Dec 2021 (\$2,500,000) **G.W. Smith.** Michigan Alliance for Animal Agriculture (M-AAA; FY 2018 Grants Program).
- Jan 2017 - Apr 2019 (\$899,000) **G.W. Smith.** Michigan Alliance for Animal Agriculture (M-AAA; FY 2017 Grants Program).

Sep 2016 - Aug 2019 (\$1,000,000) R. Chylla, **G.W. Smith**; R.J. Kirkpatrick Jr; L. Kempel and D. Gage.
MTRAC Innovation Hub for AgBio. Michigan Economic Development Corporation

State Advocacy Efforts (Testimony before Committees of State Government)

2024	Testimony before MI House Agriculture and Rural Development and Natural Resources Appropriations Subcommittee (with MSUE Director and three farmers) regarding the continuation of funding for new research and Extension program (agriculture climate resiliency initiative) focused on climate impacts and water resiliency issues impacting plant agriculture in MI (\$6.1 million in additional funding secured in FY25)
2023	Testimony before MI House Agriculture and Rural Development and Natural Resources Appropriations Subcommittee (with MSUE Director and 3 farmers) regarding proposed new research and Extension program (agriculture climate resiliency initiative) focused on climate impacts and water resiliency issues impacting plant agriculture in MI (\$6 million in new funding secured in FY24)
2019 - 2021	MI House Agriculture and Rural Development Appropriations Subcommittee (Subject: Funding for Michigan Alliance for Animal Agriculture)
2019	MI House/Senate Joint Appropriations Subcommittee for Capital Outlay (Subject: MSU Greenhouse Capital Outlay Funding Request)
2017, 2019	MI Senate Agriculture and Rural Development Appropriations Subcommittee (Subject: Funding for Michigan Alliance for Animal Agriculture)
2016	MI House and Senate Higher Education Appropriations Subcommittees Joint meeting (Subject: MSU AgBioResearch State Budget)
2015	MI Senate Higher Education Appropriations Subcommittee (Subject: MSU AgBioResearch State Budget)

State Advocacy Efforts (Meetings with/presentations to state legislators, departments and industry groups)

2015-present	Participated in one hundred and eighteen individual meetings with MI State Senators and Representatives and or their staff to advocate for MSU AgBioResearch base budget and special initiatives such as the M-AAA, Agriculture climate resiliency program, and \$53 million state investment in infrastructure in FY 2023 (greenhouse and dairy facilities). Visits were joined by the MSUE Director and our AgBioResearch/MSU Extension State Council Members)
2025	Meeting with Michigan Soybean Committee to discuss the importance of work of AgBioResearch to their industry and continued support for the Agriculture Climate Resiliency Program
2024	Hosted a campus tour (with MSU Extension) for State of Michigan elected officials, legislative staffers and industry representatives and provided remarks on ongoing research efforts focused on renewable energy and anaerobic digestion and ability to inform current/future regulatory conversations in the state

2024	Keynote presentation at 2024 Great Lakes Fruit and Vegetable Expo Joint Cherry and Apple Committee Luncheon focused on the Agriculture Climate Resiliency Program and potential impacts/benefits to growers
2024	Presentation and question and answer session focused on an agriculture, climate and water issues and ongoing programming for newly elected MI State Representatives as part of Legislative Leadership Program sponsored by the MSU Institute for Public Policy and Social Research and MSU Extension
2024	Keynote presentation at G.W. Bird Family Foundation Environmentally Sound Agriculture Day entitled: Strengthening resiliency of agriculture and food systems in Michigan and beyond Challenges and opportunities
2024	Hosted Director of Michigan Department of Environment, Great Lakes and Energy Phil Roos and his team for tour of the MSU campus and specifically the Anaerobic Digestion Research and Education Center to discuss prior, ongoing, and future research and education efforts focused on renewable energy, environmental sustainability, and water reclamation
2024	Presentation to Michigan Department of Environment, Great Lakes and Energy water conservation and efficiency committee on the Agriculture Climate Resiliency Program
2024	Conversation with the Board of Directors of MI Wheat Program about potential joint infrastructure investment
2024	Presentation to Lansing Ag and Natural Resources Club: AgBioResearch Update
2024	Keynote address at MI Food Processors Annual Meeting entitled Strengthening resiliency of agriculture and food systems in MI: Challenges and opportunities
2024	Meeting with Jesse Salazar, McKinsey, and Associates to discuss economic development in MI and opportunities for agriculture
2023	Hosted MI House Agriculture and Rural Development and Natural Resources Appropriations Subcommittee tour of MSU campus to learn more about the impact of work of AgBioResearch and MSUE and ongoing research efforts that help advance MI Healthy Climate Plan
2023	Upper Peninsula Forestry Innovation Center visit and roundtable discussion with forestry industry leaders
2023 -2024	Participation and presentation (AgBioResearch update) at MABA Outlook Conference, Mackinac Island, MI
2023	AgBioResearch, CANR, and MSUE roundtable discussion with MABA Board of Directors
2023	Meeting with Michigan Farm Bureau Young Leaders and tour of agriculture research facilities and discussion of ongoing programming
2023	Roundtable discussion with MI Vegetable Council

2023	Invited presentation (AgBioResearch update) at MI Potato Industry Commission Annual Meeting
2023	Presentation and discussion at Great Lakes Regional Dairy Conference on MSU Dairy Research and Teaching Center construction project and programmatic impact for the future
2022-2023	Presentation at MABA Winter Conference (dairy project and agriculture climate resiliency program)
2022-2024	Travel to Upper Peninsula State Fair to attend governor's luncheon and meet/interact with federal and state elected officials and leadership of relevant state departments
2022	Meeting with Michigan Farm Bureau greenhouse/nursery advisory committee regarding plant science research greenhouse project
2022	Tour of MSU plant science greenhouse facilities with State of Michigan Budget Director staff
2022	Attended Integrated Pest Management (IPM) Alliance EPA tour and provided remarks on ongoing partnerships with MI agriculture and the importance of related research
2022	Presentation at Spartan Celebration for MI Agriculture acknowledging elected officials, industry partners, and MSU leaders who contributed to legislative support for a historic \$53 million state appropriation for greenhouse dairy facilities
2022	Roundtable discussion with leadership of MI Cattleman's Association
2022	Meeting with Aaron Keatley, Deputy Director Michigan Department of Environment, Great Lakes and Energy, Tom Zimnicki, Alliance for Great Lakes Policy Director, and Megan Tinsley, Water Policy Director for Michigan Environmental Council, to discuss the programmatic vision for the new dairy facility, focus on environmental sustainability solutions and infrastructure funding request to the State of Michigan
2022	Presentation to Michigan Commission on Agriculture and Rural Development regarding the activity of AgBioResearch and the importance of funding requests to the State of Michigan for agriculture research infrastructure (dairy and greenhouse facilities).
2022	Tour of MSU Dairy Teaching and Research Center and discussion of a programmatic vision for a new dairy facility with state legislators, representatives from Consumers Energy, and other stakeholder partners
2022	Presentation at USDA Farm Service Agency summer agriculture forum on MSU campus focused on AgBioResearch strategic foci and infrastructure funding request to the State of Michigan
2022	Tour of Upper Peninsula Forestry Innovation Center with the leadership of Greenstone Farm Credit Services Forestry programs

2022	Meeting and presentation of AgBioResearch strategic foci to the Board of Directors of the MI Wheat Program
2021	Tour of MSU Dairy Teaching and Research Center, Plant Science Research Greenhouse complex, and other campus agricultural facilities with MI State Representative Amos O'Neal
2021	Tour of Kellogg Biological Station with MI State Senator Sean McCann
2021	Tour of Plant Science Research Greenhouse Complex with Michigan State Representative Scott VanSingel
2019	Tour of Plant Science Research Greenhouse Complex with Michigan House and Senate Joint Capital Outlay Committee Members
2019	Tour of campus agriculture research facilities with MI Governor's agriculture policy advisor Josh Neyhart
2019	Campus tour and discussion of ongoing agricultural research efforts with the leadership of the MI Department of Agriculture and Rural Development
2018	MSU update at MABA Leadership Program
2016	Campus tour and discussion of ongoing agricultural research efforts with leadership of MI Department of Agriculture and Rural Development and Ag Commission Members
2016	Campus tour and discussion of ongoing agricultural research efforts with State Senator Curtis Hertel

Congressional and Federal Agencies and Related Advocacy/Education Efforts

2015 - present	Represent MSU AgBioResearch at the Council for Agricultural Research, Extension and Teaching Annual Meetings in Washington DC, where coordination of advocacy efforts across all land grant institutions in support of capacity and competitive funding within USDA NIFA occurs.
2015 – present	Participate in in-person hill visits or virtual (2021) with stakeholder advocates (CARET representatives) to Michigan congressional delegation to advocate for federal funding for agricultural research (NIFA capacity and competitive funding) as part of APLU Council on Agricultural Research, Extension and Teaching annual meeting
2024	Attended Friends of National Arboretum dinner and fundraiser with agriculture policymakers from the federal government and private sector in attendance and updates from Agriculture Secretary Vilsack, House Agriculture Committee chairman Thompson, and Senate Agriculture Committee chairwoman Stabenow on farm bill progress
2024	Oral presentation of agInnovation 10 Year Research Roadmap to National Coalition for Food and Agricultural Research (NCFAR) lunch and learn session on Capitol Hill with International Fresh Produce Association Chief Science Officer Max Teplitski, NCFAR Executive Director Laura Wood and Lyndsey Dowell,

Spatial Data Science Lead for the Nature Conservancy as participants providing stakeholder perspective during presentation

- 2024 Hill visits following NCFAR lunch and learn presentation on research roadmap with staff of Congressman GT Thompson and John Moolenaar and Senators Gary Peters and Thom Tillis
- 2024 Meeting with Dr. Diedre Chester, USDA Office of Chief Scientist, and her team to gain stakeholder input on the draft of 10-year agInnovation research roadmap
- 2024 Meeting with leadership of National Science Foundation (Abiodun Ilumoka, Karen Cone, and Joda Thongnopua) to gain stakeholder input on the draft of 10-year agInnovation research roadmap
- 2024 Meeting with leadership of International Agriculture Section of APLU (Jennifer Kushner, Thomas Thompson and John Vreyens) to gain stakeholder input on the draft of 10-year agInnovation research roadmap and incorporation of global perspective
- 2024 Meeting with Kelsey Barnes, Farm Journal Foundation Director of Governmental Affairs, and Justin Zenk, Governmental Affairs Coordinator, to discuss the role of agInnovation in advancing the national agriculture research agenda, draft ten-year research roadmap and NCFAR lunch and learn public rollout of effort
- 2024 Meeting with Kris Johnson, Director of North America Agriculture Programs, Shamitha Keerthi, and Lyndsey Dowell of the Nature Conservancy to gain stakeholder input on draft of 10-year agInnovation research roadmap and potential participation in NCFAR lunch and learn public rollout of effort
- 2024 Meeting with Joe Schultz, Executive Director, Platform for Agriculture and Climate, to gain stakeholder input on draft of 10-year agInnovation research roadmap
- 2024 Meeting with Greg Jaffe, Sr policy advisor, US Department of Agriculture to gain stakeholder input on the draft of a 10-year agInnovation research roadmap
- 2024 Meeting with Homeland Security and Government Affairs team from Office of Senator Gary Peters to discuss agriculture cybersecurity and protection of research data on campus
- 2024 Meeting with USDA NIFA National Program Leaders to gain stakeholder input on draft of 10-year agInnovation research roadmap
- 2024 Hosted MI Senator Gary Peters and his staff on a visit and tour of MSU Northwest Michigan Horticultural Research Center and a conversation on ongoing research and industry priorities
- 2024 Participant in panel discussion at National Agriculture Media Summit focused on the importance and impact of agricultural research, the next farm bill, and the draft agInnovation 10-year research roadmap
- 2024 Meeting with USDA Undersecretary for Research, Education and Economics and Chief Scientist Chavonda Jacobs–Young and ARS administrators Simon Liu and

	Marlon Eve to gain stakeholder input on the draft of 10-year agInnovation research roadmap
2024	Meeting with NIFA Associate Director for Programs Dionne Toombs to gain stakeholder input on draft of 10-year agInnovation research roadmap
2024	Meeting with International Fresh Produce Association Chief Science Officer Max Teplitski to gain stakeholder input on draft of 10-year agInnovation research roadmap
2024	Campus visit and meeting with MI Senator Debbie Stabenow and discussion of farm bill and other topics
2024	Attended the USDA Agrifood Innovation Symposium, where USDA leaders discussed big new ideas focused on innovation challenge
2024	Meeting with Bridget Krieger and Elizabeth Stullburg from Lewis Burke and Associates to discuss the agInnovation 10-year research roadmap under development.
2024	Meeting with NIFA Associate Director for Programs Dionne Toombs to discuss the role of agInnovation and 10-year research roadmap under development
2024	Meeting with Emily Bass and David Hong from the Breakthrough Institute to discuss the agInnovation 10-year research roadmap under development
2024	Participant in fireside chat with Secretary of Agriculture Tom Vilsack, Congresswoman Elissa Slotkin, and MI agriculture industry leaders about farm bill and challenges facing MI agriculture, including focused conversation immediately following focused on highly pathogenic avian influenza outbreak in MI dairy cattle
2024	Meeting with Doug Steele, Vice President of Food, Agriculture and Natural Resources of APLU, to discuss the innovation 10-year research roadmap under development.
2024	Meeting with leaders of the National Science Foundation (Susan Marqusee, Karen Marongelle and Erwin Gianchandani) to discuss the role of agInnovation in advancing the national agriculture research agenda, ten-year research roadmap under development and goals for the upcoming year as national chair
2024	Meeting with Greg Jaffe, Sr policy advisor, US Department of Agriculture to discuss the role of agInnovation in advancing the national agriculture research agenda, 10-year research roadmap under development and goals for upcoming year as national chair
2024	Meeting with Doug Lynotte, Economic Development Administration, US Department of Commerce to discuss the role of agInnovation in advancing the national agriculture research agenda, Research Roadmap under development, and goals for the upcoming year as national chair
2024	Meeting with Kate Fitzgerald, Sr advisor for food systems, US Department of Agriculture to discuss the role of agInnovation in advancing the national agriculture

research agenda, 10-year research roadmap under development and goals for upcoming year as national chair

- 2024 Meeting with Rod Snyder, Senior Advisor for Agriculture, US Environmental Protection Agency, to discuss the 10-year research roadmap being developed by agInnovation
- 2024 Attended USDA Agricultural Outlook Forum and interacted with agency and industry leads in conversations regarding the future of US agriculture and challenges ahead
- 2024 Participant in NCFAR DC fly-in and discussion of the importance of funding to support agricultural research with Congressional staffers. Participated in meetings with Senators Hoeven and Heinrichs staff, as well as Congressman Moolenaar and Harris.
- 2024 Participated in MI specialty crops industries roundtable discussion with Senator Stabenow and USDA Undersecretaries Moffit, and Taylor focused on challenges and opportunities
- 2023 Campus tour and discussion of ongoing research and Extension efforts with Bennet Abrams, Legislative Assistant for Congresswoman Elissa Slotkin
- 2023 Meet and greet with Manjeet Misra, Director of USDA NIFA, to discuss the role of agInnovation in advancing the national agriculture research agenda and advocacy for federal funding and goals for the upcoming year as national chair
- 2023 Meet and greet with William Hohenstein, Director of USDA Office of Energy and Environmental Policy, Office of the Chief Economist to discuss the role of agInnovation in advancing the national agriculture research agenda, advocacy for federal funding, and goals for the upcoming year as national chair
- 2023 Meet and greet with Todd Anderson, Biological Systems Science Director, US Department of Energy to discuss the role of agInnovation in advancing the national agriculture research agenda and advocacy for federal funding and goals for upcoming year as national chair
- 2023 Meet and greet with Joe Schultz, Executive Director, Platform for Agriculture and Climate, to discuss the role of agInnovation in advancing the national agriculture research agenda, advocacy for federal funding, and goals for the upcoming year as national chair
- 2023 Meet and greet with Andy Jarvis, Director of Future of Food program Bezos Earth Fund to discuss the role of agInnovation in advancing the national agriculture research agenda and advocacy for federal funding and goals for the upcoming year as national chair
- 2023 Participated in Farm Journal Foundation (FJF) Panel discussion with Congresswoman Elissa Slotkin, International Fresh Produce Association CEO Cathy Burns, MSUE Director Quentin Tyler, and FJF Farmer Ambassador Ken Nobis focused on how agricultural research and Extension improve global food and nutrition security

- 2023 Meeting with Luis Tupas, Deputy Chief, USDA Natural Resource Conservation Service (NRCS), and other NRCS leaders to discuss federal funding for research on measurement, monitoring, reporting, and verification of soil carbon sequestration and the role land grant university scientists can play in advancing such research
- 2023 Meet and greet with Doug Steele, Vice President of Food, Agriculture and Natural Resources of APLU to discuss the role of agInnovation in advancing the national agriculture research agenda, advocacy for federal funding and goals for the upcoming year as national chair
- 2023 Meet and greet with International Fresh Produce Association Chief Science Officer Max Teplitski to discuss the role of agInnovation in advancing the national agriculture research agenda and goals for the upcoming year as national chair
- 2023 Meet and greet with Wendy Fink, Associate Vice President Food, Agriculture and Natural Resources of APLU, to discuss the role of agInnovation in advancing the national agriculture research agenda and goals for the upcoming year as national chair
- 2023 Meet and greet with Foundation for Food and Agriculture Research Executive Director Saharah Moon Chapotin to discuss the role of agInnovation in advancing the national agriculture research agenda and goals for the upcoming year as national chair
- 2023 Meet and greet with National Institute of Food and Agriculture (NIFA) stakeholder affairs officer Josh Stull to discuss the role of agInnovation in advancing the national agriculture research agenda and goals for the upcoming year as national chair
- 2023 Participated in agriculture industry round table discussion with Congresswoman Elissa Slotkin and MDARD Director Tim Boring, focused on climate resiliency of MI agriculture and the farm bill
- 2023 Participant in Universal Food forum in Washington, DC. Introduced White House National Climate Advisor Ali Zaidi, participated in a panel discussion focused on solutions for building resilient food systems, and in meet and greet with Ali Zaidi and US Secretary of Agriculture Tom Vilsack
- 2023 Meeting with Dr. Diedre Chester, USDA Office of Chief Scientist, to discuss the role of agInnovation in advancing the national agriculture research agenda and my goals for upcoming year as national chair
- 2023 Meeting with Kris Johnson, Director of North America Agriculture Programs for the Nature Conservancy to discuss the role of agInnovation in advancing the national agriculture research agenda and my goals for the upcoming year as national chair
- 2023 Meeting with Rod Snyder, Senior Advisor for Agriculture, US Environmental Protection Agency to discuss the role of agInnovation in advancing the national agriculture research agenda and my goals for the upcoming year as national chair

2023	Meeting with Luis Tupas, Deputy Chief, USDA Natural Resource Conservation Service, to discuss the role of agInnovation in advancing the national agriculture research agenda and my goals for the upcoming year as national chair
2023	Attendee at 2023 Aim for Climate Summit in Washington DC focused on increased federal and private investment in climate-smart agriculture and food systems innovation in the US and Globally
2023	Participant in National Coalition for Food and Agriculture Research (NCFAR) DC fly-in and discussion of the importance of funding to support agricultural research with Congressional staffers. Participated in meetings with the Staff of Senators Peters and Ernst and Congresswoman Slotkin. Also, proactively emphasized the importance of funding requests for agriculture research infrastructure during NCFAR board meetings
2023	Campus meeting (joint with MSUE and CANR leadership) with Congresswoman Elissa Slotkin to discuss farm bill priorities for MSU and MI agriculture. Congresswoman Slotkin is a member of the US House Committee on Agriculture, Nutrition, and Forestry
2023	Hosted Bennett Abrams, Senior Legislative Assistant to Congresswoman Elissa Slotkin, for a tour of MSU agriculture research facilities and discussion of the impactful research of AgBioResearch scientists advancing MI and US agriculture and the need for infrastructure investment through the Research Facilities Act
2023	Meet with Steve Kappes, USDA Agricultural Research Service Associate Administrator for National Programs
2023	Participated in Listening Session in Ames, IA, focused on Executive Order on Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe and Secure American Bioeconomy and conversations with USDA Research, Education and Economics Undersecretary Sanah Baig and representatives from the USDA Office of the Chief Scientist, USDA Office of the Chief Economist, The US Department of Energy and the White House Office of Science and Technology Policy
2022-2023	Represent MSU AgBioResearch at University-Industry Consortium Meetings and discussion of current/future research needs and opportunities for partnership from project and advocacy perspective
2014-2022	Co-lead on Congressional and funding agency (USDA NIFA and NIH) advocacy efforts (in collaboration with the University of Missouri and MSU Governmental Affairs staff) to support the continuation of interagency funding program entitled: "Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture using Agriculturally Important Domestic Species. Efforts helped secure inclusion in the 2018 farm bill, and supportive report language for the interagency program in Ag and Labor/HHS appropriations subcommittee reports and 10-year funding support.
2022	Participated in a tour of MSU Saginaw Valley Research and Extension Center and research showcase for Secretary of Agriculture Tom Vilsack and Senator Debbie Stabenow as part of a field hearing discussion of the Inflation Reduction Act

2022	Meet and greet with Senate Agriculture, Nutrition, and Forestry Committee staff of MI Senator Debbie Stabenow to discuss AgBioResearch and MSUE and how we can effectively partner and be a resource for information in the future
2022	Meet and greet with staff of MI Senator Gary Peters to discuss AgBioResearch and MSUE and how we can effectively partner and be a resource for information in the future
2022	Meet and greet with staff of MI Congresswoman Elissa Slotkin to discuss AgBioResearch and MSUE and how we can effectively partner and be a resource for information in the future
2022	Meet and greet with National Institute of Food and Agriculture (NIFA) stakeholder affairs officer Josh Stull to discuss AgBioResearch and MSUE and how we can be a resource to NIFA for information in the future
2022	Participate in US Senate Committee on Agriculture, Nutrition and Forestry Farm Bill Field Hearing Luncheon with Chairwoman Stabenow, Ranking Member Boozman, MSU President Stanley, and MI agriculture industry leaders and discussion of needs of MI agriculture in next farm bill
2022	Meeting with Spiro Stefanou, USDA Economic Research Service Administrator, to provide input to interagency policy committee regarding tech transfer and licensing in the agriculture sector organized by the Association of Public and Land Grant Universities (APLU)
2015-2022	Represent MSU AgBioResearch, along with AgBioResearch Director, in bi-weekly MSU update calls with Katie Naessens, Senior Staff Member, US Senate Committee on Agriculture, Nutrition and Forestry, Jacob Courville, MSU Director of Federal Governmental Relations, and MSU Extension Director to discuss ongoing MSU research and policy and funding related issues
2018	Testimony on behalf of MSU AgBioResearch at USDA NIFA Listening Session: Investing in Science to Transform Lives, Minneapolis, MN
2017	Participate in Washington DC fly-in of MSU faculty experts and AgBioResearch leadership and discussion of policy issues related to the 2018 Farm Bill (with Senate Agriculture Committee staff)
2017	Testimony on behalf of MSU AgBioResearch at USDA NIFA Listening Session: Agricultural Systems for Sustainable Production, Washington, DC
2017	Meeting with Dr. Robert Holland, Associate Director of Operations, USDA National Institute of Food and Agriculture (NIFA)
2017-2019	Represent MSU AgBioResearch at University-Industry Consortium meetings and discussions of current/future research needs and opportunities for partnership from project and advocacy perspective
2015	Campus tour and discussion of ongoing research and Extension efforts with Katie Naessens, Senior Professional Staff, Senate Agriculture Committee and Office of Senator Debbie Stabenow

Leadership/Service and Engagement at the College and University Level

2024-present	MSU representative on Michigan Crop Improvement Association Board of Directors
2024-present	Member of Agriculture Climate Resiliency Directors Action Team (with MSUE Director and Director of Michigan Department of Agriculture and Rural Development)
2024-present	Administrative lead for preliminary planning/design study for the new addition to MSU Pavilion for Agriculture and Livestock Education
2022 –present	Planning committee member and AgBioResearch/CANR administrative lead for new plant and environmental sciences building
2021-present	Member of MSU Center for Research on Ingredient Safety Internal Advisory Committee
2021 – present	Member of Project GREEN Directors Action Team (with MSUE Director and Director of Michigan Department of Agriculture and Rural Development) and presentation of AgBioResearch update at annual plant coalition meeting
2020-present	Administrative lead for planning, funding, and construction of new Dairy Teaching and Research Center on MSU campus. This includes advocacy and leadership internally with faculty and administration in two colleges [CANR and College of Veterinary Medicine (CVM)] and Office of the Provost for planning effort (feasibility study) to determine programmatic vision and infrastructure needs for a new facility, leadership of stakeholder engagement to help secure funding support from state legislature, numerous conversations with state legislators and state agencies about programmatic vision and potential return on investment from state funding for dairy facilities in capacity as AgBioResearch Director resulting in additional 30 million in appropriations to Michigan State University in FY23 targeted towards dairy project. Serve as project advocate and liaison between faculty users, architecture and engineering firm, construction management team, Infrastructure Planning and Facilities and MSU administration (Office of Provost, Executive Vice President for Administration, and MSU President) regarding planning, design, construction, and budget for project and formal and informal interaction with MSU Board of Trustees regarding programmatic vision, separate formal authorization and board approval for planning and design and authorization to initiate construction of new facility
2019 – present	Research administrative lead for efforts to garner support for plant science research greenhouse project (renovations and new construction). Worked closely with Institutional Space Planning and Management and College of Natural Science to garner university support to address this critical infrastructure need, including advocacy for inclusion as the university's top priority for capital outlay request to the state of Michigan, initiation and execution of a detailed planning study to understand breadth and depth of specific needs better and most cost-effective way to address, testimony before MI House and Senate joint capital outlay committee regarding state funding request, outreach to agriculture industry leaders to advocate to MI legislature for funding request and numerous meetings/conversations with MI State Representatives and Senators in capacity as

	AgBioResearch Director in support of funding request resulting in additional 23 million in appropriations to Michigan State University in FY23 targeted towards greenhouse project. Also, serve as a member of project planning and executive committees and provide input regarding planning, design, construction, and budget for the project and involved in formal and informal interaction with the MSU Board of Trustees regarding programmatic vision, separate formal authorization, and board approval for planning and design and authorization to initiate construction of the new facility.
2019-present	Led efforts (with College of Natural Science) to develop and implement administrative oversight structure for plant science research greenhouse complex. Efforts include the development of a faculty oversight committee, updates to staffing structure (New Director and addition of Greenhouse Engineer position), and implementation of user fees to provide better quality of service to users and funding for infrastructure updates and repairs. Advocacy efforts led to ~\$4 million investment in infrastructure improvements funded by the Office of Provost, Office of Vice President for Research and Innovation, AgBioResearch, College of Natural Science, and Infrastructure Planning and Facilities.
2019-present	Member of Interdisciplinary Science and Technology Building Advisory Committee. Committee responsibilities include space allocation and oversight and input into strategic direction and potential for interdisciplinary collaboration amongst building occupants
2018-present	Led development and administrative oversight for new research evaluation and data analytics component of AgBioResearch Office of Research Support (in partnership with Jane Payumo). This includes research performance and productivity metrics and tools (data portal, dashboard, and infographics) to document scholarly impacts of CANR and AgBioResearch faculty research efforts (individual faculty, department/school, and disciplinary/program level). Tools are regularly used in consultations with CANR Chairs, School Directors, Deans, and Directors and in communications with the MSU President, Provost, and Vice President for Research and Innovation to communicate impacts. The built systems also provide monthly reports to AgBioResearch leadership on awarded grants and high-impact publications and email recognition to faculty from AgBioResearch leadership acknowledging such accomplishments. Efforts have also included developing and implementing business automation tools to increase efficiency and reduce the administrative burden on CANR faculty and unit leaders. Examples include automated online portals for submission, review and approval of principal investigator requests, facilities and administrative costs waivers, requests to execute field research during COVID-19 restrictions, use of farm animals for research or teaching at south campus animal farms and a system for online submission and review of grants submitted to the Michigan Alliance for Animal Agriculture and other internal grants programs and submission of annual progress reports on funded grants
2017-present	Member of Michigan Livestock Exposition Board of Directors
2016-present	Center for Research on Ingredient Safety Internal Advisory Committee
2016-present	Plant Resilience Institute Internal Advisory committee

2016-present	Giltner Hall, Food Safety and Toxicology, Molecular Plant Sciences Building Advisory Committees
2016-present	Campus Research Space Committee
2016 - present	MTRAC Innovation Hub for AgBio Advisory Committee
2014-present	Lake City Research Center Advisory Committee Member
2024	Invited presentation and session facilitator for Forum on Climate Action and Food System Transformation in South Asia held in Dhaka, Bangladesh
2024	Represent MSU AgBioResearch and agInnovation at Association of 1890 Research Directors Biennial Research Symposium, Nashville, TN
2024	Campus facilities tour and discussion of ongoing CANR research, teaching, and Extension efforts with MSU President Kevin Guskiewicz
2024	Sponsored student exchange between North Carolina A&T University (NCA&T) and MSU College of Agriculture and Natural Resources (CANR) faculty, allowing three students from host labs to travel to other institutions for short-term research experience to learn from each other and cultivate collaborations
2024	Represent MSU at FIFA World Cup turfgrass research field day at the University of Tennessee Knoxville in support of ongoing research collaboration between institutions to grow turf for the 2026 World Cup
2022-2024	Member of Health and Life Science Deans Working Group (group disbanded in 2024)
2023	Formal comments at MSU Board of Trustees meeting providing rationale for farmland purchase in support of new Dairy Research and Teaching Facility
2023	Campus tour and discussion of ongoing CANR research, teaching, and Extension efforts with MSU Trustees Tebay and Scott
2023	Co-sponsor and participant in the Global Diversity, Equity, and Inclusion (DEI) conference at the University Mohammed VI Polytechnic, Benguirer campus, Morocco. Also gave a presentation on strategies to enhance DEI within the research enterprise
2023	Hosted NCA&T College of Agriculture and Life Sciences leadership and faculty on visit to MSU for dialogue with CANR leadership and faculty and symposium for sharing of ideas about potential partnerships (joint with MSUE)
2023	Campus tour and discussion of ongoing CANR research, teaching, and extension efforts with MSU Trustee Denno
2023	AgBioResearch update and Q&A at CANR alumni association networking reception

2023	Campus facilities tour and discussion of ongoing CANR research, teaching, and extension efforts with MSU Interim Provost Thomas Jeitschko
2023	Member of Search Committee for Assistant Vice President for Real Estate and Capital Planning
2023	Presenter at town hall discussion with the MSU community focused on planning for the new dairy research and teaching center
2023	Presentation/participation in panel discussion focused on agricultural innovation needs and opportunities from an MSU research perspective at the Great Lakes Fruit and Vegetable Expo
2023	Formal comments at MSU Board of Trustees meeting providing rationale for phase II authorization to proceed with construction of new Dairy Research and Teaching Facility
2023	Formal comments at MSU Board of Trustees meeting providing rationale for phase II authorization to proceed with construction of Plant Science Research Greenhouse Complex
2020-2023	Led efforts to determine feasibility and oversee planning for a \$3.4 million Great Lakes Fisheries Commission (GLFC) funded infrastructure project on campus to support GLFC-funded new aquatics research priorities
2019-2023	Member of South Campus Animal Farms Executive Committee. Led (with CANR Senior Associate Dean and Director of Academic and Student Affairs and Extension Agriculture and Agribusiness Institute Director) development and implementation of new fiscal and administrative oversight structure for animal units on the south campus and provided regular input on budget, infrastructure, staffing, and long-term strategic direction
2014-2023	Administrative lead for Michigan Alliance for Animal Agriculture (M-AAA). Worked with animal agriculture commodity and allied partners to develop M-AAA structure and operational goals and help communicate impacts. Led development and implementation of new grants program (beginning in 2015) and championed advocacy efforts on behalf of MSU for state funding for M-AAA and grants program initiated in 2015 with \$17,399,000 million in state support secured from 2017 to the present.
2017-2023	Administrative lead for Rackham Foundation Internal Grants Program
2022	Visit to NCA&T (joint with MSUE leadership) to meet with University and College of Agriculture and Life Sciences leadership to discuss joint interests and potential strategic partnership
2022	Represent CANR Dean at MSU Dean's Summit
2022	Tour of Upper Peninsula Research and Extension facilities and discussion of ongoing programming with MSU Trustees Byrum and Foster and MSUE Director Tyler
2022	Member of Search Committee for Real Estate Office Director

2022	Formal comments at MSU Board of Trustees meeting providing rationale for phase I authorization to plan for Plant Science Research Greenhouse Complex Project
2022	Formal comments at MSU Board of Trustees meeting providing rationale for phase I authorization to plan for new Dairy Research and Teaching Facility
2020-2022	Helped lead efforts at the college and university levels to advocate for and facilitate the execution of research during the COVID-19 pandemic. This included regular (minimum of weekly) communication with the MSU Vice President for Research and Innovation and Office of Regulatory Affairs about COVID-19 regulations, policies, and procedures at the university, state, and federal level applied to research activity and assure health and safety of research faculty, staff and students in response to the pandemic and during the subsequent ramp-up of research activity. Advocated for clarity and transparency in policies and procedures to appropriately manage risk while not unnecessarily compromising the execution of research and clear and timely communication from MSU administration to the research enterprise about the status of regulations and decision-making process. Coordinated efforts for CANR regarding submission of necessary applications linked to resumption of research (building and laboratory plans) and contributed to the development and implementation of necessary application processes and guidelines to facilitate execution of field research under the COVID-19 related food and agriculture exemption provided by the State of Michigan.
2021-2022	Member of Search Committee for MSU Attending Veterinarian
2018-2022	Member of Michigan Department of Natural Resources/MSU AgBioResearch Wildlife Disease Research Initiative Advisory Committee
2016-2022	Reproductive and Developmental Sciences Training Program Internal Advisory Committee
2021	Member of Search Committee for Associate Dean for Research and Strategic Partnerships, International Studies and Programs
2021	5-Year Performance Review Committee, Director of MSU Extension Agriculture and AgriBusiness Institute
2021	Campus facilities tour and discussion of ongoing CANR research, teaching, and Extension efforts with MSU Provost Teresa Woodruff
2021	Campus tour and discussion of ongoing CANR research, teaching, and Extension efforts with MSU Trustees Knake Jefferson, Vassar, and Byrum
2020 - 2021	Member of Michigan Livestock Exposition Appeals Committee
2018 - 2021	Co-Chair, MSU Council of Research Deans
2020	5-Year Performance Review Committee, Associate Dean for Research and Strategic Partnerships, International Studies and Programs

2020	5-Year Performance Review Committee Chair, Associate Director of MSU Extension
2019	Search Committee for Associate Dean for Budget, Planning, Research and Administration, College of Natural Science
2019	Search Committee for Chairperson of the Department of Large Animal Clinical Sciences, College of Veterinary Medicine
2015 - 2019	Administrative lead for Global Impact Initiative Faculty Recruitments in Quantitative and Computational Plant Sciences (with College of Natural Science), Quantitative and Computational Animal Genomics, Reproductive and Developmental Sciences (with College of Human Medicine), and Plant Resilience (with College of Natural Science).
2016 - 2019 2017-2018	Planning Committee for New Interdisciplinary Science and Technology Building Member of Michigan Natural Resources Commission Task Force charged with developing an action plan to manage/mitigate chronic wasting disease in captive and wild deer populations in Michigan
2018	Travel to Tuskegee University to attend Professional Agriculture Workers Conference and meet with College of Agriculture, Environment and Nutrition Sciences leadership
2016 - 2017	Search Committee for MSU Director of Contracts and Grants Administration

Service at National/Regional Level: Agricultural Experiment Station/agInnovation Network

2024-present	Co-Chair and working group member of ad hoc task force organized by the Association of Public and Land Grant Universities (APLU) Board on Agricultural Assembly (BAA) focused on information/data gathering to support increased federal capacity funding for agInnovation and Extension from USDA NIFA. Activities include contribution to determination of vision/scope for formal study, selection of consulting firm to execute study, study design and interpretation of results.
2024-present	Past Chair of agInnovation (National Association of Directors of State Agricultural Experiment Stations)
2022-present	Member of agInnovation Annual Meeting Planning Committee (Chair in 2023-2024).
2022-present	Member of agInnovation Chair's Advisory Committee (Chair in 2023-2024)
2022-present	Member of agInnovation Finance Committee (Chair in 2024-2025)
2020-present	Administrative Advisor for Multistate Research Project NC2040: Metabolic Relationships in Supply of Nutrients for Lactating Dairy Cows
2017-present	Administrative Advisor for Multistate Research Project NC1201: Methods to Increase Reproductive Efficiency in Cattle

2014-present	Member of North Central Regional Association of State Agricultural Experiment Station Directors (NCRA)
2024	Presenter at North Central Region Experiment Station and Extension Director Associations Administrative Management Boot Camp. The topics covered included fiscal management, an introduction to the structure of APLU and why it matters, and successful advocacy strategies
2024	Co-hosted with MSUE North Central Region Mini Land Grant Meeting for innovation and Extension Directors, Administrative Heads, and representatives from the Council for Agricultural Research and Teaching (CARET) from the north-central regions. Contributed to conference planning funding and delivered a presentation on Empowering and Advancing Communities Together: Michigan's Story (with MSUE Director)
2024	Participant in APLU leadership advocacy summit and pre-meeting to discuss strategic planning for decadal vision document
2023-2024	Chair of agInnovation (National Association of Directors of State Agricultural Experiment Stations). Provided strategic direction and leadership of the organization, including new initiatives to broaden the network of contacts and partners in promoting agricultural research and development of a 10-year roadmap for agricultural research to serve as a platform to advocate for increased federal investment in agricultural research and rally a broad coalition of traditional and non-traditional partners behind the cause. Co-led numerous internal meetings with the facilitator of ad hoc working group developing research roadmap and with current and new external partners to educate about agInnovation, the importance of the work of our scientists at land grant universities, and the ability of significant new federal investment in agricultural research to help solve key societal challenges of the following decades
2023-2024	Meetings with agInnovation standing committees (Budget and Legislative, Science and Technology and Diversity Catalyst Committees) and Agriculture Research Infrastructure (ad hoc committee) to discuss priorities for the year and how can be of assistance as agInnovation Chair
2023	Participant in joint APLU Budget and Advocacy Committee and Committee on Legislative Policy joint Washington DC fly-in focused on the development of a decadal vision document for agricultural research and Extension
2023	Participant in panel discussion on universities as an economic engine as part of new administrator's orientation during the APLU Committees on Policy joint summer meeting
2022-2023	Member of ESCOP brand and marketing ad hoc committee facilitating changing of organization name to agInnovation and new external facing website showcasing the societal impact of research at agricultural experiment stations
2022-2023	Incoming Chair of agInnovation (National Association of Directors of State Agricultural Experiment Stations)

2018-2023	Administrative Advisor for Multistate Research Project NC1192: An Integrated Approach to Control of Bovine Respiratory Disease
2017-2023	Administrative Advisor for Multistate Research Project NC1206: Antimicrobial Resistance
2022	Member of Association of Public and Land Grant Universities (APLU) ad hoc committee providing input to Biden administration on agricultural R&D licensing
2022	Presentation/participation in panel discussion at Food Systems Leadership Institute Encore Forum at APLU Annual Meeting focused on leadership succession planning in the land grant system
2022	Member of Search Committee for Executive Director of North Central Regional Association of State Agricultural Experiment Station Directors (NCRA)
2019 - 2022	Member of Experiment Station Committee on Policy (ESCOP) Executive Committee
2020 - 2022	NCRA Executive Committee Member
2020 - 2022	Member of Experiment Station Committee on Policy (ESCOP) of the Experiment Station Section (ESS) of the Association of Public and Land Grant Universities (APLU) Commission on Food Environment and Renewable Resources (CFERR) Board of Agricultural Assembly (BAA)
2021	Member of APLU ad hoc committee to develop request for proposals and select advocacy firm to work in partnership with APLU to lobby in support of funding for agricultural research, teaching and Extension
2021	Presentation on MSU AgBioResearch partnerships at LGU2U orientation session for NIFA staff sponsored by North Central Region Experiment Station Directors (NCRA) and Extension Director Associations
2021	Invited Participant in Panel Discussion at 2021 Mini Land Grant Conference North Central Region entitled: "A Conversation with North Central Region Leaders: Leading Change in Turbulent Times"
2020 - 2021	Led quarterly update calls with USDA National Institute of Agriculture (NIFA) Division Director Deb Hamernik and NCRA Executive Committee to discuss areas for further collaboration and process improvement within the agency and its programs
2020 - 2021	NCRA Chairperson
2020-2021	Initiated and facilitated (as NCRA Chair) COVID-19-related regular update calls amongst NCRA member institutions soon after the onset of the pandemic in the spring of 2020. The calls focused on mutual support amongst institutions and sharing ideas and best practices implemented to support the research enterprise during the pandemic. Weekly calls proved incredibly valuable during the pandemic. Regular monthly calls are continuing to date to facilitate more

significant communication interaction and NCRA contributions to ongoing efforts at the national level

2018 - 2021	NCRA Multistate Research Committee Member
2019 - 2020	NCRA Chair-Elect and Multistate Research Committee Chair
2018 - 2019	Planning Committee Member and Presenter for 2 nd and 3 rd Annual North Central Region Experiment Station and Extension Director Associations Administrative Management Boot Camp. Developed case Studies and contributed to leadership of sessions on fiscal management
2014 - 2015	Administrative Advisor for National Research Support Program 7 (NRSP7): A National Agricultural Program for Minor Use Animal Drugs

Development/Fundraising Efforts

2024	Presented remarks and served as Master of Ceremonies at CANR alumni and donor reception at Spartan Stampede Rodeo
2023-present	MSU lead with CANR Senior Director of Advancement to raise funding for expansion of MSU Pavilion for Agriculture and Livestock Education and other agriculture-related infrastructure needs through novel partnerships with the corporate sector focused on defined period facility component sponsorship agreements at pavilion linked to corporate advertising and promotion budgets. Two partners and \$7.5 million in signed pledges have been secured. Official announcement of lead gift scheduled for December
2023-present	MSU lead with a major MI Energy Company on a novel public-private partnership with the new MSU Dairy Teaching and Research Center and anaerobic digestion facility focused on renewable natural gas linked to renewable energy transition and the MI Healthy Climate plan. Lead negotiations and co-creation of agreements with corporate partners and conversations with multiple levels of MSU administration (Board of Trustees, Provost, Executive Vice President for Administration, Infrastructure Planning and Facilities, and Institutional Space Planning and Management. Partnership would bring significant (\$7.5 million) capital investment in anaerobic digestion facility expansion and significant ongoing revenue (> \$1 million/year) over 20-year period to help provide additional funding to pay for \$75 million new dairy facility beyond \$30 million state investment. Partnership is on 3-6 month pause while impact of political climate on C credit market is assessed
2023-present	Provided leadership (in partnership with the advancement office) in conversations with equipment dealers about donation/discounted lease programs for equipment used to support the research enterprise at AgBioResearch centers on campus and across the state. Major agreements with Case New Holland and Polaris for the provision of 10 pieces of equipment through lease and donation, respectively, in 2024, resulting in significant savings. Ongoing conversations about expansion in 2025 with above companies and new partners
2023-present	Interactions with numerous current/potential donors in jointly funded AgBioResearch/CANR/MSUE suites for MSU football and hockey. The focus

during such interactions is on relationship building and growing appreciation and affinity for the work of AgBioResearch

2019-present MSU lead for Project RAISE (Raise for Agriculture Industries, Shows and Education): An initiative to expand the MSU Pavilion for Agriculture and Livestock Education. The original goal was to raise \$ 4 million to provide for a 40,000 sq ft addition to meet the needs of the Michigan Agriculture community. Worked with Initiative Co-Chairs Carl Bednarski and John Shelle to secure buy-in for fundraising effort and form a 20-person steering committee composed of animal agriculture and agribusiness leaders to develop strategy and help with fundraising efforts. Responsible for oversight of the development of Project Raise promotional materials and contributing to discussions with potential donors. Efforts slowed during the pandemic with \$1 million in donations and pledges secured through this effort

Media Engagement: Administrative Role (since named AgBioResearch Director)

2024 MSU Today podcast with Russ White entitled: MSU Research Powers Michigan's Economy and Future

2021-2024 483 earned media mentions as AgBioResearch Director (web or print)

2024 55 broadcast media mentions as AgBioResearch Director (radio/TV)

PROFESSIONAL DEVELOPMENT

2024 University Advancement Speaker Bureau Training Session

2024 Participation in CANR workshop entitled: Creating a Culture of Belonging

2023 Participation in a session entitled: A Mile in My Shoes focused on unconscious bias at the 2023 agInnovation annual meeting

2022 Participation in sessions on building trust/strengthening organizational culture and remembering and recognizing the painful past as key to healing and reconciling and building a future based on respect and dignity for everyone as part of joint ESCOP/Extension Committee on Policy (ECOP) annual meeting, Baltimore MD

2021 Participation in a session entitled: Leading Across Differences: Diversity, Inclusion and You at ESCOP Annual Meeting, Olympic Valley CA

2021 - 2022 Participant in Food Systems Leadership Institute focused on developing individual and institutional leadership for a 21st-century food system. The program is on core leadership competencies and three complementary threads: personal leadership, leading change within organizations, and understanding and influencing complex, diverse food systems

2017 Participant in North Central Region Experiment Station and Extension Director Associations Administrative Management Boot Camp. The workshop format

included foundations for effective management, personnel engagement, fiscal management, and engagement with federal partners.

- 2017 Participant in White Men as Full Diversity Partners White Men's Caucus on Elimination of Racism, Sexism and Homophobia in Organizations. 3.5 day workshop with other leaders from CANR and across the country was on the creation of safe and meaningful dialogue to explore questions, confusions, hopes, and concerns related to diversity issues and build critical leadership skills and behaviors to enhance understanding of moral imperative and value of inclusive organizational culture
- 2014 - 2015 Participant in Lead-21 leadership development program designed to support future leaders within land grant universities. The program's focus included effective communication, managing conflict, fostering collaboration, and leading change.

PERSONAL INFORMATION

Born: February 5, 1967
Bonners Ferry, ID

Family: *Wife:* Nancy J. Smith
Sons: Mitchell E. Smith
Timothy D. Smith

EDUCATION HISTORY

Education

<u>University Attended</u>	<u>Degree</u>	<u>Year</u>	<u>Area of Specialization</u>
University of Idaho	BS	1989	Animal Science (ANS)
University of Missouri	MS	1992	ANS (Physiology of Reproduction)
University of Missouri	PhD	1996	ANS (Physiology of Reproduction)

Area of Expertise: Reproductive physiology with emphasis on ovarian function in ruminants.

Postdoctoral Experience

Feb 1996 - Sep 1997 Clayton Foundation Laboratories for Peptide Biology,
The Salk Institute, La Jolla, CA

Area of emphasis: Generation and characterization of lines of mice with targeted mutations in various components of the corticotropin-releasing factor system.

Honors, Fellowships, and Awards

National Research Service Award, National Institutes of Health, 1996-97
University of Missouri Professional Presentation Travel Fellowship, 1994

Superior Graduate Achievement Award in Animal Sciences, 1994
USDA National Needs Fellowship in Animal Reproductive Biology, 1991-94

Membership in Professional Societies

American Association for the Advancement of Science
Society for the Study of Reproduction
American Society of Animal Science
Sigma Xi

FACULTY CAREER HIGHLIGHTS

Research Program Scholarly Impacts Synopsis: transition to 100% administration January 2020

143 peer-reviewed publications and 17 review articles/book chapters; h-index 61
Continuous federal funding from USDA and (or) NIH for independent research programs (1998-2020)
\$48,819,634 in current and completed research support (\$11,752,611 linked to independent research program, \$37,067,023 tied to research administration efforts).

Service on Federal Grant Panels and Professional Journal Editorial Boards

NIH Small Business: Endocr, Metab, Nutrition, and Repro Sci Panel 2014
Associate Editor, Molecular Reproduction and Development 2014-2015
NIH ICER Study Section Ad Hoc Member, February 2013
Senior Editor, Journal of Endocrinology, 2012 to 2014
Editorial Board, Domestic Animal Endocrinology 2010-2013
NSF Ag Biotechnology SBIR grant panel 2010, 2011
USDA AFRI Animal Reproduction Grant panel 2010
Editorial Board, Journal of Endocrinology 2006-2014
USDA NRI Program 41.0 grant panel 2006
Board of Reviewing Editors, Biology of Reproduction 2005-2009, 2013-2015
Paper Reporter, Reproductive Biology and Endocrinology 2003-2004
NASA Fundamental Biology Grant Panel (Developmental Biology Section) 2001-2002

Grant/Manuscript Reviews

NIH ICER Study Section (2013; ad hoc)
PLOS One (2013)
Reproduction in Domestic Animals (2011)
PLOS Genetics (2011)
USDA SBIR Phase I Animal Production and Protection program (2011)
Journal of Proteome Research (2010)
Lalor Foundation (2010)
New Zealand Foundation for Research, Science and Technology (2010)
USDA AFRI Animal Reproduction program (2010)
NSF Ag Biotechnology SBIR program (2010, 2011)
Wellcome Trust (2009)
Physiological Genomics (2008-2009)
Molecular Reproduction and Development (2008-2014)

Biomed Central Developmental Biology (2007)
 Journal of Endocrinology (2006-2014)
 Theriogenology (2006)
 Animal Reproduction Science (2005-2006, 2008)
 Genome Canada (2005)
 Biotechniques (2005)
 Biomed Central Genomics (2005)
 Journal of Molecular Endocrinology (2005-2006, 2012-2014)
 Michigan Dairy Review (2004, 2007)
 The Veterinary Journal (2004)
 Veterinary Immunology and Immunopathology (2004)
 MSU CVM Committee on Graduate Study and Research (2003, 2009)
 Reproductive Biology and Endocrinology (2003-2005)
 Reproduction (2003-2007, 2012)
 Journal of Animal Science (2003, 2006, 2012)
 Domestic Animal Endocrinology (2002-2004, 2006-2007, 2009-2013)
 Molecular Human Reproduction (2002-2003, 2006-2008)
 British Council (2002)
 NASA Fundamental Biology Program (2001-2002)
 Israel Science Foundation (1999, 2003)
 Biology of Reproduction (1998-2010, 2013-2014)
 MSU USDA Animal Health Formula Funds Grants (1998, 2000, 2003)
 MSU (IRGP/CDFP Grants Program (1998-2000, 2003, 2005, 2009)
 USDA NRI Program 41.0 (1997-2004, 2006)

Service to Professional (Scientific) Organizations

2014	Member of Local Arrangements Committee and Development Committee for 2014 Annual Meeting of the Society for the Study of Reproduction
2005 - 2008	Member of Program Committee for 2006, 2007 and 2008 Annual Meetings of the Society for the Study of Reproduction.

Leadership/Service at the College and University Level

2013 - 2014	Administrative intern, Michigan State University AgBioResearch
2011 - 2016	Co-Director of Michigan State University Reproductive and Developmental Sciences Program
2011 - 2016	MSU Reproductive and Developmental Sciences Program executive committee member
2011 - 2012	Chair of MSU Strategic Partnership Grants Basic and Applied Biology grants review panel
2011	Co-Chair of MSU Reproductive and Developmental Sciences Program cluster hire search committee
2011	MSU Contracts and Grants IDC site visit committee member

2010 - 2016	Member of Michigan Alliance for Reproductive Technologies and Science Executive Committee
2005 - 2008	Director, MSU Reproductive and Developmental Sciences Program
2005 - 2007	Member of MSU Cell and Molecular Biology Program Admissions Committee
2005	Member of Michigan Agricultural Experiment Station Director Search Committee.
2004 - 2005	Chair of Reproductive and Developmental Sciences Research Strategic Planning Committee at MSU. Led faculty-based strategic planning process focused on the identification of key infrastructural investments necessary to increase the competitiveness of reproductive and developmental sciences faculty for NIH funding. Responsible for committee organization, leadership in vision development, and preparation of white paper.
2003	Member of Search Committee for Physiology department, College of Veterinary Medicine faculty position in germline modification.
2002	Faculty representative on MSU President Peter McPherson's Committee on Food and Society Initiative. Attended a one-day retreat and brainstormed on ways to reshape or redefine the research mission of land grant universities to better meet the needs of society as a whole in the 21 st century.
2001 - 2002	Appointed member of anonymous multi-state expert's panel on agricultural biotechnology, providing critical input on biotechnology education subject matter and approach for grades 9-12.
2000- Present	Co-founder and investigator at Michigan State University Center for Animal Functional Genomics.
2000	Faculty representative on a committee charged to select speakers for the Meites lectureship.
1999 - 2004	Member of informal ad hoc committee on Animal Genomics research at MSU. Presented vision for Animal genomics research to Provost Lou Anna Simon, resulting in funding for Endowed Professorship in Large Animal Biotechnology, Assistant Professor in Population Genetics/Bioinformatics and Center for Animal Functional Genomics. Also presented a program update to MSU President M. Peter McPherson.
1999 - 2003	Endowed Professor of Large Animal Biotechnology Search Committee Chair. Helped direct the committee in formulation of job description and compilation of list of candidates to potentially recruit for position. Successfully lobbied top candidates in field to visit MSU then apply for position. Served as direct liaison with candidates and host during interviews. Worked extensively with Chairs of 2 departments, Deans of 2 colleges, and the Experiment Station Director in all other phases of the process, including budget planning and documentation for the position, fundraising, recruitment of selected candidates, and briefing of appropriate parties on the search status.

1999 - 2001	Member of Michigan Agricultural Experiment Station Faculty Task Force on Genetically Modified Organisms. Committee served an educational and consulting role. Provided expertise on genetic modification of livestock and laboratory species.
1999 - 2000	Chair of organizing committee for campus-wide seminar series in Animal Genomics.
1999	MSU representative to faculty advisory committee with representatives from the University of Michigan, Wayne State University, and the Van Andel Institute charged to develop a plan for the establishment of joint infrastructure for animal model development within the Michigan Life Science Corridor.
1998	Member of Michigan Agricultural Experiment Station Committee charged to examine status and future directions for animal biotechnology research at MSU. Committee input was used to formulate a white paper, which led to strategic investment by the MSU administration in the animal genomics program.

Service within the Animal Science Department

2013 - 2014	Curriculum Development Futuring Committee member
2011 - 2012	Chair of the consultative committee for ANS department chairperson search
2010 - 2011	Space Committee chair
2009 - 2010	Member of the farm task force assigned to develop changes in the number and structure of south campus animal farms
2006 - 2007	Chair of the search committee for the Assistant Professor of Germ Cell Biology position in the Department of Animal Science
1999 - 2001	Graduate Student Affairs committee member and chair in 2001. Helped establish requirements for formal dissertation proposals as part of the doctoral program and deadlines for proposal defense and completion of comprehensive exams.
1999	Member of committee in charge of CSREES external review and Co-Chair of Animal Breeding and Genetics/Reproduction section. Gathered and compiled relevant information from faculty for inclusion in the review dossier and presented an overview of the current status and future direction for Animal Genomics research to the review committee. The reviewer's positive comments to the administration provided further momentum for infrastructural investment in the Animal Genomics program.
1998 - 2007	Organizer and weekly physiology seminar program leader for graduate students, postdoctoral fellows, and faculty. It is an important training ground for participants in the formulation and defense of hypotheses and provides a format for critical input on grant proposals and future experiments.

Completed Research Support

- Oct 2016 - Jan 2020 (\$459,792) **G.W. Smith**. Regulation and regulatory role of Wnt signaling during follicular waves in cattle. NIFA AFRI competitive grants program # 92320 (Animal Reproduction)
- Sep 2016 - Aug 2019 (\$185,024) **G.W. Smith**, Understanding the role of a novel oocyte-specific KRAB (Kruppel-associated box) containing Zinc finger transcriptional regulator in early embryonic development in cattle. NIFA AFRI competitive grants program # 92320 (Animal Reproduction)
- Feb 2016 - Jan 2018 (\$149,800). **G.W. Smith**. A CRISPR look at the role of OCT4 on cattle embryo lineage determination. National Institute of Food and Agriculture (postdoctoral grant written by and awarded to Brad Daigneault).
- Aug 2012 - July 2015 (\$159,130-MSU subcontract) N. Joshi, L. Racioppi, **G.W. Smith**, J.R. Pursley and D. Grooms. Improving nutrition and productivity of buffaloes to adapt to the impact of climate change. US Agency for International Development/Colorado State University
- July 2012 - May 2016 (\$1,493,663) **G.W. Smith**, J.K. Knott and J.R. Pursley. Embryotropic actions of follistatin: Mechanisms and translational relevance. National Institutes of Health (1R01HD072972-01).
- Sep 2009 - Aug 2012 (\$145,259; MSU subcontract) J. Yao and **G.W. Smith**. Functional characterization of bovine importin $\alpha 8$, a new member of the importin α family specifically expressed in oocytes and early embryos. NIFA AFRI competitive grants program # 92320 (Animal Reproduction)
- Sep 2009 - Aug 2012 (\$349,782). **G.W. Smith** and J.J. Ireland. Elucidation of the functional role of the CART peptide in control of dominant follicle selection in cattle. USDA NIFA AFRI competitive grants program # 92320 (Animal Reproduction).
- Aug 2008 - July 2012 (\$349,943) **G.W. Smith**. Oocyte control of bovine granulosa and cumulus cell function and early embryogenesis: Contribution of the novel oocyte specific protein JY-1. Program 41.0, USDA National Research Initiative Competitive Grants Program (Animal Reproduction).
- Nov 2007 - Apr 2011 (\$167,000) **G.W. Smith** and R. Meidan. Deciphering the luteal transcriptome: Insights into the mechanisms regulating corpus luteum regression. The United States-Israel Binational Agricultural Research and Development Fund.
- Sep 2007 - Aug 2010 (\$349,995) J.J. Ireland and **G.W. Smith**. The impact of variation in FSH secretion during the follicular waves on dominant follicle function in cattle. Program 41.0, USDA National Research Initiative Competitive Grants Program.
- Sep 2005 - Aug 2009 (\$352,000) **G.W. Smith** and J.J. Ireland. Local role of CART in regulation of follicular estradiol production. Program 41.0, USDA National Research Initiative Competitive Grants Program.

- Dec 2002 - Nov 2006 (\$267,000) **G.W. Smith** and R. Pursley. Intrafollicular signaling pathways that control follicle rupture in dairy cattle. Program 41.0, USDA National Research Initiative Competitive Grants Program.
- Nov 2002 - Aug 2004 (\$179,100) **G.W. Smith**. Exploring nuclear-mitochondrial DNA interactions. National Institute of General Medical Sciences (NIGMS)/University of Miami subcontract for interspecies nuclear transfer (C. Moraes: PI).
- Oct 2001 - Sep 2006 (\$1,900,000). J.R. Pursley, M.J. VandeHaar, **G.W. Smith** et al., Enhancing management and profitability on small and mid-sized dairy farms. USDA Initiative for Future Agricultural and Food Systems Competitive Grants Program, Program 15.0.
- Oct 2001 - Sep 2005 (\$260,000) **G.W. Smith**, J.L. Burton and N.K. Ames. Neuroendocrine regulation of the stress response in cattle. Program 44.0, USDA National Research Initiative Competitive Grants Program.
- Oct 2001 - Sep 2004 (\$240,000) J.J. Ireland, J.R. Pursley and **G.W. Smith** Intrafollicular role of alpha2 macroglobulin in regulation of estradiol production. Program 41.0, USDA National Research Initiative Competitive Grants Program.
- Sep 2001 - Aug 2004 (\$220,000) J.L. Burton, P.S.D. Weber and **G.W. Smith**. How do glucocorticoids regulate CD62L expression in neutrophils? Program 44.0, USDA National Research Initiative Competitive Grants Program.
- Sep 2001 - Aug 2006 (\$2,818,000) P.M. Coussens, J.L. Burton, **G.W. Smith** et al., Functional genomics of well-being and milk quality in cattle. USDA Initiative for Future Agricultural and Food Systems Competitive Grants Program, Program 10.2.
- July 2001 - June 2004(\$75,000) **G.W. Smith**, J.J. Ireland, J.R. Pursley, J. Yao, R.J. Tempelman, and P.M. Coussens. Functional genomics studies of oocyte quality and infertility in cattle. The Rackham Foundation.
- July 2000 - June 2003(\$335,000) P.M. Coussens, J. Burton, C. Ernst, J. Ireland and **G.W. Smith**. Research excellence funds center for animal functional genomics. Office of Vice President for Research and Graduate Studies, Michigan State University.
- July 2001 - Dec 2002 (\$40,868) **G.W. Smith**, J.L. Burton, and N.K. Ames. Does blocking the actions of corticotropin releasing factor enhance health and performance of livestock? Michigan Animal Agriculture Industries Coalition.
- Oct 2000 - Sep 2001 (\$14,983) **G.W. Smith**. Does vasopressin help regulate the stress response in cattle? USDA Animal Health Formula Funds.
- July 2000 - June 2001(\$27,500) J.L. Burton, P.M. Coussens, **G.W. Smith** et al., Passive immunization using Anti-J5 e.coli antibodies to prevent coliform mastitis in dairy cows. Michigan Animal Agriculture Industries Coalition.
- Sep 1998 - Aug2001 (\$155,000) **G.W. Smith** and J.R. Pursley. Role of matrix metalloproteinases in ovulation. Program 41.0, USDA National Research Initiative Competitive Grants Program.

Internal Funding

- Apr 2010 – Sep 2010 (\$94,000) **G.W. Smith**, J. Cibelli, J. Ireland, J. Knott and R. Pursley. Equipment for enhanced research in bovine embryology/stem cell biology in cattle. Michigan Agricultural Experiment Station competitive non-recurring funds for infrastructure enhancement
- July 2006 - June 2007(\$55,000) **G.W. Smith**. Cloning of the CART receptor. MSU Reproductive and Developmental Sciences Program Seed Grant Program.
- Oct 2005 - Sep 2007 (\$60,000) **G.W. Smith**. Structure, function and transcriptional regulation of JY-1: A novel gene specifically expressed in bovine oocytes and embryos. Federal funds in support of graduate education competitive grants program. Michigan Agricultural Experiment Station.
- Aug 2001 - July 2004 (\$67,500) **G.W. Smith**. Functional genomics studies of oocyte quality and infertility in cattle. The Rackham Foundation
- Oct. 1998 - Sep 1999 (\$14,956) **G.W. Smith**. Neuroendocrine regulation of the stress response in cattle. USDA Animal Health Formula Funds.
- July 1998 - June 2000(\$45,000) A. Zanella, **G.W. Smith** and O. Duran. Maternal deprivation stress and post-weaning piglet health and well-being. The Rackham Foundation.
- July 1998 - June 2000(\$55,000) **G.W. Smith**, J. Burton, P.M. Coussens, M. Doumit, C. Ernst, J. Ireland, M. Orth and A. Zanella. Discovery of novel genes that regulate livestock production efficiency. Michigan State University Center for Animal Production Enhancement.

Proposals Submitted but Not Funded

- July 2019 - June 2024(\$144,484) **G.W. Smith**, Improving Efficacy and Safety of Cattle and Human Oocyte Vitrification/Warming. National Institutes of Health, MSU subcontract.
- Jan 2017 - Dec 2019 (\$225,915) **G.W. Smith**. Understanding the gene regulatory networks for fleece characteristics in alpaca. China National Natural Science Foundation (subcontract from Shanxi Agricultural University).
- Jan 2015 - Dec 2017 (\$217,977) **G.W. Smith**. Understanding the gene regulatory networks for fleece characteristics in alpaca. China National Natural Science Foundation (subcontract from Shanxi Agricultural University).
- Oct 2014 - July 2017 (\$499,994) **G.W. Smith**. Regulation and regulatory role of Wnt signaling during follicular waves in cattle. NIFA AFRI Competitive Grants Program #A1211.
- Sep 2014 - Aug 2017 (\$499,806). JJ Ireland and **G.W. Smith**, Impact of FSH secretion during follicular waves on ovulatory follicle function in cattle. NIFA AFRI Competitive Grants Program #A1211.

- July 2014 - June 2018(1,902,235-pending). J. Ireland and **G.W. Smith**. Impact of Antral Follicle Count and FSH Dosage on ART in Cattle with Small Ovarian Reserves. National Institutes of Health
- Sep 2013 - Aug 2016 (\$208,771-MSU subcontract) J. Yao and **G.W. Smith**. Understanding the role of a novel oocyte-specific KRAB (Krüppel-associated box)-containing Zinc finger transcriptional regulator in early embryonic development in cattle. NIFA AFRI Competitive Grants Program #A1211.
- Sep 2013 - Aug 2016 (\$199,965-MSU subcontract) J. Yao and **G.W. Smith**. Understanding the role of a novel oocyte-specific KRAB (Krüppel-associated box)-containing Zinc finger transcriptional regulator in early embryonic development in cattle. NIFA AFRI Competitive Grants Program #A2311.
- Nov 2012 - Oct 2015 (\$183,400) **G.W. Smith** and R. Meidan. FGF2: A novel target for manipulation of luteolysis. The United States-Israel Binational Agricultural Research and Development Fund.
- Oct 2012 - Sep 2017 (\$2,999,950) **G.W. Smith**, J.R. Pursley, M. VandeHaar and R. Tempelman. Genomic selection of high fertility dairy cattle to enhance dairy farm profitability. USDA NIFA AFRI Food Security Competitive Grants Program A5102 (Translational Genomics for Improved Fertility of Animals).
- July 2012 - June 2015(\$383,750; MSU subcontract) S. Takayama, G.D. Smith and **G.W. Smith**. Microfluidic optimization of cryoprotectant exchange protocol to improve oocyte cryopreservation. National Institutes of Health PHS (subcontract from Univ. of MI).
- June 2011 - May 2014(\$810,997) **G.W. Smith**, TK Datta, D Singh and J Yao. BREAD: A genomics approach toward accelerated generation of high genetic merit dairy females to enhance food security and economic vitality of resource poor farmers in India. National Science Foundation.
- Nov 2011 - Oct 2014 (\$187,000) **G.W. Smith** and R. Meidan. FGF2: A novel target for manipulation of luteolysis. The United States-Israel Binational Agricultural Research and Development Fund.
- Aug 2011 - July 2013 (499,692). J.J. Ireland and **G.W. Smith**. Impact of chronically high FSH Secretion on ovulatory follicle function in cattle with a diminished ovarian reserve. USDA AFRI Animal Reproduction Program
- Jan 2010 - Dec 2013 (\$999,456) JR Pursley, **G.W. Smith**, JJ Ireland and C Wolfe. Assessment of the socioeconomic impact of enhancing Ovysnch to increase fertility of lactating dairy cows and dairy farm profit. USDA. NIFA AFRI Competitive grants Program # 92620 (Integrated Solutions for Animal Agriculture).
- Sep 2008 - Aug 2013 (\$1,873,365) **G.W. Smith** The relevance of novel oocyte and cumulus cell determinants of egg quality to ART. National Institutes of Health.
- Dec 2007 - Nov 2009 (\$151,000) **G.W. Smith**. Granulosa cell CART signaling pathways regulating follicular estradiol production. National Institutes of Health.

- Sep 2007 - Aug 2010 (\$349,586) **G.W. Smith**. Oocyte control of bovine granulosa and cumulus cell function and early embryogenesis: Contribution of the novel oocyte-specific protein JY-1. Program 41.0, USDA National Research Initiative Competitive Grants Program.
- Dec 2006 - Nov 2008 (\$151,000) **G.W. Smith**. Granulosa cell CART signaling pathways regulating follicular estradiol production. National Institutes of Health.
- Aug 2006 - July 2009 (\$330,600) **G.W. Smith** and R. Meidan. Deciphering the luteal transcriptome: Insights into the mechanisms regulating corpus luteum regression. The United States-Israel Binational Agricultural Research and Development Fund.
- July 2005 - June 2008 (\$906,000) **G.W. Smith**. Oocyte and cumulus-derived markers of oocyte competence. National Institutes of Health.
- Jan 2005 - Dec 2008 (\$994,298) **G.W. Smith**, J. Yao, G. Rosa, J. Cibelli and M. Knights. Functional genomics studies of bovine oocyte and embryo competence. Program 45.0, USDA National Research Initiative Competitive Grants Program.
- Oct 2004 - Sep 2007 (\$499,825) **G.W. Smith** and J.J. Ireland. Local role of CART in regulation of estradiol production and follicular atresia. Program 41.0, USDA National Research Initiative Competitive Grants Program.
- Apr 2004 - Mar 2009 (\$1,495,000) **G.W. Smith**. Regulation and role of JY-1: A novel egg-specific gene. National Institutes of Health.
- Oct 2003 - Sep 2005 (\$187,585) J. Yao and **G.W. Smith**. Characterization of the oocyte transcriptome and identification of oocyte specific genes in cattle Program 43.0, USDA National Research Initiative Competitive Grants Program.
- Dec 2002 - Nov 2005 (\$672,000) **G.W. Smith** and J.R. Pursley. Intrafollicular regulation of ovulation: Role of PGE2. National Institutes of Health.
- Aug 2002 - July 2004 (\$203,279) J.L. Burton, P.S.D Weber, **G.W. Smith** and N.K. Ames. Transcriptional repression of CD62L by glucocorticoid receptor in neutrophils. Program 44.0, USDA National Research Initiative Competitive Grants Program.
- Aug 2002 - July 2005 (\$318,106) A.J. Zanella, M. Mendl, N. Trottier, and **G.W. Smith**. Hippocampal glucocorticoids and their receptors as mediators of behavioral responses to weaning stress in pigs. Program 44.0, USDA National Research Initiative Competitive Grants Program.
- Oct 2001 - Sep 2003 (\$317,654) A.J. Roberts and **G.W. Smith**. Genetic mechanisms in the hypothalamus and pituitary that control reproduction in the bovine. Program 43.0, USDA National Research Initiative Competitive Grants Program.
- Oct 2001 - Sep 2003 (\$285,202). **G.W. Smith**, J.L. Burton, A.J. Zanella and N.K. Ames. Neuroendocrine regulation of the stress response in cattle. Program 44.0, USDA National Research Initiative Competitive Grants Program.

- Oct 2001 - Sep 2004 (\$4,811,393). D.J. Patterson, J.R. Pursley, **G.W. Smith** et al. Developing value-added management strategies for beef and dairy heifers. Program 15.0, USDA Initiative for Future Agricultural and Food Systems Competitive Grants Program.
- Sep 2001 - Aug 2004 (\$299,663) **G.W. Smith** and J.R. Pursley. Intrafollicular signaling pathways that control follicle rupture in dairy cattle. Program 41.0, USDA National Research Initiative Competitive Grants Program.
- Sep 2001 - Aug 2003 (\$276,000). **G.W. Smith**. Food and Agricultural Sciences National Needs Graduate Fellowships Grant in Animal Biotechnology. USDA CSREES Higher Education Programs.
- Nov 2000 - Oct 2003 (\$1,606,654). **G.W. Smith**, J.J. Ireland, M.P. Diamond, R. J. Tempelman, J.L. Burton, P.M. Coussens and J. R. Pursley. Functional genomics studies of reproductive ageing and infertility. Michigan Life Sciences Corridor Fund.
- Oct 2000 - Sep 2004 (\$590,025) J.R. Pursley, **G.W. Smith**, and A.J. Zanella. Increasing reproductive efficiency of lactating dairy cows on small and medium sized dairy operations. Program 15.0, USDA Initiative for Future Agricultural and Food Systems Competitive Grants Program.
- Oct 1999 - Sep 2002 (\$147,615) M.W. Orth and **G.W. Smith**. The significance of nitric oxide in growth plate cartilage degradation. Program 42.0, USDA National Research Initiative Competitive Grants Program.
- Aug 1999 - July 2002 (\$596,167) J. Burton, P.M. Coussens, M. Doumit, C. Ernst, J. Ireland, W. Li, M. Orth, K. Scribner, **G.W. Smith**, H.A. Tucker and A. Zanella. Initiative for identification of candidate genes in unique animal models. MSU Strategic Partnership Grant.
- Apr 1999 - Mar 2000 (\$116,274) **G.W. Smith**. Enhancement of animal health and performance with non-peptide corticotropin-releasing factor receptor 1 antagonist. The Monsanto Corporation.

Review Articles, Book Chapters (17)

- Zhang K and **Smith G.W.** 2015. Maternal control of early embryogenesis in mammals. *Reproduction, Fertility and Development* (accepted Jan 10, 2015)
- Smith G.W.** and Meidan R. 2014. Ever-changing cell interactions during the lifespan of the corpus luteum: Relevance to luteal regression. *Reprod Biol* 14:75-82
- Rajput SK, Lee K, Zhenhua G, Di L, Folger JK, **Smith G.W.** Embryotropic actions of follistatin: paracrine and autocrine mediators of oocyte competence and embryo developmental progression. *Reprod Fertil Dev* 2013; 26:37-47.
- Evans A, Mossa F, Walsh S, Scheetz D, Jimenez-Krassel F, Ireland J, **Smith G.W.**, Ireland J 2012. Effects of maternal environment during gestation on ovarian folliculogenesis and consequences for fertility in bovine offspring. *Reprod Domest Anim* 47 Suppl 4:31-37
- Ireland JJ, **Smith G.W.**, Scheetz D, Jimenez-Krassel F, Folger JK, Ireland JL, Mossa F, Lonergan P, and Evans AC. 2011. Does size matter in females? An overview of the impact of the high variation in

the ovarian reserve on ovarian function and fertility, utility of anti-Mullerian hormone as a diagnostic marker for fertility and causes of variation in the ovarian reserve in cattle. *Reprod Fertil Dev* 23:1-14.

- Smith, G.W.**, A Sen, JK Folger and JJ Ireland. 2010. Putative role of cocaine-and amphetamine-regulated transcript (CARTPT) in dominant follicle selection in cattle. In: *Reproduction in Domestic Ruminants VII*, eds MC Lucy and MF Smith; Nottingham University Press, p105-119.
- Evans, ACO, F Mossa, T Fair, P Lonergan, DP Berry, ST Butler, AE Zielak-Steciwko, **G.W. Smith**, F Jimenez-Krassel, JK Folger, JLH Ireland and JJ Ireland. 2010. Causes and consequences of the variation in the number of ovarian follicles in cattle. In: *Reproduction in Domestic Ruminants VII*, eds MC Lucy and MF Smith; Nottingham University Press, p.421-431.
- Schilling, B and **G.W. Smith**. 2010. Functional genomics studies of ovarian function in livestock: Physiological insight gained and perspective for the future. In: *Reproductive Genomics in Domestic Animals*. eds Zhihua Jiang and Troy L Ott. Wiley-Blackwell, p.183-203.
- ACO Evans, F Mossa, T Fair, P Lonergan, **G.W. Smith**, F Jimenez-Krassel, JK Folger, JLH Ireland, JJ Ireland 2010. Variation in the number of ovarian follicles in cattle: possible causes and consequences.. *Acta Scientiae Veterinariae* 30 (Supl 2), s537-s543.
- Bettegowda, A, KB Lee and **G.W. Smith**. 2008. Cytoplasmic and nuclear determinants of the maternal-to-embryonic transition. *Reproduction, Fertility and Development* 20:45-53.
- Bettegowda, A and **G.W. Smith**. 2007. Mechanisms of maternal mRNA regulation: Implications for mammalian early embryonic development. *Frontiers in Bioscience* 12:3713-3726.
- Smith, G.W.** and GJM Rosa. 2007. Interpretation of microarray data: Trudging out of the abyss towards elucidation of biological significance. *Journal of Animal Science* 85(13 Suppl):E20-23.
- Kobayashi, Y, Jimenez-Krassel, F, JJ Ireland and **G.W. Smith**. 2006. Evidence of a local negative role for cocaine and amphetamine regulated transcript (CART), inhibins and low molecular weight insulin like growth factor binding proteins in regulation of granulosa cell estradiol production during follicular waves in cattle. *Reproductive Biology and Endocrinology* 4:22
- Smith, MF, WA Ricke, LJ Bakke, MPD Dow, and **G.W. Smith**. 2002. Ovarian tissue remodeling: Role of matrix metalloproteinases and their inhibitors. *Molecular and Cellular Endocrinology* 191:45-56.
- Smith, MF, EW McIntush, WA Ricke, FN Kojima and **G.W. Smith**. 1999. Regulation of ovarian extracellular matrix remodeling by metalloproteinases and their tissue inhibitors: effects on follicular development, ovulation and luteal function. In: *Reproduction in Domestic Ruminants IV*, *Journal of Reproduction and Fertility Supplement* 54:367-381.
- Roberts, RM, N Mathialagan, JY Duffy and **G.W. Smith**. 1995. Regulation and regulatory role of proteinase inhibitors. *Crit. Rev. in Eukaryotic Gene Expression* 5:385-436.
- Smith, MF, EW McIntush and **G.W. Smith**. 1994. Mechanisms associated with corpus luteum development. *J. Anim. Sci.* 72:1857-1872.

[Refereed Journal Articles \(144\)](#)

- Ashry M, Folger JK, Rajput SK, Baroni J, **Smith GW**. 2021. FSH stimulated bovine granulosa cell steroidogenesis involves both canonical and noncanonical WNT signaling. *Domest Anim Endocrinol*. 78:106678.
- Ashry M, Yang C, Rajput SK, Folger JK, Knott JG, **Smith GW**. 2021. Follistatin supplementation induces changes in CDX2 CpG methylation and improves in vitro development of bovine SCNT preimplantation embryos *Reprod Biol Endocrinol*. 19(1):141.
- Ashry M, Rajput SK, Folger JK, Yang C, Knott JG, **Smith G.W**. 2020. Follistatin treatment modifies DNA methylation of the CDX2 gene in bovine preimplantation embryos. *Mol Reprod Dev*. 2020 Sep; 87(9): 998-1008.
- Rajput SK, Yang C, Ashry M, Folger JK, Knott JG, **Smith G.W**. 2020. Role of bone morphogenetic protein signaling in bovine early embryonic development and stage specific embryotropic actions of follistatin. *Biol Reprod*. 2020 Apr 15; 102(4): 795-805.
- Camsari C, Folger JK, Rajput SK, McGee D, Latham KE, **Smith G.W**. 2019. Transgenerational Effects of Periconception Heavy Metal Administration on Adipose Weight and Glucose Homeostasis in Mice at Maturity. *Toxicol Sci*. 2019 Apr 1; 168(2): 610-619.
- Daigneault BW, Vilarino M, Frum T, **Smith G.W.**, Ross PJ. 2018. CRISPR editing validation, immunostaining and DNA sequencing of individual fixed bovine embryos. *Biotechniques*. 2018 Nov; 65(5): 281-283.
- Abreu FM, Coutinho da Silva MA, Cruppe LH, Mussard ML, Bridges GA, Harstine BR, **Smith G.W.**, Geary TW, Day ML. 2018. Role of progesterone concentrations during early follicular development in beef cattle: I. Characteristics of LH secretion and oocyte quality. *Anim Reprod Sci*. 2018 Sep; 196: 59-68
- Ashry M, Lee K, Folger JK, Rajput SK, **Smith G.W**. 2018. Follistatin supplementation during in vitro embryo culture improves developmental competence of bovine embryos produced using sex-sorted semen. *Reprod Biol*. 2018 Sep; 18(3): 267-273.
- Daigneault BW, Rajput S, **Smith G.W.**, Ross PJ. 2018. Embryonic POU5F1 is required for Expanded Bovine Blastocyst Formation. *Sci Rep*. 2018 May 17; 8(1): 7753
- Lee BM, Chun JL, Lee JH, Kim EY, Park KS, Lee JH, Daigneault BW, **Smith G.W.**, Kim KJ, Chang KT, Lee SR, Kim SU, Choi SA, Lee KB, Kim MK. 2018. Follistatin Rescues Blastocyst Development of Poor Quality Porcine Cumulus-Oocyte Complexes by Delaying Meiotic Resumption with Decreased cGMP. *Reprod Sci*. 2018 May;25(5): 759-772
- Zhang K, Wang H, Rajput SK, Folger JK, **Smith G.W**. 2018. Characterization of H3.3 and HIRA expression and function in bovine early embryos. *Mol Reprod Dev*. 2018 Feb; 85(2):106-116.
- Ashry M, Rajput SK, Folger JK, Knott JG, Hemedia NA, Kandil OM, Ragab RS, **Smith G.W**. 2018. Functional role of AKT signaling in bovine early embryonic development: potential link to embryotropic actions of follistatin. *Reprod Bio Endocrinol*. 2018 Jan 8; 16(1):1.
- Dong C, Yang S, Fan R, Ji K, Zhang J, Liu X, Hu S, Xie J, Liu Y, Gao W, Wang H, Yao J, **Smith G.W.**, Herrid M. 2017. Functional Role of Cyclin-Dependent Kinase 5 in the Regulation of Melanogenesis and Epidermal Structure. *Sci Rep*. 2017 Oct 23; 7(1):13783.

- Camsari C, Folger JK, McGee D, Bursian SJ, Wang H, Knott JG, **Smith G.W.** 2017. Effects of Periconception Cadmium and Mercury Co-Administration to Mice on Indices of Chronic Diseases in Male Offspring at Maturity. *Environ Health Perspect.* 2017 Apr; 125(4):643-650.
- Juengel JL, French MC, Quirke LD, Kauff A, **Smith G.W.**, Johnstone PD. 2017. Differential expression of CART in ewes with differing ovulation rates. *Reproduction.* 2017 Apr; 153(4):471-479.
- Hand JM, Zhang K, Wang L, Koganti PP, Mastrantoni K, Rajput SK, Ashry M, **Smith G.W.**, Yao J. 2017. Discovery of a novel oocyte-specific Kruppel-associated box domain-containing zinc finger protein required for early embryogenesis in cattle. *Mech Dev.* 2017 Apr; (Pt B): 103-112.
- Zhenhua G, Rajput SK, Folger JK, Di L, Knott JG, **Smith G.W.** 2017. Pre-and Peri-/Post-Compaction Follistatin Treatment Increases in Vitro Production of Cattle Embryos. *PLoS One.* 2017; 12(1): e0170808.
- Jasensky J, Boughton AP, Khmaladze A, Ding J, Zhang C, Swain JE, **Smith G.W.**, Chen Z, Smith GD. 2016. Live-cell quantification and comparison of mammalian oocyte cytosolic lipid content between species, during development, and in relation to body composition using nonlinear vibrational microscopy. *Analyst.* 2016 Aug 7; 141(15):4694-706.
- Zhang K, Rajput SK, Wang S, Folger JK, Knott JG, **Smith G.W.** 2016. CHD1 Regulates Deposition of Histone Variant H3.3 During Bovine Early Embryonic Development. *Biol Reprod.* 2016 Jun; 94(6):140.doi: 10.1095/biolreprod.116.138693. Epub 2016 May 11.
- Li P, Meng J, Liu W, **Smith G.W.**, Yao J, Lyu L. 2016. Transcriptome Analysis of Bovine Ovarian Follicles at Predeviation and Onset of Deviation Stages of a Follicular Wave. *Int J Genomics.* 2016; 2016:3472748.
- Huang Y, Yao XL, Meng JZ, Liu Y, Jiang XL, chen JW, Li PF, Ren YS, Liu WZ, Yao JB, Folger JK, **Smith G.W.**, Lv LH. 2016. Intrafollicular expression and potential regulatory role of cocaine-and amphetamine-regulated transcript in the ovine ovary. *Domest Anim Endocrinol.* 2016 Jan; 54:30-6.
- Baker VL, Brown MB, Luke B, **Smith G.W.**, Ireland JJ. 2015. Gonadotropin Dose is negatively correlated with live birth rate: analysis of more than 650,000 assisted reproductive technology cycles. *Fertil Steril.* 2015 Nov; 104(5):1145-52.e1.
- Zhang K, Rajput SK, Lee KB, Wang D, Huang J, Folger JK, Knott JG, Zhang J, **Smith G.W.** 2015. Evidence supporting a role for SMAD2/3 in bovine early embryonic development: potential implication or embryotropic actions of follistatin. *Biol Reprod.* 2015 Oct; 93(4):86.
- Jiang X, Cao X, Huang Y, Chen J, Yao X, Zhao M, Liu Y, Meng J, Li P, Li Z, Yao J, **Smith G.W.**, Lv L. 2015. Effects of treatment with *Astragalus Membranaceus* on function of rat leydig cells. *BMC Complement Altern Med.* 2015 Aug 1; 15:261.
- Zhang K, **Smith G.W.** 2015. Maternal control of early embryogenesis in mammals. *Reprod Fertil Dev.* 2015 Jul; 27(6):880-96.
- Huang Y, Jin H, Chen J, Jiang X, Li P, Ren Y, Liu W, Yao J, Folger JK, **Smith G.W.**, Lv L. 2015. Effect of Vitamin D on basal and Luteinizing Hormone (LH) induced testosterone production and mitochondrial dehydrogenase activity in cultured Leydig cells from immature and mature rams. *Anim Reprod Sci.* 2015 Jul; 158:109-14.

- Jimenez-Krassel F, Scheetz DM, Neuder LM, Ireland JL, Pursley JR, **Smith G.W.**, Tempelman RJ, Ferris T, Roudebush WE, Mossa F, Lonergan P, Evans AC, Ireland JJ. 2015. Concentration of anti-Mullerian Hormone in dairy heifers is positively associated with productive herd life. *J Dairy Sci.* 2015 May; 98(5):3036-45.
- Yang S, Fan R, Shi Z, Ji K, Zhang J, Wang H, Herrid M, Zhang Q, Yao J, **Smith G.W.**, Dong C. 2015. Identification of a novel microRNA important for melanogenesis in alpaca (*Vicugna pacos*). *J Anim Sci.* 2015 Apr; 93(4):1622-31.
- Ashry M, Lee KB, Mondal M, Datta TK, Folger JK, Hemeida NA and **Smith G.W.** 2015. Expression of TGF β superfamily components and other markers of oocyte quality in oocytes selected by brilliant cresyl blue staining: Relevance to early embryonic development. *Molecular Reproduction and Development* (accepted February 2, 2015)
- Lai D, Ding J, **Smith G.W.**, Smith GD, Takayama S. 2015. Slow and steady cell shrinkage reduces osmotic stress in bovine and murine oocyte and zygote vitrification. *Hum Reprod* 30:37-45.
- Datta TK*, Rajput SK, Wee G, Lee KB, Folger JK, **Smith G.W.** 2015. Requirement of the transcription factor USF1 in bovine oocyte and early embryonic development. *Reproduction* 149:203-212(*co-first author).
- Ashry M, **Smith G.W.** 2015. Application of embryo transfer using in vitro produced embryos: intrinsic factors affecting efficiency. *Cattle Pract.* 2015; 23(Pt1):1-8.
- Lai D, Ding J, **Smith G.W.**, Smith GD, Takayama S. 2015. Slow and steady cell shrinkage reduces osmotic stress in bovine and murine oocyte and zygote vitrification. *Hum Reprod.* 2015 Jan; 30(1):37-45.
- Gupta PS, Folger JK, Rajput SK, Lv L, Yao J, Ireland JJ, **Smith G.W.** 2014. Regulation and regulatory role of WNT signaling in potentiating FSH action during bovine dominant follicle selection. *PLoS ONE* 2014; 9:e100201.
- Lee KB, Folger JK, Rajput SK, **Smith G.W.** 2014. Temporal regulation of mRNAs for select bone morphogenetic proteins (BMP), BMP receptors and their associated SMAD proteins during bovine early embryonic development: effects of exogenous BMP2 on embryo developmental progression. *Reprod Biol Endocrinol* 12:67.
- Lee KB, Zhang K, Folger JK, Knott JG, **Smith G.W.** 2014. Evidence supporting a functional requirement of SMAD4 for bovine preimplantation embryonic development: A potential link to embryotropic actions of follistatin. *Biol Reprod* 91:62.
- Smith G.W.**, Median R. 2014. Ever-changing cell interactions during the life span of the corpus luteum: relevance to luteal regression. *Reprod Biol.* 2014 Apr; 14(2):75-82.
- Lee KB, Wee G, Zhang K, Folger JK, Knott JG, **Smith G.W.** 2014. Functional role of the bovine oocyte-specific protein JY-1 in meiotic maturation, cumulus expansion and subsequent embryonic development. *Biol Reprod* 90:69.
- Folger JK, Jimenez-Krassel F, Ireland JJ, Lv L, **Smith G.W.** 2013. Regulation of granulosa cell cocaine and amphetamine regulated transcript (CART) binding and effect of CART signaling inhibitor on granulosa cell estradiol production during dominant follicle selection in cattle. *Biol Reprod* 89:137.

- Tripurani SK, Wee G, Lee KB, **Smith G.W.**, Wang L, Yao J. 2013. MicroRNA-212 post-transcriptionally regulates oocyte-specific basic-helix-loop-helix transcription factor, factor in the germline alpha (FIGLA), during bovine early embryogenesis. *PLoS ONE* 2013; 8:e76114.
- Fan R, Xie J, Bai J, Wang H, Tian X, Bai R, Jia X, Yang L, Song Y, Herrid M, Gao W, He X, Yao J, **Smith G.W.**, Dong C. 2013. Skin transcriptome profiles associated with coat color in sheep. *BMC Genomics* 14:389.
- Mossa F, Carter F, Walsh SW, Kenny DA, **Smith G.W.**, Ireland JL, Hildebrandt TB, Lonergan P, Ireland JJ, Evans AC. 2013. Maternal undernutrition in cows impairs ovarian and cardiovascular systems in their offspring. *Biol Reprod* 88: (e-pub ahead of print).
- Selvaraju S, Folger JK, Gupta PS, Ireland, JJ and **Smith G.W.** 2013. Stage specific expression and effect of bone morphogenetic protein 2 on bovine granulosa cell estradiol production: Regulation by cocaine and amphetamine regulated transcript. *Dom Anim Endocrinol* 44:115-120.
- Rajput SK, Lee K, Zhenhua G, Di L, Folger JK, **Smith G.W.** 2013. Embryotropic actions of follistatin: Paracrine and autocrine mediators of oocyte competence and embryo developmental progression. *Reprod Fertil Dev.* 2013; 26(1):37-47.
- Tian X, Jiang J, Fan R, Wang H, Meng X, He X, He J, Li H, Geng J, Yu X, Song Y, Zhang D, Yao J, **Smith G.W.**, Dong C. 2012. Identification and characterization of microRNAs in white and brown alpaca skin. *BMC Genomics* 16; 13(1):555.
- Dong C, Wang H, Xue L, Dong Y, Yang L, Fan R, Yu X, Tian X, Ma S, **Smith G.W.** 2012 Coat color determination by miR-137 mediated down-regulation of microphthalmia-associated transcription factor in a mouse model. *RNA* 18:1679-1686.
- Evans AC, Mossa F, Walsh SW, Scheetz D, Jimenez-Krassel F, Ireland JL, **Smith G.W.**, Ireland JJ. 2012. Effects of maternal environment during gestation on ovarian folliculogenesis and consequences for fertility in bovine offspring. *Reprod Domest Anim.* 2012 Aug;47 Suppl 4:31-7.
- Mossa F, Walsh SW, Butler ST, Berry DP, Carter F, Lonergan P, **Smith G.W.**, Ireland JJ, Evans AC. 2012 Low numbers of ovarian follicles ≥ 3 mm in diameter are associated with low fertility in dairy cows. *J Dairy Sci* 95:2355-2361.
- Zalman Y, Klipper E, Farberov S, Mondal M, Wee G, Folger JK, **Smith G.W.**, Meidan R. 2012. Regulation of angiogenesis related prostaglandin F2 alpha induced genes in the bovine corpus luteum. *Biol Reprod* 86(3): 92, 1-10.
- Kujjo LL, Ronningen R, Ross P, Pereira RJ, Rodriguez R, Beyhan Z, Goissis MD, Baumann T, Kagawa W, Camsari C, **Smith G.W.**, Kurumizaka H, Yokoyama S, Cibelli JB, Perez GI. 2012. RAD51 plays a key role in halting cell death program induced by ionizing radiation in bovine oocytes. *Biol Reprod* 86 (3): 76, 1-11.
- Scheetz, D, Folger, JK, **Smith G.W.** and Ireland JJ. 2012. Granulosa cells are refractory to FSH action in individuals with a low antral follicle count. *Reproduction Fertility and Development* 24:327-336.
- Fan R, Dong Y, Cao J, Bai R, Zhu Z, Li P, Zhang J, He X, Lu L, Yao J, Mondal M, **Smith G.W.** and CS Dong. 2011 Gene expression profile in white alpaca (*Vicugna pacos*) skin. *Animal* 5: 1157-1161.

- Tripurani SK, Lee KB, Wang L, Wee G, **Smith G.W.**, Lee YS, Latham KE and Yao J. 2011. A novel functional role for the oocyte-specific transcription factor newborn ovary homeobox (NOBOX) during early embryonic development in cattle. *Endocrinology* 152:1013-1023.
- Dong Y, Wang H, Cao J, Ren J, Fan R, He X, **Smith G.W.** and Dong C. 2011. Nitric oxide enhances melanogenesis of alpaca skin melanocytes in vitro by activating the MITF phosphorylation. *Mol Cell Biochem* 352:255-260.
- Lingenfelter BM, Tripurani SK, Tejomurtula J, **Smith G.W.** and Yao J. 2011. Molecular cloning and expression of bovine nucleoplasmin 2 (NPM2): a maternal effect gene regulated by miR-181a. *Reprod Biol Endocrinol* 9:40.
- Mondal M, Schilling B, Folger J, Steibel JP, Buchnick H, Zalman Y, Ireland JJ, Meidan R and **Smith G.W.** 2011. Deciphering the luteal transcriptome: potential mechanisms mediating stage-specific luteolytic response of the corpus luteum to prostaglandin F2 {alpha}. *Physiol Genomics* 43:447-456.
- Tripurani SK, Lee KB, Wee G, **Smith G.W.** and Yao J. 2011. MicroRNA-196a regulates bovine newborn ovary homeobox gene (NOBOX) expression during early embryogenesis. *BMC Dev Biol* 11:25.
- Ireland JJ, **Smith G.W.**, Scheetz D, Jimenez-Krassel F, Folger JK, Ireland JL, Mossa F, Lonergan P, Evans AC. 2011. Does size matter in females? An overview of the impact of the high variation in the ovarian reserve on ovarian function and fertility, utility of anti-Mullerian hormones as a diagnostic marker for fertility and causes of variation in the ovarian reserve in cattle. *Reprod Fertil Dev.*2011; 23(1):1-14.
- Jiang, JB, Qui JD, Yang LH, He JP, **Smith G.W.** and Li HQ. 2010. Therapeutic effects of astragalus polysaccharides on inflammation and synovial apoptosis in adjuvant induced arthritis. *Int J Rheum Dis* 13:396-405.
- Mossa F, Jimenez-Krassel F, Folger, JK, Ireland JL, **Smith G.W.**, Lonergan P, Evans AC and Ireland JJ. 2010 Evidence that high variation in antral follicle count during follicular waves is linked to alterations in ovarian androgen production in cattle. *Reproduction* 140:713-720.
- Zhu Z, He J, Jia X, Jiang J, Bai R, Yu X, Lv L, Fan R, He X, Geng J, You R, Dong Y, Qiao D, Lee KB, **Smith G.W.**, Dong CS. 2010. MicroRNA-25 functions in regulation of pigmentation by targeting the transcription factor MITF in alpaca (*Lama pacos*) skin melanocytes. *Domestic Animal Endocrinology* 38:200-209.
- Smith G.W.**, Sen A, Folger JK, Ireland JJ. 2010. Putative role of cocaine-and amphetamine-regulated transcript (CARTPT) in dominant follicle selection in cattle. *Soc Reprod Fertil Suppl.*2010; 67: 105-17.
- Evans AC, Mossa F, Fair T, Lonergan P, Butler ST, Zielak-Steciwko AE, **Smith G.W.**, Jimenez-Krassel F, Folger JK, Ireland JL, Ireland JJ. 2010. Causes and consequences of the variation in the number of ovarian follicles in cattle. *Soc Reprod Fertil Suppl.*2010;67:421-9.
- VandeVoort CA, Mtango N, Lee YS, **Smith G.W.** and Latham, KE. 2009 Differential effects of follistatin on nonhuman primate oocyte maturation and preimplantation embryo development in vitro. *Biology of Reproduction* 81:1139-1146.

- Roberts RM, **Smith G.W.**, Bazer FW, Cibelli J, Seidel GE, Jr., Bauman DE, Reynolds LP, Ireland JJ. 2009. Research priorities. Farm animal research in crisis. *Science* 324:468-469.
- Li Q, Jimenez-Krassel F, Ireland JJ, **Smith G.W.** 2009. Gene expression profiling of bovine preovulatory follicles: gonadotropin surge and prostanoid-dependent up-regulation of genes potentially linked to the ovulatory process. *Reproduction* 137:297-307.
- Tejomurtula J, Lee KB, Tripurani SK, **Smith G.W.**, Yao J. 2009. Role of importin alpha8, a new member of the importin alpha family of nuclear transport proteins, in early embryonic development in cattle. *Biology of Reproduction* 81:333-342.
- Lv, L., F. Jimenez Krassel F, A. Sen, A. Bettgowda , M. Mondal, J. Folger, K.B. Lee K, J.J. Ireland and **G.W. Smith**. 2009. Evidence supporting a role for cocaine and amphetamine regulated transcript (CART) in control of granulosa cell estradiol production associated with dominant follicle selection in cattle. *Biology of Reproduction* 81:580-586.
- He, J., Dong, C., You, R., Zhu, Z., Lv, L., and **G.W. Smith**. 2009. Localization of epidermal growth factor (EGF) and its receptor (EGFR) during postnatal testis development in the alpaca (lma pacos). *Animal Reproduction Science* 116:155-161.
- Ireland JJ, Zielak AE, Jimenez-Krassel F, Folger J, Bettgowda A, Scheetz D, Walsh S, Ward F, Knight PG, **Smith G.W.**, Lonergan P, Evans ACO. 2009. Variation in the ovarian reserve is linked to alterations in intrafollicular estradiol production and ovarian biomarkers of follicular differentiation and oocyte quality in young adult cattle. *Biol Reprod* 80:954-964.
- Lee KB, Bettgowda A, Wee G, Ireland JJ, **Smith G.W.** 2009. Molecular determinants of oocyte competence: Potential functional role for maternal (oocyte-derived) follistatin in promoting bovine early embryogenesis. *Endocrinology* 150: 2463-2471.
- Jimenez-Krassel F, Folger JK, Ireland JLH, **Smith G.W.**, Davis JS, Lonergan P, Evans ACO, Ireland JJ. 2009. Evidence that high variation in ovarian reserves of healthy young adults has a negative impact on the corpus luteum and endometrium during reproductive cycles of single-ovulating species. *Biol Reprod* 80: 1272-1281.
- Yan, X., C. Feng, Q. Chen, W. Li, H. Wang, L., **G.W. Smith** and J. Wang. 2009. Effects of sodium fluoride treatment in vitro on cell proliferation, apoptosis and caspase-3 and caspase-9 mRNA expression by neonatal rat osteoblasts. *Archives of Toxicology* 83:451-458.
- Sen, A., L. Lv, N. Bello, J.J. Ireland and **G.W. Smith**. 2008. Cocaine- and amphetamine-regulated transcript accelerates termination of follicle-stimulating hormone-induced extracellularly regulated kinase 1/2 and Akt activation by regulating the expression and degradation of specific mitogen-activated protein kinase phosphatases in bovine granulosa cells. *Molecular Endocrinology* 22:2655-2676.
- Ireland, J.L., D. Scheetz, F. Jimenez-Krassel, A.P. Themmen, F. Ward, P. Lonergan, **G.W. Smith**, G.I. Perez, A.C. Evans and J.J. Ireland. 2008. Antral follicle count reliably predicts number of morphologically healthy oocytes and follicles in ovaries of young adult cattle. *Biology of Reproduction* 79:1219-1225.
- Bettgowda, A., O.V. Patel, K. Lee, K. Park, J.J. Ireland and **G.W. Smith**. 2008. Identification of novel cumulus cell molecular markers predictive of oocyte competence: Functional and diagnostic implications. *Biology of Reproduction* 79:301-309

- Forde N., M. Rogers , M.J. Canty, P. Lonergan, **G.W. Smith**, P.M. Coussens, J.J. Ireland and ACO Evans. 2008. Association of the prion protein and its expression with ovarian follicle development in cattle. *Molecular Reproduction and Development* 75:243-249.
- Forde N., M. Mihm, M.J. Canty, A.E. Zielak, P.J. Baker, S. Park, P. Lonergan, **G.W. Smith**, P.M. Coussens, J.J. Ireland and ACO Evans. 2008. Differential expression of signal transduction factors in ovarian follicle development: A functional role for betaglycan and FIBP in granulosa cells in cattle. *Physiological Genomics* 33:193-204
- Zielak AE, M.J. Canty, N. Forde, P.M. Coussens, G.W. Smith, P. Lonergan, J.J. Ireland and **G.W. Smith**. 2008. Differential expression of genes for transcription factors in theca and granulosa cells following selection of a dominant follicle in cattle. *Molecular Reproduction and Development* 75:904-914.
- Bettegowda A, Lee KB, and **Smith G.W.** 2008. Cytoplasmic and nuclear determinants of the maternal-to-embryonic transition. *Reprod Fertil Dev.*2008; 20(1):45-53.
- Bettegowda, A., J. Yao, A. Sen, Q. Li, K. Lee, Y. Kobayashi, O.V. Patel, P.M. Coussens, J.J. Ireland and **G.W. Smith**. 2007. JY-1, a novel oocyte-specific gene, regulates granulosa cell function and early embryonic development in cattle. *Proceedings of the National Academy of Sciences USA* 104:17602-17607.
- Zielak, A.E., N. Forde, S.D.E. Park, F. Doohan, P.M. Coussens, **G.W. Smith**, J.J. Ireland, P. Lonergan and A.C.O. Evans. 2007. Identification of novel genes associated with ovarian follicle development in cattle. *Reproduction Fertility and Development* 19:967-975.
- Sen, A., A. Bettegowda, F. Jimenez-Krassel, J.J. Ireland and **G.W. Smith**. 2007. Cocaine and amphetamine regulated transcript (CART) regulation of follicle stimulating hormone signal transduction in bovine granulosa cells. *Endocrinology* 148:4400-4410.
- Ireland JJ, Ward F, Jimenez-Krassel F, Ireland JL, **Smith, G.W.**, Lonergan P, Evans AC. 2007. Folicle numbers are highly repeatable within individual animals but are inversely correlated with FSH concentrations and the proportion of good-quality embryos after ovarian stimulation in cattle. *Hum Reprod.*2007 Jun; 22(6):1687-95.
- Bettegowda, A and **Smith, G.W.** 2007. Mechanism of maternal mRNA regulation: implications for mammalian early embryonic development. *Front Biosci.*2007 May 1; 12:3713-26.
- Patel, O.V., A. Bettegowda, J.J. Ireland, P.M. Coussens, P. Lonergan and **G.W. Smith**. 2007 Functional genomics studies of oocyte competence: Evidence that reduced transcript abundance for follistatin is associated with poor developmental competence of bovine oocytes. *Reproduction* 133:95-106.
- Li, Q., F. Jimenez-Krassel, A. Bettegowda, J.J. Ireland and **G.W. Smith**. 2007. Evidence that the preovulatory rise in intrafollicular progesterone is not required for ovulation in cattle. *Journal of Endocrinology* 192:475-485.
- Smith, G.W.**, Rosa GJ. 2007. Interpretation of microarray data: trudging out of the abyss towards elucidation of biological significance. *J Anim Sci.*2007 Mar; 85(13Suppl):E20-3.
- Knights, M. and **G.W. Smith**. 2007. Decreased ACTH secretion during prolonged transportation stress is associated with reduced pituitary responsiveness to tropic hormone stimulation in cattle. *Domestic Animal Endocrinology* 33:442-450.

- Saama, P.M., O.V. Patel, A. Bettgowda, J.J. Ireland and **G.W. Smith**. 2006. A novel algorithm for transcriptome analysis. *Physiological Genomics* 28:62-66.
- Bettgowda, A., O.V. Patel, J.J. Ireland and **G.W. Smith**. 2006. Quantitative analysis of messenger RNA abundance for ribosomal protein L-15, cyclophilin-A, phosphoglycerokinase, β -glucuronidase, glyceraldehyde 3-phosphate dehydrogenase, β -actin and histone H2A during bovine oocyte maturation and early embryogenesis. *Molecular Reproduction and Development* 73:267-278.
- Mihm, M., P.J. Baker, J.L.H. Ireland, **G.W. Smith**, P.M. Coussens, A.C.O Evans and J.J. Ireland. 2006. Molecular evidence that growth of dominant follicles involves a 'switch' from follicle stimulating hormone- to luteinizing hormone-dependence in cattle. *Biology of Reproduction* 74:1051-1059.
- Kobayashi Y, Jimenez-Krassel F, Ireland JJ, Smith GW. Evidence of a local negative role for cocaine and amphetamine regulated transcript (CART), inhibins and low molecular weight insulin like growth factor binding proteins in regulation of granulosa cell estradiol production during follicular waves in cattle. *Reprod Biol Endocrinol*. 2006 Apr 12; 4:22.
- Li, Q., F. Jimenez-Krassel, Y. Kobayashi, J.J. Ireland and **G.W. Smith**. 2006. Effect of intrafollicular indomethacin injection on gonadotropin surge induced expression of select extracellular matrix degrading enzymes and their inhibitor in bovine preovulatory follicles. *Reproduction* 131:533-543.
- Corcoran, D., T. Fair, D. Rizos, O.V. Patel, **G.W. Smith**, S. Park, P.M. Coussens, J.J. Ireland, M.P. Boland, A.C.O. Evans and P. Lonergan. 2006. Differential developmental competence of in vivo compared to in vitro cultured bovine embryos is associated with differential gene expression and a suppression of transcription. *Reproduction* 131:651-660.
- Patel, O.V., S. Suchyta, S.S. Sipkovsky, J. Yao, J.J. Ireland, P.M. Coussens and **G.W. Smith**. 2005. Validation and application of high fidelity mRNA linear amplification procedure for profiling gene expression. *Veterinary Immunology and Immunopathology* 105:331-342.
- Yao, J., X. Ren, J.J. Ireland, P. M. Coussens, TPL Smith and **G.W. Smith**. 2004. Generation of a bovine oocyte cDNA library and microarray: Resources for identification of oocyte-expressed genes potentially important for oocyte/follicular development and early embryogenesis. *Physiological Genomics* 19:84-92.
- Kobayashi, Y., F. Jimenez-Krassel, Q. Li, J. Yao, R. Huang, J.J. Ireland, P.M. Coussens and **G.W. Smith**. 2004. Evidence that cocaine- and amphetamine-regulated transcript is a novel intraovarian regulator of follicular atresia. *Endocrinology* 145:5373-5383.
- Li, Q., L.J. Bakke, J.R Pursley and **G.W. Smith**. 2004. Localization and temporal regulation of tissue Inhibitors of metalloproteinases 3 and 4 in bovine preovulatory follicles. *Reproduction* 128:555-564.
- Bakke, L.B., Q. Li, C.A. Cassar, M.P.D. Dow, J.R. Pursley and **G.W. Smith**. 2004. Gonadotropin surge induced differential upregulation of collagenase-1 (MMP-1) and collagenase-3 (MMP-13) mRNA and protein in bovine preovulatory follicles. *Biology of Reproduction* 71:605-612.
- Peters, M.W., J.R. Pursley and **G.W. Smith**. 2004. Inhibition of intrafollicular PGE2 synthesis and ovulation following ultrasound-mediated intrafollicular injection of the selective cyclooxygenase-2 inhibitor NS-398 in cattle. *Journal of Animal Science* 82:1656-1662.

- Evans, A., J. L.H. Ireland, M.E. Winn, P. Lonergan, **G.W. Smith**, P.M. Coussens, and J.J. Ireland. 2004. Identification of candidate estradiol target genes involved in apoptosis and dominant follicle development during follicular waves in cattle. *Biology of Reproduction* 70:1475-1484.
- Weber, P.S.D., T. Toelboell, L.C. Chang, J. D. Tirrell, P.J. Saama, **G.W. Smith**, and J.L. Burton. 2004. Mechanisms of glucocorticoid-induced down regulation of neutrophil L-selectin: Evidence for effects at the genome level and primarily on blood neutrophils. *Journal of Leukocyte Biology* 75:815-827.
- Veney, S.L., C. Peabody, **G.W. Smith** and J. Wade. 2003. Sexually dimorphic neurocalcin expression in the developing zebra finch telencephalon. *Journal of Neurobiology* 56:372-386.
- Suchyta, S.P., S. Sipkovsky, R. Kruska, A. Jeffers, A. McNulty, R.J. Tempelman, R. G. Halgren, P.M. Saama, D.E. Bauman, Y.R. Biosclair, J.L. Burton, R.J. Collier, E.J. DePeters, T.A. Ferris, M.C. Lucy, M.A. McGuire, J.F. Medrano, T.R. Overton, T.P. Smith, **G.W. Smith**, T.S. Sonstegard, J.M. Spain, D.E. Spiers, J. Yao and P.M. Coussens. 2003. Development and testing of a high-density cDNA microarray resource for cattle. *Physiological Genomics* 15:158-164.
- Dow, M.P.D., L.J. Bakke, C.A. Cassar, M.W. Peters, J.R. Pursley and **G.W. Smith**. 2002 Gonadotropin surge-induced upregulation of the plasminogen activators (tissue plasminogen activator and urokinase plasminogen activator) and the urokinase plasminogen activator receptor within bovine periovulatory follicular and luteal tissue. *Biology of Reproduction* 66:1413-1421.
- Cassar, C.A., M.P.D. Dow, J.R. Pursley and **G.W. Smith**. 2002. Effect of the preovulatory LH surge on bovine follicular progesterone receptor mRNA expression. *Domestic Animal Endocrinology* 22:179-187.
- Bakke, L.B., M.P.D. Dow, C.A. Cassar, M.W. Peters, J.R. Pursley and **G.W. Smith**. 2002. Effect of the preovulatory gonadotropin surge on matrix metalloproteinase-14, matrix metalloproteinase-2 and tissue inhibitor of metalloproteinase-2 expression within bovine periovulatory follicular and luteal tissue. *Biology of Reproduction* 66:1627-1634.
- Smith MF, Ricke WA, Bakke LJ, Dow MP, **Smith, G.W.** 2002. Ovarian tissue remodeling: role of matrix metalloproteinases and their inhibitors. *Mol Cell Endocrinol.* 2002 May 31; 191(1):45-56.
- Dow, M.P.D., L.J. Bakke, C.A. Cassar, M.W. Peters, J.R. Pursley and **G.W. Smith**. 2002. Gonadotropin surge-induced upregulation of messenger RNA for plasminogen activator inhibitors 1 and 2 within bovine periovulatory follicular and luteal tissue. *Reproduction* 123:711-719.
- Peters, M.W., M.F. Smith and **G.W. Smith**. 2002. Use of critical interactive thinking exercises in teaching reproductive physiology to undergraduate students. *Journal of Animal Science* 80:862-865.
- Ricke, W.A., **G.W. Smith** and M.F. Smith. 2002. Matrix metalloproteinase expression and activity following prostaglandin F₂□-induced luteolysis. *Biology of Reproduction* 66:685-691.
- Ricke, W.A., **G.W. Smith**, E.W. McIntush and M.F. Smith. 2002. Analysis of luteal tissue inhibitor of metalloproteinases (TIMP-1, -2, and -3) during prostaglandin F₂□-induced luteolysis. *Biology of Reproduction* 66:1387-1394.

- Ricke, W.A., **G.W. Smith**, L.P. Reynolds, D.A. Redmer and M.F. Smith. 2002. Matrix metalloproteinase (2, 9, and 14) expression, localization and activity in ovine corpora lutea throughout the estrous cycle. *Biology of Reproduction* 66:1083-1094.
- Qahwash, I.M., C.A. Cassar, R.P. Radcliff and **G.W. Smith**. 2002. Bacterial lipopolysaccharide-induced coordinate down regulation of arginine vasopressin receptor V3 and corticotropin releasing factor receptor 1 messenger ribonucleic acids in the anterior pituitary of endotoxemic steers. *Endocrine* 18:13-20.
- Silva, LF, M.J. VandeHaar, M.S. Weber-Nielsen and **G.W. Smith**. 2002. Evidence for a local effect of leptin in bovine mammary gland. *Journal of Dairy Science* 85:3277-3286.
- Vetter DE, C. Li C, L. Zhao, A. Contarino, M.C. Liberman, **G.W. Smith**, Y. Marchuk, G.F. Koob, S.F. Heinemann, W. Vale and K.F. Lee . 2002. Urocortin-deficient mice show hearing impairment and increased anxiety-like behavior. *Nature Genetics* 31:363-369.
- Weber, P.S.D., S.A. Madsen, **G.W. Smith**, J.J. Ireland, and J.L. Burton. 2001. Pre-translational regulation of neutrophil L-selectin in glucocorticoid challenged cattle. *Veterinary Immunology and Immunopathology* 83:213-240.
- Lee S, **Smith G.W.**, Vale W, Lee KF, Rivier C. 2001. Mice that lack corticotropin-releasing factor (CRF) receptors type 1 show a blunted ACTH response to acute alcohol despite up-regulated constitutive hypothalamic CRF gene expression. *Alcohol Clin Exp res.*2001 Mar;25(3):427-33.
- Bale, T.L., A. Contarino, **G.W. Smith**, R. Chan, L. Gold, P.E. Sawchenko, G.F. Koob, W.W. Vale and K.F. Lee. 2000. Mice deficient for corticotropin-releasing hormone receptor-2 display anxiety-like behavior and are hypersensitive to stress. *Nature Genetics* 24:410-414.
- Contarino, A., F. Dellu, G.F. Koob, **G.W. Smith**, K.F. Lee, W.W. Vale and L.H. Gold. 2000. Dissociation of locomotor activation and suppression of food intake induced by CRF in CRFR1-deficient mice. *Endocrinology* 141:2698-2701.
- Turnbull, A.V., **G.W. Smith**, S. Lee, W.W. Vale, K.F. Lee and C. Rivier. 1999. CRF type I receptor deficient mice exhibit a pronounced pituitary adrenal response to local inflammation. *Endocrinology* 140:1013-1017.
- Contarino, A., F. Dellu, G.F. Koob, **G.W. Smith**, K.F. Lee, W. Vale and L.H. Gold. 1999. Reduced anxiety-like and cognitive behavioral performance in mice lacking the corticotropin-releasing factor receptor 1. *Brain Research* 835:1-9.
- Smith MF, McIntush EW, Ricke WA, Kojima FN, and **Smith G.W.** 1999. Regulation of ovarian extracellular matrix remodeling by metalloproteinases and their tissue inhibitors: effects on follicular development, ovulation and luteal function. *J Reprod Fertil Suppl.* 1999; 54:367-81.
- Smith, G.W.**, J.M. Aubry, F. Dellu, A. Contarino, L.M. Bilezikjian, L.. Gold, R. Chen, Y. Marchuk, C. Hauser, C.A. Bentley, P.E. Sawchenko, G. Koob, W. Vale and K.F. Lee. 1998. Corticotropin releasing factor receptor 1-deficient mice display decreased anxiety, impaired stress response and aberrant neuroendocrine development. *Neuron* 20:1093-1102.
- Zhao, L., C.J. Donaldson, **G.W. Smith** and W. Vale. 1998. The structures of the mouse and human urocortin genes. *Genomics* 50:23-33.

- Gentry, P.C., **G.W. Smith**, D.R. Leighr, B. Bao, and M.F. Smith. 1998. Ontogeny of stem cell factor receptor (c-kit) mRNA in the ovine corpus luteum. *Biology of Reproduction* 59:983-990.
- Smith, G.W.**, P.C. Gentry, B. Bao, D.K. Long, R.M. Roberts and M.F. Smith. 1997. Control of extracellular matrix remodeling within ovarian tissues: Localization and regulation of gene expression of plasminogen activator inhibitor type-1 within the ovine corpus luteum. *Journal of Reproduction and Fertility* 110:107-114.
- Bao, B., H.A. Garverick, **G.W. Smith**, M.F. Smith, B.E. Salfen, and R.S. Youngquist. 1997. Expression of messenger ribonucleic acid (mRNA) encoding 3 β -hydroxysteroid dehydrogenase (3 β -HSD) during recruitment and selection of bovine ovarian follicles: Identification of dominant follicles by expression of 3 β -HSD mRNA within the granulosa cell layer. *Biology of Reproduction* 56:1466-1473.
- Bao, B., H.A. Garverick, **G.W. Smith**, M.F. Smith, B.E. Salfen, and R.S. Youngquist. 1997. Changes in messenger ribonucleic acid encoding luteinizing hormone receptor, cytochrome P450-side chain cleavage, and aromatase are associated with recruitment and selection of bovine ovarian follicles. *Biology of Reproduction* 56:1158-1168.
- Smith, G.W.**, P.C. Gentry, D.K. Long, M.F. Smith and R.M. Roberts. 1996. Differential gene expression within the ovine corpus luteum: Identification of secreted protein acidic and rich in cysteine (SPARC) as a major secretory product of small but not large luteal cells. *Endocrinology* 137:755-762.
- Smith, G.W.**, P.C. Gentry, R.M. Roberts, and M.F. Smith. 1996. Ontogeny and regulation of luteinizing hormone receptor messenger ribonucleic acid expression within the ovine corpus luteum. *Biology of Reproduction* 54:76-83.
- Smith, G.W.**, J.L. Juengel, E.W. McIntush, R.S. Youngquist, H.A. Garverick and M.F. Smith. 1996. Ontogenies of messenger RNA encoding tissue inhibitor of metalloproteinases 1 and 2 within bovine periovulatory follicles and luteal tissue. *Domestic Animal Endocrinology* 13:151-160.
- Gentry, P.C., **G.W. Smith**, R.V. Anthony, Z. Zhang, D.K. Long and M.F. Smith. 1996. Characterization of ovine stem cell factor mRNA and protein throughout the luteal phase. *Biology of Reproduction* 54:970-979.
- Xu, Z., H.A. Garverick, **G.W. Smith**, M.F. Smith, S.A. Hamilton and R.S. Youngquist. 1995. Expression of messenger ribonucleic acid encoding cytochrome P450 side-chain cleavage, cytochrome P450 17 α -hydroxylase, and cytochrome P450 aromatase in bovine follicles during the first follicular wave. *Endocrinology* 136:981-989.
- Anthony, R.V., **G.W. Smith**, A. Duong, S.L. Pratt and M.F. Smith. 1995. Identification of two forms of prolactin receptor mRNA in ovine fetal liver and adult ovary. *Endocrine* 3:291-295.
- Smith, GW**, McCrone S, Petersen SL, Smith MF. 1995. Expression of messenger ribonucleic acid encoding tissue inhibitor of metalloproteinases-2 within ovine follicles and corpora lutea. *Endocrinology*. 1995 Feb; 136(2):570-6.
- Roberts RM, Mathialagan N, Duffy JY, **Smith GW**. 1995. Regulation and regulatory role of proteinase inhibitors. *Crit Rev Eukaryot Gene Expr*. 1995; 5(3-4):385-436.doi:10.1615/critreveukargeneexpr.v4.i3-4.80.

- Xu, Z, H.A. Garverick, **G.W. Smith**, S.A. Hamilton, M.F. Smith and R.S. Youngquist. 1995. Expression of follicle-stimulating hormone and luteinizing hormone receptor messenger ribonucleic acids in bovine follicles during the first follicular wave. *Biology of Reproduction* 53:951-957.
- Smith MF, McIntush EW, **Smith GW**. 1994. Mechanisms associated with corpus luteum development. *J Anim Sci*.1994 Jul; 72(7):1857-72.doi:10.2527/1994.7271857x.
- Smith, G.W.**, T.L. Goetz, R.V. Anthony and M.F. Smith. 1994. Molecular cloning of an ovine ovarian tissue inhibitor of metalloproteinases (TIMP-1): Ontogeny of mRNA expression and in situ localization within preovulatory follicles and luteal tissue. *Endocrinology* 134:344-352.
- Juengel, J.L., **G.W. Smith**, M.F. Smith, R.S. Youngquist and H.A. Garverick. 1994. Pattern of protein production by bovine corpora lutea during luteolysis and characterization of expression of two major secretory products of regressing corpora lutea. *Journal of Reproduction and Fertility* 100:515-520.
- Smith, M.F., C.N. Kemper, **G.W. Smith**, T.L. Goetz and V.L. Jarrell. 1994. Production of tissue inhibitor of metalloproteinases-1 by porcine follicular and luteal cells. *Journal of Animal Science* 72:1004-1012.
- Smith, G.W.**, R.M. Moor and M.F. Smith. 1993. Identification of a 30,000 Mr polypeptide secreted by cultured ovine granulosa cells and luteal tissue as a tissue inhibitor of metalloproteinases. *Biology of Reproduction* 48:125-132.

Abstracts (138)

- Ashry M, Rajput SK, Folger JK, Knott JG, Hemeida N and **Smith G.W.** 2014. Regulation and potential regulatory role of AKT in bovine oocyte competence. *Proceedings, 47th Annual Meeting, Society for the Study of Reproduction*, July 19-23, 2014, Grand Rapids, MI.
- McGee D, Camsari C, Folger JK, **Smith G.W.** 2014. Effects of periconception heavy metal administration to mice on adipose tissue expression of genes involved in insulin signaling and glucose transport in male offspring at maturity. *Proceedings, 47th Annual Meeting, Society for the Study of Reproduction*, July 19-23, 2014, Grand Rapids, MI.
- Camsari C, Folger JK, **Smith G.W.** 2014. Transgenerational effects of periconception heavy metal administration to mice on indices of chronic disease in offspring at maturity. *Proceedings, 47th Annual Meeting, Society for the Study of Reproduction*, July 19-23, 2014, Grand Rapids, MI.
- Zhang K, Huang J, Rajput SK, Lee KB, Knott JG, **Smith G.W.** 2014. Evidence supporting a functional requirement of SMAD2 for bovine early embryonic development. *Proceedings, 47th Annual Meeting, Society for the Study of Reproduction*, July 19-23, 2014, Grand Rapids, MI.
- Stanton AD, Camsari, C, Folger JK, **Smith G.W.** 2013 Effects of Periconception Heavy Metal Administration to Female Mice on Indices of Gonadal Function in Male Offspring at Maturity. *2013 Annual Meeting of the Michigan Alliance for Reproductive and Translational Science*, Ann Arbor, MI.
- Camsari C, Stanton AD, Folger JK, **Smith G.W.** 2013 Effects of Periconception Heavy Metal Administration to Mice on Indices of Chronic Disease in Offspring at Maturity. *2013 Annual Meeting of the Michigan Alliance for Reproductive and Translational Science*, Ann Arbor, MI.

- Zhenhua G, Folger JK, Di L, Knott JK, **Smith G.W.** 2013. Embryotropic actions of follistatin: Effects of pre/peri-compaction versus post-compaction exposure during bovine in vitro embryo culture on blastocyst rates and indices of blastocyst cell allocation. 2013 Annual Meeting of the Michigan Alliance for Reproductive and Translational Science, Ann Arbor, MI.
- Camsari C, Stanton AD, Folger JK, **Smith G.W.** 2013 Effects of Periconception Heavy Metal Administration to Mice on Indices of Chronic Disease in Offspring at Maturity. 2013 Annual Meeting of the Society of Toxicology, March 10-14, 2013, San Antonio, TX
- Folger JK, Zhenhua G, Di L, Camsari C, Knott JG, **Smith G.W.** 2013 Opposing effects of follistatin versus the BMP binding protein noggin on early development of bovine embryos in vitro. Proceedings, 46th Annual Meeting, Society for the Study of Reproduction, July 22-26, 2013, Montreal, Quebec.
- Gupta PSP, Folger JK, Lv L, Yao J, Ireland JJ, **Smith G.W.** 2013 Regulation and regulatory role of WNT signaling in potentiating FSH action during bovine dominant follicle selection. Proceedings, 46th Annual Meeting, Society for the Study of Reproduction, July 22-26, 2013, Montreal, Quebec.
- Camsari, C, Wang, H, Knott, JK, Baker, C, Folger, JK and **Smith, G.W.** 2012. Effects of periconception heavy metal exposure on anxiety-like behavior in offspring at maturity. Proceedings, 45th Annual Meeting, Society for the Study of Reproduction, August 12-15, 2012, State College, PA.
- Pohler, K, Smith, MF, Jinks, E, Abreu, F, Roberts, C, Folger, JK, **Smith, G.W.** and Geary, T. 2012. Effect of ovulatory follicle size on steroidogenic capacity and molecular markers of oocyte competence prior to GnRH-induced ovulation in non-lactating beef cows. Proceedings, 45th Annual Meeting, Society for the Study of Reproduction, August 12-15, 2012, State College, PA.
- Folger, J.K., Jimenez-Krassel, F., Ireland, J.J. and **Smith, G.W.** 2011. Regulation of bovine granulosa cell cocaine- and amphetamine-regulated transcript (CART) receptor binding in vivo and in vitro. Proceedings, 44th Annual Meeting, Society for the Study of Reproduction, July 31 - August 4, 2011, Portland, OR p. 146.
- Smith. G.W.**, Folger, J.K and Ireland, J.J. 2011. Evidence supporting a role for the novel bovine oocyte-specific protein JY-1 in regulation of cumulus cell steroidogenesis. Proceedings, 44th Annual Meeting, Society for the Study of Reproduction, July 31 - August 4, 2011, Portland, OR p. 35.
- Tripurani S, L Wang, KB Lee, G Wee, **G.W. Smith** and J Yao. 2011. The SUMO-conjugating enzyme Ubc9 is developmentally regulated and interacts with activating transcription factor 7 interacting protein 2 (ATF7IP2) in cattle. Proceedings, 44th Annual Meeting, Society for the Study of Reproduction, July 31 - August 4, 2011, Portland, OR p. 94.
- Mossa F, SW Walsh, TB Hildebrandt, DA Kenny, P Lonergan, **G.W. Smith**, JJ Ireland and ACO Evans. 2011. Evidence that undernutrition during the first trimester of pregnancy influences development and function of the cardiovascular system in female offspring in cattle. Proceedings, 44th Annual Meeting, Society for the Study of Reproduction, July 31 - August 4, 2011, Portland, OR p. 66.
- Tripurani S, KB Lee, **G.W. Smith** and J Yao. 2011. Cloning and expression of bovine factor in the germline alpha (FIGLA) in oocytes and early embryos: A potential target of microRNA-212. Thirty Seventh Annual Conference of the International Embryo Transfer Society, January 8-12, Orlando, FL.

- Mossa F, ST Butler, GP Berry, F Jimenez-Krassel, P Lonergan, **G.W. Smith**, JJ Ireland and ACO Evans. 2010. Number of follicles during follicular waves is positively associated with fertility in dairy cows. Proceedings of the 8th International Ruminant Reproduction Symposium, September 3-7, 2010, Anchorage, Alaska, p. 129.
- Tripurani S, G Wee, KB Lee, **G.W. Smith** and J Yao. 2010. MicroRNA-196a regulates bovine newborn ovary homeobox gene (Nobox) expression during maternal-zygotic transition. Proceedings, 43rd Annual Meeting, Society for the Study of Reproduction, July 30-August 3, 2010, Milwaukee, WI, p. 14.
- Meidan R, M Mondal, B Schilling, H Buchnick, E Klipper, Y Zalman, JK Folger, JP Stiebel, JJ Ireland and **G.W. Smith**. 2010. Deciphering the luteal transcriptome: Insight into mechanisms regulating corpus luteum regression. Proceedings, 43rd Annual Meeting, Society for the Study of Reproduction, July 30-August 3, 2010, Milwaukee, WI, p. 26.
- Ireland J, DM Scheetz, F Jimenez Krassel, JK Folger, **G.W. Smith**, F Mossa and ACO Evans. 2010. Evidence that mammary gland infection/injury during pregnancy in dairy cows may have a negative impact on size of the ovarian reserve in their daughters. Proceedings, 43rd Annual Meeting, Society for the Study of Reproduction, July 30-August 3, 2010, Milwaukee, WI, p. 62.
- Scheetz DM, JK Folger, **G.W. Smith** and JJ Ireland. 2010. Evidence that low antral follicle count during follicular waves negatively impacts FSH induced capacity of bovine granulosa cells to produce estradiol and anti-mullerian hormone (AMH). Proceedings, 43rd Annual Meeting, Society for the Study of Reproduction, July 30-August 3, 2010, Milwaukee, WI, p. 142.
- Wee G, KB Lee, JJ Ireland and **G.W. Smith** 2010. Role of the bovine oocyte-specific protein JY-1 in regulation of mRNA abundance for genes linked to cumulus expansion. Thirty Sixth Annual Conference of the International Embryo Transfer Society, January 9-12, Cordoba, Argentina.
- Tripurani S, KB Lee, L Wang, G Wee, **G.W. Smith** and J Yao. 2010. Cloning and characterization of newborn ovary homeobox gene in cattle. Thirty Sixth Annual Conference of the International Embryo Transfer Society, January 9-12, Cordoba, Argentina.
- Selvaraju S, Folger J, Ireland JJ and **Smith G.W.** 2009. Temporal changes in granulosa cell BMP-2 mRNA at specific stages of a follicular wave in beef heifers and effects on BMP-2 on granulosa cell function in vitro. Silver Jubilee Annual Convention of the Indian Society for Study of Animal Reproduction and International Symposium on "Expanding the Horizons of Reproductive Technologies in Global Scenario for Augmenting Fertility in Farm and Pet Animals. Department of Animal Reproduction, Gynaecology and Obstetrics, Veterinary College and Research Institute, Namakkal-637001, Tamilnadu, India, Tamilnadu Veterinary and Animal Sciences University, December 2009.
- F Mossa, D Kenny, F Jimenez Krassel, GW Smith, D Berry, S Butler, T Fair, P Lonergan, **G.W. Smith**, JJ Ireland and ACO Evans. 2009. Effect of undernutrition of heifers during the first trimester of pregnancy on blood pressure in female offspring. Gemini, "Maternal Interaction with Gametes and Embryos", Workshop of Working group 1: Experimental models, Lansko, Poland. May 2009.
- Lee, KB, S Tripurani, J Yao, J. Ireland and **G.W. Smith**. 2009. Involvement of SMAD signaling in bovine early embryonic development. Biology of Reproduction (Supplement 1):232.
- Folger, JK, F Jimenez-Krassel, JJ Ireland and **G.W. Smith**. 2009. Role of cocaine and amphetamine regulated transcript (CART) in regulation of antral follicle development in cattle: Demonstration of

inhibitory effects of the CART peptide on follicular estradiol production and granulosa cell aromatase mRNA in vivo and potential FSH regulation of CART receptor binding. *Biology of Reproduction* (Supplement 1):156.

Wee, G, KB Lee, JJ Ireland and **G.W. Smith**. 2009. siRNA mediated reduction in abundance of the bovine oocyte-specific protein JY-1 impedes cumulus expansion, meiotic maturation and subsequent embryonic development following in vitro fertilization. *Biology of Reproduction* (Supplement 1):283.

Scheetz DM, JK Folger, **G.W. Smith** and JJ Ireland. 2009. Regulation of anti mullerian hormone (AMH) production by bovine granulosa cells. *Biology of Reproduction* (Supplement 1):533.

Jimenez-Krassel, F., J.K. Folger, M Mondal, DM Scheetz, JLH Ireland, **G.W. Smith**, F Mossa, P. Lonergan, A.C.O. Evans, and J.J. Ireland. 2009. Evidence that the inherently high variation in ovarian reserves is associated with androgen and estradiol production in cattle. *Biology of Reproduction* (Supplement 1):135.

F Mossa, D Kenny, F Jimenez Krassel, **G.W. Smith**, D Berry, S Butler, T Fair, P Lonergan, JJ Ireland and ACO Evans. 2009. Undernutrition of heifers during first trimester of pregnancy diminishes size of the ovarian reserve in offspring. *Biology of Reproduction* (Supplement 1):541.

Jimenez-Krassel, F., J.K. Folger, **G.W. Smith**, P. Lonergan, A.C.O. Evans, and J.J. Ireland. 2008. Evidence that the diminished production of progesterone during estrous cycles of cattle with a low antral follicle count during follicular waves is repeatable and not caused by alterations in size of the corpus luteum. Annual Meeting of the American Society of Animal Science/American Dairy Science Association. July 7, 2008, Indianapolis, IN

Mossa, F., F. Jimenez-Krassel, S. Butler, J. Folger, **G.W. Smith**, P. Lonergan, J. Ireland, A.C.O. Evans. 2008. Alterations in FSH secretion and pituitary responsiveness to follicular fluid after ovariectomy of dairy cows with high versus low number of antral follicles. 16th International Congress on Animal Reproduction, July 13, 2008, Budapest, Hungary.

Bettegowda, A., and **G.W. Smith**. 2008. Regulatory role of the novel oocyte specific gene JY-1 in control of granulosa cell function and early embryogenesis in dairy cattle. Annual Meeting of the Midwestern Section of the American Society for Animal Science / American Dairy Science Association, March 17-19, 2008, Des Moines, IA.

Lee, K.B., J.J. Ireland and **G.W. Smith**. 2008. Regulation of bovine oocyte competence: Evidence supporting a positive influence of maternal (oocyte-derived) follistatin on blastocyst development and cell allocation. Forty First Annual Meeting, Society for the Study of Reproduction, May 27-30, Kona, HI.

Folger, J., F. Jimenez-Krassel, A. Bettegowda, **G.W. Smith**, F. Mossa, P. Lonergan, A.C. Evans and J.J. Ireland. 2008. Evidence that numbers of transcripts for estrogen receptor alpha and beta are greater in cumulus cells and oocytes from cattle with a diminished ovarian reserve. Forty First Annual Meeting, Society for the Study of Reproduction, May 27-30, Kona, HI.

Smith, G.W., K.B. Lee, A. Bettegowda, N. Mtango, K. Latham, C. VandeVoort, J.J. Ireland. 2008. Novel oocyte and cumulus cell derived markers of egg quality: Potential diagnostic and therapeutic applications. First World Congress on Reproductive Biology, May 24-25, Kona, HI.

- Smith, G.W.**, A. Bettgowda, K.B. Lee and J.J. Ireland . 2008. Identification of novel bovine cumulus cell molecular markers predictive of oocyte competence: Functional and diagnostic implications. Twenty Eighth Annual Meeting, American Society for Reproductive Immunology, June 11-14, Chicago, IL.
- Lee, K.B., A. Bettgowda, J.J. Ireland and **G.W. Smith**. 2008. The role of follistatin in bovine early embryonic development. Thirty Fourth Annual Conference of the International Embryo Transfer Society, January 5-9, Denver, CO.
- Smith, G.W.**, A. Bettgowda, J. Yao, A. Sen, Q. Li and James J. Ireland. 2007. Expression and function of JY-1: A novel oocyte-specific gene in cattle. Okayama University Research Symposium: "Mechanisms delivering life." January 11, 2007, Okayama Japan.
- Lee, K.B., A. Bettgowda, J.J. Ireland and **G.W. Smith**. 2007. Effect of follistatin treatment post fertilization on time to first cleavage, development to the blastocyst stage and cell allocation of in vitro produced bovine embryos. 33rd Annual Conference of the International Embryo Transfer Society, January 7-9, Kyoto, Japan.
- Lihua, L., F. Jimenez-Krassel, A. Sen, J.J. Ireland and **G.W. Smith**. 2007. Evidence for a local inhibitory effect of the CART peptide on LH- induced thecal androstenedione production. Fortieth Annual Meeting, Society for the Study of Reproduction, July 21-25, San Antonio, TX.
- Sen, A., J.J. Ireland and **G.W. Smith**. 2007. Effect of Cocaine and Amphetamine Regulated Transcript (CART) on extracellular regulated kinase (Erk) and Akt activation and its role in regulation of FSH signaling in bovine granulosa cells. Fortieth Annual Meeting, Society for the Study of Reproduction, July 21-25, San Antonio, TX.
- Sen, A., J.J. Ireland and **G.W. Smith**. 2007. Cocaine and Amphetamine Regulated Transcript (CART)-induced phosphatase activation accelerates desensitization of FSH-induced extracellular regulated kinase (Erk1/2) signaling in bovine granulosa cells. BioSymposia USA, XVth Ovarian Workshop, July 12-14, San Antonio, TX.
- Ireland, J.L.H., F. Jimenez-Krassel, **G.W. Smith**, P. Lonergan, A.C.O. Evans, and J.J. Ireland. 2007. Variation in number of follicles growing during follicular waves reflects size of the ovarian reserve in cattle. Fortieth Annual Meeting, Society for the Study of Reproduction, July 21-25, San Antonio, TX.
- Jimenez-Krassel, F., **G.W. Smith**, P. Lonergan, A.C.O. Evans, and J.J. Ireland. 2007. Evidence that luteinization capacity of granulosa cells from dominant follicles is diminished in cattle with a depleted ovarian reserve. Fortieth Annual Meeting, Society for the Study of Reproduction, July 21-25, San Antonio, TX.
- Ireland, J.J., **G.W. Smith**, A. Evans, P. Lonergan, F. Jimenez-Krassel, J.L. Ireland, D. Scheetz and J. Folger. 2007. Does variation in size of the ovarian reserve and FSH secretion impact fertility? Fortieth Annual Meeting, Society for the Study of Reproduction, July 21-25, San Antonio, TX.
- Saama, P., O.V. Patel, A. Bettgowda, J.J. Ireland and **G.W. Smith**. 2006. Application of a novel algorithm to analysis of the oocyte transcriptome. 2nd International Symposium on Animal Functional Genomics, May 16-19, East Lansing, MI.
- Smith, G.W.**, A. Bettgowda, O.V. Patel and J.J. Ireland. 2006. Use of the bovine model system to search for oocyte and cumulus cell-derived markers of egg quality: functional and diagnostic

implications. Symposium on Use of Livestock Models to Study Reproductive Function. Thirty-Ninth Annual Meeting, Society for the Study of Reproduction, July 29-August 1, Omaha, NE.

Smith, G.W., G.J.M Rosa, P.M. Coussens, R. Halgren, A.C.O. Evans, M. Mihm, P. Lonergan and J.J. Ireland. 2006. Interpretation of microarray data: Trudging out of the abyss towards elucidation of biological significance. Triennial Reproduction Symposium, Joint Meeting of the American Society for Animal Science, American Dairy Science Association, July 9, Minneapolis, MN.

Bettegowda, A., J. Yao, M.S. Yoo, J.J. Ireland and **G.W. Smith**. 2006. The search for vertebrate homologs of bovine JY-1: A novel oocyte/embryo specific gene. Thirty-Ninth Annual Meeting, Society for the Study of Reproduction, July 29-August 1, Omaha, NE.

Sen, A., F. Jimenez-Krassel, Y. Kobayashi, J.J. Ireland and **G.W. Smith**. 2006. Cellular mechanism of cocaine and amphetamine regulated transcript (CART) signaling in bovine granulosa cells. Thirty-Ninth Annual Meeting, Society for the Study of Reproduction, July 29-August 1, Omaha, NE.

F. Jimenez-Krassel, A. Bettegowda, J.J. Ireland and **G.W. Smith**. 2006. Temporal changes in granulosa cell CART mRNA and follicular fluid concentrations of CART peptide at specific stages of follicular development in beef heifers. Thirty-Ninth Annual Meeting, Society for the Study of Reproduction, July 29-August 1, Omaha, NE

Patel, O.V., A. Bettegowda, J.J. Ireland and **G. W. Smith**. 2006. Identification of oocyte and cumulus-derived co-regulated and differentially-regulated transcripts associated with bovine meiotic maturation. 32nd Annual Conference of the International Embryo Transfer Society, January 8-10, Orlando, FL.

Bettegowda, A., O.V. Patel, J. Yao, J.J. Ireland and **G.W. Smith**. 2006. Post transcriptional regulation of JY-1 mRNA abundance during the bovine oocyte to embryo transition. 32nd Annual Conference of the International Embryo Transfer Society, January 8-10, Orlando, FL.

Maschari, A.S., A. Bettegowda, **G.W. Smith**, and J.R. Pursley. 2006. Development of a quantitative real-time polymerase chain reaction assay for quantification of Y-chromosome bearing sperm. 32nd Annual Conference of the International Embryo Transfer Society, January 8-10, Orlando, FL.

Corcoran, D., T. Fair, D. Rizos, **G.W. Smith**, P.M. Coussens, O.V. Patel, J.J. Ireland, M.P. Boland, A.C.O. Evans and P. Lonergan. 2005. Identification of differentially expressed genes in bovine embryos cultured in vivo or in vitro. 31st Annual Conference of the International Embryo Transfer Society, January 9-11, Copenhagen, Denmark.

Dover, H., Y. Kobayashi, A. Drolet, O.V. Patel, A. Bettegowda, Q. Li, L. Chapin, M. Knights, P. M. Coussens and **G.W. Smith**. 2005. Stress-induced suppression of anterior pituitary and adrenal gland gene expression profiles in cattle. Plant and Animal Genome XIII. San Diego, CA.

Mihm, M., P.J. Baker, J.L.H. Ireland, **G.W. Smith**, P.M. Coussens, A.C.O. Evans and J.J. Ireland. 2005. Molecular evidence that growth of dominant follicles is luteinizing hormone (LH) and not follicle stimulating hormone (FSH) or estradiol dependent in cattle. Thirty-Eighth Annual Meeting, Society for the Study of Reproduction, Quebec City, Canada.

Forde, N., A Zielak, M.J. Canty, P. Lonergan, **G.W. Smith**, J.J. Ireland and A.C.O. Evans. 2005. Differential expression of intracellular signaling molecules in dominant compared to subordinate

follicles during different stages of the first follicular wave in cattle. Thirty-Eighth Annual Meeting, Society for the Study of Reproduction, Quebec City, Canada.

- Patel, O.V., A. Bettegowda, J.J. Ireland, P.M. Coussens, P. Lonergan and **G.W. Smith**. 2005 Functional genomics studies of oocyte and early embryonic development: potential association of follistatin transcript abundance with oocyte competence. Thirty-Eighth Annual Meeting, Society for the Study of Reproduction, Quebec City, Canada.
- Li, Q., F. Jimenez-Krassel, Y. Kobayashi, J.J. Ireland and **G.W. Smith**. 2005. Unraveling the intrafollicular mechanism of ovulation: Prostaglandin dependent regulation of select extracellular matrix degrading proteinases and their inhibitors in bovine preovulatory follicles. Thirty-Eighth Annual Meeting, Society for the Study of Reproduction, Quebec City, Canada.
- Ireland, J.J., J.L.H. Ireland, M.E. Winn, P. Lonergan, **G.W. Smith**, P.M. Coussens and A.C.O. Evans. 2004. Identification of genes in granulosa and thecal cells potentially important for selection of dominant follicles. 86th Annual Meeting of the Endocrine Society, New Orleans, LA.
- Yao, J., X. Ren, J.J. Ireland, P.M. Coussens and **G.W. Smith**. 2004. Generation of a bovine oocyte cDNA library: A valuable resource for identification of key oocyte-specific genes. Plant and Animal Genome XII. San Diego, CA.
- Knights, M., N.K. Ames and **G.W. Smith**. 2004. Involvement of anterior pituitary arginine vasopressin receptor V3 in the stress response of cattle. *Journal of Animal Science* 82 (Supplement 1):459.
- Knights, M. and **G.W. Smith**. 2004. Systemic inflammatory stress decreases the abundance of mRNA for GnRH receptor, LH-beta and FSH-beta in the bovine anterior pituitary. *Biology of Reproduction* 70 (Special Issue):175.
- Bettegowda, A., O.V. Patel, J. Yao, J.J. Ireland and **G.W. Smith**. 2004. Developmental regulation of bovine JY-1 mRNA abundance during in vitro oocyte maturation and early embryogenesis. *Biology of Reproduction* 70 (Special Issue):213.
- Kobayashi, Y., F. Jimenez-Krassel, J.J. Ireland and **G.W. Smith**. 2004. Evidence that cocaine- and amphetamine-regulated transcript is a novel intraovarian regulator of follicular atresia. *Biology of Reproduction* 70 (Special Issue):224.
- J. Yao and **G.W. Smith**. 2004. Identification of a novel oocyte-expressed transcript in cattle. *Biology of Reproduction* 70 (Special Issue):143.
- Patel, O.V., A. Bettegowda, J. Yao, S. Suchyta, J.J. Ireland, P.M. Coussens and **G.W. Smith**. 2004. Validation and application of linear amplification procedures for study of oocyte genomics: Gene expression profiling of bovine oocyte maturation. *Biology of Reproduction* 70 (Special Issue):161.
- Li, Q., J.R. Pursley and **G.W. Smith**. 2004. Localization and temporal regulation of tissue inhibitors of metalloproteinases 3 and 4 in bovine preovulatory follicles. *Biology of Reproduction* 70 (Special Issue):267.
- Canty, M.J., N. Forde, J.L.H. Ireland, P. Lonergan, **G.W. Smith**, P.M. Coussens, J.J. Ireland and A.C. Evans. 2004. Differential expression of genes for transcription factors in dominant compared to subordinate follicles. XIII International Workshop on the Development and Function of the Reproductive Organs, June 12 – 15, 2004, Copenhagen, Denmark.

- N. Forde, M.J. Canty, J.L.H. Ireland, P. Lonergan, **G.W. Smith**, P.M. Coussens, J.J. Ireland and A.C. Evans. 2004. Differential expression of genes for intracellular signaling molecules in dominant compared to subordinate follicles during follicular waves in cattle. XIII International Workshop on the Development and Function of the Reproductive Organs, June 12 – 15, 2004, Copenhagen, Denmark.
- Kobayashi, Y., R. Huang, J. Yao, F. Jimenez-Krassel, J.J. Ireland, P.M. Coussens and **G.W. Smith**. 2003. Differential expression of cocaine and amphetamine regulated transcript (CART) mRNA within the bovine ovary. *Biology of Reproduction* 68 (Supplement 1): 112.
- Yao, J., R. Huang, Y. Kobayashi, A. Bettgowda, J.J. Ireland, P.M. Coussens and **G.W. Smith**. 2003. Identification and characterization of expression of JY-1: A novel oocyte-specific gene in cattle. *Biology of Reproduction* 68 (Supplement 1): 238.
- Knights, M. and **G.W. Smith**. 2003. Effect of transportation stress on hypothalamic-pituitary-adrenal axis activation and subsequent responsiveness to trophic hormone stimulation in cattle. Joint meeting of the American Society for Animal Science/American Dairy Science Association, Phoenix, AZ.
- Knights M., I.M. Qahwash and **G.W. Smith**. 2003. Effect of CRF receptor antagonist administration on pituitary CRFR1 and V3 receptor mRNA and the endocrine response to systemic inflammatory stress in cattle. *Proceedings of the 85th Annual Meeting of the Endocrine Society*, Philadelphia, PA.
- Qahwash, I.Q., R.P. Radcliff and **G.W. Smith**. 2001. Regulation of arginine vasopressin receptor V3 messenger RNA in the anterior pituitary of endotoxemic steers. *Proceedings of the 83rd Annual Meeting of the Endocrine Society*, June, 2001, Denver, CO, page 365.
- Smith, G.W.**, M.P.D. Dow, L.J. Bakke, W.A. Ricke, C.A. Cassar, M.W. Peters, J.R. Pursley and M.F. Smith. 2001. Regulation of extracellular matrix remodeling during the ovarian cycle: Implications for the control of growth, differentiation, and resorption of specific ovarian structures. *Journal of Animal Science* 79 (Supplement 1):144.
- Dow, M.P.D., J.R. Pursley and **G.W. Smith**. 2001. LH surge-induced upregulation of plasminogen activator and plasmin activities within bovine preovulatory follicles. *Biology of Reproduction* 64 (Supplement 1):161.
- Cassar, C.A., M.P.D. Dow, J.R. Pursley and **G.W. Smith**. 2001. Regulation of progesterone receptor mRNA expression in bovine periovulatory follicular and luteal tissue following the LH surge. *Biology of Reproduction* 64 (Supplement 1):162.
- Bakke, L.J., M.P.D. Dow, C.A. Cassar, M.W. Peters, M.R. Charest, W.A. Ricke, M.F. Smith, J. R. Pursley and **G.W. Smith**. 2001. Differential regulation of tissue inhibitors of metalloproteinases 1-4 (TIMP 1-4) in bovine periovulatory follicles following the LH surge: Implications for regulation of the ovulatory process. *Biology of Reproduction* 64 (Supplement 1):163.
- Silva, LFP, M.J. VandeHaar, M.S. Weber and **G.W. Smith**. 2001. Leptin receptor expression in the bovine mammary gland and other tissues. *Journal of Animal Science* 79 (Supplement 1):225.
- Smith, M.F., **G.W. Smith**, F.J. Kojima and W.A. Ricke. 2001. Characterization of collagenase-1 (MMP-1) and stromelysin-1 (MMP-3) in ovine corpora lutea. *Biology of Reproduction* 64 (Supplement 1):1238.

- Willis, E.L., W.A. Ricke, **G.W. Smith** and M.F. Smith. 2001. Tissue inhibitor of metalloproteinases-3 localization and messenger ribonucleic acid expression in the ovine ovary. *Biology of Reproduction* 64 (Supplement 1):238.
- Veney, S.L., **G.W. Smith** and J Wade. 2001. Sexually dimorphic expression of neurocalcin mRNA in the developing zebra finch brain. 31st Annual meeting, Society for Neuroscience.
- Dow, M.P.D., J.R. Pursley and **G.W. Smith**. 2000. LH surge-induced regulation of urokinase plasminogen activator and its receptor mRNA expression within bovine periovulatory follicular and luteal tissue. *Serono Symposia USA, XIIIth Ovarian Workshop*, July 12-14, Madison, WI.
- Bakke, L.J., M.P.D. Dow, J. R. Pursley and **G.W. Smith**. 2000. Differential upregulation of interstitial collagenase (MMP-1) mRNA transcripts following the LH surge in bovine periovulatory follicular and luteal tissue. *Serono Symposia USA, XIIIth Ovarian Workshop*, July 12-14, Madison, WI.
- Dow, M.P.D., J.R. Pursley and **G.W. Smith**. 2000. LH surge-induced upregulation of plasminogen activator inhibitors 1 & 2 mRNA expression within bovine periovulatory follicular and luteal tissue. *Biology of Reproduction* 62 (Supplement 1):178.
- Cassar, C.A., L.J. Bakke, J.R. Pursley and **G.W. Smith**. 2000. Expression of matrix metalloproteinase-23 mRNA during the periovulatory period in cattle. *Biology of Reproduction* 62 (Supplement 1):175.
- Qahwash, I.M., C.A. Cassar, R.P. Radcliff and **G.W. Smith**. 2000. Molecular cloning of bovine corticotropin releasing factor receptor 1 (CRFR1) cDNA: Tissue distribution and regulation of CRFR1 mRNA expression in the anterior pituitary of endotoxemic steers. 2000 ASAS/ADSA Joint Meeting, Baltimore, MD.
- Smith, M.F., W.A. Ricke, and **G.W. Smith**. 2000. Matrix metalloproteinase expression and activity in ovine corpora lutea throughout the estrous cycle. *Biology of Reproduction* 62 (Supplement 1):210.
- Ricke, W.A., **G.W. Smith** and M.F. Smith. 2000. Matrix metalloproteinase expression and activity following prostaglandin F₂ - induced luteolysis: Implications of altering the MMP: TIMP-ratio. *Biology of Reproduction* 62 (Supplement 1):126.
- Wade, J., C. Peabody and **G.W. Smith**. 2000. Sexually dimorphic expression of neurocalcin in the developing zebra finch telencephalon. 30th Annual Meeting, Society for Neuroscience, New Orleans, LA.
- Ernst, C.W., N.E. Raney, C.A. Cassar and **G.W. Smith**. 2000. Identification of genes differentially expressed during pig skeletal muscle development. VIII Plant and Animal Genome Meeting, San Diego, CA.
- Bakke, L.J., J.R. Pursley and **G.W. Smith**. 1999. Regulation of membrane type-1 matrix metalloproteinase and matrix metalloproteinase-2 mRNA expression within bovine preovulatory follicles. *Biology of Reproduction* 60 (Supplement 1), p.124.
- Dow, M.P.D., L. J. Bakke, J.R. Pursley and **G.W. Smith**. 1999. The LH surge upregulates expression of tissue-type plasminogen activator mRNA in bovine preovulatory follicles. *Biology of Reproduction* 60 (Supplement 1), p.123.

- Peters, M.W., M.F. Smith and **G.W. Smith**. 1999. Use of critical interactive thinking exercises (CITE) in teaching reproductive physiology to undergraduates. *Biology of Reproduction* 60 (Supplement 1), p.91.
- Ernst, C.W., N.E. Raney, C.A. Cassar and **G.W. Smith**. 1999. Identification of genes differentially expressed during pig skeletal muscle development. Reciprocal Meats Conference, Stillwater, OK.
- Smith, G.W.** and A. Abujoub. 1998. Expression of membrane type-1 metalloproteinase mRNA by bovine follicular and luteal tissue. *Serono Symposia USA: XIIth Ovarian Workshop*, Houston, TX.
- Vale, W., J. Vaughan, M. Perrin, L. Zhao, **G.W. Smith**, T. Bale, M. Bradbury, K. Kageyama, J. Bittencourt, J.M. Aubry, G. Pozzoli, C. Rivier, J. Rivier, G. Koob, P. Sawchenko and K.F. Lee. 1998. Corticotropin releasing factor family of ligands and their receptors. 80th Annual Meeting, the Endocrine Society, New Orleans, LA.
- Zhao, L., C.J. Donaldson, **G.W. Smith** and W. Vale. 1998 The structures of the mouse and human urocortin genes. 80th Annual Meeting, The Endocrine Society, New Orleans, LA.
- Contarino, A., F. Dellu, G.F. Koob, **G.W. Smith**, K.F. Lee, W. Vale and L.H. Gold 1998. Anxiety like and cognitive behavioral phenotypes in mice lacking the corticotropin releasing factor receptor 1. 28th Annual meeting, Society for Neuroscience, Los Angeles, CA.
- Bale, T.L., **G.W. Smith**, L. Zhao, W.W. Vale and K.F. Lee. 1998. Characterization of CRF2 receptor deficient mice. 28th Annual meeting, Society for Neuroscience, Los Angeles, CA.
- Heller, J.D., S.A. Kramer, M. Koohmaraie, **G.W. Smith** and M.E. Doumit. 1998. Skeletal muscle α -actin mRNA is increased in callipyge lambs. Joint Meeting American Society of Animal Science- American Dairy Science Society. Denver Colorado.
- MacLean, J.A., **G.W. Smith**, M.F. Smith and R.M. Roberts. 1997. Characterization of transcobalamin II expression in ovine corpus luteum. *Biol Reprod* 56 (Suppl 1):252.
- Lee, S., **G.W. Smith**, K.F. Lee and C. Rivier. 1997. Endotoxin increases steady state gene expression of corticotropin releasing factor (CRF) in the paraventricular nucleus of CRF receptor 1 (CRFR1) deficient mice. 27th Annual meeting, Society for Neuroscience, New Orleans, LA, USA.
- Smith, G.W.**, P.C. Gentry, B. Bao, R.M. Roberts and M.F. Smith. 1996. Localization and regulation of plasminogen activator inhibitor type-1 (PAI-1) within the ovine corpus luteum. *Biol Reprod* 54(Suppl 1):42.
- Bao, B., **G.W. Smith**, M.F. Smith, B.E. Salfen, R.S. Youngquist and H.A. Garverick. 1996. Expression of messenger ribonucleic acid encoding luteinizing hormone receptor, cytochrome P450-side chain cleavage, and aromatase during recruitment and selection of bovine ovarian follicles. *Biol Reprod* 54(Suppl 1):165.
- Gentry, P.C., B. Bao, **G.W. Smith** and M.F. Smith. 1996. Expression and regulation of mRNA encoding stem cell factor and its receptor c-kit in ovine follicles. *Biol Reprod* 54(Suppl 1):284.
- Bao B, **G.W. Smith**, M.F. Smith, R.S. Youngquist, B.E. Salfen and H.A. Garverick. 1996. Changes in mRNA for 3 α -hydroxysteroid dehydrogenase during follicular recruitment and selection of bovine ovarian follicles. *Proceedings of the VI Ovarian Workshop*, London, Ontario p.5.

- Smith, G.W.**, P.C. Gentry, D.K. Long, B. Bao, R.M. Roberts and M.F. Smith. 1995. Expression of progesterone receptor (P₄R) mRNA within ovine post-surge follicles and corpora lutea. *Biol. Reprod.* 52(Suppl. 1):151.
- Long, D.K., **G.W. Smith**, P.C. Gentry, R.M. Roberts and M.F. Smith. 1995. Immunocytochemical localization of SPARC (Secreted Protein Acidic and Rich in Cysteine) within ovine follicles and corpora lutea. *Biol. Reprod.* 52(Suppl. 1):67.
- Bao, B., **G.W. Smith**, Z.Z. Xu, M.F. Smith, R.S. Youngquist and H.A. Garverick. 1995. Expression of luteinizing hormone receptor (LHR), cytochrome P450 side chain cleavage (P450_{scc}), and 3 β -hydroxysteroid dehydrogenase (3 β -HSD) mRNAs in bovine corpora lutea during the early to mid-luteal phase. *Biol. Reprod.* 52(Suppl.1):67.
- McIntush, E.W., **G.W. Smith**, D.K. Long, H.R. Sawyer and M.F. Smith. 1995. Localization of tissue inhibitor of metalloproteinases (TIMP)-1 to ovine large luteal cells. *J. Reprod. Fert. (Abstr. Series No. 15)*.
- Leighr, D.R., P.C. Gentry, **G.W. Smith** and M.F. Smith. 1995. Cloning and initial characterization of ovine BCL-2 expression by corpora lutea. *Biol. Reprod.* 52(Suppl. 1):67.
- Gentry, P.C., **G.W. Smith**, D.K. Long and M.F. Smith. 1995. Characterization of stem cell factor (SCF) protein expression by ovine corpora lutea. *Biol. Reprod.* 52(Suppl.1):198.
- Trout, W.E., **G.W. Smith**, P.C. Gentry, J.M. Galvin and D.H. Keisler. 1995. Oxytocin secretion by the endometrium of the pig during maternal recognition of pregnancy. *Biol. Reprod.* 52(Suppl. 1):189.
- Smith, M.F., E.W. McIntush and **G.W. Smith**. 1995. Role of ovarian tissue inhibitors of metalloproteinases: New insights. *Serono Symposia*. Nov. 2-5, Ft. Lauderdale FL.
- Smith, G.W.**, P.C. Gentry, S. McCrone, M.F. Smith and R.M. Roberts. 1994. Differential gene expression in small and large luteal cells: Localization and ontogeny of SPARC mRNA in the ovine ovary. *Serono Symposia*, July 21-23, Ann Arbor, MI. p. 26.
- Smith, G.W.**, P.C. Gentry, M.F. Smith and R.M. Roberts. 1994. Ontogeny of LH receptor mRNA expression within ovine corpora lutea. *Biol. Reprod.* 50(Suppl. 1):143.
- Gentry, P.C., **G.W. Smith** and M.F. Smith. 1994. Stem cell factor receptor (c-kit) mRNA is present in ovine corpus luteum: Initial identification and characterization. *Serono Symposia*, July 21-23, Ann Arbor, MI. p. 52.
- Smith, M.F., **G.W. Smith**, S. McCrone and S.L. Petersen. 1994. Characterization of tissue inhibitor of metalloproteinases-2 (TIMP-2) messenger RNA expression within ovine preovulatory follicles. *Serono Symposia*, July 21-23, Ann Arbor, MI. p. 94.
- Xu, Z.Z., **G.W. Smith**, S.A. Hamilton, M.F. Smith, R.S. Youngquist and H.A. Garverick. 1994. Expression of follicle-stimulating hormone receptor (FSH-R) and luteinizing hormone receptor (LH-R) mRNA in bovine follicles during the first follicular wave. *Serono Symposia*, July 21-23, Ann Arbor, MI. p. 109.
- Anthony, R.V., **G.W. Smith**, A. Duong, S.L. Pratt and M.F. Smith. 1994. Identification of two forms of prolactin receptor mRNA in ovine fetal liver and adult ovary. *Biol. Reprod.* 50(Suppl. 1):120.

- Gentry, P.C., **G.W. Smith**, Z. Zhang, R.V. Anthony and M.F. Smith. 1994. Characterization of ovine stem cell factor mRNA throughout the luteal phase. *Biol. Reprod.* 50(Suppl. 1):136.
- Xu, Z.Z., S.A. Hamilton, **G.W. Smith**, R.S. Youngquist and H.A. Garverick. 1994. Expression of cytochrome P450 side chain cleavage (Scc), cytochrome P450 17 α -hydroxylase (17 α -H), and cytochrome P450 aromatase (Arom) mRNAs in bovine follicles during the first follicular wave. *Biol. Reprod.* 50(Suppl. 1):162.
- Smith, G.W.**, P.C. Gentry, D.K. Long, M.F. Smith and R.M. Roberts. 1994. Production of plasminogen activator inhibitor-1 (PAI-1) by ovine corpora lutea: initial characterization. *J. Reprod. Fert. (Abstr. Series No. 14)* p.11.
- McIntush, E.W., K. Suzuki, H. Nagase, **G.W. Smith**, R.V. Anthony and M.F. Smith. 1993. Ovine luteal tissue inhibitor of metalloproteinases (TIMP-1): Purification and characterization. *Biol. Reprod.* 48(Suppl. 1):157.
- Smith, G.W.**, R.V. Anthony and M.F. Smith. 1992. Molecular cloning and characterization of expression of an ovine ovarian tissue inhibitor of metalloproteinases (TIMP). *Biol. Reprod.* 46(Suppl. 1):496.
- Smith, G.W.**, S. McCrone, S.L. Petersen and M.F. Smith. 1992. Expression of mRNA encoding tissue inhibitor of metalloproteinases-2 (TIMP-2) by ovine preovulatory follicles and luteal tissue. *Serono Symposia*, July 9-11, Chapel Hill, NC. p. 56.
- Goetz, T.L., **G.W. Smith** and M.F. Smith. 1992. In situ localization of tissue inhibitor of metalloproteinases (TIMP) mRNA in ovine ovarian tissues. *Biol. Reprod.* 46(Suppl. 1):497.
- Juengel, J.L., **G.W. Smith**, M.F. Smith, R.S. Youngquist and H.A. Garverick. 1992. Pattern of protein secretion by bovine corpora lutea during luteolysis. *Serono Symposia*, July 9-11, Chapel Hill, NC. p. 37.
- McIntush, E.W., **G.W. Smith**, J.L. Juengel, R.S. Youngquist, H.A. Garverick and M.F. Smith. 1992. Expression of tissue inhibitor of metalloproteinases-1 (TIMP-1) mRNA by bovine periovulatory follicles and corpora lutea. *Serono Symposia*, July 9-11, Chapel Hill, NC. p. 43.
- Smith, M.F., **G.W. Smith**, C.N. Kemper and V.L. Jarrell. 1991. Human chorionic gonadotropin (hCG) induced synthesis of protein associated with metalloproteinase inhibitor activity in preovulatory follicles of the pig. *J. Anim. Sci.* 69(Suppl. 1):128.
- Smith, G.W.**, M.F. Smith and R.M. Moor. 1991. Identification of a 30,000 Mr protein produced by luteinized ovine granulosa cells as a tissue inhibitor of metalloproteinases (TIMP). *Biol. Reprod.* 44(Suppl. 1):70.
- Packham, J.H., C.A. Ruder, **G.W. Smith**, D.G. Falk, S. Parish and R.G. Sasser. 1990. Uterine infusion of pregnancy-specific protein B does not lengthen the estrous cycle of the cow. *J. Anim. Sci.* 68(Suppl. 1):64.

Non-Refereed Publications (5)

- Smith, G.W.**, Y. Kobayashi and J.R. Pursley. 2006. The virtual dairy cattle encyclopedia of reproduction: A new comprehensive online resource on dairy cattle reproductive management. *Michigan Dairy Review* 11(4):19.

Burton, J., P.M. Coussens, M. VandeHaar, M. Allen, **G.W. Smith** and J. Ireland. 2004. From genes to dairy farms. *MI Dairy Review* 9:12-15.

Smith, G.W. 2002. Dairy wars episode II: Attack of the clones. *MI Dairy Review* 7:10-12.

Smith, G.W. 2001. Regulation of extracellular matrix remodeling during the ovarian cycle: Implications for the control of growth, differentiation, and resorption of specific ovarian structures. *Proceedings of the Growth and Development Symposium, Role of Extracellular Matrix in Growth and Development, 2001 IAAFSC Joint Meeting, Indianapolis, IN.* (<http://www.fass.org/fass01/pdfs/TableofContents.htm>).

Packham, J.H., L.A. Mitchell, **G.W. Smith**, R.V. Withers and R.G. Sasser. 1989. Economic importance of pregnancy detection in ewe lambs. *Proceedings, Western Section, American Society of Animal Science* 40:317.

Patents/Patent Applications (3)

Lee, K.F., W.W. Vale, T.L. Bale, **G.W. Smith**. Corticotropin releasing factor receptor 2 deficient mice and uses thereof. Patent # US 6,353,152 B1 (issued March 5, 2002).

Smith, G.W. and K. Lee. Methods and compositions to enhance efficiency of nuclear transfer/cloning. Provisional patent application #14474. Date filed 7/19/07.

Smith, G.W., A. Bettgowda and J. Yao. JY-1 regulation of granulosa cell function and early embryonic development in cattle. Provisional patent application #13537. Date filed 10/30/07.

Undergraduate Teaching

Date	Course	Credits	# Students
Fall 2014	ANS 409 (Advancements in Reproduction)	3	27*
Fall 2002	ANS 405 (Endocrinology of Reproduction)	4	13
Fall 2001	ANS 405 (Endocrinology of Reproduction)	4	16
Fall 2001	ANS 490 (Indep. Study-Undergrad Research)	3	1
Winter 2001	ANS 490 (Indep. Study-Undergrad Research)	3	1
Fall 2000	ANS 405 (Endocrinology of Reproduction)	4	12
Fall 1999	ANS 405 (Endocrinology of Reproduction)	3	13
Fall 1999	ANS 490 Endocrinology of Reproduction-lab	1	6
Winter 1999	ANS 490 (Indep. Study-Undergrad Research)	3	1
Summer 1999	ANS 490 (Indep. Study-Undergrad Research)	3	1
Fall 1998	ANS 405 (Endocrinology of Reproduction)	3	30
Fall 1998	ANS 490 Endocrinology of Reproduction-lab	1	26

(* 3 lectures; team taught class)

Guest Lectures: ANS 305 (Applied Animal Behavior; 1999, 2004), ANS 315 (Anatomy and Physiology of Farm Animals; 1999-2001), ANS 415 (Growth and Musculoskeletal Biology; 1999), ANS 425 (Principles of Animal Biotechnology; 1998-1999, 2001, 2003, 2005, 2007, 2010-2011), HRT/PHL 486 (Biotechnology in Agriculture: Applications and Ethical Issues; 1998, 2000, 2002, 2004, 2006, 2008, 2010).

Graduate Teaching

Date	Course	Credits	# Students
Spring 2013	ANS 890 (Writing winning grant proposals)	3	11
Spring 2011	ANS 890 (Writing winning grant proposals)	3	11
Fall 2010	Acorn Basic Science Lectures in OB/Gyn	-	20
Fall 2009	ANS 890 (Writing winning grant proposals)	3	8
Fall 2009	Acorn Basic Science Lectures in OB/Gyn	-	25*
Fall 2008	Acorn Basic Science Lectures in OB/Gyn	-	40*
Fall 2008	ANS 890 (In vitro embryo production)	2	1
Winter 2008	ANS 890 (Writing winning grant proposals)	3	3
Fall 2006	ANS 890 (Writing winning grant proposals)	2	10
Winter 2004-2012	PSL 828 Cellular and Integrative Physiology	4	8-10/yr**
Fall 2004	ANS 890 (Gamete and Early Embryo Dev)	2	5
Winter 2004	PSL 950 (Stem Cell Biology - coinstructor)	1	14
Winter 2001	ANS 890 (Biol of Extracell Matrix - coinstructor)	2	3
Summer 1999	ANS 890 (Indep Study - Molecular Biology)	3	1

* Education program for OB-Gyn residents in Flint, Grand Rapids, Lansing and Saginaw; 2 lectures on germ cell biology and embryology of pregnancy delivered to average of approximately 30 students by teleconference with pre and post test questions

** 1-3 lectures/yr.

Guest Lectures: ANS 825 (Animal Biotechnology; 1998, 2000, 2002, 2004), PSL 841 (Advanced Endocrine Physiology and Pharmacology; 1999),

Graduate Students and Postdoctoral Trainees and Visiting Scientists

Name	Date	Degree/Position	Area of Emphasis
Wang Dongliang	Aug 2013-Aug 2014	Visiting Scientist	Dairy Reproduction
Mu Nanheng	Aug 2013-Aug 2014	Visiting Scientist	Dairy Reproduction
M Ashry	Feb 2013-2019	Visiting Scientist	Akt and embryogenesis
L Monteil	Aug 2013-2015	PhD student	Oocyte/embryo competence
S Rajput	Feb 2013-2017	Visiting Scientist	Oocyte/embryo signaling
J Huang	August 2013-Aug 2014	Visiting Scientist	Oocyte/embryo signaling
K Zhang	August 2013-2015	Research Asst Prof	Oocyte/embryo signaling
PSP Gupta	Feb 2012-Jan 2013	Visiting Scientist	Wnt signaling in follicles
T Huang	Nov 2010-Nov 2011	Visiting Scientist	CART promoter regulation
G. Zhenhuo	Sept 2010-Sept 2011t	Visiting Scientist	Oocyte quality
B. Raghavendra	Sept 2010-Aug 2011	Visiting scientist	CART action
Cagri Camsiri	Aug 2010-2016	PhD student	Oocyte quality
Selva Raju	Mar 2009-June 2009	Visiting Scientist	Granulosa cell culture
T.K. Datta	Mar 2009-Aug 2009	Visiting Scientist	Molecular embryology
Mohd Shahid	Oct 2008-Jan 2009	Visiting Scientist	CART signaling
E er den mu tu	Aug 2008-August 2009	Visiting Scientist	Cathepsins and egg quality
Gabbine Wee	Aug 2008-Sept 2011	Postdoctoral fellow	JY-1 mechanism of action
Amal el Hameed	Aug. 2007 to May 2008	Visiting Scientist	CART expression in testis
Mohan Mondal*	April 2008-May 2009	Visiting Scientist	PG signaling in bovine CL
Joe Folger*	Jan. 2007 – 2008	Postdoctoral fellow	FSH signaling/follicle # model
Aritro_Sen*	Jan. 2006 – Jan 2008	Postdoctoral fellow	CART signaling pathways
Lv Lihua	April 2006 – Aug 2007	Visiting Scientist	CART and steroidogenesis

Kyungbon Lee	April 2006 –Aug 2010	Postdoctoral fellow	Oocyte/embryo competence
Qinglei Li	Aug. 2003 – Aug 2005	Post doctoral fellow	Local regulation of ovulation
Osman V. Patel	July 2003 - Oct. 2005	Post doctoral fellow	Oocyte/embryo competence
Anil Bettgowda	Aug. 2002 – July 2007	PhD	JY-1 and embryogenesis
Yass Kobayshi	July 2002 – Aug 2005	Postdoctoral fellow	CART and follicular atresia
Marlon Knights	Jan. 2002 – Dec 2003	Postdoctoral fellow	Stress response in cattle
Mike Peters	2000-2002	Ph.D.	Local regulation of ovulation
Marci Charest	1999 – 2001	M.S.	Equine reproduction
Isam Qahwash	1998 - 2001	M.S.	CRF receptor regulation
Leanne Bakke	1998-2002	Ph.D.	MMPs and ovulation
Rita Mikhail	1997-1998	M.S.	MMPs and ovulation
Mark Dow	1997-2002	Ph.D.	PA system and ovulation

* Joint advised with Jim Ireland. MK: Associate Professor, University of West Indies; IQ: Doctoral student, University of Chicago; MD: Lab Director, Reproductive Specialties Center; YK, Assistant Professor, Fort Hayes State University; LB: Assistant Professor, Concordia University-St Paul.; QL: Assistant Professor, Texas A&M University; OP; Assistant Professor, Grand Valley State University; AB: Postdoctoral fellow, UCSD Med Ctr; LL; Professor, Shanxi Agricultural University; JF: Research Assistant, Michigan State University; AS; Res Asst Prof, Univ of Rochester Med School; AH; Researcher, Dept. Animal Reproduction, El-Tahrir, Dokki, Giza, Egypt; TD; Senior Scientist, Natl Dairy Res Inst; India; SR; Scientist; National Institute of Animal Nutrition and Physiology; India; MM: Senior Scientist, Nat Res Ctr on Mithun, India KL; Research Associate, Jackson Laboratories; B.Raghavendra: doctoral student, Seoul National University; G Zhenhuo: doctoral candidate; Heilongjiang Academy of Science; TH, Associate Professor, Shihezi University, China (RM and MP left program before completion of degrees).

Awards Presented to Graduate Students and Postdoctoral Trainees

May 2013	Cagri Camsari, Outstanding Student/Trainee Research Presentation, 2013 Annual Meeting of the Michigan Alliance for Reproductive and Translational Science, Ann Arbor, MI.
Mar 2008	Anilkumar Bettgowda, Young Dairy Scholar Award. 2008 Midwest Meeting of American Society of Animal Science/American Dairy Science Association, Des Moines, IA.
Mar 2008	Anilkumar Bettgowda, Innovation in Dairy Research Award. 2008 Midwest Meeting of American Society of Animal Science/American Dairy Science Association, Des Moines, IA.

Service on Ph.D. Committees

Name	Date	Department	Areas of Emphasis
Tim Carey	2011-present	Biochemistry	Brg1 and embryogenesis
Joa Paolo Martens	2011-present	Animal Science	Aneuploidy in dairy cows
Luo Jiesi	2009-present	Animal Science	Canine iPS cells
Nora Bello	2006-2007*	Animal Science	Reproductive Management
Pablo Ross	2003-2007	Animal Science	Nuclear Transfer
Jae-Kwon Kim	2003-2004	Cell and Molecular Bio	Pulmonary Fibrosis
Sally Madsen	2002-2005	Animal Science	Immunogenomics
Juliana Perez-Laspuir	2002-2007	Animal Science	Mammary Physiology
Poi-See Chan	2002-2005	Animal Science	Cartilage Biology
Edwin Ruffle	2001-2002*	Psychology	Neurobiology
Phil Jones	1998-2000*	Animal Science	Molecular Virology

(*students dismissed from programs or changed mentor and committee)

Service on M.S. Committees

Name	Date	Department	Area of Emphasis
Danielle Scheetz	2008-2010	Animal Science	AMH and bovine fertility
Joa Paolo Martins	2007-2010	Animal Science	Reproductive Management
Amy Iager	2004-2008	Animal Science	Nuclear transfer
Mike Jacobsen	2003-2007	Animal Science	Mammary Development
Rosangela Poletta	2002-2005	Animal Science	Neurobiology and Behavior
Angela Maschari	2003-2007	Animal Science	Reproductive Physiology
Melissa Macfarlane	2001-2003	Animal Science	Reproductive Management
Rebecca Darch	2001-2004**	Animal Science	Immunophysiology
David Mello	1999-2001	Animal Science	Cartilage Biology
Sally Madsen	1999-2001	Animal Science	Immunogenomics
Mike Peters	1998-2000	Animal Science	Reproductive Management
Nick Mesires	1998-2000	Food Science	Growth Biology
John Heller	1998-2001	Animal Science	Muscle Biology

(**student admitted to Vet School and dropped out of program)

Membership in Graduate Training Programs

2008-2020	Comparative Medicine and Integrative Biology Program
2004-2020	Cell and Molecular Biology Program
1998-2020	Department of Physiology
1997-2020	Department of Animal Science

Invited Presentations

Nov 2014	Overview of MSU College of Agriculture and Natural Resources. Seoul National University College of Agriculture and Life Sciences, Seoul, Korea.
Nov 2014	Overview of MSU College of Agriculture and Natural Resources. Seoul National University Graduate School of International Agricultural Technology, Pyeongchang-gun, Korea .
Aug 2014	Embryotrophic actions of follistatin: Mechanisms and translational relevance. College of Animal Science and Technology, Shanxi Agricultural University, Taigu, People's Republic of China.
July 2014	Reproductive and developmental sciences program overview. MSU-Korea Research Symposium, MSU Department of Obstetrics, Gynecology and Reproductive Biology, Grand Rapids, MI.
July 2014	Embryotropic actions of follistatin: Mechanisms and translational relevance, 47 th Annual Meeting, Society for the Study of Reproduction, July 19-22, 2014, Grand Rapids, MI.
June 2014	Embryotropic actions of follistatin: Mechanisms and translational relevance AAAS Pacific Division 95 th Annual Meeting, June 17-20, 2014, Riverside CA.
Jan 2014	Embryotropic actions of follistatin: Mechanisms and translational relevance. 40 th Annual Conference of the International Embryo Transfer Society, January 11-14, 2014. Reno, NV.

June 2013	Application of embryo transfer using in vitro produced embryos: intrinsic factors affecting efficiency. Nottingham Cattle Fertility Conference, June 24, 2013, Nottingham, UK.
May 2013	Reproductive endocrinology review. Dairy Reproductive Management Workshop, Livestock Climate Change Collaborative Research Support Program, USAID/Colorado State University, Kathmandu, Nepal, May 13, 2013.
May 2013	Use of embryo transfer in reproductive management. Dairy Reproductive Management Workshop, Livestock Climate Change Collaborative Research Support Program, USAID/Colorado State University, Kathmandu, Nepal, May 13, 2013.
May 2013	Using dairy genomics information. Dairy Reproductive Management Workshop, Livestock Climate Change Collaborative Research Support Program, USAID/Colorado State University, Kathmandu, Nepal, May 13, 2013.
Apr 2013	Introduction to epigenetics. Heilongjiang Academy of Agricultural Sciences, Harbin, People's Republic of China.
Mar 2013	Molecular determinants of oocyte competence. Physiology Symposium, 2103 Midwest Meeting of American Society of Animal Science/American Dairy Science Association, Des Moines, IA.
Mar 2013	Embryotropic actions of follistatin: Mechanisms and translational relevance. NIH/USDA Workshop on "Domestic Large Animals as Models for Agricultural and Biomedical Research, Baltimore, MD.
Dec 2012	Reproductive biotechnology research at Michigan State University. Project Inauguration Workshop, Improving nutrition and productivity of buffaloes to adapt to the impact of climate change. Livestock Climate Change Collaborative Research Support Program, USAID/Colorado State University, Kathmandu, Nepal.
Nov 2012	Effects of periconception heavy metal exposure on anxiety-like behavior in offspring at maturity. College of Animal Science and Technology, Shanxi Agricultural University, Taigu, People's Republic of China.
Oct 2012	Embryotrophic actions of follistatin: Mechanisms and translational relevance. Reproductive Biology Forum, Interdisciplinary Program in Reproductive Biology, Texas A&M University, College Station, TX.
July 2012	Functional determinants of oocyte competence: Implications for fertility, assisted reproductive technologies and animal biotechnology. College of Animal Science and Technology, Shihezi University, Shihezi, Xinjiang, People's Republic of China.
Dec 2011	Embryotrophic actions of follistatin: Mechanisms and translational relevance. Department of Biomedical Sciences, Colorado State University, Ft. Collins CO.
Aug 2011	Functional genomics studies of oocyte competence and early embryonic development: The bovine model. Primate Embryo Gene Expression Resource Training Course Minisymposium; Philadelphia PA.
July 2011	Reproductive and developmental sciences initiative overview, MSU Health and Life Science Deans, East Lansing, MI.

June 2011	Reproductive and biomedical applications of stem cell technologies in humans and farm animals: Theory and problems. Shanxi Agricultural University, Taigu, People's Republic of China.
May 2011	MSU Reproductive and Developmental Sciences Program highlights. First Annual Meeting of the Michigan Alliance for Reproductive Technologies and Science; Lansing, MI.
Mar 2011	Highlights of ongoing research in reproductive and developmental sciences at Michigan State University. MSU Extension and AgBioResearch Council, Lansing, MI.
Dec 2010	Applying to graduate programs in agriculture related disciplines in the US: How to be noticed and keys to success. Shanxi Agricultural University, Taigu, People's Republic of China.
Dec 2010	Oocyte control of bovine granulosa and cumulus cell function and early embryogenesis: Contribution of the novel oocyte specific protein JY-1. Shanxi Agricultural University, Taigu, People's Republic of China.
Nov 2010	Oocyte control of bovine granulosa and cumulus cell function and early embryogenesis: Contribution of the novel oocyte specific protein JY-1. National Dairy Research Institute. Karnal, India.
Sep 2010	Putative role of cocaine-and amphetamine-regulated transcript (CARTPT) in dominant follicle selection in cattle. 8th International Ruminant Reproduction Symposium, September 3-7, 2010, Anchorage, AK.
July 2010	Functional determinants of bovine oocyte competence. Shanghai Institute of Medical Genetics, Shanghai Jiao Tong University, Shanghai, People's Republic of China.
May 2010	Models for study of oocyte competence. First Annual Meeting of MI Alliance for Reproductive Technologies and Science, Grand Rapids, MI.
Feb 2010	Functional genomics studies of oocyte competence and early embryonic development: the bovine model. 20 th Annual meeting of the Indian Society for the Study of Reproduction and Fertility. Japuir, India.
Feb 2010	Functional determinants of oocyte competence. .National Dairy Research Institute. Karnal, India.
Aug 2009	Functional genomics studies of oocyte competence and early embryonic development: The bovine model. Oocyte and preimplantation embryo molecular biology training course. Temple University School of Medicine, August 6, 2009, Philadelphia, PA.
Aug 2009	Functional genomics studies of oocyte competence. Heilongjiang Academy of Agricultural Sciences, Harbin, People's Republic of China.
Nov 2008	Life as an undergraduate student in Animal Science at Michigan State University. Shanxi Agricultural University, Taigu, People's Republic of China.
Nov 2008	Application of RNA interference to the study of gene function. Shanxi Agricultural University, Taigu, People's Republic of China.

- Aug 2008 Functional genomics studies of oocyte competence. 2008 Gordon Research Conference on Reproductive Tract Biology. August 3-8, 2008. Proctor Academy, NH.
- Aug 2008 Functional genomics studies of oocyte competence and early embryonic development: The bovine model. Oocyte and preimplantation embryo molecular biology training course. Temple University School of Medicine, August 13, 2008, Philadelphia, PA.
- June 2008 Identification of novel bovine cumulus cell molecular markers predictive of oocyte competence: Functional and diagnostic implications. Twenty Eighth Annual Meeting, American Society for Reproductive Immunology, June 11-14, Chicago, IL.
- May 2008 Novel oocyte and cumulus cell markers of egg quality: Functional and diagnostic implications. First World Congress of Reproductive Biology, May 24-25, 2008, Kona, HI.
- Apr 2008 Identification of novel oocyte and cumulus cell markers of oocyte competence: Functional and diagnostic implications. The Davis Michael Lectureship, Division of Animal and Veterinary Sciences, West Virginia University, April 28, 2008.
- Jan 2008 Functional genomics studies of bovine oocyte and early embryonic development: Insights into oocyte competence and regulation of the maternal to embryonic transition. Genetics and IVF Institute, Fairfax, VA, January 16, 2008.
- Jan 2008 Cytoplasmic and nuclear determinants of the maternal to embryonic transition. 34th Annual Conference of the International Embryo Transfer Society, January 5-9, 2008. Denver, CO.
- Aug 2007 Cloning and genetic engineering of livestock: Facts versus fiction. Shanxi Agricultural University, Taigu, People's Republic of China.
- Feb 2007 Functional genomics studies of bull fertility. Cooperative Resources International Research Committee, February 14, Shawano, WI.
- Feb 2007 Local regulation of follicular steroidogenesis: Role of Cocaine and Amphetamine Regulated Transcript and its mechanism of action. Interdisciplinary Reproductive Biology Seminar, February 21, University of Florida, Gainesville, FL.
- Jan 2007 Expression and function of JY-1: A novel oocyte-specific gene in cattle. Okayama University Research Symposium: "Mechanisms delivering life." January 11, Okayama Japan.
- July 2006 Interpretation of microarray data: Trudging out of the abyss towards elucidation of biological significance. Triennial Reproduction Symposium, Joint Meeting of the American Society for Animal Science, American Dairy Science Association, July 9, Minneapolis, MN.
- July 2006 Use of the bovine model system to search for oocyte and cumulus cell-derived markers of egg quality: functional and diagnostic implications. Symposium on Use of Livestock Models to Study Reproductive Function. Thirty-Ninth Annual Meeting, Society for the Study of Reproduction, July 29-August 1, Omaha, NE.
- Apr 2006 The search for oocyte and cumulus cell derived markers of egg quality: Functional and diagnostic implications. Reproductive Sciences Program, University of Michigan, Ann Arbor, MI.

- Nov 2005 Oocyte and cumulus derived markers of oocyte competence – an R01 resubmission. Physiology Seminar, Department of Animal Science, Michigan State University. East Lansing, MI.
- Oct 2005 The search for oocyte and cumulus cell derived markers of egg quality: Functional and diagnostic implications. Cell and Molecular Biology Program, Colorado State University, Fort Collins, CO.
- Sep 2005 Characterization of the oocyte transcriptome and the search for markers of egg quality: Functional and diagnostic implications. Departments of Dairy and Animal Science and Poultry Science, Penn State University, State College, PA.
- Oct 2003 Is CART a novel regulator of steroidogenesis in the bovine ovary? Temporal and spatial regulation of CART expression and preliminary evidence of an effect on estradiol production. Physiology Seminar, Department of Animal Science, Michigan State University. East Lansing, MI.
- June 2003 Overview of the Michigan State University Center for Animal Functional Genomics. Infigen Inc, DeForest, WI.
- June 2003 Characterization of the oocyte transcriptome: JY-1, CART and the search for markers of egg quality. Infigen Inc, DeForest, WI.
- Apr 2003 Characterization of the oocyte transcriptome: JY-1, CART and the search for markers of egg quality. Faculty Research Forum, Department of Physiology, Michigan State University, East Lansing, MI.
- Feb 2003 Cloning and genetic engineering of livestock: facts vs fiction??? Michigan State University Forum (The Impact of Biotechnology on Humanity: Advancing Science to Improve the Quality of Life). Pasant Theater, Wharton Center, East Lansing, MI.
- Feb 2002 Current status and future perspectives for animal genomics research at MSU. Roundtable discussion with MSU President M. Peter McPherson, East Lansing, MI.
- Feb 2002 Animal genomics research. MSU Extension and Experiment Station Council, East Lansing, MI.
- July 2001 Regulation of extracellular matrix remodeling during the ovarian cycle: Implications for the control of growth, differentiation, and resorption of specific ovarian structures. Growth and Development Symposium, Role of Extracellular Matrix in Growth and Development, 2001 IAAFSC Joint Meeting, Indianapolis, IN.
- Apr 2001 Developing technologies in beef cattle reproduction. MSU Extension Cattleman's College, Lake City, MI.
- Sep 2000 Identification of intrafollicular regulators and regulatory pathways that mediate follicle rupture in cattle. Reproductive Biology Group, USDA Meat Animal Research Center, Clay Center, NE.
- Sep 2000 Developmental, reproductive, neuroendocrine and behavioral effects of targeted disruption of the corticotropin releasing factor receptor genes in mice: New insights into

regulation of the stress response. Food for the 21st Century Animal Reproductive Biology Program, University of Missouri, Columbia, MO.

- Oct 1999 Development of a program of excellence in animal genomics at Michigan State University: a round table discussion. Animal Breeding and Genetics Seminar, Animal Science Department, Michigan State University, East Lansing, MI.
- May 1999 Vision for the future of animal genomics research at Michigan State University. CSREES External Review Team, Animal Science Department, Michigan State University, East Lansing, MI.
- Mar 1999 Developmental, neuroendocrine and behavioral effects of corticotropin releasing factor receptor 1 gene disruption in mice. Faculty Research Forum, Department of Physiology, Michigan State University, East Lansing, MI.
- Mar 1999 Vision for the future of animal genomics research at Michigan State University, Provost Lou Anna Simon et al., Michigan State University, East Lansing, MI.
- Feb 1999 Current status of cloning and transgenic animal technologies in livestock. Physiology Seminar, Animal Science Department, Michigan State University, East Lansing, MI.
- Feb 1999 Local regulation of ovarian function by matrix metalloproteinases and their tissue inhibitors. Department of Biochemistry, Rush Medical College at Rush-Presbyterian-St. Luke's Medical Center, Chicago, IL.
- Oct 1998 Developmental, neuroendocrine and behavioral effects of corticotropin releasing factor receptor 1 gene disruption in mice. Department of Physiology, Colorado State University, Fort Collins, CO.
- Nov 1997 Endocrine, developmental and behavioral effects of corticotropin releasing factor receptor 1 gene disruption in mice. Physiology Seminar, Animal Science Department, Michigan State University, East Lansing, MI.
- Oct 1997 Applications and limitations of gene targeting technology. Physiology Seminar, Animal Science Department, Michigan State University, East Lansing, MI.
- Oct 1997 Research program overview. Animal Science Faculty, Michigan State University, East Lansing, MI.
- Oct 1995 Local regulators of corpus luteum function. Labs for Peptide Biology, Salk Institute, La Jolla, CA.
- Dec 1994 Local regulators of corpus luteum function. Division of Development and Reproduction, Roslin Institute, Edinburgh, Scotland, UK.
- Dec 1994 Differential gene expression in small and large luteal cells: Localization and ontogeny of SPARC mRNA in the ovine ovary. Laboratory of Development and Differentiation, Babraham Institute, Cambridge, UK.
- July 1994 Differential gene expression in small and large luteal cells: Localization and ontogeny of SPARC mRNA in the ovine ovary. Sero Symposium-Xth Ovarian Workshop, Ann Arbor, MI.

- June 1994 Local regulators of corpus luteum function. Missouri-Kansas Reproductive Biology Workshop, Columbia, MO.
- May 1994 Potential physiological role of metalloproteinases and their inhibitors in ovulation and corpus luteum function. Reproductive Biology Seminar, University of Idaho, Moscow, ID.

Appearances before TV or Radio Audiences

- Dec 2002 Interview with Anya Tucker, NewsCenter 6 (East Lansing, MI), on the report of the first successful human reproductive cloning. The interview appeared on 5:30, 6:00, and 11:00 p.m. broadcasts.
- June 1998 Radio interview with AM station WWJ (Detroit, MI) regarding the significance and applications of our published research on genetically engineered mice lacking corticotropin-releasing factor receptor-1.
- June 1998 Radio interview with AM station WOOD (Grand Rapids, MI) regarding the significance and applications of our published research on genetically engineered mice lacking corticotropin-releasing factor receptor-1.
- July 1998 Television interview with Young Don Lee (Korean Broadcast System) for a documentary series on stress. The interview focused on the significance and applications of our published research on genetically engineered mice lacking corticotropin-releasing factor receptor-1.
- July 1998 Radio interview with Dennis Kralik (MSU Media Communications Department) on applications of our published research on genetically engineered mice lacking corticotropin-releasing factor receptor-1. Interview featured on MSU Radio News Hotline.
- July 1998 Television interview with April Takens (Lansing Cable Channel 22) regarding applications of our published research on genetically engineered mice lacking corticotropin-releasing factor receptor-1. The interview was featured on the "Profiles" program during the week of 7/13/98.

Miscellaneous Printed Reports

- Oct 2012 MSU's land grant legacy: A Morrill imperative then and now. Research featured in Fall 2012 MSU alumni magazine.
- Jan 2012 Solving the infertility puzzle with bovine eggs. Research featured in 2011 MSU AgBioResearch Annual Report.
- Nov 2011 Going with the flow in the livestock industry. Research featured in Fall 2011 Futures magazine.
- Mar 2010 MSU scientists receive more than 1.4 million in grants. <http://statenews.com> Story on new grant funding featured in a news report by MSU student newspaper "The State News."
- Oct 2009 New frontiers in animal science: Covering fertile ground. Research featured in Fall 2009 Futures magazine.

Jan 2008	Local experts weigh in after FDA approves food from cloned animals Opinion featured in a story on FDA ruling on the safety of meat and milk products from farm animals published in MSU student newspaper "The State News."
Nov 2007	New gene may offer clues to infertility in both cows and women. Article featured in Nov 8, 2007 MSU News Bulletin.
Oct 2007	JY-1 gene in cows may be linked to fertility. Research featured in an internet news report on the Biotech weblog (www.biotech-weblog.com).
Oct 2007	New egg specific gene, JY-1 offers clues to infertility. Research featured in internet news reports on NEWS-medical.Net website (www.news-medical.net).
Oct 2007	Cow gene may offer fertility clue. Research featured in the internet news report on the Telegraph.com (www.telegraph.co.uk).
Oct 2007	New gene may offer clues to infertility in both cows and women. Research featured in an internet news report on Eureka Alert (www.eurekaalert.org).
Oct 2007	New gene may offer clues to infertility in both cows and women. Research featured in an internet news report on PHYSORG (www.physorg.com).
Oct 2007	New gene may offer clues to infertility in both cows and women. Research featured in the MSU newsroom and on the MSU home page (newsroom.msu.edu).
Oct 2007	Newly identified gene may offer clues to infertility in both cows and women. This research was featured in article in Fall 2007 Futures magazine.
Dec 2003	Featured in State News article entitled "U researches cloning types." Spoke with a reporter on 4 different occasions prior to publication of the article to explain cloning technology, its applications, and ongoing research in the field at MSU (Author: Evan Rondeau).
Feb 2003	Featured in State News Article on a presentation delivered at Michigan State University Forum entitled "The Impact of Biotechnology on Humanity: Advancing Science to Improve the Quality of Life" (Author: Melissa Sanchez).
Aug 1998	Research featured in article entitled "Mellow mice help scientist understand anxiety disorders" published in the Messenger, Michigan Agricultural Experiment Station Bulletin.
July 1998	Research featured in MSU News Bulletin article (front page) entitled "Genetic engineering breakthrough: Mellow mice help wage war on stress, anxiety" (Author: Sue Nichols).
July 1998	Research featured in article entitled "Mellow mice help scientist understand anxiety disorders" published in Futures, Michigan Agricultural Experiment Station News.
June 1998	Research featured in article (front page) entitled "Mellow mice may hold key to stress: MSU scientist says rodent gene study might help humans" published in Lansing State Journal (Author: Mark Mayes).
June 1998	Research featured in article entitled "Doctored mice can live stress-free: MSU research into genetically engineered rodents will help develop anti-anxiety drugs" published in the Detroit News (Author: Karl Leif Bates).

- June 1998 Research featured in article (front page) entitled “MSU makes mice mellow by removing anxiety gene” published in Grand Rapids Press (Author: Sarah Hollander).
- June 1998 Research featured in Yahoo News article (United Press International) entitled “Genetic researchers breed “mellow mice”.