Minutes of the W3171 Technical Committee Meeting

University of Alaska Fairbanks, Fairbanks, AK

May 31 – June 1, 2018

May 31, 2018

The meeting, held in Room 501 of the Akasofu Building (International Artic Research Center) at the University of Alaska Fairbanks, was called to order at 8:15 am on May 31st by Committee Chair, Brett White (Nebraska). In attendance were Charles Rosenkrans (Arkansas), Anna Denicol (California), Jerry Bouma (Colorado), Cindy Tian (Connecticut), Ken Bondioli (Louisiana), Carol Keefer (Maryland), Brett White (Nebraska), Clay Isom (Utah), Irina Polejaeva (Utah) and Milan Shipka (Administrative Advisor).

The meeting agenda was reviewed and approved. Charles Rosenkrans (Arkansas) made a motion to approve the minutes from the previous meeting as read and Carol Keefer (Maryland) seconded the motion. The minutes were unanimously approved. W3171 Administrator Advisor, Milan Shipka, welcomed committee members to the University of Alaska Fairbanks and provided some historical perspectives regarding the University of Alaska Fairbanks. He also provided guidance for submission of the project's report of accomplishments, impacts and publications. Our National Institute of Food and Agriculture (NIFA) representative, Mark Mirando, joined the meeting via teleconference. Dr. Mirando provided updates from NIFA on news and personnel, the budget for the 2018 fiscal year, competitive programs, outcomes for Agriculture and Food Research Initiative (AFRI) Foundational Programs in fiscal year 2017 and interagency funding opportunities.

Station reports were presented and discussed for Arkansas, California, Colorado, Connecticut, Louisiana, Maryland and Nebraska. Charles Rosenkrans (Arkansas) communicated work by their group on the vaginal microbiome in cattle, use of anti-mullerian hormone as a predictor of beef heifer fertility, potential of prolactin as a candidate gene for production traits, and associations of bovine melatonin receptor 1a and dopamine d2 receptor gene mutations with hair coat scores and calving rates in beef cattle. In addition, Dr. Rosenkrans initiated a discussion regarding an integrated grant proposal (*Influence of sexed semen on profitability of livestock producers*) previously prepared by members of the W3171 Technical Committee. Interest in submitting a NIFA integrated proposal to the AFRI Sustainable Agricultural Systems Request for Applications was gauged. Consensus of the committee was that the letter of intent deadline (6/27/2018) was too near for the current grant cycle, however, additional discussion on preparing a proposal in 2019 would take place via email.

Anna Denicol (California) described research projects in her laboratory regarding the isolation and characterization of bovine ovarian stem cells. Jerry Bouma (Colorado) provided an overview of ongoing projects to examine the role of: 1) pluripotency factors in ovine placental cell differentiation via short-hairpin RNA (shRNA) knockdown of Lin28A and Lin28B; 2) androgen signaling in placental development and function through CRISPR-Cas9 mediated gene targeting of KDM1A in the sheep trophectoderm; and 3) placental fatty acid transporters (FATP4) in fetal development. Cindy Tian (Connecticut) presented work evaluating the effects of maternal diets on fetal genomic imprinting in sheep, comparing gene products in autosomes vs. sex chromosomes to determine dosage compensation of the X chromosome, and identifying the role of Akt3 in embryonic stem cell survival and proliferation. Ken Bondioli (Louisiana) discussed research evaluating oocyte retrieval methods on developmental competence and gene expression in the cow, the effect of cryoprotectant exposure/vitrification on epigenetic marks in immature and mature bovine oocytes, the effect of DMSO- and glycerol-based vitrification protocols on zona pellucida hardening in mature bovine oocytes, and optimization of homology-directed repair efficiency for CRISPR/Cas9 induced genomic editing in porcine fibroblast cells. Next, Carol Keefer (Maryland) conveyed research results regarding analysis of embryo metabolism by gas chromatography-mass spectrometry (GC-MS) and isolation of spermatogenic germ cells in cats. Finally, Brett White (Nebraska) detailed studies utilizing boars overexpressing shRNA specific to the porcine gonadotropin-releasing hormone II (GnRH-II) receptor to examine the role of GnRH-II and its receptor in LH-independent testosterone production in the boar.

At 3:30 pm, the meeting was adjourned for the day. The committee was provided a tour of the Robert G. White Large Animal Research Station. An interesting overview of the research being performed on muskox and reindeer was provided by Dr. Jan Rowell. Following the tour, committee members enjoyed dinner at the Alaska Salmon Bake in Pioneer Park.

June 1, 2018

The committee resumed its annual meeting at 8:30 am. We began with our final report from the Utah station. Clay Isom discussed research examining global epigenetic differences between porcine oocytes isolated from small vs. large follicles, characterizing gene expression and cell counts in porcine somatic cell nuclear transfer (SCNT) blastocysts with high and low incidence of apoptosis, and identifying how stage of lactation and energy status impact gene expression in individual in vivo-matured bovine oocytes. Next, Irina Polejaeva (Utah) presented work from her laboratory to improve the efficiency of gene editing in livestock as well as to generate transchromosomal goats for production of human immunoglobulin therapeutics, sheep with a disrupted cystic fibrosis transmembrane conductance regulator (CFTR) gene and Type I interferon receptor knockout sheep to study viral infection and ruminant reproduction.

During the business meeting, Anna Denicol (California) was nominated to serve as Secretary for the W3171 Technical Committee in 2018. Charles Rosenkrans (Arkansas) made a motion to approve the nomination and Ken Bondioli (Louisiana) seconded the motion. The motion to elect Anna Denicol (California) as Secretary was unanimously approved. Kiho Lee (Virginia) will serve as Chair for the upcoming year. The 2019 annual meeting of the W3171 Technical Committee will be held in conjunction with the 2019 International Embryo Technology Society Conference at the Sheraton New Orleans Hotel in New Orleans, Louisiana. The meeting will begin at 8 am on Thursday, January 24, 2019.

The rewrite for the W3171 committee is due by January 15, 2019. A writing committee was established. Brett White (Nebraska) and Ken Bondioli (Louisiana) agreed to serve as Chair and Co-Chair of the committee, respectively. Jerry Bouma (Colorado) and Quinton Winger (Colorado) also agreed to serve on the committee. In regard to development of the outline, Cindy Tian (Connecticut) will oversee the review of Objective 1 with assistance from Clay Isom (Utah). Irina Polejaeva (Utah) will manage the review of Objective 2 with assistance from Kiho Lee (Virginia). To assist with the rewrite, monthly online meetings and establishing a Google document were recommended.

The committee thanked our Administrative Advisor, Milan Shipka, for graciously hosting the meeting and the wonderful hospitality. The meeting was adjourned at 12:10 pm.

Respectively Submitted,

Brett White – Acting Secretary

W3171 Technical Committee