

## **AIPL Centennial – Research Priority Discussion**

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*Summarized by S.M. Hubbard, AIPL*

- Heterosis – crossbreeding and genomics (Seidel)
  - Long-term, high-risk, high-return research – appropriate for ARS (Van Tassell)
  - Will be considered for future genomic evaluations (VanRaden)
  - Logistic challenges have been somewhat alleviated because of technology changes (Weigel)
  - Genomics can be used to determine additive (easiest), dominance, and epistatic effects (Garrick)
  - Low-cost SNP effective for full-sib analysis of dominance and epistatic effects (Van Tassell)
  - Ongoing additive improvement in seedstock animals must also be considered (Garrick)
  - Nicking (Misztal)
  - Profitability not obvious (Misztal)
  - Traits other than production (Seidel)
- Milking speed (Flatness)
  - Brown Swiss collects data through type program; Holstein data available from automatic milk systems? (Wiggans)
  - What is measured – flow rate vs. milking speed (Cassell)
  - On-farm software changes (Cole)
  - Value to producer from supplying extra data (LaCroix)
  - Parlor type (management) affects importance to producer (Huffard)
- Prioritizing traits for data collection (Huffard)
  - Collect as much health trait data as economically feasible and determine importance from data (Norman)
  - Amount of data drives research possible (Van Tassell, Cole)
  - Technical and social issues involved in getting results to producers (Ehrlich)
  - Core herds (Seidel)
- Economic impact of fertility (Seidel)
  - Herd bull use (Seidel, Cassell)
  - Pregnancy without fetus (Seidel, Cassell)
  - Sexed semen (Seidel)
  - Impact of longevity (Van Tassell)
- bST and lack of consumer acceptance (Van Tassell)
- Health data enhancement in national database (Ferris)
  - Connection with genomics (Seidel)
  - Research dependent on data availability (Pearson)
  - European bull information can't be accessed (Flatness)
  - Work with available data can improve quality of future data (Norman)
  - Data collection issues with on-farm systems (Van Tassell, Norman, Cole)
  - Prior experience with producer-collected data on calving ease (Van Tassell)
  - Massive amounts of data compared with European data (Van Tassell)
  - Treatment records
    - May improve data available (Ehrlich)
    - Political and legal ramifications due to FOIA and other issues (Cole, Van Tassell, Norman)
    - Individual producer release of data to AIPL (Clay)
    - Pre-processing at DRPC to avoid compromise of producer privacy (Van Tassell)

- Data accuracy kudo for AIPL and DRMS (Flatness)
- Economic benefit to industry from genomics (Lawlor)
  - Bull sampling (Seidel)
    - Genotyping a necessity by AI organizations (Cassell)
      - Cost passed on to producers?
      - Reduced progeny-test program
    - Extra expense could be offset by reduced progeny-test costs (Seidel)
    - Too early to determine market acceptance but will sample fewer bulls to offset genomics cost (Sattler, Meland, Zwald, and Starkenburg)
    - Greatest benefit to consumer (Sattler et al.)
    - Younger bulls can be marketed (Meland)
    - Not lower but maintained price; somewhat lower price for untested younger bulls (Zwald)
    - Fewer animals through traditional progeny test will offset genotyping costs (Van Tassell)
    - More efficiently supplied food source (Starkenburg)
    - Ratio of genotyped bulls to progeny-tested bulls (Wiggans)
    - More bulls considered than in past for same number tested (Starkenburg)
    - Use of technology to intensify selection (Van Tassell)
    - Diversity management at population level (Van Tassell)
    - Narrowing of genetic base, but diversity must be maintained (Starkenburg)
    - Amount of increase in bulls considered as related to parent average (Wiggans)
    - Not yet quantifiable (Starkenburg)
    - Different impact on small AI organizations (Flatness)
  - Embryo transfer (VanRaden)
    - Opportunity to increase selection intensity on female side (Seidel)
    - Flushes on genomically tested animals, particularly young virgin heifers (Lamb)
    - Low-density chip important for cow selection (Van Tassell)
    - Value of testing for deleterious recessives (Lamb)
    - Commercialization issues (Munson, Van Tassell)
- Dairy beef (Seidel)
  - No return for investment (Pearson)
  - Bull/breed selection (Seidel)
  - Low-density SNP to identify animals with merit (Van Tassell)
  - AI-sired beef currently low; opportunity to improve consistency (N. Smith)
  - Sexed semen (Seidel)
  - Genomics can aid in determining which animals to raise – dairy or beef (Sheldon)
  - Injection site locations (Sheldon)
- Genomics larger paradigm shift than was AI (Garrick)