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SOCIÉTÉ CANADIENNE D'ENREGISTREMENT DES ANIMAUX



## C.L.R.C. WORKSHOP REPORT - 2008

The Annual Workshop presented by CLRC was held on April 5, 2008 at the Executive Royal Inn in Calgary, Alberta. Again this year, the Workshop was a half-day event in the morning, followed by the CLRC Annual Meeting in the afternoon. Approximately 24 representatives of various breed associations were on hand for this very informative morning.

After an enjoyable breakfast sponsored by the Canadian Imperial Bank of Commerce, CLRC Chairman Sheryl Blackburn welcomed all of those present and all present introduced themselves. General Manager Ron Black introduced the guest speakers.

Following is a brief summary of each of the three presentations:

### **1. Dr. David Bailey, Genome Alberta and Dr. Bob Church: "Genomics Tools – Linking Technology with Hands-on Applications for Livestock"**

Dr. Bailey breeds Percheron horses and Dr. Church is a respected scientist and long time cattle breeder in Alberta.

Bob Church first provided background as to the role that the Animal Pedigree Act (APA) and animal registration have played in the livestock industry through the years. He noted in particular that the cattle industry, and subsequently other species, made significant use of parentage verification technologies, first by blood typing, and later by DNA genotyping, to add to the integrity of the registration systems established under the APA. Much of Bob's talk consisted of interesting and sometimes humorous recollections from his extensive experience in the industry.

David Bailey then spoke of some of the newer technologies that are being developed and which are, or will be, available to the livestock industry. These technologies basically involve testing for various traits and defects, and can be of assistance in seed stock selection.

He explained that all living things, from bacteria to plants, to animals, to humans contain DNA. This DNA contains all of the information necessary to make a complete organism. All of the information about a particular organism is encoded in its DNA, which can be safely stored and reliably replicated. In any organism, the DNA is organized into genes. Cells decode the information in genes to build proteins, each of which carries out a unique function. Examples of these proteins are Myosin, a mechanical protein that allows muscles to contract, and Hemoglobin, the transport protein that allows red blood cells to carry oxygen. Genes can be turned on and off. If they are off, that protein will not be produced. All of the cells within an organism contain the exact same genetic information.

DNA is made up of four building blocks called nucleotides, which are arranged into very long strands. The order of nucleotides in a DNA strand is called a sequence. Every individual has a unique DNA sequence; however, the uniqueness lies in just 0.1% of the DNA sequence.

These differences in DNA sequences translate to differences in protein function, and it is research on these differences that determines what controls various traits. The technology for this research is based on Single Nucleotide Polymorphism (SNPs).

Current genome research topics include: analyzing genetic variation between individuals and populations, uncovering the functions of DNA sequences and their gene products, mapping the timing and location of gene expression, and investigating interactions between DNA sequences, gene products and the environment.

2. **Dr. Lynn Tait, OC Flock Management: “The Canadian Small Ruminant Industry - Thinking Outside the Borders”.**

In addition to her veterinary practice, Lynn, in partnership with Dr. Ileana Wenger, operates a semen collection and embryo transplant facility for sheep and goats. In her presentation, she noted that it was not many years ago that A.I. and E.T. was unheard of in the sheep and goat sectors, but the closure of foreign markets to live animals following BSE in 2003 drove the increased application of these technologies for sheep and goats, as semen and embryos from Canada are accepted into countries such as Mexico that still will not allow the entry of live animals. A.I. and E.T. are now being used in all parts of the sheep and goat industry; i.e. for meat and dairy breeds of sheep and for dairy, meat and fibre goats. Although the Canadian sheep and goat industry is small, its diversity creates access to multiple markets.

She emphasized that the Animal Pedigree Act and the Canadian registration system are definitely part of what she termed “the Canadian advantage” when it comes to the export of genetics to markets around the world.

3. **Dale Kelly and Chris Barker, Saskatchewan Research Council: “Update on Continuing and New Services from SRC”.**

Dale, who is Vice-President of Agriculture, Biotechnology and Food at SRC, first introduced Chris Barker, who was recently appointed as Manager of the laboratory. Dale indicated that SRC has five divisions of which Agriculture, Biotechnology and Food is one, the others being: Mining and Minerals, Environment and Forestry, Energy, and Alternative Energy and Manufacturing. Up until now the Agriculture, Biotechnology and Food division has included two laboratories: Bova-Can Laboratories for animal’s parentage verification and trait improvement as well as meat traceability, and GenServe Laboratories™ for crop enhancement genetics, animal trait enhancement genetics and human diagnostic genetic services. SRC is in the process of amalgamating the two labs into one under the GenServe™ name.

For the livestock industry, the lab continues to offer familiar services including DNA microsatellite genotyping for identification and parentage verification, coat colour testing, freemartin testing, karyotyping and BLAD testing.

Dale then spoke of some of the expanded services being offered by the lab. These services are focused on traits, characteristics and product improvement tools while building strategic alliances to expand market potential. These services are not just for cattle, but for other species of animals, as well as plants.

The expanded services include:

1. Igenity ® This test gives a profile of an animal including coat colour, tenderness, fat thickness, yield grade, rib eye area, carcass weight, marbling score, calving ease, stayability and docility.

2. Single Nucleotide Polymorphism (SNP) technology for identification and parentage verification, as well as for diagnostic testing.
3. Marker-assisted Breeding Tools
4. Contract Research.

Chris Barker briefly introduced himself and told the participants that he is excited about being involved in, working with, and meeting the needs of the livestock industry.

As the presentations were made during the morning, it was very interesting to note that there was very much a common thread amongst the presentations this year. Topics such as the SNP-based technology were touched on at various times.

All of the presenters answered a number of questions from the floor.

More information may be found on the following websites:

Genome Alberta: [www.genomealberta.ca](http://www.genomealberta.ca)

OC Flock Management: [www.ocflock.com](http://www.ocflock.com)

Saskatchewan Research Council: [www.src.sk.ca](http://www.src.sk.ca)

Next year's Workshop will be held on Saturday, April 25, 2009 in Toronto

Prepared by Ron Black, General Manager, from the Powerpoint slides used by the presenters.  
April 24, 2008