Advances In Genotyping

Illumina announces commercial release of the Infinium® BovineSNP50 BeadChip.

In mid-January, Illumina Inc. launched the Infinium® BovineSNP50 BeadChip, a 12-sample genotyping product now available for detecting genetic variation in any breed of cattle. Developed in collaboration with leading bovine researchers from the U.S. Department of Agriculture-Agricultural Research Service (USDA-ARS), the University of Missouri-Columbia (UMC), the University of Alberta and other industry partners, the BovineSNP50 BeadChip features more than 54,000 single nucleotide polymorphisms (SNPs, pronounced "*snips*") evenly spaced across the entire bovine genome.

Of these SNPs, 24,000 were discovered using Illumina's Genome Analyzer and are not available on any other commercial array or in any public database, according to a company news release.

►Jerry Taylor presented some information regarding the Infinium BovineSNP50 BeadChip at the 2007 Beef Improvement Federation meeting.

Illumina also recently released the Infinium CanineSNP20 BeadChip, a 22,000-SNP panel developed in collaboration with the Broad Institute and the University of California, Davis. Genotyping on both the BovineSNP50 and CanineSNP20 products is available as a service through Illumina's FastTrack Genotyping Services group.

DNA An Industry Update

Researchers can take advantage of the iSelect™ Infinium Custom product process to design multi-sample BeadChips with specific disease-related or pathway-related SNPs for their organism. Infinium iSelect Custom Genotyping offers access to SNPs across the entire genome, the highest data quality and reproducibility, and call rates greater than 99%, according to the company release. To date, Illumina has developed customized genotyping solutions for 15 nonhuman species using both the GoldenGate® and Infinium assays.

"Researchers from a range of markets, including agricultural, work with Illumina because they can build products that offer comprehensive and focused content for genetic analysis," said Carsten Rosenow, Illumina's senior marketing manager of DNA analysis products. "Specifically, the BovineSNP50 and CanineSNP20 BeadChips will benefit the agricultural communities by allowing for accurate selection of genetic merit at birth."

At the 2008 Plant and Animal Genome (PAG) conference in mid-January, scientists from major agricultural research institutions, including Martien Groenen, professor of animal breeding and genetics at Wageningen University, Wageningen, Netherlands, and Curt Van Tassell, research geneticist with USDA-ARS, presented overviews of their work developing custom genotyping arrays with Illumina. Specifically, the bovine consortium presented the data they have collected from initial studies using the BovineSNP50 BeadChip.

"Developing the BovineSNP50 BeadChip was possible because of collaborative efforts from each of the bovine groups and the level of support we received from Illumina," said Jerry Taylor, UMC professor of animal sciences and genetics. "In particular, Illumina's Genome Analyzer played a pivotal role in discovering novel, validated content not found on any other product. With more than 100 million head of cattle in the United States — 1 billion globally — we hope that the BovineSNP50 BeadChip benefits the bovine research community by offering a more efficient and cost-effective method for breeding offspring with desired traits."

Illumina continues to partner with consortia around the world to develop human and nonhuman screening assays. Presently, Illumina is working with researchers at the Animal Health Trust, Suffolk, United Kingdom; Royal Veterinary College; University of Minnesota; and the Broad Institute to develop an equine genotyping BeadChip. Commercial release of this chip is expected in the first quarter of 2008.

Editor's Note: *Adapted from a news release provided by Illumina Inc. Taylor presented some information regarding this research in committee and in a general session at the 2007 Beef Improvement Federation meeting. The audio to his presentation, as well as the accompanying PowerPoints are available in the newsroom at* www.bifconference.com.