NRSP-8 Agenda Brief

NRSP 8, National Animal Genome Program, is six months into the new five-year project. One significant new initiative that NRSP 8 leadership is involved with is AgEncode, Agricultural Animal Encyclopedia of DNA Elements. The AgEncode collection of projects is designed to help identify the genetic regulators that control when, where, and how most genes are active in development and throughout an animal's lifespan. Differences between species are largely determined not by different genes, but by differences in the regulatory program. Similarly, there is evidence that the majority of mutations underlying economically important traits will not be in the genes themselves, but in regulatory sequences (e.g. promoters, enhancers, insulators, etc.). However, regulatory sequences are not as highly similar between species as the genes themselves and are therefore more difficult to identify. The experimental solution is to use functional assays to identify large fractions of all the regulatory sites in livestock genomes. Achieving this goal of the AgEncode projects will provide insight into differences between species and will enable more rapid identification of mutations influencing economically important traits in livestock. This will accelerate progress in genetic improvement of livestock to achieve healthier, more efficient animals yielding more nutritious and desirable animal products. NRSP 8 leaders have a meeting scheduled June 27 in DC with ARS scientist involved in this initiative.