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Opportunity Title: Postdoctoral Research Opportunity in Animal Genetics
Opportunity Reference Code: ARS-AGIL-2018-127-0040-01

Organization	U.S. Department of Agriculture (USDA)	ORISE
Reference Code	ARS-AGIL-2018-127-0040-01	

How to Apply   A complete application consists of:

- An application
- Transcripts – Click here for detailed information about acceptable transcripts
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional recommendations

All documents must be in English or include an official English translation.

If you have questions, send an email to USDA-ARS@orau.org. Please include the reference code for this opportunity in your email.

Description   A postdoctoral research opportunity is available with the the U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS) in the Animal Genomics and Improvement Laboratory (AGIL) in Beltsville, Maryland.

The successful applicant will be mentored by Dr. John B. Cole and Dr. Paul VanRaden in the USDA Animal Genomics and Improvement Laboratory. Research activities will focus on a project titled "Effects of differential rates of pedigree errors on genomic selection", but participation in other Laboratory projects is possible, as well.

Scientists in AGIL have access to the National Dairy Database, which is the largest collection of phenotypic, genetic, and genomic information about dairy cattle in the world. Whole-genome DNA sequence data from both the 1000 Bull Genomes Project and other in-house sequencing efforts also are available for analysis. Traditional pedigrees are known to have error rates of 10-15%, and when pedigrees of bulls used in genetic evaluation have errors there is a reduction in inter-sire variation because offspring performance is credited to the incorrect animal. Some young bulls currently have many genotyped daughters and others do not. The pedigree for a bull with many genotyped daughters is more accurate (has fewer errors) than the pedigree of a bull with few genotyped daughters. Recent research has identified differences in genetic trend when using two-stage BLUP versus single-step BLUP for genomic breeding value estimation, and proposed methods for accounting for uncertain parentage in the construction of the G matrix.

The successful applicant will learn how to account for unknown parentage in complex pedigrees and expand the system used to discover missing ancestors in maternal pedigrees using genotype data. Specifically, pedigrees can link to discovered grandsires or great grandsires using constructed IDs for missing, nongenotyped dams or granddams. Additional work is needed to determine the effects of unknown, uncertain, or discovered ancestry on genotype imputation, parent averages, and genomic predictions of genetic merit for traits of economic importance in large dairy cattle populations. These methods have the potential to be applied in many different species, including humans, livestock, fishes, and plants.

This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and ARS. The initial appointment is for one year, but may be renewed upon recommendation of ARS and is contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time. Participants do not become employees of USDA, ARS, DOE or the program administrator, and there are no employment-related benefits.

While participants will not enter into an employment relationship with ARS, this position requires a pre-appointment check and a full background investigation.

This opportunity is available to U.S. citizens, Lawful Permanent Residents (LPR), and foreign nationals. Non-U.S. citizen applicants should refer to the **Guidelines for Non-U.S. Citizens Details** page of the program website for information about the valid immigration statuses that are acceptable for program participation.

For more information about the ARS Research Participation Program, please visit the **Program Website**.

Qualifications

To be eligible, applicants should have a doctoral degree in animal breeding and genetics, plant breeding and genetics, quantitative genetics, conservation genetics, population genetics, statistics, or a related field with experience in the calculation of breeding values and estimation of (co)variance components using linear mixed models.

Preferred Skills:

- The position requires experience with estimation of (co)variance components and animal breeding values using linear mixed models that combine performance, pedigree, and genotype information.
- Computer programming skills are required; experience with Fortran 90/95 is preferred.
- Experience with computer simulation is desirable.
- Knowledge of livestock production systems and biology is desirable, but not required.

Eligibility Requirements

- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Environmental and Marine Sciences** (1 👁)
  - **Life Health and Medical Sciences** (7 👁)
  - **Mathematics and Statistics** (1 👁)