



## ICAR Rules and Guidelines for SNP-based Parentage Testing in Cattle

These Rules contain the **minimum requirements** for accreditation of SNP-based DNA parentage testing in cattle.

### 1) LABORATORY IDENTIFICATION

The applicant must be clearly identified by providing the following:

- a. Name of the laboratory,
- b. Institution if relevant,
- c. Address and country, and
- d. A contact person at the lab, as well as all information necessary for getting in touch with her/him quickly.

### 2) EDUCATION AND TRAINING OF LAB SUPERVISOR AND OPERATORS

The minimum requirements for education and training of the laboratory supervisor and senior operator are:

- a. Bachelor degree, or higher, in a scientific discipline for the laboratory head or supervisor.
- b. At least five years experience in molecular diagnostics for the laboratory senior operator.

Experience is considered a key factor in data production and in the interpretation of results.

### 3) EQUIPMENT

- a. Equipment used to run and score SNPs must be described, as well as the methods used.
- b. The year of purchase and last revision must be provided – this allows ICAR to evaluate the appropriateness of the technology being used and ensure each lab is following a proper maintenance program that should enable it to generate high quality data.
- c. Yearly revision is considered a minimum requirement.

### 4) CERTIFICATION

- a. No certification is presently required. In the future, ISO17025 and/or ISO9001 will be a minimum requirement.

### 5) PARTICIPATION AND PERFORMANCE IN RING TESTS

- a. The participation and performance in ISAG ring (comparison) tests must be disclosed and certificates provided, when available. Applicants must also sign a release allowing ISAG to directly disclose their ring test results to the ICAR DNA Committee.
- b. Participation in at least one ISAG ring tests is considered a minimum requirement at this time.
- c. A Committee of Experts will decide performance thresholds for each ring test with due consideration for the structure of the ring test and the average performance of laboratories in the ring test that year.



## 6) SNP MARKERS

- a. The name of all SNPs typed on all animals (marker set I) and of the additional markers assayed in the case of unresolved parentage (marker set II) must be declared, as well as the number of animals typed in at least the last two years.
- b. It is a minimum requirement to use at least 95 SNPs from the set recommended by ISAG (see Annex VI) on all animals typed.
- c. To ensure sufficient experience within the lab, genotyping 500 animals per year is set as a minimum requirement for accreditation.
- d. Exclusion probability (PE; 2 parents and 1 parent) of the complete marker sets used must be calculated and declared. The type of population and the number of animals (minimum 150) used for computations are to be described. ICAR recommends using Holstein as a reference group when possible. The ICAR Committee of Experts will evaluate that an appropriate PE is reached for accreditation, on the basis of the population analyzed

## 7) MARKER NOMENCLATURE

- a. Nomenclature of markers must be described.
- b. ISAG nomenclature is required for the ISAG SNP marker set.