

ICLAS Network for Promotion of Animal Quality in Research

Guidelines for developing an In-house Genetic Monitoring Program

Genetic testing can be done in one of two ways; by choosing a commercial testing laboratory, or by developing the laboratory testing methods in-house.

Commercial genetic testing

For commercial genetic QA testing there are a number of laboratories that will type animals using DNA markers, either microsatellite markers (MIT) or single nucleotide polymorphisms (SNPs). When contracting with these laboratories it is essential to select the correct panel of MIT markers or SNPs to uniquely identify the animal strains housed at the institution requesting the service.

In-house genetic monitoring program

When developing an in-house genetic monitoring program the testing strategy should take the following into consideration:

- a. First determine whether your institution has the appropriate animal husbandry practices in place and that animal husbandry personnel are trained in identifying phenotypic characteristics of the animals.
- b. The above husbandry programs should include methods to reduce the formation of sub strains by employing cryopreservation and strain replenishment strategies at the animal facility. Without a. and b. in place, it is probably not worth adopting a testing program since there are no breeding quality assurance measures in place.
- c. Next, decide whether you want to utilize MIT markers or SNPs as the tool for identifying individual strains of animals. This will determine what you do with regard to laboratory procedures. However, some institutions may choose biochemical or immunological methods for genetic strain identification which are also viable alternatives for genetic monitoring.
- d. Determine whether you will do all of the laboratory work in house, including isolation of DNA from animals to performing the molecular test procedures, or whether you will limit your involvement to the collection and isolation of DNA samples that will be shipped to an organization with expertise in genetic analysis and that routinely provides genome scanning services to the worldwide research community.