

Genetic diversity in times of increasing demand

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Care, Use and Welfare
of Marmosets as
Animal Models for
Gene Editing-based
Biomedical Research

An ILAR Roundtable Workshop

Genetic diversity in times of increasing demand

How much diversity exists in Callithrix populations

captive

wild

How much diversity is needed for specific research areas

How to promulgate diversity

Centralized: Top down

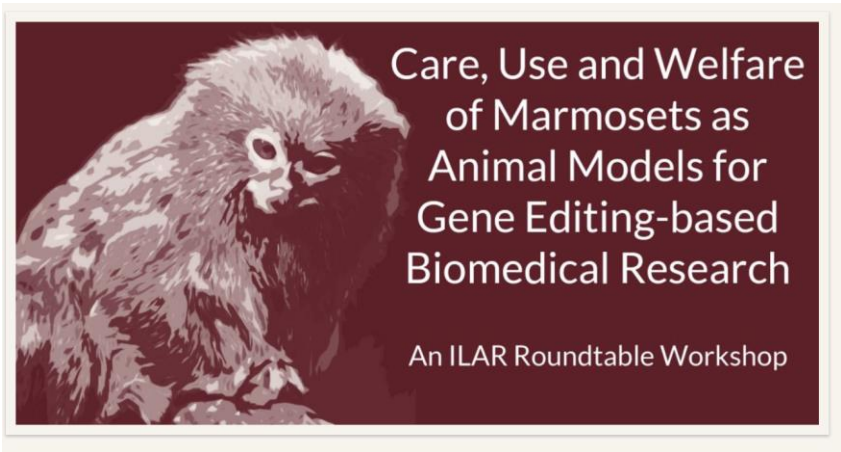
Dispersed: Bottom up

Infrastructure to foster genetic diversity

Founders on loan

Simplified methods

Cooperative methods



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Objectives:

- Examine the prospect and application of a Species Survival Plan for marmosets, including its role in the exchange of genetic information (+ small colonies)
- Discuss elements of genetic and microbiological characterization of marmosets
 - Do the provenance and genetic background of marmoset colonies play a role in choosing research questions
 - Maintain marmoset colony genetics
- Discuss the genetic diversity in Japan's marmoset colonies
- Analyze the need for and role of genetic diversity in marmosets used in biomedical research (genome sequencing)
- Present a chip-based genomic analysis



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- What is the contribution of genetic diversity to marmoset-based animal models?
- What are some of the most common problems encountered in tracking genetic diversity?
- What are some of the potential solutions in maintaining said diversity?
- It appears likely that the US marmoset research population will include a number of breeding colonies that are each relatively small, raising questions as to how to best maintain the overall population to ensure genetic viability.
 - o What are the specific goals of genetic management of the marmoset population – e.g., outbreeding? Definition of founder populations? Enrichment or elimination of certain lineages based on either genotype or phenotype?
 - o What can we learn from other institutions that manage numerous, small breeding populations – e.g., zoos?
 - o What mechanisms can be used to either encourage or enforce broad population genetic management?
 - o What would be the costs and benefits of plans to genotype or sequence every marmoset in research?