

Rederivation and cryopreservation options

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Summary description:

This document outlines options for preserving mouse strains. These services are available from the TMESCSR.

Usage Keywords/Tags embryo retrieval, embryo cryopreservation, sperm cryopreservation

Category Protocol

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Each of these services requires careful coordination between the PI laboratory and the TMESCSR. This coordination is crucial for success. The responsibilities of both parties are outlined here.

- 1. Rederivation by Embryo Retrieval and Transfer:** The investigator notifies the TMESCSR regarding how many singly housed males are planned for rederivation matings (there is a minimum of 2 males and a maximum of 8 males for rederivation matings per line). The TMESCSR orders wild-type females and superovulates them for embryo production. The investigator will mate the females with the males and return the females to the TMESCSR (9410 MRB IV) the following day by 10 AM.
- 2. Sperm Cryopreservation:** The investigator provides TMESCSR with 2 proven breeder males between 2 months and 6 months of age. The TMESCSR performs sperm cryopreservation and stores the straws in liquid nitrogen until future use.
- 3. *In vitro* fertilization (IVF):** The TMESCSR performs a sperm cryopreservation as above, and subsequently performs *in vitro* fertilization using frozen sperm at a later date, or performs an IVF at the same time as the sperm cryopreservation with fresh (non frozen) sperm. The investigator provides the TMESCSR with 2 males between 2 months and 6 months of age. The TMESCSR performs the sperm cryopreservation and an IVF to generate fertilized embryos. The fertilized embryos may be cryopreserved, or be transferred to a recipient female for rederivation.
- 4. Embryo Cryopreservation:** The investigator provides 8 to 10 (or more, if available) singly housed male mice. The TMESCSR provides wild-type females for superovulation and mates them to the males on weekly basis until sufficient embryos are obtained. Embryos are retrieved from the mated females, frozen in straws and stored in liquid nitrogen. The goal is to obtain and cryopreserve approximately 250 embryos.

| Factor | Embryo | Sperm |
|-----------------|----------------|----------------|
| Cost to Freeze | Medium to High | Low |
| Cost to Recover | Low | Medium to High |
| Time to Freeze | Low to High | Low |
| Time to Recover | Low | Low to Medium |
| Reliability | High | Variable |

| | | |
|--------------------------|-------------------------|---------------|
| Ease of Use | High | Low to Medium |
| Genotype Produced | Heterozygous/Homozygous | Heterozygous |