



**Gesellschaft für
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Society for Laboratory Animal
Science

GV SOLAS

Working group on Hygiene

Introduction behind a hygiene barrier of transgenic animals from external experimental colonies

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It is not possible to supply all animals needed for experiments exclusively from breeding colonies with a well documented microbiological status. In particular transgenic animals are not, as a rule, available from such sources. Such animals tend to be purchased in small numbers and bred for one's own needs only. In the majority of cases, decontamination of such animals is necessary to minimize the risk of infection and allow maintenance of a well defined microbiological status behind a hygiene barrier. In vitro fertilisation can also reduce the risk of infection using germ-free or germ-associated (gnotobiotic) recipient animals; this procedure is, in contrast to the use of 'SPF' foster mothers, more reliable and efficient. Depending on the microbiological quality of animals (or embryos) supplied, different procedures will be needed to introduce them behind the barrier.

A. Embryos

Deep frozen embryos usually present a low infectious risk.

- If the microbiological status of the embryos is known through a reliable hygiene report from the supplier, and harmless, the embryos can be introduced directly behind the barrier and implanted therein to pseudopregnant females.
- If information is not available on the microbiological quality of the animals, embryos washed several times should be implanted into pseudopregnant females which are kept in isolators. In the same cage sentinel (germ-free) animals (at least 3) should be placed which, after the weaning of the young and together with the foster-mothers, must be subjected to microbiological examination. If the microbiological quality is appropriate, the young can then be introduced behind the barrier.

B. Gnotobiotic animals (germ-free, germ-associated)

Mice and rats with a defined microflora (e.g. germ-free animals after the decontamination using embryo transfer or hysterectomy, possibly following association with defined flora), are considered to be completely harmless.

Prerequisites for introduction behind the barrier

The data from the supplier on the microbiological status (housing conditions, monitoring methods and frequency, number of animals, etc.). In germ-associated animals this should be

- the species of the micro-organisms used for association
- appropriate transport conditions that do not compromise the microbiological status
- it is recommended that data of the supplier should be checked by examination of at least two animals.
- the rest of the animals supplied should be kept in a positive pressure isolator until the results are complete.
- if the quality is appropriate, the animals can be introduced behind the barrier.

C. Animals with undefined microflora

In all animals with undefined microflora (conventional keeping conditions or kept behind the barrier) which originate from colonies where not enough is known about the microbial status, a clear infectious risk must be assumed. This is also the case with so-called ?SPF? animals which come from colonies not monitored regularly and not selected carefully. Such animals should be introduced behind the hygiene barrier only after decontamination.

This decontamination should be performed by embryo transfer. It can be assumed that the risk of spreading agents by embryo transfer is lower than by hysterectomy (no post-implantation contamination with infectious agents). Beside the "classic" embryo transfer, an implantation of embryos originating from in vitro fertilization is also possible.

Prior to sanitation / decontamination

- Prior to the purchase of animals, the recipient should acquire a negative pressure isolator and germ-free animals which can serve as foster mothers.

Embryo transfer

- The breeding animals supplied are, until the removal of embryos (embryo transfer), kept isolated (negative pressure isolator, mini-isolator).
- The embryos are removed and then washed repeatedly and transferred into pseudopregnant females (kept in an isolator with negative pressure). In the same cage sentinel (germ-free) animals (at least 3) should be placed which, after the weaning of the young and together with the foster-mothers, must be subjected to microbiological examination.
- If the microbiological quality is appropriate, the young can then be introduced behind the barrier.

Literature

- Embryo handling guidelines for laboratory rodents and rabbits used for the purpose of embryo cryostorage or import-export. IETS External Renew - revised 1/94, International Embryo Transfer Society (IETS/University of California, Irvine, CA)

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