Laboratory Animal Facilities

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General Summary

The purpose of the Laboratory Animal Facilities (LAF) is to support *in vivo* research and to contribute to the development of basic and clinical medicine. In 2007, 186 researchers used the LAF. We undertake breeding of experimental animals and provide technical guidance to researchers performing animal experiments. Furthermore, we performed the following studies to develop basic medical sciences, including laboratory animal science.

Research Activities

Publishing anatomic color atlases of laboratory animals

Anatomical information on laboratory animals is necessary for animal experimentation. We have already published 3 anatomical atlases of laboratory animals (rabbit in 1993, rat in 1997, and mouse in 2001) in collaboration with the Department of Anatomy (I). We are preparing to publish international editions of these atlases to spread the information throughout the world.

Establishment and characterization of strains derived from Japanese wild mice and Phodopus hamster

Inbred strains derived from Japanese wild mice (*Mus musculus molossinus*) and *Phodopus* hamsters were developed and maintained in this laboratory.

Japanese wild mice are excellent sources of genetic material to improve laboratory mice, because the genetic constitution of this subspecies differs greatly different from that of common laboratory mice derived from subspecies. We have established several new inbred strains based on Japanese wild mice captured in Osaka prefecture. These strains are being maintained in our laboratory, and new consomic strains based on these strains are being developed.

Phodopus hamsters are small rodents that differ taxonomically from Syrian hamsters, which are the major laboratory hamster. We recently confirmed that the *Phodopus* hamster is a promising candidate for a new laboratory animal, and we have established an inbred strain. Furthermore, we continue to establish other inbred strains or congenic strains, to develop human disease models, and to investigate their biomedical characteristics.

The search for a novel drug for treating atopic dermatitis by means of an NC/Nga inbred mouse strain

The NC/Nga inbred strain is the current mouse model for atopic dermatitis. However,

the rates of dermatitis differ among laboratories. The NC/Nga inbred strain maintained in our laboratory has a diathesis for particularly severe dermatitis. In collaboration with the Department of Tropical Medicine, we are using NC/Nga mice to search for novel drugs for treating atopic dermatitis.

Development of a simple method of tracheal intubation for small experimental rodents

Airway management is an important technique related to "refinement" and "reduction" of the "3 R's" of animal experimentation. Tracheotomy is a classic technique in rodents but causes severe stress. An otoscope is used as a laryngoscope for tracheal intubation. Tracheal intubation guided by fiberoptic endoscopy is also presented. For these methods, particular equipment is required, and there are matters of safety and reproducibility. To solve these problems, we developed, in collaboration with Department of Internal Medicine (Cardiology), a simple method of tracheal intubation for small experimental rodents.

Ovulation inhibition due to removal of peripheral blood phagocytes

Reactive oxygen species containing superoxide are believed to be involved in ovulation. We have recently confirmed, by means of a specific superoxide sensor, production of superoxide and found immunohistochemical localization of DNA and lipid peroxides in the ovulating ovary. Phagocytes, such as neutrophils and macrophages, are thought to be sources of reactive oxygen species involved in ovulation. This year, we started to examine whether the removal of peripheral blood phagocytes inhibits ovulation, to examine sources of reactive oxygen species involved in ovulation.

Publications

Watanabe N, Tomimori Y, Terakawa M, Ishiwata K, Wada A, Muto T, Tanaka T, Maruoka H, Nagahira K, Nakatsuka T, Fukuda Y. Oral administration of chymase inhibitor improves dermatitis in NC/Nga mice. *J Invest Dermatol* 2007; **127:** 971–3.

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