動物供應 - 建立基因轉殖及基因剔除小鼠繁殖供應系統
Set-Up Transgenic and Gene Knock-Out Mice Reproductive and Providing System

計畫類別: □ 個別型計畫 □ X 整合型計畫
計畫編號：NSC89 - 2318 - B - 006 - 016-M51
執行期間：89 年 8 月 1 日至 90 年 7 月 31 日

計畫主持人：
共同主持人：

整合型計畫：總計畫主持人：子計畫主持人：

執行單位：國立成功大學醫學院生理學研究所

中華民國 91 年 1 月 16 日
The primary objective of this project was to produce and provide severe combined immunodeficiency (SCID) mice for studies of human diseases and gene therapy. SCID mice are a mutant of the mouse strain C.B-17. C.B-17 is a BALB/c strain that carries the immunoglobulin heavy-chain locus of the C57BL/6Ka mouse strain. The mutation in SCID mice is autosomal recessive and was mapped to chromosome 16. The mutation blocks the differentiation of B and T lymphocytic lineage-committed progenitors. NK cell development and function are not influenced by the SCID mutation. As an inbred strain, all SCID mice share the same single genetic disease, but not all mice lack functional lymphocytes. Two to 20% of young mice are considered "leaky", meaning that they develop low numbers of functional B and T cells. The frequency of serum IgG+ SCID mice is higher in older age groups. This condition is not inherited. Leaky mice can partially or completely reject allogeneic skin grafts, and are generally excluded from studies in which the transfer of human immune function is attempted. SCID mice have little or no immunity and readily succumb to infections by one or more microorganisms (eg, viruses, bacteria, protozoa, fungi). To ensure survival, they must be raised in a protected environment free of pathogenic agents. Even in such an environment SCID mice are prone to premature death, due in part to a high incidence of spontaneous lymphomas which appears to arise from thymic T cells. In the past two years, we have successfully established SCID mice breeding colony and supplied to investigators islandwide. Breeders of SCID mice were obtained from the Jackson Laboratory, Bar Harbor, ME, USA on January 10, 1999. Since then, 1,309 mice (male: 566; female: 743) were produced by these breeders in isolator cages or laminar air flow racks for maintaining the specific pathogen-free status in the Laboratory Animal Center, College of Medicine, National Cheng Kung University, Tainan, Taiwan. All mice were housed in filter-topped cages containing autoclaved food, water, and bedding; cages were changed in a safety cabinet. The animal rooms have automatic light control with a 12-h light:12-h dark cycle. The health quality of the animals was monitored quarterly by an in-house surveillance program, which included a serologic test battery of ten murine pathogens, bacteriologic examination of fresh cecal content and nasal wash, and parasitic examination of cecal contents. Under the environmental condition in our Animal Center, SCID mice can be bred well but have small litters (4-6 pups/litter). The risk of aforementioned leakage of SCID mutation can be monitored in the animal colony by measuring serum IgG (< 20 µg/ml).