

Charles River has entered into a licensing agreement with DNX, a leader in R&D of products and services based on transgenic animal technology. This agreement confers non-exclusive rights to breed, use and sell laboratory animals produced using DNX's patented DNA microinjection process. This places Charles River in a position to produce and sell a wide variety of transgenic lab animal models, and to provide breeding and cryopreservation services to customers with transgenic lab animals created by DNA microinjection.

This document reviews seven CRL transgenic models. They include five OncoMouse™ lines for cancer research, the apo A-I cardiovascular model and ImmortoMouse®

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### **OncoMouse MMTV/v-Ha-ras mammary carcinoma model:**

**Mating strain:** FVB/N mouse.

**Transgene:** viral Harvey ras oncogene.

**Promoter:** mouse mammary tumor virus (MMTV).

**Phenotype:** adenocarcinoma of the mammary and salivary (especially parotid) glands.

**Transgenic expression:** spontaneous mammary tumors appear in females, usually at 3-6 months of age, and parotid tumors appear in both sexes.

**Reference:** E. Sinn et al., 1987. Coexpression of MMTV/v-Ha-ras and MMTV/c-myc genes in transgenic mice: Synergistic action of oncogenes in vivo. *Cell* 49:465-475.

**Laboratory:** Department of Genetics, Harvard Medical School, Boston.

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### **OncoMouse zeta-globin/v-Ha-ras tumor promoter inducible papilloma model:**

**Mating strain:** FVB/N mouse.

**Transgene:** viral Harvey ras oncogene

**Promoter:** fetal mouse zeta-globin.

**Phenotype:** development of papilloma lesions in response to epidermal abrasion or topical tumor-promoting agents; many lesions progress to sarcomas and squamous cell carcinomas.

**Transgenic expression:** probably life-long in both sexes.

**Reference:** A. Leder et al., 1990. v-Ha-ras transgene abrogates the initiation step in mouse skin tumorigenesis: Effects of phorbol esters and retinoic acid. *Proc Natl Acad Sci USA* 87:9178-9182.

**Laboratory:** Department of Genetics, Harvard Medical School, Boston.

### **OncoMouse Ig enh/c-myc pre-B-cell lymphoma model:**

**Mating strain:** FVB/N mouse.

**Transgene:** human c-myc oncogene.

**Promoter:** mouse Ig enhancer.

**Phenotype:** pre-B-cell lymphoblastic lymphomas; neoplastic cells observed in bone marrow and spleen.

**Transgenic expression:** pathology evident in both sexes by 2 months.

**Reference:** E.V. Schmidt et al., 1988. Transgenic mice bearing the human c-myc gene activated by an immunoglobulin enhancer: A pre-B-cell lymphoma model. *Proc Natl Acad Sci USA* 85:6047-6051.

**Laboratory:** Department of Genetics, Harvard Medical School, Boston.

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### **OncoMouse MMTV/c-neu mammary carcinoma model:**

**Mating strain:** FVB/N mouse.

**Transgene:** rat c-neu oncogene.

**Promoter:** mouse mammary tumor virus (MMTV).

**Phenotype:** mammary carcinoma.

**Transgenic Expression:** in both sexes.

**Reference:** W.J. Muller et al., 1988. Single-step induction of mammary adenocarcinoma in transgenic mice bearing the activated c-neu oncogene. *Cell* 54:105-115.

**Laboratory:** Department of Genetics, Harvard Medical School, Boston.

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### **OncoMouse MMTV/c-myc mammary carcinoma model:**

**Mating strain:** FVB/N mouse.

**Transgene:** mouse c-myc oncogene.

**Promoter:** mouse mammary tumor virus (MMTV).

**Phenotype:** mammary adenocarcinoma.

**Transgenic expression:** tumors appear after 3 months in females only.

**References:** T.A. Stewart et al., 1984. Spontaneous mammary adenocarcinomas in transgenic mice that carry and express MMTV/myc fusion genes. *Cell* 38:627-637.

E. Sinn et al., 1987. Coexpression of MMTV/v-Ha-ras and MMTV/c-myc genes in transgenic mice: Synergistic action of oncogenes in vivo. *Cell* 49:465-475. (Lineage designated TG.M, MMTV-H3myc.)

**Laboratory:** Department of Genetics, Harvard Medical School, Boston.

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### **apo A-I (line 427):**

**Mating strain:** C57BL/6 mouse.

**Transgene/Promoter:** human apolipoprotein A-I.

**Phenotype:** production of mouse high density lipoprotein (HDL) cholesterol particles that contain human apolipoprotein A-I.

**Transgenic expression:** life-long, both sexes.

**Reference:** A. Walsh et al., 1989. High levels of human apolipoprotein A-I in transgenic mice result in increased plasma levels of small high density lipoprotein (HDL) particles comparable to human HDL<sub>3</sub>. *J Biol Chem* 264:6488-6494. (lineage 427)

**Laboratory:** Biochemical Genetics and Metabolism, Rockefeller University, New York City.

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## **ImmortoMouse®:**

**Mating strain:** C57BL/6 mouse.

**Transgene:** SV40 tsA58 TAG.

**Promoter:** mouse H2K<sup>b</sup> Class I (MHC).

**Phenotype:** immortalization of cells cultured under permissive conditions.

**Transgenic expression:** cells of both sexes throughout fetal and adult life are immortalized in vitro at 33°C in the presence of interferon.

**Reference:** P.S. Jat et al., 1991. Direct derivation of conditionally immortal cell lines from an H-2K<sup>b</sup>-tsA58 transgenic mouse. *Proc Natl Acad Sci USA* 88:5096-5100.

**Laboratory:** Ludwig Institute for Cancer Research, Middlesex Hospital, London.

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Note: The descriptions of animal models contained in this document are for informational purposes only and should not be treated as a warranty with respect to such models.

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If you have any comments, questions, or would like a hardcopy of this document, please contact our Technical Assistance department at +1 800 338-9680.