

# Light Producing Animal Models

## Now Available from Taconic

### Inflammation

<b>Gadd45b</b> (growth arrest & DNA damage inducible 45-Beta)	CD-1	Cancer – apoptosis; MAP kinase- and NF- $\kappa$ B-mediated signaling pathways; inflammation
<b>iNos or Nos2</b> (macrophage nitric oxide synthase)	FVB/N	Inflammation; sepsis
<b>Epx* or Epo</b> (eosinophil peroxidase)	FVB/N	Eosinophila – parasitism or asthma; bone marrow transplantation
<b>Saa1</b> (serum amyloid A-1)	BALB/C	Arthritis, amyloidosis, sepsis
<b>IL-2</b> (interleukin-2)	CD1	Inflammation, cancer
<b>Cox2 or Ptgs2</b> (cyclooxygenase-2)	BALB/C	Inflammation, pain
<b>TNF<math>\alpha</math></b> (tumor necrosis factor-alpha)	BALB/C	Inflammation – arthritis or inflammatory bowel disease; cancer – apoptosis; sepsis
<b>NF<math>\kappa</math>B-RE</b> (NF $\kappa$ B response elements)	BALB/C	Inflammation – arthritis or inflammatory bowel disease; cancer – apoptosis
<b>NF<math>\kappa</math>B-RE (Oslo)</b> (NF $\kappa$ B response elements)	BALB/C & DBA/1	Inflammation – arthritis or inflammatory bowel disease; cancer – apoptosis
<b>I<math>\kappa</math>B<math>\alpha</math></b> ([inhibitor of NF $\kappa$ B]a)	BALB/C	Inflammation – arthritis or inflammatory bowel disease; cancer – apoptosis; sepsis

### Oncology/Angiogenesis

Animal Model	Background Strain	Applications
<b>Vegfr2*</b> (vascular endothelial growth factor receptor-2)	FVB/N	Inflammation; angiogenesis processes incl. embryonic or post-natal development, wound healing
<b>Vegfr2-K1* (knock in)</b> (vascular endothelial growth factor receptor-2)	C57/BL6 Albino & Outbred (nu/nu)	Cancer, inflammation; angiogenesis processes incl. embryonic or post-natal development, wound healing
<b>Vegf*</b> (vascular endothelial growth factor)	FVB/N	General angiogenesis reporter
<b>EL1-luc/EL1-TAg</b> (Elastase 1)	FVB/N	Spontaneous and bioluminescent pancreatic tumor model

## Drug Metabolism / Toxicology

Animal Model	Background Strain	Applications
CYP3A4 (cytochrome p450 isoform 3A-human promoter)	FVB/N	Drug metabolism; CYP3A4 gene regulation studies; CYP3A4-mediated drug-drug interactions
Cyp3a11* (cytochrome p450 isoform 3a-mouse promoter)	FVB/N	Drug metabolism; Cyp3a11-mediated drug-drug interactions
CYP3A4 RAT* (cytochrome p450, isoform 3A-human promoter)	SD RAT	Drug metabolism; CYP3A4 gene regulation studies; CYP3A4-mediated drug-drug interactions
Cyp1a1 (cytochrome p450, isoform 1a2-mouse promoter)	CD-1	Drug metabolism; Cyp1a1 mediated drug-drug interactions
Cyp1a2 (cytochrome p450, isoform 1a2-mouse promoter)	CD-1	Cyp1a2-mediated drug-drug interactions; toxicity
Cyp2c9 (cytochrome p450, isoform 1a2-mouse promoter)	CD-1	Drug metabolism; Cyp1c9 mediated drug-drug interactions
Cyp19 or Aro (aromatase)	CD-1	Estrogen synthesis; regulation of estrogen production
$\gamma$ Gcs-h or Gclc (gamma-glutamylcysteine synthetase)	CD-1	Heavy metal and chemical toxicity – CdCl <sub>2</sub> , chloroform, or MeHg; chemoprotection
Sod1 (superoxide dismutase)	CD-1	Toxicity including heavy metal and chemical – CdCl <sub>2</sub>
Mdr1 or Abcb1b (multiple drug resistance-1)	Mdr1	Drug transport
Gadd45 $\alpha$ (growth arrest & DNA damage inducible 45-alpha)	CD-1	Toxicity – heavy metal and chemical
Gadd153 (growth arrest & DNA damage inducible 153)	CD-1	Toxicity – heavy metal and chemical

## Endocrine Disruptor

Animal Model	Background Strain	Applications
Kap (kidney androgen regulated promoter)	FVB/N	Kap gene regulation; androgen regulation; endocrine disruption
pS2/TFF1 (trefoil peptide-1)	FVB/N	Inflammatory bowel disease; colitis; gastric ulcer
Mup1 (major urinary protein-1, or alpha-2u globulin)	FVB/N	Mup gene regulation; androgen regulation; endocrine disruption
Esr1 (estrogen receptor-alpha)	CD-1	Esr1 gene regulation studies

## Metabolic Disease

Animal Model	Background Strain	Applications
RIP (rat insulin gene promoter)	FVB/N	Insulin production applications; pancreatic islet transplantation
Retn (resistin)	C57BL/6	Obesity – fasting, high-fat feeding, insulin resistance; obesity – adipose tissue transplantation
mIns2 (mouse insulin promoter)	C57BL/6	Insulin production changes studies resulting from fasting, high-fat feeding, streptozotocin treatment, or pancreatic islet transplantation

## Other Disease Areas

Animal Model	Background Strain	Applications
CMV (cytomegalovirus promoter)	FVB/N	Tissue transplantation R&D studies
Bmp4 (bone morphogenetic protein-4)	FVB/N	Wound healing, estrogen modulation of gene expression
Gfap (glial fibrillary acidic protein)	FVB/N	Astrocyte regeneration (primarily CNS), including physical trauma, chemical insult, or meningitis
$\beta$ -Actin (murine beta actin promoter)	FVB/N	Model may be used as donor animals for studying the transplantation of various tissue types
GAPDH (human Phosphoglyceraldehyde dehydrogenase promoter)	FVB/N	Model may be used as donor animals for studying the transplantation of various tissue types
UbC-luc	C57BL/6	Adoptive transfer, Noninvasive monitoring of endometriosis

### \*Listing Notes

All of the transgenic models are in MICE except for the CYP3A4 which has been developed in both mouse and RAT. The gene abbreviations presented are those most commonly used in NCBI locus link, GENBANK, the Mouse Genome Informatics database, and in the literature. In some cases two alternative abbreviations for the same gene are given. Most of the models consist of the mouse promoter driving the luciferase reporter. These are indicated with gene abbreviation in lower case other than the first letter that is capitalized. For a few of the transgenic models, the human promoter was used. Having the gene abbreviation in all upper case indicates the models using a human promoter.

### Availability

Animals are available in limited numbers from our Taconic colonies, Caliper Life Sciences CDAS Division in Cranbury, New Jersey or Caliper Life Sciences in Alameda, California.

For LPTA animal model lines CYP3a11, CYP3A4 rat, Epx, Vegfr2 and Vegf: these product lines and their use are claimed by pending U.S. and foreign patent applications owned by Caliper Life Sciences.

LPTA animal model lines contain a luciferase gene provided under a license from the Regents of the University of California and Promega Corporation. Under the terms of those licenses, the use of these products and derivatives thereof is strictly limited to that of a research reagent. No right to use these products for any diagnostic, therapeutic, or commercial application will be conveyed to the customer of these products.

*In vivo* imaging in mammals is covered by one or more U.S. and foreign patents controlled by Caliper Life Sciences, Inc., including the following: U.S. patent numbers 6,649,143, 6,217,847, 5,650,135, 6,916,462, 6,890,515, and 6,908,605, and European Union patent number 0861093. A license from Caliper Life Sciences, Inc is required to practice under these patents.



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