

# CANCER BIOLOGY DATA CURATION AT THE MOUSE TUMOR BIOLOGY DATABASE (MTB)

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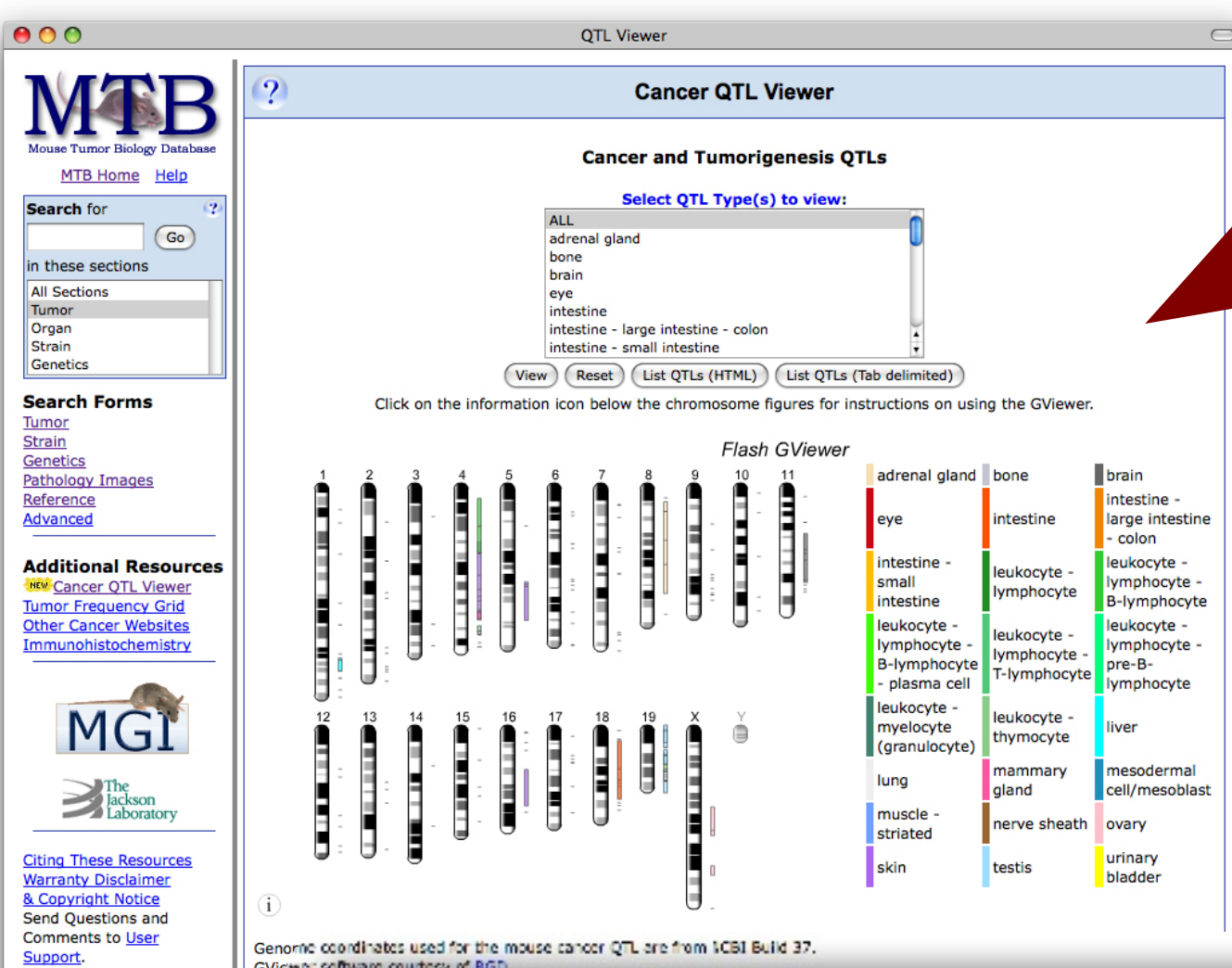
<http://tumor.informatics.jax.org>

## ABSTRACT

Many advances in the field of cancer biology have been made using mouse models of human cancer. The Mouse Tumor Biology (MTB, <http://tumor.informatics.jax.org>) database provides web-based access to data on spontaneous and induced tumors from genetically defined mice (inbred, hybrid, mutant, and genetically engineered strains of mice). These data include standardized tumor names and classifications, pathology reports and images, mouse genetics, genomic and cytogenetic changes occurring in the tumor, strain names, tumor frequency and latency, and literature citations.

Although primary source for the data represented in MTB is peer-reviewed scientific literature an increasing amount of data is derived from disparate sources. MTB includes annotated histopathology images and cytogenetic assay images for mouse tumors where these data are available from The Jackson Laboratory's mouse colonies and from outside contributors. MTB encourages direct submission of mouse tumor data and images from the cancer research community and provides investigators with a web-accessible tool for image submission and annotation. Integrated searches of the data in MTB are facilitated by the use of several controlled vocabularies and by adherence to standard nomenclature. MTB also provides links to other related online resources such as the Mouse Genome Database, Mouse Phenome Database, the Biology of the Mammary Gland Web Site, Festing's Listing of Inbred Strains of Mice, the JAX® Mice Web Site, and the Mouse Models of Human Cancers Consortium's Mouse Repository.

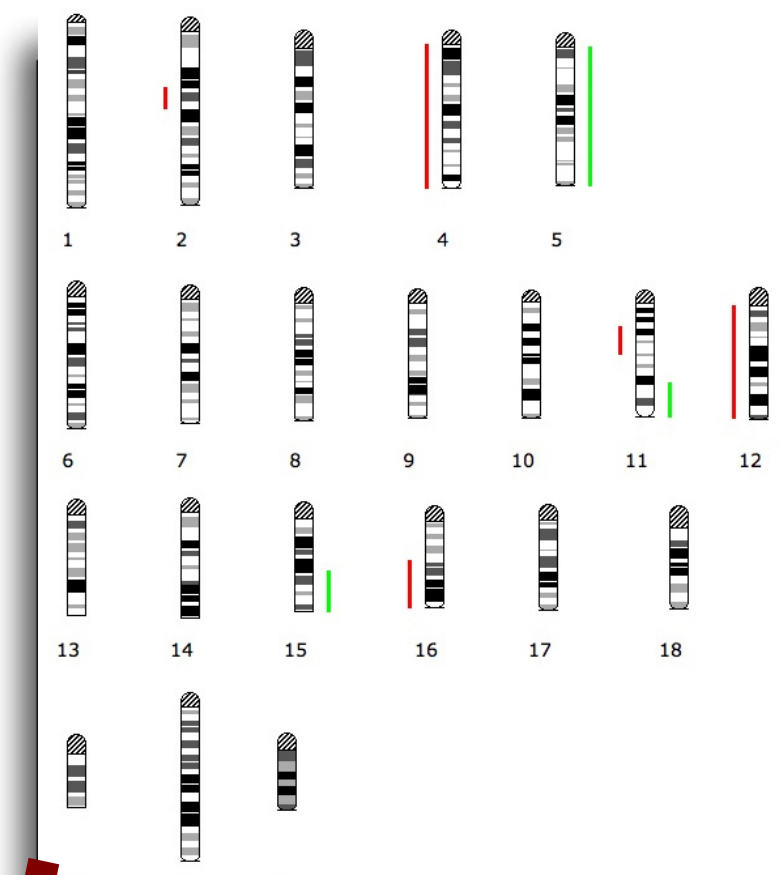
MTB provides access to data on mouse models of cancer via the internet and has been designed to facilitate the selection of experimental models for cancer research, the evaluation of mouse genetic models of human cancer, the review of patterns of mutations in specific cancers, and the identification of genes that are commonly mutated across a spectrum of cancers. MTB is supported by NCI grant CA089713.



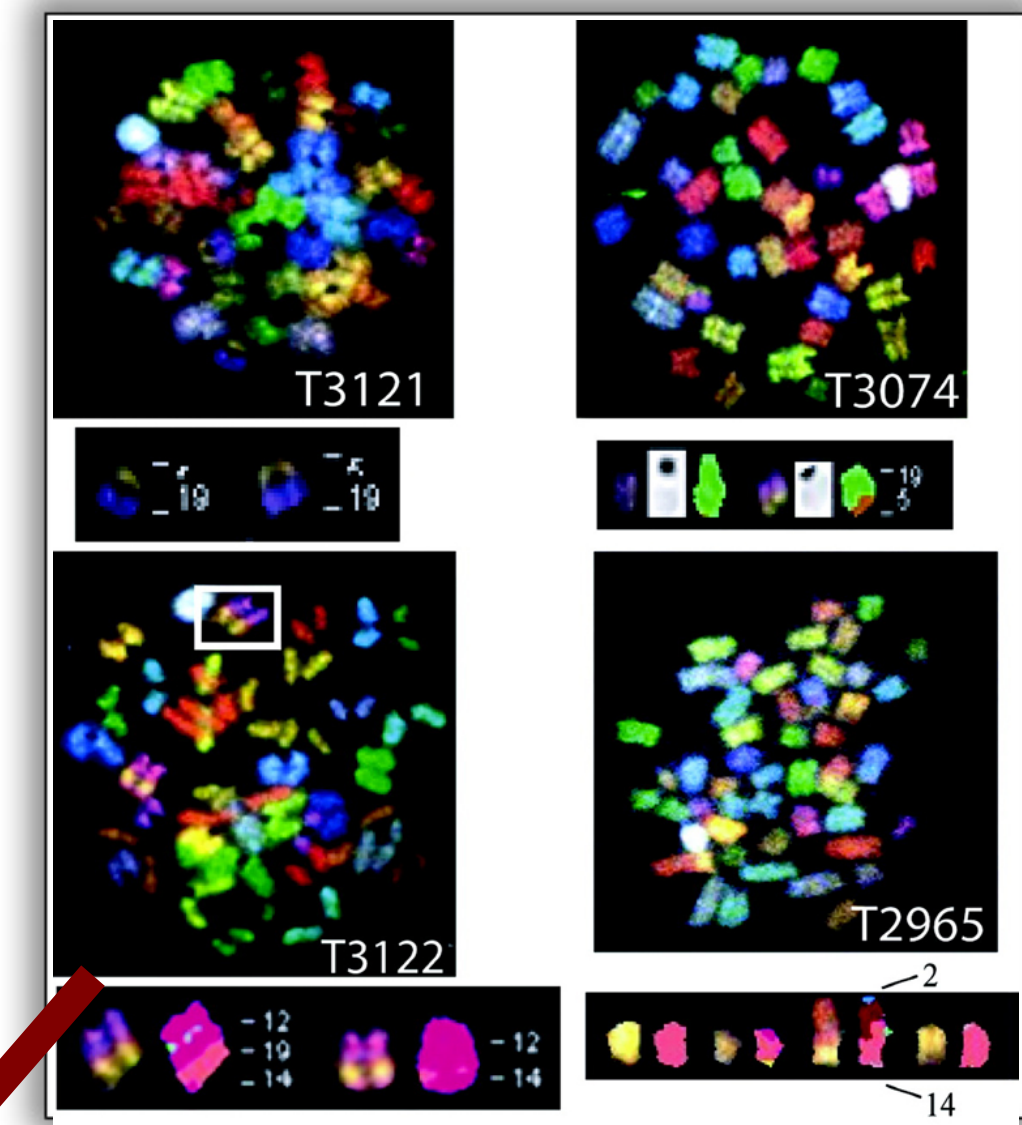
Cancer QTL data are imported from MGD and displayed using GViewer.

(Pathology data submitted via the online submission system)

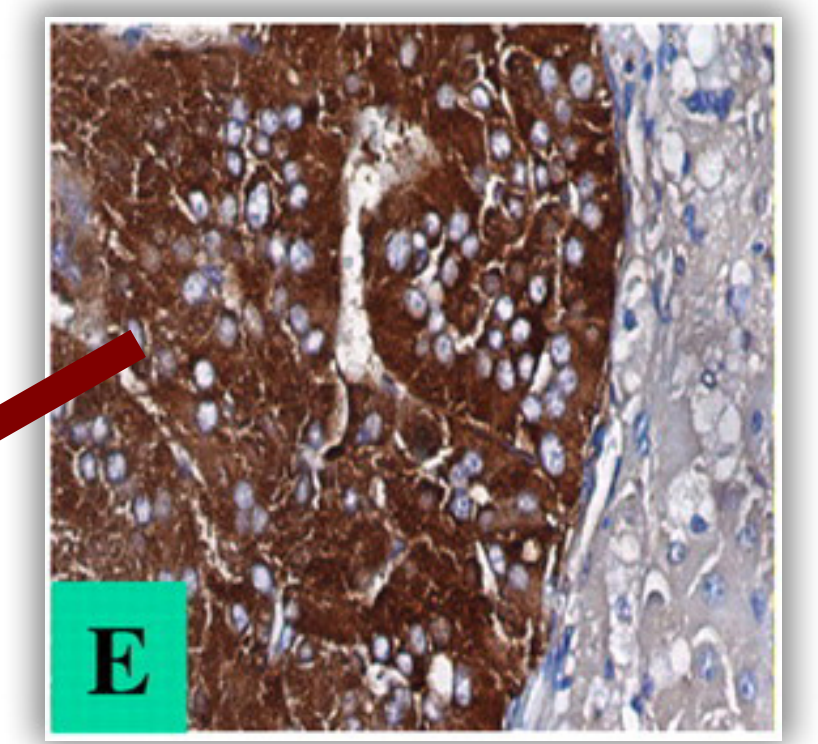
Data from a variety of sources is incorporated into the database. A number of searches are available for the user to query the data.



(CGH data from the NCI and NCBI's SKY/M-FISH CGH database)



(SKY data from Morales J.C. et al., Proc Natl Acad Sci U S A 2006 Feb 28;103(9):3310-3315)



(Pathology data from You M.J. et al., Proc Natl Acad Sci U S A 2002 Feb 5;99(3):1455-1460)

(QTL data from the Mouse Genome Database (MGD))

Tumor Name	Organ Affected	Treatment Type	Strain Name	Tumor Frequency Range	Microscopy	Images	Tumor Summary
Adrenal gland - Medulla pheochromocytoma	Adrenal gland - Medulla	None (spontaneous)	STOCK Pten <sup>tm1Rop/+</sup>	24	net lung	<a href="#">Summary</a>	
Adrenal gland - Medulla pheochromocytoma	Adrenal gland - Medulla	None (spontaneous)	STOCK Pten	0		<a href="#">Summary</a>	
Adrenal gland - Medulla pheochromocytoma	Adrenal gland - Medulla	None (spontaneous)	STOCK Cdkn2a <sup>tm1Rdp</sup>	0		<a href="#">Summary</a>	
Adrenal gland - Medulla pheochromocytoma	Adrenal gland - Medulla	None (spontaneous)	STOCK Cdkn2a <sup>tm1Rdp</sup> /Pten <sup>tm1Rop/+</sup>	97		<a href="#">Summary</a>	
Adrenal gland - Medulla pheochromocytoma	Adrenal gland - Medulla	None (spontaneous)	STOCK Cdkn2a <sup>tm1Rdp</sup> /Pten <sup>tm1Rop/+</sup> /Pten <sup>tm1Rop/+</sup>	99	Adrenal gland - Medulla pheochromocytoma	<a href="#">Summary</a>	

Records that match the query terms are displayed on the Tumor Search Results page. Users may opt to view more information by clicking on the hyperlinks.

The Tumor Summary page displays a summary of all the data in the database regarding a particular tumor from a particular strain.

## Database Stats

- 33,732 tumor frequencies
- 3,594 strains
- 3,333 pathology images
- 169 cytogenetic images

On the Pathology Image Detail page each image is displayed accompanied by a detailed description provided by a veterinary pathologist. This additional information facilitates more accurate interpretation of the images.

**Pathology Image Detail**

**Image:** Fig. 3E, stained with anti-chromogranin A. Positive staining shows as dark brown.

**Caption:** Fig. 3E, stained with anti-chromogranin A. Positive staining shows as dark brown.

**Description:** Immunohistochemistry of pheochromocytoma. Positive staining for anti-chromogranin A and neuron-specific enolase protein chromaffin origin of these tumors.

**Age at Necropsy:** Fig 3E F and text, original source.

**Notes:** Fig 3E F and text, original source.

**Contributor:** You MJ (1:24365)

**Copyright:** This image is from You MJ, Proc Natl Acad Sci U S A 2002 Dec 24;99(3):1455-460. Copyright 2002 National Academy of Sciences, U.S.A.

**MTB ID:** MTB:22967

**Tumor Name:** Adrenal gland - Medulla pheochromocytoma

**Treatment Type:** None (spontaneous)

**Tumor Synonyms:** pheochromocytoma

**Organ Affected:** Adrenal gland - Medulla

**Frequency:** 59%

**Reference:** 1:24365

**Strain:** STOCK Cdkn2a<sup>tm1Rdp</sup> Pten<sup>tm1Rop/+</sup>

**Strain Synonyms:** Pten<sup>tm1Rop/+</sup>

**Strain Sex:** M

**Reproductive Status:** mixed population not specified

**Age of Onset:** 7 weeks

**Age of Dissection:** 7-26 weeks

**Assay Image Detail**

**Image:** SKY/M-FISH and CGH image showing chromosome spreads with colored markers.

**Caption:** Case No: 2871; Case Name: "Brc1a mutant pbr1"

**Contributor:** SKY/M-FISH and CGH web site, NCI and NCI (1:18222)

**Copyright:** This image is from NCI and NCBI's SKY/M-FISH and CGH Database (2001). <http://www.ncbi.nlm.nih.gov/skyweb.cgi>.

**Mouse Chromosomes:**

Chromosome	Name	Cytogenetic Type	Assay Type	Notes
2	2(C)-D	Loss	CGH	
4	4(A2)-qter	Loss	CGH	
5	5(A2)-qter	Gain	CGH	
11	11(A5-B2)	Loss	CGH	
11	11(D)-qter	Gain	CGH	
12	12(A1.2)-qter	Loss	CGH	
15	15(D2)-qter	Gain	CGH	
16	16(C1)-qter	Loss	CGH	

**MTB ID:** MTB:30271

**Tumor Name:** Mammary gland adenocarcinoma

**Treatment Type:** None (spontaneous)

**Tumor Synonyms:** mammary gland tumor + mammary gland adenocarcinoma

**Organ Affected:** Mammary gland

**Frequency:** observed

**Reference:** 1:27268

**Strain:** [not specified]:Brc1a<sup>tm1Crd</sup>/Brc1a<sup>tm2Cd</sup> Tg(Wap-cre)11738Mam Trp53<sup>tm1Rdp/+</sup>

**Strain Synonyms:** Brc1a<sup>tm1Crd</sup>/Brc1a<sup>tm2Cd</sup> Tg(Wap-cre)11738Mam Trp53<sup>tm1Rdp/+</sup>

**Strain Sex:** Unspecified

**Reproductive Status:** reproductive status not specified

**Assay Image Detail**

**Image:** SKY image showing chromosome spreads with colored markers.

**Contributor:** Morales JC (1:107173)

**Copyright:** This image is from Morales JC, Proc Natl Acad Sci U S A 2006 Feb 28;103(9):3310-5. Copyright 2006 National Academy of Sciences, U.S.A.

**Mouse Chromosomes:**

Chromosome	Name	Cytogenetic Type	Assay Type	Notes
5,19	translocation	Translocation	SKY	5 of 13 spreads showed clonal translocations with no gross signs of aneuploidy, see text original ref.
5,19	robertsonian translocation	Robertsonian translocation	SKY	Robertsonian translocation 19;5 was detected in 18 of 20 spreads, tumor 3121.
5,19	t(19;5)	Translocation	SKY	Clonal translocation 19;5 was detected in 13 of 15 spreads, tumor 3074.
4,12	t(12;4)	Translocation	SKY	Translocation 12;4 was detected in tumor 3122.
12,14	t(12;14)	Translocation	SKY	Translocation 12;14 was detected in tumor 3122.
2,14	t(14;2)	Translocation	SKY	Translocation 14;2 was detected in tumor 2365.

**MTB ID:** MTB:36631

**Tumor Name:** Leukocyte - Lymphocyte - T-lymphocyte lymphoma

**Treatment Type:** None (spontaneous)

**Tumor Synonyms:** thymic lymphoma

**Organ Affected:** Thymus

**Frequency:** 72.73%

**Reference:** 1:107173

**Strain:** 129SvEv<sup>+/+</sup> Trp53<sup>tm1Tg</sup> Gt(OSTG)4324Lax

**Strain Synonyms:** p53<sup>tm1Tg</sup>

**Strain Sex:** Unspecified

**Reproductive Status:** reproductive status not specified

Assay Image Detail pages display the image accompanied by a list of the aberrations stated by the source to be represented in that image. This page also provides data on the tumor and the strain in which the tumor arose.