Mouse Nomenclature

Advanced Genetics

2/27/20
Wild type...

- Not exactly wild in traditional sense
- Inbred defined as 20 consecutive generations of sib mating
- C57BL/6J
  - C57BL = parent strain
  - 6 = line
  - J = Jackson Lab code
- Lab codes designate where crossing occurred
  - J – Jackson
  - Mcw – Medical College of Wisconsin
  - Kyo – Kyoto University
  - Mit – MIT
Crossing Strains

- Progeny of parental strains designated as F1Hybrid
  - D2B6F1
    - DBA/2 mother and C57BL/6J father
- Intercrossing two F1 hybrids gives rise to F2 generation
  - D2B6F2
    - Offspring of a D2B6F1 cross

\[
\begin{align*}
\text{Inbred*} \\
\text{C57BL/6J} &= \text{B6} \\
129S1/SvImJ &= \text{129S} \\
\text{F1Hybrid*} \\
\text{B6129SF1/J}
\end{align*}
\]
Genes and Loci

• First letter capitalized
• Italicized
• Example
  • \( Apc \) = adenomatosis polyposis coli
• Mutant allele name may be placeholder for unknown gene
  • \( Lepr^{db} \) used to be \( Db^{db} \)
• Loci: \( D8Mit17 = 17^{th} \) locus on mouse chromosome 8 identified at MIT
Alleles

• Named by phenotype
• Superscripted
• Italicized
• Dominant = first letter capitalized
• Recessive = all lowercase
• Examples:
  • $Apc^{Min}$ = dominant, multiple intestinal neoplasia allele of adenomatosis polyposis coli gene
  • $Lepr^{db}$ = recessive, diabetes allele of leptin receptor gene

Genotypes

• Includes: genetic background – gene\textsuperscript{allele} / lab designation
• Notation for spontaneous mutations:
  • MRL/MpJ-\textit{Fas}\textsuperscript{Ipr}/J
Targeted Knock-out, Knock-in, or Floxed mutations

• Modified genes superscripted with “tm” for targeted mutations
Transgenic Strains

B6.Cg-Tg(PDGFB-APP)5Lms/J

- **Background (Recipient Strain)**
- **Donor Strain**
- **Founder Line**
- **Holding Site Lab Code**

**Congenic N≥5**

**Transgenic**

(Promoter-Gene)

**Creator Lab Code**

*Mixed Strain Background = semicolon (;)
Backcrossed to recipient inbred strain < 5 generations

**Congenic or Incipient Congenic = period (.)
Backcrossed to recipient inbred strain ≥ 5 generations
Proteins

• All capitol letters
• No italics
• Examples
  • LEPR
  • APC

Mouse Nomenclature Home Page

Rules and Guidelines

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Searches

- Search for existing mouse genes/markers: [Genes and Markers Query Form](http://www.informatics.jax.org/mgihome/nomen/)
- Search for existing mouse alleles/mutations: [Phenotypes, Alleles & Disease Models Query Form](http://www.informatics.jax.org/mgihome/nomen/)
- Search for existing mouse strains: [Inbred Strains of Mice and Rats](http://www.informatics.jax.org/mgihome/nomen/)
- Search or apply for a Laboratory Registration Code with the [Institute for Laboratory Animal Research (ILAR)](http://www.informatics.jax.org/mgihome/nomen/)

Submissions/Registrations

- Submit a proposed locus symbol
- Submit a new allele/mutant, register a mouse strain name, or submit phenotype data
- Submitting Data Files - Instructions and examples
JAX® MICE & SERVICES

JAX® Mice are the highest quality and most-published mouse models in the world. Take advantage of our large inventories of common inbred strains and the convenience of having your breeding and drug efficacy needs met by the leading experts in mouse modeling.
## Review of nomenclature across models

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Resources

- [https://www.jax.org/jax-mice-and-services](https://www.jax.org/jax-mice-and-services)