TRM: Slc7a2/CAT2 KO Mice

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BACKGROUND

CAT2 is a membrane associated protein involved in the cellular uptake of cationic amino acids such as arginine, lysine and ornithine. CAT2 plays a regulatory role in the activation of macrophages. Arginine is a substrate for nitric oxide synthase (NOS) during the production of nitric oxide (NO). The release of NO by inflammatory cells contributes to the progression of diseases such as cancer, arthritis, inflammatory bowel disease, Crohn's disease, and atherosclerosis. CAT2 plays a role in controlling inflammation and IL-17 activation in an injury model of colitis.

TECHNOLOGY DESCRIPTION

In this strain, a neo cassette replaces replace 1.9 kb, including exon 2, of the solute carrier family 7 (cationic amino acid transporter, y^+ system), member 2 (*Slc7a2*) gene, abolishing membrane bound CAT2 activity. Mice homozygous for this $Cat2^{-/-}$ allele are viable and fertile. These $Cat2^{-/-}$ mice exhibit a reduction in NO biosynthesis in macrophages. They have increased numbers of memory T cells and activated dendritic cells in their lungs. When infected with *Helicobacter pylori* these mice display suppression of gastric macrophage levels, macrophage expression of iNOS, dendritic cell activation, and expression of granulocyte-colony stimulating factor. They exhibit altered cytokine expression

APPLICATIONS

These mice may be useful for studying the control of CAT2 over inflammation and disease progression.

STATE OF DEVELOPMENT

The mice are designated Tangible Research Material (TRM). A complete description, including genotyping, phenotyping, etc is found at The Jackson Lab cat. No. 022767; https://www.jax.org/strain/022767

INTELLECTUAL PROPERTY INFO

Academic and non-profit institutions please order directly from The Jackson Laboratory. Commercial entities require a license from UC San Diego contact (https://innovation.ucsd.edu/contact/).

RELATED MATERIALS

- Nicholson B, Manner CK, Kleeman J, MacLeod CL. Sustained nitric oxide production in macrophages requires the arginine transporter CAT2. J Biol Chem. 2001 May 11;276(19):15881-5. Epub 2001 Feb 16. - 05/11/2001

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OTHER INFORMATION

KEYWORDS

Cationic amino acid, arginine, nitric oxide synthase, macrophage, inflammation, k/o mice

CATEGORIZED AS

- **Medical**
  - Disease: Autoimmune and Inflammation
  - Research Tools
- **Research Tools**
  - Animal Models

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