Most upregulated gene: 2310046K01Rik

Accession: Q9D6X5 (S52A3_MOUSE)
Protein - Solute carrier family 52, riboflavin transporter, member 3
Protein synonymous names: riboflavin transporter 2
Gene - Slc52a3
Gene synonymous names: Rft2, RFVT3
Organism - Mus musculus

Function: Transporter for riboflavin, which must be obtained as a nutrient via intestinal absorption. Riboflavin transport is Na^+-independent at low pH but significantly reduced by Na^+ depletion under neutral pH conditions. Activity is strongly inhibited by riboflavin analogs, such as lumiflavin, flavin mononucleotide (FMN), flavin adenine dinucleotide (FAD), by methylene blue, and to a lesser extent by amiloride (By similarity).

GO - Molecular function
- riboflavin transporter activity

GO - Biological process
- cellular response to heat
- riboflavin transport
- sensory perception of sound

Subcellular location
- apical cell membrane
- multi-pass membrane protein

2310046K01Rik transports riboflavin (aka as vitamin B2) across cell membranes. It has two other family members, SLC52A1 and SLC52A2. SLC52A2 is expressed in all tissues, while it has been shown that SLC52A3 is primarily expressed in the testis and intestine. Mutations in SLC52A3 are associated with the rare disease Brown-Vialetto-Van Laere syndrome, which is characterized by palsies. The phenotype is likely due to riboflavin deficiency, and can be treated in part by administration of extra riboflavin (Yonezawa et al., 2013).

Yonezawa, Atsushi, and Ken-ichi Inui. “Novel Riboflavin Transporter Family RFVT/ SLC52: Identification, Nomenclature, Functional Characterization and Genetic Diseases of RFVT/SLC52.” *Molecular Aspects of Medicine* 34.2–3 (2013): 693–701. *ScienceDirect*. Web. The ABCs of Membrane Transporters in Health and

Disease (SLC Series).