

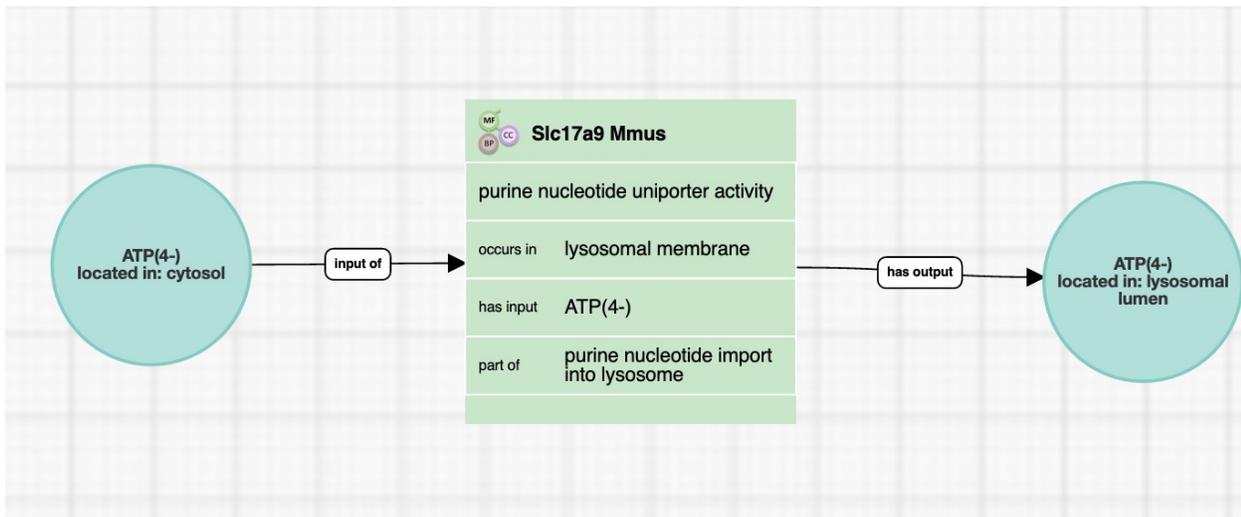
# Guidelines for annotating transporter activity

## Pathway Editor

The activity unit for a transmembrane transporter is:

- **MF:** 'enables' a child of transmembrane transporter activity ([GO:0022857](#))
- **Context:**
  - The movement of the small molecule substrate is represented by:
    - small molecule (ChEBI) + 'input of' + the start location of the small molecule, captured with the relation 'located in'
    - the transporter activity + 'has output' the small molecule (ChEBI) + the end location of the small molecule, captured with the relation 'located in'
  - **BP** 'part of' the BP in which this transporter activity participates
  - **CC** 'occurs in' a child of membrane ([GO:0016020](#)), e. g.: lysosomal membrane ([GO:0005765](#)).

**Example:** [SLC17A9 transports ATP to the lysosomal lumen](#)



# Form Editor

The activity unit for a transmembrane transporter is:

- **MF**: a child of transmembrane transporter activity ([GO:0022857](#))
- **Context**: The movement of the small molecule substrate is represented by:
  - **'has input'** the small molecule (ChEBI)
  - **BP** **'part of'** the BP in which this transporter activity participates
  - **CC** **'occurs in'** a child of membrane ([GO:0016020](#)), e. g.: lysosomal membrane ([GO:0005765](#))

**Example:** [SLC17A9 transports ATP to the lysosomal lumen](#)

The screenshot shows the GO-CAM form editor interface for the gene **Slc17a9 Mmus** (MGI:191107). The form is titled "Activity Unit" and is dated "Mar 29, 2023". The main activity is "MF purine nucleotide uniporter activity" (GO:0160042). The form is annotated with several relationships:

RELATIONSHIP	TERM	ASP	EXT	EVIDENCE	REFERENCE	WITH
	purine nucleotide uniporter activity GO:0160042	F				
	Slc17a9 Mmus MGI:191107			direct assay evidence used in manual assertion ECO:0000314	PMID:27477609	
has input	ATP(4-) CHEBI:30616		ext.	direct assay evidence used in manual assertion ECO:0000314	PMID:27477609	
has output	ATP(4-) CHEBI:30616		ext.	direct assay evidence used in manual assertion ECO:0000314	PMID:27477609	
part of	purine nucleotide import into lysosome GO:0141013	P		direct assay evidence used in manual assertion ECO:0000314	PMID:27477609	
occurs in	lysosomal membrane GO:0005765	G		direct assay evidence used in manual assertion ECO:0000314	PMID:27477609	

## Differences between GO-CAM and standard annotation of a transmembrane transporter activity

In standard annotation (captured with the Noctua Form or Protein2GO), the localization of the molecule is not captured; neither is the output of the transporter, since that output relates to the localization of the molecule transported.

## Review information

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