

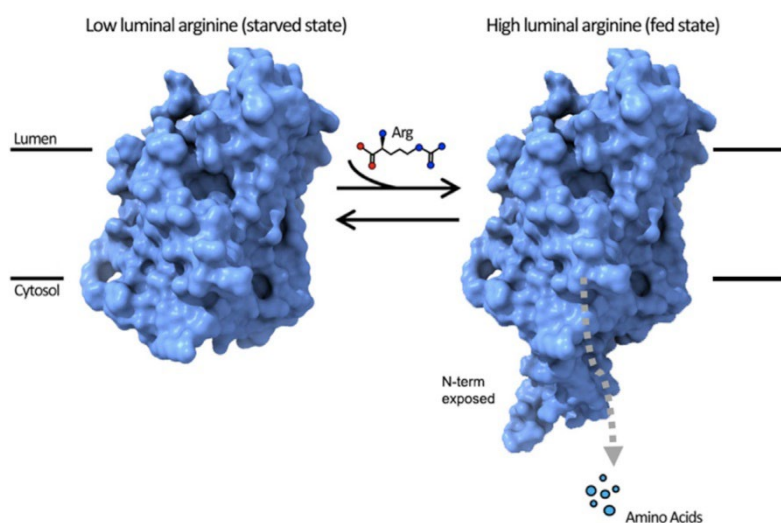
## Amino Acid Sensation and Transport by SLC38A9

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SLC38A9 is a member of the sodium-coupled amino acid transporters that is found on the lysosomal membrane where it transports Arginine and other essential amino acids.

SLC38A9 senses amino acids in the fed state to signal the activation of mTORC1 via the Ragulator-rag GTPase complex. We determined the very first structures of SLC38A9 with and without arginine bound and discovered the mechanism by which SLC38A9 translates the amino acid concentration into a signal for mTORC1 activation. Here I will describe the transport mechanism as well as the amino acid sensation mechanism of SLC38A9. Our work provides important insights into nutrient sensing by SLC38A9 to activate the mTORC1 pathways in response to dietary amino acids.



**Figure 1**