New Class of Nucleotide Sugar Transporter in Trypanosome Peroxisome

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Trypanosoma brucei expresses essential N-glycosylated and GPI anchored glycoproteins, eg. the variant surface glycoprotein (VSG) and the transferrin receptor (TfR).
Glycosylation pathways require nucleotide sugars (NS).
NS biosynthesis in T. brucei, uniquely, takes place inside of peroxisomes, which in these organisms are called glycosomes. We are characterizing new class of nucleotide sugar transporters (gNST) present on the membrane of these organelles, which were discovered by High confidence SILAC glycosome proteome and RNAi knock-down followed by VSG glycosylation phenotyping and nucleotide sugars quantitation by mass spectrometry. These glycosome NST allow NS to reach cytosol and ultimately to be taken up by traditional NST present on ER and Golgi.