

Publication

Asymmetric distribution of glucose transporter mRNA provides a growth advantage in yeast

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4500457**Author(s)** Stahl, Timo; Hümmer, Stefan; Ehrenfeuchter, Nikolaus; Mittal, Nitish; Fucile, Geoffrey; Spang, Anne**Author(s) at UniBasel** [Ehrenfeuchter, Nikolaus](#) ; [Spang, Anne](#) ;**Year** 2019**Year: comment** 2019**Title** Asymmetric distribution of glucose transporter mRNA provides a growth advantage in yeast**Journal** The EMBO journal**Volume** 38**Number** 10**Pages / Article-Number** e100373**Keywords** cellular fitness, glucose transporter, mRNA localization, signaling, stress response

Asymmetric localization of mRNA is important for cell fate decisions in eukaryotes and provides the means for localized protein synthesis in a variety of cell types. Here, we show that hexose transporter mRNAs are retained in the mother cell of; *S. cerevisiae*; until metaphase-anaphase transition (MAT) and then are released into the bud. The retained mRNA was translationally less active but bound to ribosomes before MAT. Importantly, when cells were shifted from starvation to glucose-rich conditions, HXT2 mRNA, but none of the other HXT mRNAs, was enriched in the bud after MAT. This enrichment was dependent on the Ras/cAMP/PKA pathway, the APC ortholog Kar9, and nuclear segregation into the bud. Competition experiments between strains that only expressed one hexose transporter at a time revealed that; HXT2; only cells grow faster than their counterparts when released from starvation. Therefore, asymmetric distribution of HXT2 mRNA provides a growth advantage for daughters, who are better prepared for nutritional changes in the environment. Our data provide evidence that asymmetric mRNA localization is an important factor in determining cellular fitness.

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