

Splice up your life: an iron-regulated splicing factor in *Toxoplasma gondii*

Yue Lan¹, Lucia Mrvova² and Megan Sloan¹

Toxoplasma gondii's infects a broad range of host cells each presenting a different nutritional landscape. Iron is one of the most essential nutrients these parasites must scavenge, and its abundance can vary >500-fold between hosts. Despite its central role in core cellular processes including respiration and DNA replication/repair, too much iron is toxic to cells. As such parasites must tightly regulate genes for iron sensing, scavenging and storage. Differential splicing is an important mechanism for eukaryotes to regulate gene expression, yet it remains an understudied area of *Toxoplasma* biology. We have identified a putative splicing factor (TGGT1_272440) whose transcript and protein abundance is increased when parasites are grown in a low iron environment. TGGT1_272440 is a paralogue of the previously described serine arginine (SR) splicing factor SR4, whose expression is not iron responsive, and part of a family of SR splicing factors which have a diverse set of roles in eukaryotes including regulation of splicing, mRNA transport and translation. Knockout of TGGT1_272440 has a mild growth phenotype in low iron conditions. Similar to, previously described SR factors, loss of TGGT1_272440 had a modest effect on transcript abundances with fewer than 90 transcripts showing >2-fold changes abundance. However, we saw changes to intron retention in ~90 genes. Work is ongoing to validate specific RNA clients and any conserved binding motifs for (Tg272440). Together these data suggest another layer of regulation of iron metabolism in *Toxoplasma* parasites.

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