Investigation of a protein kinase signalling pathway required for haptomonad differentiation in *Leishmania mexicana*

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Survival of *Leishmania* throughout its life cycle relies on perfectly orchestrated differentiation events, triggered by environmental changes such as nutrients, pH and temperature. Protein kinases are fundamental to sensing these environmental cues and signalling differentiation. In the sand fly, procyclic promastigotes undergo several differentiation events, resulting in either the infective metacyclic form or the haptomonad form. Metacyclic cells can be enriched by growth in Graces media, but the haptomonad form has low abundance in these conditions. Here we investigate a *L. mexicana* haptomonad differentiation protein kinase (HDK1) null mutant, producing cultures enriched in haptomonad parasites, triggered by reduction in pH from 7.5 to 5.5, but not to a change in temperature. This HDK1 null mutant can infect the sand fly midgut but cannot colonise the stomodeal valve, indicating an impaired onwards transmission. Proteomic and RNAseq analysis, comparing expression levels between the procyclic and haptomonad life cycles stage of this HDK1 mutant have identified markers of the haptomonad stage and are aiding to unravel this signalling pathway.