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“a conserved quorum sensing signalling pathway regulates interspecies crosstalk”

PARASITE DEVELOPMENT

Parasites talk about growth

Microbial communities use quorum sensing to coordinate group behaviour. Among them, the parasite *Trypanosoma brucei* — which causes African trypanosomiasis in humans — mediates quorum sensing through an unidentified factor that induces the development of cell-cycle arrested ‘stumpy forms’ of trypanosomes during the blood stage of the life cycle, in preparation for transmission. *T. brucei* can co-infect animals together with *Trypanosoma congolense* and *Trypanosoma vivax*; however, whether interspecies interactions occur and whether they are dependent on quorum sensing was unknown.

Michael Burrell/Alamy Stock Photo

In a recent study, Silvester *et al.* investigated trypanosome interspecies relationships and found that these interactions can regulate parasite growth and development.

First, the authors showed that the growth of *T. congolense* in the bloodstream was controlled by cell density. They found that *T. congolense* encoded conserved quorum sensing regulatory genes that were orthologous to those involved in the stumpy formation pathway in *T. brucei*. Functional analyses confirmed complementarity between these genes, as a *T. brucei* null mutant for one specific quorum sensing component (*TbHYP2*) was rescued by complementation with the orthologous gene from *T. congolense* (*TcHYP2*). Next, the authors found that *T. congolense*-conditioned culture medium could promote growth arrest and stumpy formation in *T. brucei*, and that this was mediated through quorum sensing. By contrast, *T. congolense* was not responsive to *T. brucei* signalling, but they could not establish whether signalling was unidirectional or whether unidirectionality was a result of the parasite isolate used. Finally, they confirmed these results in a mouse co-infection model *in vivo*.

Altogether, this study shows that a conserved quorum sensing signalling pathway regulates interspecies crosstalk in trypanosome co-infections and provides novel insights into trypanosome virulence and transmission.

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ORIGINAL ARTICLE Silvester, E. *et al.* Interspecies quorum sensing in co-infections can manipulate trypanosome transmission potential. *Nat. Microbiol.* http://dx.doi.org/10.1038/s41564-017-0014-5 (2017)