

## Quiescence in *Leishmania mexicana*

Romina Nievas<sup>1</sup>, Katherine Newling<sup>1</sup>, Jeremy Mottram<sup>1</sup>

<sup>1</sup>York Biomedical Research Institute and Department of Biology, University of York, York, UK.

Microbes commonly employ cellular quiescence to survive environmental stresses such as starvation, immune surveillance, or chemotherapeutic interventions. Moreover, dormancy often underlies chronic infections that complicate the clinical management of infected patients. A few studies have identified quiescent and semi-quiescent population of amastigotes in leishmania-infected mice, characterized by low rates of transcription and protein turnover. However, since access to persistent amastigotes is a major logistical bottleneck, further mechanistic analysis on these cells are limited. *Leishmania* promastigotes also enter a non-replicating but viable state in culture when starved of purines that have hallmarks of persister-like cells. These cells can survive without the provision of purines for more than 3 months, during which, growth arrest is reversible by the addition of exogenous purine. The study of these growth arrested leishmania forms provides a model to unravel general mechanisms underpinning transition between quiescent and proliferative states and may also provide answers to the frequent drug treatment failures in the absence of genetically selected resistant parasites. We are using the adenine-starvation model and multi-omics approaches to identify markers for persistent parasites and to elucidate the protein kinase-dependent signalling mechanisms that regulate entry and exit from quiescence in *Leishmania*.