Cytoadhesion of *Trypanosoma congolense* to bioengineered 3D bovine microvessels

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African trypanosomes are extracellular parasites of a plethora of mammals, causing a range of lethal diseases collectively known as African trypanosomiasis. One of the greatest difficulties in trypanosomiasis control is the complexity of the trypanosome interaction with the mammalian host. *Trypanosoma congolense*, one of the most pathogenic and prevalent African trypanosome species for African livestock, cytoadheres to the vascular endothelial cells, in a process known as sequestration.

Previously, we showed that sequestration in the brain determines acute cerebral disease, but we lacked a robust method to investigate how sequestration is governed. Therefore, we have developed two bioengineered 3D microvessel models composed by either primary bovine brain or aorta microvascular endothelial cells to directly assess how sequestration of two clinically-distinct parasite strains is affected by blood flow properties and endothelial cell activation in two organotypic vascular beds.

This physiologically-relevant platform allows direct assessment of cytoadhesion in a controlled environment, thus being ideal to identify parasite ligands and host receptors of sequestration. This knowledge is important for the successful development of therapeutic strategies that interfere with parasite survival in the mammalian host, thus abrogating disease and/or reducing disease severity.