

## **Abstract**

An in vitro system for studying the transformation of bloodstream forms of *Trypanosoma brucei* into procyclic (midgut) forms is described. In this system, transformation of the parasites was stimulated by *Glossina morsitans morsitans* midgut homogenates at 27 degrees C but not at 4 degrees C. The transformation-stimulating capacity was irreversibly destroyed by heating the midgut homogenates at 60 degrees C for 1 h. A correlation was established between the transformation activity of the midgut homogenates and trypsin activity. The protease inhibitors (soybean trypsin inhibitor and N-p-tosyl-L-lysine-chloromethyl-ketone) inhibited trypsin activity and completely blocked the transformation of the parasites. Furthermore, the midgut homogenates could induce transformation only in the presence of blood. These results provide evidence for the involvement of trypsin or trypsin-like enzymes within the tsetse midgut in stimulation of the transformation of bloodstream trypanosomes