

# **The Molecular Basis of Human Infectivity of *Trypanosoma brucei gambiense*: Potential for Antisleeping Sickness Drug Discovery**

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*2<sup>nd</sup> Stakeholders Meeting  
MRC, Cape Town, South Africa  
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# Scientific Rationale & Objectives

## Rationale:

- Normal human serum is toxic to *Trypanosoma brucei brucei*
- The gene (SRA) responsible for human infectivity of *T. brucei rhodesiense* is known
- SRA gene is absent in *T. brucei gambiense*

## Objectives:

- Identify gene(s) and gene product(s) used by *Trypanosoma brucei gambiense* to evade man's innate immunity to infection

## Methodology

- Transcriptomic and proteomic profiling of infective and non infective tsetse fly stages of *Trypanosoma brucei gambiense* to obtain differential displays
- RNAi and fluorescence/electron microscopy for evaluation of physiological roles of identified genes and gene products



# Key Findings & Achievements

- **The results expected are as follows:**
  - 1. Obtain genes and gene products responsible for human infectivity of *T. brucei gambiense*
  - 2. Subcellular localization of identified virulence protein(s) known
  - **The conclusions drawn:**
    - 1. The virulence factors identified can be exploited for development of truly effective antislipping sickness drugs
    - 2. Development of recombinant vaccine(s) feasible



# Challenges & How Resolved

- **Challenges:**

- Difficulty in getting enough cells from tsetse flies for the study

- **How Resolved:**

- Large number of flies will be used involving cyclical transmission through rabbits.
- Cells will be harvested 2-3 times a week from infected flies by both probing and dissection of infected flies



# Future Directions & How ANDI Can Contribute

## Suggestions as to further work

- Exploring the therapeutic potentials of identified host peptides and their synthetic variants
- Production of antibodies to parasite virulence molecules

## Suggestions for ANDI's role

- Facilitate collaborations
- Catalyze access to funds by:
  - ✓ Advising/assisting in competitive grant writing
  - ✓ Providing information on funding opportunities



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