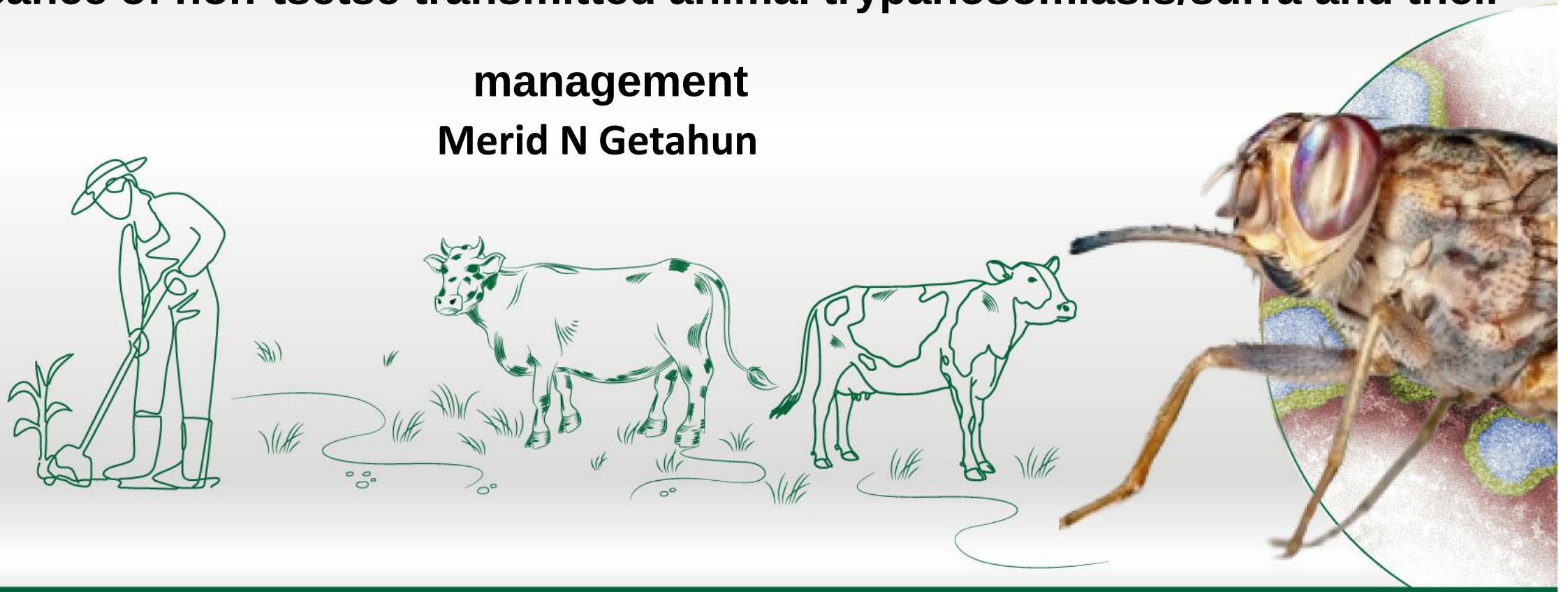
AFRICAN UNION
INTERAFRICAN BUREAU FOR ANIMAL RESOURCES

37TH CONFERENCE OF THE INTERNATIONAL SCIENTIFIC COUNCIL FOR TRYPANOSOMIASIS RESEARCH AND CONTROL (ISCTRC)
15 – 19 September, 2025 Nairobi, Kenya

37E CONFÉRENCE DU CONSEIL SCIENTIFIQUE INTERNATIONAL POUR LA RECHERCHE ET LE CONTROLE SUR LA TRYPANOSOMIASE (CSIRCT)
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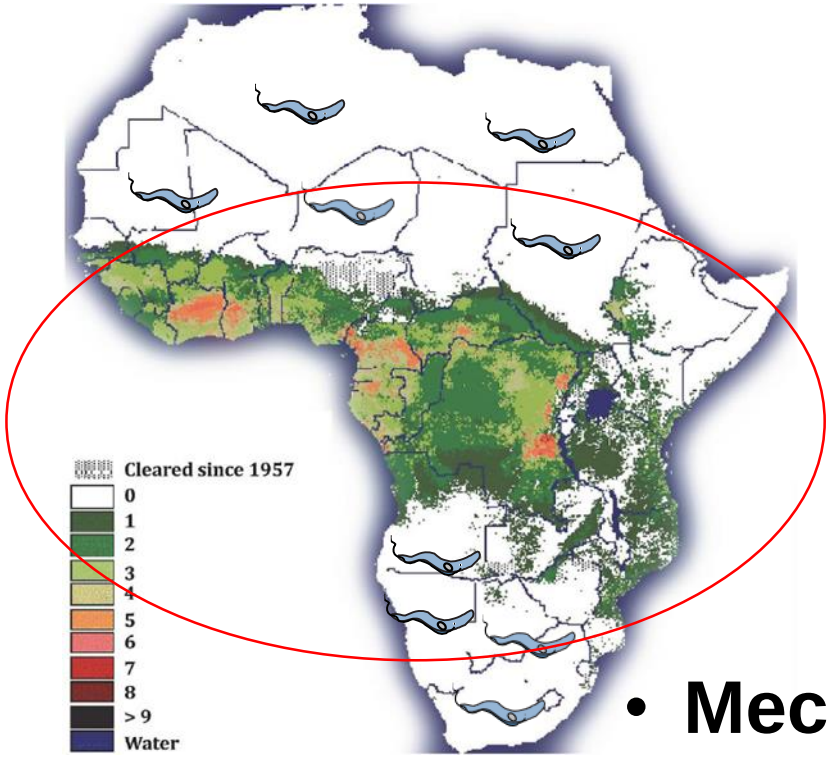
Significance of non-tsetse transmitted animal trypanosomiasis/surra and their management

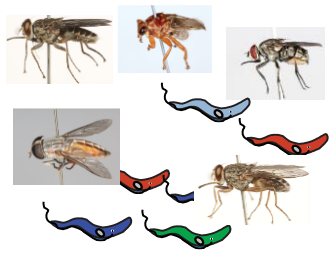
Merid N Getahun



Introduction

How trypanosome managed to circulate and sustain in the absence of tsetse???







T.vivax + *T.congolense*
(Morrison *et al*., 2016



T.evansi distribution
(Auty et al., 2015)

- **Mechanical transmission**
- Animal movement/continuous introduction
- **Unknown biological vector**
- None vector based transmission

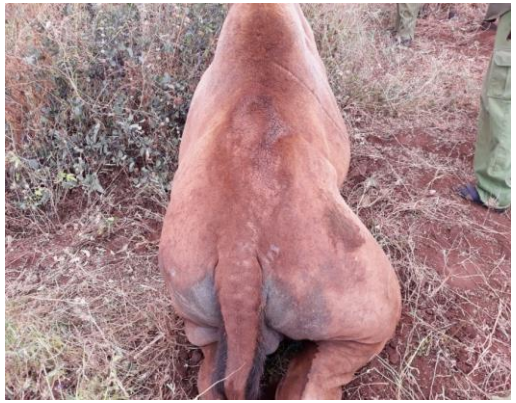
Non-tsetse transmitted trypanosomiasis impact



T.evansi



T.vivax

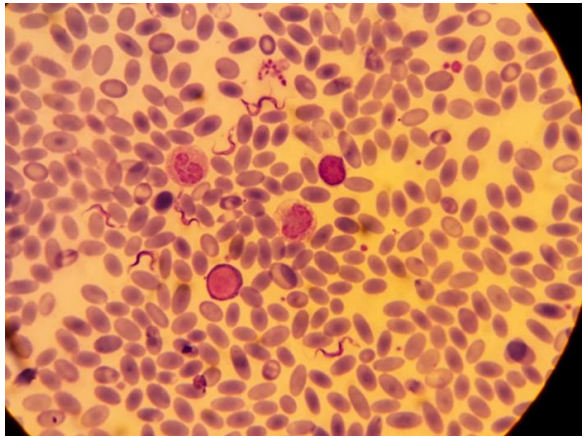


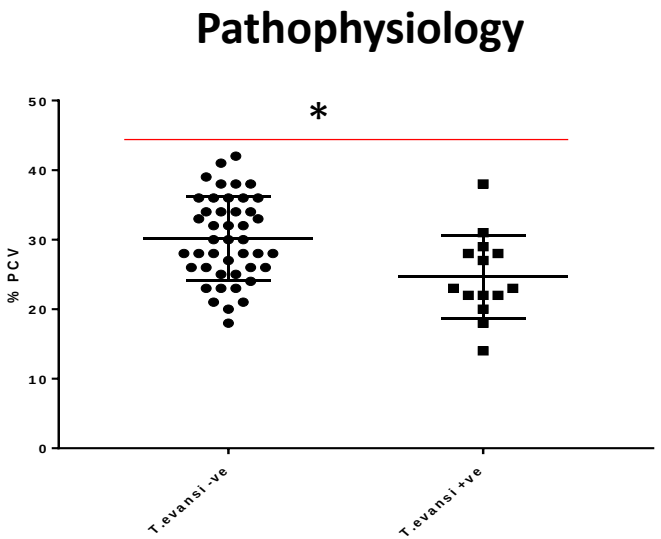
T.evansi + anaplasma

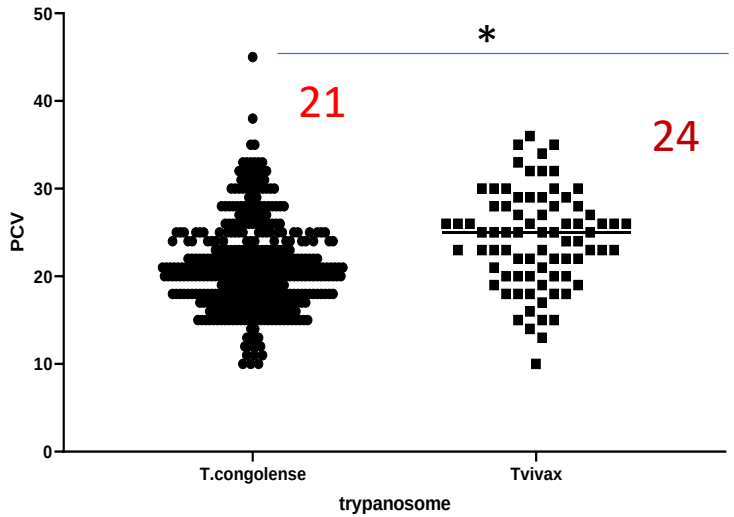


William G. Kaelin Jr, Sir Peter J. Ratcliffe, and Gregg L. Semenza,

2019 Nobel price







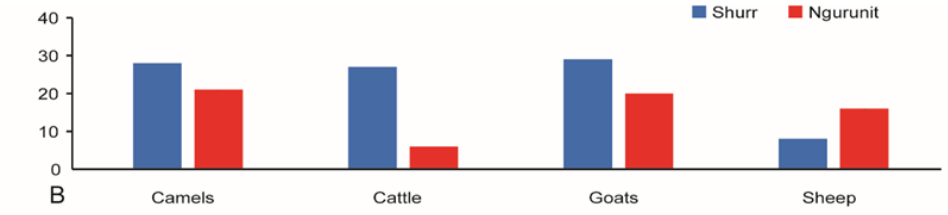
~15%mortality

Low productivity

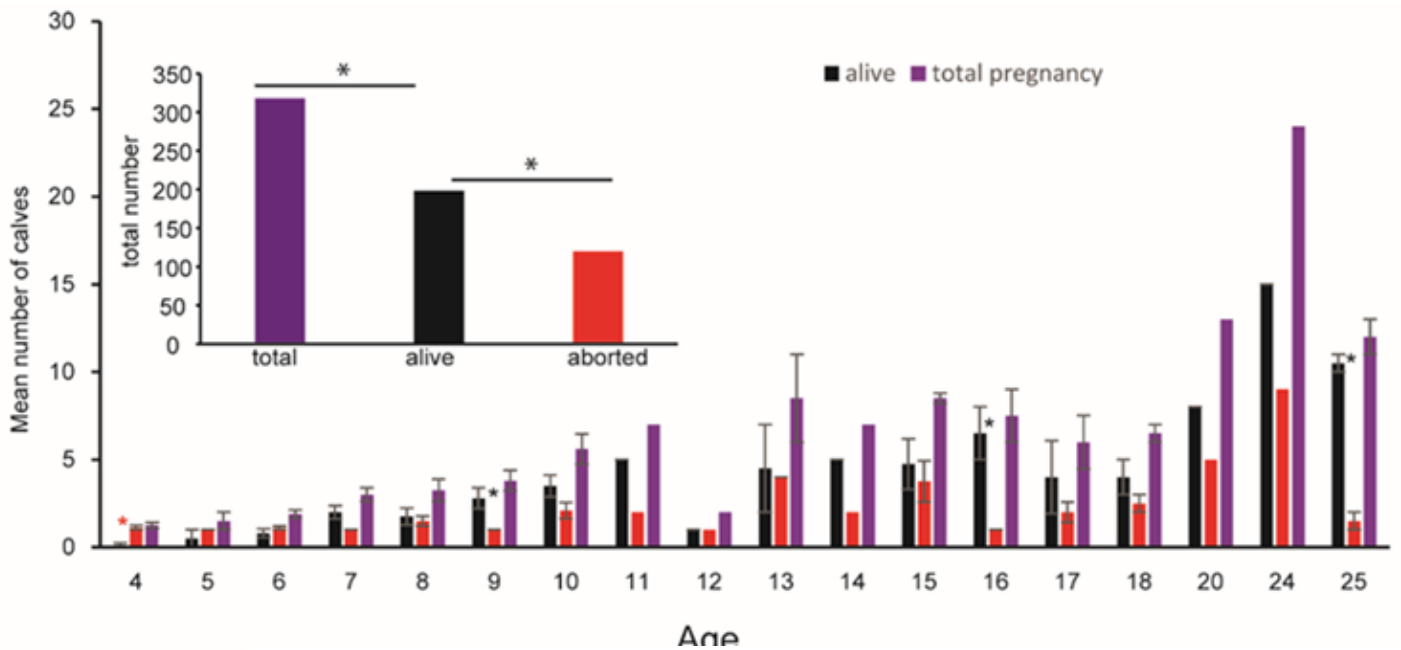
35% abortion

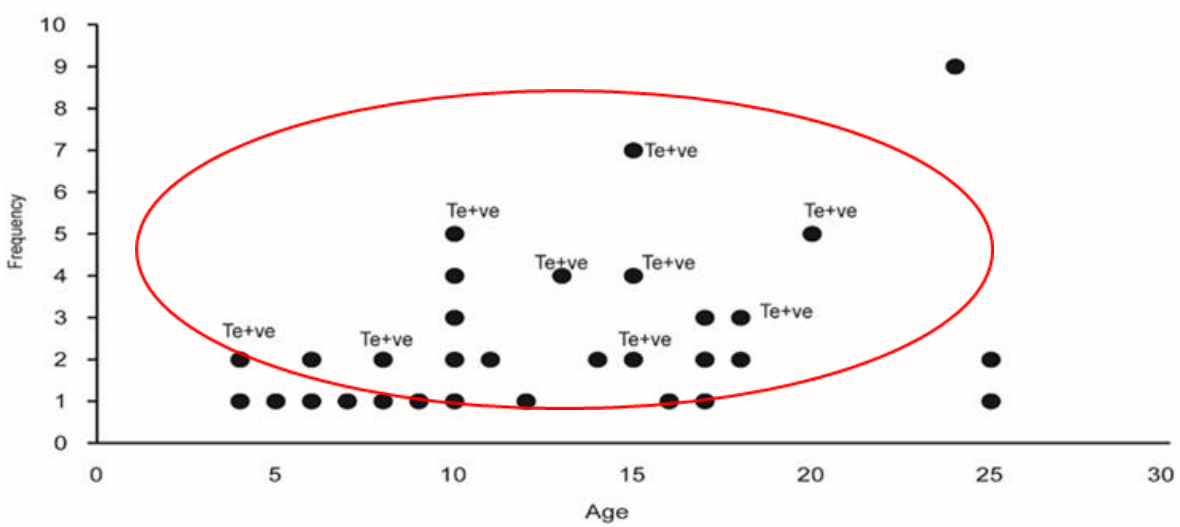
- **Individual variation**
- **Resilience**

Impact of non tsetse transmitted trypanosomiasis



Abortion

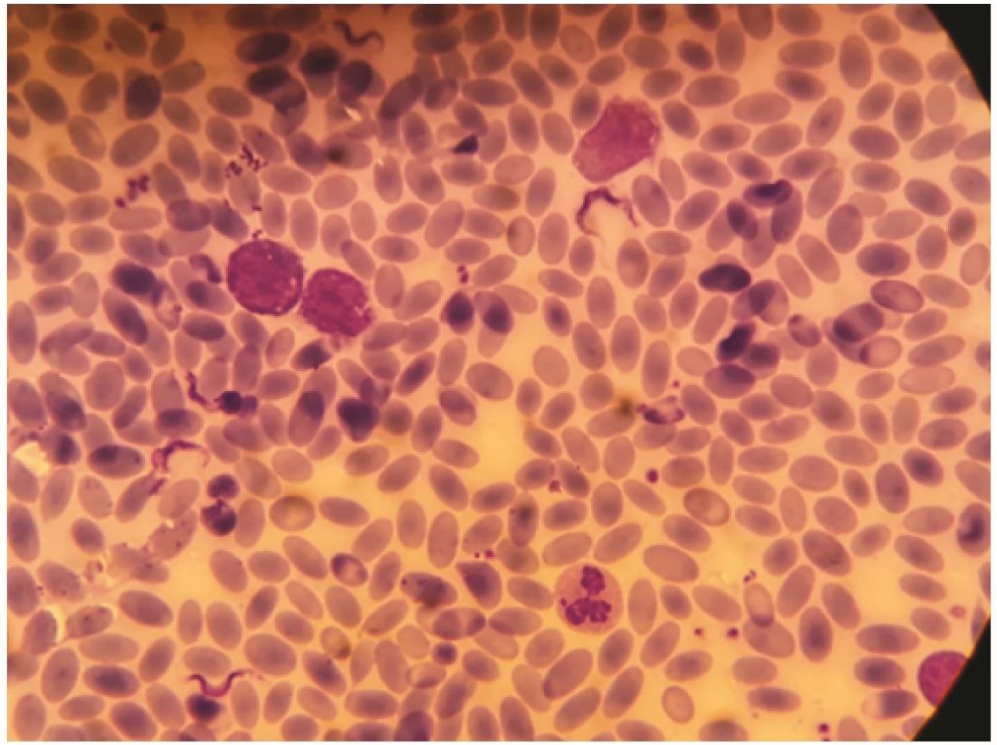




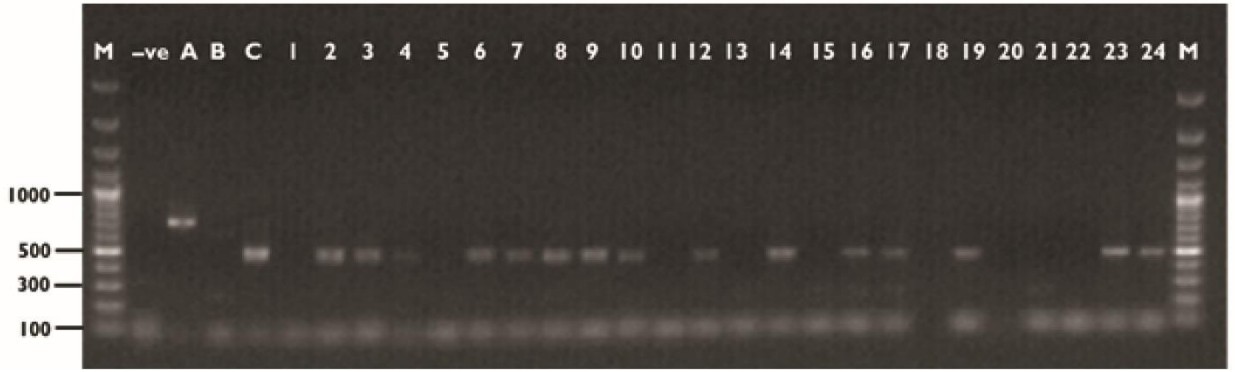
Getahun et al.,in inpre

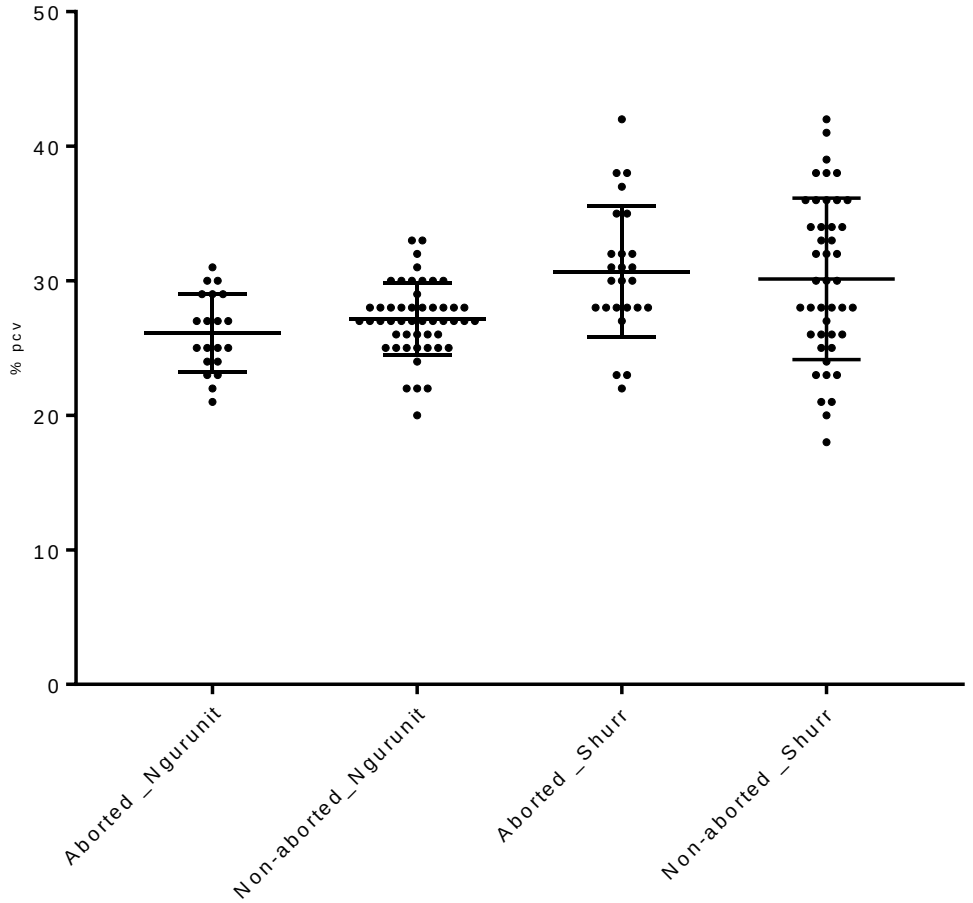
Asymptomatic infection

A



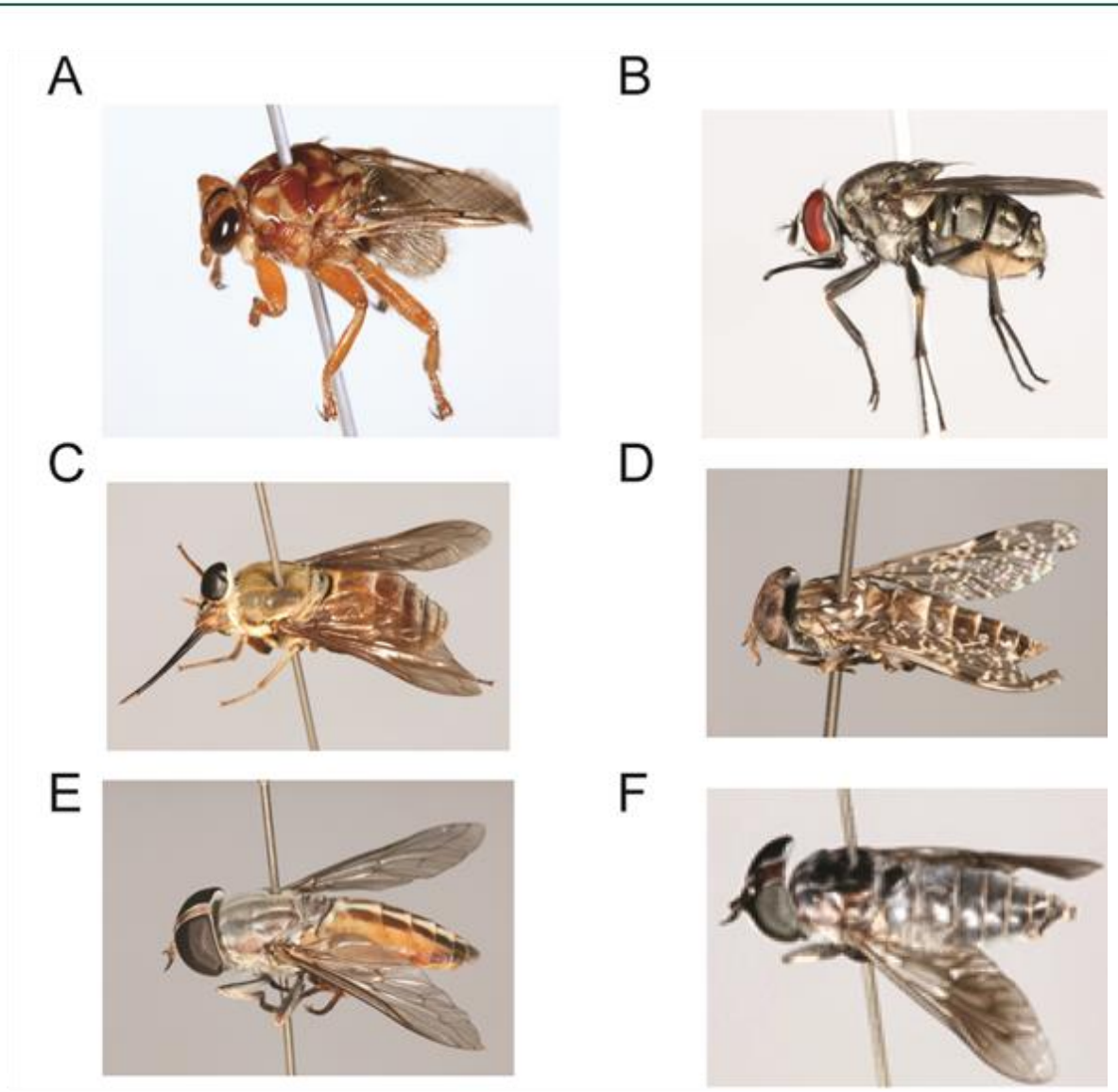
B

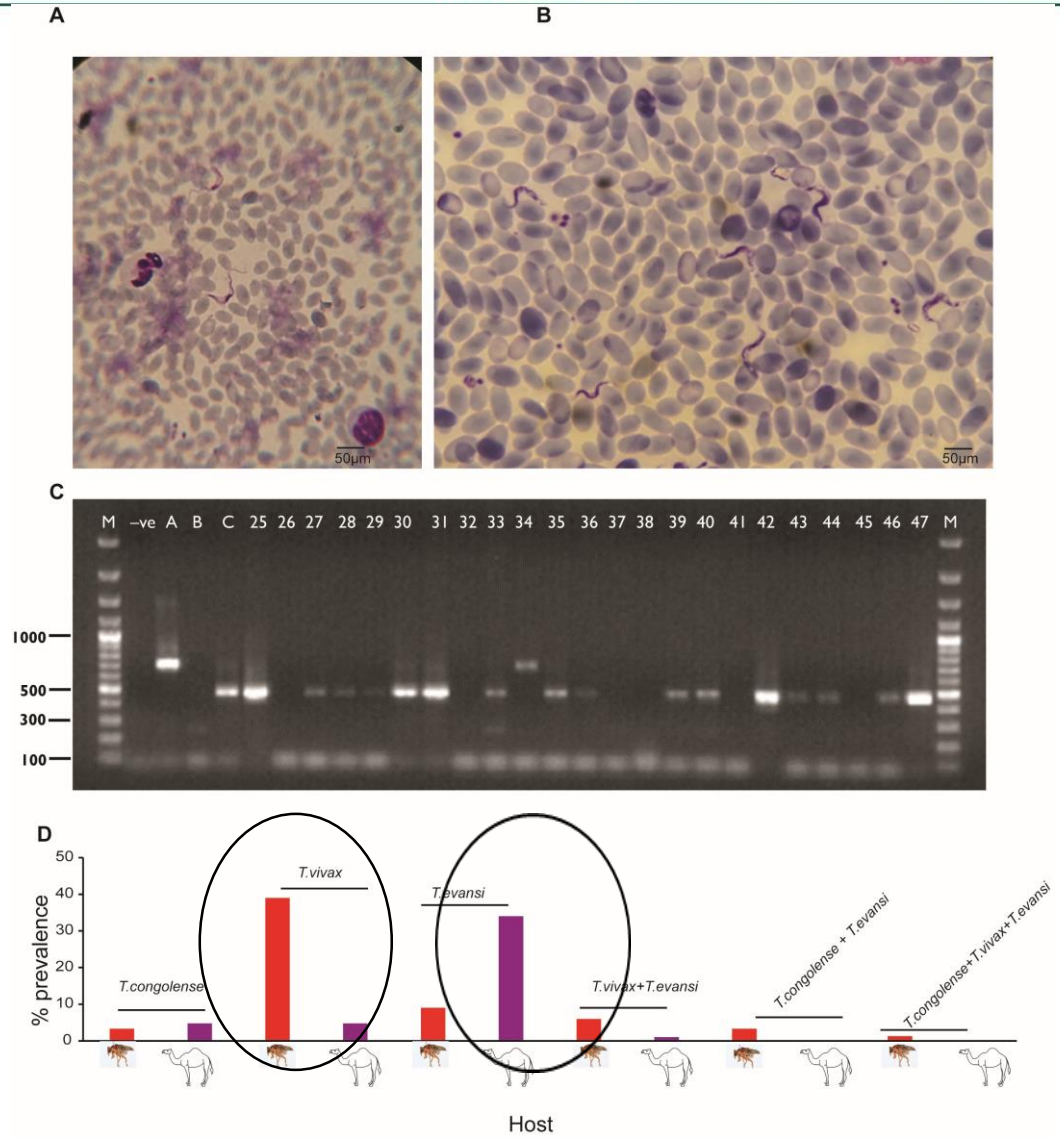




Most of the aborted camels were asymptomatic for tryps as negative with microscopy but +ve with PCR

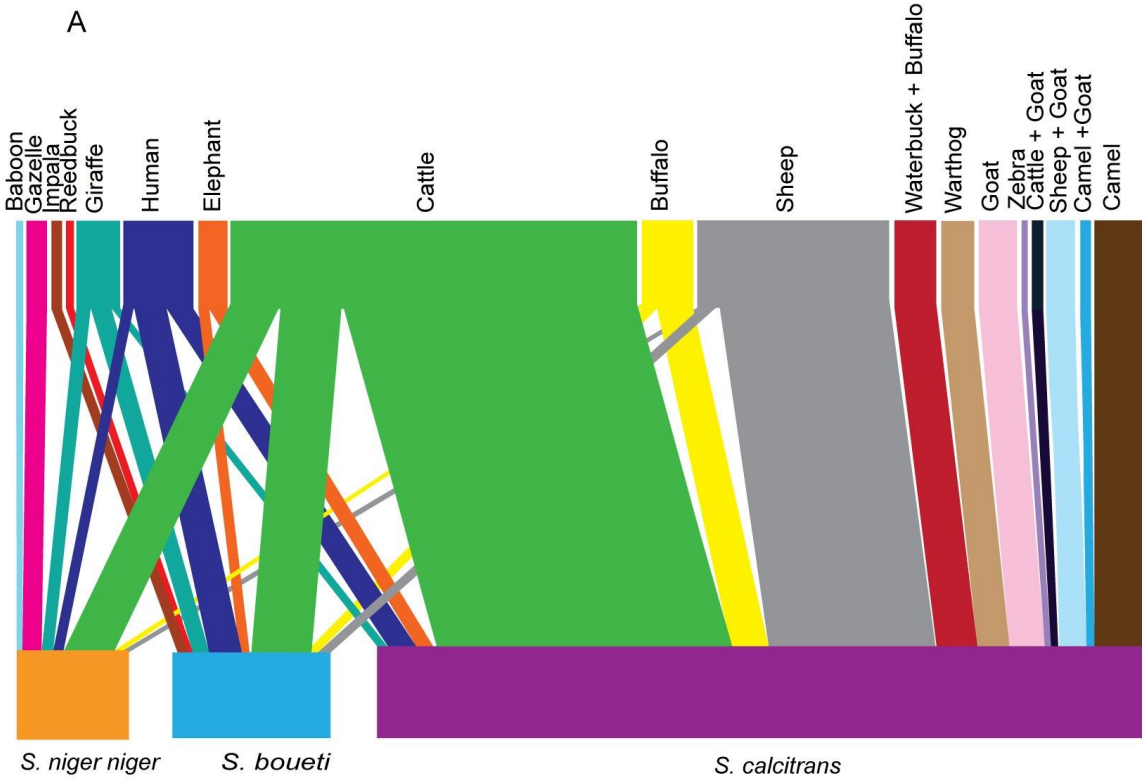
Non tsetse mechanical vectors of trypanosomiasis

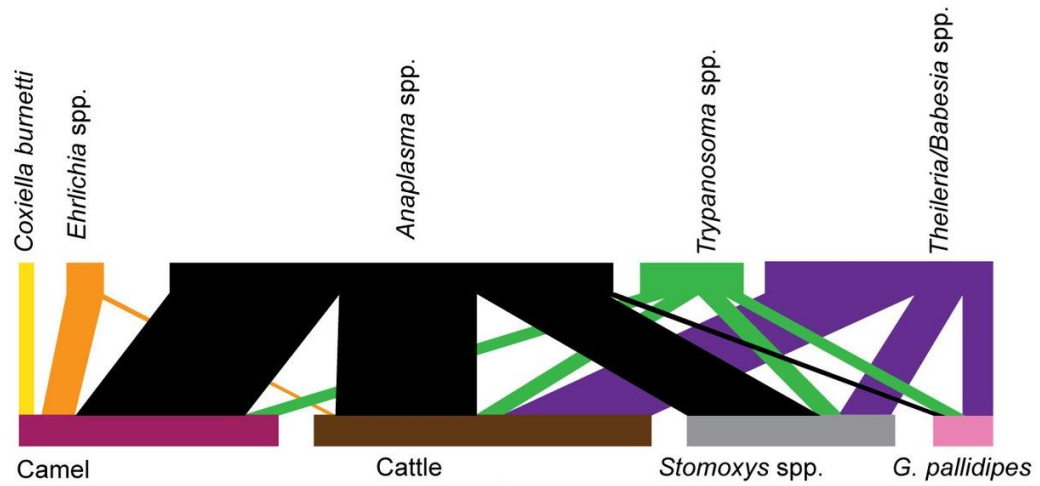




Feed on livestock and support pathogens

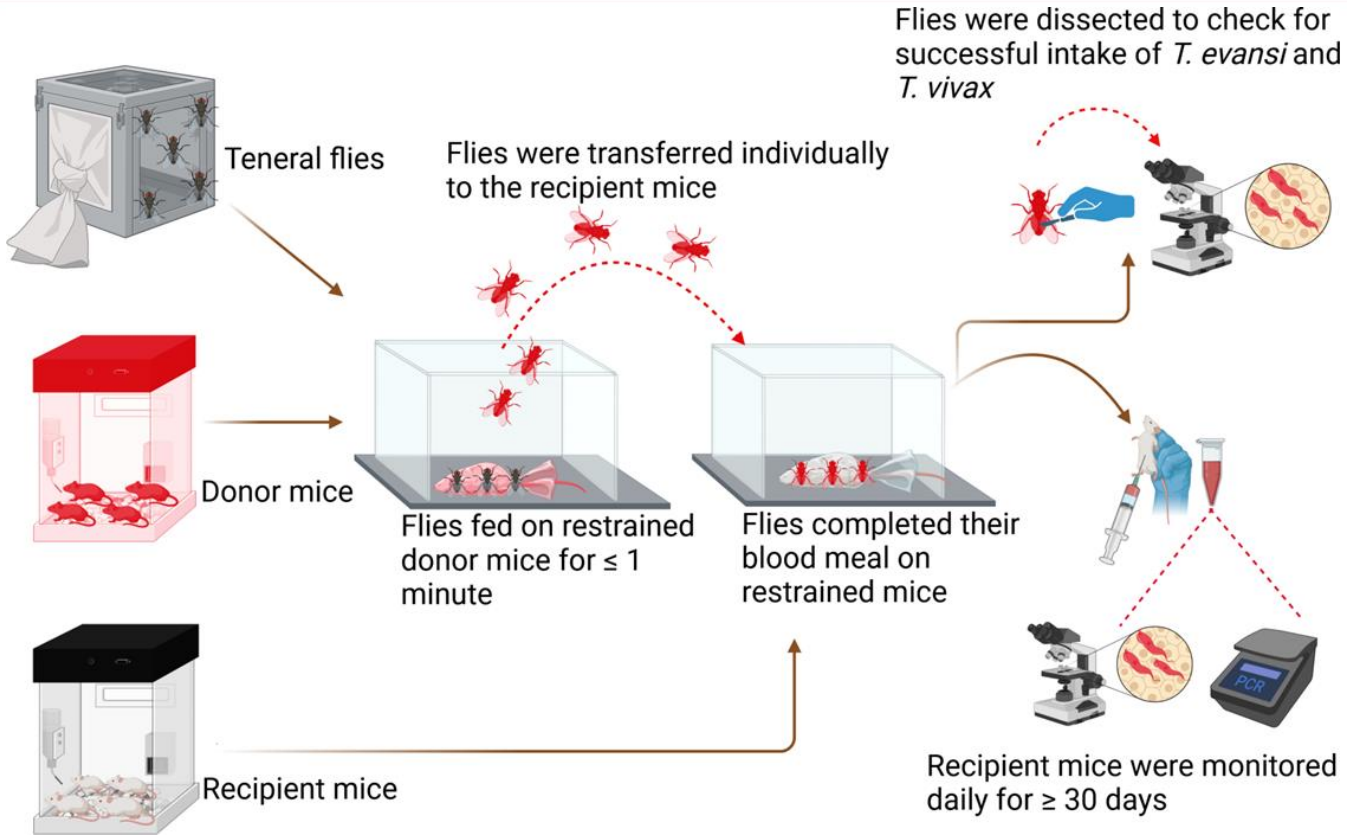
Stomoxys feeds on wide range of domestic and wild animals

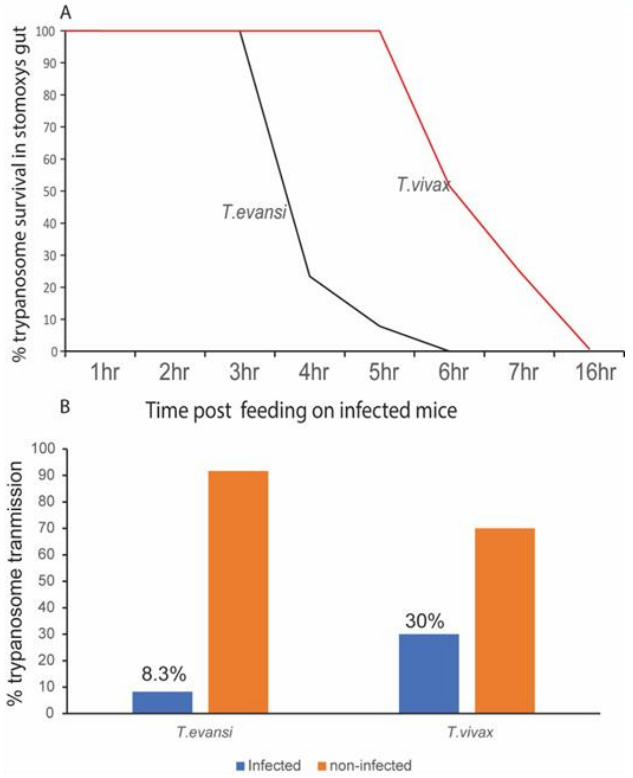




Multiple pathogens

Stomoxys flies are competent vectors of trypanosomiasis

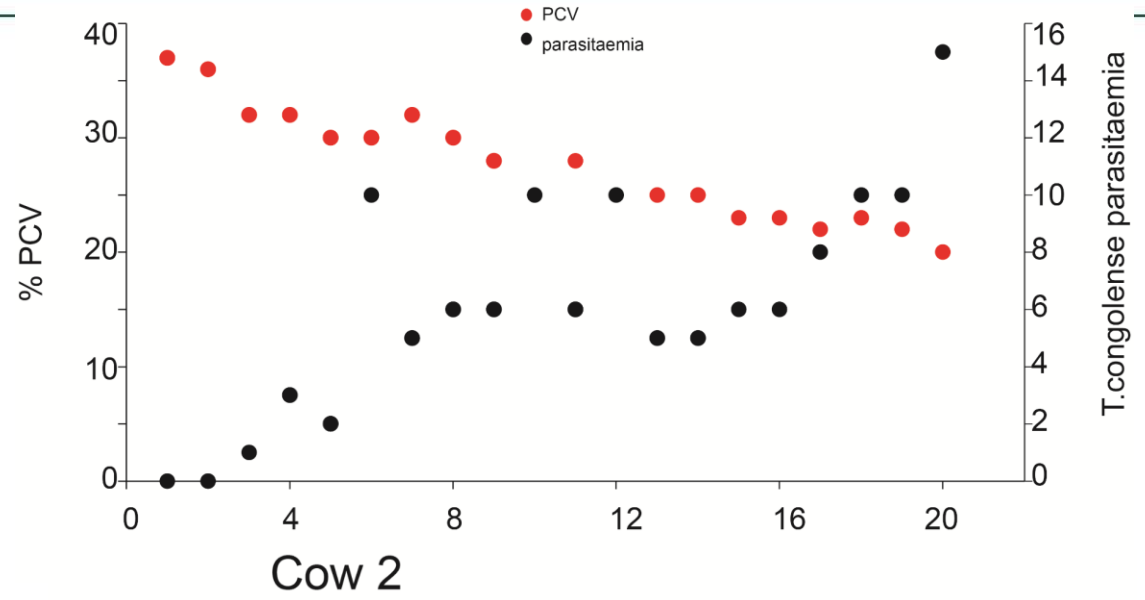


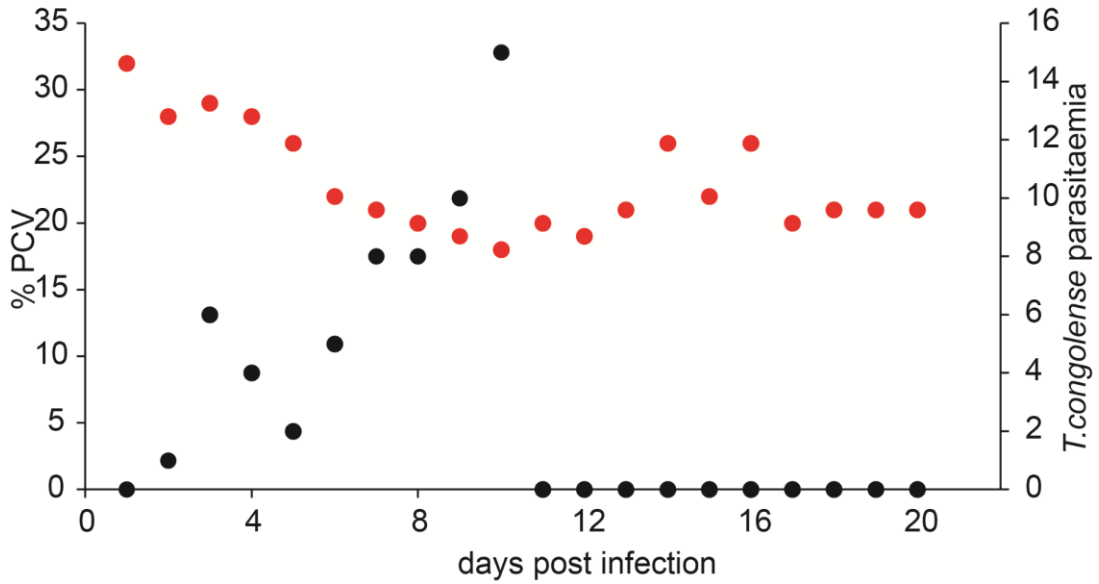


Observation: Nature inspired drug discovery

Using relevant host such as small ruminant, cattle!!!

What favour mechanical transmission:
High parasitaemia, Behavioural defence; aggregate nature of livestock help to find the next host within a short time





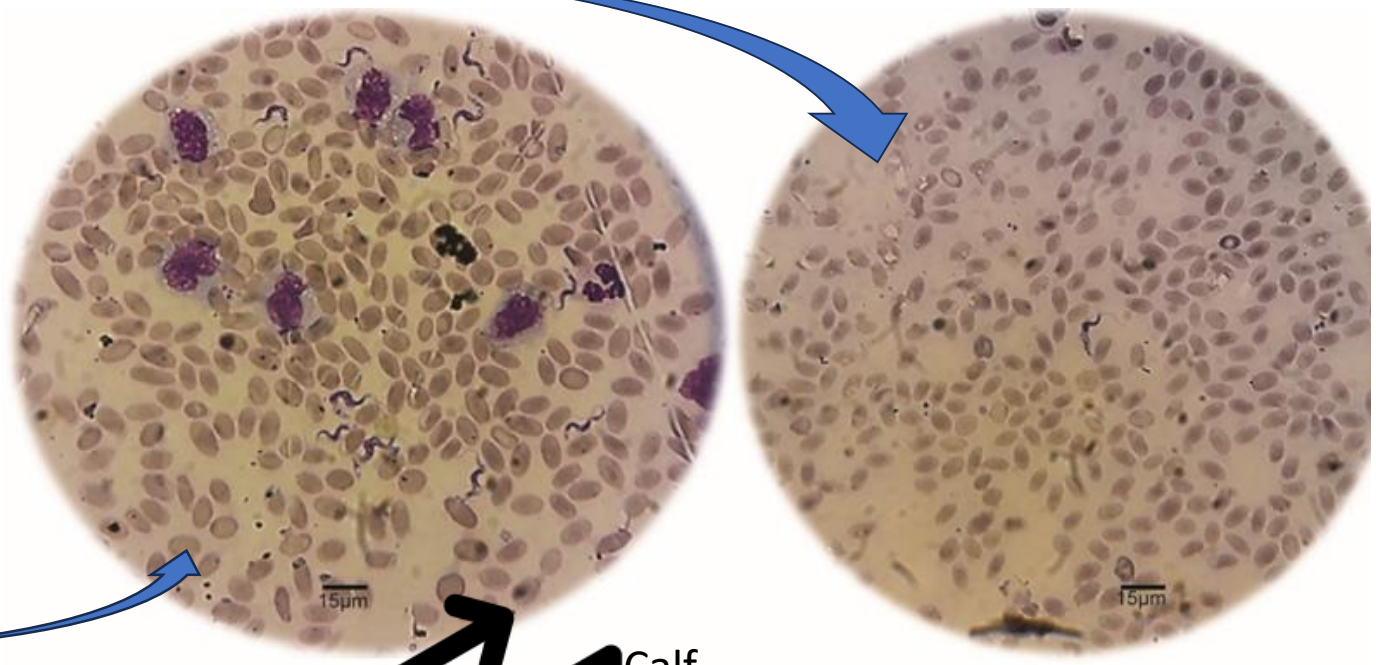
Darwinian evolution

How they do it??????

Interested in finding Macro molecules and metabolites involved in the fight??

Have you ever taught vertical transmission of animal trypanosome as one means of sustaining trypanosomes?





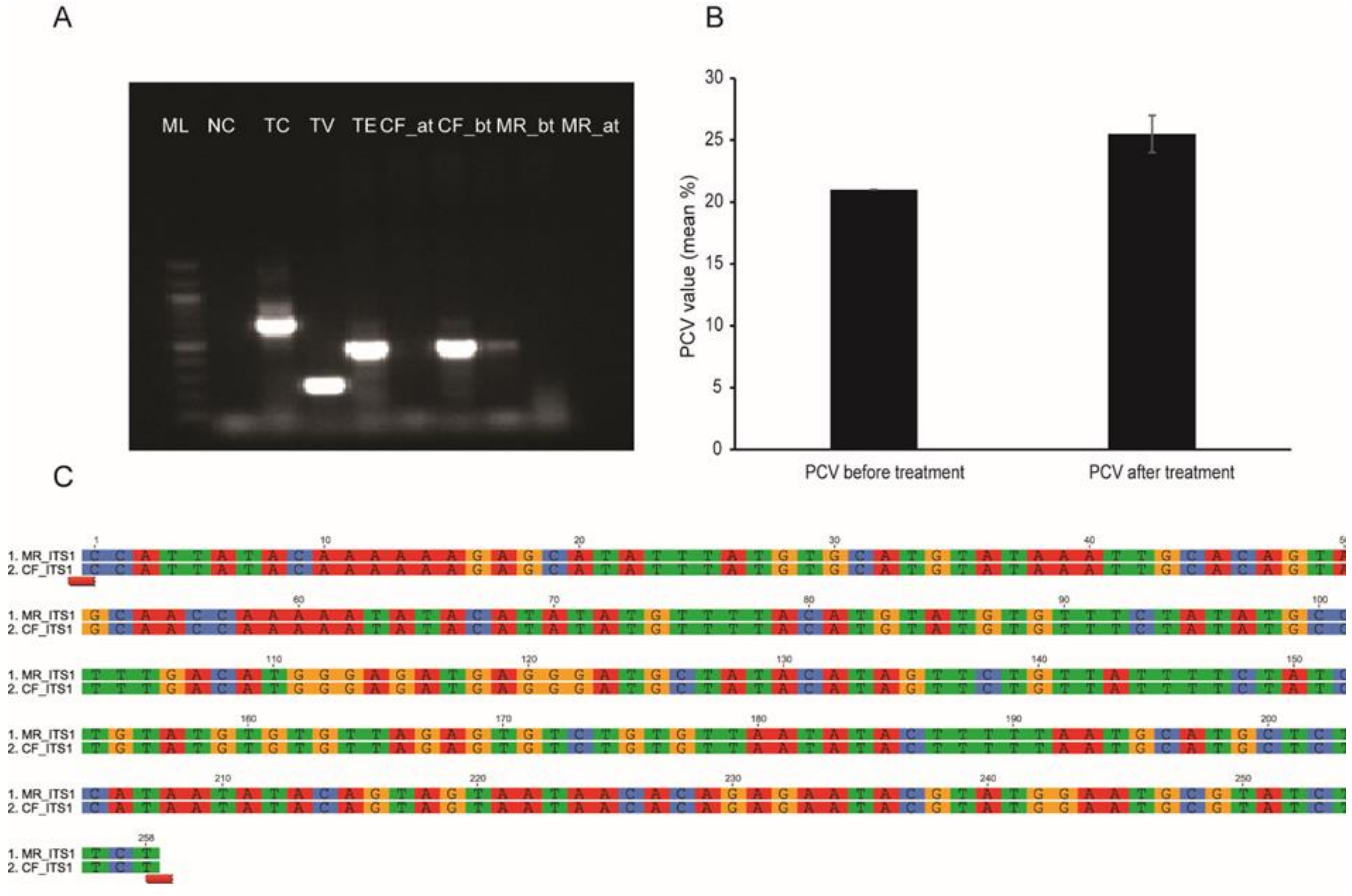
Calf
10E9

mother
10E6

1000 fold

Observation: virulence may not be a desired biological trait that pass to generation

Vertical transmission of trypanosomes



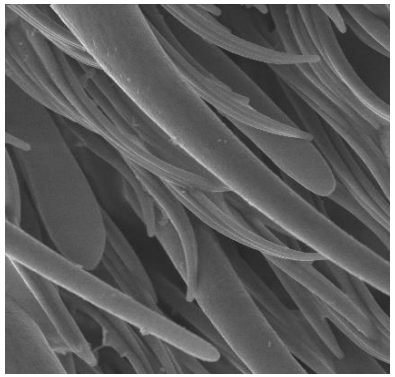


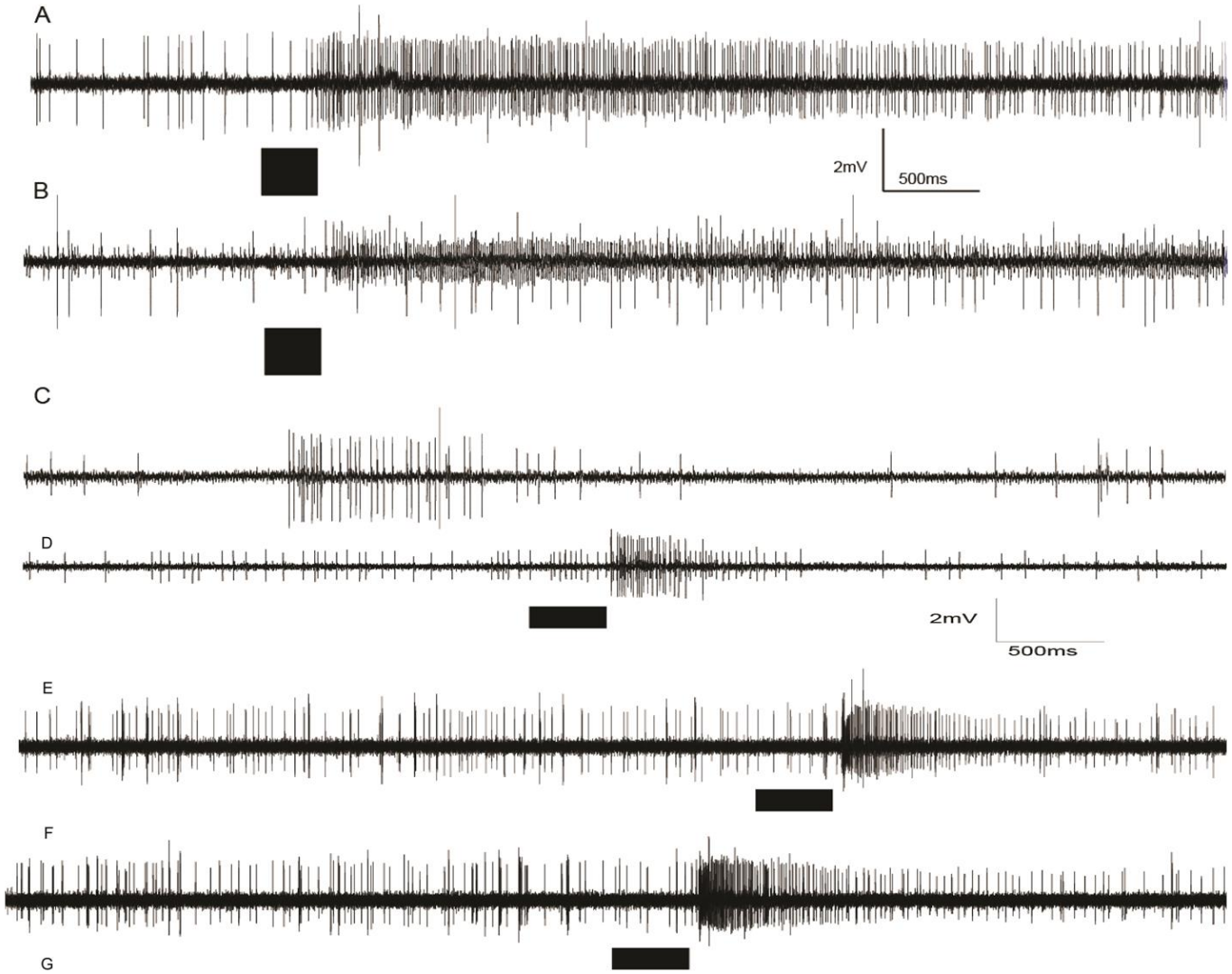
Getahun et al.,in inpre

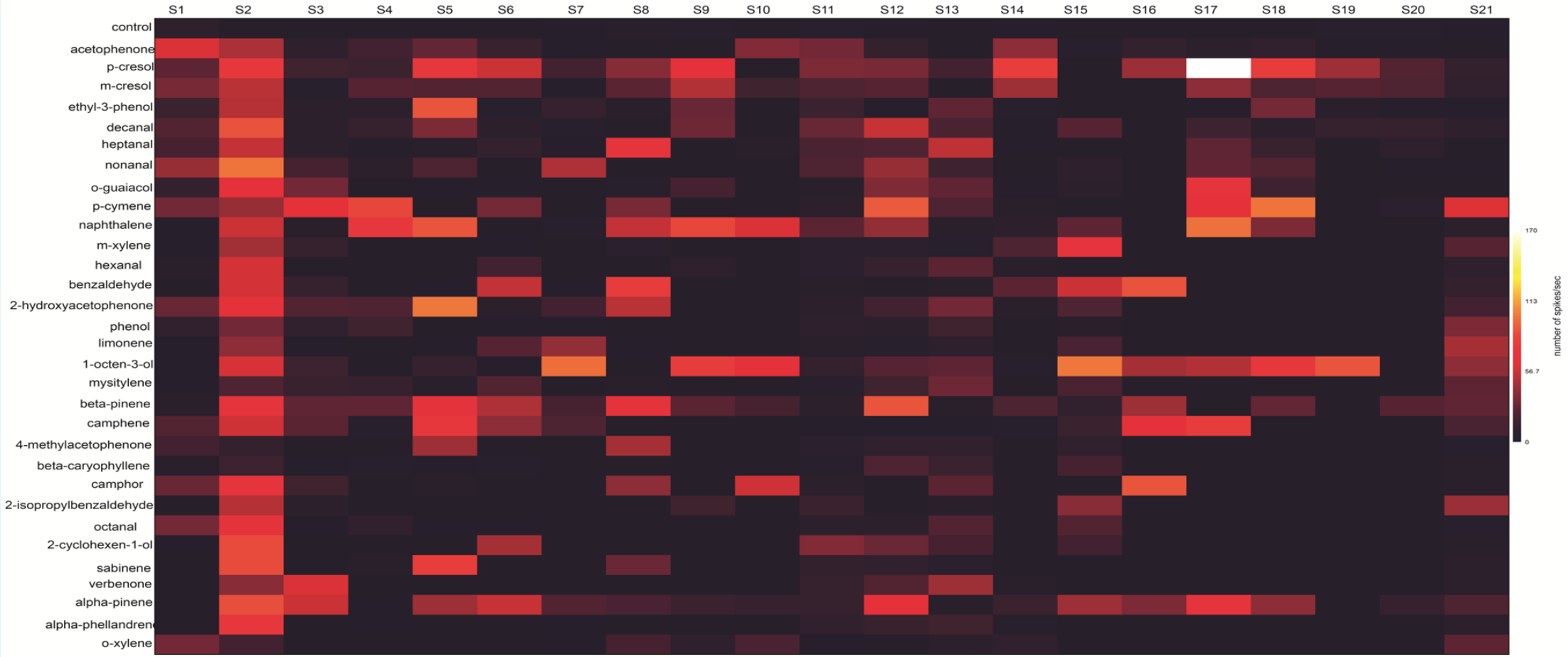
Managing mechanical vectors and the diseases

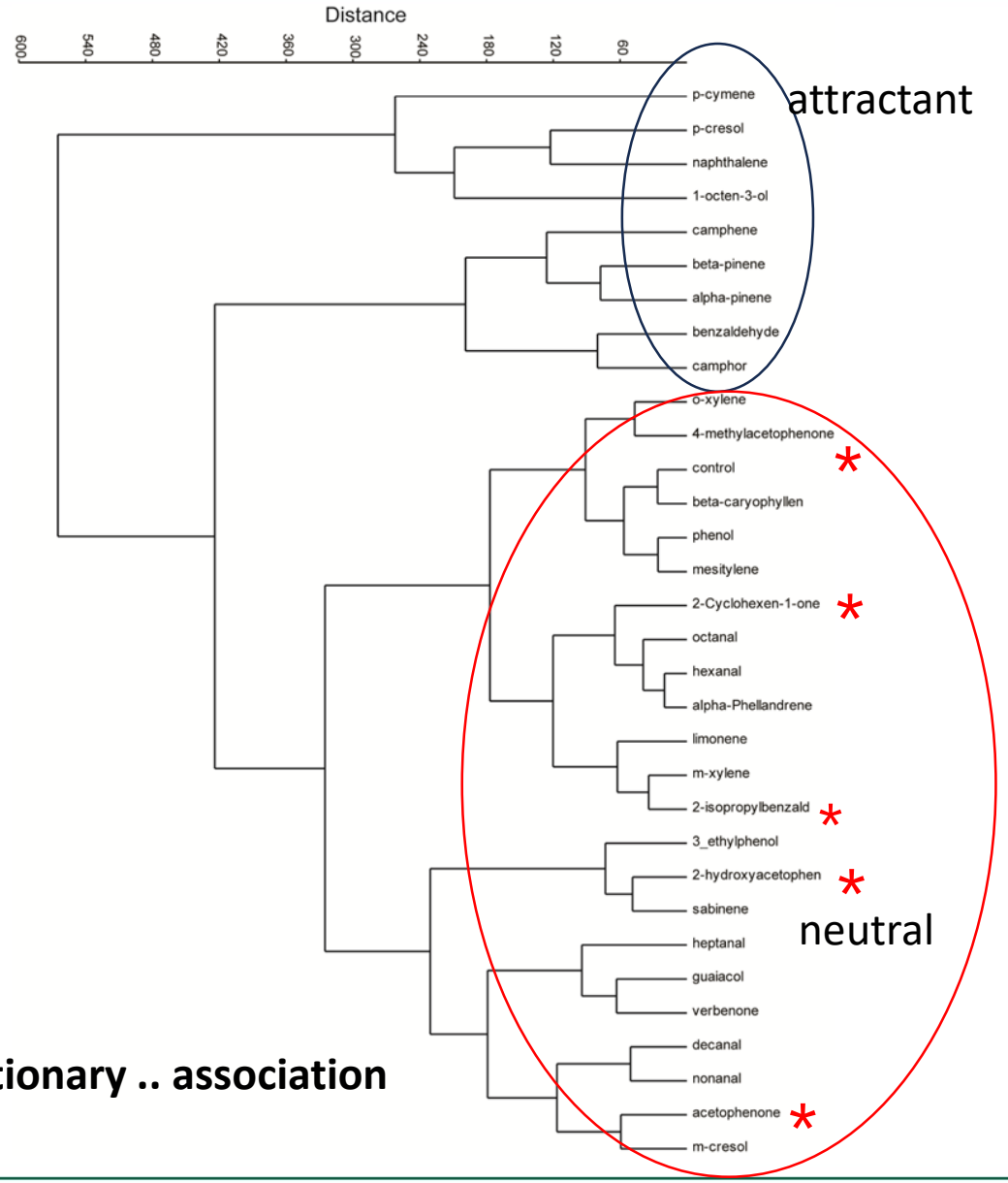
Managing biting flies to manage trypanosomiasis.







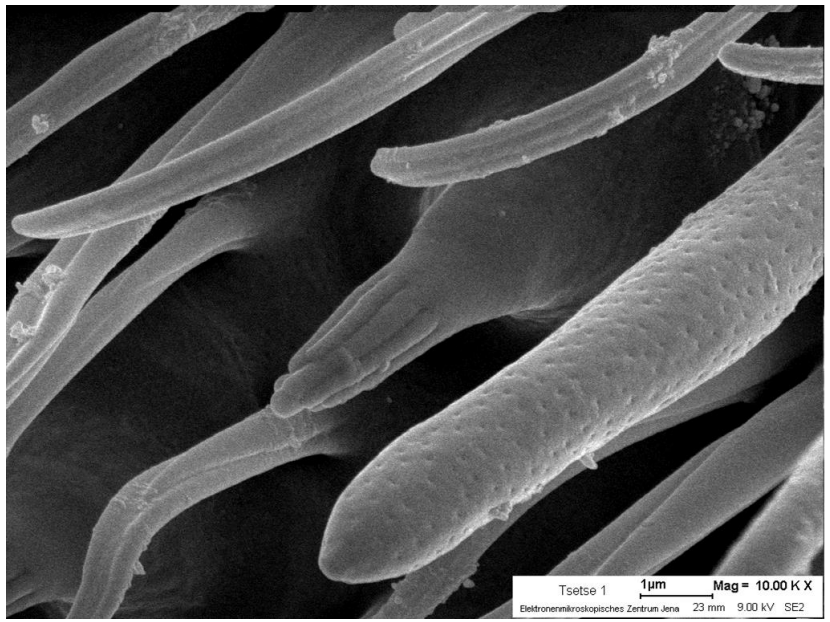

S1
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S5
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S15
S16
S17
S18
S19
S20
S21
control
acetophenone
p-cresol
m-cresol
ethyl-3-phenol
decanal
heptanal
nonanal
o-guaiacol
p-cymene
naphthalene
m-xylene
hexanal
benzaldehyde
2-hydroxyacetophenone
phenol
limonene
1-octen-3-ol
mysitylene
beta-pinene
camphene
4-methylacetophenone
beta-caryophyllene
camphor
2-isopropylbenzaldehyde
octanal
2-cyclohexen-1-ol
sabinene
verbenone
alpha-pinene
alpha-phellandren
o-xylene
170
113
56.7
0
number of spikes/sec

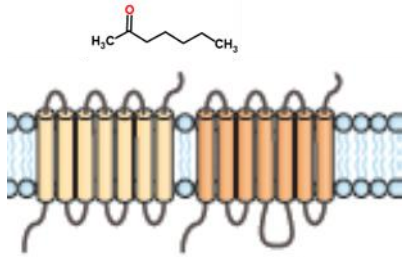


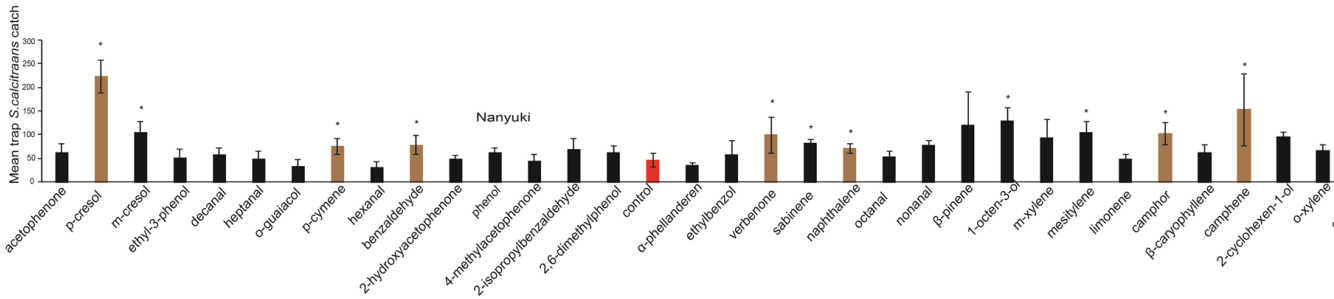
attractant

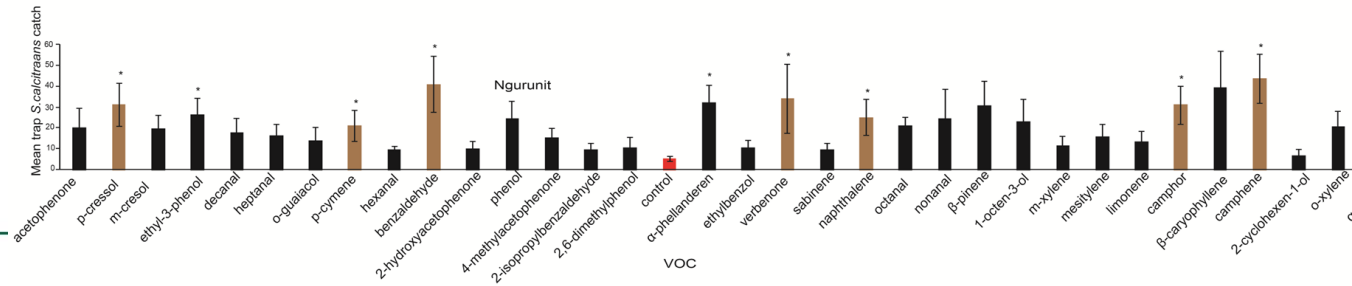
neutral

olutionary .. association

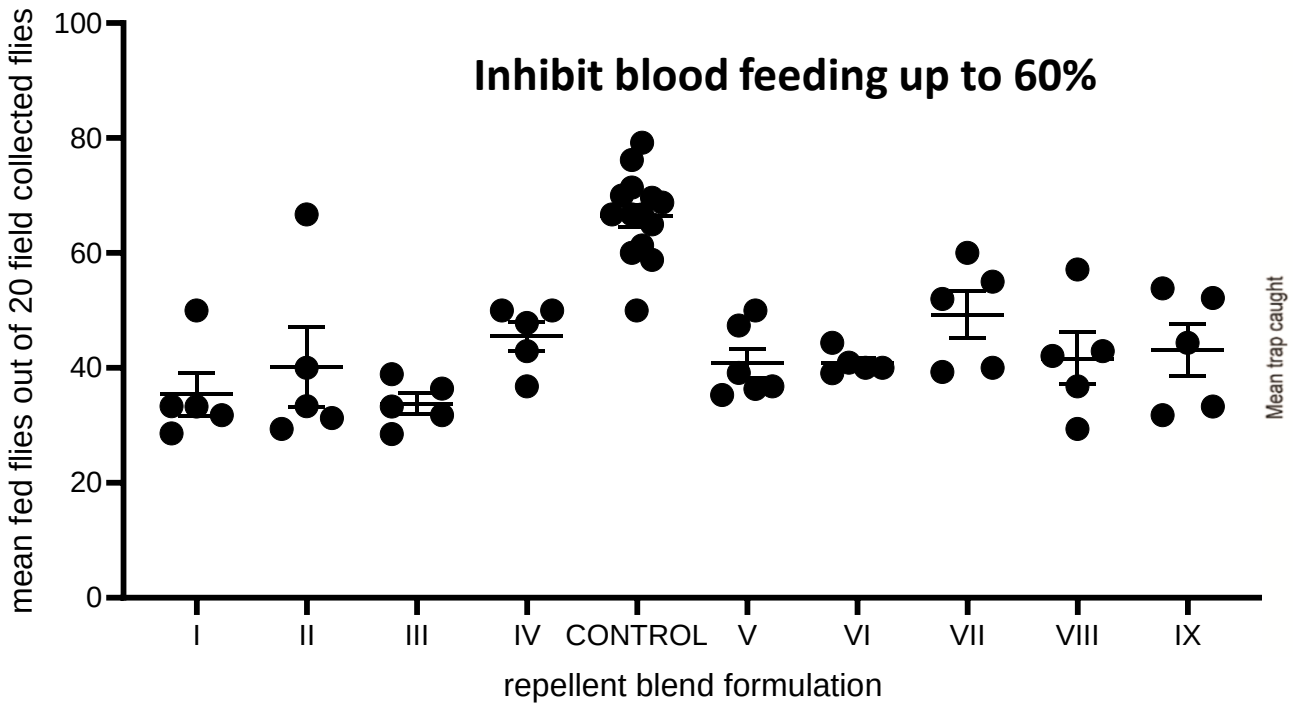


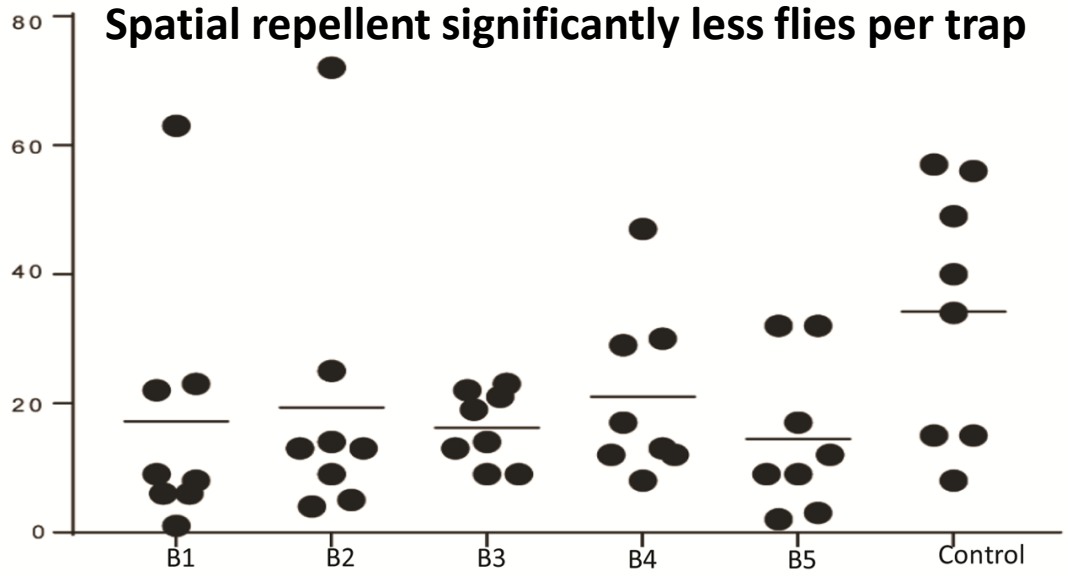






Repellent formulation

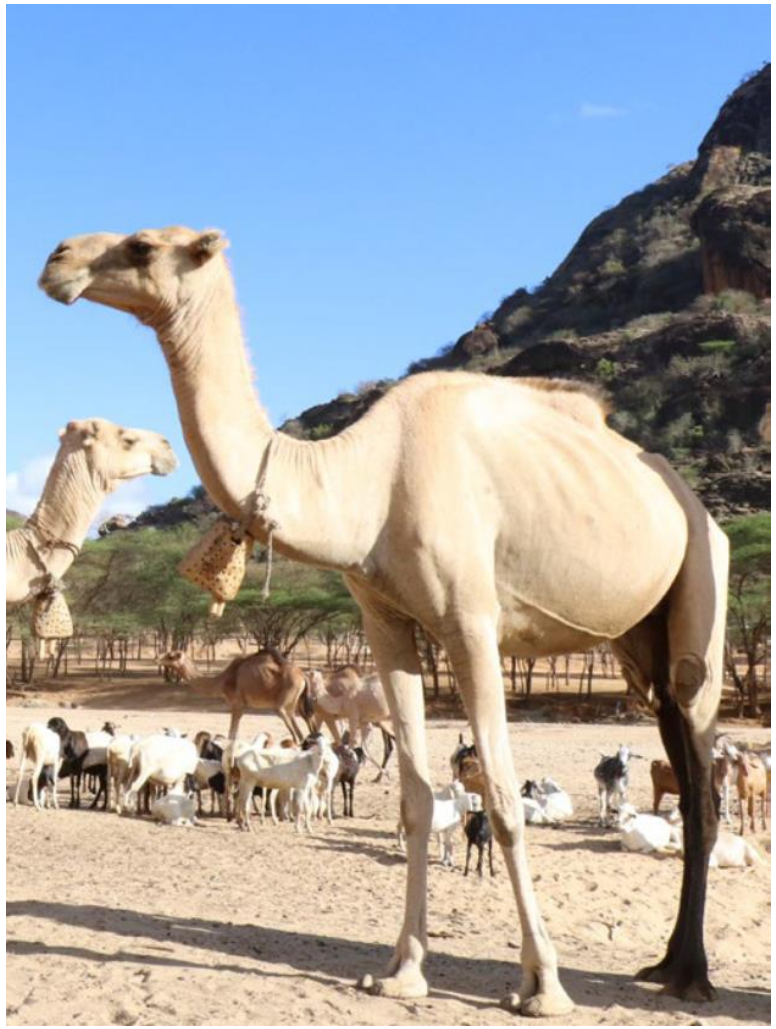




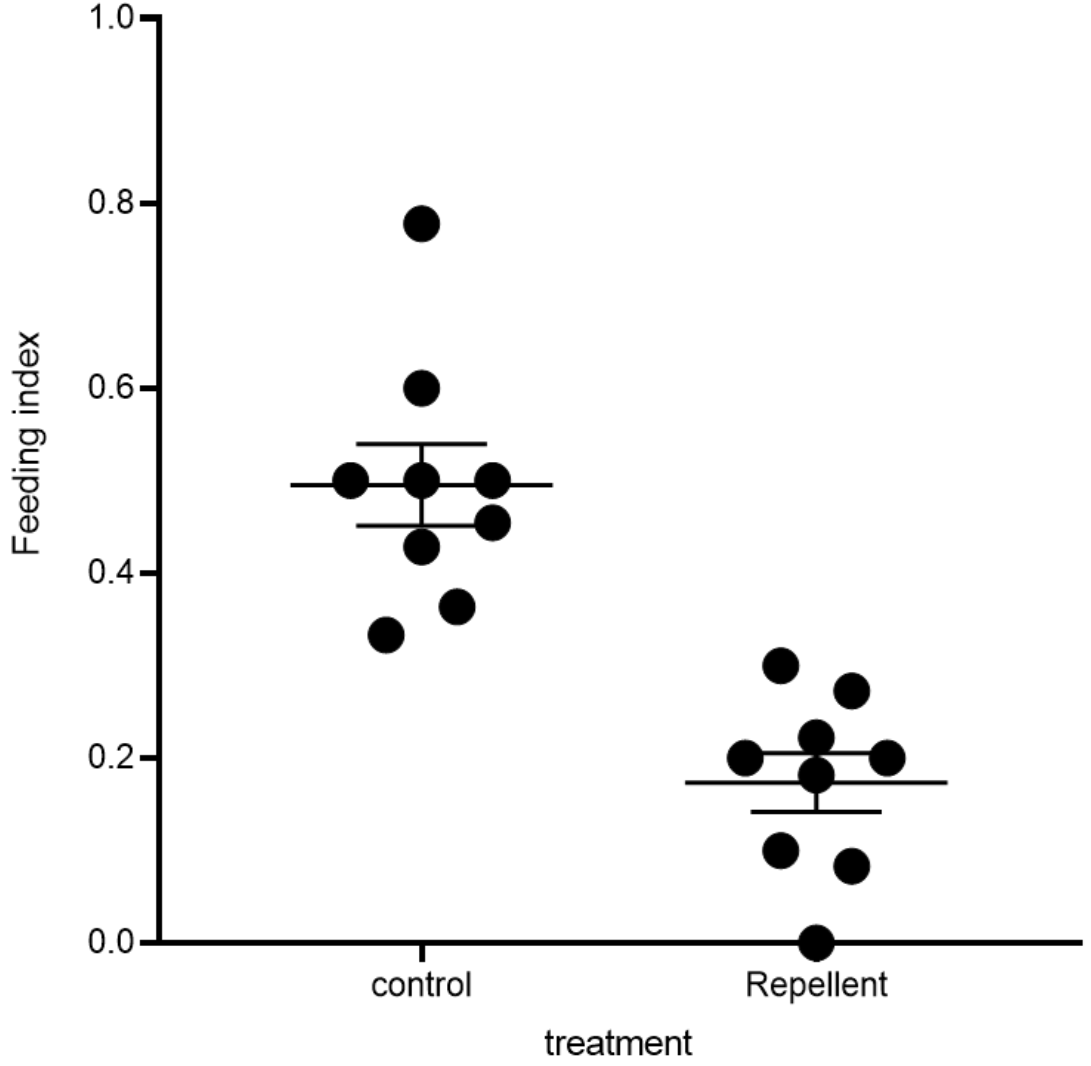


Getahun et al.,in inpre

Repellent formulation significantly reduced flies feeding on camel







Getahun et al.,in inpre

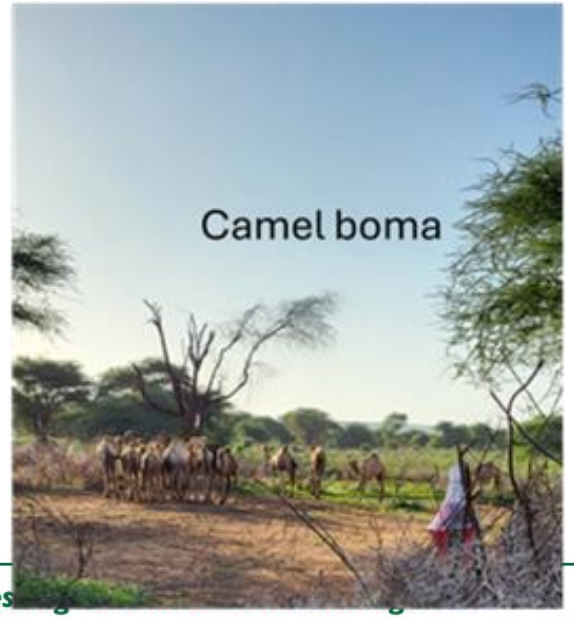
Biting flies trap

A



Biting flies attractant formulation

B



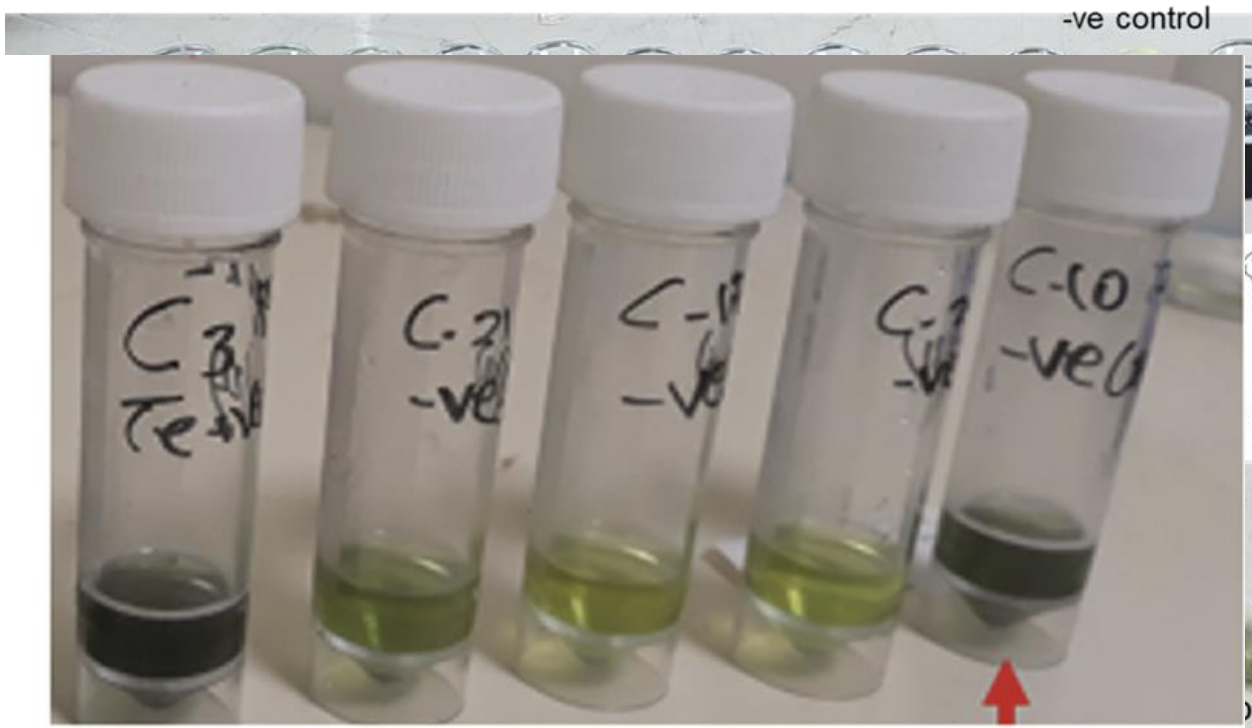
C

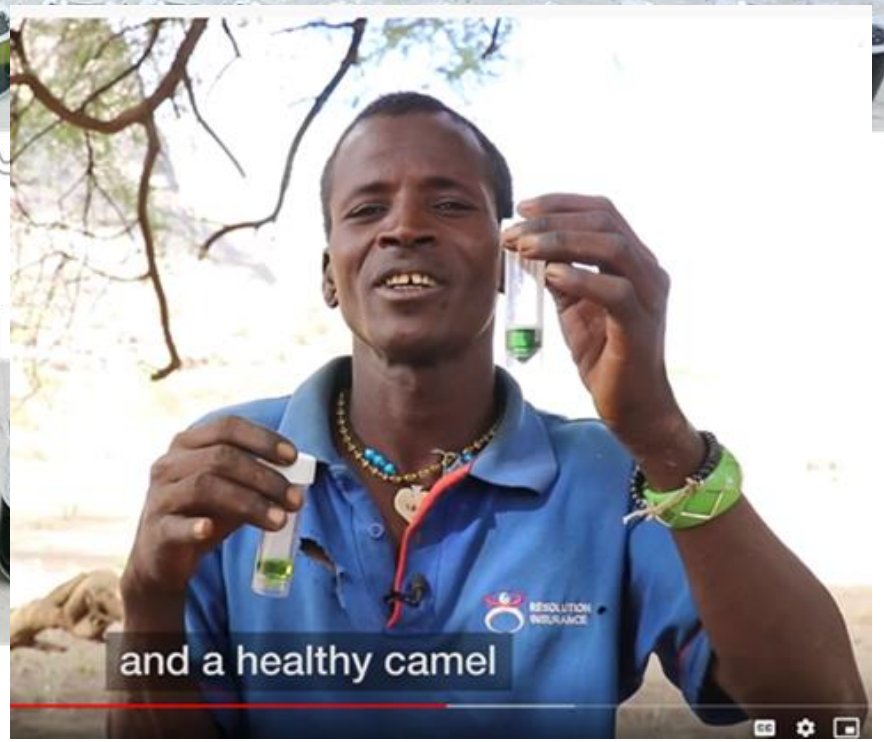


D

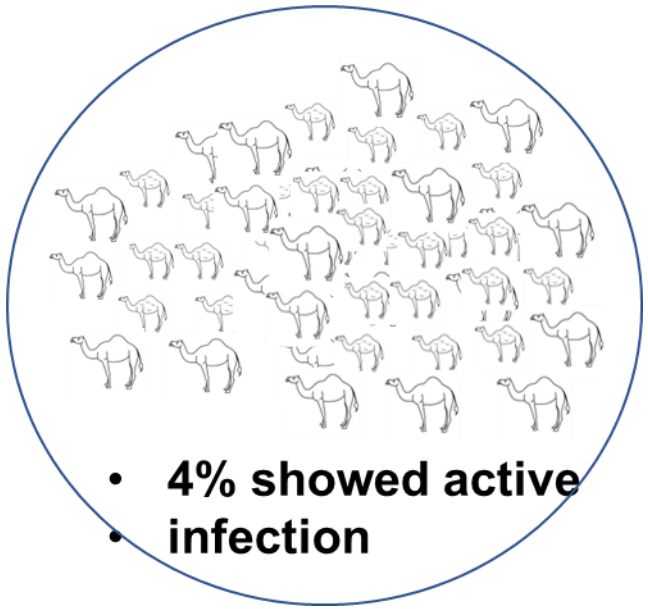


Simple diagnostic





Mic	+	-	-	-	-
PCR	+	-	-	-	+
Bio marker	+	-	-	-	+

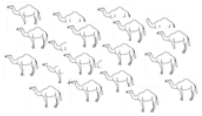


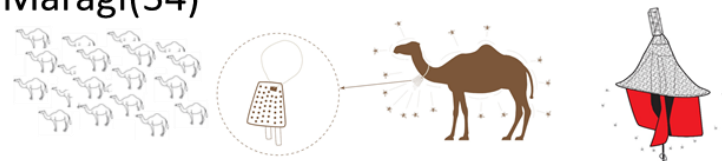
- **4% showed active infection**

Total 223



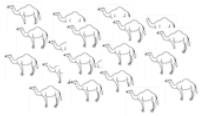
Longele(46)





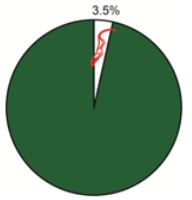
Maragi(34)

Martidrop(48)

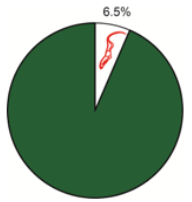




mPakas(95)

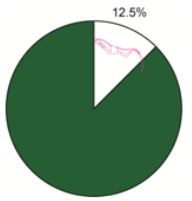


3.5%

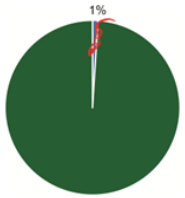


6.5%

0%



12.5%



1%

Getahun et al.,in inpre

Summary

- Non tsetse transmitted trypanosomiasis is significantly impacted livestock health, productivity, and livelihood thus should be given equal emphasis,
- Stomoxys species complex, similar to tsetse flies, feed on diverse **wild** and **domestic animals**, harbour various **pathogens** including trypanosome and **efficiently transmit trypanosomes** to healthy mouse within 60 seconds of contact with infected mouse model.
- Abortion, calf mortality, production loss is significant impact of trypanosomes
- Manage non tsetse vectors around animal bomas, zero grazing using baited trap + repellent(prescion)
- **Understand the system (host(livestock), vector, pathogens)**
- The impact of maternally transmitted subclinical surra vertical infection may sustain surra transmission and induce abortion and calf mortality in camel that need to monitored and managed to save young calf



icipe

African Insect Science for Food and Health

European Union

Federal Ministry
for Economic Cooperation
and Development
BMZ

Max Planck Institute
for Chemical Ecology

Centre for International
Migration and Development
a joint operation of GIZ and the
German Federal Employment Agency

Norad

COMBAT

Thank you | Merci | شكراً لك | Obrigado | Gracias | Asante

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