SCIENTIFIC WRITING AND PRESENTATION
ENT-402

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Writing skills

Let us look at ways to make sure that your results can be successfully published!

Before You Start Writing, Ask:

- What?
- Where?
- How?

Writing Your Paper

Structure

Title page
Abstract
Introduction
Materials & Methods
Results and
Discussion
Acknowledgements
References
Figures
Figure Legends
Tables

The Title: Make It Compelling

- Concise and informative
- Should contain the most important words related to the topic
- Titles do not exceed two lines in print.
- Titles do not normally include numbers, abbreviations or punctuation.
- They should include sufficient detail for indexing purposes but be general enough for readers outside the field to appreciate what the paper is about.

Sample Research Article Titles

- **Bad Title:**
- The amazing effect of bednets on malaria

- **Good Title:**
- A controlled trial of efficacy of insecticide treated bednet use for malaria control

- Use of insecticide treated bednet in controlling malaria

Abstract

- It should be a concise “standalone” piece with a very clear message.
- It must accurately reflect the full text of the paper.
- Why did you do the study? What did you do? What did you find? What did you conclude?
- The only chance you have to get the reader’s attention.
- Should be crisp, concise and accurate.

A Structured Abstract:
It can help organize your ideas – try it!

Background Abstract	*Glossina fuscipes fuscipes* is the major vector of human African trypanosomiasis, commonly referred to as sleeping sickness, in Uganda. In western and eastern Africa the disease has distinct clinical manifestations and is caused by two different parasites: *Trypanosoma brucei rhodesiense* and *T. b. gambiense*. Uganda is exceptional in that it harbors both parasites, which are separated by a narrow 160-km belt. This separation is puzzling considering there are no restrictions on the movement of people and animals across this region.
Methodology/Principal Findings Abstract	We investigated whether genetic heterogeneity of *G. f. fuscipes* vector populations can provide an explanation for this disjunct distribution of the *Trypanosoma* parasites. Therefore, we examined genetic structuring of *G. f. fuscipes* populations across Uganda using newly developed microsatellite markers, as well as mtDNA. Our data show that *G. f. fuscipes* populations are highly structured, with two clearly defined clusters that are separated by Lake Kyoga, located in central Uganda. Interestingly, we did not find a correlation between genetic heterogeneity and the type of *Trypanosoma* parasite transmitted.
Conclusions/Significance Abstract	This lack of a correlation between genetic structuring of *G. f. fuscipes* populations and the distribution of *T. b. gambiense* and *T. b. rhodesiense* indicates that it is unlikely that genetic heterogeneity of *G. f. fuscipes* populations explains the disjunct distribution of the parasites. These results have important epidemiological implications, suggesting that a fusion of the two disease distributions is unlikely to be prevented by an incompatibility between vector populations and parasite.

Introduction

- Capture your audience. Why is your experiment important?
- Keep it short: 2-3 paragraphs if possible
- Avoid a literature review: set the scene and give the state of the art rather than describe everything known on the topic

Introduction Tips

Tell the reader:

- Why your research was **needed**
- Why does it **matter** to farmers, or researchers
- Were there any **controversies** you were trying to address?
- What did you do that was **new or innovative**?

Introduction: Good Practice Points

- Opening sentence takes you **straight to the issue**
- Contains the **most important details** of the issue
- Contains a **brief summary** of the **controversies** and the **best evidence**
- Ends in a **clear research question** and how you set out to answer it
- Keeps with the rules of good writing and is written using **active rather than passive tense**

Materials and Methods

- Give enough detail so that a qualified reader could **repeat the study**
- If your methods section is “thin on details” editors worry that you are **hiding something**

Materials and Methods

- Provide enough details for competent researchers to repeat the experiment (Who, What, When, Where, How, and Why?)
- Start writing when experiments still in progress
- Sufficient information must be provided for reproducibility
- Study design-new methods must be described in detail
- Supplies, manufacturer, country needs to be added
- Animal, human, protections details
- Measurements/ instruments
- Statistical analysis and data collection

Figures and Tables

- Each figure or table should have one stand-alone message
- Don't overload figures or tables with numbers or text
- Figures and tables should be entirely understandable on their own, without reference to the whole paper or need to read Methods or Results
- Do not discuss what your findings mean in figure legends

Results: The Facts and Nothing But the Facts

- Should be ordered around primary and secondary outcomes in the same order as listed in the Methods section
- State clearly and simply what you found using words and numbers
- Use tables and figures for the main numbers
- Don’t duplicate information in text and tables
- Short and easy to understand

Discussion

- Hardest section to write, but it is also the most important.
- Start the discussion with a single sentence that states your main findings
- Discuss both strengths and weaknesses
- Correlation of your finding with the existing knowledge
- What is new
- Conclusion/summary, perspectives, implications.
- Research limitations and need for future research

Discussion: In Depth

Relate your study to what has been already found

- How do your results fit in with what is already known?
- What are the strengths and weaknesses of your study compared to previous studies?
- Why does your paper offer a different conclusion?

Discuss what your study means

- Don't overstate the importance of your findings; readers will probably come to their own conclusions on this issue

Unanswered questions

- What did your research not address? Avoid using the cliché more research is needed.

Avoiding A Long, Confused Discussion Section

First Paragraph:

- Interpretation/answer based on key findings
- Supporting evidence

Subsequent paragraphs:

- Compare/contrast to previous studies
- Strengths and weaknesses (limitations) of the study
- Unexpected findings
- Hypothesis or models

Last paragraph:

- Summary
- Significance/implication
- Unanswered questions and future research

Extras

- **References:** cite them accurately, restrict yourself to the key ones, check the APA style
- **Acknowledgements**
- **Author contributions (who did what)**
- **Funding**

What Should You Start Writing First?

- Methods
- Figures
- Results
- Discussion
- Introduction
- Abstract and Title