WORKSHOP ON WRITING ABSTRACTS AND DEVELOPING POSTER PRESENTATION FOR INTERNATIONAL MEETINGS

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AGENDA

- 9:30 – 9:45 Introduction
- 9:45 – 11:45 Results, Discussion, and Conclusions
- 11:45 – 12:00 Coffee Break
- 12:00 – 12:30 Introduction Section. Hypothesis Formulation
- 12:30 – 13:00 Methods Section (including note on statistics)
- 13:00 – 14:00 Lunch Break
- 14:00 – 15:00 Title, Authors, and Affiliations
- 15:00 – 15:15 Coffee Break
- 15:15 – 18:00 Small Group Exercises/Discussion
INTRODUCTION

Who?
• You are Master and PhD Students or early career PhD researchers eager to learn more about writing abstracts for an international audience!

What?
• This interactive course is designed to allow participants to learn and apply the information in development of an abstract for international conferences.

Where?/ When?
• Here and now!

Why?
• International scientific conference abstracts and Ukrainian conference abstracts are written differently; by understanding the differences, you can more clearly communicate your research to international audiences.

How?
• Participate! Speak up, ask questions, and critically identify how to use the information in development of your own abstract!
**GOALS**

- Understanding of abstract layout and content for international conferences
- Opportunity to receive constructive criticism on developed abstracts
- Opportunity to provide colleagues with constructive criticism and feedback
ABSTRACT LAYOUT

Title  Authors  Introduction  Methods (optional)  Results  Conclusions  Discussion (optional)
ABSTRACT RULES

Each conference has different rules:

- Deadline for abstract submission
- Abstract size limit
  - Word limit or character limit
- Abstract formatting
  - Sections to be included
  - Key words or conference theme classification
- Image, graph, or table allowances

Conference Websites include:

- Information on the abstract rules
- Abstracts from the previous year that can serve as templates
- Information on travel grants
For this workshop, we will use the abstract rules for abstracts that may be submitted to the 2019 Regional One Health Symposium.

Abstracts should be 2500 characters long and do not contain images/tables/graphs.
ABSTRACT CROSS SECTION

Title
Authors
Introduction
Methods (optional)
Results
Conclusions
Discussion (optional)

Provides background, rationale, and research objectives
Describes experiments performed and how it was performed
Describes how research impacts scientific knowledge
RESULTS

Why are we starting with this section?

- This is the section that **forms the backbone** of the story you will tell in your abstract.
- All of the sections of the abstract connect and depend on the results you include.
- This section should focus on the research experiments performed and briefly how it was done.

*Please take a moment and think of the three main experiments that you will include in your abstract. Please write these down now.*
There are typically two types of results sentences:

- Describes experiments that answer yes/no questions.
- Describes experiments that answer quantitative questions.
RESULT SENTENCE TYPES

Yes/No experiments

- **Sentence describes the experiment and its outcome.**
- Example: PCR analysis revealed the presence of the \textit{impB} gene, which may play a similar role in pathogenesis.
- Example: GPS tracking of Norwegian Ridgebacks revealed the shifted migratory pathway resulted in nesting sites located in England for the first time.

Quantitative experiments

- **Sentence describes the experiment, the generated data, and the outcome of that data.**
- Example: PCR analysis revealed a 19\% increase transcription of \textit{impB} in the presence of a functional \textit{gruE} gene, indicating GruE may directly or indirectly increase transcription of \textit{impB}.
- Example: GPS tracking of Norwegian Ridgebacks revealed the shifted migratory pathway resulted in 60\% more nesting on lowland marshes, suggesting a preference for the prevalent English lowland marshes.
RESULTS TYPE EXAMPLES — YOUR TURN!

- Experiment designed to identify location of a Peruvian Vipertooth herd.
- Experiment to determine changes in Peruvian Vipertooth infection rates over time.
- Experiment to determine rate of Peruvian Vipertooth wingspeed in non-windy conditions.
- Experiment to determine food preference of Peruvian Vipertooth dragons.
Experiment designed to identify location of a Peruvian Vipertooth herd.  
Yes/No

Experiment to determine changes in Peruvian Vipertooth infection rates over time.  
Quantitative

Experiment to determine rate of Peruvian Vipertooth wingspeed in non-windy conditions.  
Quantitative

Experiment to determine food preference of Peruvian Vipertooth dragons.  
Yes/No
RESULTS TYPES — DEVELOPING YOUR ABSTRACT

Go back to your three experiments. Are they mostly Yes/No or Quantitative?

- If there are no quantitative experiments, identify if there are any you could include that fit the other experiments.

Is someone willing to share a yes/no experiment?

Is someone willing to share a quantitative experiment?
RESULTS

- When writing results, be sure to include enough information that readers can understand the process by which the experiment was done, the data generated (if it is quantitative), and what you think is the result of this experiment.

- Make a story with a logical pathway from one experiment to the next.

- Do not write very long, complex sentences and only write enough detail to explain. The easier it is to read, the easier it is to understand.

- Write to the audience at the conference.

- If a separate methods section will not be included, you may need to identify critical methods information to clearly describe the experiment being performed.

Please take a moment and select a quantitative experiments and develop a sentence describing the experiment, the data, and outcome of that data.
CONCLUSIONS AND DISCUSSION

What it is

• Describes what all the experiments together “mean”
• A chance to put your results into the context of known science
• Describes the implications of your work in a “big picture”

What it is not

• A repeat of the results
CONCLUSIONS SECTION (IF SEPARATE)

- What is the conclusions section?
- This section should answer the question:

**Taken together, what do the results of all my experiments mean?**
Your experiments reveal the following:

• Romanian Longhorn dragons do not eat fish, but prefer the meat of wild four-legged herbivores, such as deer, elk, and roe deer.
• Observation of Romanian Longhorn nesting grounds indicate that 89% of nests are built in wooded, mountainous areas.
• Annual infection rates in the last 5 years have decreased.
• Relocation of Romanian Longhorns to coastal wooded areas resulted in 34% fewer eggs laid by females.

Example conclusion statement:

• Taken together, the preference for wooded, mountainous nesting areas and potential decreased in preferred food sources contribute to the lack of herd expansion for relocated Romanian Longhorns.
YOUR CONCLUSION

It's specific to your research!

Take a moment and order your experiments and data, and see if you can summarize it in one sentence.

Taken together, what do the results of all my experiments mean?
DISCUSSION — ALIGN WITH THE RESULTS AND CONCLUSION

Results
• Described the experiments and results!

Conclusions
• Summarized the research!

Discussion
• Explain the implications of the research in the big picture!
DISCUSSION

Show the impact of the presented data to the larger scientific world!

Can include recommendations based on your presented data.

Can include specific next experiments designed to answer the next immediate question.

Try to avoid “we will do more of the same analysis” statements. This suggests that the data is not strong enough on its own.
DISCUSSION EXAMPLE

Your experiments reveal the following:

• Romanian Longhorn dragons do not eat fish, but prefer the meat of wild four-legged herbivores, such as deer, elk, and roe deer.
• Observation of Romanian Longhorn nesting grounds indicate that 89% of nests are built in wooded, mountainous areas.
• Annual infection rates in the last 5 years have decreased.
• Relocation of Romanian Longhorns to coastal wooded areas resulted in 34% fewer eggs laid by females.

Example conclusion statement:

• Taken together, the preference for wooded, mountainous nesting areas and potential decreased in preferred food sources contribute to the lack of herd expansion for relocated Romanian Longhorns.

Example discussion:

• To address the goal of increasing the Romanian Longhorn population, care needs to be taken with habitat selection for relocation. Our data suggests that forested areas in Romania, Ukraine, and Slovakia should be considered due to the abundance of wooded, mountainous nesting areas and similar food availability.
ANY QUESTIONS?
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</table>
INTRODUCTION

Should provide information to allow the audience to understand what problem you are trying to solve and why you are trying to solve it.

Big Problem – Usually includes impacts to people, animals, or the environment

Smaller Problem – The specific focus of your work

Know your audience!! They determine the level of detail!
BIG AND SMALL PROBLEMS

Identify the big problem:

• Look in your discussion section!
• “To address the goal of increasing the Romanian Longhorn population”

Identify the small problem:

• Look in your conclusion section!
• “the lack of herd expansion for relocated Romanian Longhorns”
INTRODUCTION EXAMPLE

Big Problem

- Critically endangered Romanian Longhorns (Romania longhonia) are native dragons to the northern Romania forests and historically have kept local fauna in check.

Small Problem

- A relocated herd in coastal Romania do not appear to be expanding as quickly as expected.

Knowledge Gaps

- Relocation has been effective for increasing Norwegian Ridgeback populations.
- Efforts have been made to reinforce Romanian Longhorn populations by relocating groups of mating pairs, with varying success.
It’s specific to your presented results data and conclusions!

Take a moment and identify the big and small problem for your presented data.

What potential knowledge gaps do you think may be needed?
INTRODUCTION EXAMPLE

**Big Problem**
- Critically endangered Romanian Longhorns (*Romania longhornia*) are native dragons to the northern Romania forests and historically have kept local fauna in check.

**Small Problem**
- A relocated herd in coastal Romania do not appear to be expanding as quickly as expected.

**Knowledge Gaps**
- Relocation has been effective for increasing Norwegian Ridgeback populations.
- Efforts have been made to reinforce Romanian Longhorn populations by relocating groups of mating pairs, with varying success.
INTRODUCTION DEVELOPMENT EXAMPLE

Identify the big problem

Identify the small problem

Identify any knowledge readers might not know regarding your research topic.

Insert additional knowledge and streamline transition from big problem to small problem.
Critically endangered Romanian Longhorns (*Romania longhornia*) are native dragons to the northern Romania forests and historically have kept local fauna in check. Relocation has been effective for increasing the Norwegian Ridgeback populations. Efforts have been made to support Romanian Longhorn populations by relocating groups of mating pairs, with varying success. Specifically, this research focused on a relocated herd in coastal Romania that does not appear to be prospering.
HYPOTHESIS

Hypothesis is defined as an educated guess that can be tested.

**Educated** – means the hypothesis is based on observations (both personal and published)

**Testable** – means the hypothesis should be the basis of the questions that the experiments test

The hypothesis also explains why you selected the experiments you are reporting!

Look at your results data and fill in the blank:

“I did these experiments to test if ________________________________.”

Whatever you fill in the blank with, should be the start of your hypothesis.

Note, the hypothesis can be disproved and still be useful to the scientific community.

Data is often presented to show a lack of correlation between two items.
HYPOTHESIS EXAMPLE

Your experiments reveal the following:

• Romanian Longhorn dragons do not eat fish, but prefer the meat of wild four-legged herbivores, such as deer, elk, and roe deer.
• Observation of Romanian Longhorn nesting grounds indicate that 89% of nests are built in wooded, mountainous areas.
• Annual infection rates in the last 5 years have decreased.
• Relocation of Romanian Longhorns to coastal wooded areas resulted in 34% fewer eggs laid by females.

Example hypothesis:

• To determine the cause of the lack of expansion in the relocated herd, we analyzed health and reproduction factors that may impact the Romanian Longhorns.
It’s specific to your presented results data and conclusions!

Take a moment and identify your overall hypothesis.

What is your hypothesis?
Is anyone willing to share their conclusion sentence and their hypothesis for feedback?
METHODS

Is it needed?

- It is NOT always required as part of the abstract.
- Methods information can often be incorporated into the Results section.
- Should only include CRITICAL detail to allow readers to understand how the experiments were done.
METHODS

**Good information:**
- Summarized experimental protocols (e.g. microbiological testing assays, surveillance analysis protocols)
- Specific techniques not part of general knowledge (summary of process only)

**Too much information:**
- Specific primers used in standard PCR
- Specific chemical concentrations
- Specific machinery used (e.g. brand of centrifuge)
- Specific brand of reagents (e.g. specific PCR kit)

**Too little information:**
- “Biochemical tests”
- “Statistical analysis”
- Reference to a country-specific protocol

**The methods should address all the experiments discussed in the Results Section!**
METHODS SECTION OR INTEGRATED METHODS?
STATISTICS

What it is

• Describes a statistical algorithm analysis of values of the items of the sample, which are known together as a set of data.
• Includes a “p” value

What it is not

• Calculating the average of a set of numbers
• Putting data on a graph
• A set of data
Need more information on statistics? Good news!

Metabiota is putting together a basic statistics class. Please reach out to them for additional information and availability.
This is literally the first thing people read! It sets expectations for the abstract. It is a one-line argument for why readers should read the abstract!
If your abstract was a newspaper article, how would you title it?

The most interesting titles include the overall results to convince readers to read the abstract.

Look to your Conclusion statement— it has most of the key information you should include in the title!

Newspaper headlines are designed to attract readers by titling the article with the most important summary of the information to convince people to purchase and read the details.
Example conclusion statement:

• Taken together, the preference for wooded, mountainous nesting areas and potential decreased in preferred food sources contribute to the lack of herd expansion for relocated Romanian Longhorns.

Example Title:

• Non-preferred food and nesting areas contribute to reduced herd expansion of Romanian Longhorns
Is anyone willing to share their conclusion sentence and their title for feedback?
AUTHORS

Authorship order denotes those that contributed most to least, ending with the grant’s principal investigator.

Contribution

High Contribution

Less Contribution

High Contribution

Author Order

Presenter  Contributor  Contributor  Contributor  Contributor  Principal Investigator
AUTHORS

- If asked, you should be able to explain how each individual contributed to data collection and/or analysis.
- Remember to use the order and clearly identify corresponding authors (usually the principle investigator listed at the end).
- Authors share both the rewards and the responsibility for the publication.

Role of Intracellular Carbon Metabolism Pathways in *Shigella flexneri* Virulence

Department of Molecular Biosciences and Institute for Cellular and Molecular Biology, University of Texas at Austin, Austin, Texas, USA
AFFILIATIONS

- Affiliation information may allow for networking if a reader identifies a connection with an institution they recognize.
- Affiliation information allows readers to see the diversity of the team that prepared the data for presentation.
- It is important to provide accurate contact information to allow potential collaborators to follow-up with you (or the Principle Investigator).
EXAMPLES!

AmrZ Beta-Sheet Residues Are Essential for DNA Binding and Transcriptional Control of *Pseudomonas aeruginosa* Virulence Genes

Elizabeth A. Waligora, Deborah M. Ramsey, Edward E. Pryor, Jr., Haiping Lu, Thomas Hollis, Gina P. Sloan, Rajendar Deora, and Daniel J. Wozniak

Department of Microbiology and Immunology, Department of Biochemistry and Center for Structural Biology, Wake Forest University School of Medicine, Medical Center Blvd., Winston-Salem, North Carolina 27157, and Center for Microbial Interface Biology, The Ohio State University, Columbus, Ohio

Direct Evaluation of *Pseudomonas aeruginosa* Biofilm Mediators in a Chronic Infection Model


Department of Microbiology and Immunology, Department of Pathology, and Department of Pathology/Comparative Medicine, Wake Forest University Health Sciences, Medical Center Blvd., Winston-Salem, North Carolina 27157; Department of Microbiology, University of Washington, Seattle, Washington 98195; and Center for Microbial Interface Biology, Infectious Disease, and Microbiology, The Ohio State University, Columbus, Ohio 43210
ABSTRACT CROSS SECTION

Title
Authors
Introduction
Methods (optional)
Results
Conclusions
Discussion (optional)

Provides background, rationale, and research objectives

Describes experiments performed and how it was performed

Describes how research impacts scientific knowledge
SUMMARY

Title
• Attract readers and reflect the main discussion statement.

Authors
• Reflect all those that contributed to the presented data and analysis.

Introduction
• Provide background and rationale for research and hypothesis.

Methods/Results
• Provide information on the experiment, the outcome, and its implications.

Conclusion/Discussion
• Describe a summary of the results and its implications in the greater scientific literature
FINAL STEPS!

- Proofread it!
- Get a friend to proofread it!
- Get Metabiota staff to proofread it!
- Double check word count!
ANY QUESTIONS?