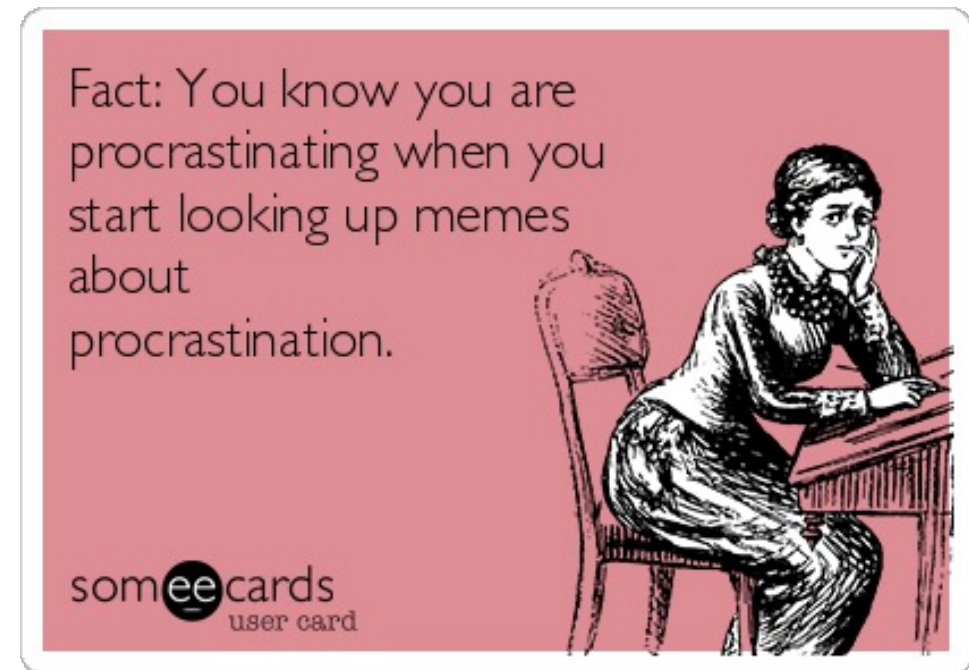


M1D8:

Evaluate experimental results

1. Complete quiz
2. Work on Data summary!



Finishing up Mod 1!

- Research talk comments to be returned early next week
- Data summary submitted via Canvas
 - Draft due Saturday, March 16 by 10 pm
 - Revision due Monday, March 25 by 10 pm
- Blog post submitted via Slack #spring-2023-blog
 - Due Monday, March 18 by 10 pm
- Notebook submitted via Canvas
 - Due Friday, March 8 (TR section) or Saturday, March 9 (WF section) by 10 pm
 - **Submit M1D3 for 'detailed' grading**
 - **Entire notebook will be reviewed for 'completion' grading**

Let's review our Mod 1 project goals...

What is our overall goal / question in this project?

How are we addressing the goal / answering the question?

Let's review our Mod 1 experiments...

confirmation digest
SDS-PAGE and BCA

What was tested?

How was the output
measured?

DSF

What was tested?

How was the output
measured?

Advantages?

Disadvantages?

EMSA

What was tested?

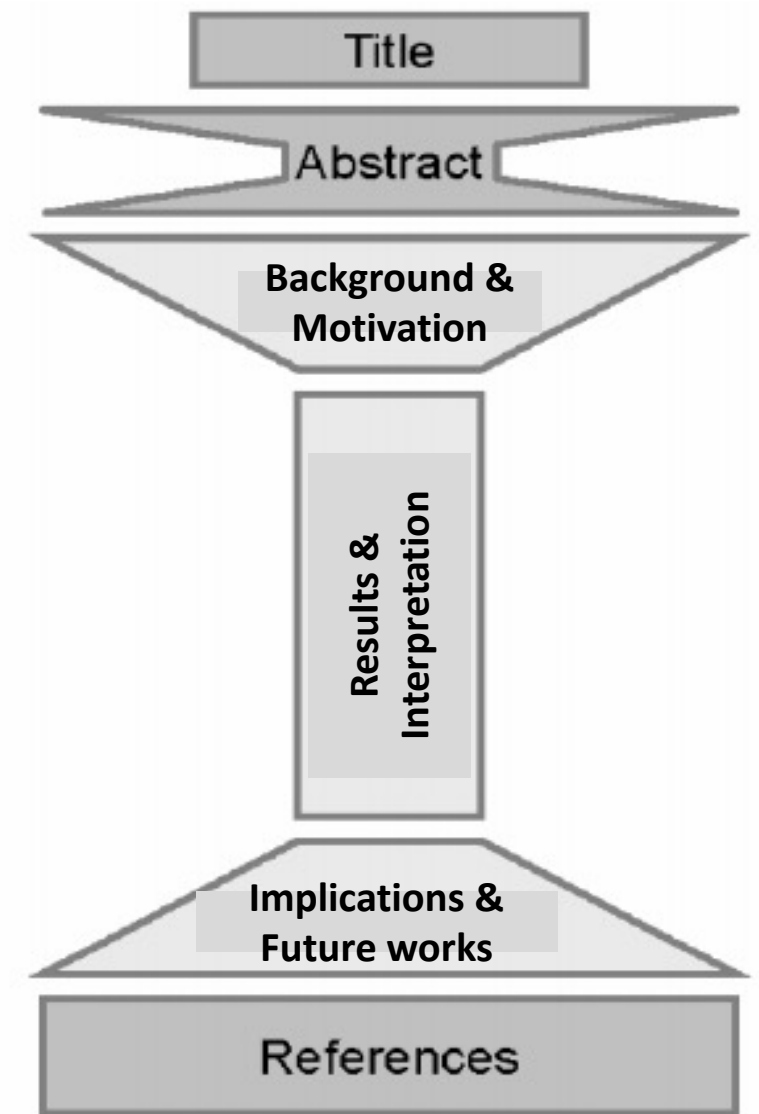
How was the output
measured?

Advantages?

Disadvantages?

Getting started on the Data summary

- Title: take-home message / conclusion
- Abstract: **paragraph, NOT bullet points**
- Background & Motivation (include citations)
 - ~ 2 slides
- Results & Interpretation
 - 4-5 slides
- Implications & Future works (include citations)
 - ~2 slides
- References



Data summary structure / logistics

- To be submitted as a **powerpoint** file!
 - Change page settings such that 'slides' are portrait and 8.5" x 11"
- **Title and Abstract can be included on the same slide**
- Each figure will be included as a separate Data slide
 - Image should be at the top of the slide with title and caption
 - Results / Interpretation text should be included on same slide
 - Though figures are separated into Data slides, the story should be cohesive between figures!

What is the **purpose** of the Background & Motivation section?

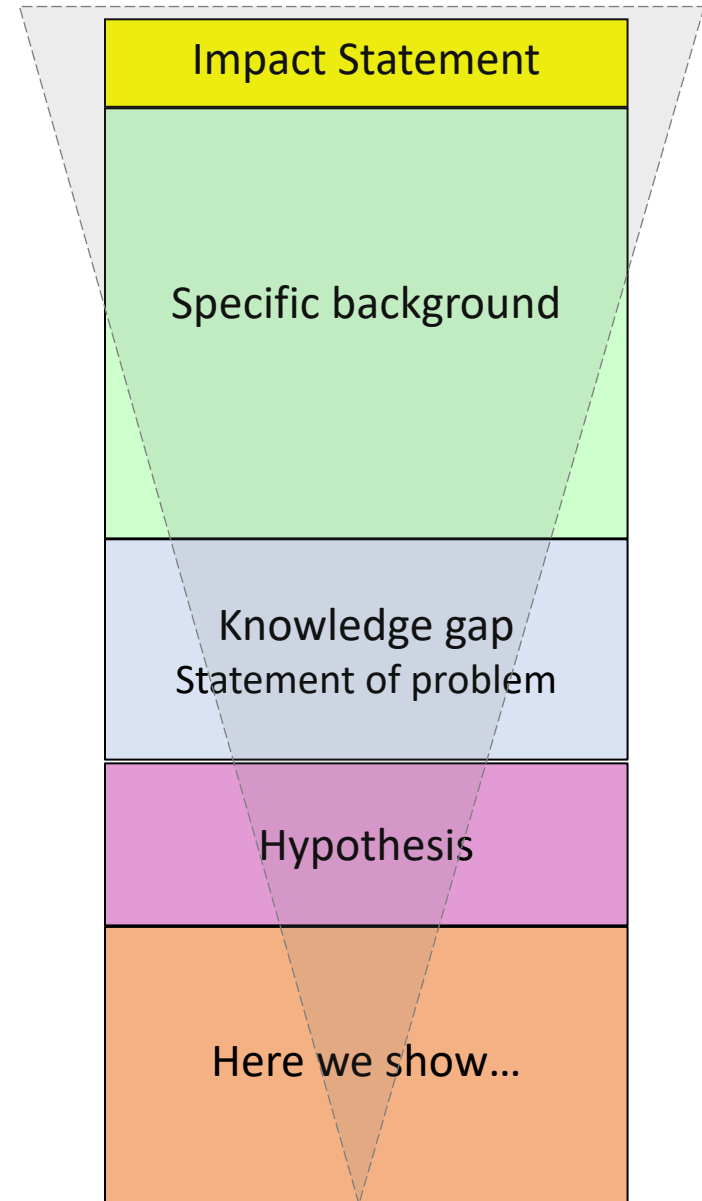
What **information should be included** in the Background & Motivation section?

Notes on Background & Motivation section...

- Impact statement
 - Why is your research important / useful? Provide context for your project.
- Specific background
 - Introduce topics (pathways, specific technologies, etc)
 - Narrow focus to the specific question addressed in your study
- Knowledge gap / statement of problem
 - State what is unknown
 - Include your research question!
 - What do you propose will be the outcome of your study?
- A brief preview of your findings
 - Here we show...

Notes on topic sentences...

- Topic sentence = first sentence of each paragraph
- Should 'funnel' from big picture topic to your specific research question / project
 - Provide only the background needed to understand research / problem / goal
 - Clearly state what is not currently known
 - Address how you will fill knowledge gap
 - Provide preview of your results
- Include references!!



How should you introduce your story?

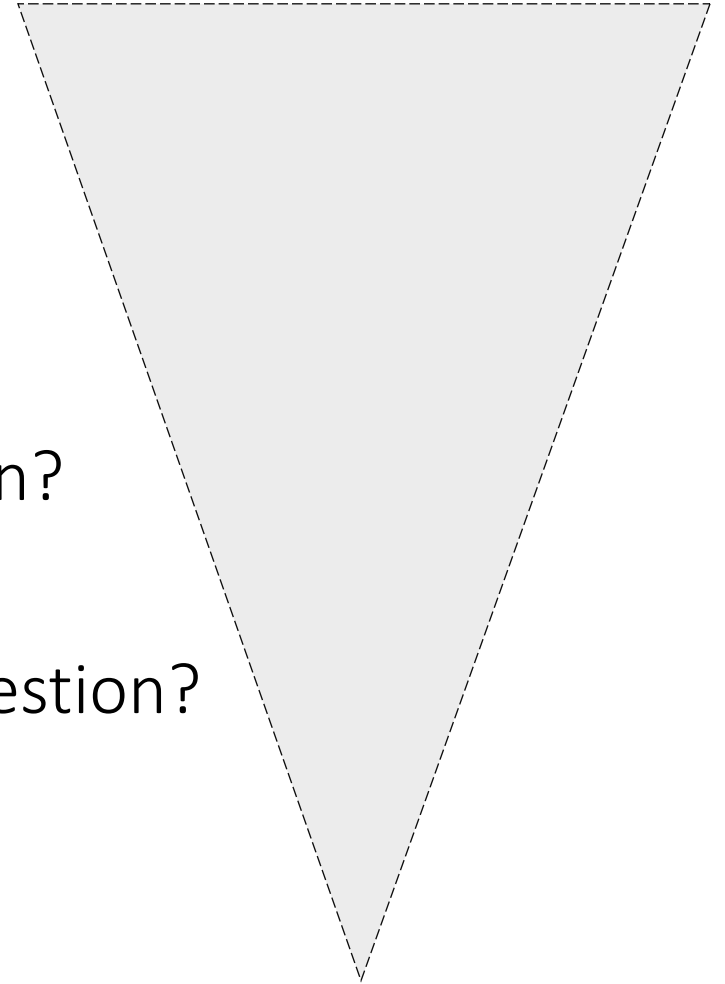
1st paragraph: what is the big picture / problem?

2nd paragraph: what is currently known?

3rd (or 4th) paragraph: what is your research question?

4th (or 3rd) paragraph: how will you address your question?

5th paragraph: here we show...

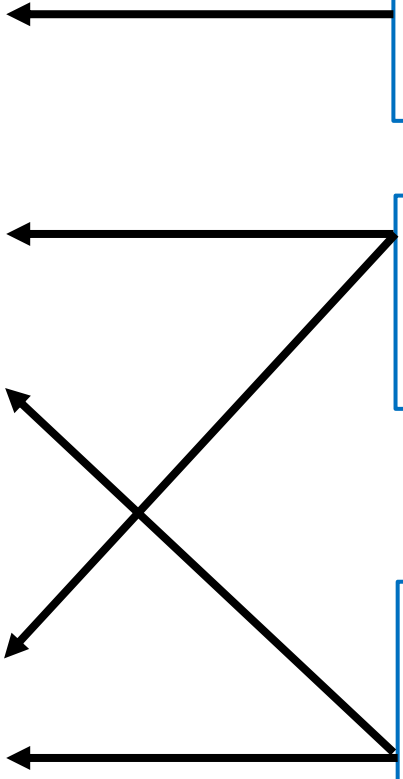


How should you organize the Background & Motivation section?

Background and Motivation:

- Topic sentence #1
 - Supporting statement (citation)
 - Supporting statement (citation)
 - Transition sentence
- Topic sentence #2
 - Supporting statement (citation)
 - Transition sentence

Each section should include the broad header to distinguish the sections of the Data summary



Each topic sentence will be a main bullet in the text (this is like the first sentence in a paragraph)

Supporting statements should be included for each topic sentence as sub-bullets (these are like the sentences that would follow the first sentence in a paragraph)

Review of Results & Interpretations section...

Image **should not** be the entire page

- Only needs to be large enough to be clear / visible

Title **should** be conclusive

- Don't state what you did, rather state what you found (take home message)

Caption **should not** detail the methods or interpret the data

- Define abbreviations, symbols, etc.
- Include details needed to “read” figure

Bullet points **should** present and interpret the data

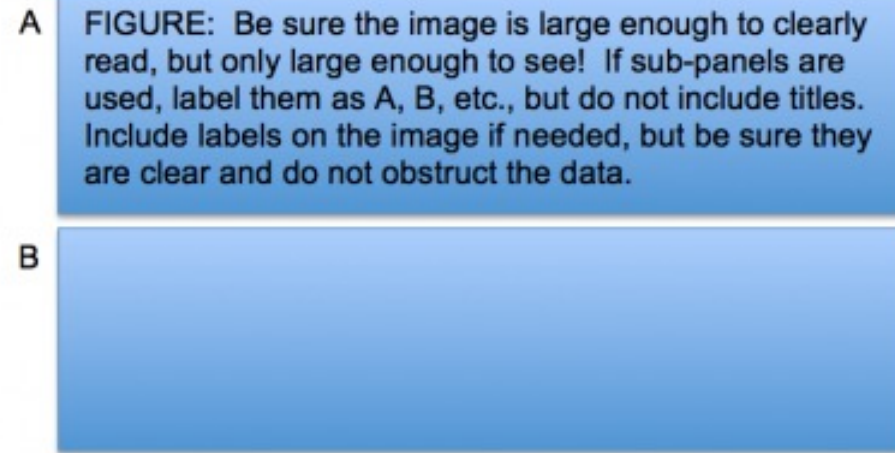


FIGURE TITLE: This should state the conclusion of the figure in very brief and precise language. **CAPTION:** Start with a topic sentence that introduces the figure or sub-panel. Provide all of the information that the reader needs to interpret the figure (define abbreviations, explain labeling scheme, differentiate between sub-panels A, B, etc.). You should not interpret the figure or give minor methods details.

RESULTS SECTION TITLE: This should state a conclusion concerning what you now know given the information provided on this slide...if there is more than one conclusion, consider separating the information into more than one slide.

RESULT(S)/INTERPRETATION(S): Use the questions below to guide the information you provide in your concise bullets.

- What is the overall goal of your experiment?
- What was your expected result according to your hypothesis?
- What evidence do you have that your result is 'correct' or 'incorrect'?
 - What controls did you include and for what did these control?
 - Did the controls work as expected?
- What was the result?
 - Was the result expected?
- In sum, what do these data suggest or indicate?

What to include for Results & Interpretations

- State the goal / intent / purpose of experiment in the first bullet
- What you did:
 - What are the experimental conditions?
 - What are the controls?
 - What are the expectations for the controls / conditions that were tested?
- What you found: quantitatively describe your result, referring to the figure ("Figure 1a shows a % increase of...")
- What does this indicate: interpret your results, what does it mean?
- What does this motivate you to do next: transition to next experiment

What figures will you include in the Data Summary?

- 1.

- 2.

- 3.

- 4.

- 5.

How will you incorporate class data?

Consider how you can support the data you have...

- How consistent are your results with the other biological replicates?
- What are the results of the EMSA for the four small molecules that you chose?
- Are there other small molecules that fit into your strategy and gave interesting results?

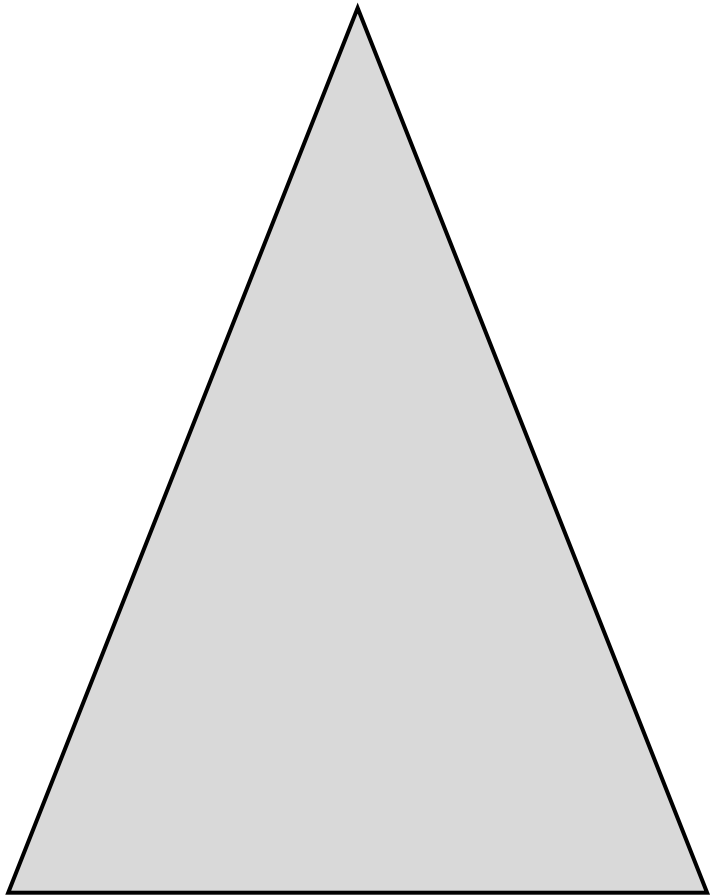
What is the **purpose** of the Implications and Future works section?

What **should be addressed** in the Implications and Future works section?

Notes on Implications & Future works section...

- Start with 'here we showed...'
 - **Restate major results and broad implications**
 - Follow same order as in Figures/Results
- Describe your conclusions from your data
 - If necessary, describe caveats of experiment and suggest improvements
- Identify unknowns and speculate (within reason)
 - Don't make huge generalizations or overreach
- Propose future experiments, identify new questions that arise
- **Come back to the big picture / impact statement topic introduced in background**

How should you conclude your story?



- What are the main findings / conclusions?
- What are the implications of the results?
- How do the results relate to the research question / hypothesis?
- How do the results advance what is known?

Ideas for Future works:

- What are some next steps?
- What are some broader possibilities?

For today...

- Assign tasks for Data summary and get to work!
- **Submit completed notebook entry for M1D3 tomorrow by 10 pm**

For M2D1...

- Review project overview and M2D1 introduction