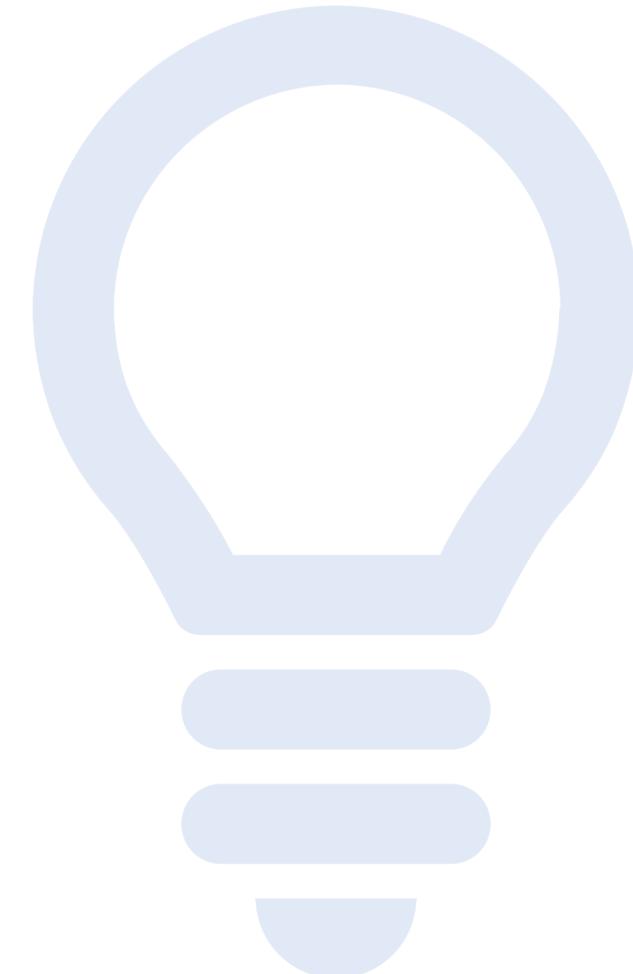




# Developing Your Research Poster



# Reminders

- Virtual Networking 101 TODAY @ 4:00pm
- Things that should be done already:
  - Scientific paper assignment
  - IDP draft
  - LinkedIn profile & resume (due today)
- Upcoming due dates:
  - Friday July 24<sup>th</sup> – Abstract
  - Monday July 27<sup>th</sup> – Poster
  - Friday July 31<sup>st</sup> – IDP signed



Why invest time  
in making a nice  
poster?

What are the  
main contents of  
a poster?

How can we use  
visualization  
tools to help us?

What is the  
general plan of  
“attack” at  
poster sessions?

Why invest time in  
making a nice  
poster?

# What do you think?

What are some ways that developing a research poster or being a part of a poster session might help you?

Communicate  
your science

Receive valuable  
feedback

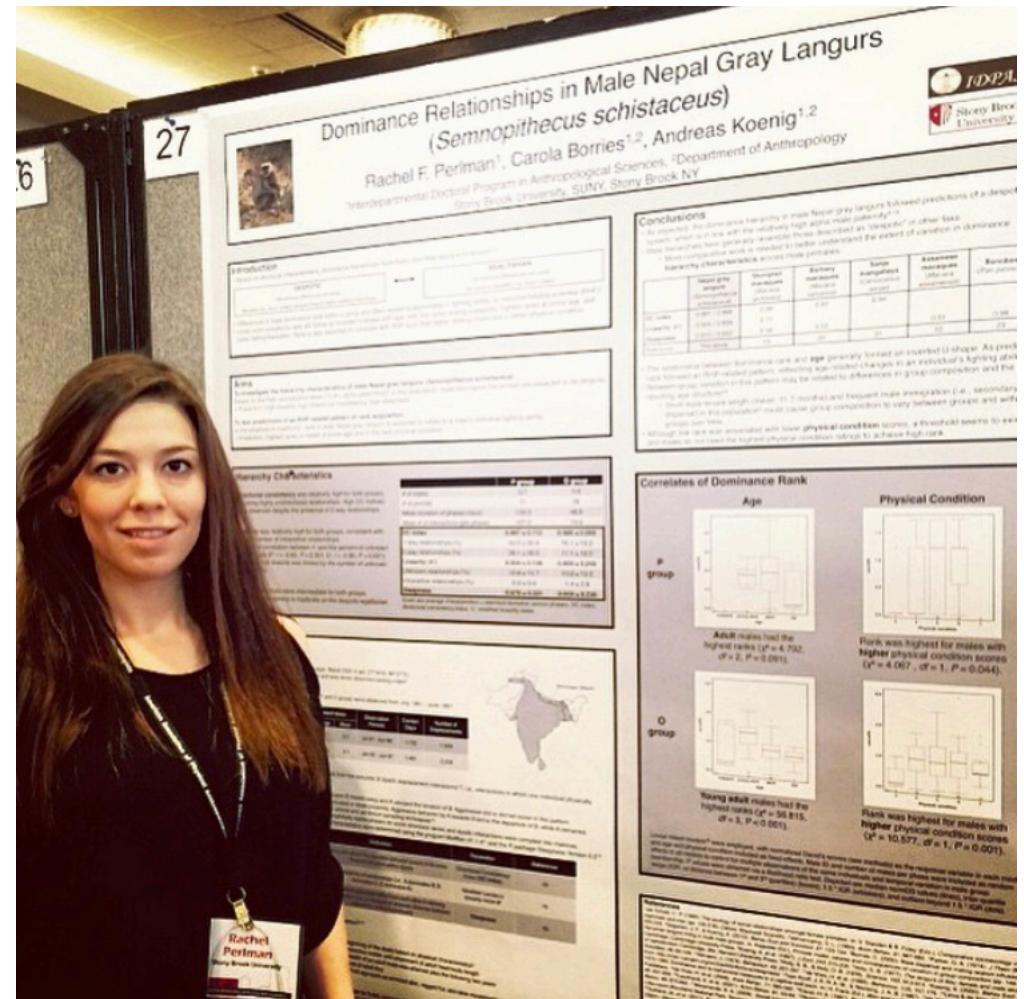
Major networking  
opportunity

Practice for  
future



# My Poster Session Experience

- Interact with other students and learn about their work
  - Represent my lab
  - Interact with researchers and get my name out there
  - Chance to learn how to explain complex and theoretical concepts

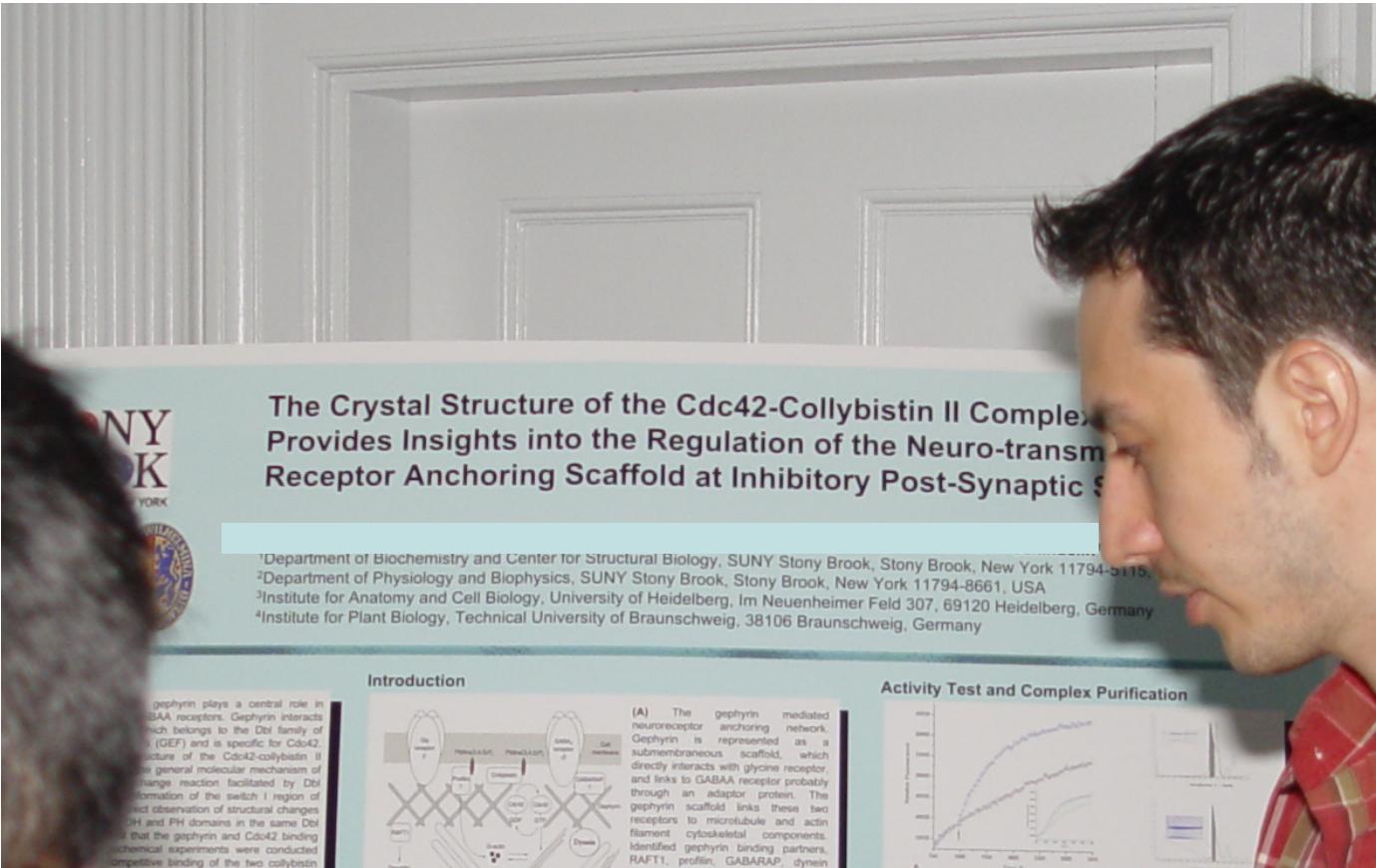


What are the  
main contents of  
a poster?

# A Poster Should Include...

- Title } **Be bold...choose something that'll get people's attention**
- Authors (and affiliations) } **Include the key players (order matters)**
- Content
  - Introduction/background
  - Prior work/ State-of-the-art
  - Methods
  - Results
  - Conclusions/Future Work
The main “meat” of the poster
- References
- Funding sources
- Acknowledgements } **Always give credit where credit is due**

# POSTER COMPONENTS: Title



# Choose your words well...

APPLIED COGNITIVE PSYCHOLOGY

*Appl. Cognit. Psychol.* **20**: 139–156 (2006)

Published online 31 October 2005 in Wiley InterScience  
(www.interscience.wiley.com) DOI: 10.1002/acp.1178

## Consequences of Erudite Vernacular Utilized Irrespective of Necessity: Problems with Using Long Words Needlessly

DANIEL M. OPPENHEIMER\*

*Princeton University, USA*

### SUMMARY

Most texts on writing style encourage authors to avoid overly-complex words. However, a majority of undergraduates admit to deliberately increasing the complexity of their vocabulary so as to give the impression of intelligence. This paper explores the extent to which this strategy is effective.

“Write clearly and simply if you can,  
and you’ll be more likely to be  
thought of as intelligent”

# Breakout - Brainstorming a Title!

- Each person:
  - Spend a few minutes explaining your research project in a nutshell
  - Write down a list of keywords related to your project
  - Try to come up with a title
- Give each other feedback
- Come back and share

# POSTER COMPONENTS: Introduction

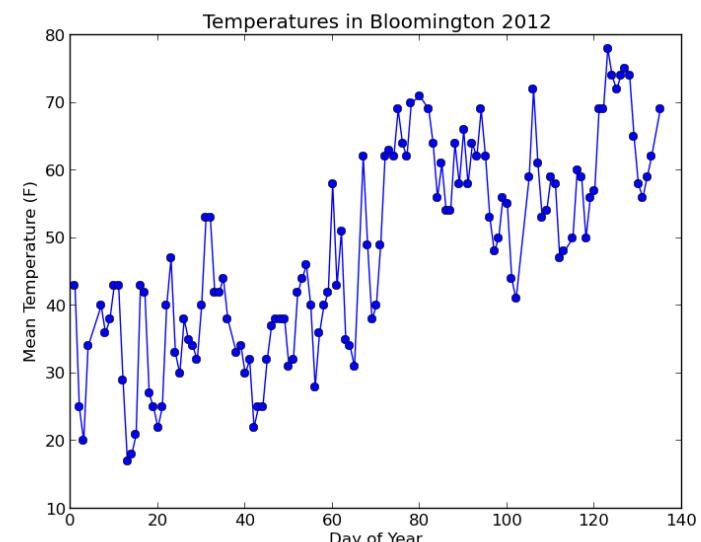
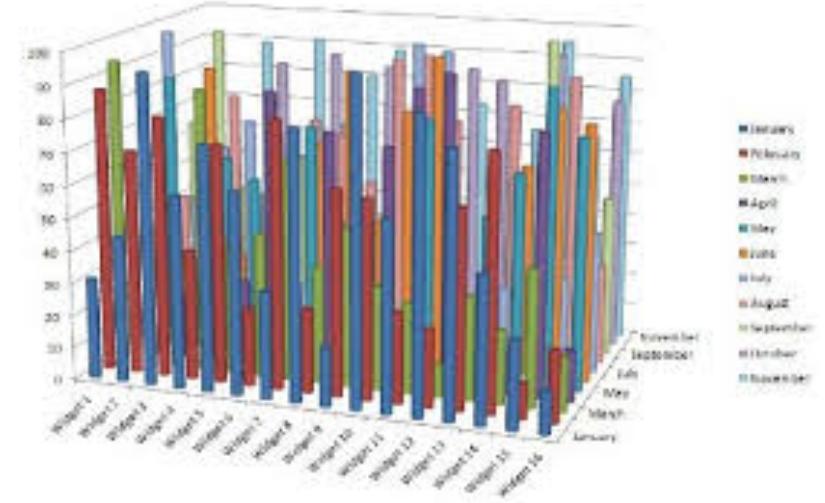
- What are you investigating?
  - Why is it important?
  - How are you addressing it?
- 
- High up on the poster
  - Introduce key ideas and limit the use of jargon
    - Simple diagrams may be helpful



Being able to answer these questions is also the key to starting a conversation before moving into the more complicated details

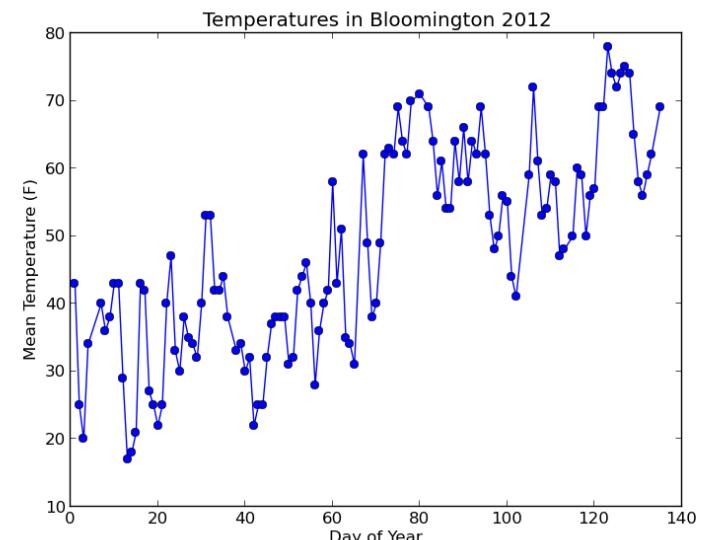
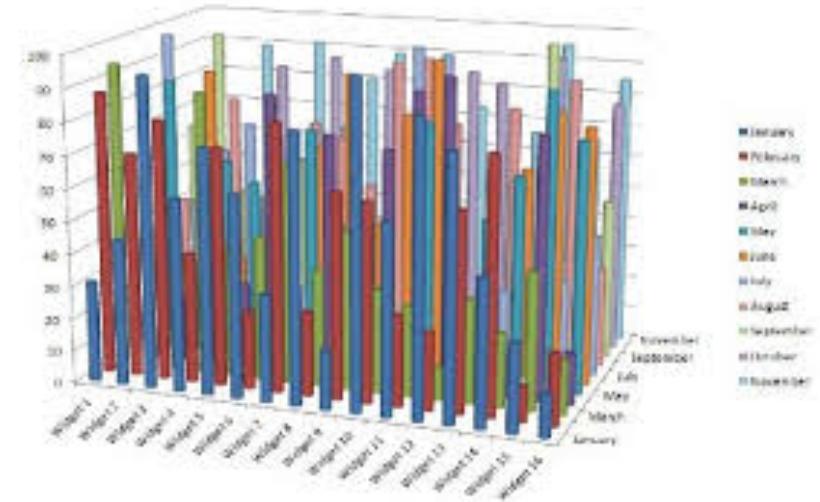
# POSTER COMPONENTS: Methods

- Need to explain what you did clearly
- What type of experiment/simulation did you run?
- What kind of data did you collect?
- How did you do it?



# POSTER COMPONENTS: Results

- Findings need to be interpretable to the general audience
- Figures and plots help, but they are not everything
- If no one can understand it, then there's no point



# POSTER COMPONENTS: Conclusions/Future Work

- Brief take-home message
- How did your work contribute to addressing the research problem that was posed?
- What about the experiment was successful? What was not?
- Given the project you completed, what are the next steps?

# Sample Layout

**Title of the Research Study**  
PEOPLE WHO DID THE STUDY  
UNIVERSITIES AND/OR HOSPITALS THEY ARE AFFILIATED WITH

**Logo**

**Introduction**  
We hope you find this template useful! This one is set up to yield a 100x70 centimetre horizontal poster.

We've put in the headings we usually see in these posters, you can copy and paste and change to your hearts content. We suggest you use black text against a light background so that it is easy to read. Background color can be changed in format->background->gradient down menu.

The boxes around the text will automatically fit the text you type, and if you click on the text, you can see the little handles that appear to stretch or squeeze the text boxes to whatever size you want. If we need just a little more room for your type, go to formats-line spacing and reduce it to 9pt or even 8pt.

The dotted lines through the center of the pieces will not print, they are for alignment. You can move them around by right-clicking and holding them, and dragging them until they are where you want them. Use them to put your pictures or text boxes aligned together.

**How to bring things in from Excel® and Word®**

**Excel:** select the chart, for right-click, and then edit->picture->PowerPoint. The chart can then be imported to the presentation. If you need to edit parts of the chart, it can be ungrouped. **Watch out for** scientific symbols used in imperial charts, which PowerPoint will not recognise as a word font and may print improperly if we don't have the font installed on our systems. It is best to use the Symbol font for scientific characters.

**Word:** select the text to be brought into PowerPoint, hit edit->copy, then edit-paste the text into a new or existing text block. This text is editable. You can change the size, color, etc., as format-text. We suggest you not put shadows on smaller text. Stick with Arial and Times New Roman fonts so your collaborators will have them.

**Screen:**  
We need images to be 72 to 100 dpi in their final size, or use a rule of thumb of 2 to 4 megapixels recommended dpi per square foot of image. For instance, a 3x3 photo that will be 6x6 in size on the final poster should be scanned at 200 dpi.

We prefer that you import or crop images into PowerPoint Generally, if you double click on an image to open it in Microsoft Photo Editor, and it tells you the image is too large, then it is too large for PowerPoint. If you crop the image 1200x1600 pixels or smaller work very well. Very large images may show on your screen but PowerPoint cannot print them.

**Preview:** To see your poster in actual size, go to view->zoom-100%. Posters to be printed at 200% need to be viewed at 200%.

**Feedback:** If you have comments about how this template worked for you, email to [sales@recaprint.com](mailto:sales@recaprint.com).

We know! Call us at 800-590-7850 if we can help in any way.

**Methods**

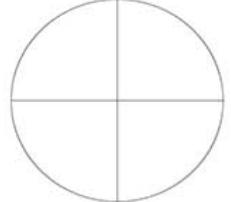
**Results**

**Conclusions**

**Figure #1**

CHART OR PICTURE

**Figure #2**

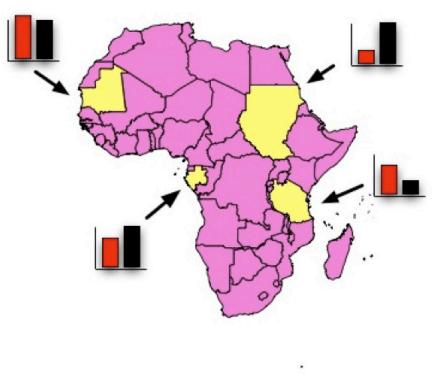


**Bibliography**

1. XXXXXXXXX
2. XXXXXXXXX
3. XXXXXXXXX
4. XXXXXXXXX

printed by [Recaprint.com](http://www.recaprint.com) www.recaprint.com

**Your fascinating poster title**  
name, address



**Literature cited**

**Acknowledgements**

**Further information**

**Annoying logos, etc.**

[colinpurrington.com](http://colinpurrington.com)

# This title states the main result in “sentence case.”

Keep the introduction short! - just enough to lead in to the poster.

Don't paste in an abstract.

Instead, write what you would say first if explaining in person: the big issue, why it is important, your specific question.

Full sentences not necessary!

## 1. Numbered headings can guide readers through a sequence

1.1.2. But don't do this...one digit only!

Could a viewer understand it without your explanation?

Good place for side issues, references, details for the experts in the field

Good place for peripheral results or technical details.

## References

Your name<sup>1</sup>, colleagues' name<sup>2,3</sup>, mentor' (s') name(s)<sup>3</sup>

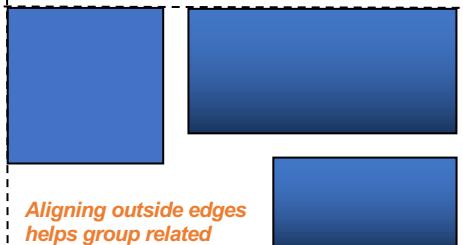
<sup>1,2</sup>Mentor's department, Stony Brook University; <sup>3</sup>Other affiliations

## 2. Put a central result or informative schematic here.



General flow is top left to middle right - keep the most important items along or close to this line.

## 3. Sans-serif fonts best for headings



## 4. Headings give the main result from each figure. Keep to 1-2 lines

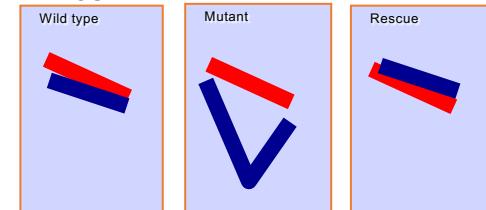


Figure legends can give more info – but are not always needed. Try to convey as much information in labels or, better, graphically in the figure itself (e.g., lane labels, consistent line colors) so readers don't have to go back and forth between figure and legend to understand it.

## 5. Conclusions / next steps

- just the main points
- not a paragraph

# DIFFERENCES IN ACTIVITY PATTERNS RELATED TO STATUS IN MALE GELADAS (*THEROPITHECUS GELADA*)

Rachel F. Perlman<sup>1</sup>, Amy Lu<sup>2</sup>

<sup>1</sup>Interdepartmental Doctoral Program in Anthropological Sciences

<sup>2</sup>Department of Anthropology  
Stony Brook University, SUNY, Stony Brook NY

UNIVERSITY OF MICHIGAN  
GELADA RESEARCH PROJECT

IDPAS

Stony Brook  
University

## INTRODUCTION

- A central concept in socioecological research is that energetics limits the reproductive success of females, but not males<sup>1</sup>
- Yet male-male competition often involves intense aggression, displays, and mate guarding<sup>2-4</sup>
- Efforts to acquire status and access to mates can entail substantial metabolic costs, however such costs are rarely assessed<sup>5</sup>
- In polygynous mating systems where males may only gain mating opportunities by directly challenging a harem-holding male, energetics may be a key factor influencing a male's reproductive potential

## GELADAS

- Leader males maintain a reproductive unit, sire 83-100% of offspring, and likely face high energetic demands<sup>6</sup>
- Bachelor males may face fewer energetic demands because there are no females present in bachelor units

## AIMS:

- To examine how leader and bachelor male geladas differ in activity patterns
- To assess factors that may influence variation in leader male activity



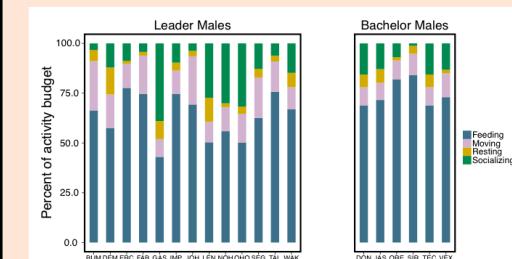
## CONCLUSIONS

- Leader males seem to face high energetic demands associated with maintaining their social position and access to females
- Potential variability in energetic condition across leader males may facilitate bachelor male takeover strategies

## FUTURE WORK

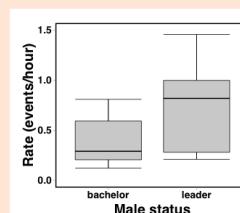
- Increase study period duration
- Assess energetic condition via non-invasive sampling of biomarkers
  - Urinary C-peptide<sup>8-10</sup>
  - Fecal thyroid hormone<sup>11-13</sup>
- Investigate potential link between testosterone-mediated reproductive effort and energetic constraints<sup>14-17</sup>

## LEADER MALES VS. BACHELOR MALES



Leader males spend less time feeding (mean: 63% vs. 75% of activity budget,  $p=0.07$ ) and more time moving (mean: 16% vs. 10%;  $p=0.02$ ) compared to bachelors. Leader male activity levels are more variable compared to bachelors, particularly for time spent feeding ( $SD=0.11$  vs. 0.07).

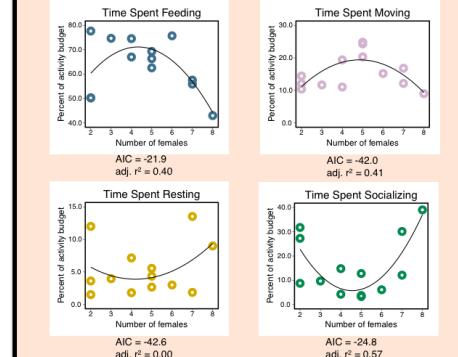
Leader males engage in a higher rate of high intensity agonistic behaviors\* compared to bachelors ( $p=0.002$ ).



\*High intensity agonistic behaviors include chases, vocal displays, and contact aggression.

Depicted are median rate values (lines), inter-quartile ranges (IQR, or distance between 1<sup>st</sup> and 3<sup>rd</sup> quartiles, boxes), and 1.5 \* IQR (whiskers).

## LEADER MALE ACTIVITY VARIES BY UNIT SIZE



## METHODS

### Study Site and Study Population

- Simien Mountains National Park, Ethiopia
- Population has been under observation since 2006 by the University of Michigan Gelada Research Project

### Data Collection

- Focal animal sampling:
  - Activity states and all specific social interactions (e.g., affiliation, sexual interactions, agonism)
- 143 hours of focal data
  - Leaders: 86.5 focal hours
  - Bachelors: 55.5 focal hours
- Mean observation time per individual:
  - 6.6 hours (Leaders), 9.4 hours (Bachelors)



### Study Period and Study Subjects

- September – November 2015
- 13 leader males (13 reproductive units)
- 6 bachelor males (1 bachelor unit)

### Statistical Analyses

- All statistical analyses were performed in R
- Non-parametric statistics (Mann Whitney U Test)
- Non-linear regressions using the R package easysnls

## REFERENCES

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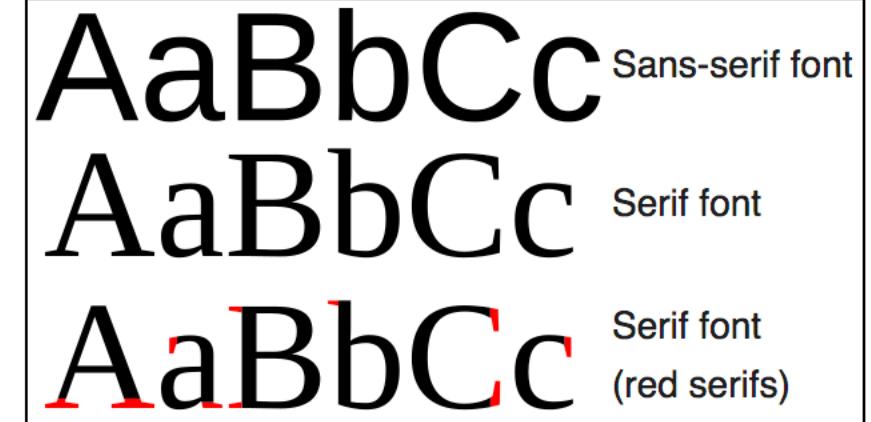
## ACKNOWLEDGEMENTS

We would like to thank all current and past members and field assistants of the University of Michigan Gelada Research Project. We thank Jasinta Beehner, Thore Bergman, Patry DeLaey, Estell Jelaw, Ambaye Fanta, Shiferaw Asrat, Tarkku Waregap, Dave Pappano, Marcella Bentez, Andreas Reiter, Carola Borries, and Catherine Markham. The current study was made possible by the Department of Anthropology at Stony Brook University. Future data collection will be supported by the Simien Mountains National Park Management Authority and the Ethiopian Wildlife Conservation Authority. The study complied with the laws and regulations of Ethiopia. Permissions were obtained from SBU IACUC #: 2015-2202. We would also like to thank the Ethiopian Wildlife Conservation Authority and the warden and park staff of the Simien Mountains National Park. Photo credits: Rachel Perlman

How can we use  
visualization tools to  
help us?

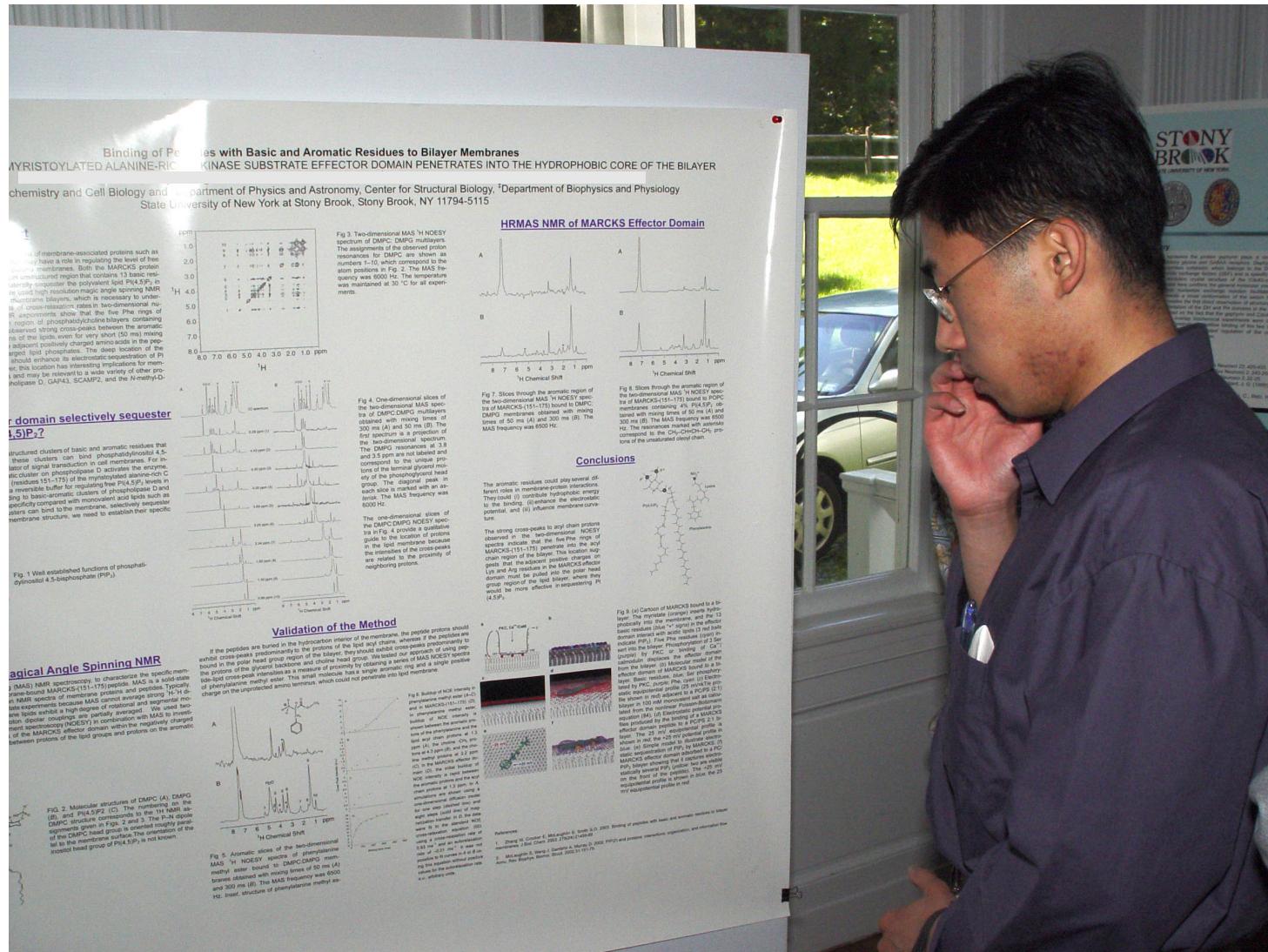
# Fonts and Sizes

Keep it simple and readable.



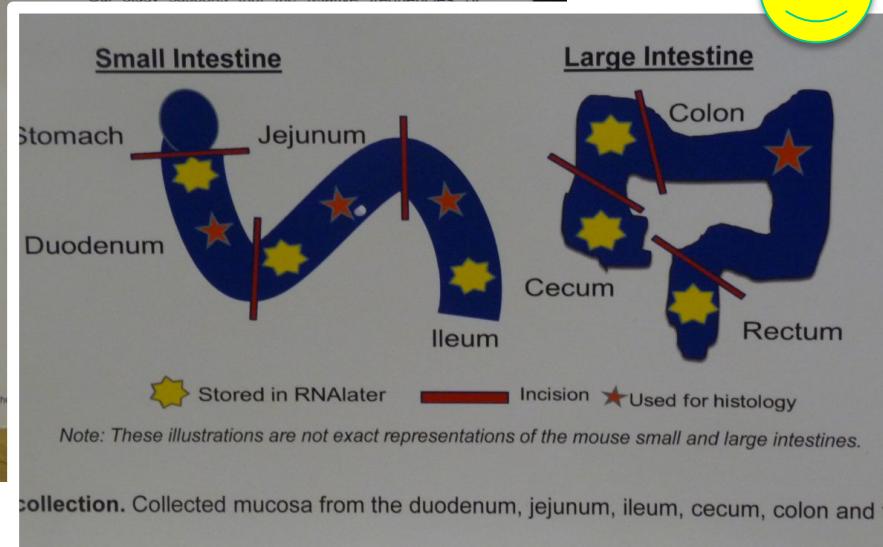
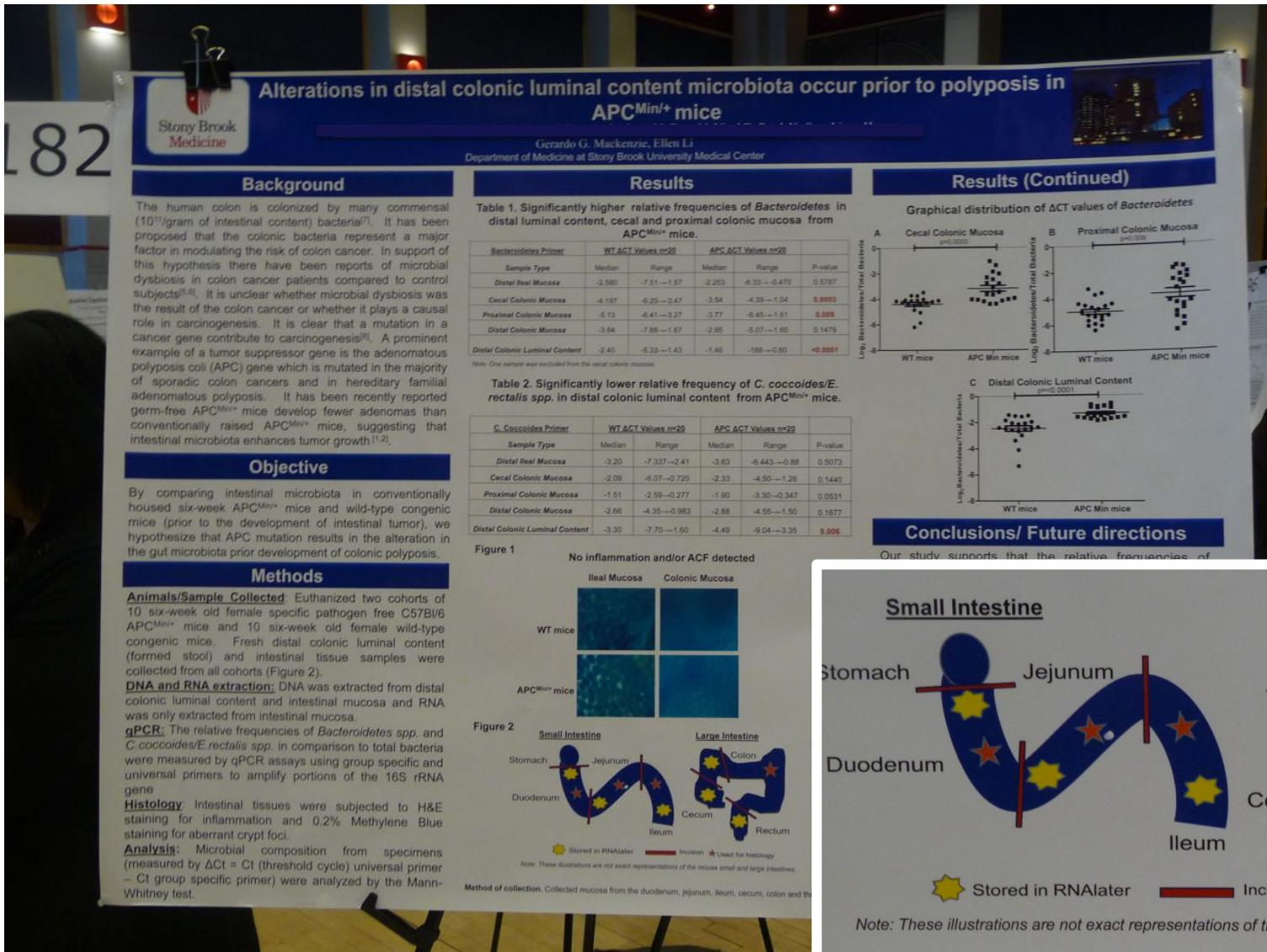
- **No fancy fonts** – the easier to read, the better
- Use large font size, even if it means that some details have to come out
- You should be able to read it if you print it out on 8.5 x 11 in. paper

# LARGE text...



...and LESS of it

# Use pictures to explain concepts

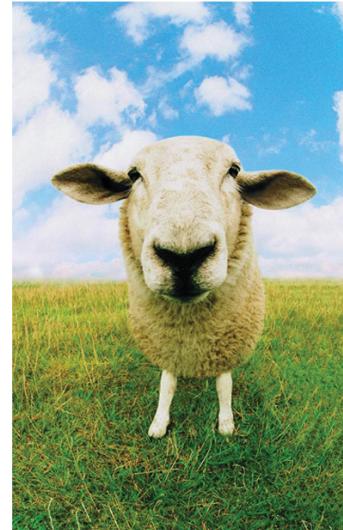


# Breakout – Visualizing your research!

- Pair up in breakout rooms
- Think about how to visualize:
  - Data you have been working on this summer OR
  - Your general field of research
- Spend 5 minutes sketching out a diagram or flowchart
- Give each other feedback

# Poster Figures

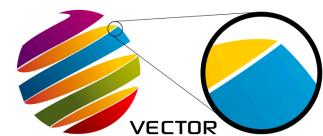
- High resolution .png files OR use vector graphics (not pixelated images)
- Low resolution figure/diagrams on posters can make it look tacky
- Use captions



High Resolution



Low Resolution



# Poster Equations

- Option 1: Equation editor in Microsoft Word
- Option 2: LaTeX editor
  - LaTeX is a typesetting language that is used by many members in academia who do a lot of math
  - To get started, you can use tools like [www.overleaf.com](http://www.overleaf.com)
- Write equation → screenshot to poster

$$\hat{I} = \sum_{m=1}^M f(x_i) \frac{\pi(x_i)}{q(x_i)}$$

$$p(\boldsymbol{\theta} | \mathbf{y}_{1:T}) = \frac{p(\mathbf{y}_{1:\textcolor{brown}{T}} | \boldsymbol{\theta}) p(\boldsymbol{\theta})}{p(\mathbf{y}_{1:\textcolor{brown}{T}})} \propto p(\mathbf{y}_{1:T} | \boldsymbol{\theta}) p(\boldsymbol{\theta})$$

# An example to critique...

**NRF**

**BLACK HOLE DIET PLANS**

**PIGS IN SPACE:  
EFFECT OF ZERO GRAVITY AND  
AD LIBITUM FEEDING ON WEIGHT  
GAIN IN CAVIA PORCELLUS**

**Colin B. Purrington**  
6673 College Avenue, Swarthmore, PA 19081 USA

**THE HIGH FRUCTOSE SUGAR ASSOCIATION**

**SPACEEXES**

**ABSTRACT:**  
One ignored benefit of space travel is a potential elimination of obesity, a chronic problem for a growing majority in many parts of the world. In theory, when an individual is in a condition of zero gravity, weight is eliminated. Indeed, in space one could conceivably follow ad libitum feeding and never even gain an gram, and the only side effect would be the need to upgrade one's stretchy pants("exercise pants"). But because many diet schemes start as very good theories only to be found to be rather harmful, we tested our predictions with a long-term experiment in a colony of Guinea pigs (*Cavia porcellus*) maintained on the International Space Station. Individuals were housed separately and given unlimited amounts of high-calorie food pellets. Fresh fruits and vegetables were not available in space so we were not offered. Every 30 days, each Guinea pig was weighed. After 5 years, we found that individuals, on average, weighed nothing. In addition to weighing nothing, no weight appeared to be gained over the duration of the protocol. If space continues to be gravity-free, and we believe that assumption is sound, we believe that sending the overweight – and those at risk for overweight – to space would be a lasting cure.

**INTRODUCTION:**  
The current obesity epidemic started in the early 1960s with the invention and proliferation of elastane and related stretchy fibers, which released wearers from the rigid constraints of clothes and permitted monthly weight gain without the need to buy new outfits. Indeed, exercise today for hundreds of million people involve only the act of wearing stretchy pants in public, presumably because the constrictive pressure forces fat molecules to adopt a more compact tertiary structure (Xavier 1965).

Luckily, at the same time that fabrics became stretchy, the race to the moon between the United States and Russia yielded a useful fact: gravity in outer space is minimal to nonexistent. When gravity is zero, objects cease to have weight. Indeed, early astronauts and cosmonauts had to secure themselves to their ships with seat belts and sticky boots. The potential application to weight loss was noted immediately, but at the time travel to space was prohibitively expensive and thus the issue was not seriously pursued. Now, however, multiple companies are developing cheap extra-orbital travel options for normal consumers, and potential travelers are also creating news ways to pay for products and services that they cannot actually afford. Together, these factors open the possibility that moving to space could cure overweight syndrome quickly and permanently for a large number of humans.

We studied this potential by following weight gain in Guinea pigs, known on Earth as fond of ad libitum feeding. Guinea pigs were long envisioned to be the "Guinea pigs" of space research, too, so they seemed like the obvious choice. Studies on humans are of course desirable, but we feel this current study will be critical in acquiring the attention of granting agencies.

**CONCLUSIONS:**  
Our view that weight and weight gain would be zero in space was confirmed. Although we have not replicated this experiment on larger animals or primates, we are confident that our result would be mirrored in other model organisms. We are currently in the process of obtaining necessary human trial permissions, and should have our planned experiment initiated within 80 years, pending expedited review by local and Federal IRBs.

**ACKNOWLEDGEMENTS:**  
I am grateful for generous support from the National Research Foundation, Black Hole Diet Plans, and the High Fructose Sugar Association. Transport flights were funded by SPACE-EXES, the consortium of wives divorced from insanely wealthy space-flight startups. I am also grateful for comments on early drafts by Mañana Athletic Club, Corpus Christi, USA. Finally, sincere thanks to the Cuy Foundation for generously donating animal care after the conclusion of the study.

**MATERIALS AND METHODS:**  
One hundred male and one hundred female Guinea pigs (*Cavia porcellus*) were transported to the International Space Laboratory in 2010. Each pig was housed separately and deprived of exercise wheels and fresh fruits and vegetables for 48 months. Each month, pigs were individually weighed by duct-taping them to an electronic balance sensitive to 0.0001 grams. Back on Earth, an identical cohort was similarly maintained and weighed. Data was analyzed by statistics.

**RESULTS:**  
Mean weight of pigs in space was  $0.0000 \pm 0.0002$  g. Some individuals weighed less than zero, some more, but these variations were due to reaction to the duct tape, we believe, which caused them to be alarmed push briefly against the force plate in the balance. Individuals on the Earth, the control cohort, gained about 240 g/month ( $p = 0.0002$ ). Males and females gained a similar amount of weight on Earth (no main effect of sex), and size at any point during the study was related to starting size (which was used as a covariate in the ANCOVA). Both Earth and space pigs developed substantial dewlaps (double chins) and were lethargic at the conclusion of the study.

**LITERATURE CITED:**

NASA. 1982. Project STS-XX: Guinea Pigs. Leaked internal memo.  
Sekulić, S.R., D. D. Lukač, and N. M. Naumović. 2005. The Fetus Cannot Exercise Like An Astronaut: Gravity Loading Is Necessary For The Physiological Development During Second Half Of Pregnancy. Medical Hypotheses. 64:221-228  
Xavier, M. 1965. Elastane Purchases Accelerate Weight Gain In Case-control Study. Journal of Obesity. 2:23-40.

# Tips to reduce messiness

## 1. Declutter

- Shorten text, cut lesser points

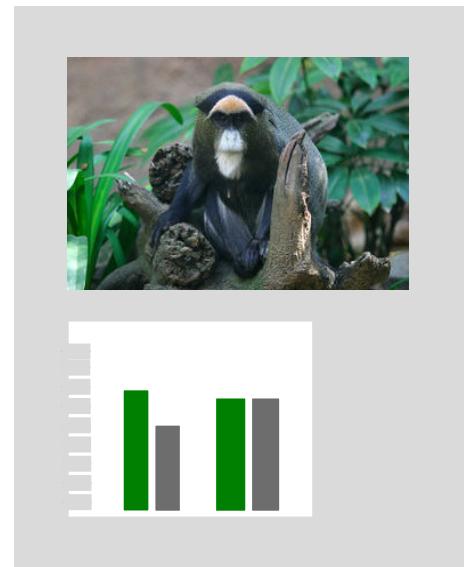
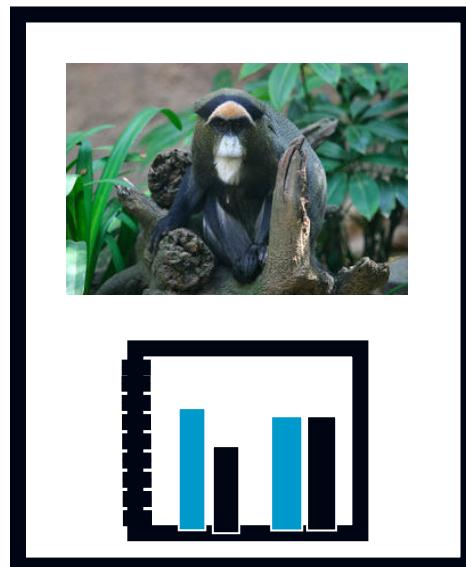
## 2. Simplify / tone down graphics

- Use **grays** for axes and scales
- Use **color** for data

## 3. Use borders & boxes appropriately

- Avoid unnecessary boxes
- Use light neutral blocks to group related items
- Use white space between groups

## 4. Align edges of related items



# How can you prepare?

- Clearly identify the central message
- List the main points and sort in order of importance
- Keep only the 2-3 most important points
- Prepare the figures (avoid tables)
- Sketch (several) draft layouts
- Avoid the temptation to fill all available space
- Import everything into PowerPoint template (of the correct size) and rearrange

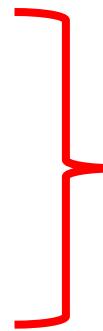
What is the general  
plan of “attack” at  
poster sessions?

**“Never lose sight of what a poster  
is for. It’s a conversation starter.”**

# Plan Your Pitch

Imagine that each person will only be at your poster for 3 minutes – you can only deliver the key points.

- What did you do? (15 seconds)
- Why is it important/interesting? (30 seconds)
- How did you do it? (1-2 minutes)



This is something  
you should  
practice before  
the poster session

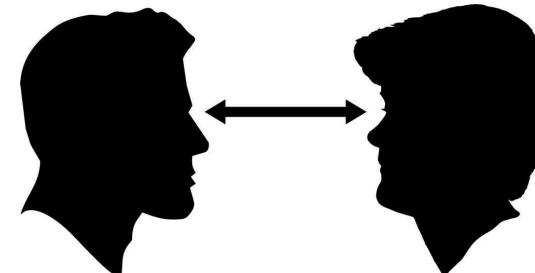
# Engage your listeners!



Use props



Speak clearly



Eye contact



Use the poster

# Explorations Poster Session Guidelines

- All posters should be: **36”(H) x 48”(L)**
- For more info, see i-STEM poster instructions:  
[https://www.stonybrook.edu/commcms/istem/poster\\_printing\\_services/Poster%20formatting%20instructions.pdf](https://www.stonybrook.edu/commcms/istem/poster_printing_services/Poster%20formatting%20instructions.pdf)
- Poster file due on Monday, July 27<sup>th</sup>

# Virtual Symposium – What to Expect

Pre-assigned Breakout Rooms

by topic

Each presenter = 15-minute slot

talk: 10 minutes

questions: 5 minutes



# Explorations Poster Session

DATE: Friday, July 31  
TIME: 9:00am – 12:00pm

Poster session = opportunity to share your work!

- Professors and/or faculty members
- Professionals in industry – you never know who's there
- Other students

Invite people to come see your poster!

- Mentor (definitely)
- Labmates (grads and undergrads)
- Friends and family
- Other faculty members



# Additional Resources

SBU Undergraduate Research & Creative Activities Website

Giving Poster Presentations / Talks

<https://www.stonybrook.edu/commcms/ureca/students/givingpresentations.php>

Tips for virtual poster presentations (“E-Poster”)

<https://www.postersessiononline.com/electronic-poster-presentation/>

<https://ww2.amstat.org/meetings/qdet2/presentationtips.cfm>

# Questions?