How not to give a poster: Some suggestions based on years of experience

D. Lund (credit to J. Granger)
Purpose of a Poster

• Summarize research **concisely** and **attractively**
• Help publicize it and **generate discussion**
• Mixture of a **brief text** mixed with **tables, graphs, pictures**

Academic posters judged on the basis of
• Content
• Clarity
• Structure
• Impact
1. **Define your audience:** specialists/generalists/general public  
   i. <30 seconds to secure their attention
2. **Distill your message:** What is your most interesting/important finding?  
   a. Identify **key points**  
   b. Make a draft  
      i. Make main conclusion your title  
      ii. Organize using **key points** in logical order to **tell a story**
3. **Prepare graphics:** spend most of your time here  
   a. Use only figures necessary to convey **key points**  
   b. Keep them visually simple and digestible
4. **Leave out unnecessary information!**
USE BASIC STRUCTURE

Note: posters typically don’t contain abstracts but they can be used if space constraints are tight.

- Title
- Introduction
- Methods: short
- Results and Conclusions
- Acknowledgements
- References

- Title
- Background
- Objectives
- Hypotheses
- Results
- Implications
- Acknowledgements
- References

Organize so that information you would leave out of a talk is de-emphasized (towards bottom or in separate section).
BREATHE AND FLOW

• Provide a clear entry point for readers, and a logical visual flow
• Group related information
• Use numbering or arrows if linked content should be read in a particular order
• Use space and margins to give your content room to breathe
EASY WITH THE COLORS

- Colors and backgrounds should be subtle
- Color should highlight, separate, define and associate information
- Should not compete with your information
- Colors may look different on your screen than in your print
- Color blindness: use high contrast graphs, lines on charts and backgrounds, and text. Most common is red and green blindness
- Avoid using unnecessary and distracting background textures or decoration
Title title title title title title title title title title title title title title title title

Author, Author, and Author

Address(es)

Introduction

Blah, blah, blah.

Results

Blah, blah, blah

Note: spaces between sections, emphasis on results

Materials and methods

Blah, blah, blah

Conclusions

Blah, blah, blah

Literature cited


Acknowledgments

Blah, blah

Further information

Blah, blah, blah.
Introduction

Replace the "title, title, title, title" with your own "title, title, title, title".

Results

"title, title, title, title"

Materials and methods

"title, title, title, title"

Conclusions

"title, title, title, title"

Literature cited

"title, title, title, title"

Acknowledgments

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USE BIG FONT and few words

• Text should be legible from about 1 meter (24 pt font ideal)
• Aim for a word count of ≤ 800 words
• Sans-serif font like Arial or Helvetica
• Main title should be 70-100 pts, subheadings around 36-40 pts, body text around 24 pts, captions 18 pts
• Format headings and subheadings consistently
• Use bullets, numbering, and headlines to make it easy to read
Enhanced hydrothermal flux along mid-ocean ridges should result in greater scavenging of dissolved trace metals from the deep ocean. At 19°S, the fluxes of V, As, and Zn increased by ~12x during Termination 1 (T1), likely due to scavenging or co-precipitation with Fe-oxyhydroxides. Results from 6°S and 11°S show similar but more modest changes (3-5x) during T1 (Lund et al., 2016). Therefore, along the SEPR it appears that the scavenging rates were at least 3x higher than today, with potentially important implications for the budget of these oxyanions. For example, hydrothermal scavenging accounts for approximately 50% of the oceanic sink for V, which has a residence time of approximately 100 kyr (Morford and Emerson, 1999; Schlesinger et al., 2017). If V removal along the global mid-ocean ridge system varies on glacial-interglacial timescales, then the underlying assumption of steady state conditions for the oceanic V budget would need to be revisited.

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Focus on the graphics

• Use diagrams, graphs or flowcharts to help explain complex information visually
• Don’t’ use too many different or strongly contrasting colors
• If your topic has a central statement, graphic or diagram, make this prominent in your design. Don't hide it in a corner!
• Every graphic/figure should have a purpose
Graphics!

- Font size = 20 – 24 pts
- Large symbols
- No title on top
- Figure caption on the bottom 18-20 pts
- Clearly label all features on the figure itself or use prominent legend (don’t’ bury key information in captions)
- Judicious use of color
- Don’t cut and paste from a paper
- Avoid use of tables if possible – make it a figure instead
Pigs in Space: Effect of Zero Gravity and Ad Libitum Feeding on Weight Gain in Cavia Porcellus

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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 ones 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, nuts, fruits, and vegetables were not available in space so were not offered. Every 30 days, each Guinea pig was weighed. After 8 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 environments do not cause weight gain and we believe that assumption is sound, we believe that sending the weight and those at risk for weight loss into space would be a lasting cure.

INTRODUCTION:
The current obesity epidemic started in the early 1980s with the invention and proliferation of elastane and related clothing, which released wearers from the rigidity of constraints of clothes and permitted them to gain weight. Indeed, exercise today for hundreds of millions of people involve only the act of wearing stretchy pants in public. Presumably, because of the constraining pressure forces fat molecules to adopt a more compact tertiary structure. (Xavier 1993)

CONCLUSIONS:
Our view that weight and weight gain could 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 8 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 Mariana Athletic Club, Corpus Christi, USA. Finally, sincere thanks to the Coy 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. Every 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 ± 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 and try to escape 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 deviations (double chins) and were lethargic at the conclusion of the study.

LITERATURE CITED:

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- Insufficient contrast between text and background
- Title is difficult to read
- Text is too small
- Too much text: want ≤ 800 words
- Background is distracting: avoid dark backgrounds
- Too many color schemes
- No focal point (other than hamster)
- Intended sequence of text boxes not visually evident
- No figures! Who has time to read the details!
- Italics of subheadings not necessary
- Changes of fonts = NO!
- Affiliations draw too much attention
Oβ-Benzyguian inhibits Tamoxifen Resistant Breast Cancer Cell Growth and Resensitizes Breast Cancer Cells to Anti-Estrogen Therapy

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Abstract

Endocrine therapies using anti-estrogens are least toxic and very effective for breast cancers, however, tumor resistance to tamoxifen and other anti-estrogens is a major problem. Recent studies have identified the involvement of the DNA repair protein MGMT in pancreatic cancer (Clin Cancer Res 24, 1607, 2008). Here, we investigated whether MGMT overexpression could serve as a biomarker for tamoxifen resistance. Specifically, we determined whether administration of the MGMT inhibitor Oβ-Benzyguian (BQ) at a non-toxic dose alone or in combination with the anti-estrogen ICI to tumor xenografts to breast cancer cells. Further, we also determined whether BQ as tamoxifen resistant cells.

MOSM expression was found to be increased in breast cancer cells relative to n levels were significantly higher in tamoxifen resistant MCF-7 cells. However, using a specific siRNA in a cell line IMGTs DNA and protein levels were observed to be increased in MCF-7 cells. Furthermore, administration of BQ at doses known to increase MGMT expression was also observed to increase MOSM expression. BQ also increased MOSM expression in MCF-7 cells in a dose-dependent manner. Furthermore, BQ also increased MOSM expression in MCF-7 cells in a dose-dependent manner. This finding suggests that MOSM inhibition may play a role in tumor growth and survival.

Results

Prostate Treatment of Tamoxifen Inhibitors MOSM Expression: We observed and used a combination of tamoxifen resistant cells from the parental cell line to quantify MOSM expression in MCF-7 cells or to increase MOSM expression when compared to parental MCF-7 cells. Knocking Down BQ Enhances MOSM Expression in Tamoxifen Resistant Breast Cancer Cells: BQ significantly increased MOSM expression in parental MCF-7 cells or in tamoxifen resistant breast cancer cells. Interestingly, there was an increase in MOSM expression levels in tamoxifen resistant breast cancer cells. Despite this, knockdown of BQ at a lower concentration of MOSM significantly increased MOSM expression levels. However, knockdown of BQ increased MOSM expression levels. Notably, knockdown of BQ increased MOSM expression levels and this effect was accompanied by a decrease in MOSM expression levels.

Transcriptional Regulation Between MOSM and BQ: Previous studies have suggested that the transcriptional regulatory regions of MOSM and BQ are important for the regulation of MOSM expression. Transcriptional regulatory regions between MOSM and BQ are important for the regulation of MOSM expression. MOSM expression was increased in tamoxifen resistant breast cancer cells. However, knockdown of BQ did not influence MOSM expression levels.

Conclusions

Oβ-Benzyguian plays a role in tamoxifen resistant breast cancer cell lines. Contrasting with the experiments above, we studied whether or not knocking down MOSM has any effect on Erk1/2 phosphorylation. As expected, knocking down MOSM decreased Erk1/2 phosphorylation. However, treatment with BQ alone or in combination with tamoxifen increased Erk1/2 phosphorylation. These data demonstrate that MOSM has the ability to antagonize the activity of MOSM and that the combination of MOSM and BQ is effective in inhibiting the growth of tamoxifen resistant breast cancer cells.

Acknowledgements

We would like to thank the following individuals for their contributions: Dr. John Smith, Dr. Jane Doe, and Dr. Mort Green. This work was supported by grants from the National Cancer Institute (NCI).
A long summary

1) Keep it simple
   - your poster will likely be in a sea of posters
   - emphasize key points – think elevator speech
   - knowing what to leave out is as important as what to include!

2) Be prepared to get into the weeds
   - include methods in supplemental information
   - anticipate questions not addressed up front
   - refer the inquisitive guest to your paper in press

3) make your main conclusion your title
   - don’t bury the lead
   - make it huge so people can easily read while strolling by
A long summary, cont.

4) Figures are key – they’re worth lots of words
   - figures should be simple, think Apple design ethos
   - if it’s a complex problem, add schematic diagram
   - avoid using figures directly from paper
   - avoid using tables, esp. complex ones

5) USE BIG FONT and few words (<800)
   - people need to read from 4-5 ft away

6) Focus on flow so the reader knows where to go
   - number the figures
   - use arrows
   - de-emphasize background information
A long summary, cont.

7) Organizational strategy
   - use brief intro, results, and conclusions
   - or use an abstract and conclusions
   - de-emphasize non-essential information

8) Enjoy the poster session!
   - often times feedback is better than for a talk

And don’t forget:
- make sure it is the right size for your allotted poster space
- print well in advance in case plotter is having issues, proofread for obvious mistakes
What makes a good poster?

• Important information should be readable from 5-10 feet away
• Title is short and draws interest
• Word count ≤ 800 words
• Text is clear and to the point
• Use of bullets, numbering, and headlines make it easy to read
• Effective use of graphics, color and fonts
• Consistent and clean layout
• Includes acknowledgments (co-authors, funding agency!), your name and institutional affiliation, and references
Software for poster design

- **PowerPoint**: A popular, easy-to-use
- **Adobe Illustrator, Photoshop and InDesign**: Feature-rich professional software with high-resolution images, but more complex
- **Open Source Alternatives?**
Typical poster sizes

• Determine the size of the space provided
• Typical academic poster sizes
  A0 118.9 cm x 84.1 cm
  A1 84.1 cm x 59.4 cm
  A2 59.4 cm x 42.0 cm
  A3 42.0 cm x 29.7 cm

In Power Point:
• *File → Page Setup*
  • *Custom or AO – A3*
    • Specify width and height in cm or inches (check)
  • *Portrait or landscape*
• Or: download templates on line
• Save finished poster as pdf (mac to pc problems)