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
KEEP IT SIMPLE

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
Introduction
Blah, blah, blah.

Results
Blah, blah, blah

Materials and methods
Blah, blah, blah

Conclusions
Blah, blah, blah

Note: spaces between sections, emphasis on results

Literature cited

Acknowledgments
Blah, blah, blah

Further information
Blah, blah, blah
Title title title title title title title title title title title

Author, Author, and Author
Address(es)

Introduction
Replace the “Title, Title, Title” with your own “Title, Title, Title”

Results
Brief, Brief, Brief

Materials and methods
Brief, Brief, Brief

Conclusions
Brief, Brief, Brief, Brief

Literature cited

Acknowledgments
© Template copyrighted Carla Perugino. You may use this template, of course, but please do not plagiarize, adapt, or put on your own site. Also, do not upload this file, even if

For more BrieB Briefing and Briefings, please visit my BrieB Briefing at http://www.briefing.com.
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.

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.
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**
ABSTRACT:

One ignored benefit of space travel is the 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 were not offered. Every 30 days, each Guinea pig was weighed. After 4 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 used for human habitation, 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 1980s with the invention and proliferation of elastane and related fabric technologies, 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 millions of people involves only the act of wearing stretchy pants in public, presumably because the constructive pressure forces fat molecules to adopt a more compact tertiary structure (Xavier 1965).

Luckily, at the same time that fabrics became stretchy, the rice 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-terrestrial 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.

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 alarms up 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.

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 Mariana Athletic Club, Corpus Christi, USA. Finally, sincere thanks to the Coby Foundation for generously donating animal care after the conclusion of the study.

LITERATURE CITED:

NASA. 1965. Project S78-208: Guinea Pigs. Leaked internal memo.

- 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
O6-Benzylguanine Inhibits Tamoxifen Resistant Breast Cancer Cell Growth and Resensitizes Breast Cancer Cells to Anti-Estrogen Therapy

Joshua Smith, George C Bobustuc, Rafael Madero-Visbal, Jimmie Colon, Beth Isley, Jonathan Ticku, Kalkunte S. Srivenugopal and Santhi Konduri

Cancer Research Institute of M.D. Anderson Cancer Center, Orlando, Florida and Texas Tech University Health Sciences Center, Amarillo, Texas

Abstract

Endocrine therapies using anti-estrogens are least toxic and very effective for breast cancers, however, tumor resistance to therapeutic strategies is a major concern. O6-benzylguanine (BG) is a less toxic dose of BG in combination with the anti-estrogen tamoxifen breast cancer cell growth. Further, we also determined whether BG or tamoxifen resists 3.

MSTT expression was found to be increased in breast cancer cells relative to normal levels of expression. MSTT expression was prevented using a specific siRNA resulting in the reduction of MSTT expression and in vivo, increased MSTT expression. Other experiments showed that BG alone or BG in decreased expression, whereas tamoxifen alone and tamoxifen alone did not. However, these results increased the gain in expression and prevented breast cancer growth. In vivo, BG also prevents metastasis (TM/UC). These results are also enhanced the cycloDicer (C/EBP) expression. In breast cancer tissues, BG decreases the expression of BG and tumor growth delay and immortality revealed that BG inhibited the increased gain in expression. These findings suggest that MSTT inhibition may be overexpressed in E705 resistance.

Recent advances in breast cancer research have identified key pathways involved in chemotherapeutic agents. The ability of cancer cells to recognize DNA damage through specific recognition of their unique damage has contributed to a novel therapeutic strategy. The DNA repair enzyme O6-benzylguanine (BG) suppresses tumor cell growth by inducing apoptosis. BG binds to exposed sites on DNA to form adducts. This adduct formation results in the initiation of the DNA damage response, leading to the formation of the DNA repair enzyme O6-benzylguanine (BG). The repair process, which is dependent on the activity of the DNA repair enzyme O6-benzylguanine (BG), results in the prevention of tumor cell growth.

In vivo, BG also prevents metastasis (TM/UC). These results are also enhanced the cycloDicer (C/EBP) expression. In breast cancer tissues, BG decreases the expression of BG and tumor growth delay and immortality revealed that BG inhibited the increased gain in expression. These findings suggest that MSTT inhibition may be overexpressed in E705 resistance.

Introduction

Recent advances in breast cancer research have identified key pathways involved in chemotherapeutic agents. The ability of cancer cells to recognize DNA damage through specific recognition of their unique damage has contributed to a novel therapeutic strategy. The DNA repair enzyme O6-benzylguanine (BG) suppresses tumor cell growth by inducing apoptosis. BG binds to exposed sites on DNA to form adducts. This adduct formation results in the initiation of the DNA damage response, leading to the formation of the DNA repair enzyme O6-benzylguanine (BG). The repair process, which is dependent on the activity of the DNA repair enzyme O6-benzylguanine (BG), results in the prevention of tumor cell growth.

Recent advances in breast cancer research have identified key pathways involved in chemotherapeutic agents. The ability of cancer cells to recognize DNA damage through specific recognition of their unique damage has contributed to a novel therapeutic strategy. The DNA repair enzyme O6-benzylguanine (BG) suppresses tumor cell growth by inducing apoptosis. BG binds to exposed sites on DNA to form adducts. This adduct formation results in the initiation of the DNA damage response, leading to the formation of the DNA repair enzyme O6-benzylguanine (BG). The repair process, which is dependent on the activity of the DNA repair enzyme O6-benzylguanine (BG), results in the prevention of tumor cell growth.

O6-Benzylguanine Plays a Dual Role in Tamoxifen-Resistant BC Cells: Contrasting, with the experiments above, next, we studied whether or not knocking-down MSTT had any effect on ERα transcription. As expected, knocking-down MSTT decreased ERα gene transcription. However, it was interesting to note that the BMSC-induced MSTT expression also decreased after BMSC treatment (Fig. 2A). These data demonstrate that BMSC has the ability to attenuate the not only the BMSC but also the BMSC transcription, indicating a possible dual role for BMSC in breast cancer cell lines.

Results

Prolonged Treatment of Tamoxifen Increases MSTT Expression: We show long-term treatment of tamoxifen on the parental E705 parental-resistant MCF-7 cells increased MSTT expression compared to parental MCF-7 cells.

Knocking Down ERα Enhances MSTT Expression in Tamoxifen-Resistant Breast Cancer Cells: The transfection of PC3 cells with the MSTT-specific siRNA resulted in the MSTT-specific siRNA knockdown and in vivo, increased MSTT expression. The results from this study suggest that BMSC-mediated transcriptional activity of the MSTT gene in breast cancer cells.

Transcriptional Regulation Between MSTT and p21: Previously, it was reported that p21 expression regulates MSTT gene expression and in breast cancer cells. Therefore, we asked whether or not the p21 expression regulates MSTT transcription. Tamoxifen-resistant MCF-7 cells, which do not express p21, did not express MSTT mRNA. More important, knocking down MSTT decreased MSTT transcription whereas p21 knockdown increased MSTT transcription activity.

Discussion

In conclusion, we showed that BMSC treatment increased MSTT expression in breast cancer cells. BMSC treatment increased MSTT expression in breast cancer cells and the BMSC-mediated transcriptional activity of the MSTT gene in breast cancer cells. Treatment of BMSCs with BMSCs enhanced MSTT transcription whereas p21 knockdown increased MSTT transcription activity.

Conclusions

We would like to thank Dr. James Smith and Dr. George Smith for their help in preparing this manuscript. This work was supported by NIH grant CA112248.
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 \( \leq 800 \) 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 \(\rightarrow\) 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)