How To Make An Effective Poster

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With information kindly provided by Lolita Adkins and Jeremy Foin
“The more strikingly visual your presentation is, the more people will remember it. And more importantly, they will remember you.”

— Paul Arden
What is the purpose of an academic poster?

“...to display information in a clear, concise manner, while generating interest to engage in a discussion”

“...a big piece of paper (or wall-mounted monitor) that can communicate your research at a conference, and is composed of a short title, an introduction to your burning question, an overview of your novel approach, your amazing results in graphical form, some insightful discussion of aforementioned results, a listing of previously published articles that are important to your research, and some brief acknowledgement of the tremendous assistance and financial support conned from others” (Purrington 2014)
NO
YES
The implications, please...

HERETICAL STATEMENT #1: conference presentations don’t really have that much to do with the research.

HERETICAL STATEMENT #2: in reality, conference presentations are pretty much all about networking and shameless self-promotion.
IN A NUTSHELL:

YOUR POSTER MUST GRAB EYEBALLS.
Poster Presentations
Guidelines: The Must Haves

A New Rodent Model of Pediatric Sports-Related Concussion
Angela Antos, haron Schuller, Angelo Escue, Stacey Ean, Rich Nh, Lauren Ean, Merit Ammerberg Lee, Gene G. Gutkoff
Department of Neurological Surgery, University of California, Sanos, CA

Introduction
The current model for pediatric sports-related concussion (SRC) is the rat model. While this model is useful for understanding the basic science of SRC, it does not fully capture the unique aspects of pediatric SRC. The goal of this study was to develop a new rodent model of pediatric SRC that more accurately reflects the clinical presentation of pediatric SRC.

Method
The new model involved the use of a novel impactor designed to deliver a controlled impact to the head of the rodent. The impact was delivered to the vertex of the head, simulating a typical fall or blow to the head encountered in sports-related concussions. The impact was controlled in terms of magnitude and duration to ensure consistent and reproducible results.

Results
The new model showed several key differences compared to the current rat model of SRC. First, the severity of the concussion was more closely aligned with the clinical presentation of pediatric SRC, with more pronounced symptoms that persisted for a longer duration. Second, the new model allowed for a more accurate assessment of the long-term effects of SRC, including changes in cognitive function and behavior.

Conclusions
The new rodent model of pediatric SRC is a valuable tool for advancing our understanding of this complex condition. Further research using this model is needed to better understand the underlying mechanisms of SRC and to develop effective interventions for its prevention and treatment.

Hypothesis
We hypothesize that the new model will be more effective in predicting the clinical outcomes of pediatric SRC compared to the current rat model. This hypothesis is supported by the preliminary results obtained using the new model.

Abstract
The new model of pediatric SRC is a significant advancement in the field of concussion research. By more accurately mimicking the clinical presentation of pediatric SRC, this model will enable researchers to better understand the underlying mechanisms of this condition and to develop more effective interventions for its prevention and treatment.

Acknowledgments
This work was supported by the National Institutes of Health (NIH) and the Department of Neurological Surgery at the University of California, Sanos, CA.

Does Perinatal Exposure to DDTs and the Development of Glucose Intolerance Promote Skeletal Muscle Deficiency?
Claire Malt, Michelle Lee Ph.D., Department of Animal Sciences, Department of Environmental Toxicology, University of California, Davis

Introduction
DDT is a persistent organic pollutant that has been linked to a variety of health effects, including glucose intolerance and skeletal muscle deficiency. However, the mechanisms underlying these effects are not fully understood. The current study aimed to investigate whether perinatal exposure to DDT promotes glucose intolerance and skeletal muscle deficiency in offspring.

Method
A total of 100 pregnant females were randomly assigned to one of two groups: control (n=50) and DDT-exposed (n=50). The DDT-exposed group was administered a single intraperitoneal injection of a DDT solution on day 14 of gestation. The offspring were then weaned and allowed to grow to adulthood. At 3 months of age, the offspring were subjected to a glucose tolerance test, and their skeletal muscle mass was measured using MRI.

Results
Offspring exposed to DDT showed a significant increase in glucose intolerance compared to control offspring. Additionally, the DDT-exposed offspring had significantly lower skeletal muscle mass compared to control offspring.

Conclusion
These findings suggest that perinatal exposure to DDT promotes glucose intolerance and skeletal muscle deficiency in offspring. Further research is needed to elucidate the underlying mechanisms and to develop strategies for prevention and treatment.

Acknowledgments
This work was supported by the National Institutes of Health (NIH) and the Department of Animal Sciences at the University of California, Davis.
What is an Academic Poster?

- A form of Academic Expression
- Summary of Research (5 – 10 minutes)
- Visually augmented discussion/interaction
- At conferences viewers come to you (or you can invite)
  - People search published abstracts
  - Posters may be grouped by field & folks may wander
- New Information
- Characteristic Fields
- Appearance/Content varies by Field or Lab
Why are Academic Posters Important?

• Represents you and you sponsor’s research at:
  • Conferences
  • Symposia
  • Hallways
  • Informational Days
• Demonstrate expertise
• Demonstrate attention to detail
• Practice public speaking
• Learn about most current results in field
• Deepens understanding of topic
• Opportunity for teaching and learning
• Share ideas
• Create collaborations
Vital: Work with Your Sponsor

- Represents their laboratory
- They again need to be involved
- New data available – what should be included?
- Will want to make revisions (several times)
- Need final approval
Preparing Your Poster

Keep in Mind:

- Characteristic sections with expected information
- Consult rules of conference/rubrics
- Work in collaboration w/ research sponsor
- Decide on experiments that will be presented
- Create a storyboard/plan
- Visually appealing
- Primarily image driven but stand alone
- Simply and tightly written
- Know what to say for each figure
- Transitions between sections
- Practice for your audience
- KNOW all details of project
- Master questions
Your Audience will be??

- Researchers in your field will read even if bad
- Researchers in related fields easily persuaded to view
- Previously uninterested passers by can be attracted by a good poster
- ***You want to attract these people!***
- Don’t vary content, vary
  - explanation
Main Elements of a Poster

- Title (same as submitted abstract)
- Name and Campus
- Core Technical Content
  - Abstract
  - Introduction
  - Results
  - Discussion
  - Literature cites/Resources
  - Acknowledgements
- Visuals
- Font should be legible fonts like:
  - Times New Roman
  - Arial
  - Garamond
  - Berkeley UC Davis Medium

- **Do not** use illegible fonts like:
  - Brush Script
- Use the same font type throughout your poster
- No smaller than 16 pt. font
Poster Appearance

- Make rough plan of your poster
- Will have “standard” headings
- Poster provides visual aids as you talk
- Picture worth 1K words
- Carry information with colorful images and figures
- Estimate space that will be needed –
  - How many experiments reported
  - How many figures needed?
  - What types of figures?
  - How much text to explain
  - Space for text

- Poster must be “stand alone” (understandable in halls, unstaffed)
- Has to have words
- Word amount varies with field
- Balance your text and images
Poster Appearance

- 36”x48” good for 3 column (Proposal or one experiment).
- Intro - Can have image of existing model, or eye catching photo
- Methods - can be a flow chart
- Results – Figures, Line Graphs common.
- Discussion – Often bulleted
- Should be Visually Appealing
- Understand reader “gravity”
- Top left to bottom
- Left to right
- Have an obvious flow
- Headings
- Numbers
- Use “white space” or color frames to organize

- Unobtrusive/Neutral backgrounds
  - White
  - Lt grey
  - Lt beige
Which do you prefer?
what is a visual hierarchy?

“The visual organization of elements within a design format to establish focal points based on their importance to the message to be communicated”

“The organization and prioritization of content as a means to communicate a message”

“Using color, contrast, texture, shape, position, orientation, and size to organize elements in a way that gives users a sense of visual importance”
why use a visual hierarchy?

- humans are primarily visual creatures
- we tend to focus on differences, not similarities, when making comparisons
- this is a key consideration for designing an effective poster

**POSTER = COMMUNICATION, and**

**DESIGN = COMMUNICATION, so...**
GOOD DESIGN = EFFECTIVE POSTER

(assuming that your data isn’t crap – but there are ways to get around that as well)
elements of a visual hierarchy

A visual hierarchy is constructed using some combination of the fundamental principles of graphic design:

- negative/positive space
- contrast
- repetition
- proximity
- color
- alignment
- typography (not really a principle)
negative/positive space

• the balance between negative (background) and positive (foreground) space in a composition is very important
  – too much negative space = incomplete or disassociated appearance
  – too little negative space = busy, cluttered, and difficult to read

cramming too much information into too small of a space is far and away the number-one mistake in academic poster designs
types of contrast

- **size**
- **position**
- **color**
- **orientation**
- **texture**
- **shape**
color

- color theory is an extremely complicated topic that could take up an entire class on its own
- for our purposes we will focus on two aspects:
  - color as an emotional tool
  - color as an organizational tool
color temperature – warm or cool?
color temperature – warm or cool?
color temperature

warm vs. cool colors

• warm
  – hues from red through yellow, including browns and tans
  – seem to advance or appear more active; often evoke feelings of happiness, optimism and energy, but can be visually overwhelming

• cool
  – cool = blue-green through blue-violet, including most grays
  – appear to recede into the background; usually calming and soothing, but can also express sadness
color as an organizational tool
a final word about color...

- color is an extremely powerful tool – use with caution!
  - using too much and/or too many colors drastically reduces effectiveness
  - a limit of 3 colors is usually recommended
    - but not always possible (think pie charts and the like)
  - however, it is possible to substitute pattern for color
    - also avoids potential problems with colorblindness in your audience (it’s much more common than you may think)
proximity

• moving elements closer or farther apart to achieve a more organized look
• based on the idea that related items in close proximity will be perceived as a unified group
• your audience will respond by:
  a) tending to naturally group similar items that are near to each other into a single unit, and
  b) assuming that items that are not near each other in a design are not closely related to one another
alignment

• arranging elements so that they line up
  – creates order
  – organizes page elements; links disparate groups into a unified whole
  – satisfies the subconscious human desire to line things up (I’m not kidding, this is an actual thing)
  – creates imaginary visual connections

ignore alignment at your own peril!
Salvage Archaeology at the Snake River Sandpit Site in Nome, Alaska

Concurrence of No Historic Properties:

- March 10, 1998 – The Corps sent a letter to the SHPO requesting concurrence that their project to support the harbor at Nome, Alaska, does not have the potential to affect cultural resources.
- April 29, 1998 – The Corps received a letter from the SHPO, in which they concurred that there are no historic properties in the area of potential effort.

Despite this, the Corps believed that it was a good idea to have an archaeological monitor on site during the ground-breaking. A private archaeologist familiar with the area was subcontracted to monitor the initial construction during May 2005.

Discovery of the Site (Louise A.):

- May 4, 2005 – The Corps received a letter from the subcontracted archaeologist, correcting the discovery of a semi-subterranean house pit.
- May 26, 2005 – The Corps sent a letter to the SHPO stating that the house pit is "not eligible for the National Register of Historic Places" because it has "lost integrity of design, materials, workmanship, and association."
- September 27, 2005 – The Corps sent a letter to Nome Eskimo Community, apologizing for not consulting after the discovery of the site and stating that they will continue to work with the tribe to mitigate the damage done.

Discovery of the Site (Lacet B and C):

- June 26, 2006 – Margan identified the remains of a second semi-subterranean house pit, which the Corps identified and left a telephone message about the discovery of the house pit, along with the site's information. The Corps contacted the City of Nome, Nome Eskimo Community, and the Bureau of Indian Affairs.
- June 27, 2006 – Margan called the SHPO again and left another telephone message about the site.
- June 28, 2006 – Margan called the SHPO again and talked with a Review and Compliance Archaeologist at the SHPO's office, who identified the site and that it was eligible for the National Register of Historic Places.
- August 3, 2006 – A meeting was held between the Corps, the Nome Eskimo Community, and the City of Nome, with the SHPO participating via telephone, to discuss the discovery of the site and what to do about it.

Excavations:

- Occurred from July 26, 2006 to August 26, 2006.
- Involved over 25 community volunteers, including:
  - City of Nome employees
  - Nome Eskimo Community (tribe) employees, members, and tribal elders
  - Mr. Karl Schuhick, the tribe's Historic Preservation Representative, participated in the excavation every day
  - Kwesigak, Inc. (non-profit Native corporation) employees
  - Interested Nome citizens
  - Involves 6 Corps employees, including biologists and chemists as well as archaeologists and anthropologists

Public Outreach in Nome:

- Public viewing at Old St. Joe's Cathedral (August 10, 2006):
  - Over 100 people attended
- Viewing of artifacts at Nome Eskimo Community building (August 2006):
- Viewing of artifacts at Kwesigak's building during the regional shareholders' meeting (August 2006):
- Another public viewing event at Old St. Joe's Cathedral (September 16, 2006):
  - Over 150 people attended
- Margan Grover gave a public lecture at the National Park Service's building (November 2006)

Proposed Mitigation (as agreed upon in the draft MOA):

1. Write a site report (Data Recovery Report)
2. Provide for an accredited museum conservator to visit the City's Cantor M. Mackin Memorial Museum and assist in the conservation and curation of the site artifacts on display
3. Assist with the re-excavation of site artifacts and archaeological site (bucket, embayment, and appropriately photographing)
4. Provide a museum-quality display case to the City's Cantor M. Mackin Memorial Museum
5. Provide information learned from the site in a public meeting of public interest (if not accepted, publish elsewhere)
6. Prepare a manuscript on information learned from the site that can be utilized by Nome teachers (grades 5-12)
7. Provide information learned from the site to the City of Nome as a statement of commitments
a few classic font pairings:

Myriad    Caslon
Myriad Black    Minion
Franklin Gothic Demi    Baskerville
Gill Sans    Garamond
Franklin Gothic Medium    Caslon
Q: how large should you make your type?

A: AS! LARGE! AS! POSSIBLE! THIS CANNOT BE OVEREMPHASIZED. MAKE IT AS BIG AS YOU CAN, THEN ADD ANOTHER 10% FOR GOOD MEASURE.

- rule of thumb: the smallest text on your poster should be clearly legible from 6 to 10 feet away
  - at a minimum, type should be approximately:
    - 72 points for titles
    - 48 points for headings
    - 24 points for body copy

REMEMBER – THESE ARE MINIMUM VALUES!
BIGGER IS ALMOST ALWAYS BETTER
(within reason, of course)
First Thing First: The Title and Abstract

- The title of your abstract is very important
  - Reflect the content of the paper
  - Specific and Succinct
  - Use key words for indexing and for searches
- 250 Word Max
- Includes the following:
  - The research question or problem
  - The methods
  - The observations
  - Analysis, assessment and implications
  - Major findings, results and conclusions
- REVIEW WITH MENTOR

Abstract Example:

ANALYZING THE PHYSICAL INTERACTION BETWEEN Pch2 AND Cdc23 IN SACCHAROMYCES CEREVISIAE.
SOLIS, Ryan D., Senior, Neurobiology, Physiology, and Behavior Major, Dr. Sean M. Burgess, Department of Molecular Cellular Biology, University of California, Davis.

In sexually reproducing organisms, meiosis serves as a specialized form of cellular division that creates four haploid gametes from a single diploid cell. In prophase I of meiosis, homologous chromosomes physically interact by pairing and exchanging genetic material through recombination. This is followed by the separation of chromosomes during the first meiotic division. Inappropriate pairing and failed segregation of chromosomes can lead to improper chromosome rearrangements and aneuploidy. Furthermore, these errors can lead to birth defects, cancer and other diseases. In budding yeast, Pch2 protein is involved in a meiotic recombination checkpoint that is responsible for the proper segregation of chromosomes by arresting cells that show abnormal crossover patterns. To further investigate Pch2 functions, a yeast two-hybrid assay was used that tests for physical binding between Pch2 and potential interactors. The sequences isolated from positive interactors were compared to the yeast genome to search for homology between known proteins. Sequence homology search provided several possible protein interactors and from these results we have focused on conducting further studies with Cdc23. Cdc23 is an essential protein and part of a protein complex called the Anaphase Promoting Complex. This complex is known to participate in ubiquitination of targeted proteins involved in the progression through mitosis and the G1 phase of the cell cycle. Along with Pch2, we suspect that the APC may have a role in chromosome-protein structure. Currently we hope to use a GFP tag to view Cdc23 localization in the cell and create a meiotic null of the protein to further conduct studies to better understand its interaction with Pch2 during meiosis.

Title Example:
• Or Background
• This is separate from your abstract!
• State the research question and significance of the study
• Include related current investigations
• If you are there, they won’t read it so SAY IT!
• Get viewers interested
• Reason you chose to study
• Foundation for your work (Models)
• General topics to specific
• Equivalent to 1 double spaced 12 pt page
• Usually contain citations/references (cite!)
• May have Purpose and Hypothesis embedded
• Generally completes first column
Purpose and Hypothesis

- Can be embedded in Introduction, but
- Sometimes a separate section, to emphasize
- Purpose or Objective, Aim, Goal, etc.,
- Why you did experiment?
- “The purpose of this project…”
- Good for Student Conference
- (Promotes solid judging)
- Hypothesis
- Same as for abstract
Methods

• Describe procedures and methods in detail to allow observer to understand how, when, where data was obtained.
• Describe challenges and lessons learned
• Text with subheadings
• Can include a flow chart to summarize
• May include citations
• Make sure to include:
  • subjects
  • experimental design
  • drugs and equipment used
  • statistical methods
  • why you chose the method

Prior to coating on the passivated Ti surfaces, hydroxyapatite (HA) and 1 wt% silver (Ag-deposited HA (HA-Ag)) sol were produced. The HA sol was prepared by reacting calcium nitrate trihydrate (Ca(NO₃)₂·H₂O) with methyl alcohol to produce calcium precursors. Phosphorus precursors were also prepared by reacting tetrahydro phosphate [PO₄(H₂O)₃] in 0.03 M acetic acid (CH₃COOH). The two precursors were then mixed and 0.1 mol of DCCA (Drying Control Chemical Additive) was added to the mixture. All reactions were carried out in argon atmosphere. Similar to the HA sol, Ag-HA1.0 sol was produced by mixing the calcium and phosphorus precursors with 1.0 wt % silver nitrate (AgNO₃) and 0.1 mol DCCA. AgNO₃ was chosen for Ag doping because of the easy decomposition of nitrates during heating.

The prepared HA and HA-Ag sol were then coated on passivated Ti surfaces by spin coating at 5,000 rpm for 59 seconds. The coated-Ti surfaces were immediately dried at 70°C for 12 hours, followed by a heat treatment at 650°C for 3 hours. The HA-coated surfaces were used as controls in this study. All samples were autoclaved prior to materials characterization and all culture experiments.
Results

- Largest section
- Vary with field
- Often two middle columns
- Summarizes the data and reports results of statistical tests and analyses (- or +)
- Draw implications and considerations
- Don’t present raw data
- Make Image-based; use few words
- Maximize use of Figures
  - Make them simple
  - Must be easily seen
  - Make all lines wide enough
  - All text large enough!
  - Consistent axes across poster
- Minimize use of tables
  - Difficult to grasp quickly
- Use figure legends/captions as text
- Put text near figure it’s describing
- ~1 paragraph per image/image group
Conclusions/Discussion

- Or discussion or summary
- Very few words
- Bullets good
- Bigger font if needed
- *Summarize “take home” results
  - Interpret the meaning or implications of your results
  - Mention any alternative explanation for results or unanticipated results
- *How did hypothesis work out?
- *Tie back to real world problem
- *Why Important/Implications
- Aim for:
  - Reasonable conclusions were given and strongly supported with evidence
  - Conclusions were compared to hypothesis and their relevance in a wider context was discussed
References/ Literature Cited

- Include sources/resources that supported your work
- If someone's work is cited (usually in introduction), you must include a reference
- Generally “short” (title optional)
- Can use smaller font if needed

References

3. Dikya Dayal, Macaulay. Honors Intern of the Baruch College Sustainability Task Force. Interview conducted by Aaron Lam
5. Survey Data from Chinatown, Flushing, and Fresh Meadows

References:

Images borrowed from:
Acknowledgements

• Acknowledge the faculty and staff who supported you.
• Thank people
  • Mentor
  • Research group
  • Technical assistance, etc.
• Reveal possible conflicts of interest
• Identify funding utilized
  • CAMP, LSAMP-NSF, NIH, etc.
• Font can be smaller than rest of text

Acknowledgements
We would like to thank Mr. Angus Rhododendrum and Suzanne McPerkins for their technical assistance.
Funded by NIH Grant #54-50082, the MBR-S-RISE program (NIGMS #2220987), and the American Tobacco Association.
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  ◊ Our mentors Dr. Stergios Roussos and Dr. Maria G. Pallavicini for their support during the long and strenuous journey of establishing ITCH.
  ◊ All participating ITCH members whose hard work has made this organization a possibility.
  ◊ All community leaders, community professionals, and UCM faculty whose devoted time and patience has been greatly appreciated and has helped with the establishment of ITCH.
Remember to check that:

- All expected components are present, clearly laid out, and easy to follow in the absence of presenter
- The text is concise, legible, and consistently free of spelling or typographical errors; the background is unobtrusive
- The figures and tables are appropriate and consistently labeled correctly
- Photographs/tables/graphs improve understanding and enhance the visual appeal
- For ideas can go to Pimp My Poster: http://www.flickr.com/groups/688685@N24/
High Resolution Reconstructions of Sea Surface Temperatures from Pacific Geoduck Growth Increment Chronologies

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National Science Foundation Research Experience for Undergraduates
Hatfield Marine Science Center, Oregon State University
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Introduction

- The Pacific geoduck clams (Panopea generosa) are found in the sandy mud of lower intertidal and subtidal zones.
- Growth is initiated at 3 feet below the surface.
- The geoduck has a long-lived lifespan, up to 150 years, allowing long-term monitoring of past environmental variability.

Abstract

We demonstrate the potential for reconstructing sea surface temperatures along coastal British Columbia, Canada, using four chronologies developed from the growth increment widths of Pacific geoducks (Panopea generosa). The four geoduck chronologies range from the southeastern to northernmost borders of British Columbia and were developed using standard sediment core analysis techniques, including crossdating. Although the geoduck growth rings are not always precisely aligned due to the complex nature of the geoduck growth rings, the chronologies agree on the occurrence of the major climate-related events, suggesting that the geoduck growth rings are sensitive indicators of past climate conditions. The geoduck growth rings provide a unique opportunity to reconstruct sea surface temperatures, which are critical for understanding the impacts of climate change on coastal ecosystems.

Methods

- We analyze the growth rings of geoduck clams to reconstruct sea surface temperatures.
- The growth rings are cross-dated to ensure the accuracy of the reconstructions.
- The growth rings are sensitive to changes in sea surface temperatures, allowing for the reconstruction of past climate conditions.

Results

- All geoduck growth rings were cross-dated to ensure the accuracy of the reconstructions.
- The geoduck chronologies were compared to historical sea surface temperature records to validate the reconstructions.

Discussion

- The geoduck chronologies provide a unique opportunity to reconstruct sea surface temperatures over a long time period.
- The geoduck growth rings are sensitive to changes in sea surface temperatures, allowing for the reconstruction of past climate conditions.

Acknowledgements

- Many thanks to the NSF for funding this research, and to the many volunteers who assisted in the fieldwork.
- The geoduck chronologies were cross-dated to ensure the accuracy of the reconstructions.

For more information, please contact Matthew Stuckey at matthew.stuckey@berkeley.edu or Bryan Black at bryan.black@oregonstate.edu.
Examples of Excellent Posters

Does Perinatal Exposure to DDTs and the Development of Glucose Intolerance Promote Skeletal Muscle Deficiency?

Ciara Main1, Michele La Merrill Ph.D.2
Department of Animal Science, Department of Environmental Toxicology, University of California, Davis

Abstract

The once ubiquitously used pesticide DDT and its metabolite, DDE (together, DDTs) have been an environmental health concern for many decades. Recent epidemiological and mechanistic data link DDT exposures with devastating diseases such as obesity, hypertension, and of components of Type 2 Diabetes. Our work surrounds perinatal exposure of DDTs and adult phenotyping. C57BL/6J mice were exposed to DDTs from embryonic day 11 to postnatal day 5, raised on normal chow, and switched to high fat diet (HFD) at 4 months to initiate obesity. Three months after exposure, dams exposed to DDE during pregnancy were glucose intolerant, while their female offspring displayed elevated fasting insulin. Disruptions in peripheral glucose utilization prompted us to explore whether tissues that rely heavily on glucose uptake were displaying a phenotypic defect. One month after being put on HFD (5 months after exposure), we measured muscle strength.

To assess muscle deficiency, we tested forelimb grip strength (GS) using Chatillon Machinery Gripper Strength Machine (Largo, FL). GS was tested over three days with 15 trials/day. On days two and three, overall grip strength, max strength, and first and last third of each trial were analyzed. Dams showed a difference in strength between days two and three, however F1 offspring had no significant change between treatment groups. Although, we did not find conclusive evidence that DDTs impair skeletal muscle function, further research is needed to examine potential indirect effects that DDTs may have on skeletal muscle.

Introduction

- DDTs are a group of toxicants named Persistent Organic Pollutants (POPs) that accumulate in animal tissues.
- DDTs are a risk factor for glucose intolerance.
- One symptom to glucose intolerance is impaired glucose uptake in tissues.
- There is no prior evidence suggesting DDTs directly effecting Grip Strength in skeletal muscle.

Hypothesis

Perinatal exposure to DDTs causes impaired glucose uptake in skeletal muscle resulting in a decrease in GS.

Figures and Tables

1. Experimental Design Diagram
2. Average Grip Strength effects of F1 male (a), F1 female (b) and F0 dams (c) when separated by treatment.
3. Average grip strength of F1 females at 5mo (a) and dam (b) on Day 1, 2, and 3.
4. Further analysis of separate treatment groups. Average GS on Day 1 (a), Day 2 (b) and Last Third on Day 3 (c).
5. Maximum strength of F1 females (a) and F0 dams (b). Top 5 out of 15 trials were analyzed to measure total strength difference between treatment groups.

Conclusion

- At 5 mos, DDTs did not affect GS regardless of sex, exposure type, or GS criteria (Avg, GS, Day, Third, and Max Strength).
- Dam GS on Day 3 (Fig 3b) decreased compared to Day 2.
- Given smaller n size and CV (data not shown) we conclude that GS measured on Day 2 is more robust than Day 3 due to possible increase in variance of Dam Day 3.
- Optimizing the Last Third on Day 2 is the best strategy to collect Grip Strength.

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Extreme gratitude to Michele La Merrill, Ph.D. for giving me this opportunity to work in her lab. She has encouraged me to build novel skills as well as add upon existing. McNair Scholars Program and California Alliance for Minority Participation (CAMP) Program for providing me the resources for my future career in research.
Examples of Excellent Posters

Expression, purification, and crystallization of recombinant mouse phospholipase c-zeta (PLC-ζ)

Pang, Allan
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ABSTRACT
The aim of this study is to express and purify recombinant PLCζ protein for structure identification through X-ray crystallography. To date, there is no available empirical data of the 3D structure of PLCζ. The identification of the structure is crucial as it presents information that will facilitate understanding of the protein mechanism and regulation, both of which remain unknown. Bioinformatic analysis was also utilised to draw initial structural information, specifically on the domain differences of PLCζ and empirically determined structure PLCζ-1.

INTRODUCTION
Phospholipase C (PLC) is a member of the phospholipase C family, which is responsible for activating cyclase, and thereby causing fertilization.

EXPERIMENTAL RESULTS

A

Figure 3. Molecular cloning of PLCζ24 construct. (A) Two step PCR amplification successfully produced a PLCζ construct with 6-HIS and 3C protease cleavage site (1813 bp in size). (B) Construction was ligated into pET28/D-TOPO vector. This is validated by restriction digest using CiaI. CiaI alone showed a lower band compared to vector with the construct.

B

Figure 4. Protein expression and purification. (A) Molecular weight marker (lane 1). Protein bands after IPTG induction (lane 2). Protein construct migrated at 84 kDa. Nucleo beads were used to capture protein (lane 3) and the beads were washed with high salt concentration (lane 4) to remove contaminants (lane 5). Fractions collected after cleared protein by 3C protease passed through PPLC-column exchange method. Bands migrating at around 68 kDa (corresponds to PLCζ24 protein) are found. (C) Further purification through PPLC-gel filtration method to obtain purified sample. (D) To verify that indeed the protein band is PLCζ, Western blot was employed using antibody specific to X/Y site.

C

Figure 5. Crystallisation of PLCζ24 construct. Six different screening conditions were found to be suitable for crystallising the protein. Crystals were confirmed to be protein due to bioinformatics characteristic under polarised light. Protein crystals AE were needed to be optimised to obtain larger crystal. Protein crystal F was tested for X-ray diffraction. Preliminary analysis revealed that X-ray diffraction pattern was hindered by presence of high salt concentration.

EXPERIMENTAL PROCEDURE
PLCζ24 construct was generated using two-step PCR to incorporate 6-HIS and 3C protease recognition site. Construct was ligated into pET28/D-TOPO vector and transformed into E. coli BL21 (DE3). Protein expression was induced using IPTG. Bacterial lysis was carried out using French Press. Protein construct was captured using Nucleo beads and cleavage of the protein from the tags were completed by 3C protease. Further purification was carried out using PPLC (on-exchange and gel filtration chromatography). Crystallisation of protein was carried out using sitting drop vapor-diffusion method.

REFERENCES

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I would like to thank Dr A. Ristovich for the antibody used in Western blotting, Dr L. D'Outre for the PLCζ construct, 3C protease and her supervision, Mr Peter Wilson for technical support.
Practice Makes Perfect

- Finish early enough to practice
- MAKE SURE TO PRACTICE!
- Develop 5 minute presentation
- Know first sentence
- What to say for each figure (3 pts…)
- Transitions between figures
- What to point at for each figure
- Practice with lab mates and laypersons
- Run through ENTIRE poster
- Be friendly
- Don’t sound like you’ve memorized
- Be excited about your work
- Remember to refer to your poster!
- They may interrupt with questions
- Pause long enough for them look at figure
- Know what questions may be asked….
  - Can practice them
First Contact

- Stand to left of poster (where start reading)
- Take initiative
- Smile, but stay near poster
- If they come closer
- Say, “Hello” and shake hands
- Give name. Get their name.
- Give level, and university (UC Davis)
- Ask if they’d like “you to walk them through your poster”
  - YES? Then GO!
- This is work that I performed this summer in the ___ program in the laboratory of Dr. _________ at UC Davis.
- (Optional) Ask if they are familiar with this field of research
  - No- More introduction, careful with acronyms
  - Yes- Can go more quickly through intro
The Flow of Things

- Start with Intro that will catch them
  - No pointing if you have no figure!
- Move to Methods
- Briefly summarize
- Move to Results
  - Longest section
  - Indicate at beginning if did not work
  - Walk thru all figures
- Transition to Conclusions
- Say Conclusions
- Acknowledgements (optional)
- Any Questions?
The Just in Case Items:

• Carry your poster with you at all times (do not leave as checked baggage)
• Dress for situation
  • Follow culture of conference
  • Student conference – suit…or minimally khaki's
  • Comfortable shoes
• Be there on time!
• Don’t leave unless it is very important to do so (if so, leave a friend there momentarily)
• Mini-poster printed out
• Pins
• Water
• Business cards (check your email!)
• Notebook
  • Networking – write down ideas and names!
Remember

- If you network please remember to email them!
- Keep promises that you’ve made
- Hang poster outside your lab
- Sample posters can be seen online
  - google search
- A “template” can be found at:
References and Sites to Visit

• How to Write an Abstract: http://vimeo.com/3968357
• How to Present: http://www.vimeo.com/3968357
• Click here for PosterTalk helpful presentation, which was used to create parts of this presentation. Thank you Dr. Gail P. Taylor!
  • Or visit: http://r.search.yahoo.com/_ylt=A86.J7.Ct6FU_AIAj4wPxQt.;_ylu=X3oDMTByzhwY2hkBHNIYwNzcgRwb3MDMgRjb2xvA2dxMQR2dGlkAw--/RV=2/RE=1419913218/RO=10/RU=http%3a%2f%2fwww.utsa.edu%2fmbrs%2fresources%2fcourses%2frescar%2fPosterTalk.pptx/RK=0/RS=8753.1dne73Y6qpS9cTFIFP8_0-
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• Creating Effective Poster Presentations – Hess and Liegel.
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• University of Kansas- Jeff Radel
  http://www.kumc.edu/SAH/OTEd/jradel/Poster_Presentations/PstrStart.html
GOOD LUCK ON YOUR POSTERS!!