



UNIVERSITY OF SOUTH CAROLINA

# DISCOVERY DAY

Tips for  
Successful Posters

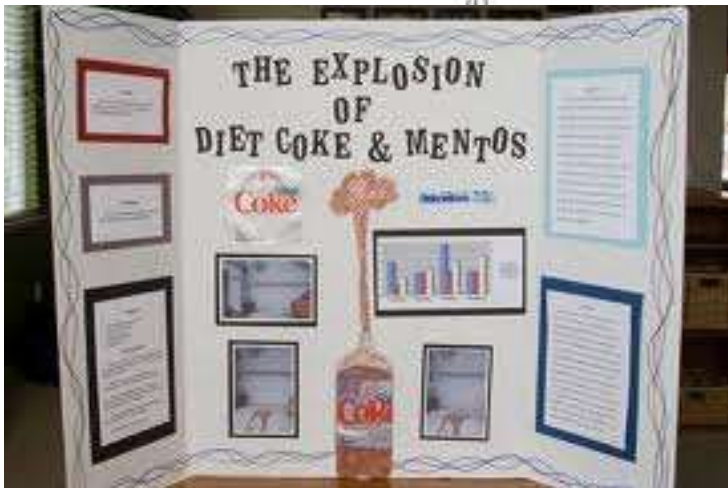


# What do we mean **POSTER SESSION?**



# NOT this...

UNIVERSITY OF SOUTH CAROLINA





# But THIS...

UNIVERSITY OF SOUTH CAROLINA





*See it for yourself:*

View one of the  
Discovery Day videos  
ONE and TWO



UNIVERSITY OF SOUTH CAROLINA

# DISCOVERY DAY

Logistics



## Review

***Discovery Day guidebook***

on OUR website

(<http://www.sc.edu/our/doc/Guidebook.pdf>)



# Logistics

**Event Date:** Friday, April 22nd

**Location:** Russell House

## Registration

8:15 am-2:00 pm      Registration opens      Russell House 2nd floor lobby

## Posters

9:00 am-10:30 am      Poster Session - Morning      Russell House Ballroom

11:30 am-1:00 pm      Poster Session - Mid-day      Russell House Ballroom

2:00 pm-3:30 pm      Poster Session - Afternoon      Russell House Ballroom

## Oral & Creative Presentations

9:00 am-11:00 am      Oral & Creative Presentations - Morning      Russell House - Rooms vary

11:30 am-1:00 pm      Oral & Creative Presentations - Mid-day      Russell House - Rooms vary

1:30 pm-3:30 pm      Oral & Creative Presentations - Afternoon      Russell House - Rooms vary

## Reception & Awards

3:30 pm-4:30 pm      Celebration & Reception      Russell House Ballroom

4:30 pm-5:30 pm      Awards & Recognition Ceremony      Russell House Theater





# Logistics

- 3 poster sessions (morning, mid-day, afternoon)
- Assignments random unless abstract submitted by **PRIORITY** deadline (last Friday before Spring Break)
- Notification on timing: week before (on website and by email)
- At Ballroom door, give your last name and you will be shown to poster location



# Logistics

- 2 posters per side of display board
- Poster dimensions: 3-4 ft high x 3.5 ft wide
- 4 t-pins provided to hang
- Angle pins down NOT straight through
- Nametags at registration table



# Logistics

- Posters sub-divided into categories
- Categories based on topic/mentor department
- Judged within categories (IF selected yes on abstract submission; can only change to NO)



# Logistics

- Judging guidelines in guidebook
- Judges: faculty, staff, and grad students
- Judges: 2-3 per section
- Judges are NOT experts in field
- No judging if NOT present at poster



# Logistics

- Award Ceremony: *attendance expected*
- Awards: receive envelope with information for certificate



# How To: General Overview



# A successful poster...

- conveys a **clear message**,
- by **high-impact** visual information,
- with **minimum** text

...grabs attention!



# A great poster is...

- **Readable** – use clear language and good grammar in all poster text
- **Legible** – all poster text should be readable from 5 feet away
- **Well-organized** – group items logically and visually for maximum impact
- **Succinct** – you have 10 seconds to grab your audience's attention





# Overview: Content

**Remember:** Do **NOT** duplicate the full text of your work **on** your poster.

***Hit the high points!***

Provide handouts for more information.



# Overview: Content - *OPTION 1*

Sections you may wish to include:  
(will vary depending on your desired message)

- Introduction, background, or overview
- Hypothesis (Question you explored)
- Motivation or purpose (Why you did it)
- Methods (How you did it)
- Results (What you found)
- Conclusions (What you learned)
- Significance (What it means)
- Future plans or next steps
- References (Works cited)
- Acknowledgements

**Abstract is not needed!**



# Overview: Content - *Option 2*

## Sections you may wish to include:

(will vary depending on your desired message)

- Introduction, background, or overview
- Activity/Event description (What you did)
- Motivation or purpose (Why you did it)
- Reflection (What you learned; What was the impact on you)
- Significance (What it means; what you want others to learn/know from your experience)
- Future plans or next steps
- References (Works cited)
- Acknowledgements

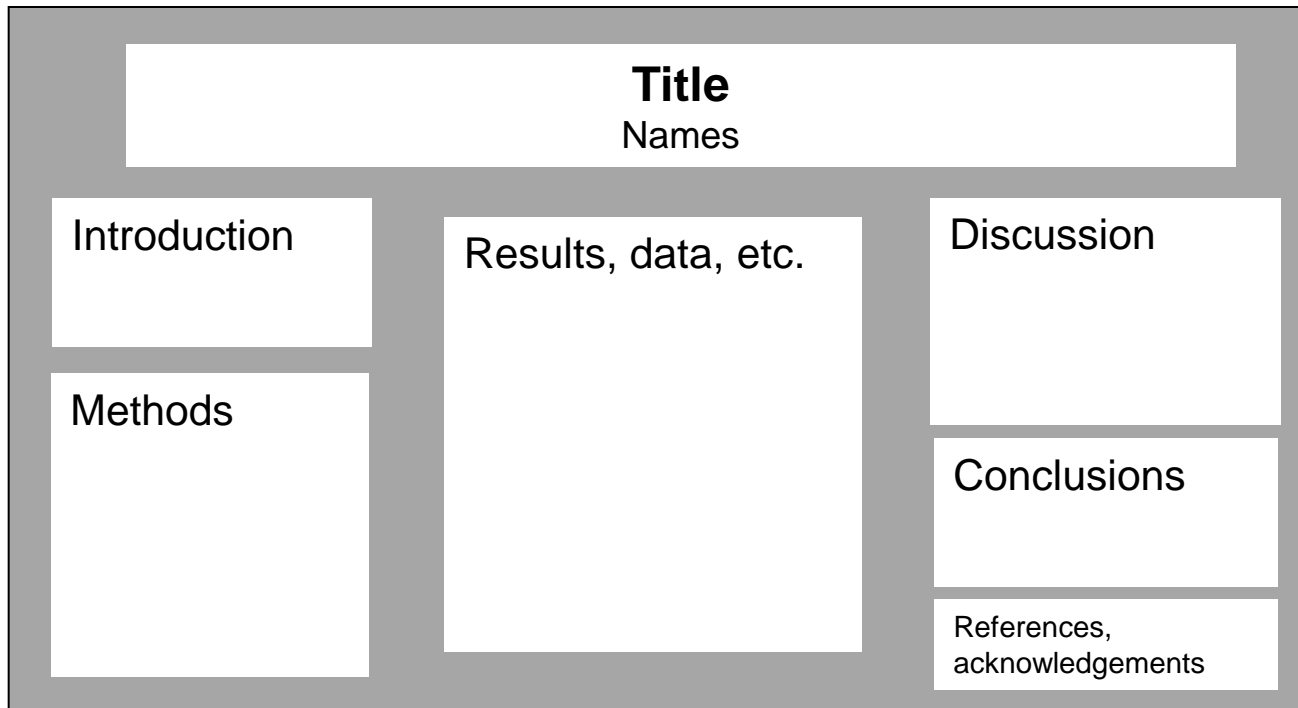


# Overview: Layout

People take in information according to a known spatial sequence.

*Capitalize on this and use it effectively!*

Expected layout (3-4 columns of information):

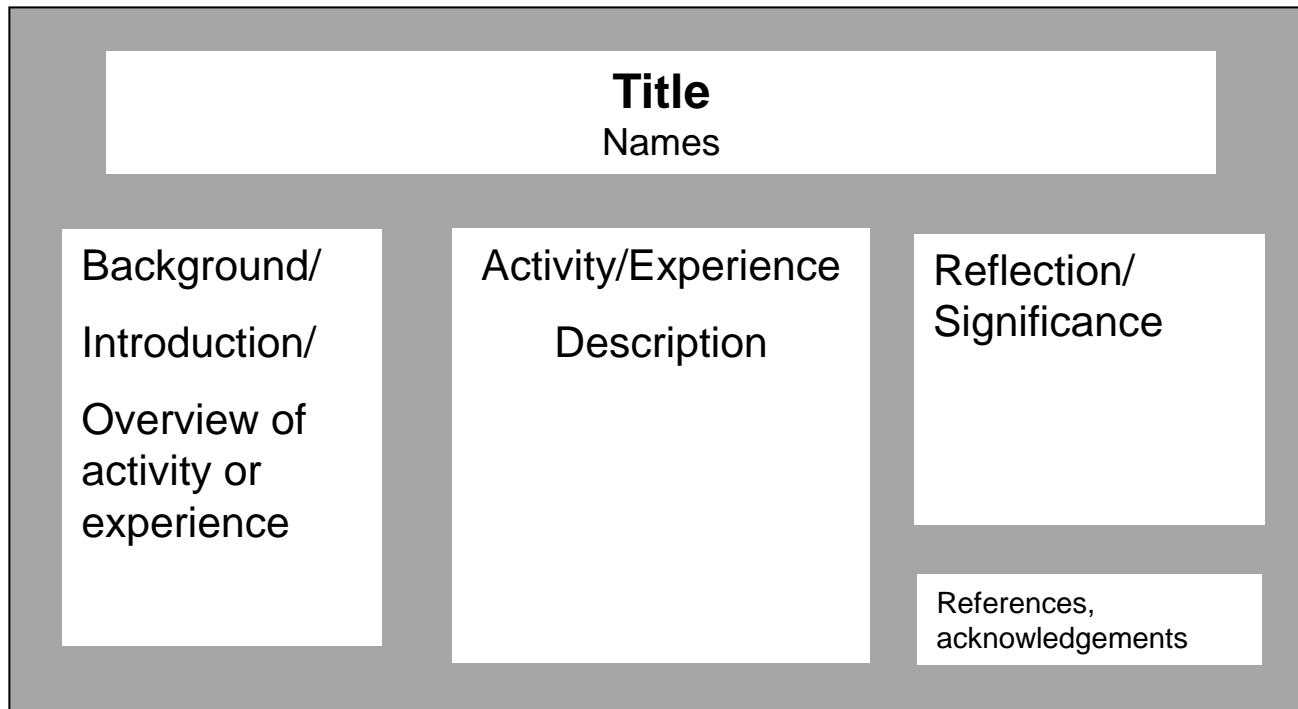




# Overview: Layout

## Activity or Experience

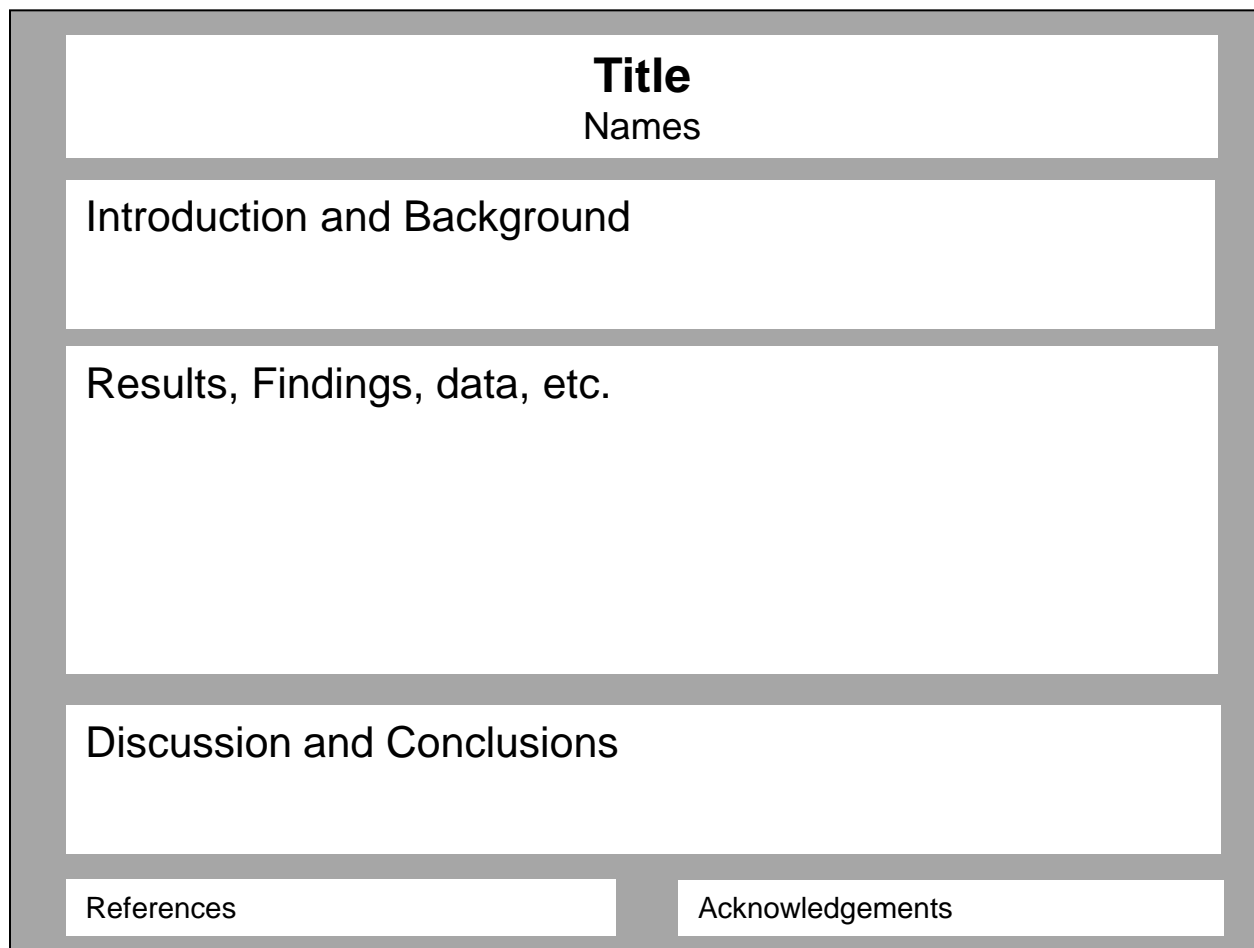
Expected layout (3-4 columns of information):





# Overview: Layout

Alternative layout: Progression of information  
(*much less common*)





# Overview: Layout

## Activity or Experience

|  |                  |
|--|------------------|
| <b>Title</b><br>Names                                      |                  |
| Background/Introduction/Overview of activity or experience |                  |
| Activity/Event Description (what did you do)               |                  |
| Reflection/Significance                                    |                  |
| References   | Acknowledgements |



# Overview: Layout

## **YES!!!**

You can use a different format than “expected.”

- The key is to make the flow of information logical.
- Be sure your chosen layout emphasizes your message!

**See examples in the next section**





# How To: Examples



# “Expected” layout

Title  
Names, departments

## Introduction: Chemical Hydride Hydrolysis

- Chemical hydrides are a means of storing hydrogen.
- Sodium borohydride ( $\text{NaBH}_4$ ) undergoes hydrolysis to produce hydrogen as follows:
 
$$\text{NaBH}_4 + (2+x) \text{H}_2\text{O} \rightarrow \text{NaBO}_2 \cdot x\text{H}_2\text{O} + 4\text{H}_2$$
- The coefficient  $x$  represents the hydration state of sodium metaborate ( $\text{NaBO}_2$ ).
- Minimizing  $x$  minimizes the total weight in the hydrogen delivery system while maximizing the efficiency.
- Four stable hydration states exist and the formation of these states is temperature dependent and shown below:

| Hydration State         | Temperatures Where Stable                 |
|-------------------------|---|
| Tetrahydrate ( $x=4$ )  | $<54^\circ\text{C}$                       |
| Dihydrate ( $x=2$ )     | $54^\circ\text{C}$ – $310^\circ\text{C}$  |
| 1/3-hydrate ( $x=1/3$ ) | $110^\circ\text{C}$ – $350^\circ\text{C}$ |
| Anhydrous ( $x=0$ )     | $>350^\circ\text{C}$                      |

## Water Usage and Reaction Pathway

- First attempted to hydrolyze sodium borohydride with liquid water.
- Required approximately 30 times more water than stoichiometric feed.
- Experimental conditions were limited to below  $100^\circ\text{C}$ , yielding low reaction rates.
- Experimental temperature range increased with steam hydrolysis reactor.
- Steam would adhere, or deliquesce, to the surface of sodium borohydride.
- Expanded temperatures to over  $140^\circ\text{C}$ .
- Low relative humidities prevent reaction at high temperature conditions.

## Deliquescence

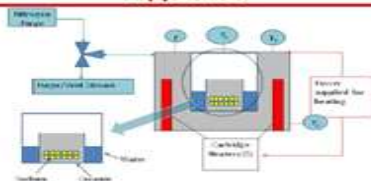
- Sodium Borohydride undergoes deliquescence in the presence of water vapor.
- Deliquescence is the process of water vapor in the air adhering to the surface of a solid.
- Water vapor goes to the liquid phase while in contact with the solid during deliquescence.
- Deliquescence usually ends with too much water surrounding the solid, in which case the water will dissolve the solid.
- Water vapor uses as little as 30% of the liquid water needed to pre-dissolve the  $\text{NaBH}_4$ .
- As less water is needed to dissolve the  $\text{NaBH}_4$ , the necessary weight of the reactor lessens which, in turn, increases the efficiency.



## Hypothesis and Objectives

- Construct and utilize a high pressure batch reactor to hydrolyze solid sodium borohydride with water vapor.
- Predict the reaction progress as a function of time using the pressure profile.
- Determine the amount of  $\text{NaBH}_4$  conversion using Boron-11 Nuclear Magnetic Resonance ( $^{11}\text{B-NMR}$ ).
- Determine the water content of the final product using Thermogravimetric Analysis (TGA).

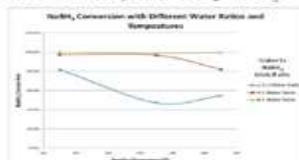
## Apparatus



- Sodium borohydride and water are separated initially.
- Nitrogen originally pressurizes the bomb reactor.
- Heat is supplied to the reactor using six cartridge heaters.
- Thermocouples measure three temperatures at different points to ensure gradient.
- Pressure measurements were recorded by a pressure transducer.

## $\text{NaBH}_4$ Conversion Measured with $^{11}\text{B-NMR}$

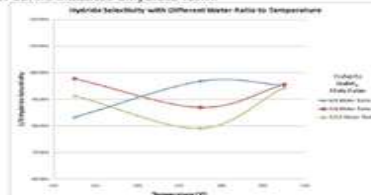
- $^{11}\text{B-NMR}$  analysis measures the composition of  $\text{BH}_4^-$  and  $\text{BO}_2^-$ .



- Hydrolysis goes to completion when a slight excess of water is introduced to the system.
- Reactions running only the stoichiometric water feed had approximately 50% conversion.
- Higher temperatures generate a faster reaction but at the cost of lower conversions.

## Water Content of Product Measured by TGA

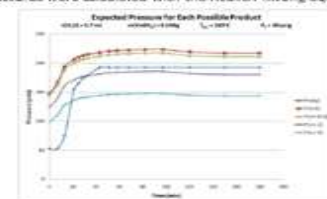
- The TGA quantifies the water of hydration in the  $\text{NaBO}_2$  products.
- A mass loss of 8.4% indicates 1/3-hydrate form.
- A mass loss of 35.4% indicates dihydrate form.



- Higher selectivity of 1/3-hydrate is correlated to a lower water content in the final product.
- TGA analysis suggests that the mass lost lies somewhere between 8.4% and 35.4%, consistent with the idea that a mixture of 1/3-hydrate and dihydrate would be formed.
- Runs with higher feeds of water favored the formation of the 1/3-hydrate form.
- At lower temperatures, 1/3-hydrate selectivity decreases with the water ratio.
- The effect of water to  $\text{NaBH}_4$  feed ratio is minimal at higher pressures.

## Pressure Profile

- Experimental pressures were recorded using a pressure transducer.
- One expected pressure can be calculated for each of the four possible hydration states of  $\text{NaBO}_2$ .
- Expected pressures were calculated with the Redlich-Kwong equation of state.



| Temperature (°C) | Molar Ratio of Water to $\text{NaBH}_4$ | $x^a$ | High- $T$ Experimental Pressure (atm) | Theoretical Pressure (atm) $x=0$ | Theoretical Pressure (atm) $x=1/3$ | Theoretical Pressure (atm) $x=2$ | Theoretical Pressure (atm) $x=4$ |
|------------------|---|-------|---------------------------------------|----------------------------------|------------------------------------|----------------------------------|----------------------------------|
| 350              | 0.1                                     | 4     | 312.0                                 | 272.3                            | 232.9                              | 194.2                            | 144.0                            |
| 350              | 0.1                                     | 2     | 348.8                                 | 308.9                            | 269.4                              | 231.1                            | 180.5                            |
| 350              | 2.5:1                                   | 0.5   | 313.0                                 | 335.9                            | 309.2                              | 271.1                            | 232.7                            |
| 300              | 0.1                                     | 4     | 312.7                                 | 248.8                            | 213.9                              | 174.8                            | 124.8                            |
| 300              | 0.1                                     | 2     | 372.7                                 | 343.8                            | 306.8                              | 271.4                            | 235.2                            |
| 250              | 4.1                                     | 2     | 304.7                                 | 205.6                            | 188.5                              | 162.6                            | 131.0                            |
| 200              | 0.1                                     | 2     | 288.7                                 | 206.0                            | 196.9                              | 181.2                            | 160.0                            |
| 200              | 2.5:1                                   | 0.5   | 86.7                                  | 208.7                            | 214.5                              | 225.1                            | 235.5                            |
| 200              | 2.5:1                                   | 0.5   | 78.7                                  | 187.9                            | 199.3                              | 214.9                            | 225.8                            |
| 200              | 0.1                                     | 0     | 297.7                                 | 249.3                            | 242.1                              | 236.2                            | 231.2                            |
| 200              | 4.1                                     | 2     | 345.0                                 | 232.0                            | 204.6                              | 187.2                            | 173.1                            |
| 200              | 2.5:1                                   | 0.5   | 333.0                                 | 173.9                            | 168.4                              | 158.2                            | 149.0                            |

- From TGA, it is expected that the actual pressure will be between the 1/3-hydrate and dihydrate estimations.
- Few experiments had a pressure profile precise enough to give expected pressures.

## Conclusions

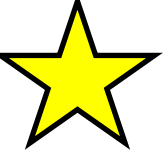
- The batch reactor was successful in that the steam hydrolysis reaction went nearly to completion for runs with only a slight increase of water over the stoichiometric ratio.
- A stable 1/3 hydrate form of sodium metaborate was produced under the reaction conditions, significantly reducing the amount of water tied into the solid product.
- The decreased water in the solid product increases the efficiency of hydrogen delivery.
- The stable hydration states did not appear to change with pressure.
- Although the pressure measurements were not as precise as desired, new reactor designs are being examined to address any potential problems.

## Acknowledgements

- NSF Grant # CBET 0756089
- University of South Carolina Magellan Scholarship

## References

1. Liu, Hong; Boyd, Christopher M.; Beard, Amy M.; and Matthews, Michael A. "Oxygen-pressurized batch hydrolysis of  $\text{NaBH}_4$  at elevated temperatures and pressures." *International Journal of Hydrogen Energy*, February 2011.
2. Navarro-Arribas, E. T.; Gray, A. R.; Davis, T. A.; and Matthews, M. A. "Hydrolysis of sodium borohydride with steam hydrates." *International Journal of Hydrogen Energy*, December 2007, 32 (16): 4717-4722.
3. Beard, Amy M.; Davis, Thomas A.; and Matthews, Michael A. "Deliquescence in the hydrolysis of sodium borohydride to water vapor." *Industrial and Engineering Chemistry Research*, 2010, 49 (16): 9696-9699.



# “Expected” layout

Program No. 611.7



## Expression of Lipocalin-2 in Colorectal Cancer Metastasis to the Liver

Student name; Mentor name



<sup>1</sup>ASBMB UAN at USC <sup>2</sup>Department of Biological Sciences, <sup>3</sup>Center for Colon Cancer Research, University of South Carolina, Columbia, SC 29208

### ABSTRACT

Metastasis, frequently from the colon to the liver, is the major cause of death with colorectal cancer, reducing the five-year survival to less than 10%. Metastasis occurs due to productive collaborations between tumor cells and host-derived cells in the tumor microenvironment, where a pre-metastatic niche is created to prime for cancer cell invasion into the target organ<sup>1</sup>. In a highly metastatic colorectal cancer cell line implanted into the livers of Balb/c mice, microarray analysis showed LCN2 is the most highly expressed protein in the liver of tumor-bearing mice prior to metastasis. Western blot analysis and examination of tumor sections by ELISA illustrated increased levels of LCN2 in tumor progressed into metastasis, with similar results when RT-PCR was performed, as greater levels of LCN2 mRNA were found in highly metastatic cells in contrast to less metastatic cells. It has been found that LCN2 is highly associated with the promotion of colorectal cancer metastasis to the liver, with increased levels connected to the advancement of metastatic progression.

### INTRODUCTION

Colorectal cancer is the third most common cancer, accounting for approximately 682,000 deaths per year worldwide<sup>2</sup>. In the United States, it is the second leading cause of cancer-related fatalities<sup>3</sup>. When patients are treated for colorectal cancer prior to metastasis, the survival rate is high. Unfortunately, those affected do not typically express outward symptoms of metastasis and it is often diagnosed when very little can be done. More research must be pursued on the biological and molecular biomarkers that detect the early stages of metastasis, which can provide the best opportunity for therapy to slow its progression. Lipocalin-2 (LCN2) is from a family of proteins associated with cell regulation, specifically in differentiation and proliferation<sup>4</sup>. There is conflicting evidence on their role in cancerous growth; some evidence suggests that lipocalin can inhibit the proliferation of cancer cells<sup>5</sup>, while others suggest that they promote its progression<sup>6</sup>. These studies examined LCN2 expression in clinical cells, but not in the target organ microenvironment; thus, further studies must be undertaken to determine the role of LCN2 in establishing and promoting metastasis.

### HYPOTHESIS

Increasing presence of LCN2 is positively associated with progression of early colorectal cancer metastasis to the liver.

### OBJECTIVES

- To assess LCN2 protein levels in isogenic colon cancer cell lines with different capabilities to metastasize.
- To determine whether increasing levels of LCN2 coincides with the progression to early colorectal metastasis to the liver.

### METHODS

- Western blotting to verify presence of LCN2 protein.
- ELISA (EIA) Systemic and qPCR (Real-time RT-PCR) were performed on these cell lines to determine varying levels of LCN2 concentration.

### PRELIMINARY DATA

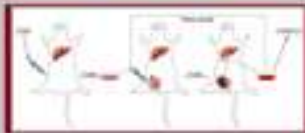


Figure 1. Mouse model of colon cancer metastasis to the liver. CT26 cells with low metastatic capabilities are introduced to become highly metastatic CT26-FL3 cells.

### PRELIMINARY DATA



Figure 3. Frequency of liver metastases in mice bearing tumors from two isogenic cell lines. Mice bearing tumors from the less metastatic CT26 parental cell line (CT26) show frequency of liver metastases compared to mice with tumors from CT26-FL3 cells.



Figure 5. Microarray analysis of mRNA expression in tumor-bearing mice before and after the arrival of metastatic cells. LCN2 is over-expressed by 34 fold in a pre-metastatic liver versus a sham control liver.



Figure 4. Immunoblot analysis of liver from tumor-bearing mice at various stages of metastasis. In mice with CT26-FL3 cells, the circulating LCN2 levels increase with tumor progression.

### RESULTS



Figure 6. LCN2 protein levels in CT26 and CT26-FL3 cells using Western blot analysis.

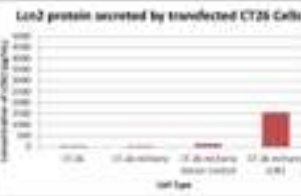


Figure 8. LCN2 protein levels secreted into the media by over-expressing cells.

### RESULTS



Figure 7. Concentration of LCN2 (ng/ml) secreted by stably transfected CT26-FL3 cell lines.

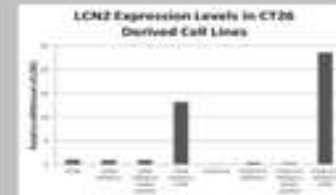


Figure 9. Relative levels of mRNA transcripts in CT26 derivative cell lines using real-time PCR against beta-actin.

### CONCLUSIONS AND FUTURE DIRECTIONS

- LCN2 is positively associated with colon cancer cells with greater ability to metastasize.
- LCN2 is upregulated in the pre-metastatic niche after implantation of colon cells shown by real-time PCR.
- The impact of manipulating LCN2 levels both by gene suppression and overexpression in vivo, and especially in vivo, must be assessed to additionally determine the role of LCN2 in early colorectal cancer metastasis to the liver.
- The results of this further experimentation may provide significant support for the possibility that LCN2 is a biomarker for the event of metastasis to the liver.

### REFERENCES

1. American Cancer Society. Cancer Facts and Figures 2014. Atlanta, GA: American Cancer Society; 2014.
2. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2014. CA Cancer Clin Oncol. 2014;64(2):9-29.
3. American Cancer Society. Colorectal Cancer Facts and Figures 2014. Atlanta, GA: American Cancer Society; 2014.
4. Kishimoto A, Kishimoto T. Lipocalin-2: a novel protein family member. J Biol Chem. 2001;276(12):3381-3384.
5. Kishimoto A, Kishimoto T. Lipocalin-2: a novel protein family member. J Biol Chem. 2001;276(12):3381-3384.
6. Kishimoto A, Kishimoto T. Lipocalin-2: a novel protein family member. J Biol Chem. 2001;276(12):3381-3384.



# "Expected" layout

## Role of P-glycoprotein in the Transport of Amyloid-β Protein in Cerebral Amyloid Angiopathy

University of South Carolina, Biomedical Engineering Program, Columbia, SC 29208

**ABSTRACT**

Cerebral amyloid angiopathy (CAA), a neurodegenerative disorder of the elderly, is characterized by amyloid-β (Aβ) deposits in the brain and subsequent cerebral pathology. Recent identification of the full-length Aβ<sub>1-42</sub> that binds to p-glycophorin (Pg) in vitro suggests that p-glycophorin may be a receptor for Aβ<sub>1-42</sub> and may be involved in its transport into the brain. We have investigated the role of p-glycophorin in the transport of Aβ<sub>1-42</sub> in human brain microvessel endothelial cells (hBMVEC).

**RESULTS**

1. Characterization of Human Brain Microvessel Endothelial Cells (hBMVEC)

2. Flow cytometry analysis of hBMVEC for p-glycophorin expression

3. Transport of Aβ<sub>1-42</sub> across hBMVEC

4. Effect of p-glycophorin on Aβ<sub>1-42</sub> transport

**METHODOLOGY**

1. Preparation of hBMVEC by primary isolation

2. Transport assay

3. Aβ<sub>1-42</sub> P-glycophorin knockdown

4. Confocal microscopy

**DISCUSSION**

hBMVEC from an endothelial microvessel that can be used as a model of the blood brain barrier to Alzheimer's patients. This model can be used to study brain-microvessel pathologies such as cerebral amyloid angiopathy.

hBMVEC microvessels were formed after 5-7 days, where the cells showed an increase in TEER values, expression of tight junction proteins (ZO-1 and occludin), and formation of VE-cadherin at the expected range.

hBMVEC microvessels did not show expression of α-vitronin, being found in smooth muscle cells such as pericytes. This corroborates the purity of the microvessels.

hBMVEC microvessels showed higher expression of Aβ<sub>1-42</sub> and p-glycophorin (localization of ZO-1).

All Aβ<sub>1-42</sub> and Aβ<sub>1-40</sub> monomers are being transported from the basolateral to the apical side of the endothelial microvessel.

Treatment of microvessels with Aβ<sub>1-42</sub> monomers causes a significant increase of p-glycophorin indicating increased function of Pg.

Treatment of endothelial cells with p-glycophorin causes an over-expression of Pg.

**FUTURE WORK**

Test Aβ<sub>1-42</sub> as possible substrate

Test Aβ<sub>1-40</sub> different species to cells that overexpress Pg

Test Aβ<sub>1-42</sub> different species to cells over-express Pg knockdown

Test vascular disease

Proteinase inhibitors

## Impacting Communities, Changing Lives: Diabetes Education in Columbia, SC

Student name, Senior, Department of Anthropology  
Free Clinic of Columbia, SC  
Mentors: Names

### Background

Diabetes is currently ranked 7th in terms of leading cause of death of most South Carolinians [2]. In addition to poor overall health in South Carolina, it makes sense that health education is not as heavily promoted in the state as it should be. When diabetes can cause the loss of limbs, eyesight, and a number of other health problems in combination with hypertension, education is a necessary in trying to limit the risk exposed of South Carolinians to this growing epidemic. This is exacerbated in disadvantaged communities where a nutrient-poor diet may be the only diet available to them. In terms of education in South Carolina, 83% of high school students drop out between the ages of 16 and 19. This is incredible in comparison to the fact that 17.9% of high school students will not graduate with a high school diploma as a result of missed factors [1]. With such alarming statistics, South Carolina is currently 47th in the nation in terms of quality public education [2]. It makes sense that such trends in terms of health education are also as low and unhelpful.

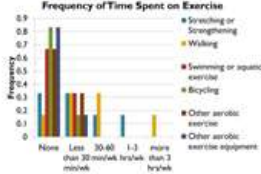
### Results

#### How Physical Health Was Affected

|                 | Blood Pressure | Blood Sugar | BMI       |
|-----------------|----------------|-------------|-----------|
| Whites          | 132.96         | 188.84      | 33.72     |
| Hispanics/Other | 111.71         | 200.36      | 32.45     |
| Normal Range    | 120/80         | 120         | 18.5-24.9 |

\*Only one patient self-identified as Hispanic

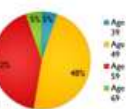
#### How Were Behaviors Affected?



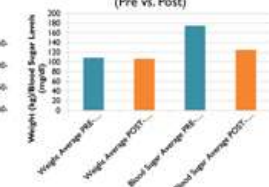
#### Ethnicity Breakdowns for Participants



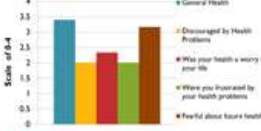
#### Age Distribution



#### Weight and Blood Sugar Averages (Pre vs. Post)



#### Assessment of Overall Health/Worry Levels



### Methods

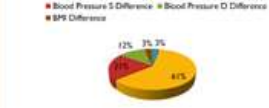
**Acquiring Patient Information (Pre-measure levels):** Before patients enter the program, they must sign a waiver in order for their health information to be used. Their health information will be used for the purposes of quantifying the impact of this project on the Columbia community. This must be done in accordance with HIPAA law as information is considered case-sensitive.

**Course Register:** The course took place once a week on Fridays at 1PM. A total of two classes were taught in regards to the disease and meal management. Each patient will be required to sign in before the commencement of the class and be given pamphlets at the conclusion of each class. After the conclusion of the patient's second class, the patient will be rewarded with a glucose meter and testing strips. Patient files were examined to indicate which patients were able to return for a follow-up with their appropriate biophysical assessments recorded. This will allow us to track the changes patients that participated in the education program. All information will be recorded in a notebook and electronically. This will be staggered as patient intake is tracked.

#### BMI Difference



#### Differences in Wellness Markers



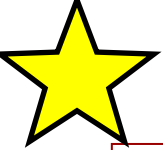
### Conclusions

Based on our results, we can effectively see the need of this program in the community. The data illustrates correlations in ethnicity and in education levels with behaviors and physical illness. Problems with promotion through the clinic and the restrictions in regards to assessments of patients after the sessions also presented as from gathering a true picture of another (collaborating aspect of our project showed that individuals were more confident after the sessions yet still did not alter their behavior enough to show any significant changes. Ways to improve the project consist of monitoring the program over a longer length of time and analyzing different educational models for retaining patients.

### Acknowledgements

Special thanks to the Carolina Leadership Institute for the grant that allowed for the completion of this project. I would also like to thank the Free Clinic of Columbia, SC, for allowing my staff and myself to utilize their facilities for this project. I would also like to thank my team consisting of Stephanie Crawford, Philip Kibbe, Philip McLean, Haley Grimes, Christian Wertz, Amanda East, Wrenna Phoenix, and Kristina Platten. I would also like to personally thank Drs. Samson and Chung for their continued mentoring through this project.





# “Expected” layout when few pictures available



**Title**  
Names, departments



## Introduction

### Wireless Networks

- Wireless networks are expected to be available and reliable at all times and all locations.
- Environmental conditions like walls, weather, and large crowds cause problems

### Smartphones

- Smartphones have a variety of sensors built into them that can gather information about the surrounding environment.
- These sensors include accelerometers, compasses, light detectors, and proximity detectors
- They also have wifi radios and GPS

### Goals

- This project aimed to use the readings from the sensors to detect situations that will cause reduced signal strength
- It may be possible to predict when the user is going to have poor reception so the phone can plan accordingly

### Other Work

- A number of other projects are underway that also make use of the sensors available on smartphones
- Mobile Assistant for Inattentive Drivers (MAID)
- Increasing the reliability of natural interaction systems such as Microsoft's Kinect

## Methods

### Android App

- An app was developed for Android phones that would automatically collect data every 15 minutes
- This interval was chosen to balance frequency of collection with battery life
- The app was allowed to run constantly on the user's phone to collect data in real world situations
- The app uploaded data after each collection to a MySQL database

### Data Collected

- Data collected included: time, proximity, battery level, location, cellular signal strength, and wifi signal strength
- The data were downloaded from the database into an Excel spreadsheet
- The correlation function in Excel was used to determine if acceleration, magnetic field, proximity, battery charge, or light appeared to have an influence on cellular and wifi signal strengths
- The data points corresponding to wifi signal strength were plotted on a map and color coded to indicate the signal strength of the University wireless network, "accident" at that location.

## Results and Discussion

### Accelerometer

- Cellular Strength: 0.145
- Wifi Strength: 0.069
- These low correlation values indicate the absence of a relationship between acceleration and both cellular and wifi signal strengths

### Magnetic Field

- Cellular Strength: -0.123
- Wifi Strength: -0.022
- These correlation values were even smaller than the ones for acceleration, so there is again little evidence to suggest a relationship between magnetic field and the signal strengths

### Proximity

- Cellular Strength: -0.302
- Wifi Strength: -0.289
- These values are much stronger than the previous two and are the strongest observed.
- There is a possibility of a slight negative correlation
- The relatively strong correlation could also be explored by the phone being in a pocket versus in the open

### Battery Charge

- Cellular Strength: -0.291
- Wifi Strength: -0.193
- These values are weaker than the proximity values and slightly negative
- There may be a negative correlation between battery charge and the signal strengths

### Light

- Cellular Strength: 0.205
- Wifi Strength: 0.017
- These values were opposite the proximity values and much weaker
- This difference supports the possibility of being in the pocket reducing signal strength and being in the open increasing it

### Figure 1: Wifi Map

- The map reveals the clustering of the data points
- As the project continues, a more even distribution of data points will be collected
- Wifi signal strength appears to be stronger inside than outside



Arena for Research on Emerging Networks and Applications

## Wifi Map



Figure 1: Map of Wifi Signal Strength

Detail of Swearington

## Ongoing and Future Work

### Signal Correlations with Other Sensors

- Use newer sensors such as gyroscopes, barometers, and thermometers
- Collect data in diverse scenarios using multiple phones

### Mobile Assistant for Inattentive Drivers (MAID)

- Link the phone to the car's diagnostics port to get real-time data from the car's sensors
- Identify the fingerprint for each event and create the abstract sensor modules
  - **Rickless:** detect reckless driving
  - **Speed:** detect when the driver is going too fast
  - **Turn signal:** detect if the driver properly signaled before turning
  - **Stop:** detect if the driver obeyed a stop sign
  - **Lost:** detect when the driver appears to be lost
  - **Yield:** detect if the driver properly yielded at a yield sign
  - **Clot:** detect if the driver is causing traffic to back up behind him
  - **Drunk:** detect drunken driving
  - **Line change:** detect lane changes
- Identify additional situations that might be detectable using the phone's sensors

### Enhancing Kinect with Smartphones

- Wi uses accelerometry and gyroscope to detect motion
- Kinect uses video and depth cameras to detect motion
- Combine the two methods together to make a more robust system
  - Use the phone in the pocket in place of the Wi remote
  - Use its accelerometer/gyroscope sensors to aid Kinect
  - Allow players Kinect cannot see to interact with the system
  - Help the system identify players from a crowd



“Expected”  
layout with  
great image  
use

**Motivation:**

- World-wide potable water crisis needs affordable treatment technologies
- Nanomaterials have promising capabilities (sorption/filtration)
- Lack of strategy for useful application



**Results:**

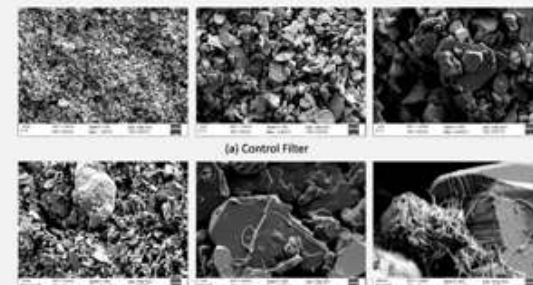


Figure 1: SEM Images

**Objectives:**

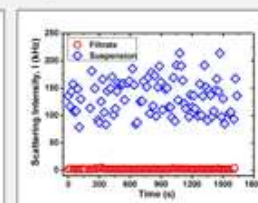
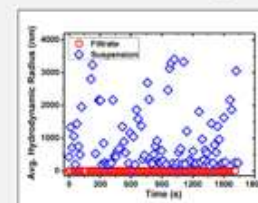
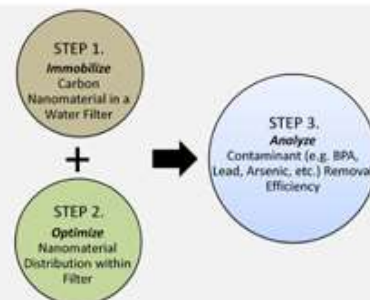
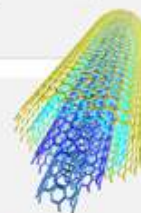
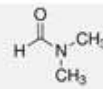


Figure 2: Hydrodynamic Radius

Figure 3: Scattering Intensity

**Materials:**

- Carbon Nanotubes (CNTs)
- Organic Solvent: N,N-Dimethylformamide
- Commercial Water Filter



**Underlying Mechanism:**

Untreated Filter Surface  
(No Affinity)



Chemically Treated Filter Surface  
(Thermodynamic Affinity)



**Methods:**



**Conclusions:**

- CNTs can be deposited on functionalized surfaces
- The attachment is irreversible thus results in immobilized CNT coated surfaces





# Non-traditional layout

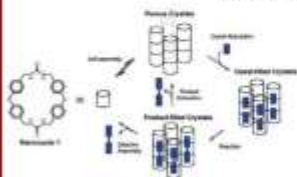


**Title**  
Names, departments



## Introduction

How are certain photochemical reactions influenced by being carried out in a confined environment?



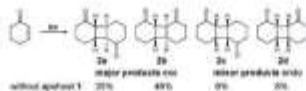
### Macrocycles

- Porous self-assembling monomers
- Form tubular crystals
- Can increase selectivity of certain reactions
- Reusable

### 2-Cyclohexenone

- Phenylether macrocycle used as host

- Increased selectivity



## Background

Chemists are always looking for ways to make reactions more efficient. That is, they are always asking, "How can we attain a higher yield of our target product quicker, with less reagents, and with minimal environmental impact?" One possible solution can be found in running reactions in a confined environment. By restricting the reaction site, we not only can increase the selectivity of the product of the reaction, but also reduce the use of expensive, harsh chemical reagents. This concept is analogous to the site of enzymes in biological systems, where enzymes drive reactions by fixing substrates together and thereby reduce the activation energy for those reactions.

One type of confined environment that is currently being studied employs the use of a porous crystalline tube-like structure known as a macrocycle that is composed of identical monomers. The size of these macrocyclic monomers that compose the macrocycle can be adjusted, allowing for control of the overall size of the macrocycle. This in turn provides for a wide range of molecules to react within the macrocycle.



Benzophenone Macrocycle (BPMC)

### Thymine

- Structure is similar to 2-Cyclohexenone
- [2+2] photodimerization under UV irradiation
- Thymine photodimers cause kinks during DNA replication; can lead to melanoma

### Isomers

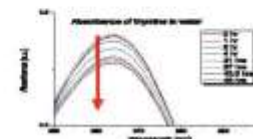
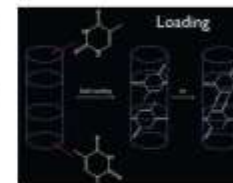
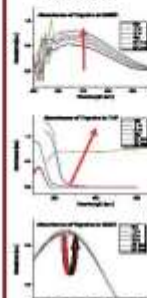


## Methodology

Testing for the best solvent for soak loading

In which solvent does thymine absorbance decrease?

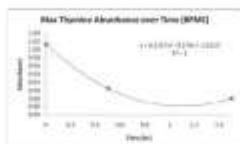
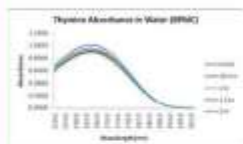
### Initial Studies



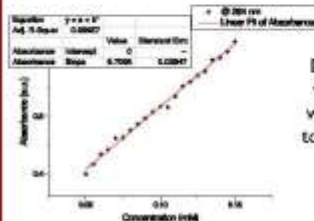
Water was found to be the best solvent candidate for soak loading.

## Data & Discussion

### Loading



### Analytical absorbance study



Decrease in absorbance was used in conjunction with Beer's Lambert plot to determine a host : guest ratio of 2.38:1

### Irradiation

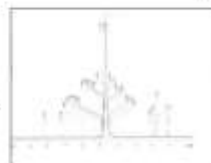


Thymine in D2O



Thymine Loaded in BPMC

### 1H-NMR Spectra



Extracted Thymine and Photoproducts after Irradiation

Preliminary results indicate two things. One, the guest molecule certainly loaded into the macrocycle. As is evident on the 1H-NMR spectrum, peaks for both thymine and the benzophenone macrocycle are present. The other finding is that irradiation of thymine in the host macrocycle produced peaks on the 1H-NMR spectrum different from that of just thymine. This indicates that irradiation inside the macrocycle produced some unspecified products. Future work on this study must consist of producing a more specific identification of the irradiated products of thymine inside of the macrocycle.

## References

1. Dewal, M. B.; Xu, Y.; Yang, J.; Mohammed, F.; Smith, M. D.; Shimizu, L. S. "Host-guesting the cavity of a porous material changes the photoactivity of included guests." *Chem Commun* **2008**, 3909-3911. Highlighted by Nature Chem, July 11, 2008. doi:10.1038/nchem.34
2. Yang, J.; Dewal, M. B.; Shimizu, L. S. "Self-assembling bi-axes macrocycles used as an organic zeolite for a highly stereoselective photodimerization of 2-cyclohexenone." *J Am Chem Soc* **2006**, 128(25), 8122-8123.
3. Origins of Selectivity for the [2+2] Cycloaddition of  $\alpha,\beta$ -unsaturated Ketones within a Porous Self-assembled Organic Framework  
Jun Yang, Mahender B. Dewal, Salvatore Profeta, Jr., Mark D. Smith, Youyong Li, and Linda S. Shimizu  
*Journal of the American Chemical Society* **2008** 130 (2), 612-621

## Acknowledgements



I would like to thank Dr. Linda Shimizu for the wonderful opportunity to conduct undergraduate research during the Summer of 2010. I would also like to thank the entire Shimizu Group for their complete support and hospitality during my time as an undergraduate researcher. Finally, I would like to give very special regards to my Graduate Mentor, Michael Geer, who guided me through every step of this fantastic journey.





# Non-traditional layout



## Title

Name, Department, University of South Carolina



### Problems, Issues & Plans



#### Purpose

This poster portrays the experience of the University of South Carolina from the decision of creating a journal of undergraduate research to the implementation. Each step will be discussed followed by lessons learned.

#### Why a Journal?

- Provide students multiple forums to showcase research (complements presentation opportunity through Discovery Day, university's research conference)
- Publication experience valuable to complete research process
- Publication in professional journals not available for all students
- Marketing tool to showcase student research

#### Why Now?

- Technology advanced, to meet the needs of publication for all disciplines
- Administrative support critical: support, staffing, and funds

#### Why On-line?

- Available for all disciplines
- Broader audience access: students, prospective students, potential partners/collaborators
- Reducing costs low
- Content refreshed regularly
- Dynamic interface

#### Why Caravel?

- Named after the type of ship used to explore Magellan
- "Magellan program" is the university's undergraduate research brand
- Research is about the journey not the destination

### Site Design and Development



The original two design bids for Caravel

#### Site Considerations and Needs

- Total costs: staff expense, IT resources
- Server accessibility (will the site be hosted on- or off-site)
- Content Management System (allows easy updating of website with minimal coding, eliminates need to contract with web developer)
- Platform responsive website (adjusts for desk laptop, tablet, phones)
- Article archiving (how often, search options, accessibility)
- Submission process and forms (on- or off-site)
- Journal from Caravel (themselves) on the homepage
- What information needs to be available and where

#### Site Development and Bid Process

- Evaluate timeline for completion
- Previous experience (review previous jobs/website for compatibility with journal needs)
- Company and contract cooperating bids for user interface
- Training of staff for site management
- Cost (\$14,500)
- Site: <http://caravel.usc.edu>



Final product: Custom screen capture, above, Caravel homepage. Below, is article page which includes the article title, a video of the author describing his work, an abstract, and the abstract itself (in this case a chart)



### Editorial and Submission Process



#### Submitter Guidelines

- Guidelines must be discipline appropriate
- All submissions include a written component, for art/music/media, format is an artist's statement or abstract providing context
- Student form addresses plagiarism, copyright, and compliance issues (names subjects and account used)
- Faculty require approval of submission
- "Paper" forms to be submitted by email
- Writing center consult encouraged

#### Faculty Editorial and Advisory Board

- Some board used to guide journal development and review submissions
- Faculty reviewers only
- Provide feedback on submission guidelines and site needs
- Meet journal to colleagues and students

#### Role of Editorial Board

- Review all submissions within discipline or area-discipline
- Identify and select invited reader (topic expert) for each submission ("See Lessons Learned")
- Provide publication recommendations in terms of timing and discipline representation
- Final decision for publication made by Vice President for Research

#### Review and Feedback Process

- Anonymous review
- Two reviewers: editorial board and topic expert
- Three options: Accept with minor changes, accept with major changes, or revise and resubmit
- No decline option as this is viewed as an educational experience
- All students receive feedback
- "Revise and resubmit" may include a requirement of additional research inquiry and a writing center consultation

#### Other

- Eligibility: Undergraduate and one-year post-graduate
- Research conducted by university's undergraduates or one location and with any number
- Copyright, not restrictive, submission may be published in other forums

### Moving Forward



#### Lessons Learned

- Editors submit recommendations for second reviewers to Managing Editor
- Editors submission is sent to second reviewer in timely manner
- Editors submission is not sent to student's mentor (may occur if receiving anonymously)
- Short review times (max two weeks) and timely follow-up needed to maintain editorial timeline (submissions does not equal finalities)

### Future Plans

- Student review board (graduate or undergraduates) may be added in future
- Submissions will move to webform / database rather than by email
- Will use short, early titles to capture a broader audience (marketing focus)

### Faculty and Student Quotes

Thank you so much for the good news you bring to (students), whose work it was my pleasure to approve. I also commend the University, yourself and all others who work on the journal for having launched such a great initiative and for contributing to the development of our students. -- Faculty member

Working with my partner and mentor on this paper has been incredibly beneficial for me academically in that it has given me a thorough understanding of how to construct a proper research paper and working well with others to finalize the project. This experience will help me reach my goal of going to graduate school. -- Student



# Non-traditional layout

## Dennis and Dennis Architects: Architecture and Culture in Macon, Georgia

Student Name [Redacted]

Art History, Sociology

### Introduction

I am investigating the cultural and architectural histories of six major buildings in downtown Macon, Georgia by the long-standing local firm of Dennis and Dennis. Though the firm produced many recognizable public and private buildings during their long career, no one has thoroughly examined the extent of their influence in Macon. Relying on a variety of primary sources, my project assesses both internal evaluations of the firm's work as well as the public perceptions of these buildings over time. In the course of my research the evolution of the firm throughout their work on these six buildings has aligned with and been a parallel to the city's own commercial growth. The products of this research combine architectural histories of each building with analysis of the unique cultural impact that the firm and their buildings have had on the city.

### Future Work

There is still so much more to be learned about the firm and I hope to have opportunities to continue this research. I want to have a more comprehensive idea of the scope of their work and the history of the firm itself, eventually attaining a better point of comparison for their work across the country and within the Middle Georgia area. As I prepare to begin graduate coursework for Historic Preservation, I hope to eventually foster a career of highlighting the great stories behind buildings such as those that so intricately shape communities.

### Resources

My research comes from the firm's private archives, the rooms of The Macon Telegraph, and the Historical Room at the Washington Memorial Library.



### Temple Beth Israel



#### Constructed:

- Construction completed in 1902
- Designed for the oldest Jewish congregation in the city

#### Style:

- Highly decorative portico, and a crowning cupola define the symmetrical facade
- Masonry and stucco composition
- White stucco composition, subtle plaques, and delicate stained glass line the street-facing elevations and create an elegant

#### Impact:

- Set on Cherry Street, it blends the residential area on one end with the civic sector on the other
- Its design and longevity have fostered the organization's community involvement and become a physical image of the historic congregation's legacy.



Architectural Drawing by P.E. Dennis



Shortly after Completion

### Centenary United Methodist Church



#### Constructed:

- Construction lasted from 1903 to 1913
- Commissioned by a small congregation that started as a Sunday school.

#### Style:

- Highly decorative classical details
- Richardson-Romanesque forms
- Characterized by dramatic tower
- Brick and plaster

#### Impact:

- Its placement on a major street, next door to Mercer University, and facing public square gave the church access to the community.
- From here they have established themselves within the downtown area, focusing on outreach and community engagement.
- They are still an active congregation in the area, persisting through various changes in their surroundings.



Centenary Shortly after Construction

### City Auditorium



#### Constructed:

- Construction from 1923 - 1928
- The decision making process took nearly ten years. This time was characterized by a great deal of indecision on the location, style and capacity.

#### Style:

- It is Monumental porticoed limestone structure
- 5th story atop an imposing pedestal
- Houses the largest copper dome in the world
- Neoclassical in design
- Entrances line each street elevation
- An outdoor stage projects from the Cherry Street elevation

#### Impact:

- The structure has been immensely successful as a locus of culture and civic gathering.
- It commands attention from all over downtown and binds its neighboring governmental, cultural, and commercial sectors.



City Auditorium's Original Section

### Macon City Hall



#### Constructed:

- Original City Hall constructed in 1833
- Dennis and Dennis renovations in 1935

#### Style:

- Neoclassical temple front projects from two side bays
- Masonry and stucco composition
- Very symmetrical, rational facade
- Little decoration
- Pilasters and laurel wreath motifs within the entablature break up the surface

#### Impact:

- Its regularity and explicit historic style convey its governmental function.
- Set in the same location for over a century, it has become an icon of the city.
- Cemented Dennis and Dennis's reputation for classical and civic designs



The Original City Hall Building



City Hall after Reconstruction

### Insurance Company of North America



#### Constructed:

- Completed in 1937

#### Style:

- Commissioned to look like Independence Hall
- Marble and brick, symmetrical structure
- Rich with symbolic details and design elements

#### Impact:

- The building sits atop Coleman Hill.
- It does not face the street, but rather looks over the entire city.
- It is an immediately recognizable icon in downtown Macon's landscape
- The building is now home to Mercer University's Law School



Macon Telegraph/Ad for INA Open House



Dennis and Dennis Architects for the State Capitol

### Post Office



#### Constructed:

- Construction completed in 1964

#### Style:

- Abstracted Neoclassical details characterize the impressive four-story facade
- Modeled after Elms Alexander's original design for Wesleyan College, which formerly stood on the property
- Designated by a squared cupola at its top
- Brick and Marble structure
- Functional post office needs grow out of the less formal rear

#### Impact:

- The building's referential design honors the city's history, while its Classical abstractions mark it as a modern regional business center.
- Dennis and Dennis proved their skill at infusing symbolism with their signature traditional language.
- The building's ideal location on College Street insures that it is still a busy center today.




Dennis and Dennis Architects for the Post Office



Alternative layout  
with top to bottom  
flow

## Rejuvenating Lime Production in Oman: *Resolving Current Challenges*



R. Al-Yahya<sup>1</sup>, F. Al-Jaid<sup>1</sup>, A. Al-Saki<sup>1</sup>, H. Al-Wahidi<sup>1</sup>, H. Dhabhani<sup>1</sup>,  
H. Al-Waadi<sup>1,2</sup>, S. Al-Tamaly<sup>1</sup>, A. Al-Lawati<sup>1</sup>, A. Al-Mutairi<sup>1</sup>, A. Al-Zoghbi<sup>1</sup>

<sup>1</sup>Department of Plant Production & Horticulture, Sultan Qaboos University,  
College of Agriculture and Forest Sciences, Al-Hayl, Zamil, Muscat, Oman  
<sup>2</sup>Faculty of Agriculture, University of Diyala, Iraq

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### Abstract

Production of lime (lime containing soil other related stress species in Oman have been significantly reduced in recent years. The reduction in yield has been attributed to a combination of abiotic and biotic factors that adversely affected tree growth and productivity. Loss of trees cultivated with lime trees was 90% of that in 1990 (Fig. 1), mainly due to Witches' Broom Disease of Lime (WBDL). The disease that may have originated in the Balkans has the potential to devastate lime production throughout the entire region of western Asia and North Africa thus affecting food security in Oman as well. In Oman, these problems have been worsened by increasingly stressful abiotic conditions caused by drought, salinity and soil acidity which ultimately led to the decline of lime production in the country (Fig. 2). The integrated adverse effects of biotic and abiotic stresses on tree lime have resulted loss of tree lime average yield productivity and without economic lime largely sustained farming systems. The sustainable tree lime production has eventually led to abandonment of many farms, to conversion of food farms to forage farms, or to complete change of the land use into other commercial projects. While the causal agent of WBDL, i.e. pathogen *Nectria haemata* has long been identified, practical solutions to the disease have not been tested and these challenges remain every year loss. Through national and international collaboration, methodological representation in the laboratory and field testing of efficient management strategies, this research will tackle various related aspects of WBDL in Oman. The researchers aim to eventually provide practical solutions to tree lime growers, thus enabling them to continue production from degraded trees while new, long-term solutions through resistant varieties are being gradually evaluated and introduced. The proposed project will address the phytopathological WBDL through molecularly identifying native stress species the influence on resistance, characterizing the interaction of WBDL with other stress factors, molecular breeding and hybridization of new *Citrus* varieties clones, establishment of field trials for evaluating hybridized and native varieties of *Citrus* productivity from study the use from alternative sources and testing and optimizing lime production through management of degraded trees.

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### Statement of the Problem

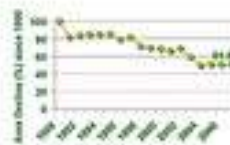



Fig. 1. Lime production (t/ha) from 1990 to 2008. The production of lime trees in Oman has declined significantly over the period.



10% loss in lime cultivated area & production





Fig. 2. Lime production (t/ha) from 1990 to 2008. The production of lime trees in Oman has declined significantly over the period.


---

### Methodological Approach




**Pathogen Isolation & Identification**

Isolation of *Nectria haemata* from infected trees and identification of the pathogen using molecular and morphological methods.




**Field Observations**

Observation of the disease in the field and collection of samples for laboratory analysis.



**Genetic Diversity**

Genetic diversity analysis of the studied trees using molecular markers.



**Methodological Approach**

The approach includes: Pathogen Isolation & Identification, Field Observations, Genetic Diversity, and Molecular Breeding & Hybridization.

**Molecular Breeding & Hybridization**

Development of new varieties using molecular breeding and hybridization techniques.

**Field Trials**

Evaluation of the performance of the developed varieties in the field under different conditions.

**Genetic Diversity**

Genetic diversity analysis of the studied trees using molecular markers.

SR/AGR/CRD/08/01

**University Day 2009**

**www.squ.edu.om**



# “Expected” layout for activities/experiences



## Title

**Student Name; Mentor Name**  
Department, University of South Carolina



### USC Connect

USC Connect is leading the transformation of students' educational experiences through a university-wide focus on integrating learning within and beyond the classroom. The ultimate goal of USC Connect is for students to be thoroughly and deeply prepared with core knowledge, developed skills, and the dispositions to contribute and lead in home, community, and work settings. USC Connect strives to enhance the learning of all students by promoting participation in beyond the classroom experiences, and creating opportunities for reflection on these experiences.

### Community Service

One thing about me that sets me apart from many others is the dedication I put into my service work here at Carolina. I currently serve as Executive Director of the Waverly Afterschool Program, President of Students for Big Brothers Big Sisters, President of the USC Chapter of No Kid Hungry, Vice President of Make a Wish Organization, Vice President of Community Service for USC Connect Student Representative Board, as well as a host of other organizations. Besides serving, I have also completed two service-learning components as well.

### Reflection

The unique thing that I really enjoy about USC Connect is that the five pathways to success are all different, but connect to each other. Being involved with Community Service is a pathway that can connect you with anything whether you are studying abroad, doing research, or taking part in an internship! USC Connect emphasizes that service is a great way for us to reflect on helping our local and global community & address many grass root problems that fall through the cracks because there are not enough people to help address them.

### In Class Experience

In my School's in Community (EDFN 300) class I have been able to learn what it means to be an educator. I have researched several different regions and learned how education looks differently where ever you go. Being able to take the information I have learned inside the classroom has created a gateway to what I participate in outside the class. Learning strategies such as how to tutor students makes a difference.

### Waverly Program

I take the most pride in the transformation the Waverly program has taken since I started to work with it. The 2012-2013 school year was the first year that I took over the program as Executive Director! I have been able to improve the program. We not only expanded our volunteer base, but we also expanded the program so that we could help even more students. This year, we partnered with St. Lawrence Place, a transitional shelter for single mothers, and brought the Waverly Program there so that their children could have access to the same resources as those who attend Melrose Park. Everyday I see significant similarities between what I have learned in my classes and the work that I do with Waverly. Being able to make a connection between the two helps a lot, especially since the work I do directly correlates to my future career plans. Waverly embodies what USC Connect stands for when it comes to outside experiences.

### Reflection



In my work with Waverly I am preparing myself to be an educator. My goals consist of expanding the program I have grown as well as working more on learning exactly what it means to be an educator.

### Community Service in Action



In my Service Learning in South Carolina class (Univ 201) we took an alternate spring break trip to Allendale, SC. In this photo I am working to restore an abandoned home so it can be turned into an educational facility for community members.

In my Speech 140, class I was taught the skills to communicate with any audience. In the photo to the right I am reading a book to a group of kindergarten students at an elementary school.



In the photo below I am tutoring a local high school student who participates in the Waverly Program.



### Contact Information

### Conclusion

When I created an e-portfolio I was able to look back at all the work and accomplishments I have participated in and reflect on those experiences. Creating an e-Portfolio not only helps me reflect on what I learned, but may also help me attract future employers.

### What I Learned?

I have learned the art of true reflection from working on this project. I was able to take one pathway from USC Connect—Community Service, and expand on the one aspect of how everything we do inside the classroom connects with what we do outside. I learned that you should always keep a journal of every organization and event that you take part in. It is important to record the purpose of the event and what you got out of it.

### Future Career

I have learned that everything I do helps prepare me for when I have my own class and am teaching. Working both at the Waverly center combined with my experiences inside the classroom helps to ensure that I have the proper tools needed to be a successful educator.

### Learning Never Stops

What I will take away from this experience is that learning never stops. As I learn within my classes, I am able to use that information in my community service position. As I work with students, I am constantly learning from: How a particular teaching style works; how to create lasting relationships with students, and how to appeal to their learning styles. I know that as I begin my career as an educator, I will repeat this cycle. I will reflect on my experiences I will be able to use what I learned to create a great learning environment.



# Alternative layout with top to bottom flow for activities/experiences

## Not Your Grandma's Knitting Circle: Fiber Arts In the New Millennium

Student Name

Department of Anthropology, University of South Carolina

### Hypothesis

Globalization has facilitated the renewed attention to handmade goods and, through the internet, assisted in the formation of collective groups. In today's global world fiber arts are being re-contextualized and reinstated in the lives of modern day women and men. This has brought about new movements in fiber arts to "DIY" or do-it-yourself.

### Introduction

The goal of this project was to explore the ways in which globalization and the internet relate to the formation and maintenance of do-it-yourself knitting groups. Part of my research documented the differences between the knitting cultures of Asheville, NC and New York City, NY. I also studied how these groups use social media and websites like Ravelry.com to communicate and enhance the group's experience both online and offline. I situated this project around the idea that creators organize themselves to counter the alienation of global capitalism.

### Motivation



I learned to knit at the age of ten and have been hooked ever since. My personal experience with knitting culture has led me to question what makes this particular type of collective so unique in the modern era. Seeing the ways in which the internet has become integral into my own knitting led me to examine the ways in which knitters, as a community, utilize the sources available on the web both for communicating and for furthering their craft.

### History of Knitting

- ◆ Anthropological data
- ◆ Islamic Egypt, 7<sup>th</sup>-9<sup>th</sup> century
- ◆ Moors of Spain
- ◆ Catholic knitting iconography, 14<sup>th</sup> century
- ◆ Invention of draw plate needles 1566
- ◆ Queen Elizabeth and machine knitting
- ◆ Revolutionary War: knitting as resistance
- ◆ The Industrial Revolution
- ◆ Victorian Steam Knitting
- ◆ Knitting for economy: WWI and WWII
- ◆ Post-war decline
- ◆ Yarn markets of the 60s
- ◆ Celebrity Knitting in the late 90s



### Knitting and the Internet

- ◆ Knitlist
- ◆ Knit.com message boards
- ◆ Blogs
- ◆ Blogging Communities
- ◆ YouTube knitting podcasts
- ◆ Marriage.com host knitting circles- online activity
- ◆ Ravelry.com as the central hub of online knitting
- ◆ Ravelry via Facebook
- ◆ Photography and knitting
- ◆ Pinterest.com
- ◆ Etsy.com

### Goals of Study

- ◆ To study knitting collections by participant observation.
- ◆ Use the internet to find and make contact with different types of knitting groups
- ◆ Interview with informants on the internet using social media like meetup.com and ravelry.com
- ◆ Observe the ways that relationships translate from online activities to real world friendships
- ◆ Document the ways that I use the internet during my research and participation in the knitting cultures of New York City, NY and Asheville, NC
- ◆ Study the different types of knitting groups including an all-male knitting group and a pizza and pants knitting collective
- ◆ Participate in knitting social events outside of the collective's regular meetings

### Asheville, NC

#### Knitting climate

- ◆ Southern mountain town
- ◆ Very cold in winter (high need for knitted garments)
- ◆ Lack of rain
- ◆ Age range of knitters: late 20s to late 60s
- ◆ Very large and helpful knitting shops
- ◆ Enthusiastic
- ◆ Local weavers
- ◆ Both small and large collectives

#### Groups Studied

- ◆ Pats All Men's Group
- ◆ Wednesday morning Sit in Kite
- ◆ Thursday Evening hot in Kite
- ◆ Pats and Pats



This path at the Wood in Park



- #### Events
- ◆ Spinning Wheel Class
  - ◆ Sit in Kite
  - ◆ Indie Craft Fair
  - ◆ South Eastern Animal and Fiber Fair



### Findings

- ◆ Instant connection of knitters
- ◆ Encouragement among knitters
- ◆ Knitting gives people a sense of accomplishment and satisfaction
- ◆ The life style of knitters influencing their desire to DIY everything
- ◆ Knitting is being used for politics, not just as a hobby art form
- ◆ There is a variety of websites utilized by knitters
- ◆ These websites are integrated into the collective's regular meetings
- ◆ Community building via communication
- ◆ Strength of online bonds
- ◆ Online relationships translating into long lasting friendships and yearly visits

### Methods

- ◆ Study of historical text
- ◆ Participant observation
- ◆ Focus knitting collectives through the internet
- ◆ Used key informants to conduct a chain referral sampling
- ◆ Conducted semi-structured interviews
- ◆ Treated the group meetings as open forums to collect data on the group's collective ideas

### Challenges

- ◆ Isolating the knitting groups found on the internet
- ◆ Observing the groups while participating in the conversation and knitting
- ◆ Negotiating the knitting culture of two different cities in a very short amount of time
- ◆ Time management
- ◆ Having enough detailed observation to extract strong and supported conclusions

### New York City, NY

#### Knitting climate

- ◆ International capital
- ◆ Cold winters (high need for knitted garments)
- ◆ Knitting as hip and fashionable
- ◆ Age range of knitters: early 20s to late 50s
- ◆ Small stores
- ◆ Few groups met at yarn stores
- ◆ Exclusive groups
- ◆ International yarn market capital
- ◆ Knitting on sidewalks

#### Groups Studied

- ◆ Craft night with Ale-We and co.
- ◆ Spin City
- ◆ NYC Pats and Pats



- #### Events
- ◆ Yarn Hop to the Hamptons
  - ◆ Visit to a farm farm
  - ◆ Interviews with the Editors of a knitting magazine, Vogue Knitting, Knit Society, NY Yarn Market News

### Conclusions

- ◆ People are empowered by knitting
- ◆ Knitting is being re-contextualized and reintroduced into the lives of modern men and women
- ◆ The knitting revolution is a reaction against globalization
- ◆ Knitting is being used for political and social dialogue
- ◆ Knitters of today are drawn to collective activity
- ◆ The internet has given knitters a choice in the ways knitters relate to one another

### Acknowledgment

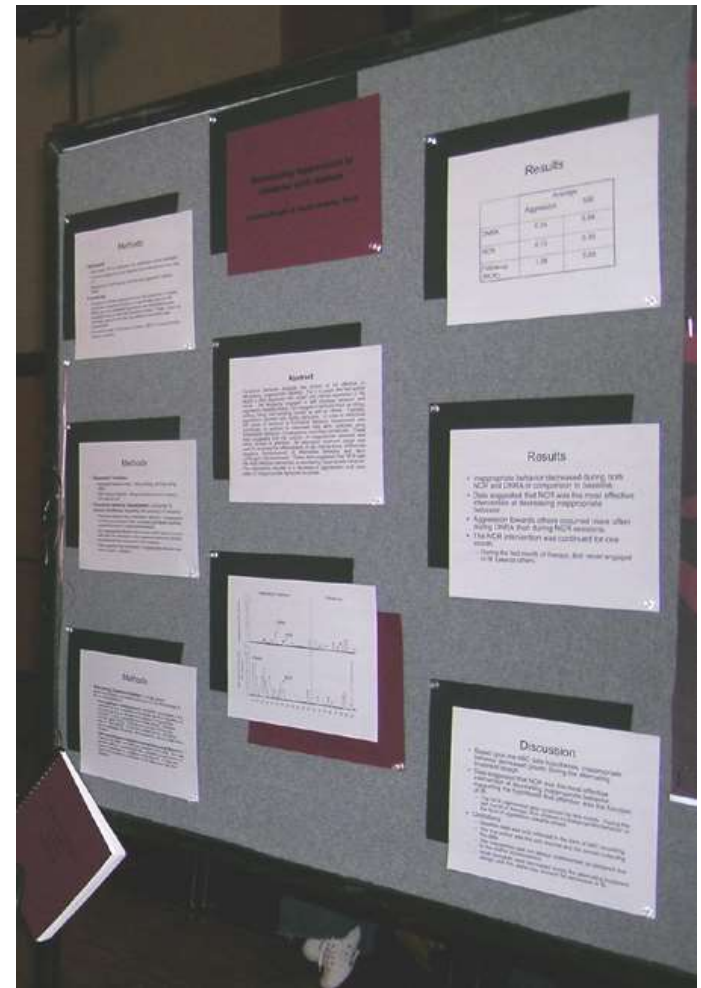
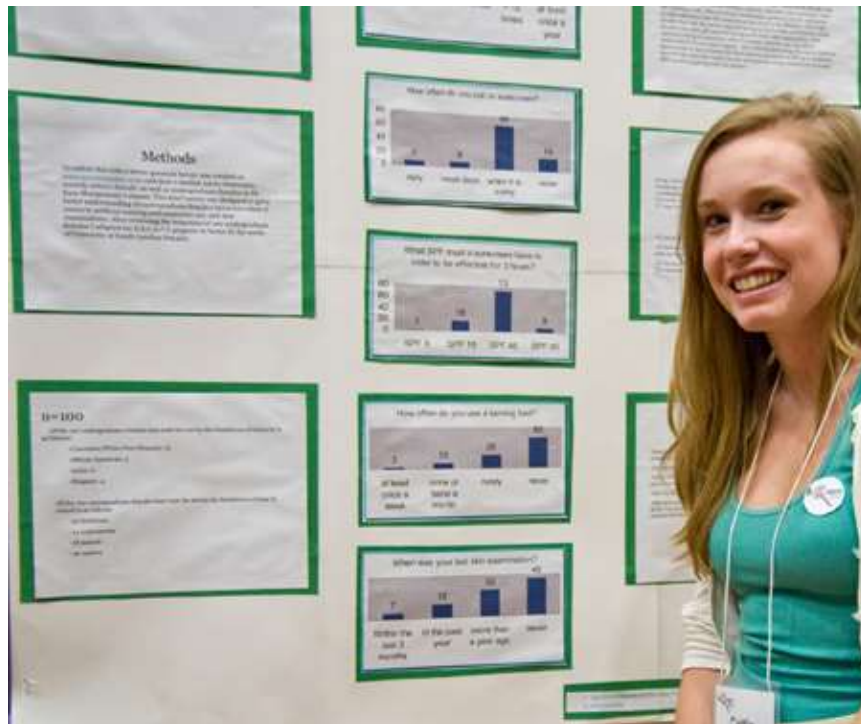
Dr. Barker  
Dr. Kingsolver  
University of South Carolina Magellan Scholarship and Magellan Mini-Grant  
Caroline Weaver





OPTION to avoid the cost of a full size poster print: Create individual “slides” of information in powerpoint using the traditional sections expected in a poster; print out each “slide” on standard 8.5”x11” paper; attach to display board in separate pieces

**\*\*MUST bring your own push pins or thumbtacks\*\***









- YES, you can have a laptop or display WITH your poster.
- Tables ONLY provided if requested with abstract submission.
- You may only use half of the table (the area below your poster).
- No electricity available.



# How To: Planning your poster



Planning:

#1

REMEMBER:

You are not in this alone –  
talk with your mentor!

**ASK for assistance!**



What do you want the audience to know when finished?

**Identify your message!**



What information is  
**CRITICAL** to understanding  
this message?

**Include ONLY message  
supporting information!**



Outline your message and supporting information

**The abstract is a good starting point**



# Planning: Outline Information

#4  
continued

## Possible questions/issues to consider in your outline:

- 1) Clarify your message
- 2) What activities or results support message
- 3) What information is needed to understand the results/experience and how you got to those results
- 4) Are there images that can help explain or support the message
- 5) Introduce or explain the activity to put it in context
- 6) Are there any future plans or next steps
- 7) Review “typical” sections ([Slide #10](#))

**Stay message focused!**



Map your outline into  
poster format on paper

**Review critically; focus on the message!**

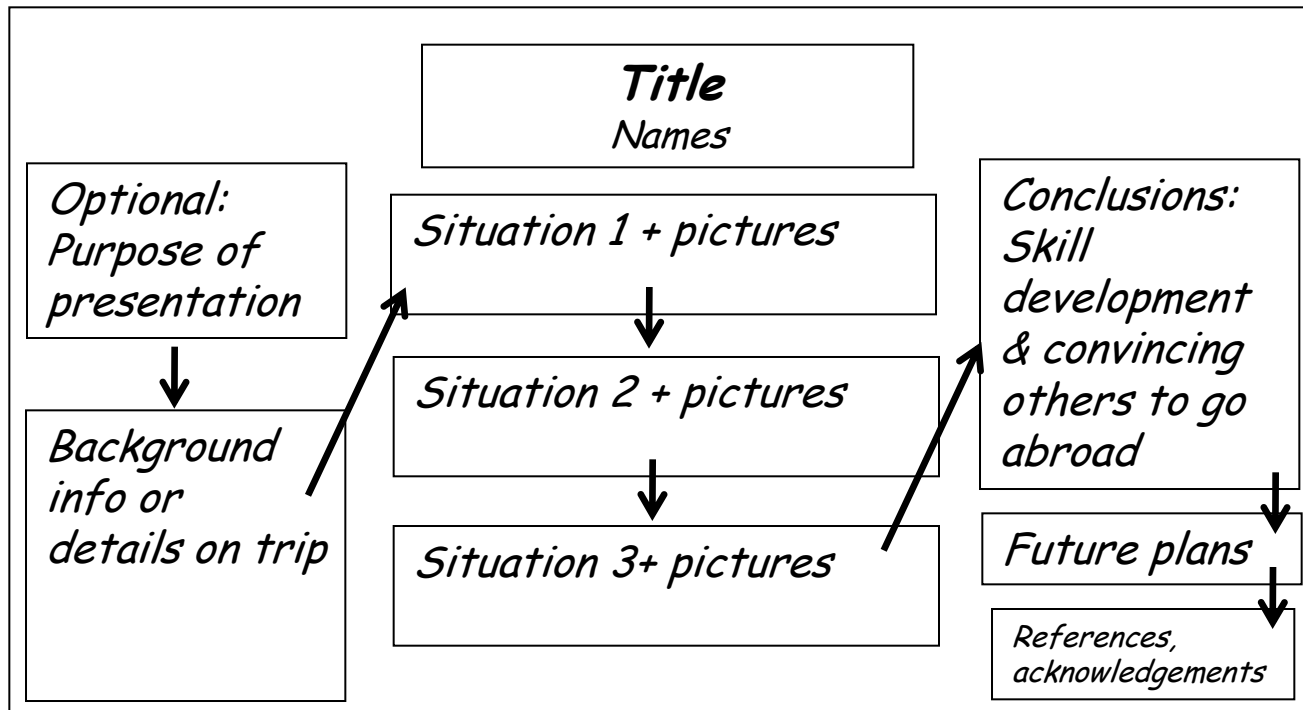




# Planning: Mapping Poster

## EXAMPLE

#5  
continued



**Review critically; focus on the message!**



# Planning: Resources

#6

- *Creating Effective Poster Presentations* by George Hess, Kathryn Tosney, Leon Liegel <http://www.ncsu.edu/project/posters/>
- *How to Write a Research Poster* by Lorrie Faith Cranor <http://xrds.acm.org/resources/how-to-write-research-poster.cfm>
- *Building Your Presentation Poster* by Dr. Linda Vick [http://www.npuphysics.org/resources/comp/building\\_your\\_poster.pdf](http://www.npuphysics.org/resources/comp/building_your_poster.pdf)
- *Poster Design Resources: Design & Presentation* by UNC Health Sciences Library [http://guides.lib.unc.edu/poster\\_design](http://guides.lib.unc.edu/poster_design)



# How To: Creating your poster



# PowerPoint Resources: Web links

*Poster-making 101* by Brian Pfohl and Greg Anderson, Bates College <http://abacus.bates.edu/~bpfohl/posters/>

*Designing Effective Posters* by UNC Health Sciences Library <http://guides.lib.unc.edu/posters>

*Creating a Poster in PowerPoint* by Eastern Michigan University <http://www.emich.edu/apc/guides/apcposterpowerpoint2010.pdf>

**Discovery Day Poster Size (MAX):  
48in (H) x 42in (W)**



# PowerPoint Resources: Video links

## YouTube videos: Creating posters in PowerPoint

### *Creating posters using PowerPoint 2010 (part 1 of 2)*

by University of North Carolina Chapel Hill Health Sciences Library tutorial

<https://www.youtube.com/watch?v=OxBQ1F4EMyE>

### *Creating posters using PowerPoint 2010 (part 2 of 2)*

by University of North Carolina Chapel Hill Health Sciences Library tutorial

<https://www.youtube.com/watch?x-yt-cl=85114404&v=4rekTy8iFbk&x-yt-ts=1422579428>

### *Making an academic research poster using Power Point*

by Jerry Overmyer (Mathematics and Science Teaching Institute (MAST), College of Natural and Health Sciences, University of Northern Colorado)

<http://www.youtube.com/watch?v=MqgjgwIXadA>

**Discovery Day Poster Size (MAX):  
48in (H) x 42in (W)**



# InDesign Resources: Video links

## Creating posters in InDesign

### *Create professional posters using Adobe InDesign*

by University of North Carolina Chapel Hill Health Sciences Library tutorial

<http://guides.lib.unc.edu/c.php?g=8592&p=44030>

**Discovery Day Poster Size (MAX):  
48in (H) x 42in (W)**



# How To:

## Details: Making it GREAT



# Guidelines: Color

Use color, photos, charts, and graphs to **support** your poster and message.

**Remember:** A little color goes a long way. Stick to two or three colors **for text.**





Title

Names, departments

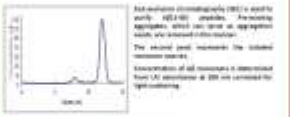
University of South Carolina, Columbia, SC



Abstract

Identification of amyloid plaques within the neuroendocrine... Abstract text describing the study's purpose and findings.

AB Monomer Purification



AB Fibril Preparation

Isolated recombinant AB1-42 was incubated with... Text describing the fibril preparation process.

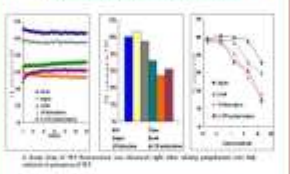
AB Fibril Measurement



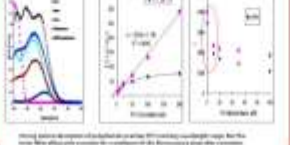
AB Fibril Disaggregation Assay

AB1-42 fibrils were incubated with... Text describing the disaggregation assay.

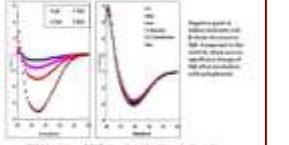
Results



Disaggregation is a function of fibril length effect



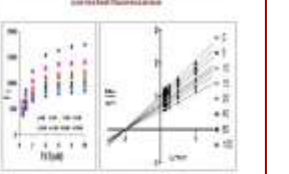
T22 spectra of T2E incubated with polyphenols



T2E imaging of T2E incubated with polyphenols



Discrete retention of protein of T2E concentrations under controlled fluorescence



Conclusions

1. Amyloid formation... 2. Polyphenols... Conclusions text.

Future Work

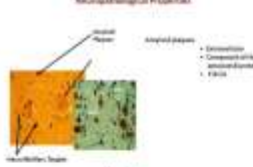
1. Investigate... 2. Investigate... Future work text.

Acknowledgements

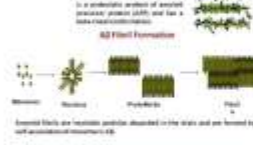
1. Dr. Michael... 2. Dr. Michael... Acknowledgements text.

Background and Significance

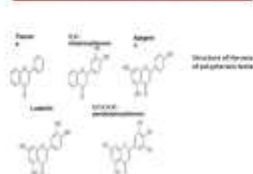
Neurobiological Perspective



AB Fibril Purification



Methodology



Impacting Communities, Changing Lives: Diabetes Education in Columbia, SC

Student name, Senior, Department of Anthropology
Free Clinic of Columbia, SC
Mentors: Names

Background

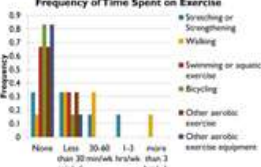
Diabetes is currently ranked 7th in terms of leading cause of death... Background text.

Results

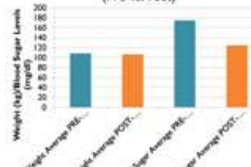
How Physical Health Was Affected

Table with columns: Blood Pressure, Blood Sugar, BMI. Rows: Blacks, Whites, Hispanics/Other, Normal Range.

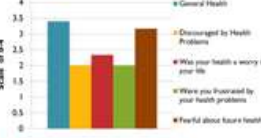
How Were Behaviors Affected?



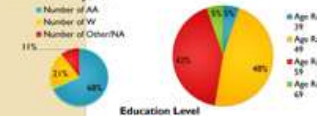
Weight and Blood Sugar Averages (Pre vs. Post)



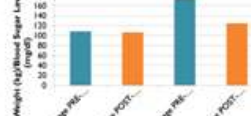
Assessment of Overall Health/Worry Levels



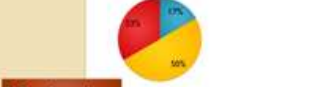
Ethnicity Breakdown for Participants



Age Distribution



Education Level



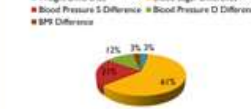
Methods

Acquiring Patient Information (Pre-meter levels): Before patients enter... Methods text.

BMI Difference



Differences in Wellness Markers



Conclusions

Based on our results, we can effectively see the need of this program... Conclusions text.

Acknowledgements

Special thanks to the Carolina Leadership Institute for the grant... Acknowledgements text.

GOOD:
1) use of color to highlight and separate sections;
2) uses color and pictures effectively in results;
BAD: text small



# Guidelines: Color

When choosing colors for your poster, err on the side of conservatism.

- Chartreuse and pink? **Not so much!**

Certain colors “vibrate” when side-by-side, making text difficult to read:

**Headache**

**Yikes**



# Impacts of sea-level rise on Seattle, WA

DANIEL MAHR • BROWN UNIVERSITY • GEO132 • DECEMBER 12, 2009

## Introduction

Among the many threats of global warming, one of the most immediately obvious is rising sea levels and their consequences. Understanding the impacts of rising sea levels is especially important since the threat is likely to be more acute in coastal regions. These regions include approximately 40% of the world's population and 60% of the world's economic activity.

**Research questions:**

- How much and at what points of land will be lost as sea levels rise?
- How will the overall demographics affect different sectors (e.g. residential, commercial, industrial)?

## Data

**LiDAR data:** Light Detection and Ranging technology is the most accurate method to create digital elevation models (DEM) and digital surface models (DSM). The data is collected from the aircraft using a laser and a sensor to measure the distance between the sensor and the ground.

**USGS elevation data:** The USGS provides elevation data for the entire United States. The data is collected from a variety of sources, including satellite altimetry and ground-based measurements.



**Sea level rise:** The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the Intergovernmental Panel on Climate Change (IPCC) scenarios.

**Population:** The population of Seattle is projected to increase from 650,000 in 2000 to 1,000,000 in 2050. The data is based on the US Census Bureau projections.

## Methods

**Sea level rise heights:**

- Three elevation data sets were used to determine the sea level rise heights. The data sets were: USGS elevation data, LiDAR elevation data, and LiDAR bathymetry data.
- The data sets were processed using ArcGIS software to determine the sea level rise heights.

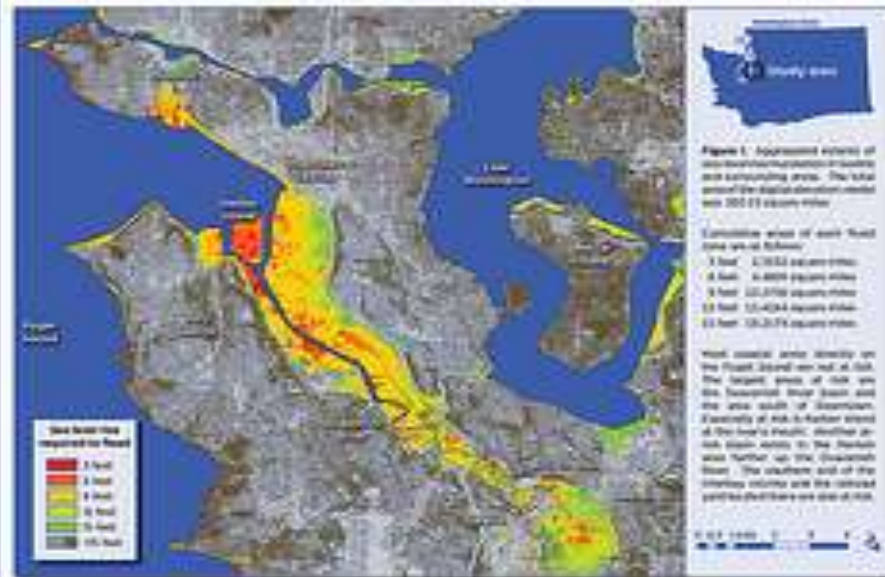
**Population mapping:**

- The population data was mapped using a digital elevation model (DEM).
- The data was processed using ArcGIS software to determine the population density.

**Scenario completion:**

- Commercial and residential areas were assumed to be protected.
- 70% of commercial areas and 50% of residential areas were assumed to be protected.
- Using a 100-year return period, the data was processed to determine the population density.
- Using a 100-year return period, the data was processed to determine the population density.

## Results

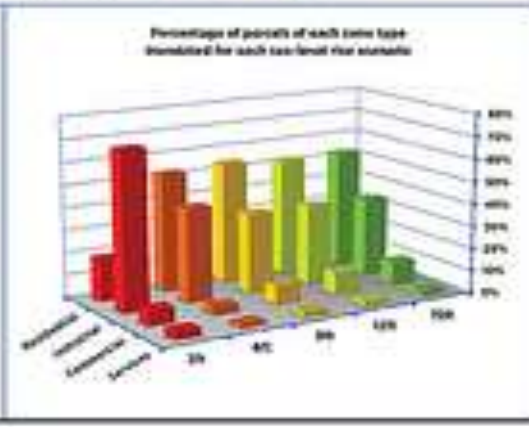


**Figure 2:** Sea level rise increases impact by parcel type. Each bar represents the percentage of parcels of that type that are at risk of being inundated by sea level rise. The data is based on the USGS elevation data and LiDAR bathymetry data.

**Percentage of parcels of each type inundated for each sea level rise scenario:**

| Sea Level Rise Scenario | Commercial | Industrial | Residential | Public | Other |
|-------------------------|------------|------------|-------------|--------|-------|
| 1 foot                  | 10%        | 15%        | 5%          | 10%    | 10%   |
| 2 feet                  | 20%        | 30%        | 10%         | 20%    | 20%   |
| 3 feet                  | 30%        | 45%        | 20%         | 30%    | 30%   |
| 4 feet                  | 40%        | 60%        | 35%         | 40%    | 40%   |
| 5 feet                  | 50%        | 75%        | 50%         | 50%    | 50%   |
| 6 feet                  | 60%        | 85%        | 65%         | 60%    | 60%   |

**Parcel categories:** Commercial, Industrial, Residential, Public, Other.



## Discussion

**Sea level rise extent:**

The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the IPCC scenarios. The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the IPCC scenarios.

**Population mapping:**

The population data was mapped using a digital elevation model (DEM). The data was processed using ArcGIS software to determine the population density. The data is based on the US Census Bureau projections.

**Scenario completion:**

Commercial and residential areas were assumed to be protected. 70% of commercial areas and 50% of residential areas were assumed to be protected. Using a 100-year return period, the data was processed to determine the population density. Using a 100-year return period, the data was processed to determine the population density.

## Conclusions

**Summary of findings:** The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the IPCC scenarios. The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the IPCC scenarios.

**Implications:** The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the IPCC scenarios. The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the IPCC scenarios.

**Recommendations:** The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the IPCC scenarios. The sea level rise is projected to be between 1 and 6 feet by the year 2100. The data is based on the IPCC scenarios.

## Acknowledgements

**Work and Support:**

John Carlson - Brown University GIS System Manager  
 Tom O'Brien - Brown University School of Engineering  
 USGS Elevation - Light Detection and Ranging  
 USGS Bathymetry - Light Detection and Ranging  
 USGS Elevation - Light Detection and Ranging  
 USGS Bathymetry - Light Detection and Ranging  
 USGS Elevation - Light Detection and Ranging  
 USGS Bathymetry - Light Detection and Ranging

GOOD: 1) use of color and contrast; 2) sections highlighted and separated for emphasis; 3) good focus on data/results; BAD: too much text



# Guidelines: Color

## Color can be used to accentuate, separate, and/or highlight information

**Title**  
Name, Department, University of South Carolina




**Problems, Issues & Plans**



**Why a Journal?**

- Provide students insight (avenue to discuss research, assignments, presentation, opportunity through Discovery Day, university's research, curriculum)
- Publication experience valuable to learning the research process
- Publication in professional journals not available for all students
- Marketing tool to discuss student research

**Why Now?**

- Technology advanced beyond the reach of publication for all disciplines
- Administration support critical (logistics, editing, and funds)

**Process**

The entire process the responsibility of the University of South Carolina from the decision of creating a journal of undergraduate research to the implementation. Each step will be discussed followed by lessons learned.

**Why On-line?**

- Available for all disciplines
- Broader audience (parents, students, prospective students, potential partners, collaborators)
- Recurring costs low
- Content not subject to copyright
- Distance friendly

**Site Design and Development**



**Site Considerations and Needs**

- True ownership, staff, expertise, IT resources
- Remote accessibility (with the ability to be located on cell sites)
- Content Management System (allows easy updating of website with minimal training, eliminates annual contract with web developers)
- Platform responsive website (adjusts for both laptop, tablet, phone)
- Flexible enabling (flexible offers, search options, accessibility)
- Submission process and flow (reduce errors)
- Central focus (article submission) on the homepage
- What information needs to be available and where

**Site Development and Roll Process**

- Emphasize flexible incorporation
- Previous experience (content, graphics, job, website for compatibility with journal needs)
- Computer and content supporting both for ease transfer
- Training of staff for site management
- Cost (\$21,000)
- New site (opened as site)

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**Editorial and Submission Process**



**Submission Guidelines**

- Guidelines used by discipline appropriate
- All submissions include online component, for on-line reader (focus is on site's submission or abstract providing content)
- Student from discipline appropriate, original, well-organized, focus (focus, relevance and critical text)
- Faculty member approval of submission
- "Paper" focus to be submitted by email
- Writing center consult encouraged

**Faculty Editorial and Advisory Board**

- Have board meet to guide journal development and review submissions
- Faculty members edit
- Provide feedback to submission professors and site needs
- Market journal to colleagues and students

**Editorial and Submission Process**



**Submission Guidelines**

- Guidelines used by discipline appropriate
- All submissions include online component, for on-line reader (focus is on site's submission or abstract providing content)
- Student from discipline appropriate, original, well-organized, focus (focus, relevance and critical text)
- Faculty member approval of submission
- "Paper" focus to be submitted by email
- Writing center consult encouraged

**Faculty Editorial and Advisory Board**

- Have board meet to guide journal development and review submissions
- Faculty members edit
- Provide feedback to submission professors and site needs
- Market journal to colleagues and students

**Review and Feedback Process**

- Anonymous review
- Two reviews, editorial board and logic output
- Three options: Accept with minor changes, accept with major changes, or review and resubmit
- No double-blind review (this is viewed as an editorial responsibility)
- All students receive feedback
- "Review and resubmit" may include a requirement of additional research input and writing center consultation

**Other**

- Eligibility: Undergraduate and one-year post-graduate
- Research conducted by university's undergraduate or one-year graduate with one review
- Copyright: Not exclusive, submission may be published in other formats

**Moving Forward**



**Lessons Learned**

- Editors without recommendations for second reviewers to Managing Editor
- Editors' submissions to not be second reviews in clearly marked
- Editors' submissions to not send to student's contact email if receiving recommendations
- Submission form (two weeks) and ready, follow up needed to maintain editorial board involvement (don't get equal feedback)

**Future Plans**

- Undergraduate board/production or underdevelopment for additional focus
- Submissions will move to mobile - tablet when time fits
- Will not start, ready will to engage a broader audience (marketing focus)

**Faculty and Student Quotes**

Thank you so much for the great work you bring to (journal), when work it was my pleasure to organize. I also wanted the University journal and all others who work on the ground for having benefited such a great initiative and for contributing to the development of our students. - Faculty member

Working with my partner and mentor on this page has been extremely beneficial for our understanding of how to construct a proper research paper, and working well with others to further the project. This experience will help me reach my goal of going to graduate school. - Student

The site design and editorial and submission process occurred concurrently for Caravel. It is important to evaluate where and when energy should occur.



# Guidelines: Color

Avoid  
background  
pictures!



Title  
Names, departments

**Introduction**

Recent studies have demonstrated the potential use of carbon nanotubes as a programmable platform for organic chemical reactions effectively providing a basis for which to screen numerous products of chemical synthesis.

**Abstract**

Abstract text describing the research objectives and findings.

**CPM**

CPM (Carbon Programmable Material) is a 2D molecular structure, based on carbon nanotubes, which can be used for the synthesis of various organic molecules.

**Figure 1**

**Figure 2**

**Figure 3**

**Figure 4**

**Conclusion**

The results of this study demonstrate the potential use of carbon nanotubes as a programmable platform for organic chemical reactions. The CPM structure provides a basis for which to screen numerous products of chemical synthesis.

Background overwhelming text; text too small



# Title

Names, departments

## Introduction

Play behavior in juvenile rats is important for the recognition of social cues and behaviors in adulthood. One of the biggest indicators of play in juveniles is pinning (Panksepp & Beatty 1980), which is when one play partner is laying dorsal-side down with another partner laying on top (Vanderschuren et al 1997). Pins are usually preceded by contact with the dorsal area of the pinned rat.

In the past, play has been shown to be affected in models of Fetal Alcohol Syndrome (FAS) (Meyer & Riley 1986). While FAS models show that alcohol affects both duration and rate of social behavior (Kelly et al 2000), relatively little research has been done on play.

Siviy & Panksepp (1987) found that juvenile rats with their dorsal body surface anesthetized show a concentration-dependent reduction in play behavior. The current experiment uses an FAS model to analyze the effect of alcohol exposure on play behavior in rats with varying degrees of sensory impairment induced by local anesthetic.

## Treatment

Prenatal and postnatal alcohol exposure administration was done via intragastric intubation (see table below).

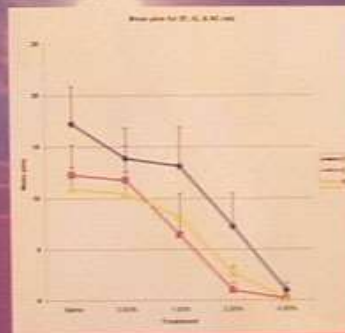
| Group                    | Treatment of Dams (G01-Birth)  | Treatment of Pups (PD2-PD16)   |
|--------------------------|--|--|
| Ethanol Exposed (E1)     | Dams received 2% ethanol solution with 2% glucose in distilled water.            | Pup dams received 2% ethanol solution with 2% glucose in distilled water with 2% glucose in distilled water. |
| Intact Controls (IC)     | Dams were treated with a 2% ethanol solution with 2% glucose in distilled water. | Pup dams were treated with a 2% ethanol solution with 2% glucose in distilled water.                         |
| Nonexposed Controls (NC) | Dams were treated with 2% glucose in distilled water.                            | Pup dams were treated with 2% glucose in distilled water.  |

## Procedure

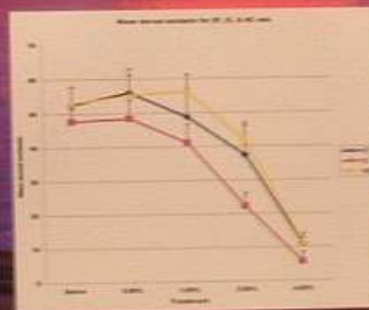
Two males and two females were used from each litter. Rats were weaned at postnatal day (PD) 21 and housed separately at PD 27. On PD 32 to 34, rats were habituated for five minutes to play in an isolated area. On PD 35, rat pairs began testing. Five doses of xylocaine, a local anesthetic, were used: 0.00%, 0.50%, 1.00%, 2.00% and 4.00%. .2 ml were administered dorsally in four places: behind each ear, and laterally at each side above the ribcage. The treatments were administered in randomized fashion over five days of testing.

## Results

The amount of mean pins for each xylocaine treatment in the ET group was significantly more than the IC or NC groups, except for 0.50% & 4.00%. These data are collapsed across sex.



The mean dorsal contacts for each group followed the general pattern of peaking at 0.50% and decreasing except for NCs, who peaked at 1.00%. These data are collapsed across sex.



## Conclusions & Future Directions

The data at this point suggest that the effect of xylocaine treatment did not interact with group. This suggests that the change in play behavior seen here in ethanol-exposed rats is not a function of somatosensory processing changes, and instead must be a function of some other aspect of the social behavior system.

The heightened number of pins in the ET group suggests that either the ethanol-exposed rats are more motivated to engage in play behavior, are more sensitive to play initiation by another animal, or are more likely to exhibit play responses. The lack of differences in dorsal contacts across groups suggests that there are no differences in play responses and the lack of interaction between group and xylocaine dose suggests no differences in sensory sensitivity to play initiation. Therefore, it may be that motivation to play is altered in alcohol-exposed animals. This suggests that alcohol exposure may be altering social motivation during the juvenile period. FAS is known to increase the likelihood of impulsive, and subsequently delinquent, behavior, at least in males (Tremblay et al 1994), and this may be due to changes in motivation.

## References

Beatty, J. J., Siviy, R. B., Panksepp, J. P. (1987) Anesthetized and non-anesthetized adult rats exhibit different patterns of social behavior. *Behavioral and Brain Sciences*, 10, 343-350.

Beatty, J. J., and Siviy, R. B. (1987) Social behavior and play in the rat. *Behavioral and Brain Sciences*, 10, 343-350.

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Beatty, J. J., Siviy, R. B., Panksepp, J. P. (1987) Anesthetized and non-anesthetized adult rats exhibit different patterns of social behavior. *Behavioral and Brain Sciences*, 10, 343-350.

Background overwhelming & inconsistent with message; too much text and too small



# Guidelines: Text

## Break text into easy-to-read chunks:

- Use paragraphs sparingly
- Use lists/bullets
- Use audience appropriate language
- Use distinctive section headers
  - Emphasize with text size, color, or font





## Introduction

### Wireless Networks

- Wireless networks are expected to be available and reliable at all times and all locations.
- Environmental conditions like walk, weather, and large crowds cause problems

### Smartphones

- Smartphones have a variety of sensors built into them that can gather information about the surrounding environment.
- These sensors include accelerometers, compasses, light detectors, and proximity detectors.
- They also have wifi radios and GPS

### Goals

- This project aimed to use the readings from the sensors to detect situations that will cause reduced signal strength
- It may be possible to predict when the user is going to have poor reception so the phone can plan accordingly

### Other Work

- A number of other projects are underway that also make use of the sensors available on smartphones
- Mobile Assistant for Inattentive Drivers (MAID)
- Increasing the reliability of natural interaction systems such as Microsoft's Kinect

## Methods

### Android App

- An app was developed for Android phones that would automatically collect data every 15 minutes
- This interval was chosen to balance frequency of collection with battery life
- The app was allowed to run constantly on the user's phone to collect data in real world situations
- The app uploaded data after each collection to a MySQL database

### Data Collected

- Data collected included: time, proximity, battery level, location, cellular signal strength, and wifi signal strength
- The data were downloaded from the database into an Excel spreadsheet
- The correlation function in Excel was used to determine if acceleration, magnetic field, proximity, battery charge, or light appeared to have an influence on cellular and wifi signal strengths
- The data points corresponding to wifi signal strength were plotted on a map and color coded to indicate the signal strength of the University wireless network, "occident" at that location.

## Results and Discussion

### Accelerometer

- Cellular Strength: 0.146
- Wifi Strength: 0.009
- These low correlation values indicate the absence of a relationship between acceleration and both cellular and wifi signal strengths

### Magnetic Field

- Cellular Strength: -0.123
- Wifi Strength: -0.002
- These correlation values were even smaller than the ones for acceleration, so there is again little evidence to suggest a relationship between magnetic field and the signal strengths

### Proximity

- Cellular Strength: -0.302
- Wifi Strength: -0.289
- These values are much stronger than the previous two and are the strongest observed.
- There is a possibility of a slight negative correlation.
- The relatively strong correlation could also be explained by the phone being in a pocket versus in the open

### Battery Charge

- Cellular Strength: -0.291
- Wifi Strength: -0.195
- These values are weaker than the proximity values and slightly negative
- There may be a negative correlation between battery charge and the signal strengths

### Light

- Cellular Strength: 0.205
- Wifi Strength: 0.017
- These values were opposite the proximity values and much weaker
- This difference supports the possibility of being in the pocket reducing signal strength and being in the open increasing it

### Figure 1: Wifi Map

- The map reveals the clustering of the data points
- As the project continues, a more even distribution of data points will be collected
- Wifi signal strength appears to be stronger inside than outside



Arena for Research on Emerging Networks and Applications

## Wifi Map



Figure 1: Map of Wifi Signal Strength

## Ongoing and Future Work

### Signal Correlations with Other Sensors

- Use newer sensors such as gyroscopes, barometers, and thermometers
- Collect data in diverse scenarios using multiple phones

### Mobile Assistant for Inattentive Drivers (MAID)

- Link the phone to the car's diagnostics port to get real-time data from the car's sensors
- Identify the fingerprint for each event and create the abstract sensor modules
  - Reckless: detect reckless driving
  - Speed: detect when the driver is going too fast
  - Turn signal: detect if the driver properly signaled before turning
  - Stop: detect if the driver obeyed a stop sign
  - Lost: detect when the driver appears to be lost
  - Yield: detect if the driver properly yielded at a yield sign
  - Clog: detect if the driver is causing traffic to back up behind him
  - Drunk: detect drunken driving
  - Lane Change: detect lane changes
- Identify additional situations that might be detectable using the phone's sensors

### Enhancing Kinect with Smartphones

- Wii uses accelerometer and gyroscope to detect motion
- Kinect uses video and depth cameras to detect motion
- Combine the two methods together to make a more robust system
  - Use the phone in the pocket in place of the Wii remote
    - Use its accelerometer/gyroscope sensors to track Kinect
  - Allow players Kinect cannot see to interact with the system
  - Help the system identify players from a crowd

Good use of color and contrast; sections highlighted and separated for emphasis; bulleted lists easier to read



# Guidelines: Text

Use an easy-to-read font for all text at a minimum size of 24pt.

Avoid ALL-CAPS for extended blocks of text, as they are **HARD TO READ**.



# Guidelines: Text

Studies show that serifed fonts are easiest to read for long blocks of text.

Limit yourself to two fonts – generally one serifed and one non-serifed.



# Guidelines: Text

Use “standard” fonts, such as:

## Serif:

- Times New Roman
- Garamond
- Georgia

## Sans Serif:

- Arial
- Calibri
- Verdana

## Symbols, math:

Use only the most basic symbols needed



# Guidelines: Text

Using “standard” fonts limits printing concerns

Unknown fonts might be changed during the printing process, resulting in changes to your design and layout

*To avoid font substitution, see “how to” docs for embedding fonts prior to printing*



# Guidelines: Text

## Suggested font sizes:

- **Title** - sans serif, Title Case, 90-120pts
- **Sub Titles** (names, etc) - sans serif, 72 pts
- **Section Titles** - sans serif, 45 pts
- **Main Text** - serif font, minimum 24pts  
(bigger is better!)



# Guidelines: Images

Pictures, graphs, etc = **GOOD!**

Clip art = **BAD!!!!**

If your work depends on illustrations but you can't draw to save your life, make friends with someone who can or do without.



# Guidelines: Images

- Check the quality of your image, picture, graph, etc. **BEFORE** printing (check it at 100% size – find this under “View” in PowerPoint)
- Avoid pixilated pictures and graphs!





# Guidelines: Images

Don't use images you find on the internet for your poster unless you know:

1. The images are not copyrighted
2. The images are large enough to print well on your poster



**Simplify!**



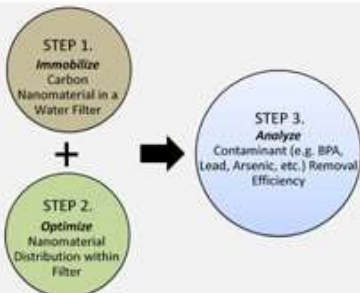
Excellent example of image use and extremely limited text

### Motivation:

- World-wide potable water crisis needs affordable treatment technologies
- Nanomaterials have promising capabilities (sorption/filtration)
- Lack of strategy for useful application



### Objectives:



### Results:

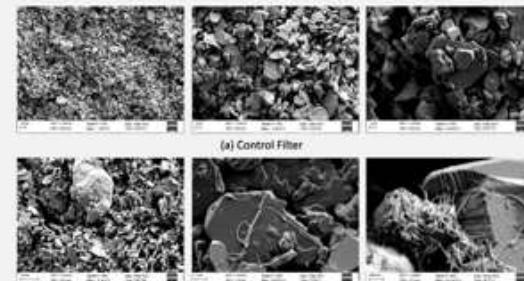
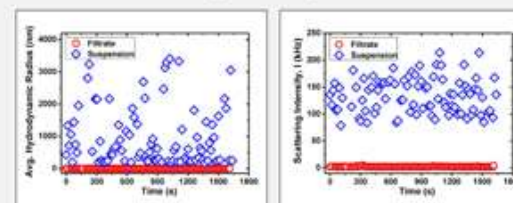


Figure 1: SEM Images

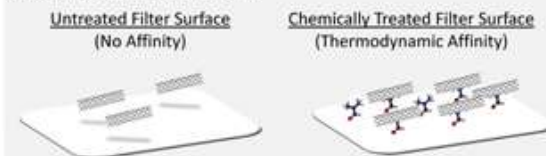


### Materials:

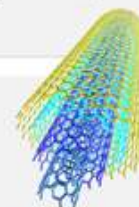
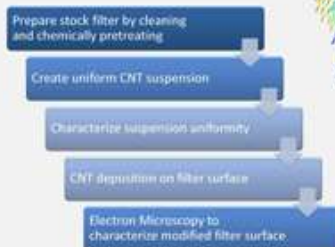
- Carbon Nanotubes (CNTs)
- Organic Solvent: N,N-Dimethylformamide
- Commercial Water Filter



### Underlying Mechanism:



### Methods:



### Conclusions:

- CNTs can be deposited on functionalized surfaces
- The attachment is irreversible thus results in immobilized CNT coated surfaces





## Question everything!

- Does it support the message
- Is the language understandable
- Is it too wordy
- Is it too busy



# How To: Viewing and Editing



# Viewing and Editing

Throughout the process, view layout and contents at **full size** and **overall**!

In PowerPoint:

- To view full size: View-Zoom-100%
- To view overall: View – “fit-to-window”



# Viewing and Editing

## Share drafts with mentor and peers:

- HONEST opinions
- Editing assistance (grammar, spelling, language usage, layout, aesthetics, etc)

### In PowerPoint:

- Email PowerPoint file
- Convert to PDF (Office button-Save As-PDF)
- Print on 8.5x11 paper (Office button-Print-check box: Scale to fit paper-preview to confirm-Print)



# Viewing and Editing

## Full size editing:

If possible, it's a great idea to print out a full size draft for editing

HOW: (tips under "how to": <http://www.sc.edu/our/discovery.shtml>)

- Printers
- Adobe Acrobat
- Publisher
- Excel
- Other?





# Formatting and Printing (1 of 2)

Poster size (MAX) 48in H x 42in W (not a typo!)

*Contact the printer BEFORE to confirm printing requirements, issues, etc*

Where to print - Columbia:

- USC printing (COUPON!) <http://printing.sc.edu/>
- CAS – Gambrell Hall <http://artsandsciences.sc.edu/technology/computingcenter>
- Marine Science – ask in department
- Engineering and Computing? Ask student services or the computing center
- Honors fellowship recipient? Contact Susan Alexander
- School of Medicine <http://dba.med.sc.edu/price/irf/PosterP.htm>
- FedEx - \$\$



# Formatting and Printing (2 of 2)

## Where to print - Aiken: (3 options, ask mentor)

- Biology/Geology department: Students mentored by Bio/Geo faculty print for free, others \$25 per poster
- Instructional Services department: \$35/poster
- USCA Operations: \$25/poster

## Where to print - Upstate:

- Contact Adrian Hayes (AHAYES@USCUPSTATE.EDU) for options

## Where to print – All Campuses:

- USC printing (COUPON!) <http://printing.sc.edu/>



# Remember:

## A successful poster...

- conveys a **clear message**,
- by **high-impact** visual information,
- with **minimum** text

...grabs attention!



UNIVERSITY OF SOUTH CAROLINA

# How To: Presenting



## The TALK

- Prepare a 30sec, 2min, and 5min overview of your project/activity
- Possible topics (think message and outline):
  - the context of your problem/experience and why it is important (Introduction/Background)
  - your objective and what you did
  - what you discovered or results
  - what the answer means in terms of the context or the impact

**Spread the message!**



## Consider Audience

- Be prepared to talk with experts and non-experts
- Know definitions
- Critically review your poster and talk for potential questions
- Don't be scared of "I don't know," "I hadn't thought of that," and "Great idea!"

**Don't assume knowledge!**



## Engage the viewer

- Invite the viewer to ask questions or offer to “walk them through it”
- Use the poster as a visual aid to emphasize points and share information (point to things)
- Don’t stand in front of your poster (can move in while pointing to things)

**Be welcoming!**



## Attitude

- If you are bored – your audience will be bored!
- Show your enthusiasm for your topic

**Share your passion!**





## Appearance

- Don't distract the audience with your own appearance
- Be neatly neutral OR complement colors
- Business casual (suits not required)
- Sensible shoes (remember standing!)

**Don't clash!**



# Presentation Resources

- **Creating Effective Poster Presentations: Present Your Poster** by George Hess, Kathryn Tosney, Leon Liegel  
<http://www.ncsu.edu/project/posters/PresentPoster.html>  
**In video form** (this is great, but a little long):  
<https://www.youtube.com/watch?v=vMSaFUrk-FA>
- **A Guide to Presenting a Poster** by the Cain Project in Engineering and Professional Communication  
<http://www.owlnet.rice.edu/~cainproj/presenting.html>



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# DISCOVERY DAY

...a forum for  
student ingenuity!