UNIVERSITY OF SOUTH CAROLINA
Office of Research

Summer Research Symposium Details and Effective Poster Presentations

Dr. Lauren Clark

Director, Office of Undergraduate Research

Symposium

Thursday, July 27, 2023

10:00 – 11:30 pm Morning Session

1:00 – 2:30 pm Afternoon Session

Please arrive half an hour before your session to check in and set up your poster.

Hollings Program Room, Thomas Cooper Library

Light refreshments will be provided

Registration

Symposium Details

- Nametags at registration table
- 2 posters per side of display board
- Ideal poster dimensions:

  48 in. high x 42 in. wide

- 4 t-pins provided to hang
  - Angle pins down NOT straight through

Poster Details

- 2 posters per side of display board

- Posters sub-divided by research program
- You will be notified of morning or afternoon session once the program is finalized.
- Program with poster numbers will be posted online about one week before the symposium.

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Introduction
Results
Dominique Davis
Impact Energy (Joules)
Area (mm²)
Acknowledgements

A successful poster…

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

A great poster is…

- **Readable** – use clear language and correct 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

Poster Content – What do I include?

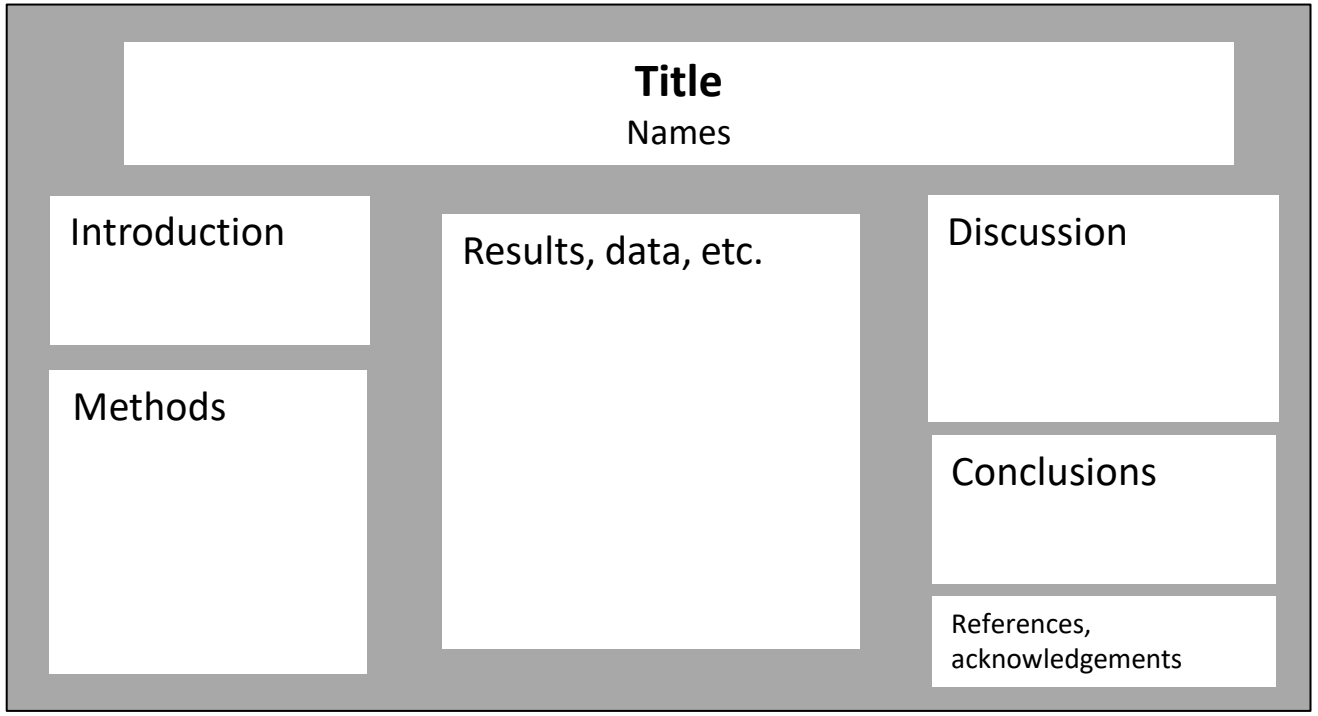
- Abstract (ask your mentor if this should be included)
- Introduction / Background (what is the context for your work)
- Hypothesis / Research Question
- Methods (What did you do)
- Results (What did you find)
- Discussion (what do your results mean – intrepret the data)
- Conclusions (What you learned)
- Future plans or next steps
- References (Works cited)
- Acknowledgements

Overview: Layout

People take in information according to a known spatial sequence.

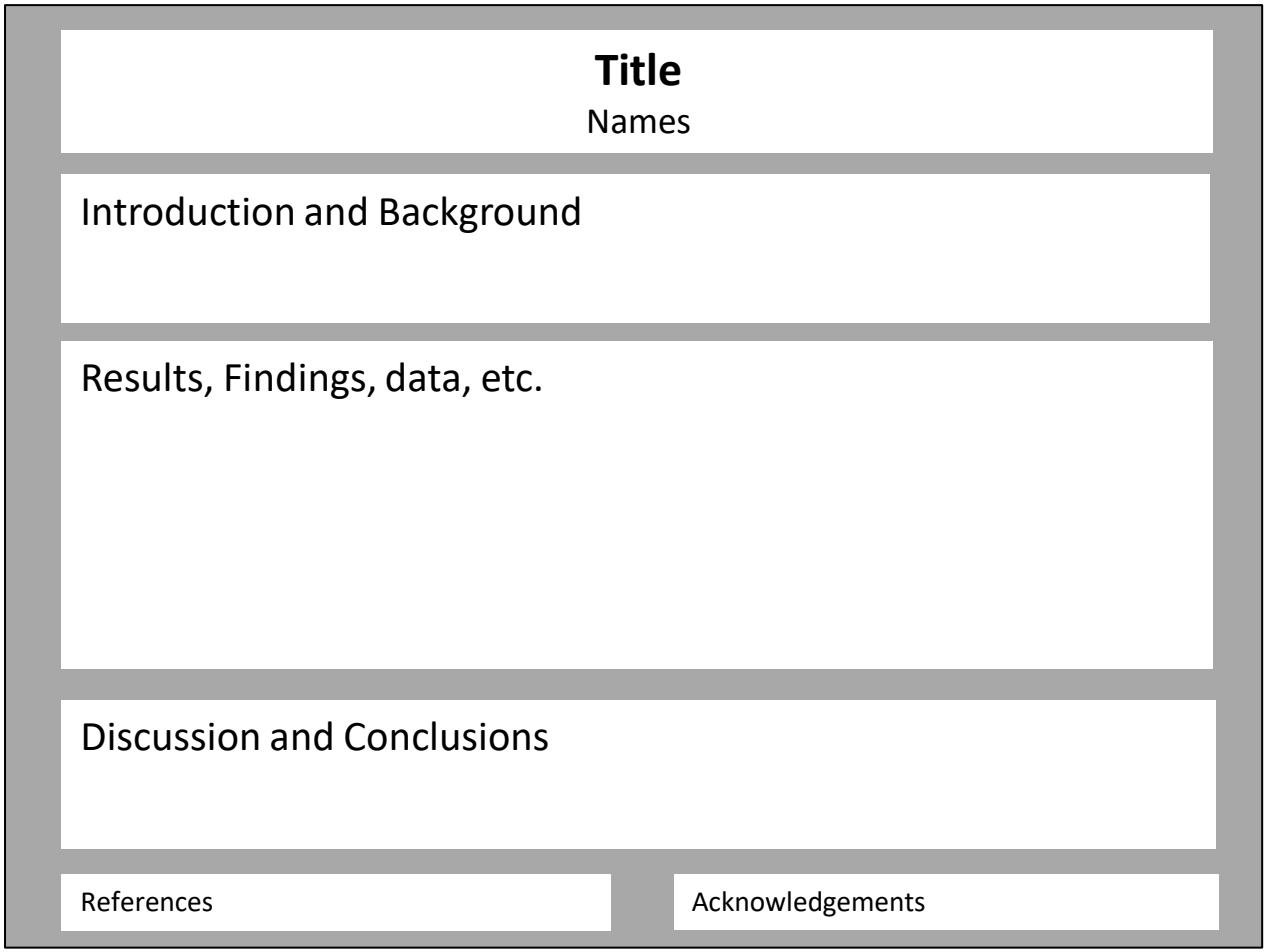
Capitalize on this and use it effectively!

Expected layout (3-4 columns of information):



Overview: Layout

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



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!

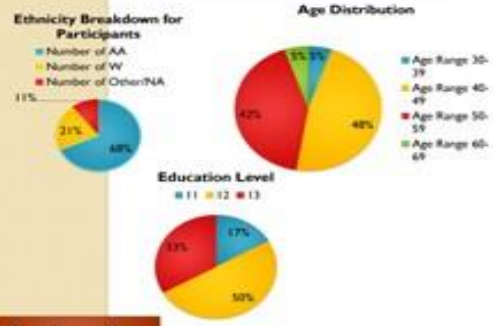
See examples in the next section

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 gamble of other health problems in combination with hypertension, education is a necessity 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, 8.5% of high school students drop out between the ages of 16 and 19. This is incredible in comparison to the fact that 37.9% of high school students will not graduate with a high school diploma as a result of mixed factors [1]. With such unsurprising 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 unfunded.



Methods

Acquiring Patient Information (Pre-meter 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.

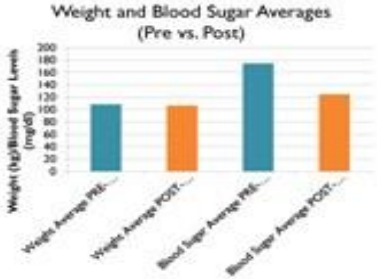
Course Regimen: The course took place once a week on Fridays at 1PM. A total of two classes were taught in regards to the disease and meal management. Each patient will be required to sign in before the commencement of the class and be given pamphlets at the conclusion of each class. After the conclusion 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 programs. All information will be recorded in a notebook and electronically. This will be staggered as patient intake is tracked.

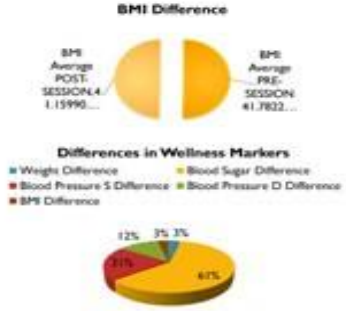
Results

How Physical Health Was Affected

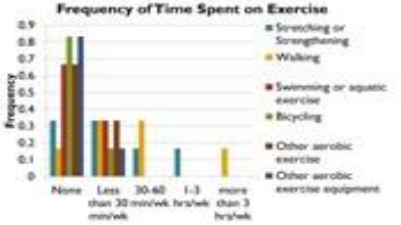
	Blood Pressure	Blood Sugar	BMI
Blacks	132/86	186.94	33.72
Whites	111/71	200.36	32.45
Hispanics/Other *	131/77	255	45.72
Normal Range	120/80	120	*18.5-24.9*

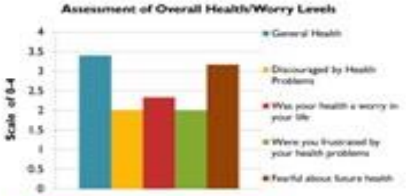
*Only one patient self-identified as Hispanic





How Were Behaviors Affected?





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 prevented us from gathering a true picture of Another confounding 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 instructing patients.

Acknowledgements

Special thanks to the Carolina Leadership Initiative for the grant that allowed for the conduction of this project. I would also like to thank the Free Clinic of Columbia, SC for allowing my staff and myself in utilizing their facilities for this project. I would also like to thank my team consisting of Stephanie Crawford, Philip Riddle, Molly McCue, Haley Gruver, Charlotte Wertz, Amanda Seal, Winsor Meneses, and Kristina Mullen. I would also like to personally thank Drs. Simmons and Crump for their continued mentorship through this project!

Title

Names, Departments

University of South Carolina, Columbia, SC

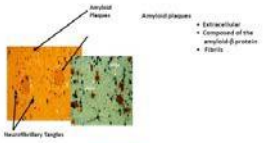
Abstract

Deposition of amyloid plaques within the cerebrovasculature, consisting mostly of insoluble fibrillar amyloid-β protein (fAβ) aggregates, is a pathological feature in 82-98% of Alzheimer's disease (AD) brains. Polyphenols such as resveratrol, myricetin and quercetin, have been considered promising in disease modifying therapy for AD as they are capable of inhibiting formation o fAβ or disassociating preformed fAβ. In this study, we tested the effects of a new group of polyphenols – apigenin, luteolin, 3',4'-dihydroxyflavone, and 5,7,3',4',5'-pentahydroxyflavone – on fAβ dissociation.

Thioflavin T (ThT) is a fluorescent dye that gives a characteristic fluorescence emission and excitation when attached solely to the cross β-sheet conformation of fAβ, as opposed to Aβ monomers, dimers, or oligomers. Therefore, fluorescence changes are often used to detect changes in Aβ morphology upon the addition of polyphenols. A significant drop of ThT fluorescence, not consistent with the stable structure of fAβ, was observed in the presence of polyphenols. However, further testing by our lab through circular dichroism (CD) and transmission electron microscope (TEM) imaging showed that fAβ was actually not disassociated by these polyphenols. These results suggest that polyphenols do not actually disassociate fAβ, but do bind them. This binding action of polyphenols may have implication in disrupting fAβ induced cellular damage in the AD brain.

Background and Significance

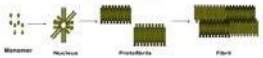
Neuropathological Properties



Aβ Protein

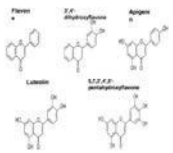
Aβ protein is a small peptide composed of 40-42 amino acids. It is a proteolytic product of amyloid precursor protein (APP) and has a beta-sheet conformation.

Aβ Fibril Formation



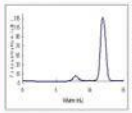
Amyloid fibrils are insoluble particles deposited in the brain and are formed by self-association of monomeric Aβ.

Methodology



Structure of the new group of polyphenols tested

Aβ Monomer Purification



Size exclusion chromatography (SEC) is used to purify Aβ(1-40) peptides. Pre-existing aggregates, which can serve as aggregation seeds, are removed in this manner.

The second peak represents the isolated monomer species.

Concentration of Aβ monomers is determined from UV absorbance at 280 nm corrected for light scattering.

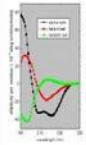
Aβ Fibril Preparation

Isolated monomeric Aβ(1-40) was incubated with 150 mM NaCl at 25°C and then agitated on a vortex at 500 rpm to promote assembly. fAβ was isolated by centrifugation.

Aβ Fibril Measurement

Thioflavin T (ThT) fluorescence was used to monitor the quantity of amyloid material. ThT binds the β-sheet structure of amyloid fibrils, giving a characteristic shifted fluorescence emission and excitation.

Measurements were taken to correct fluorescence changes caused by the inner filter effect.



Circular Dichroism (CD) is used to measure β-sheet structure of Aβ fibrils.

Transmission electron microscope (TEM) imaging is used to visualize changes of fAβ.

Double-reciprocal plots of ThT concentration and corrected fluorescence for different polyphenol concentrations at fixed amount of fAβ were assessed to investigate binding competition.

$1/F_{corr}$ vs. $1/[ThT]$: $1/F_{corr} = 1/F_{max} + (K_{in}/F_{max})\cdot 1/[ThT]$

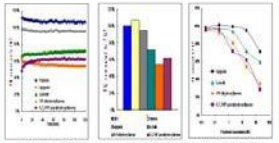
where K_{in} is the apparent binding constant, F_{max} is the maximum ThT fluorescence.

Aβ Fibril Disassociation Assay

fAβ were diluted to 20uM in 40mM Tris with 150mM NaCl in presence or absence of 200 uM polyphenol. Reaction solutions were incubated without agitation at room temperature for at least 2 hours. Then samples were tested for ThT fluorescence, CD and TEM.

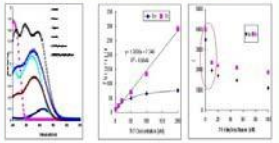
Results

ThT fluorescence change by adding polyphenols



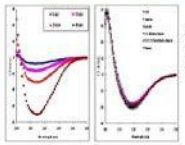
A sharp drop of ThT fluorescence was observed right after adding polyphenols into fAβ solution in presence of ThT.

Fluorescence correction for Inner filter effect



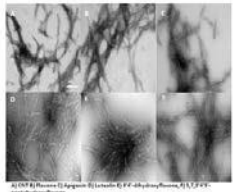
Strong optical absorption of polyphenols overlaps ThT working wavelength range. But the inner filter effect only accounts for a small part of this fluorescence drop after correction.

CD spectra of fAβ incubated with polyphenols



Negative peak at 220nm indicates rich β-sheet structure in fAβ. Compared to the control, there was no significant change of fAβ after incubation with polyphenols

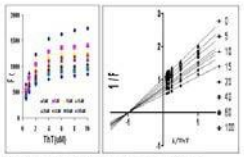
TEM imaging of fAβ incubated with polyphenols



A) ThT B) Fluorone C) Apigenin D) Luteolin E) 3',4'-dihydroxyflavone, F) 5,7,3',4',5'-pentahydroxyflavone

Compared to the control in morphology, there was no significant change of fAβ after incubation with polyphenols

Double-reciprocal plots of ThT concentration and corrected fluorescence



Double-reciprocal plots converge at x-axis, indicating non-competitive inhibition.

Conclusions

- Apigenin, Luteolin, 3',4'-dihydroxyflavone and 5,7,3',4',5'-pentahydroxyflavone decrease ThT fluorescence associated with fAβ.
- The inner filter effect alone does not explain the large amount of fluorescent drop.
- Based on CD and TEM imaging evidence, polyphenols do not disassociate fAβ.
- Double-reciprocal plots of ThT concentration and corrected fluorescence indicate that polyphenols and ThT may noncompetitively bind to fAβ.

Future Work

- Screen these polyphenols in protofibril elongation and association mechanisms, to determine if binding effect other aggregation mechanisms.
- Determine whether polyphenol binding to fAβ can alter cell responses elicited by Aβ.

Acknowledgements

- Dr. Moss Research Group
- NSF CAREER Award (BES-0644820) to MAM
- Magellan Scholar Undergraduate Research Award
- South Carolina Undergraduate Research Funding (SURF) through the South Carolina Honors College
- Pilot Study Grant, University of South Carolina, Complimentary and Alternative Medicine Center

UNIVERSITY OF SOUTH CAROLINA

Marketing Health: Communication about the Right Choice, Fresh Start Farmers' Market among Low-income Customers

Names

University of South Carolina College of Social Work; South Carolina Cancer Prevention and Control Research Network; Family Health Centers, Inc.

Background

- The Right Choice Fresh Start (RCFS) Farmers' Market at Family Health Center was established to increase availability of healthy produce and provide economic opportunity for small-scale farmers in Orangeburg, SC (3).
- In 2012, RCFS introduced a food assistance matching program titled "Shop N' Save" (SNS) to increase the use of federal food assistance at the market.
- RCFS and SNS were advertised through flyers, signs at the market, newspaper advertisements, and six outreach events in Orangeburg.
- The purpose of this study is to identify who participated in the "Shop N' Save" program and how they heard about the RCFS market.
- Matching programs can help address economic barriers associated with farmers' markets (2). Knowing how participants receive information about the market is key to engaging customers with food assistance and sustaining a matching program.

Shop N Save Intervention

- The market was open one day per week (Friday) for four hours per day for 20 weeks (June through October, 2012) at the health center site in Orangeburg.
- RCFS is authorized to accept SNAP/EBT, and most vendors at the market were authorized to accept Women, Infants, and Children Program (WIC) as well as Senior and WIC Farmers' Market Nutrition Program (FMNP) vouchers.
- Customers enroll in the SNS program after making a purchase of $5 or more with their own food assistance (SNAP/EBT, WIC, WIC FM or Senior FM vouchers). Transactions were documented on sales receipts.
- Future SNS coupons were redeemed on subsequent market dates when SNS participants spent $5 or more in food assistance at the market. Participants could receive up to one coupon per week, and SNS coupons could only be used at the RCFS mark et. Coupons expired on the last day of the market season.
- Demographic information on all participants, including how they heard about the RCFS market, was collected through enrollment surveys.

Use of Shop N Save

- Of 336 total participants, 46% returned to the market at least once.
- SNS coupons were used most frequently on June 22nd (the week Senior and WIC FM vouchers were distributed in Orangeburg) and October 12 (final market day).
- Of 3690 total market transactions, 16.4% involved Shop N Save coupons. (Figure 1)
- Total revenue at the end of the market season was $15,719.73. Total food assistance revenue was $5921.65 (37.7%). Total revenue from SNS coupons was $3071 (16%).

Transactions per week

Figure 1. Total transactions per week compared with transactions involving Shop N Save participants.

Shop N Save participants

Table 1. Characteristics of Shop N' Save participants

Variables		Frequency	Percent
Gender (missing data on 1 person, % based on valid percent)			
	Female	304	90.7
	Male	31	9.3
Race			
	African American	302	89.9
	White	24	7.1
	Other (Hispanic or Latino, Asian, Native American, or other)	11	3.3
Patient at FHC			
	Yes	180	53.6
	No	156	46.4
Type of household food assistance (can select more than one)			
	SNAP	174	51.8
	WIC	77	22.9
	WIC Farmers' Market Nutrition Program	56	16.7
	Senior Farmers' Market Nutrition Program	174	51.8

How did you hear about the RCFS market?

Figure 2. Chart comparing how SNS participants heard about the market (could select more than one category). Percentages are calculated from N=336. Categories with a response of 6% or less are not included in this comparison.

Conclusions

- The majority of SNS participants are African American, female, and patients at Family Health Center. SNAP/EBT and Senior FM vouchers are the most common forms of food assistance used at the market.
- Word of mouth was the most significant means of communicating RCFS and SNS among participants. Friends, family and fellow community members are trusted sources of information in the community and should be considered when marketing an intervention (1).
- Voucher distribution centers (SNAP/WIC offices) are also important sources of information for food assistance recipients. Markets should provide information about incentive programs at these locations.
- Formal methods of advertising (outreach events, newspaper ads) brought in less than 10% of participants and were least significant in recruiting participation.

References

1. Friedman, D. (2012). African American men's perspectives on promoting physical activity: "We're not that difficult to figure out!" *Journal of Health Communication, 17*(10), 1151-1170.
2. Freedman, D., Hebert, J. "Double down on obesity with double bucks at farmers' markets" [Letter to the editor]. (2012) *The State Newspaper*. Retrieved at http://www.thestate.com/2012/07/31/2469528/freedman-hebert-double-down-on.html
3. Freedman, D. A., Whiteside, Y. O., Brandt, H. M., Young, V., Friedman, D. B., & Hebert, J. R. (2012). Assessing readiness for establishing a farmers' market at a community health center. *Journal of Community Health, 37*(1), 80-88.

Modular Nano-Enabled Sorption Cartridge for Water Treatment

Student Name; Mentor Name
Civil and Environmental Engineering, University of South Carolina, Columbia, SC

Motivation:

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

Objectives:

STEP 1. ***Immobilize*** Carbon Nanomaterial in a Water Filter

+

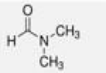
STEP 2. ***Optimize*** Nanomaterial Distribution within Filter

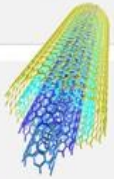
➡

STEP 3. ***Analyze*** Contaminant (e.g. BPA, Lead, Arsenic, etc.) Removal Efficiency

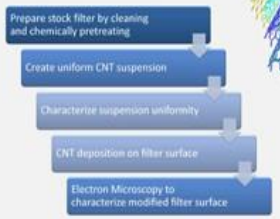
Materials:

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





Methods:



Results:

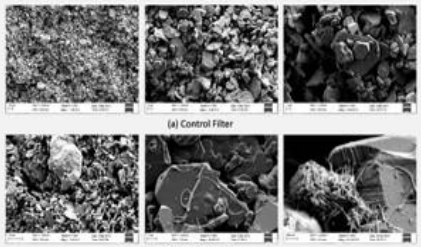


Figure 1: SEM Images

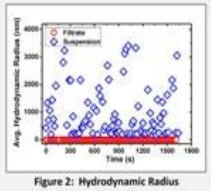


Figure 2: Hydrodynamic Radius

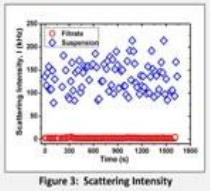


Figure 3: Scattering Intensity

Underlying Mechanism:

<u>Untreated Filter Surface</u>
(No Affinity)

<u>Chemically Treated Filter Surface</u>
(Thermodynamic Affinity)

Conclusions:

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

Invention Disclosure (SCRF# 00930): Carbonaceous Nanomaterials Immobilized on Porous Matrices to Remove Organic Contaminant from Water

UNIVERSITY OF SOUTH CAROLINA

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, "uscstudent" at that location.

Results and Discussion

Accelerometer
- Cellular Strength: 0.146
- 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 explained 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 change 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
Arena for Research on Emerging Networks and Applications

Wifi Map

Figure 1: Map of Wifi Signal Strength

Detail of LeConte

Detail of Swearingen

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 packet in place of the Wii 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

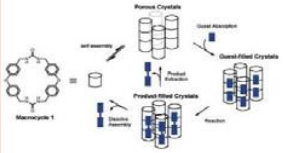
UNIVERSITY OF SOUTH CAROLINA

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

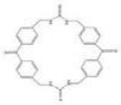
2-Cyclohexenone

- Phenylether macrocycle used as host
- Increased selectivity

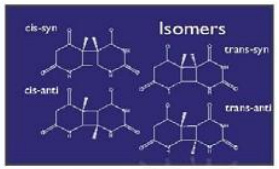
Background

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 use of enzymes in biological systems, where enzymes drive reactions by fitting 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)



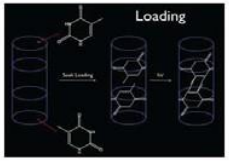
Thymine

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

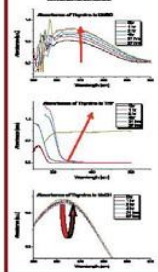
Methodology

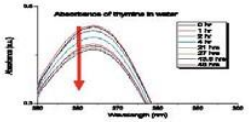
Testing for the best solvent for soak loading

In which solvent does thymine absorbance decrease?



Initial Studies

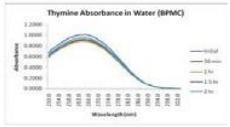


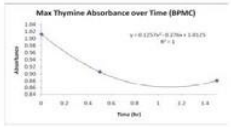


Water was found to be the best solvent candidate for soak loading.

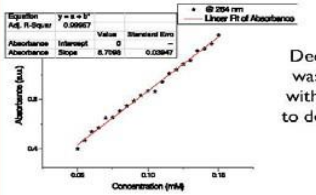
Data & Discussion

Loading





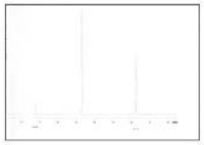
Analytical absorbance study



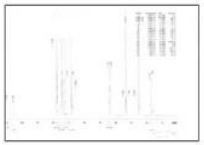
Beer's Lambert Plot for Thymine in Water

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

Irradiation

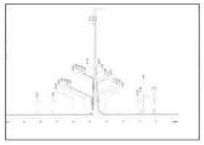


Thymine in D2O



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 of 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. "Manipulating the cavity of a porous material changes the photoreactivity of included guests." *Chem. Commun.* **2008**, 3909-3911. Highlighted by *Nature Chem.*, July 11, 2008, doi:10.1038/nchem.36
2. Yang, J.; Dewal M.B.; Shimizu L.S. "Self-assembling bis-urea 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 α,β-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.

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

Hit the high points!

Consider including a QR code so that those interested can link to a digital version of your poster.

Planning:

#1 REMEMBER:

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

ASK for assistance! Get approval for template.

Planning:

#2 Identify Message

What do you want the audience to know when finished?

Planning:

#3 Support Message

What information is CRITICAL to understanding this message?

Planning:

#4 Outline Information

Outline your message and supporting information

The abstract is a good starting point

Planning: Outline Information

Possible questions/issues to consider in your outline:

1) Clarify your message – what question are you answering
2) What results support message
3) What information is needed to understand the results and how you got those results
4) Are there figures that can help explain or support the message
5) Discuss/interpret the results – what does it mean?
6) Are there any future research areas or next steps

Stay message focused!

Planning:

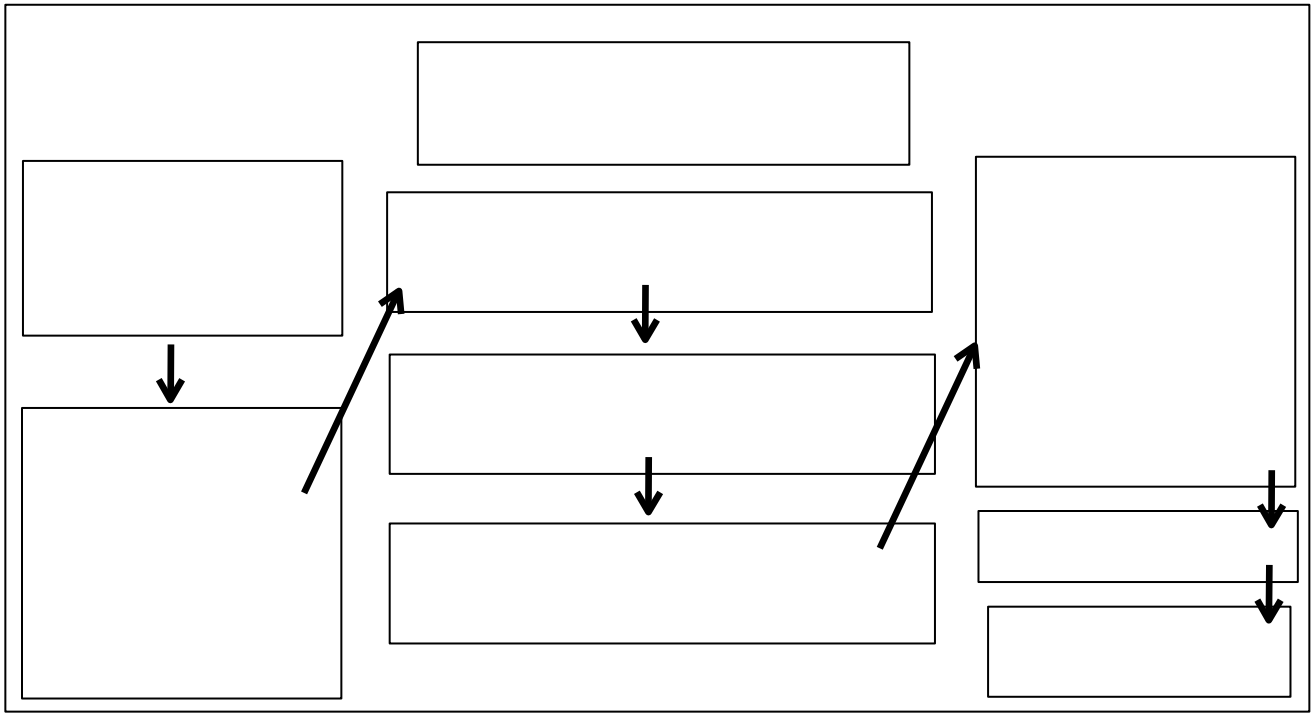
#5 Mapping Poster

Map your outline into poster format on paper

Review critically; focus on the message!

Planning: Mapping Poster

EXAMPLE



Planning: Resources

- *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

- *Poster Design Resources: Design & Presentation* by UNC Health Sciences Library

http://guides.lib.unc.edu/poster_design

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

Summer Research Symposium 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

Guidelines: Color

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

Chartreuse and pink? Please don't!

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

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 IN LARGE BLOCKS OF TEXT.

Guidelines: Text

Limit your poster to two fonts:

one serif and one sans serif

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 – save poster as pdf

Guidelines: Text

Using “standard” fonts minimizes printing concerns

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

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**!!!!

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

Guidelines: Aesthetic

Question everything!

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

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/about/annual_events/discover/usc/documents/poster_tile_printing.pdf

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

Formatting and Printing

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:

- Many options on campus – ask your mentor or program director

Remember: A successful poster…

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

…grabs attention!

Presenting

#1 Prepare your talk

- Prepare a 30 sec, 2 min, and 5 min overview of your project
- Explain the context of your research question and why it is relevant/important (background)
- Explain your objective and what you did (methods).
- What were your results (explain figures and tables)?
- What do the results mean – what is the significance of your research project?

Questions you MUST be able to answer:

So what? Why should I care?

Presenting

#2 Consider your audience!

Be prepared to talk with experts and non-experts

- **Know definitions of every word on poster and be able to define acronyms**

- **Critically review your poster for potential questions – anticipate questions people might ask**

- **Don't be scared of "I don't know," "I hadn't thought of that," and "Great idea!"**

Don't assume knowledge!

Presenting

#3 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, use your poster to help your discussion)
- Don't stand directly in front of your poster

Be friendly and welcoming!

Presenting

#4 Have a positive attitude

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

Presenting

#5 Dress professionally

- Be neatly neutral
- Business casual (suits not required)
- Sensible shoes (remember you will be standing in one place for 1.5 hours!)

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