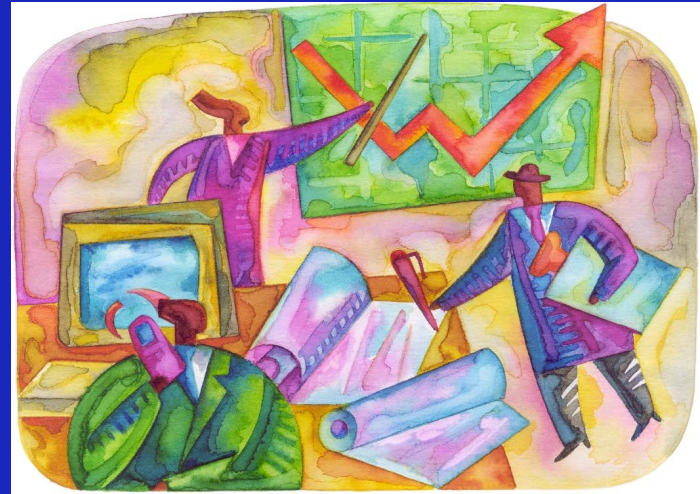


Scientific Poster Design

How to keep your poster
from resembling an
“abstract painting”



CCMR

Cornell Center for Materials Research

Cornell University, Ithaca, NY

<http://www.ccmr.cornell.edu>



A poster can be better than giving a talk

More efficient because:

- you totally bomb at giving talks
- can be viewed while you nap
- can hang in the department for years
- can reach folks not in your field of research

Posters serve as...

An advertisement of your hard work



Kool, wow!, check
this out!, you must
be smart!



It's just an illustrated abstract



Poster title goes here, containing strictly only the essential number of words...

Author's Name/s Goes Here, Author's Name/s Goes Here, Author's Name/s Goes Here
 Address/es Goes Here, Address/es Goes Here, Address/es Goes Here

Introduction

Plot ...

Check with conference organizers for their specifications of abstract format before you start your poster. Make the poster size landscape portrait (8.5x11). The top of the poster must be 400x60 (15cm), landscape portrait format. Do not change page size. You can make the smaller or larger size when printing. You need a 1/8 inch gap between the poster and the wall or a 1/4 inch gap between the poster and the wall.

Best if the poster is on a white background. Do not use a color background. Do not use a color background. Do not use a color background.

Method

Tips for making a successful poster ...

- Rewrite your paper in poster format. Simply everything and use a white.
- Headings of the poster should be in upper and lower case bold letters.
- Have one word per line. Do not use bold letters.
- When laying out your poster leave breathing space around you text. Do not crowd your poster.
- Try using photographs or diagrams. Avoiding numerical tables.
- Spell check and grammar check before printing.

Results

Printing and Lamination ...

Once you have completed your poster bring to the MU for printing. We will process it and deliver it to you. Check and proofread. The final poster will be printed on a white background.

Final Proofreading of your poster until the last minute. Allow at least 24 hours for printing and delivery to the poster.

Cost ...

For poster printing and lamination charges contact the MU.

Aim

How to write the poster ...

Simply highlight the main results of your own paper only and place your text on a 1/4 inch margin. The poster should be between 32 and 32 pages. A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100.

Conclusion

Poster Design (Screening and Digital Photography, and Image Size)

Content

Medical Illustration Unit

Photo/Media Support

Photo/Video

Small photo/Video

Webpage

Webpage

Acknowledgements

Just highlight the main results of your own paper only and place your text on a 1/4 inch margin.



Is my abstract effective?

- Why should anyone care?
- What am I adding to current knowledge?
- Do I need to explain methods?
- Have I told them what I found and recommend?

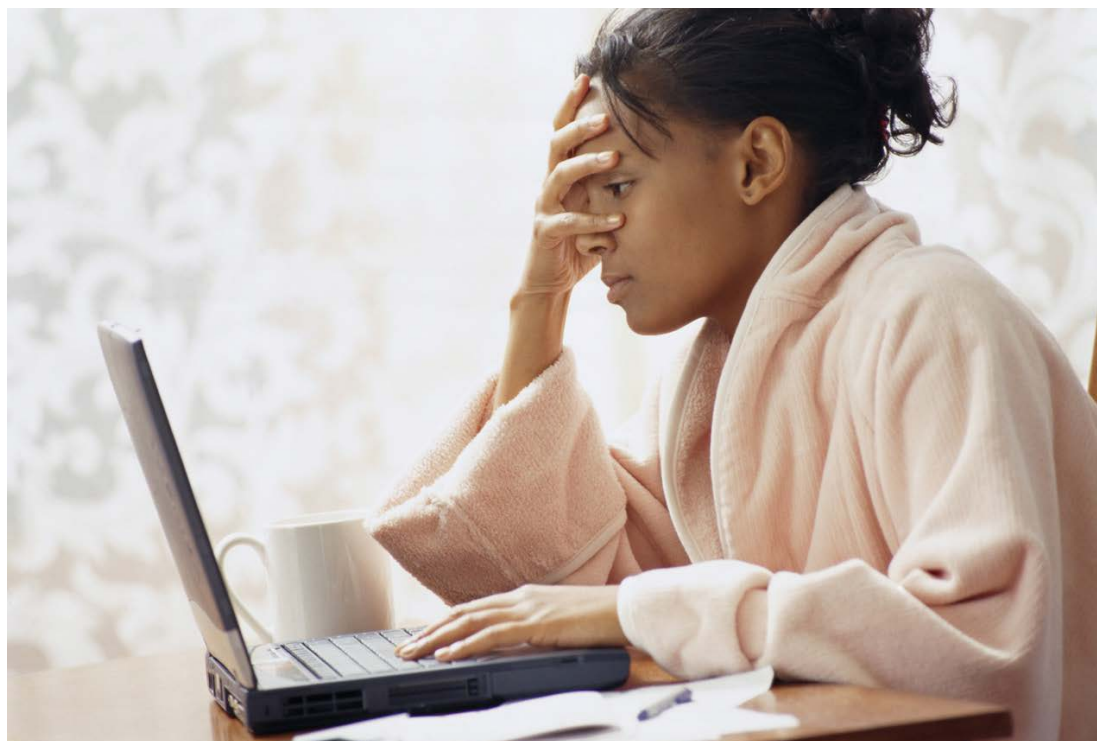


CCMR

Cornell Center for Materials Research



A portrait of a grad student

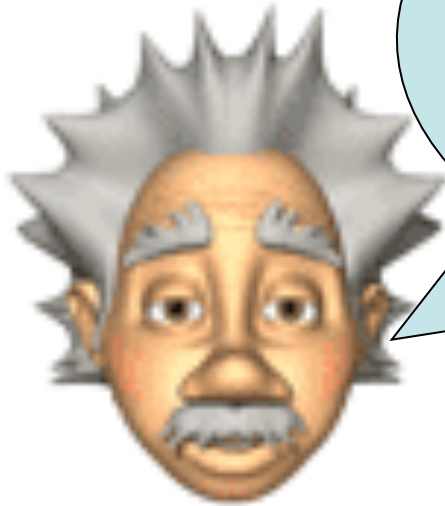


@#&%!@#\$, I have 12 hours to throw this thing together and get it printed before it's due.

How do I get months and years of research onto my poster?

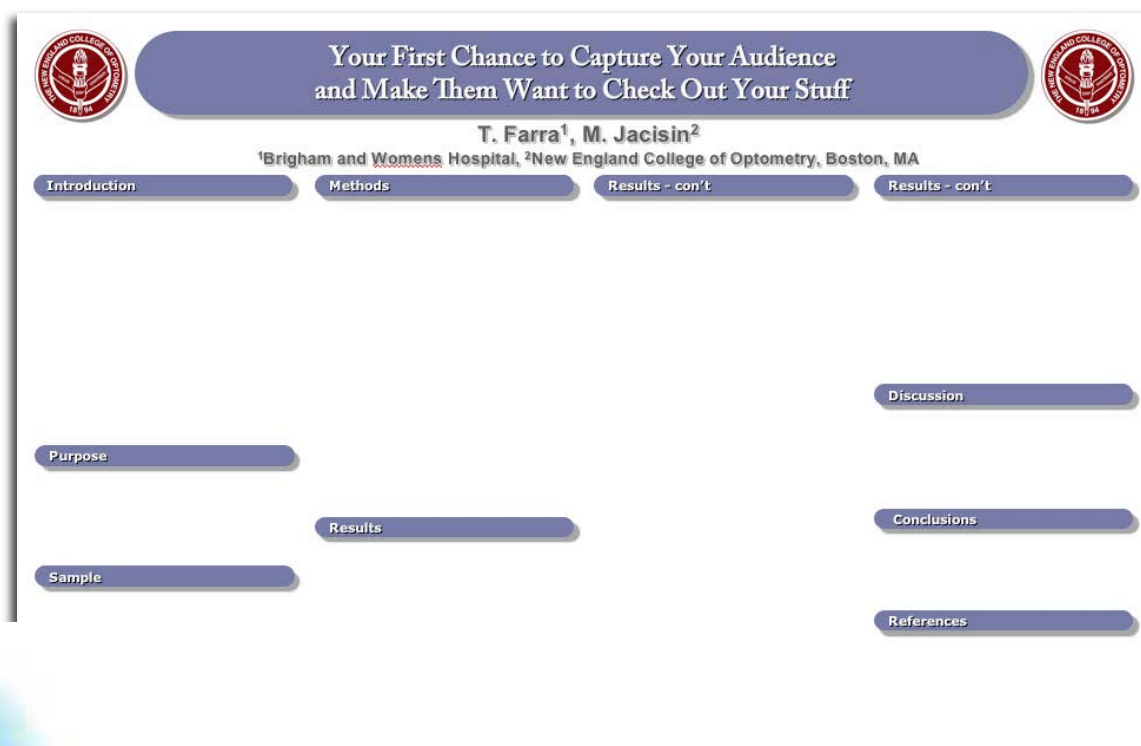


- Your poster is a short story
- Describe a few major points
- Arouse the reader's interest to read on
- Limit it to 250 words



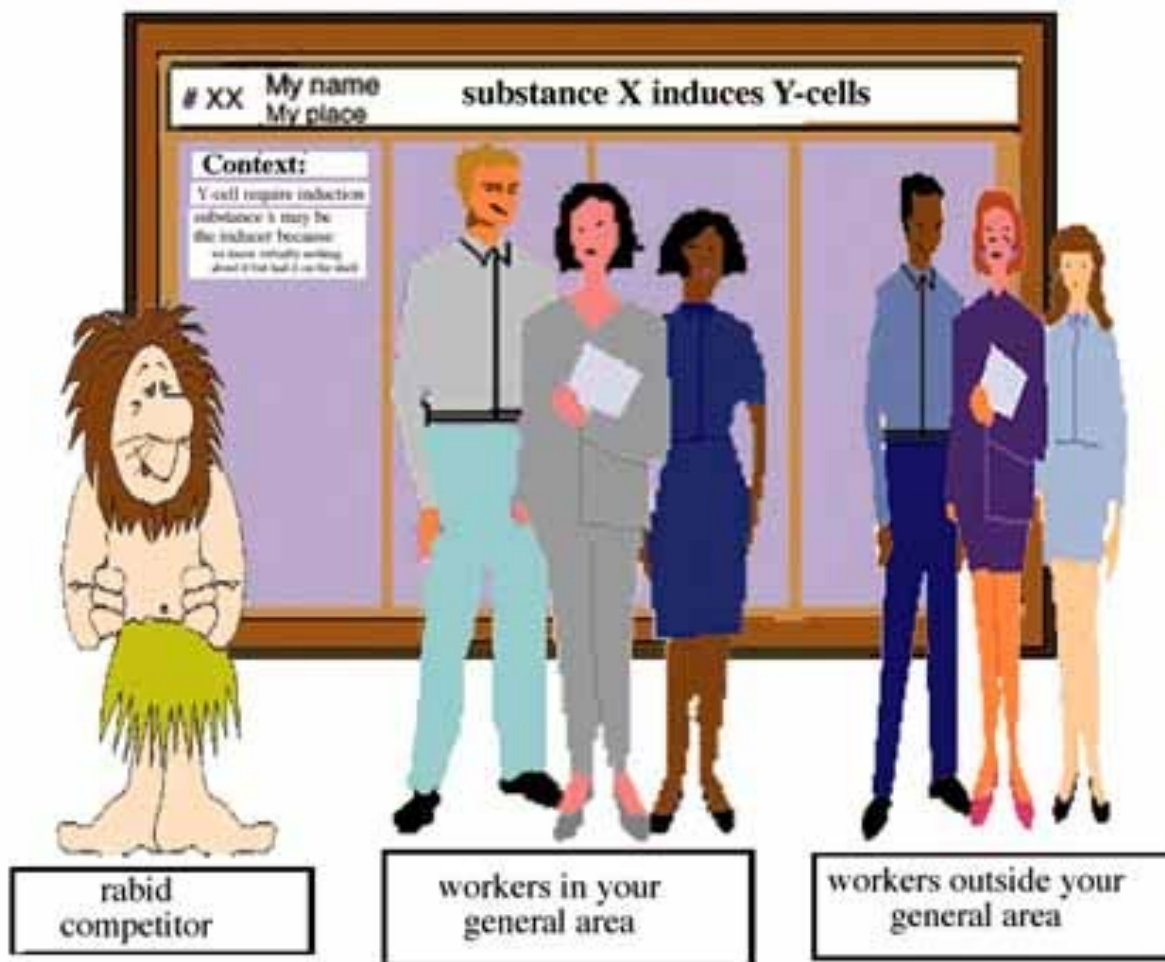
Recite after me,
Less is best!

Simplify your paper into poster format



Find out the size required!

Who's my audience?

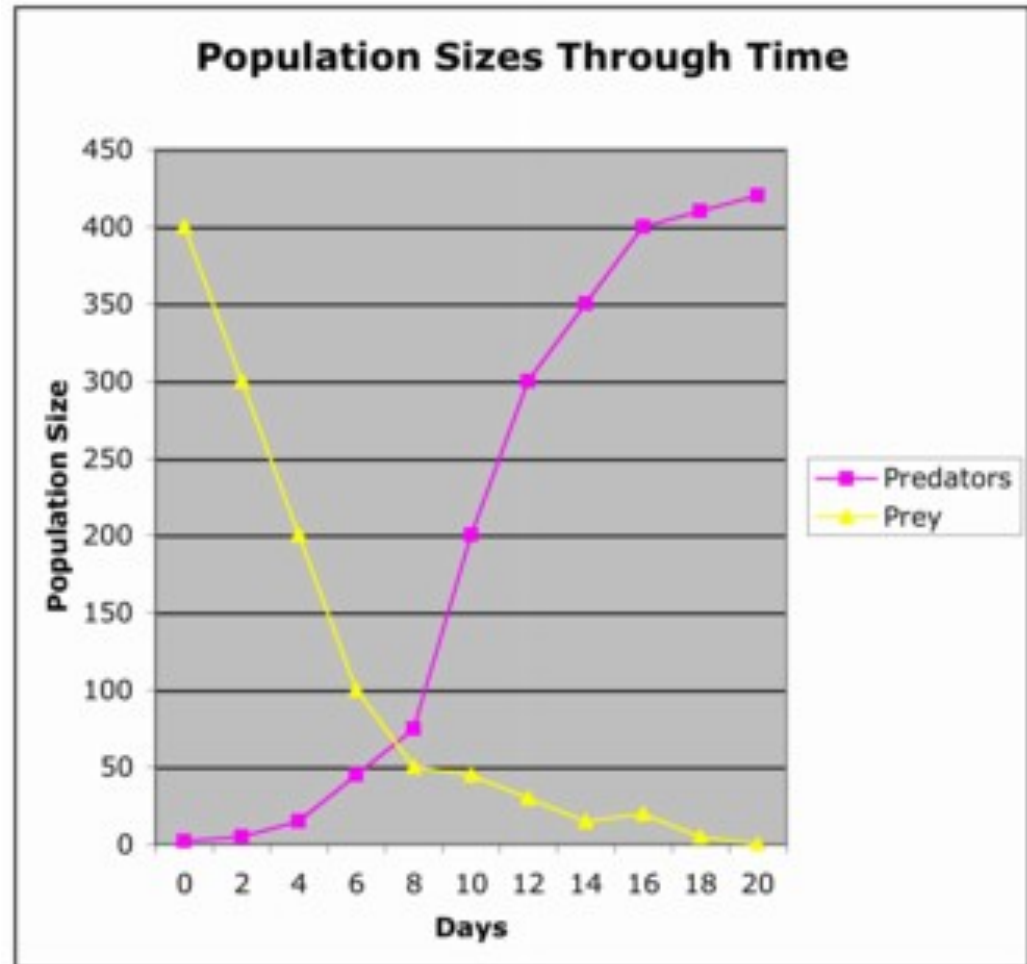


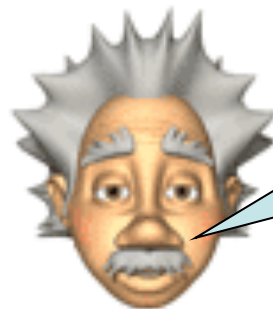
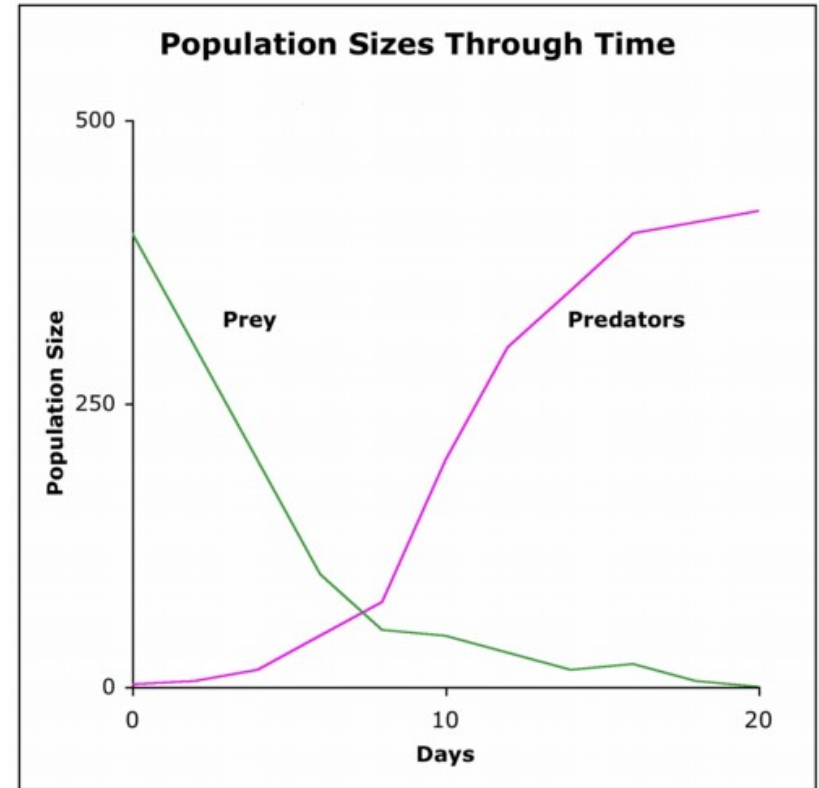
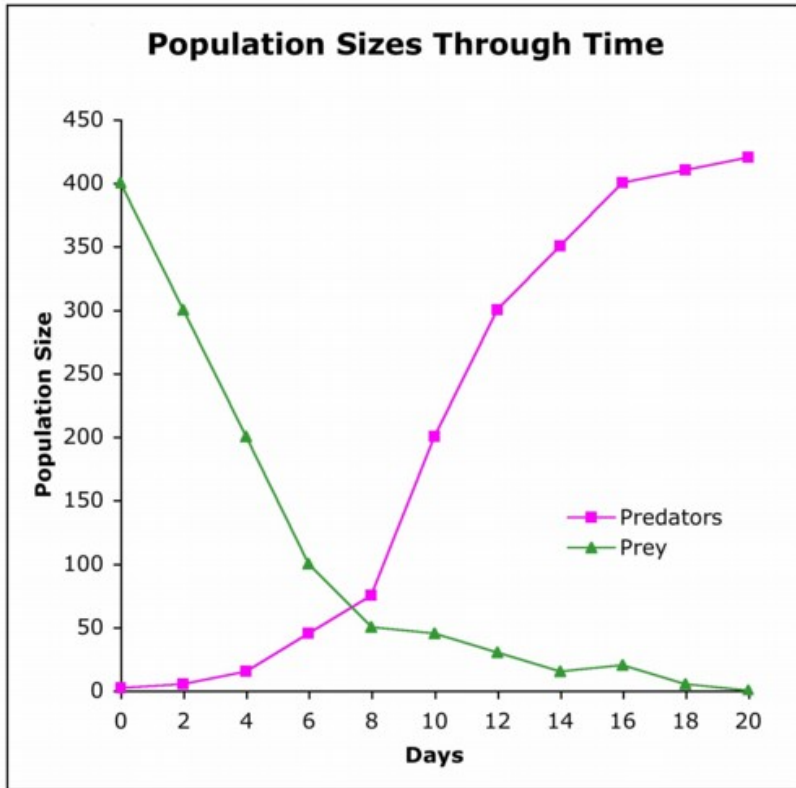


Start putting
together your
2 main elements

1) Simple, effective data displays

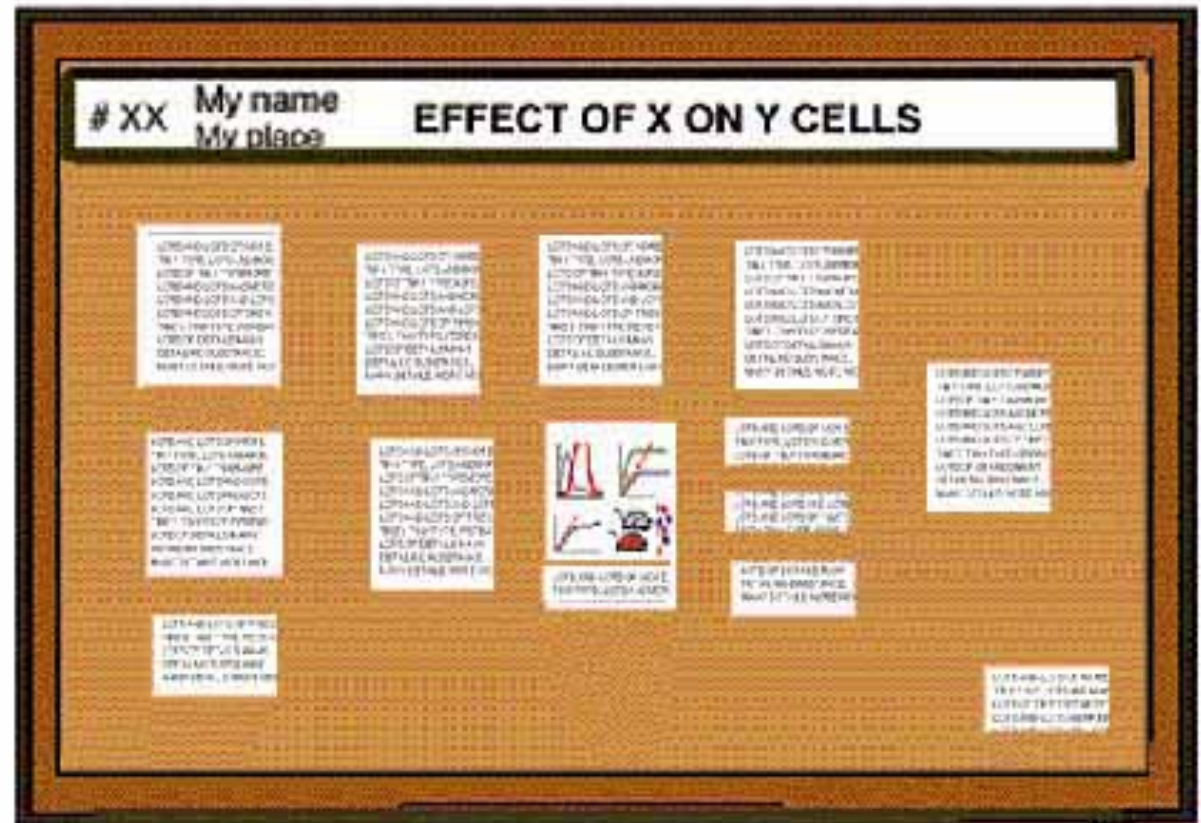
Don't make them stand on their heads to read your data!





Keep it simple but effective

2) Small blocks of supporting text



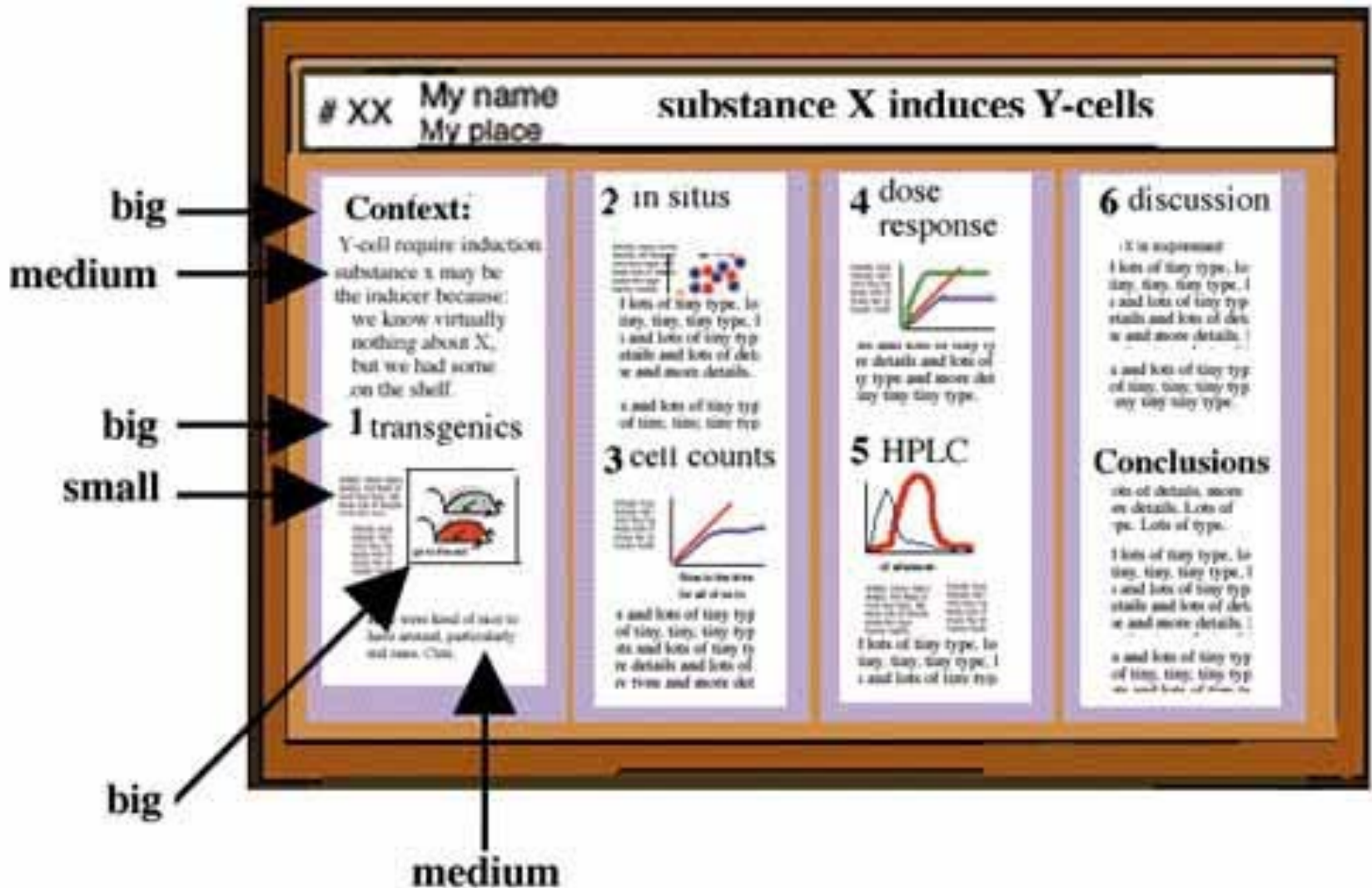
The need for chairs in front of your poster will not go over well

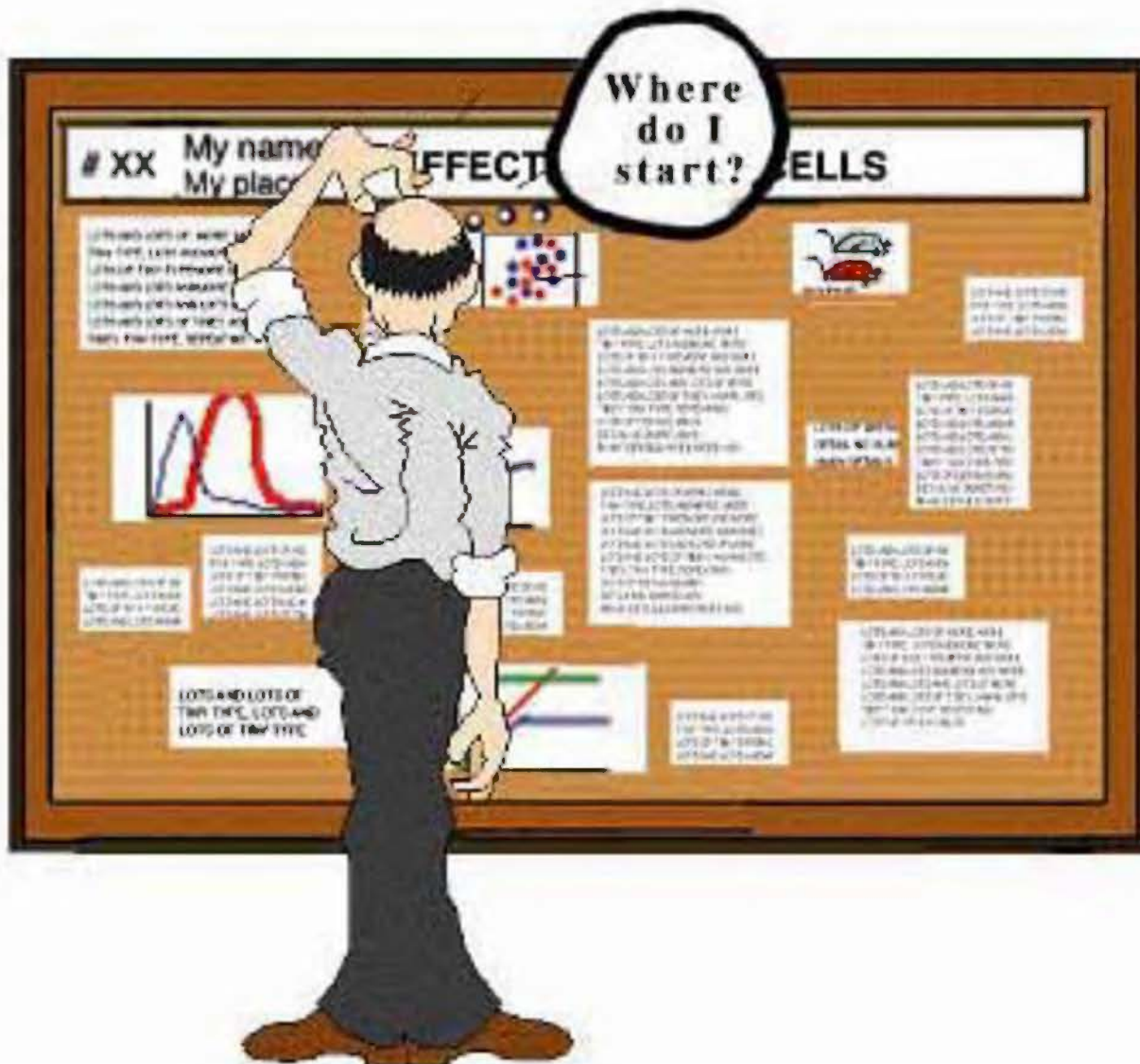


Your copy should answer...

# XX	My name My place	EFFECT OF X ON Y CELLS
Why?	Methods?	What do I recommend?
What am I adding?	What did I find?	

I could actually read this







Pick a software program

Although you' ll probably gravitate towards PowerPoint,
consider a true design program.

PowerPoint



- OK, but the colors will fool you
- Easy to use
- Inflexible
- Designed for overhead projection

Adobe Illustrator or InDesign



- Excellent
- More difficult to learn
- What you see is what you get
- Others: Canvas, Publish-It, Corel Draw, LaTeX, etc.



Let's design a poster!



Your poster title:

Think BIG! Really Big!

Your biggest impact!
Boldface type
Not all caps!

Poster title goes here, containing strictly only the essential number of words...

Group authors names and affiliations

Author's Name/s Goes Here, Author's Name/s Goes Here, Author's Name/s Goes Here
Address/ess Goes Here, Address/ess Goes Here, Address/ess Goes Here

Introduction

File

Check - all content originates from the publication of the author(s) and is not a derivative work. All content is the property of the author(s) and is not to be used for any other purpose without the author's permission.

The purpose of this poster is to provide a brief overview of the research project and to highlight the key findings. It is not intended to be a substitute for the full paper.

Simply highlight the key findings and conclusions. Do not include a full abstract or introduction.

Aim

The aim of this poster is to provide a brief overview of the research project and to highlight the key findings. It is not intended to be a substitute for the full paper.

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Simply highlight the key findings and conclusions. Do not include a full abstract or introduction.

Results

Impacts / Key Findings

Impacts such as photographs, graphs, diagrams, logos, etc. can be used to enhance the poster.

Tables and figures should be clearly labeled and easy to read. Use a grid to help with the layout.

The best way to present data is to use a clear and concise format. Use a grid to help with the layout.

Do not use too many colors. Use a grid to help with the layout.

How to use graphs

For single graphs use a 10x10 grid, and for multiple graphs use a 20x20 grid.

Graphs should be clearly labeled and easy to read. Use a grid to help with the layout.

Do not use too many colors. Use a grid to help with the layout.

Printing and Lamination

Check with the printer for the best printing options. Use a grid to help with the layout.

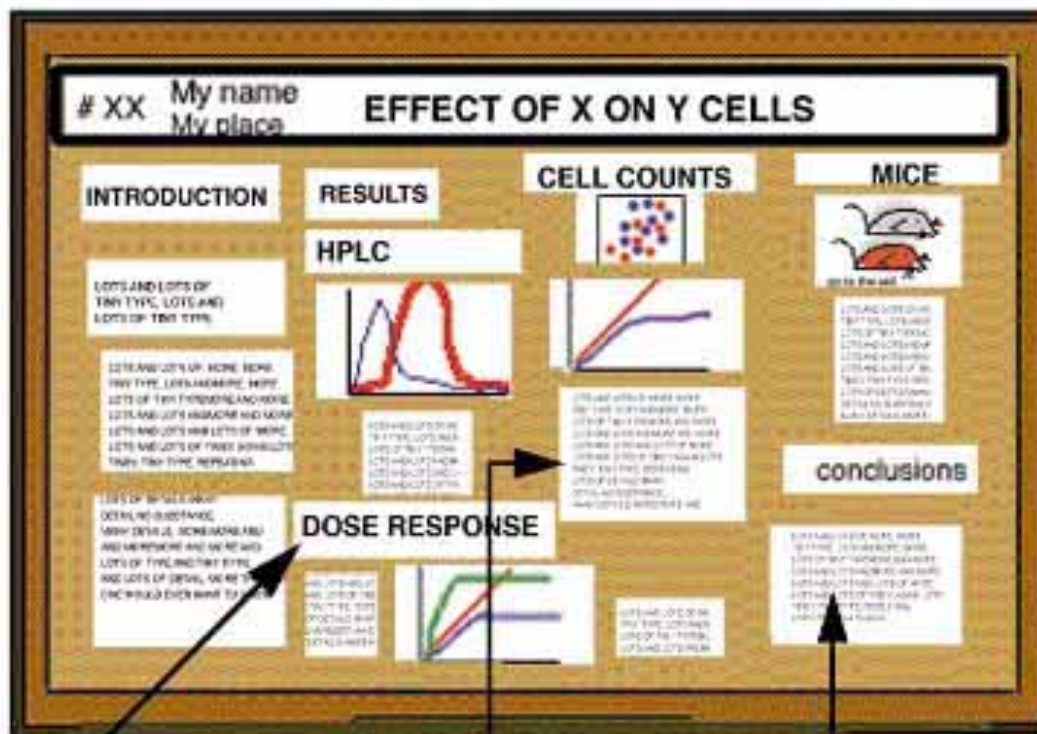
Do not use too many colors. Use a grid to help with the layout.

Simply highlight the key findings and conclusions. Do not include a full abstract or introduction.

The aim of this poster is to provide a brief overview of the research project and to highlight the key findings. It is not intended to be a substitute for the full paper.

Simply highlight the key findings and conclusions. Do not include a full abstract or introduction.

The Secrets of Readable Text:



Large type states methods, not results

Results artfully buried in a methods description

Carefully omits interpretations

Poster title goes here, containing strictly only the essential number of words...



Author's Name/s Goes Here, Author's Name/s Goes Here

Address Goes Here, Address Goes Here



Introduction

File ...
Check all contents against your application of the new iteration, balance all supporting mechanism providing language with clarity.

The purpose of this presentation is to ...
This presentation will describe the ...
The main objective is to ...

Abstract

This abstract is to ...
This abstract is to ...

Method

The methodology used in this study ...
The methodology used in this study ...

Results

The results of this study ...
The results of this study ...

Conclusion

The conclusion of this study ...
The conclusion of this study ...

Acknowledgments

We would like to thank ...
We would like to thank ...

Footnote

Copyright ...
Copyright ...

- Leave breathing space around your text
- Plain fonts even serif here
- Same size and style
- Left-aligned
The reason is...



Hi there, my name is mitch collinsworth and I would like to tell you about myself and how I got this job at cornell. Well you see, my uncle had a friend who knew my cousin on the other side and his daughter worked for facilities. I was down on my luck and my sister told me she knew a guy who's nephew's wife's kid worked for this guys father and what can I say , he hired



Hi there, my name is mitch collinsworth and I would like to tell you about myself and how I got this job at cornell. Well you see, my uncle had a friend who knew my cousin on the other side and his daughter worked for facilities. I was down on my luck and my sister told me she knew a guy who's nephew's wife's kid worked for this guys father and what can I say, he hired me with no questions asked and just told me to keep my mouth shut. So here I am at CCMR.

Conclusions first!

- Put the most important part first!
- Short and to the point!
- Upper left hand corner

Your Ingenious Teaser Right Here to Woo Them Down to the Body

Conclusions first: 44 pt bold
 Always put the most important part - your conclusions - first! Place your conclusions in the upper left hand corner of your poster.
 Prepare your material from the reader's perspective. What was done, by who and your conclusion has to be understood within a couple of second's reading! Use active voice when writing the text. **Text size: 34 pt regular**

Introduction
 Posters are primarily visual presentations. Your poster should be dominated by self-explanatory illustrations such as graphs and pictures while the amount of text should be kept to the minimum.

Your aim
 Your poster is an advertisement for your research and as such it needs to be eye-catching and straight to the point. You only have seconds, or at best a few minutes to attract the attention of the visitor to a poster session. Keep your message short and clear

Your message
 Keep your message clear and your text concise. Decide what is relevant for this poster and try to get your message across to your target group.

Layout, photos and print
 Contact [Madhava](#) at University Library for help with layout and image enhancement. For printouts and professional photographers contact [Sushranta](#). Fore more information: www.library.cornell.edu

Tips:
 The best font for text blocks that are as short as they should be on a poster is a Sans Serif typeface family. Therefore, use sans serif fonts such as Arial or ~~Myriad~~ sans rather than serif fonts like Times or Courier.
AVOID CAPITAL LETTERS IN TEXTS THAT ARE LONGER THAN ONE LINE, SINCE THEY ARE MORE DIFFICULT TO READ.

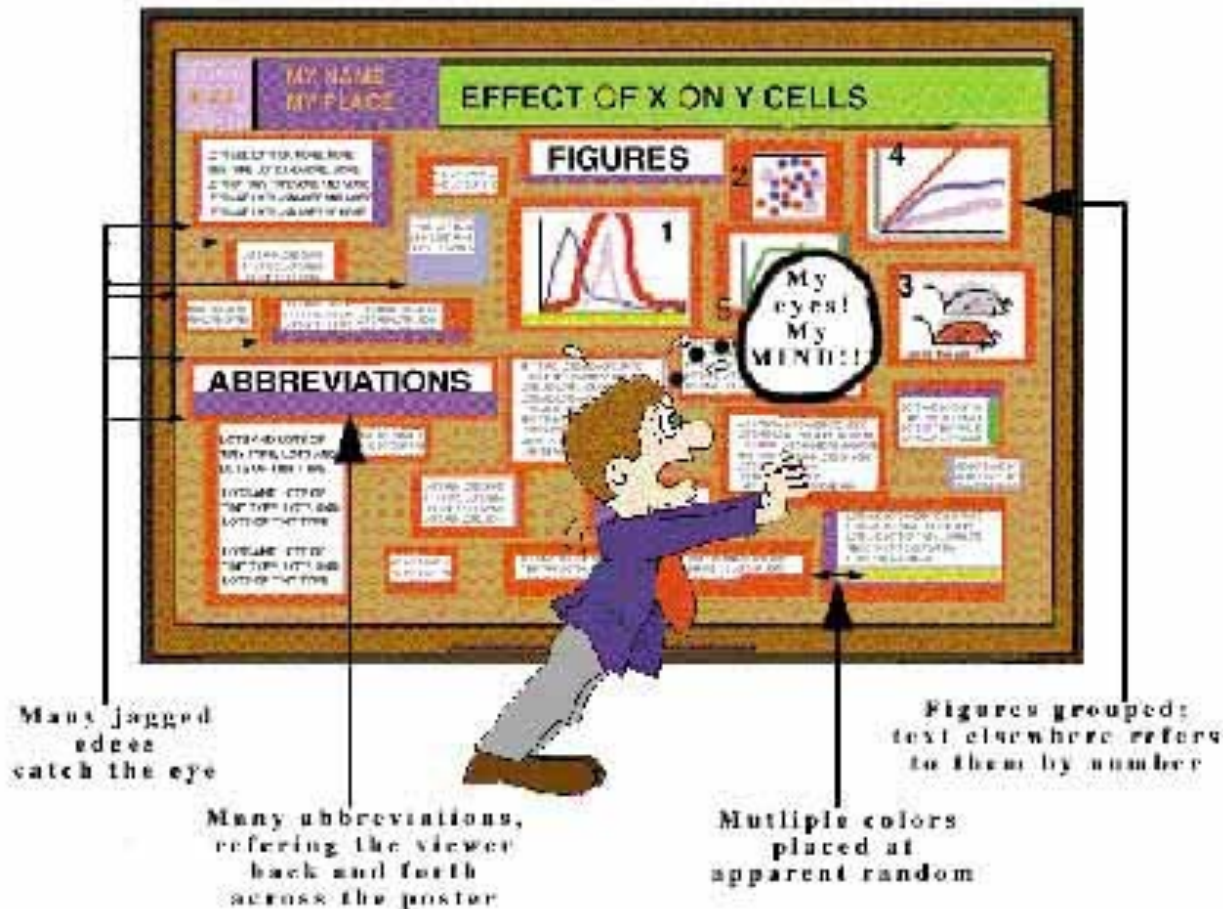
Handouts
 If you succeed in getting the reader's attention, provide her/him with more detailed information in the form of handouts or printed articles. Include references on your handout instead of your poster.

us s d o u c a r t h u s a t a n a l n s i
h a g e c a p m i t e p r o g r a m

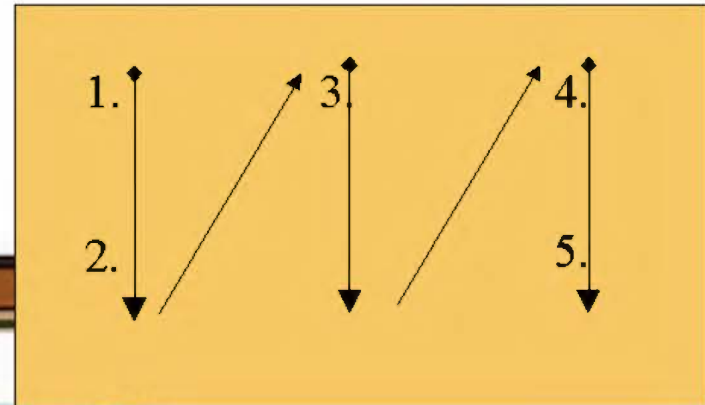
A w a y s w r i t e a s o o p t i c a p t i o n 2 2 p r o g r a m

K a r o l i n s k a I n s t i t u t e t
F o u n d e d 1 8 2 7
K a r o l i n s k a I n s t i t u t e t
S e k e t a r e n 1 4 1 8 2 7
F o u n d e d 1 8 2 7
K a r o l i n s k a I n s t i t u t e t
S e k e t a r e n 1 4 1 8 2 7
F o u n d e d 1 8 2 7
K a r o l i n s k a I n s t i t u t e t
S e k e t a r e n 1 4 1 8 2 7
F o u n d e d 1 8 2 7

Easy for the eye to follow




Utter chaos
will make
folks dizzy!



XX My name
My place substance X induces Y-cells

Context:
Y-cell require induction
substance X may be
the inducer because
we know virtually
nothing about X,
but we had some
on the shelf.

1
lots and lots
lots of tiny
and lots of
more detail
tiny type is



tiny type, lot of type
tiny, tiny type, lots and
lots of tiny type. Detail
in and lots of details, most
at more details.


2
lots and lots
lots of tiny, tiny
and lots and lots
more details on
tiny type and
tiny tiny tiny
lot of type
lots and lots
. Details a
lots, more
& Lots of

3
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on details. Lots
Lots of type.

tiny type, lot of type
tiny type, lots and lots
of tiny type. Details and

4
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tiny, tiny, tiny typ
& lots of tiny

of type
and lots
Details and



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lots of tiny, tiny,
and lots and lots
more details and
tiny type and me
tiny tiny tiny typ

6
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& lots of tiny typ
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w and more details.

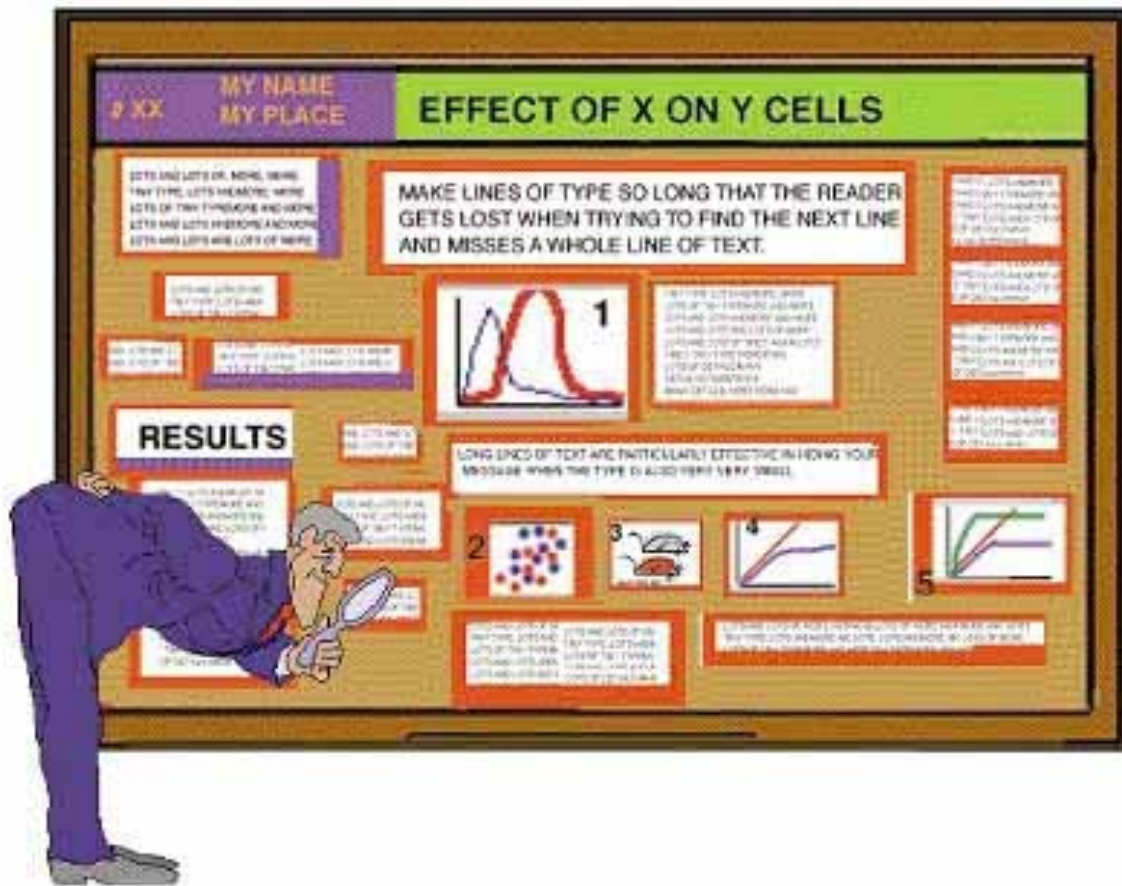
e and lots of tiny typ
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lots and lots of it
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and lots and lots of
more details and I
tiny type and me
tiny tiny tiny

5
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lots and
Lots of

more details and lots of sh
tiny type and more details
tiny tiny tiny type.

Can anyone read your body text?



Text sizes:

Title: 85 point

Authors: 56pt

Sub-headings: 36pt

Body text: 24pt

Captions: 18pt

Your Ingenious Teaser Right Here to Woo Them Down to the Body

Conclusions first: 44 pt bold
Always put the most important part - your conclusions - first! Place your conclusions in the upper left hand corner of your poster. Prepare your material from the reader's perspective. What was done, by who and your conclusion has to be understood within a couple of second's reading! Use active voice when writing the text. textsize: 34 pt regular

Introduction
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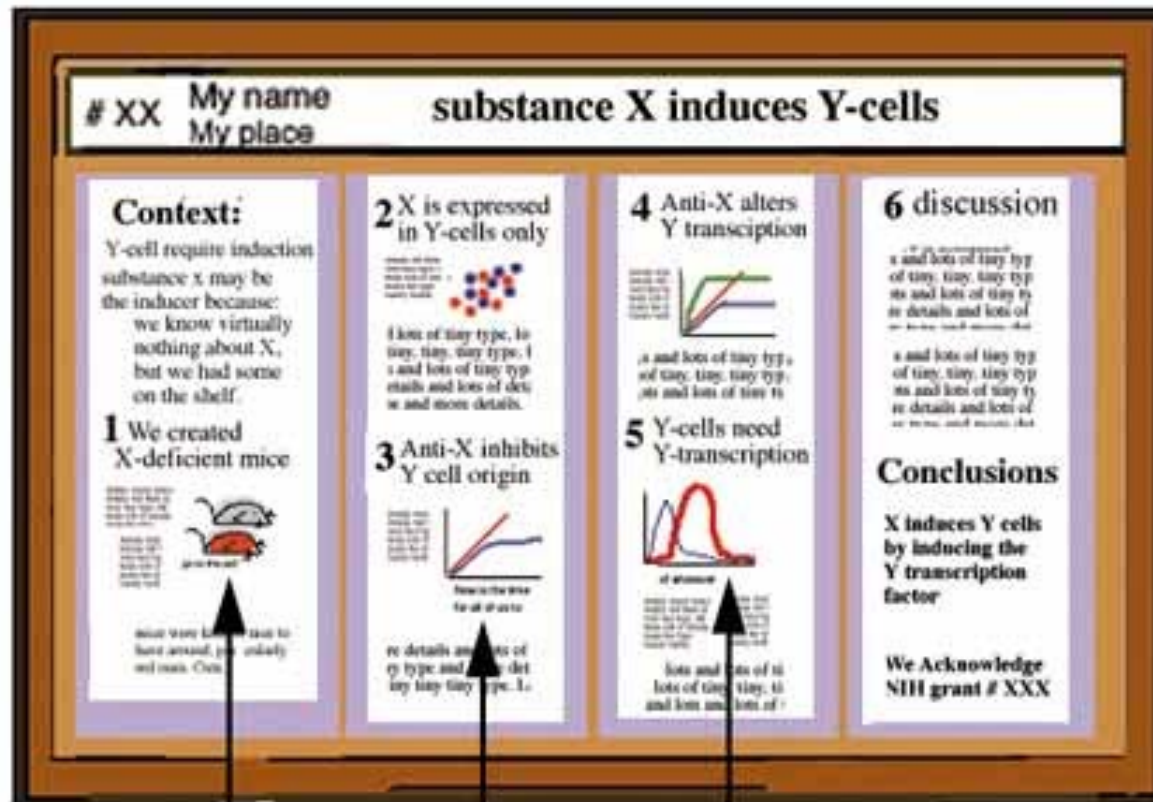
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Handouts
If you succeed in getting the reader's attention, provide her/him with more detailed information in the form of handouts or printed articles. Include references on your handout instead of your poster.

use font size of Karolinska
image caption 12pt regular

Karolinska Institutet, Huddinge
Forsknings- och Utvecklingscentrum
S-141 86
Välkommen till Karolinska
Post: 141 86
Telefon: 08 746122
Fax: 08 746126
E-post: medlab@karolinska.se
Webb: www.karolinska.se

Images and graphs say much more than words



BIG figures that use color

Keep posters visual!

NO. 31426 (2005)



Southern Flounder Exhibit Temperature-Dependent Sex Determination

J. Adam Luckenbach*, John Goswin and Russell Boeski
 Department of Zoology, Box 7617, North Carolina State University, Raleigh, NC 27695



Introduction

Southern flounder (*Paralichthys lethostigma*) support valuable fisheries and show great promise for aquaculture. Female flounder are known to grow faster and reach larger adult sizes than males. Therefore, information on sex determination that might increase the ratio of female flounder is important for aquaculture.

Objective

This study was conducted to determine whether southern flounder exhibit temperature-dependent sex determination (TSD) and if growth is affected by rearing temperature.

Methods

- Southern flounder blood and urine were assayed to collect eggs and sperm for *in vitro* fertilization.
- Hatched larvae were reared from a natural diet on filter-sterilized to high protein pelleted food and fed until saturation at least twice daily.
- Upon reaching a mean total length of 40 mm the juvenile flounder were stocked at equal densities into one of three temperatures (8, 23, or 28°C for 245 days).
- Crustaceans were preserved and later sectioned at 2-6 microns.
- Sex-distinguishing markers were used to distinguish males (spermatogenesis) from females (oogenesis).

Histological Analysis

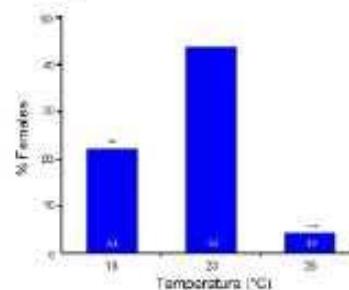


Male Differentiation

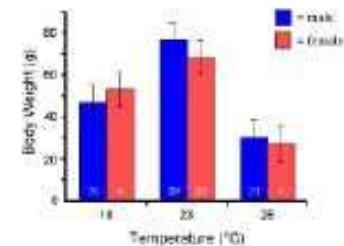


Female Differentiation

Temperature Affects Sex Determination



Growth Does Not Differ by Sex



Results

- Sex was discernible in most fish greater than 120 mm long.
- High (28°C) temperatures produced 8% females.
- Low (18°C) temperature produced 22% females.
- Mid-range (23°C) temperatures produced 44% females.
- Fish reared at high or low temperatures showed reduced growth compared to those at the mid-range temperature.
- Up to 245 days, no difference in growth existed between sexes.

Conclusions

- These findings indicate that sex determination in southern flounder is temperature-sensitive and temperature has a profound effect on growth.
- A mid-range rearing temperature (23°C) appears to maximize the number of females and promote best growth in young southern flounder.
- Although adult females are known to grow larger than males, no difference in growth between sexes occurred in age-0 to 1-year southern flounder.

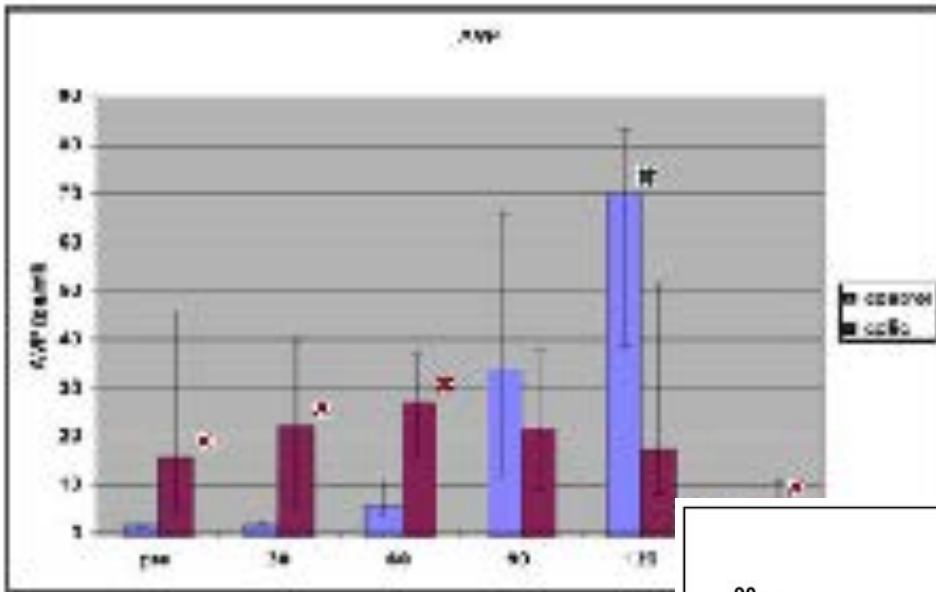
Acknowledgements

The authors acknowledge the following Graduate Program of the National Marine Fisheries Service at the University of North Carolina for their College Program for funding this research. Special thanks to Les Wilson and Beth Strawn for help with the work.

Picture perfect photos

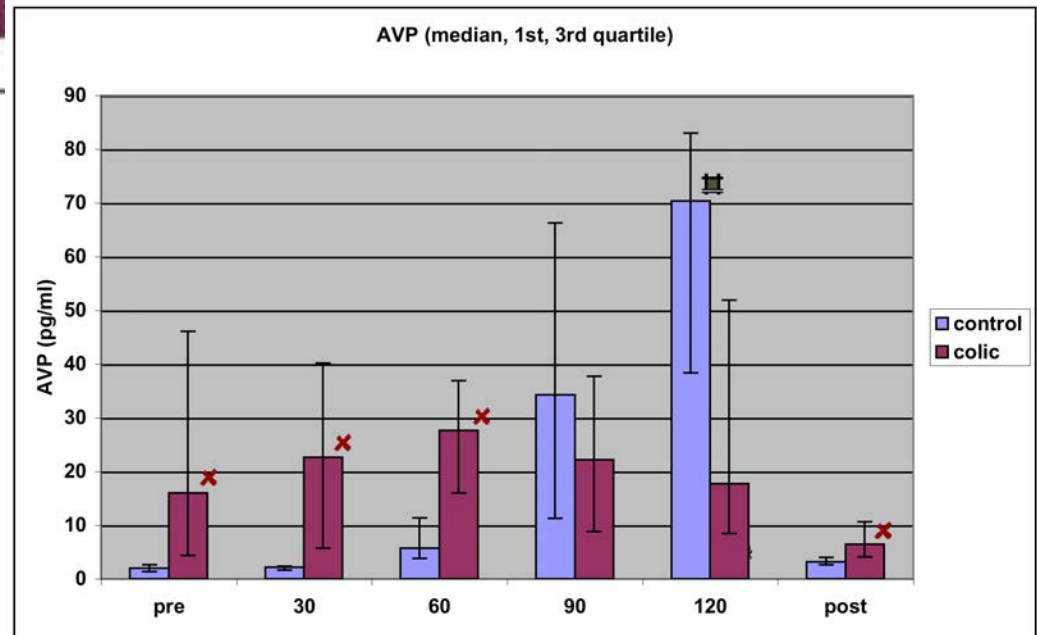
- Avoid resolution overkill!
At least 150 dpi, but no more than 300 dpi
- Save photos as jpg or png
Line art as a png (graphs)
- Web images are usually
poor resolution

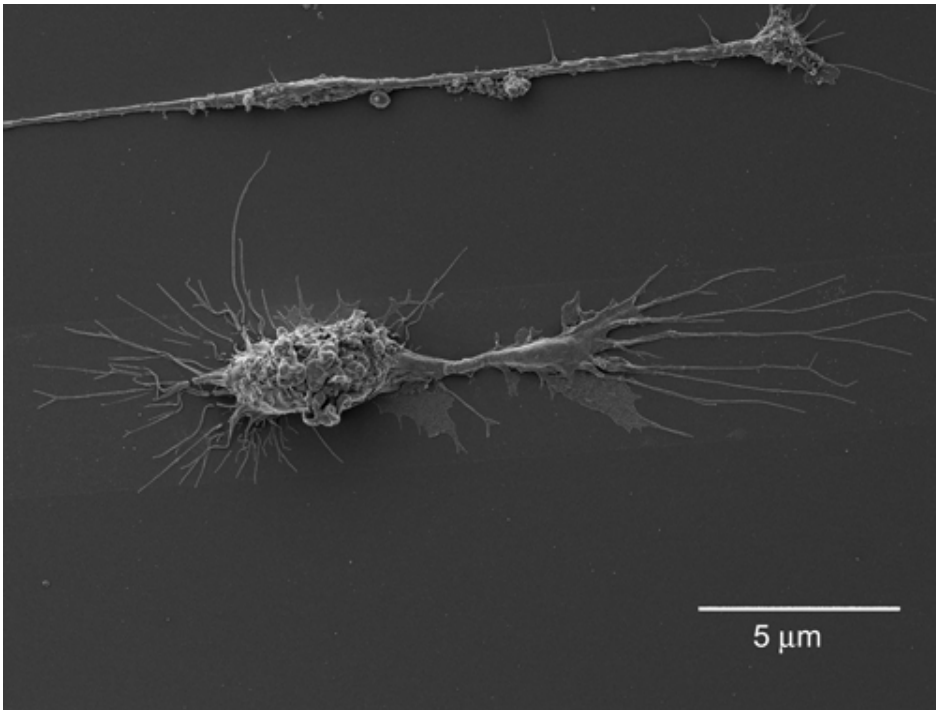




jpg

png

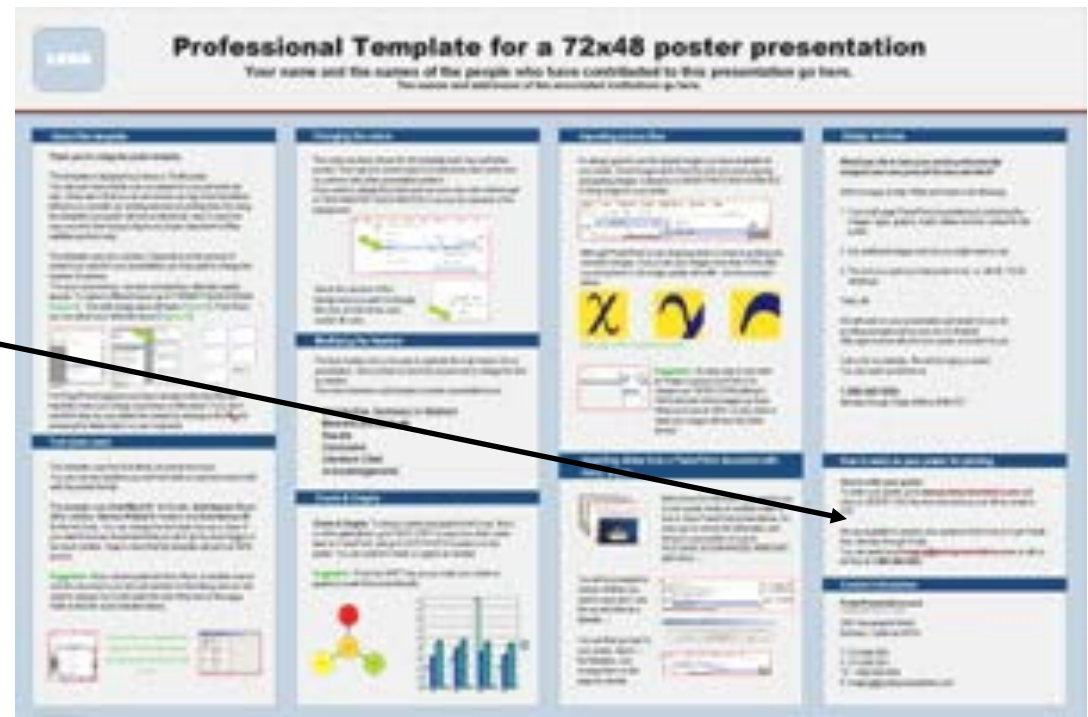




Your cool images
mean nothing
without a
scale bar or
description

Don't forget your funding acknowledgements

CNF-NSF-BMR, etc
Your department can provide you with the required wording



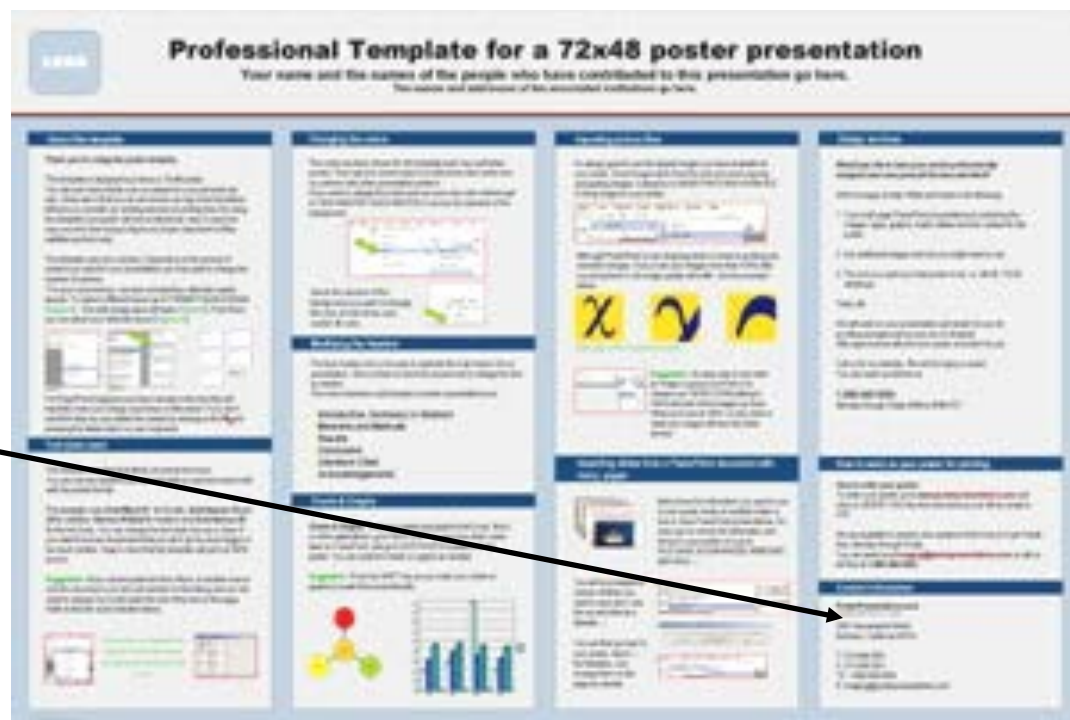
Your contact info!!!

Without it you' ll become

“ya know, those guys with the awesome poster”

Include all
contact info:

- Mail address
- Phone
- E-mail



Using color to engage your readers

2-3 colors, no more!

Dark type on
light color background

The image shows a poster template with the following sections and content:

- Header:** Cornell University logo on the left, NSF logo on the right. The main title area contains the text: "Poster title goes here, containing strictly only the essential number of words..."
- Author Information:** "Author's Name/s Goes Here, Author's Name/s Goes Here, Author's Name/s Goes Here" followed by "Address/es Goes Here, Address/es Goes Here, Address/es Goes Here".
- Introduction:** "Introduction" section with text: "Read ... Check with conference organizers for all specifications of abstract format before you submit your poster. ... This poster is for poster template A (8.5x 11.0x), landscape (portrait) format. Do not change the page size. ... Bar height in inches is 3.5. Do not make your poster bigger than necessary to fit on the wall size."
- Aim:** "Aim" section with text: "How does this poster template ... Simply highlight the essential aspects of your research. ... The color of the poster background can be changed to the color of your choice."
- Method:** "Method" section with text: "Tips for making a successful poster ... Read the paper in the poster format. ... Use a word processing program to create your poster. ... Try using photographs or color images. ... Spell check and grammar check your program."
- Results:** "Results" section with text: "Importing the image files ... To import an image file into your poster go through the menu and click on Insert > Picture From File. ... Be aware of the image size you are importing. ... Do not use images from the web."
- References:** "References" section with text: "References should be listed in the bottom right corner of the poster. ... Use a word processing program to create your references. ... Do not use images from the web."
- Conclusion:** "Conclusion" section with text: "For more information on Poster Design, Scanning and Digital Photography, and Image Files. Contact: Medical Illustration Unit, Photo of Works in Capital, 609-525-2800, Email: photo@cornell.edu, Website: photo.mssu.cornell.edu"
- Acknowledgements:** "Acknowledgements" section with text: "Just highlight the essential aspects of your research. Replace with your text."

Whoa! Where's my sunglasses?

POSTER TITLE GOES HERE, CONTAINING STRICTLY ONLY THE ESSENTIAL NUMBER OF WORDS...

Author's Name/s Goes Here, Author's Name/s Goes Here, Author's Name/s Goes Here
Address/es Goes Here, Address/es Goes Here, Address/es Goes Here

Introduction

First ...

Check with conference organizers on their specifications of size and orientation before you design your poster. Medium poster size is landscape portrait square.

The paper size of the poster template is A0 (36" x 60") in landscape (horizontal) format. Do not change the page size. You can scale it to a smaller or larger size when printing. You need a different setup size with either a portrait (vertical) or a square poster template.

Be as friendly to your audience as possible. While space is limited by conference organizers (e.g. 36" x 60" is OK). Do not make your poster bigger than necessary, but still readable.

Check with conference organizers on their specifications of size and orientation before you design your poster. Medium poster size is landscape portrait square.

The paper size of the poster template is A0

Method

Tip for making a successful poster ...

- Rewrite your paper in poster format. Simply everything and state overall.
- Headings other than Section titles should be both upper and lower case, small capitals.
- Leave a wide margin around the text and use bold characters for emphasis.
- When laying out your poster leave breathing space around your text. Don't overcrowd your poster.
- Try using photographs or color images. Avoid long numerical tables.
- Spell check and grammar check before proofread.

Results

Printing (orientation) ...

Images such as photographs, graphs, diagrams, logos, etc. can be added to the poster.

To save space on images in your poster, go through them as if you're on a tight budget. From the file menu on your computer, select "Print as PDF". This can save the image as either a JPEG or TIFF. JPEG is the preferred format.

Be aware of the image size you are printing. The size of your photo (36" x 60") will be about 100% (100% = 100 pixels). Call the University. Do not use images from the web.

Use color graphics ...

For simple graphics use MS Excel or another graphing tool in Power Point.

Graphs with a scientific graphing program (e.g. Sigma Plot, Origin, etc.) should be saved as a JPEG or TIFF if possible. For more information see the University.

Printing and Laminating

Once you have completed your poster, bring it to the University for printing. We will provide a size and print your poster and provide. The final poster will be printed and laminated.

Keep the original of your poster until the committee. Allow at least 2 weeks for the poster to be printed and laminated. Simply highlight the text to be replaced.

Cost ...

For poster printing and laminating charges contact the University.

Conclusion

For more information on Poster Design (Printing and Digital Photography, and Image Files):

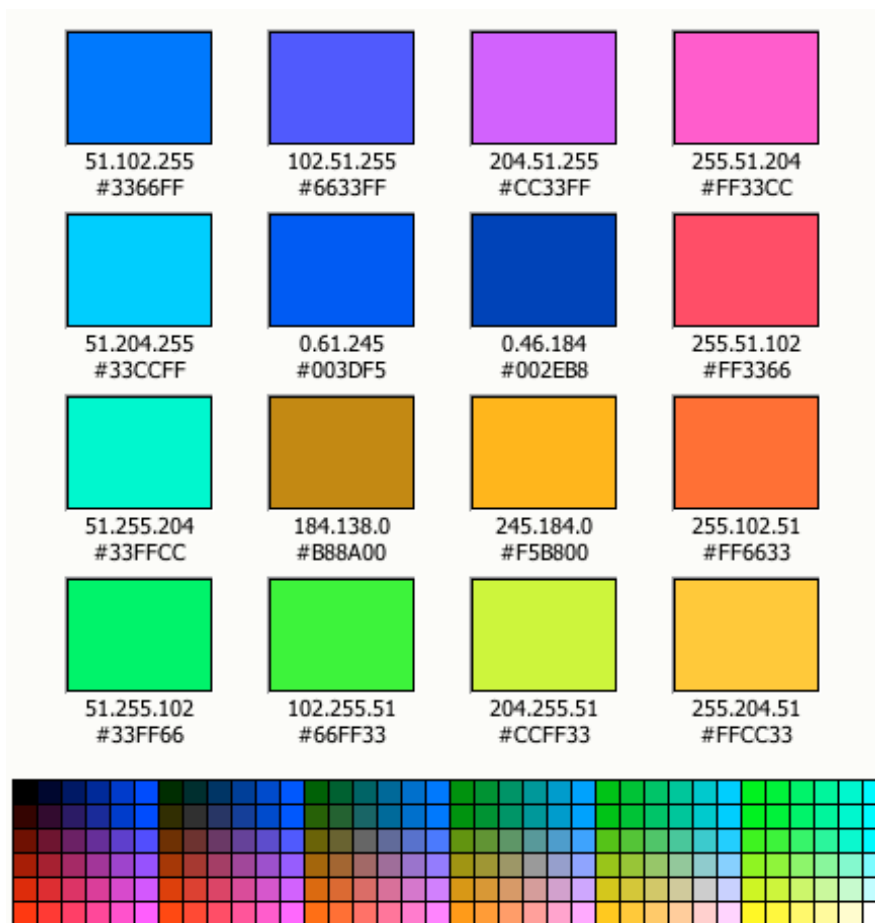
Contact:
Medical Illustration Unit
Princeton-Wake Hospital
PH: 282.2830
Email: princew@wake.edu
Website: <http://med.illustr.wake.edu>

Acknowledgements

Just highlight the text to be replaced with your text. Replace it with your text.

This attracts attention but tires out the eye

Be careful with the primary colors





Blue on Red appears blurry to the human eye.

Yellow on white is hard to read

Red on Blue appears blurry to the human eye.



• aeiko



• Peach Green & Seeds



• Rust



• dollar



<http://www.colorschemer.com/online.html>

Be aware of busy backgrounds

NC STATE UNIVERSITY

Snook Growth in Habitats with Differing Abiotic Variability

Alesia Read, North Carolina State University, anread@unity.ncsu.edu

PROPOSED OBJECTIVE

To create a useful tool for assessing potential stocking habitats based on degree of variability in water quality.

- Snook are a popular game fish found in the estuarine creeks of Florida
- Snook population has been on the decline due to overfishing and habitat degradation
- Numerous stock enhancement endeavors are currently underway without sufficient preliminary research
- Abiotic variability is a prominent feature of these estuaries
- Temperature, dissolved oxygen and salinity might play influential roles in the survivorship of the juvenile snook

RESULTS

STUDY SITES

North Creek Lower (High Variability)

Negative Growth:
Dissolved Oxygen (mg/L) 0-22
Salinity (ppt) 2-21
Temp (°C) 25-34

North Creek Middle (Medium Variability)

Positive Growth:
Dissolved Oxygen (mg/L) 0-8
Salinity (ppt) 16-28
Temp (°C) 30-38

North Creek Upper (Low Variability)

Slow Growth:
Dissolved Oxygen (mg/L) 0-4
Salinity (ppt) 16-30
Temp (°C) 26-33

METHODS

1. Juvenile snook are raised to fingerlings (100-200 mm) in the aquaculture facility
2. All snook are tagged with identifying markers for individual growth measurements.
3. Fish are placed in cages within variable habitats at the research sites for 40 days.
4. Fish are weighed and measured for growth

CONCLUSION

- Snook exhibit increased growth in habitats with a medium degree of abiotic variability
- Stock enhancement projects will be more efficient by releasing juvenile snook primarily in nursery habitats with a medium degree of abiotic variability

NSF 0971832



Southern Flounder Exhibit Temperature-Dependent Sex Determination

J. Adam Luckenbach*, John Godwin and Russell Boeski

Department of Zoology, Box 7617, North Carolina State University, Raleigh, NC 27695



Introduction

Southern flounder (*Paralichthys lethostigma*) support variable behaviors and show great promise for aquaculture. Female flounder are known to grow larger and reach larger adult sizes than males. Therefore, information on sex determination may help increase the ratio of female flounder in aquaculture.

Objective

This study was conducted to determine whether southern flounder exhibit temperature-dependent sex determination (TSD), and if growth is affected by rearing temperature.

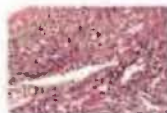
Methods

- Southern flounder broodstock were strip spawned to collect eggs and sperm for *in vitro* fertilization.
- Fertilized larvae were reared from a standard diet on filters at rearing temperatures of high (28°C), mid-range (23°C), and low (18°C) in a flow-through system.
- Upon reaching a mean total length of 40 mm, the juvenile flounder were stocked at equal densities into one of three temperatures (18, 23, or 28°C) for 245 days.
- Growth was observed and fish sacrificed at 245 days.
- Sex-distinguishing markers were used to distinguish males (gonatropogenesis) from females (gonadogenesis).

Histological Analysis

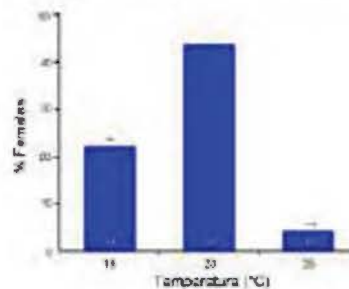


Male Differentiation



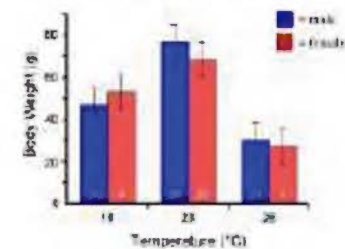
Female Differentiation

Temperature Affects Sex Determination



P < 0.001 and *P < 0.0001 represent significant differences from a 1:1 male:female sex ratio.

Growth Does Not Differ by Sex



Results

- Sex was discernible in most fish greater than 120 mm long.
- High (28°C) temperatures produced 8% females.
- Low (18°C) temperature produced 22% females.
- Mid-range (23°C) temperature produced 44% females.
- Fish reared at high or low temperatures showed reduced growth compared to those at the mid-range temperature.
- Up to 245 days, no differences in growth existed between sexes.

Conclusions

- These findings indicate that sex determination in southern flounder is temperature-sensitive and temperature has a profound effect on growth.
- A mid-range rearing temperature (23°C) appears to maximize the number of females and promote better growth in young southern flounder.
- Although adult females are known to grow larger than males, no difference in growth between sexes occurred in age-0 to 1 year southern flounder.

Acknowledgements

The authors acknowledge the following Keynote Program of the National Institute of Health (NIH) through the University of North Carolina Sea Grant College Program and under the National Sea Grant College Program award number NA16RG0327 for financial support. Thanks to the staff of the North Carolina Sea Grant for their assistance in the lab.

A little different!

NC STATE UNIVERSITY

Southern Flounder Exhibit Temperature-Dependent Sex Determination



J. Adam Luckenbach*, John Godwin and Russell Borski
 Department of Zoology, Box 7617, North Carolina State University, Raleigh, NC 27695

Introduction

Southern flounder (*Paralichthys lethostigma*) support valuable fisheries and show great promise for aquaculture. Female flounder are known to grow faster and reach larger adult sizes than males. Therefore, information on sex determination that might increase the ratio of female flounder is important for aquaculture.

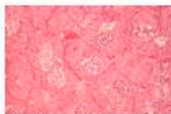
Objective

This study was conducted to determine whether southern flounder exhibit temperature-dependent sex determination (TSD), and if growth is affected by rearing temperature.

Methods

- Southern flounder ~~larvae~~ were strip spawned to collect eggs and sperm for *in vitro* fertilization.
- Hatched larvae were weaned from a natural diet (~~zooplankton~~) to high protein ~~zooplankton~~ feed and fed until satiation at least twice daily.
- Upon reaching a mean total length of 40 mm, the juvenile flounder were stocked at equal densities into one of three temperatures 18, 23, or 28°C for 245 days.
- Gonads were preserved and later sectioned at 2-6 microns.
- Sex-distinguishing markers were used to distinguish males (spermatogenesis) from females (~~oogenesis~~).

Histological Analysis

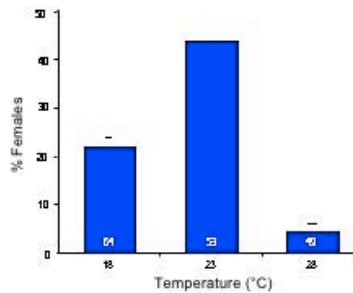


Male Gonad section



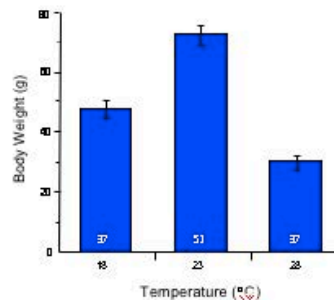
Female Gonad section

Temperature Affects Sex Determination

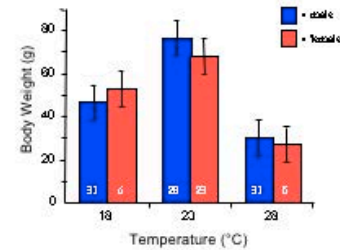


(**P < 0.01 and ***P < 0.001 represent significant deviations from a 1:1 male:female sex ratio)

Rearing Temperature Affects Growth



Growth Does Not Differ by Sex



Results

- Sex was discernible in most fish greater than 120 mm long.
- High (28°C) temperature produced 4% females.
- Low (18°C) temperature produced 22% females.
- Mid-range (23°C) temperature produced 44% females.
- Fish raised at high or low temperatures showed reduced growth compared to those at the mid-range temperature.
- Up to 245 days, no differences in growth existed between sexes.

Conclusions

- These findings indicate that sex determination in southern flounder is temperature-sensitive and temperature has a profound effect on growth.
- A mid-range rearing temperature (23°C) appears to maximize the number of females and promote better growth in young southern flounder.
- Although adult females are known to grow larger than males, no difference in growth between sexes occurred in age-0 (< 1 year) southern flounder.

Acknowledgements

The authors acknowledge the support of funding from the National Science Foundation and the University of North Carolina at Chapel Hill. Funding for this research was provided by the NSF Grant #1008000 and the University of North Carolina at Chapel Hill.

Edit, Edit, Edit and Evaluate!

Cancer-specific Therapy: JMG-CoA R... Inhibitors [Statins]
Suppress Proliferation and Induce Apoptosis in T cell Lymphoma
Matthew J. Goldstein^{1,2}, Sarwan Yousaf^{1,2}, Cathy Shacht^{1,2} and Lawrence Steinman^{1,2}
Department of Biology, Searles Hall, P.I. USA and Departments of ¹Immunology, ²Neurology and ³Neuroscience, Stanford University, CA USA

Figure 1: The Statin Pathway
A diagram showing the conversion of HMG-CoA to Mevalonate, then to Farnesyl pyrophosphate, and finally to Farnesylated proteins. It also shows the inhibition of this pathway by statins.

Figure 2: Therapeutic Path System
A diagram showing the interaction between the Statin Pathway and the Therapeutic Path System, involving various proteins and signaling molecules.

Results
• Treatment with statins significantly reduced proliferation and induced apoptosis in T cell lymphoma cells.
• The effects were dose-dependent and reversible.
• Statin treatment increased the expression of pro-apoptotic genes and decreased the expression of anti-apoptotic genes.

Conclusions
• Statins exhibit anticancer activity in T cell lymphoma by suppressing proliferation and inducing apoptosis.
• The effects appear to be mediated through the inhibition of the mevalonate pathway and subsequent downregulation of Farnesylated proteins.

Acknowledgments
• This work was supported by the National Institutes of Health (NIH) and the Department of Biology at Stanford University.

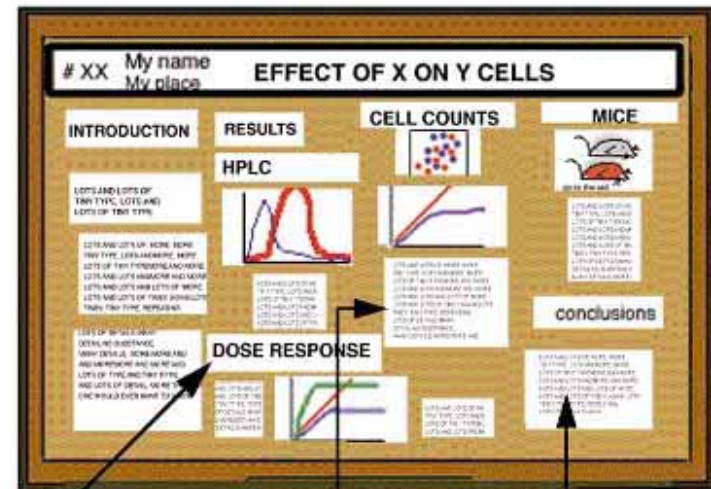
Print out a letter size draft

Can you read the type?

Are these the colors you really want?

Does it look too busy?

Do my main points pop?



Large type states methods, not results

Results artfully buried in a methods description

Carefully omits interpretations

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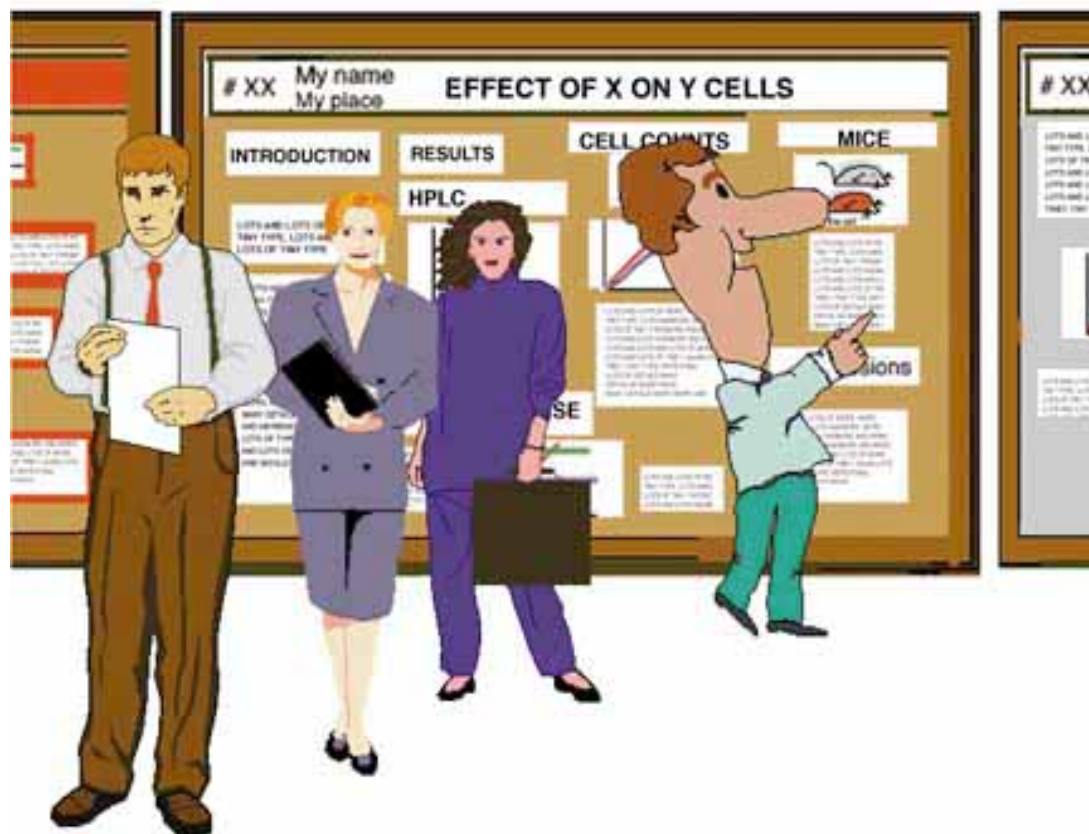
The secret of a good poster:
“Ugly design print ugly poster”

http://cf.ccmr.cornell.edu/cf_newsite/poster_print/index.html

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Prepare a 3-5 minute verbal explanation

Is he ever
going to
SHUT UP???



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- Provides a written record for interested folks
- Makes you look together
- Be sure to include complete contact information
- Might even get you a job!



Let's judge some designs
and see what you've learned

Using a Windbreak Habitat Model Across Broad Landscapes: The Effect of Local Landscape Composition and Geographic Location

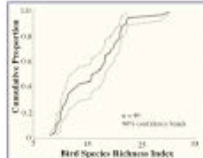
George Hess¹, John Poulsen², Raymond O'Connor³, Jeff Bay³

1. Windbreaks as Habitat

Agricultural lands — fields, pastures, and orchards — are managed to produce food and fiber for people. In the U.S., Great Plains and extensive agricultural landscapes, windbreaks have been planted to protect fields, crops, livestock, and livestock from the prevailing wind. Windbreaks provide some of the finest wooded habitat for birds and other wildlife that people have come to value. Windbreaks make up about 25% of the wooded cover in Nebraska, much of the other wooded cover across the Great Plains.

Although they provide cover from wind erosion and provide habitat for some species, windbreaks also contribute to the fragmentation of prairie grasslands. Prairie fragmentation negatively impacts prairie wildlife such as prairie grouse, chickens, upland wildgeese, and pronghorn antelope.

- Forty windbreaks were sampled using message sampling with a frame stratified by intensity of cultivation.
- Most sample windbreaks fall in or near extensive cropland.
- Habitat characteristics of each windbreak were measured in 1991.
- Thirty-five farmers allowed researchers to return in 1992.



- Using regression factors associated with each sample, we estimated the habitat value of windbreaks for the region (graph left).
- We estimated that half of Nebraska's windbreaks support fewer than 10 breeding bird species (graph left).
- We also estimated that between 67% and 100% of windbreaks are smaller than 1.2 hectares (data not shown), suggesting that few Nebraska windbreaks provide habitat for forest interior or area sensitive birds.

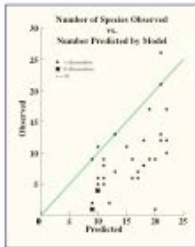


4. Validating BSRI Model

In 1992, a team of five ornithologists revisited 39 of the 40 windbreaks (1 farmer refused further visits) between late May and early July.

Each windbreak was visited four times. Data were collected between one-half hour before and one hour after sunrise. All observed birds were identified by species and recorded using spot mapping techniques. Two recorded observations of the same species were only placed on the field map through the windbreak for each visit.

Because the windbreaks were narrow, we assumed all species were detected.



5. Results of Validation

The model overestimates the number of bird species in the Nebraska windbreaks (graph left). However, the relative qualitative ranking of windbreaks is generally preserved. A total of 31 species were observed.

A strong, significant relationship was found between deviation of observed from predicted number of species and large regional variables of the geographic location of individual windbreaks.

Forest interior, area sensitive, and forest edge species occurred in the larger, taller, more complex windbreaks.

Openland and grassland species occurred in the smaller, shorter, less complex windbreaks.

6. Failure of the Model

There are several possible explanations for the failure of the model to predict accurately the number of bird species in the windbreaks.

- 1) **Geographic differences in species richness.** The model was developed in Kansas, which has 5-20 more species of bird than Nebraska. Breeding Bird Survey species richness map of North America.
- 2) **Differences in adjacent windbreak characteristics.** The number of species in Nebraska's windbreaks depends differently on windbreak characteristics than did the number of species in Kansas.
- 3) **Differences in landscape-scale characteristics.** The number of species in Nebraska's windbreaks depends on characteristics of the surrounding landscape.

7. Local Landscape-Scale Effects

Land cover data were collected for the quarter-section (30 x 30 acre) of land containing the sample windbreak. Cover categories were 100% cropland, crop/grass/brushwood, forest, open pastured, and water. Fences and utility piling were also recorded (present/absent).

Landscape metrics computed included relative cover distributions, total edge length, edge:area ratio, number of patches, mean patch size, mean perimeter per patch, and size of largest field.

The relation between observed and predicted number of species was not significantly related to any of the landscape metrics. This suggests that neither a region, the center of species using a windbreak depends primarily on landscape attributes.

8. Conclusions

- 1) The Bird Species Richness Index for windbreaks cannot be extended simply to describe species richness at large regional scales without either validating explicitly or adding terms that account for differences in regional species pools.
- 2) Local landscape-scale composition and structure do not explain the failure of the model.
- 3) The presence of species pools in windbreaks (i.e., forest interior, grassland) may be explained by windbreak size and complexity. The model may be more useful for predicting the presence or absence of species pools than for predicting the total number of species present.

Acknowledgments: This work could not have been done without the many dedicated people at the National Agricultural Statistics Service who helped plan and execute the 1994 data collection effort; the kind farmers who allowed us to survey their windbreaks; the five ornithologists who spent six weeks traveling around Nebraska; and many other people from the University of Nebraska, U.S. Fish and Wildlife Service, Natural Resources Conservation Service, and the Environmental Protection Agency. Funding was provided by the Environmental Protection Agency and the USDA Agricultural Research Service.

1. North Carolina State University, Forestry Department, Raleigh, NC
2. University of Maine, Department of Wildlife Ecology, Orono, ME
3. North Carolina State University, Statistics Department, Raleigh, NC

A bit text heavy but not too bad.



Determining the Wear Resistance of Occlusal Splints in a Prospective Clinical Study

P. Ottl, P. Schmelz, A. Piwowarczyk, H.-Ch. Lauer

Dept. of Prosthodontics, School of Dentistry (Director: Prof. Dr. H.-Ch. Lauer), ZZMK (Carolfarm), J. W. Goethe University, Frankfurt, Germany

Objective

- To determine quantitatively the wear resistance of a newly developed light-curing splint resin over a period in situ of six months.

Materials and Methods

Patients

n = 20 consecutive patients
(mean age: 34.7 years; 12 F, 8 M)

Inclusion criteria

- Natural dentition/ fixed denture
 - Complete dentition to at least the 1st molar and
- for the **stabilization splint sample**:
- Insufficient occlusal support
 - Increased occlusal loss of dental hard tissue

for the **distraction splint sample**:

- TMJ pain and
- Complete anterior dislocation of the disk without reduction with terminal reduction
- TMJ osteoarthritis



Fig. 1: Stabilization splint in situ

Resin splint material (Fig. 1)

- Light-curing (400-500 nm) resin made of high-molecular dimethacrylates with organic and inorganic fillers
- Does not contain methyl methacrylate

Study design

- Duration: 6 months
- Types of splints (maxilla, n = 10 each): stabilization splints, distraction splints
- Splint wear mode: 24 hours
- Examinations: before insertion (BI), at 4 weeks (4W), at 3 months (3M), at 6 months (6M)
- Occlusal adjustments were restricted to the time before 4W.

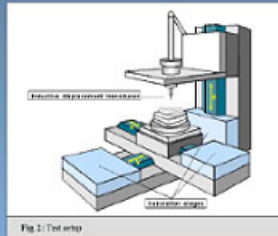


Fig. 2: Test setup

Measuring technology (Fig. 2)

- Vibration-isolated table framework
- 3 translation stages (for directions x, y, and z) (DC-Motor) (PI, Waldbronn)
- DV 4 stereomicroscope (Zeiss, Oberkochen)
- WA 20 inductive displacement transducer/ Spider8 digital 8-channel measurement unit/ Calman 32 software V2.1 (HBM, Darmstadt)
- Local coordinate storage for occlusal contacts during baseline measurements
- Ten measurements each in regions 13, 23, 16, 26 (BI, 4W, 3M, 6M)
- Splint repositioned on remount cast

Results

- The medians of the occlusal vertical gaps/losses (wear, resin lamination, water sorption, etc.) are shown in Fig. 3 (stabilization splints) and Fig. 4 (distraction splints).

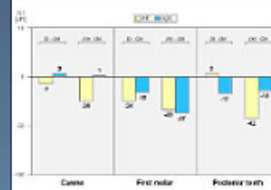


Fig. 3: Occlusal vertical gaps/losses (median) of the teeth in situ over a period in situ of six months (n = 10 stabilization splints)

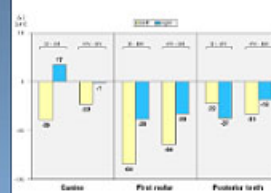


Fig. 4: Occlusal vertical gaps/losses (median) of the teeth in situ over a period in situ of six months (n = 10 distraction splints)

- Statistical analysis (Mann-Whitney U-test, $p \leq 0.05$) showed no significant differences when comparing the corresponding results of stabilization and distraction splints.

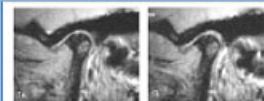


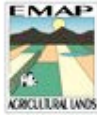
Fig. 5a and b: Sagittal oblique (SO) of the condyle in situ with (a) and without (b) splint (Fig. 5a) and with (b) distraction splint inserted (Fig. 5b) following six months of wearing.

Conclusions

- The present study *clinically* confirms the good wear resistance results of the new resin splint material obtained in a previous *in-vitro* study [OTTL et al., Dtsch Zahnärztl Z 52, 342 (1997)].
- Good wear resistance is of great importance for maintaining the therapeutic mandibular position during the treatment period (Figs. 5a and b).



Nice poster



A Framework for Assessing the Condition of Agricultural Lands

George Hess¹, Anne Hielkamp², Mike Munster³, Steve Peck³, Lee Campbell⁴, Betty McQuaid⁴, Steve Shafer^{3,5}

Mission: To develop indicators of the condition of agricultural lands within an ecological framework, and to monitor and evaluate this condition on a regional basis.



Sustainable agriculture has been discussed, defined, and discussed in countless papers.

Definitions tend to be broad and encompass ecological, economic, social and even policy dimensions. Although these dimensions are interrelated, each may be treated independently.

In our efforts, we sought methods to examine only the ecological aspect of sustainability.



People place values on agricultural lands that must be addressed if monitoring is to be relevant.

The foremost goal for agricultural lands is to produce food and fiber for human uses.

Other desired outcomes can be considered goals for the larger landscape and sometimes function as constraints on production. These include clean air and water, wildlife habitat, and aesthetically pleasing landscapes.

The ecological condition of agricultural land is defined by its productivity and the degree to which natural biotic and abiotic resources are conserved and protected.

Agricultural land in good condition is productive and shows not compromise natural resources. Sustainability is the ability to maintain good condition over time.



Indicators were selected to reflect crop productivity and land stewardship.

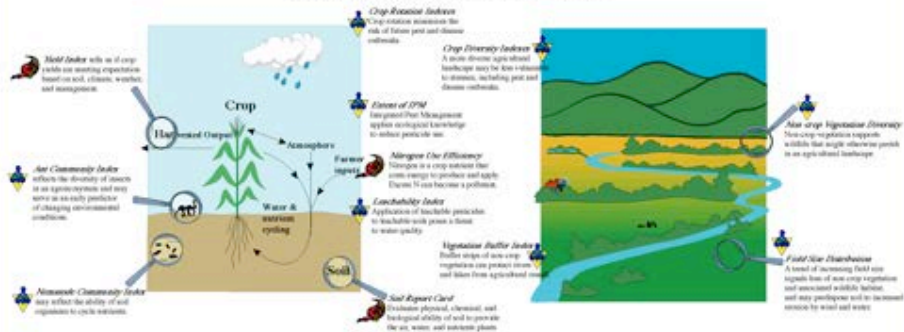
In making an assessment, condition is reported for each indicator. An overall condition may also be reported, but depends critically on the relative weighting of the goals for agricultural lands.

For sustainability, one can examine trends in crop productivity and stewardship practices.

Potential Indicators for Annually Harvested Herbaceous Cropland

As a starting point, we chose to concentrate our efforts on developing indicators for **annually harvested herbaceous cropland** — **land planted with crops that are harvested every year** whether the plants are annual or perennial. Common examples are corn, wheat, soybeans, alfalfa hay, and sorghum.

We also endeavored to supplement, rather than duplicate, existing efforts. Our conceptual framework is flexible enough to incorporate indicators based on data from other monitoring efforts. For example, an erosion indicator could be developed using the USDA Natural Resources Conservation Service's National Resources Inventory data.



Fields are for crops . . .


. . . but landscapes are for all of us.

Acknowledgements: The EMAP Agricultural Lands Inventory Group thanks the many individuals and organizations that made the effort a success. The individuals on the team were not numerous in number, but the organizations include the USDA's Agricultural Research Service, Forest Service, National Agricultural Statistics Service, and Natural Resources Conservation Service; the U.S. Environmental Protection Agency; North Carolina State University; University of Maine; Oregon State University; University of Nebraska; and, well, I guess the list of organizations is pretty long, too. Thanks to all!

1. North Carolina State University, Forestry Department, Raleigh NC;
2. Duke University Medical Center, Durham NC;
3. North Carolina State University, Department of Plant Pathology, Raleigh NC;
4. USDA Natural Resources Conservation Service, Raleigh NC;
5. USDA Agricultural Research Service, Raleigh NC.



Where do I begin?



PREVALENCE OF OBESITY AMONG INNER CITY LATINO CHILDREN AND ADOLESCENTS

Nazrat M. Mirza MD, ScD, Jill Merchant MS, Leslie Becker, PhD
 Children's National Medical Center and George Washington University School of Medicine and Health Sciences,
 Washington, DC

Background

Obesity is a multi-faceted and public health problem facing children and adolescents in the US. Of particular significance is the increasing prevalence of obesity and its complications among the Latino population. Addressing this public health issue is a strong issue of family and children advocacy. Diagnosis of the problem placed on children, may come by a misdiagnosed suspicion that child is overweight but dental food or other factors made on TV. Obesity in children and adolescents is concerning not only because of the associated health and psychosocial consequences, but also because obese children tend to become obese adults. Thus, obesity is associated with long chronic diseases, it will have an economic impact on the health care system.

Purpose of Study: Examine the extent of obesity among inner city Latino children and adolescents with the overall goal of informing the need for an obesity intervention program.

Study Design

Two hundred and twenty-five charts of children and adolescents aged 4 to 17 years were randomly selected from well-child visits to Children's Hospital's Latino Magnet Clinic for the calendar year 2010. The charts were an average of 8.6% (range 4 to 24%), approximately 46.9% were Latino, predominantly from El Salvador. Information contained from the charts included height, weight, blood pressure, latest classification, history, and physical findings associated with obesity complications. Height (Leslie Becker, MD) was calculated from measured weight and height. Data analysis was done using SAS version 9.1.

Results

The distribution of the study sample is shown in Table 1. About 50% were female. The average age was 10.4 years with a SD of 3.3 and a range of 4.0 to 17.7 years. The mean BMI was 20.8 with a SD of 3.4 and a range of 13.1 to 31.6. Overall 40% of the children and youth were overweight (BMI ≥ 25) (percentage) or at risk for overweight (BMI ≥ 25) (percentage), with an almost equal distribution between the two categories (Table 2). Males were more overweight and at risk for overweight than females, but the gender difference was not statistically significant. The prevalence of overweight was highest for youth ages 10 to 17 years.

Table 1 - Population statistics

Variable	Frequency (%)
Gender	
Male	66.1
Female	33.9
Age Categories (years)	
4-6	19 (12%)
7-8	40
9-10	22.4
11-12	27.8
13-14	14.4
15-16	10.8
17-18	8.2

Results continued

Table 3 shows the distribution of overweight and at risk for overweight by age category. There did show that prevalence overweight and at risk for overweight is high in children as young as 4 to 6 years. Although the prevalence of overweight and at risk for overweight was lower in the age group 14-17 years, the difference was not statistically significant. Patient from help (18.4 and 20.0%) respectively.

Latino frequency was higher among the overweight than the non-overweight children and youth (50.0% vs. 46.9% respectively). There was no difference in the frequency of occurrence of other signs such as, obstructive sleep apnea, learning difficulties, behavior and problems, asthma, and ADHD between the overweight and non-overweight group. Only 7% of all the overweight children had their classification levels changed. The abnormal levels ranged from 112.1 to 169.0. The percent of the children and youth were high blood pressure, and the range was 17.1 to 77.8. There was no significant association between overweight and asthma or diabetes. Blood pressure in this study overall (only 20% of the overweight children and youth) was diagnosed and medication made in their charts regarding their overweight status by their health care providers. There were no referrals for overweight intervention and dietary plans.

Table 2 - BMI Distribution

BMI Category (at Risk for overweight - BMI 25-29.9)	Frequency (%)
1. Both sexes (n=125)	20.8
2. Males (n=76)	22.4
3. Females (n=49)	19.4
Overweight (BMI ≥ 30) (percentage)	
1. Both sexes (n=125)	22.4
2. Males (n=76)	18.1
3. Females (n=49)	26.8

Table 3 - At Risk for Overweight and Overweight by Age Category

Age Category (n)	At Risk for Overweight (%) (BMI 25-29.9)	Overweight (%) (BMI ≥ 30)
4-6 (n=19)	21.1	10.5
7-8 (n=40)	35.0	22.5
9-10 (n=22)	9.1	18.2
11-12 (n=28)	36.1	27.8
13-14 (n=14)	21.4	21.4
15-16 (n=11)	27.3	36.4
17-18 (n=8)	25.0	37.5

Conclusions & Recommendations

The prevalence rate for overweight and at risk for overweight among children and youth in the inner city Latino community is more than twice the national average. Primary health care providers need to acknowledge and assess the presence of obesity and overweight in children and adolescents to early and provide appropriate management of the problem. Targeted intervention and prevention strategies for overweight and obesity in children and adolescents are urgently needed for this population.



I'm feeling sleepy

Early Outcomes of the First 1471 Consecutive Kyphoplasty Procedures in the United States for the Fixation of Painful Osteopenic Vertebral Body Compression Fractures (VCF)

Steven R. Gartin¹, M.D., leader R. Lieberman², M.D., Mark A. Reiley³, M.D., Joseph M. Lane⁴, M.D., Frank W. Phillips⁵, M.D., Hallett S. Mathews⁶, M.D., Hansen A. Yuan⁷, M.D., Barton H. Sachs⁸, M.D., for the Kyphoplasty Study Group
¹University of California, San Diego, Medical Center, San Diego, CA; ²Cleveland Clinic, Cleveland, OH; ³Wentzky Orthopedic Medical Group, Berkeley, CA; ⁴Hospital for Special Surgery, New York, NY; ⁵University of Chicago Spine Center, Chicago, IL; ⁶Mit-Alberta Spine Specialists, Richmond, VA; ⁷State University of New York Health Sciences Center, Syracuse, NY; ⁸Albany Medical Center, Albany, NY



BACKGROUND

- 700,000 VCFs per year
- 275,000 diagnosed, ~80% due to pain
- Spinal deformity associated with
 - Significant morbidity
 - 22% increased mortality (Kado, Ann Int Med 1996)
- Current treatments ineffective
 - Open surgeries fail
 - Medical management palliative
- Vertebroplasty
 - Bifocal transpedicular cement fill
 - Relieves pain
 - Requires high pressure and runny cement
 - High risk of cement leaks
 - Up to 73% where documented (Hestl et al., Radiology 1997)
 - Major complications (Chris, J Int Neuronal 1997)
 - 1.3% in osteoporosis
 - 10% in metastatic cancers

KYPHOPLASTY

Kyphoplasty is a minimally invasive orthopedic procedure for reducing and fixing painful vertebral body compression fractures secondary to osteoporosis. Using a posterior approach, one or two inflatable Bone Tamps (Fig. 1) are inserted into the fractured vertebral body, generally using a bilateral transpedicular approach (Fig. 2). The surgeon carefully inflates the balloon tamps (Fig. 2) using radiopaque contrast medium with image, volume and pressure control. The increased balloon tamp volume compacts the inner cancellous bone as it pushes the fractured outer cortical bone back toward its normal position. The inflation path is also controlled by placement, volume and balloon design. After reduction, the balloon tamp is removed, and the resulting void is filled with thick PMMA under low manual control and low pressure. The steps of Kyphoplasty are illustrated in Fig. 3.

Figure 1 Inflatable Bone Tamp (IBT)



Figure 1 Cleared in the U.S. for the reduction of fractures and/or creation of a void in cancellous bone.



Figure 2 Bilateral Transpedicular Fracture Reduction with the IBT

Figure 3 Kyphoplasty Using the IBT



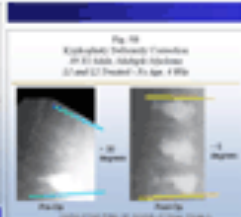
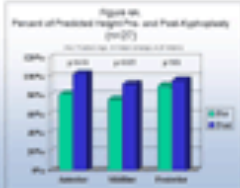
STUDY DESIGN AND METHODS

A retrospective multi-center review to assess early outcomes with Kyphoplasty. Pain was localized by physical examination. The presence of mass lesions and softtissues was confirmed on MRI. General or deep local anesthesia was chosen based on anatomy, number of levels and patient status. The first 135 patients at our centers were asked to characterize their back pain as improved, the same or worse 24 hours post-op and at last follow-up. Fractured and nearest normal vertebral body heights were measured anterior, middle and posterior in the first 27 vertebral body fractures treated by one surgeon (MAM). The height of the nearest normal vertebral body was used to calculate the % of predicted height for all the vertebral bodies (Fig. 4A) and for the sub-set where which had lost 15% or more of height before treatment (Fig. 4B).

The pre-treatment height was subtracted from the predicted height, then divided by the post-treatment height subtracted from the predicted height, to find the percentage of total height restored. One set of X-rays by one surgeon (JMP) are used to show an example height restoration (Fig. 5A) and deformity correction (Fig. 5B). Device-related major complications from all procedures are reported. Fracture leaks in the first 70 procedures performed by one surgeon (JML) were assessed with X-ray and MRI.

PRELIMINARY RESULTS

- 107 before (level 1-7)
- Average (before) age: 67 months
- Range: 55-89 (3) years
- 90 operators
- 260 levels (level 1-7)
- Average vertebrae: 2.7
- Average fracture position: 100 (range: 80-120)
- Average tamp inflation volume: 1.0 cc (range: 0.7-1.6)
- Were the IBT systems safe?
 - Minor morbidity
 - 95% report pain improvement at 2 weeks
 - 95% IBT reduction of fracture height (Fig. 5A, B, 5C, 5D)
 - No increased incidence of adjacent fracture
 - 0% device related major complications
 - 4 hardware
 - 1 catheter
 - 1 bleeding
 - 1 stroke
 - 0% lost to follow-up (noting level)



CONCLUSIONS

Kyphoplasty is an important treatment option that provides immediate stability and return to activities of daily living to patients with acutely painful vertebral body compression fractures secondary to osteoporosis. Kyphoplasty facilitates fracture reduction and deformity correction. While reduction is more likely in acute fractures (few months or less), it has been seen in fractures over one year old. Kyphoplasty also provides rapid pain relief in the nearly all patients, and this result is independent of fracture reduction. The safety profile of Kyphoplasty compares favorably to the published safety profile of vertebroplasty.



Poster title goes here, containing strictly only the essential number of words...



Author's Name/s Goes Here, Author's Name/s Goes Here, Author's Name/s Goes Here
 Address/es Goes Here, Address/es Goes Here, Address/es Goes Here

Introduction

Fit...
 Check with conference organizers on their specifications of board dimensions before you start your poster. If you're not sure, ask the organizers for their specifications.
 The page size of the poster depends on (36" x 108") landscape (horizontal) format. Do not change the page size. You can scale it to a smaller or larger size when printing. You need a different size poster with either a portrait or vertical or a square poster template.
 Bear in mind you don't want to fill up the white space allocated to you. Conference organizers (e.g. 800 Write the USA) don't make your poster bigger than necessary. Just fit it right in size.

Aim

How to use the poster template...
 Simply highlight the text and replace it by typing in your own text or copy and paste your text from a MS Word document or a Power Point slide presentation.
 The body text font size should be between 24 and 32 points. Arial, Helvetica or similar font.
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Tips for making a successful poster...

- Re-write your paper in poster format. Simply everything, and save as PDF.
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- When laying out your poster leave breathing space around your text. Do not crowd your poster.
- Try using photographs or diagrams/graphs. Avoid using numerical tables.
- Spell check and get someone else to proof read.



Experiments are run in the Cornell University. Results are reported in the journal of the American Chemical Society.



Experiments are run in the Cornell University. Results are reported in the journal of the American Chemical Society.



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Results

Printing the results...
 Images such as photographs, graphs, diagrams, logos, etc. can be added to the poster.
 To insert scanned images to your poster go through the menu as follows: Insert > Picture > From File. In the bottom of your computer select any press OK. The format of images is either JPEG or TIFF. JPEG is the preferred format.
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For simple graphs use MS Excel or other graph directly in Power Point.
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Experiments are run in the Cornell University. Results are reported in the journal of the American Chemical Society.



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Printing and Lamination

Once you have completed your poster, bring it down to MU for printing. Make it professional. A3 size board printer. You can check and proof read. The final poster will then be printed and laminated.
 Note: Do not take your poster until you have finished. Allow at least 24 hours for the poster to be printed.

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 For poster printing and lamination charges contact MU.

Conclusion

For more information:
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 Printers of Wake Hospital
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 Email: info@wakeprint.com
 Website: www.wakeprint.com

Acknowledgements

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Perfect!

A Large-Scale Public Library Renovation in Taiwan



A Large-Scale Public Library Renovation in Taiwan

Library Association of R.O.C.
National Teaching Library of Taiwan

ABSTRACT

There are 323 public libraries, including university and village public libraries, in Taiwan. As most were built in 1960s, they are not fit in the digital environment to meet users' needs.

In order to upgrade the quality of public library services in Taiwan to meet users' needs and to foster lifelong learning, in 2003, the central government of Taiwan approved a budget of NT\$1.2 billion (US\$4 million) as a large-scale public library renovation project in 301 public libraries.

National Teaching Library was designated as coordinate library to execute the project from February 2003 to June 2004. 301 public libraries were divided into eight groups according to the geographical area, and a steering committee was formed, consisting 96 committee members from the fields of library and information sciences, architecture, space design, literature, and history. 96 committee members were assigned to one of eight groups of 301 public libraries to help and to give suggestions of renovation, improvement, replacement, service programs of each library.

The project was executed and completed efficiently and effectively in June 2004. This poster presentation will display the results of the renovation, improvement, replacement, library management, and services of 301 public libraries in Taiwan. The contents of the poster will be explained by words, pictures, and statistical tables.

Keywords: Public libraries
<http://www.ntl.gov.tw>

Background

The last time large-scale renovation project, library buildings in Taiwan were renovated in 1960s. Since then, the quality of library buildings has been declining. The renovation project is a large-scale public library renovation project in 301 public libraries in Taiwan. The project is a large-scale public library renovation project in 301 public libraries in Taiwan. The project is a large-scale public library renovation project in 301 public libraries in Taiwan.



Figure 2 | Number of Public Libraries in Taiwan

Category	Number	Total
University	1	1
Provincial	102	103
County	102	205
Township	102	307
Total	205	307



Results | Redesigning library building appearance, building interior, furniture and service programs

- Background**
 - The last time large-scale renovation project, library buildings in Taiwan were renovated in 1960s.
 - Since then, the quality of library buildings has been declining.
 - The renovation project is a large-scale public library renovation project in 301 public libraries in Taiwan.
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www.ntl.gov.tw



Oh my gawd!

WHICH IS MORE IMPORTANT: NUMBER OF PATCHES OR CONNECTIVITY?

Darm Kalisak, PES Student

Contact: dkalisak@cornell.edu

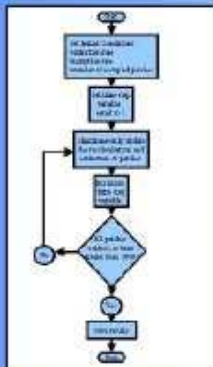
INTRODUCTION AND OBJECTIVES

Micro-patterned structures with defined geometry could benefit from the unique features of the effects of different materials developed at that the same material has been known to respond differently. In patches, a large population will readily accommodate a structure and mechanism. It is unclear to those what composition change at each interface, or a better to approach to add new patches to the existing patches, or a better to replace old patches with new patches.

It is not clear, in a certain way, to which extent the effect is independent of structure. For example, if the composition factor is too high, the effect may be lost or even lead to unwanted side effects. However, the composition factor is too low, it may lead to unwanted side effects. Therefore, the effect may be lost or even lead to unwanted side effects. Therefore, the effect may be lost or even lead to unwanted side effects.

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THE PROGRAM



ASSUMPTIONS AND LIMITATIONS

Additional patches are added to a system which has a number of patches. The number of patches is assumed to be constant. It is assumed that the number of patches is constant.

Adding patches to a system is assumed to be independent of the number of patches. It is assumed that the number of patches is constant.

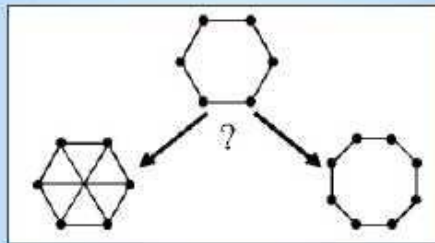
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THE ISSUE



A micro-patterned structure is a collection of discrete population patches, in which individual patches vary typically in size, shape and location. In the long-term evolution of the micro-pattern, the system is shaped more by adding new patches or by increasing the number of connections between existing patches?

Adding patches to a system is assumed to be independent of the number of patches. It is assumed that the number of patches is constant.

Adding patches to a system is assumed to be independent of the number of patches. It is assumed that the number of patches is constant.

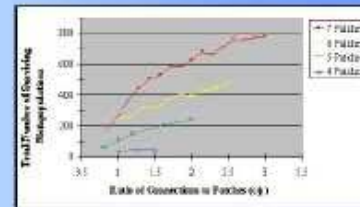


RESULTS

Results of the study by using different materials with different patch sizes.

- number of patches (5, 6, 8, 10, 15)
- randomly connected network (random network)
- the effect of patch size on the number of patches, connectivity
- the effect of patch size on the number of patches, connectivity
- the effect of patch size on the number of patches, connectivity

The overall evolution of the system is determined by the number of patches and the number of connections between patches. The number of patches and the number of connections between patches are determined by the number of patches and the number of connections between patches. The number of patches and the number of connections between patches are determined by the number of patches and the number of connections between patches.



CONCLUSIONS

The number of the total patches and the number of connections between patches are determined by the number of patches and the number of connections between patches. The number of patches and the number of connections between patches are determined by the number of patches and the number of connections between patches.

It is not clear, in a certain way, to which extent the effect is independent of structure. For example, if the composition factor is too high, the effect may be lost or even lead to unwanted side effects. However, the composition factor is too low, it may lead to unwanted side effects. Therefore, the effect may be lost or even lead to unwanted side effects.



Nice flow, but too metallic

Fusing ¹⁸F-FDG-hybrid PET To CT Images Significantly Alters Treatment Planning In The Radical Treatment Of Non-Small Cell Lung Carcinoma

Y.C. Ung, M.D., C.B. Caldwell, Ph.D.,¹ K. Mah, M.Sc., C.J. Dunjovc, M.D., J.M. Huhogh, M.D., S.N. Ganguli, M.D.,² R.G. Turora, B.Sc., and L.E. Eberlich, M.D.¹
Toronto-Sunnybrook Regional Cancer Centre, Sunnybrook and Women's College Health Sciences Centre,¹ and University of Toronto, Toronto, CANADA

Abstract

A prospective clinical study was conducted to determine the impact of integrating PET and CT images into CT plan optimization for radical treatment of non-small cell lung cancer. Twenty patients were included in the study. PET and CT images were fused using CT and PET images to create the fused PET/CT images. The percentage of PET/CT images that were fused was 100%. The PET/CT images were used to generate CT plans. The PET/CT images were used to generate CT plans. The PET/CT images were used to generate CT plans. The PET/CT images were used to generate CT plans.

Potential of ¹⁸F-FDG-hybrid PET for Radiation Therapy Planning

"Fluoro-deoxyglucose (FDG) is a glucose analogue that is metabolically trapped in cells. Many malignancies are associated with increased glycolysis and thus demonstrate increased uptake of FDG. To help cancer staging, FDG-PET has proven to have greater sensitivity and specificity than CT." In radiation planning, it may help to distinguish between tumor and other processes such as inflammation. As a functional imaging modality, FDG-PET may complement the anatomic data from CT.



Figure 1. Unfused PET and CT images. The PET image shows increased uptake of FDG in the tumor area, which is not visible on the CT scan.

Study Objective: To determine the impact of integrating ¹⁸F-FDG-hybrid PET images with CT planning images on treatment planning of patients with NSCLC.

Problem

Local control with radical radiation therapy for non-small cell lung carcinoma (NSCLC) is often poor. Some evaluation with PET/CT has the potential to improve outcomes. The evidence base with any dose escalation approach is the ability to accurately define the gross-tumor volume (GTV). With accurate imaging techniques such as PET or MRI, it is often difficult to distinguish malignant from normal tissues, particularly when anatomic parameters or normal tissue displacement occurs. CT and MRI are also not well suited to determining which, if any, non-metastatic lymph nodes are involved. A robust, more sensitive lymph node involvement would help guide treatment strategies.

Prospective Study Design

Imaging: In treatment position and same day

- FDG-hybrid PET
 - Maximum 1 hour before CT
 - 4-10 mL ¹⁸F-FDG injected
 - Image 1 hour 1 hour ¹⁸F-FDG injection
 - Maximum PET counts
 - 10-15 min image reconstruction
 - Total time 1.5-2.0 hours

- CT simulation
 - Right 10 min before
 - Image 10 min CT
 - Image 10 min CT
 - Image 10 min CT
 - Total time 10 min

Image Registration

The CT and PET/CT images will be co-registered using a 3D rigid body translation, rotation program and rigid fiducial markers. All registrations achieved a composite deviation of less than 1 mm.

Patient Selection

- confirmed for radical radiation therapy
- able to lie in treatment position for 30 minutes
- amenable to advanced consent
- pre-clinical selection for poorly defined tumors on diagnostic CT

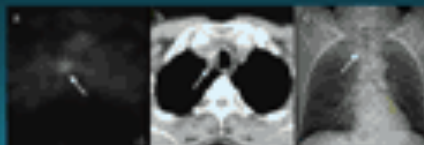
Treatment Planning

- PET localized using CT only and then with PET/CT by each of 7 physicians
- Separate plans generated for CT based PET/CT and CT/PET based PET/CT
- AP-PA, AB-BA for 10 Gy and oblique-beam fields for 20 Gy to the axilla
- CT and dose constraints to 40 Gy
- DVHs generated for PET/CT and CT

Impact of FDG-hybrid PET on Patient Management

- In 5/26 (19%) patients, radiation therapy was changed from radical to palliation intent.

Figure 2. Case example where therapy was changed from radical to palliation intent because of the recognition of FDG-PET data on PET/CT image depicting 40% and 70% tumor, respectively compared to diagnosis CT. The corresponding CT and PET/CT images are shown below.



Impact of Co-registered FDG-hybrid PET on PTV Coverage

- In 9/23 (39%) patients, the volume of PTV_{CT/PET} receiving at least 90% of the prescribed dose with the CT only based plan was less than 90%.



Figure 3. Case example in which co-registered PET/CT images revealed a large volume of PTV_{CT/PET} based on CT simulation on PET/CT image which was not visible on the CT only based plan. The gross-tumor volume (GTV) and PTV_{CT/PET} are shown in red and blue, respectively. The PTV_{CT} is shown in green. The PTV_{CT/PET} is shown in yellow. The PTV_{CT} is shown in green. The PTV_{CT/PET} is shown in yellow.



Figure 4. Coverage of PTV_{CT/PET} based on the CT only plan. The results on the average of 11 physicians is shown. For 100% of the CT only based plans, the PTV_{CT/PET} received at least 90% of the prescribed dose (red shaded). In 9 cases, the percentage to the PTV_{CT/PET} was less than 90% of the prescribed dose (blue shaded).

Impact of FDG-hybrid PET on Spinal Cord Dose

- In 10/23 (43%) cases, the maximum cord dose was reduced by more than 200 cGy with CT/PET data.

Figure 5. The maximum dose to the spinal cord in the CT only and CT/PET plans are shown for each patient. The results on the average of the physician plans. In 10 cases, the maximum cord dose was reduced by more than 200 cGy with CT/PET data.



Discussion

The impact of integrating ¹⁸F-FDG-hybrid PET with CT simulation was assessed in terms of patient management, PTV coverage, and maximum dose to spinal cord. In 19% (5/26) of patients, FDG hybrid revealed a change in management, in 10% (10/23) the CT based plan would have resulted in significant geographic miss, and in 40% (9/23) the cord dose was reduced by 200 cGy or more. The impact was most significant in those with evidence of previously unsuspected metastases. For the former group, others have reported changes in their plans when using PET/CT data. In this study, plans were generated separately for the CT/CT hybrid and PET/CT hybrid plans. Radiotherapy planning involves the physician and PET/CT can play a role in reducing physician reliance on traditional CT.

Conclusions

The timing of FDG hybrid PET images to CT planning images significantly altered treatment plans in 19% of our cases. Integration of FDG hybrid PET into radiotherapy planning increases the probability of geographical misses and results in a documented step in DVH for lung cancer.

References
1. Ung YC, et al. Int J Radiat Oncol Biol Phys. 2010; 77: 1161-1167.
2. Ung YC, et al. Int J Radiat Oncol Biol Phys. 2010; 77: 1168-1174.
3. Ung YC, et al. Int J Radiat Oncol Biol Phys. 2010; 77: 1175-1181.



I've fallen, and I can't get up



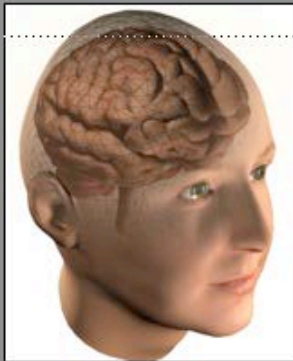
Karolinska
Institutet

Your Ingenious Teaser Right Here to Woo Them Down to the Body

The name of the author is 23pt regular

Conclusions first: 44 pt bold

Always put the most important part - your conclusions - first! Place your conclusions in the upper left hand corner of your poster.
Prepare your material from the reader's perspective. What was done, by who and your conclusion has to be understood within a couple of second's reading! Use active voice when writing the text. **Text size: 34 pt regular**



Use photos of 18pt bold
Image caption 23pt regular

Introduction

Posters are primarily visual presentations. Your poster should be dominated by self-explanatory illustrations such as graphs and pictures while the amount of text should be kept to the minimum.

Your aim

Your poster is an advertisement for your research and as such it needs to be eye-catching and straight to the point. You only have seconds, or at best a few minutes to attract the attention of the visitor to a poster session. Keep your message short and clear

Your message

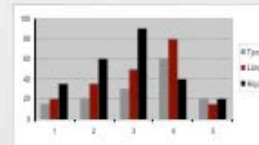
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Always write a descriptive caption 23pt regular

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AVOID CAPITAL LETTERS IN TEXTS THAT ARE LONGER THAN ONE LINE, SINCE THEY ARE MORE DIFFICULT TO READ.

Handouts

If you succeed in getting the reader's attention, provide her/him with more detailed information in the form of handouts or printed articles. Include references on your handout instead of your poster.

It is always nice to put in a picture and write some few short notes of what's going on in the future. Put handouts, business cards, nearby - on a table or in an envelope hung with the poster.



Gorgeous!

LESSONS LEARNED FROM AIRWAY PRESSURE RELEASE VENTILATION (APRV)

Lewis J. Kaplan, MD^{1,2}, Heatherlee Bailey, MD, FAAEM^{1,2}

Medical College of Pennsylvania-Hahnemann University

Departments of Surgery¹ and Emergency Medicine², Philadelphia, PA USA

INTRODUCTION

Airway Pressure Release Ventilation (APRV) (a.k.a. BiPAP) has been previously demonstrated to be a useful modality to manage patients with acute lung injury (ALI) or the acute respiratory distress syndrome (ARDS). As this is a fundamentally different mode than conventional cyclic ventilators, we reviewed a single institution's experience with APRV to determine safety, complication detection, and efficacy at resolving hypoxemia and hypercarbia.

METHODS

Consecutive patients transitioned from either volume or pressure targeted ventilation to APRV (Dräger Esch 4 Pulmonary Workstation) at a University hospital surgical ICU were retrospectively reviewed. Patients initially ventilated with APRV were excluded. Initial APRV settings to correct hypoxemia ($pO_2 \leq 60$ torr or $FIO_2 \geq 0.9$) were a P_{high} at the prior plateau pressure, a T_{high} of 6.0 sec and a T_{low} of 0.8 sec. Hypercarbic ($pCO_2 \geq 55$ torr and $pH \leq 7.3$) patients were set at a T_{high} of 5.0 sec and a T_{low} of 1.0 sec. Settings were adjusted to resolve hypoxemia and hypercarbia. IRB approved abstracted data included principal diagnoses, ventilator parameters, laboratory values and ventilator-associated complications. Data before and after APRV were compared using a two-tailed paired t-test or Chi-square as appropriate; significance was assumed for $p < 0.05$ (^{1,2}).

RESULTS

Demographics

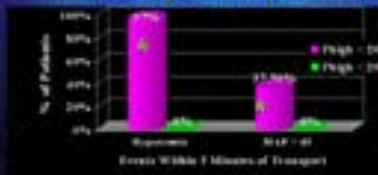


APRV

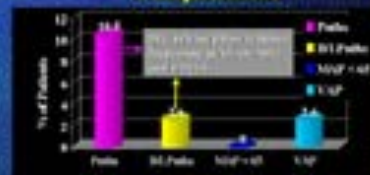


Element	Value
% Hypoxemia	88%
% Hypercarbia	12%
Time to $SO_2 \geq 92\%$	7 ± 4 min
Time to $FIO_2 \leq 0.6$	5.2 ± 0.9 hr
Time to $pCO_2 \leq 40$ torr	42 ± 7 min
Time to max ΔpCO_2	76 ± 17 min
Mean change in V_T	-3.3 ± 0.9 L/min ³

Transport Safety



Complications



CONCLUSIONS

1. APRV is a safe rescue mode for hypoxemic or hypercarbic respiratory failure and requires a significantly lower V_T than conventional ventilation.
2. Decreasing release phase volumes and a rising pCO_2 are strong indicators of pneumothorax in a patient on APRV. Routine end-tidal CO_2 monitoring is recommended.
3. Preparation for safe intra-hospital transport may be keyed to the P_{high} required for oxygenation and ventilation. Patients requiring a $P_{high} > 20$ cm H_2O should be transported on the ventilator.



Welcome to
the 80's
For sure!



Helpful sites on poster presentations:

<http://colinpurrington.com/tips/academic/posterdesign>

<http://www.ncsu.edu/project/posters/NewSite/>

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