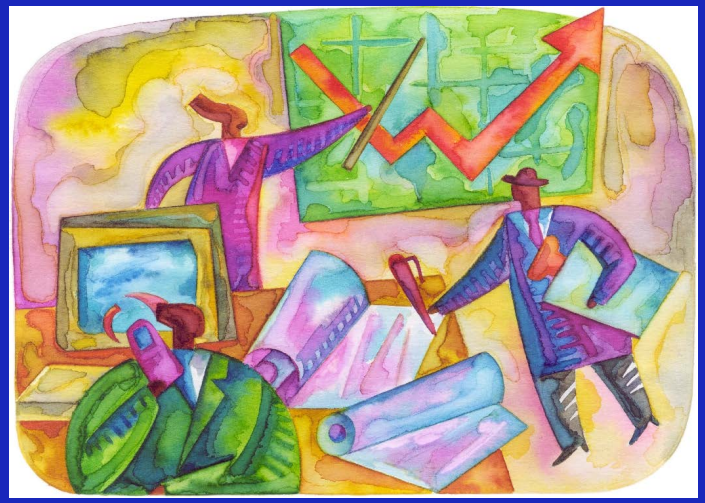
Scientific Poster Design

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 9

CORNELL POLYMER OUTREACH PROGRAM

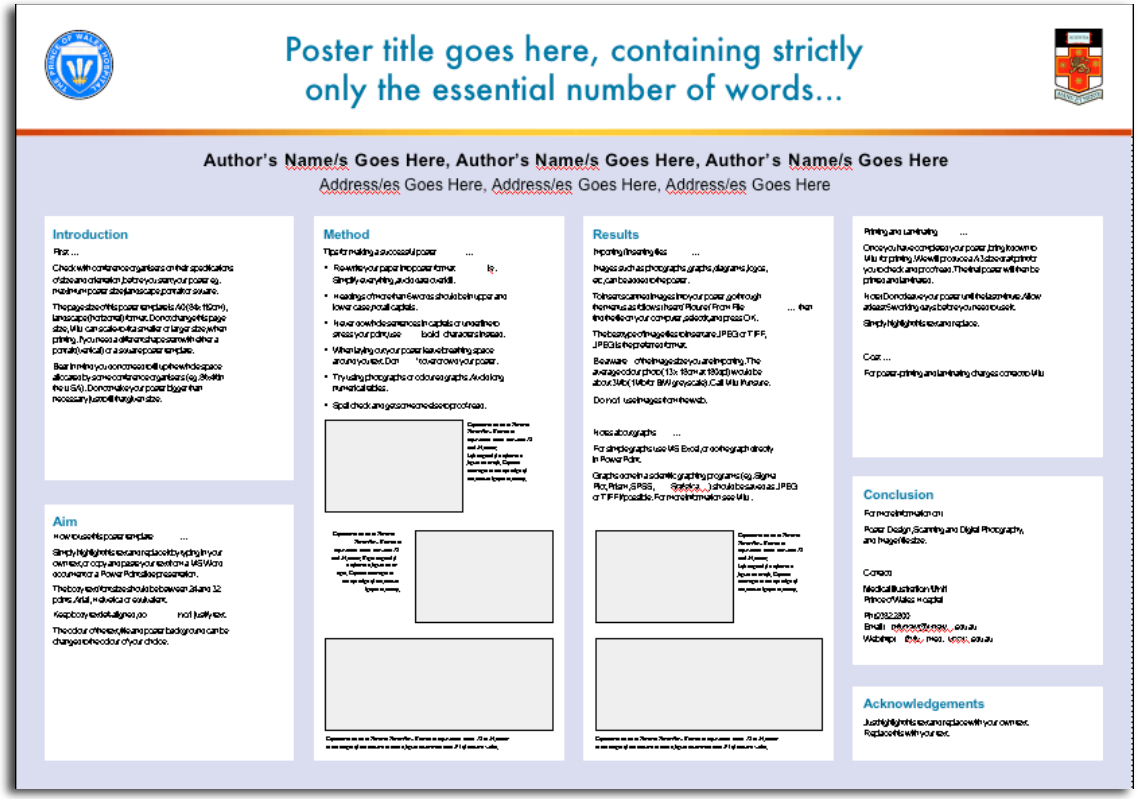
POSTER SESSION
May 23, 2005

SIMULATIONS OF POLYMER NETWORKS WITH A BIMODAL CHAIN LENGTH DISTRIBUTION

Dhananjay Bhaw, Claude Cohen and Fernando Escobedo

School of Chemical and Biomolecular Engineering

We have conducted molecular simulations of end-linked polymer networks with a bimodal chain length distribution. Short and long chains with lengths differing by an order of magnitude make up a typical network. Such networks have been experimentally demonstrated to have superior mechanical properties (modulus and toughness) as compared to the corresponding unimodal networks. The causes of this enhancement are not well understood. It is also not clear which combination of chain molecular weights in what proportion will yield this improvement. We have systematically explored networks with a range of chain lengths in varying proportions to explore the causes of mechanical enhancement and to optimize mechanical properties. Two possible reasons for better mechanical properties have been proposed in the literature: finite extensibility of the short chains and clustering of short chains. When the short chains are so short as to be non-Gaussian, they reach their maximum extensibility at smaller deformations than longer chains – this makes the network more difficult to deform and hence stronger. Also, short chains tend to cluster when they contribute most of the mole fraction in the network while the long chains contribute most of the volume fraction – short chain clusters act as reinforcing regions to make the network stronger. We changed chain lengths and proportions of long and short chains to explore all combinations of the following scenarios: clustered and non-clustered short chains and Gaussian and non-Gaussian short chains. We also looked at the microscopic structure of the various networks and studied bond breakage. We conclude from the study that the main reason for the mechanical enhancement is the finite extensibility of short chains and that clustering protects short chains from excessive deformation but does not improve mechanical properties.



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

Aim

Method

Results

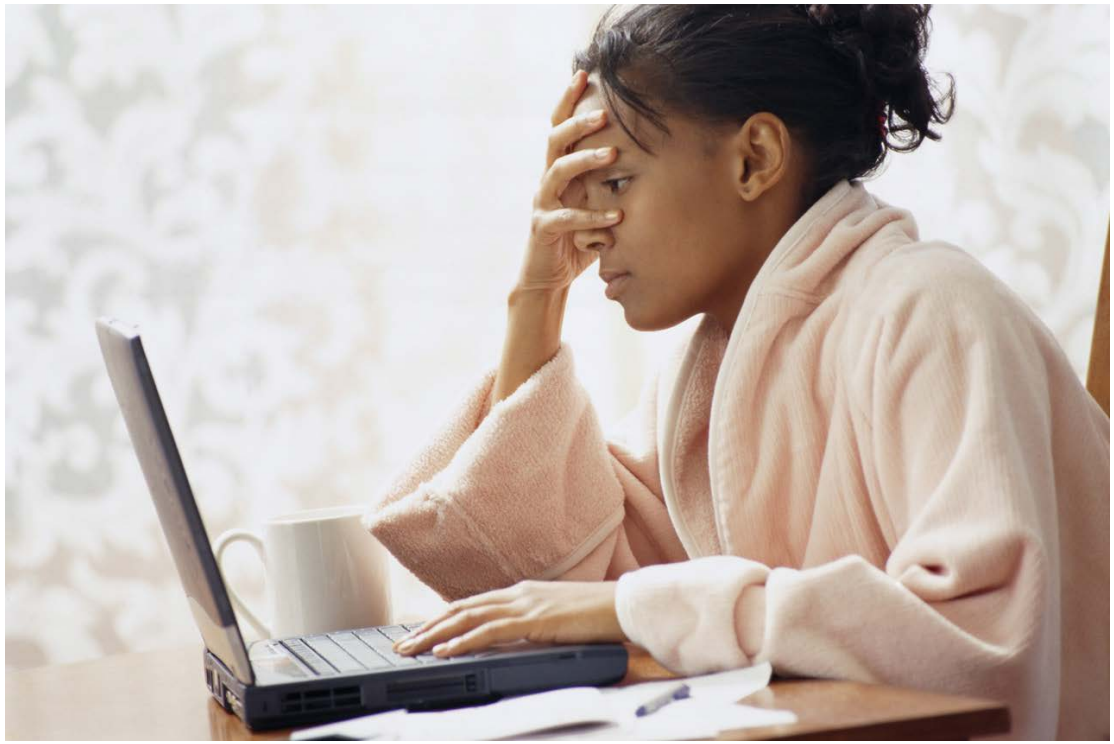
Conclusion

Acknowledgements

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?

A portrait of a grad student



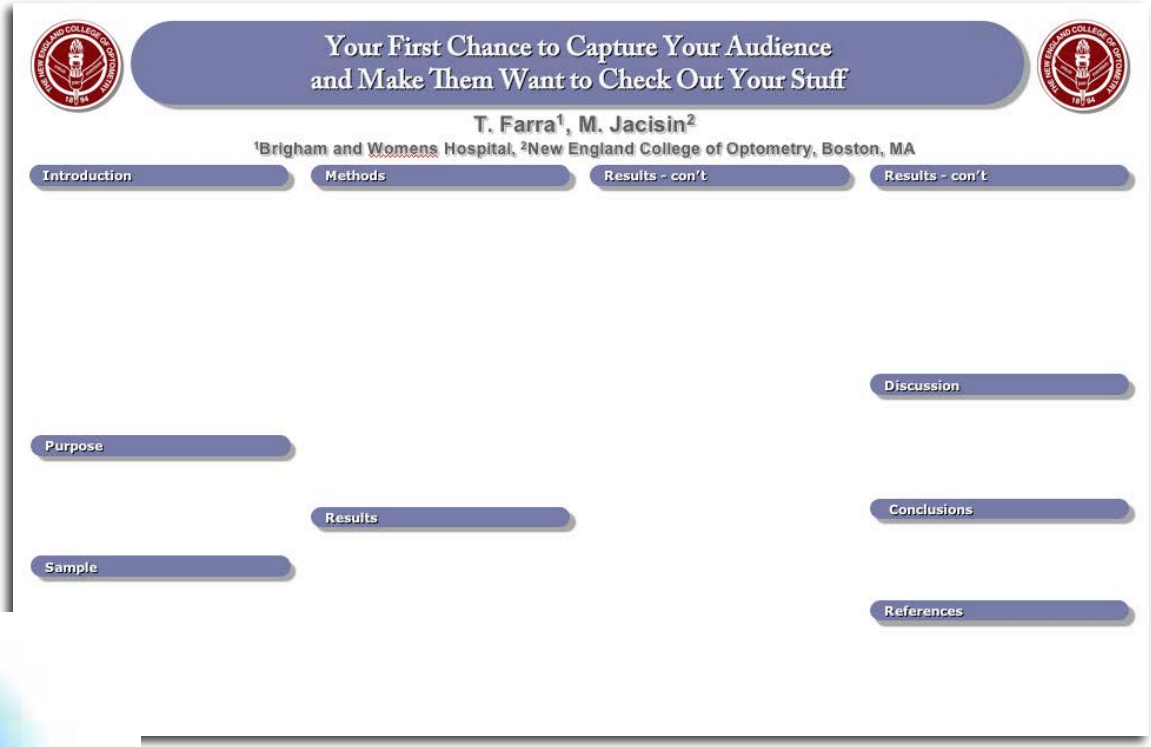
@#&%!@#$, I have 12 hours to throw this thing together and get it printed before it's due.

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

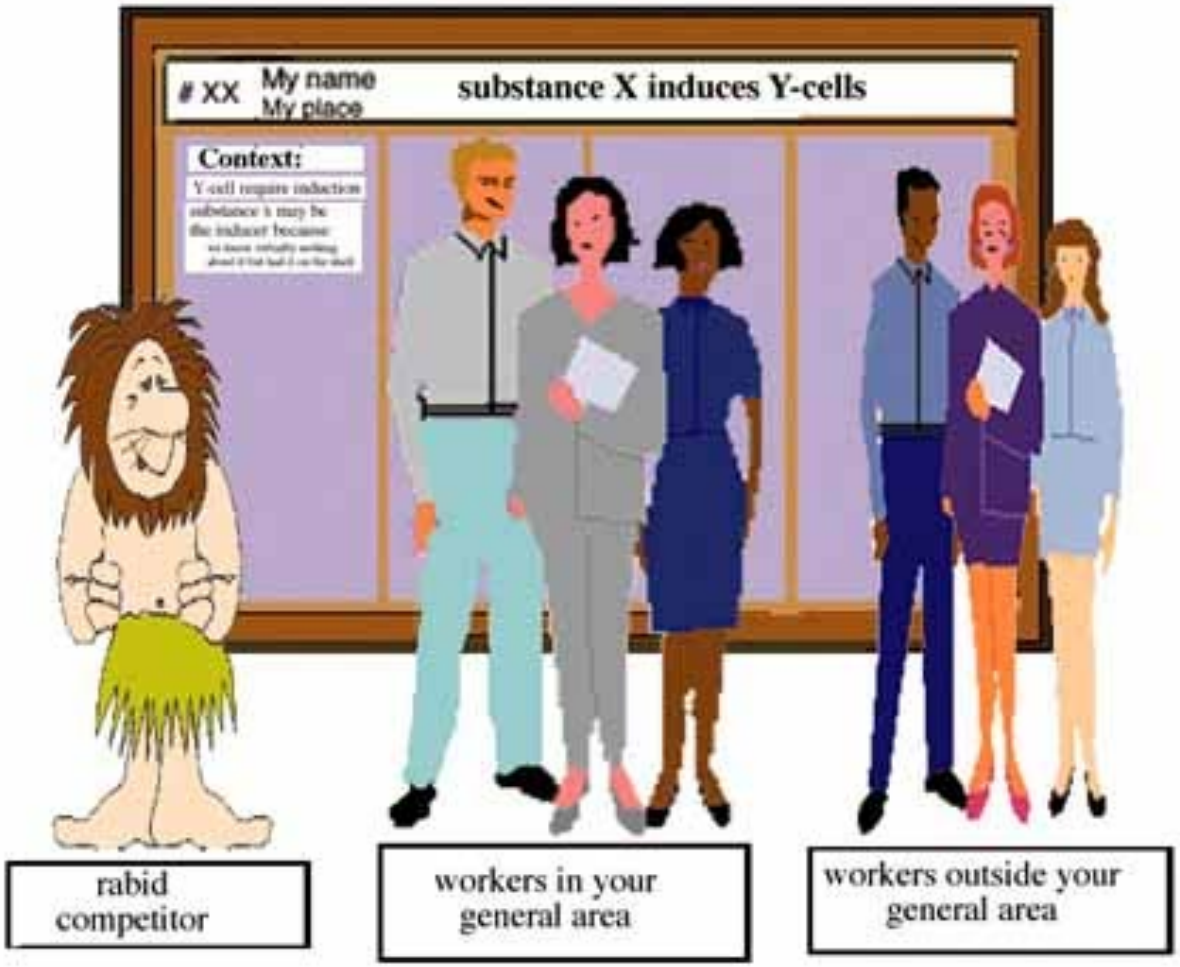
Recite after me,
Less is best!

Simplify your paper into poster format

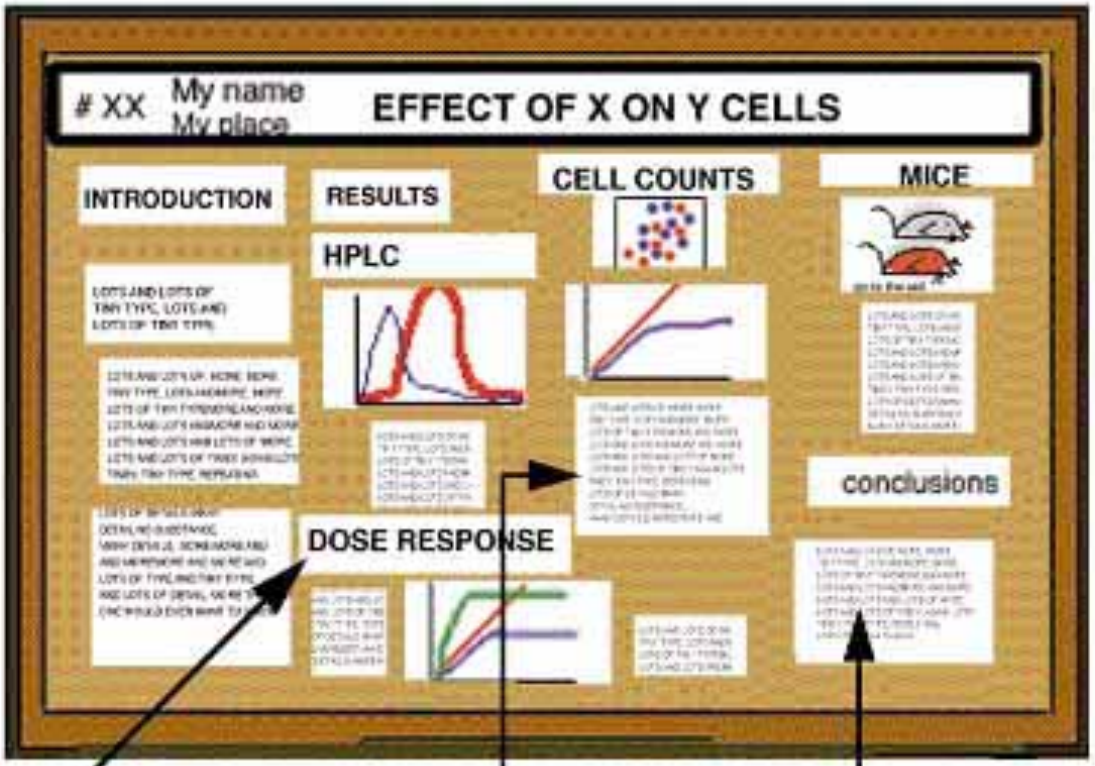


Find out the size required!

Who's my audience?



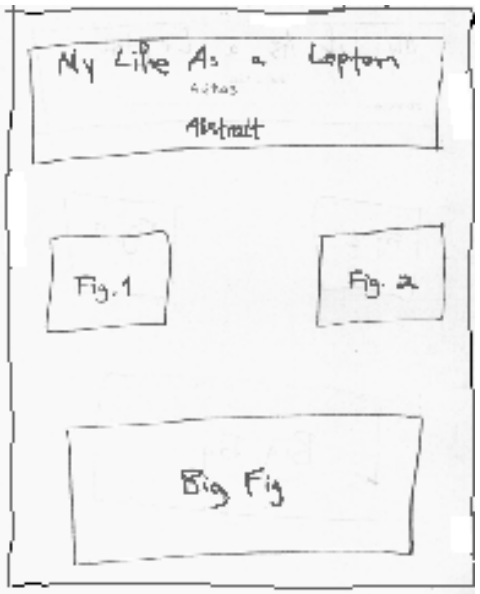
Remember, most of these "scientists" come for the free booze



Large type states methods, not results

Results artfully buried in a methods description

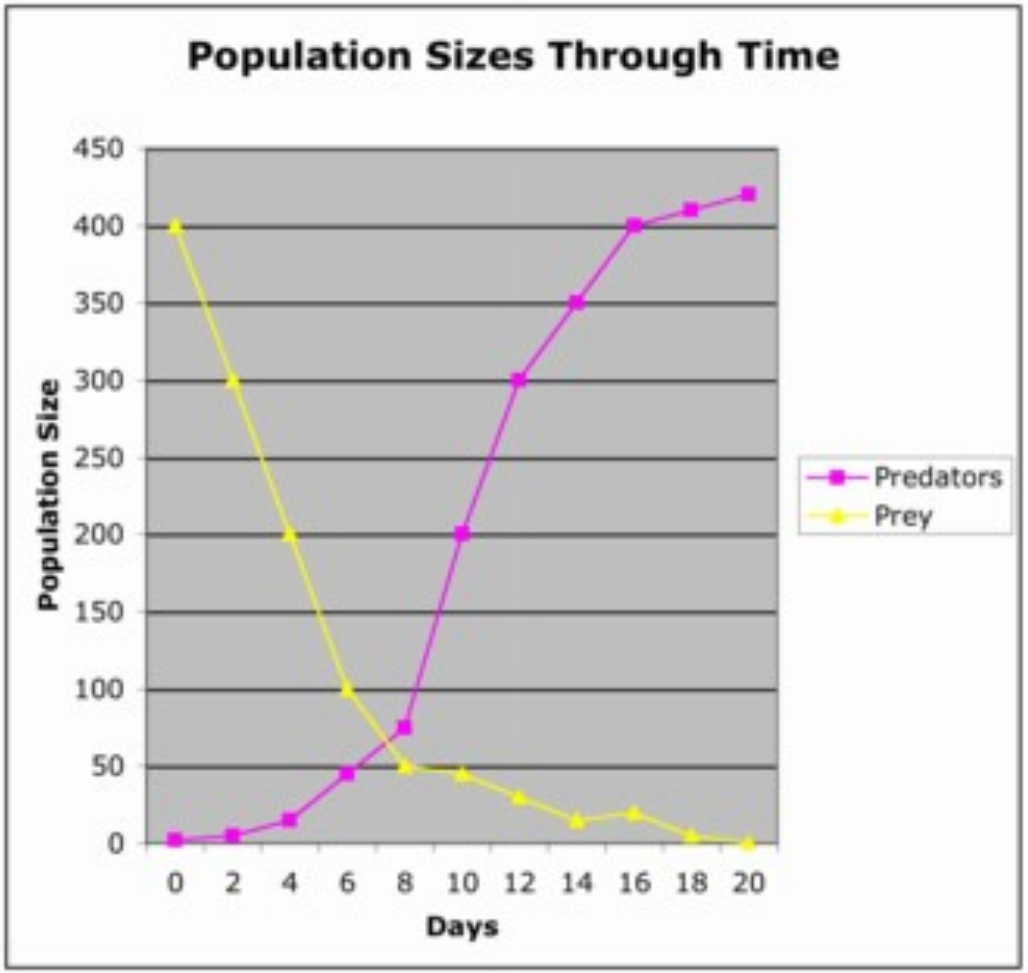
Carefully omits interpretations

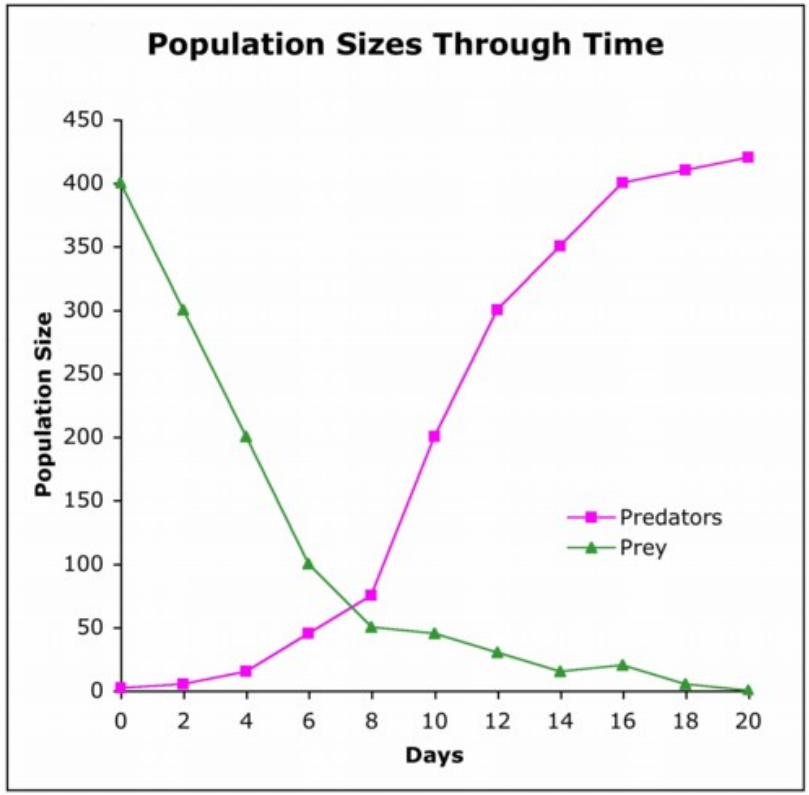


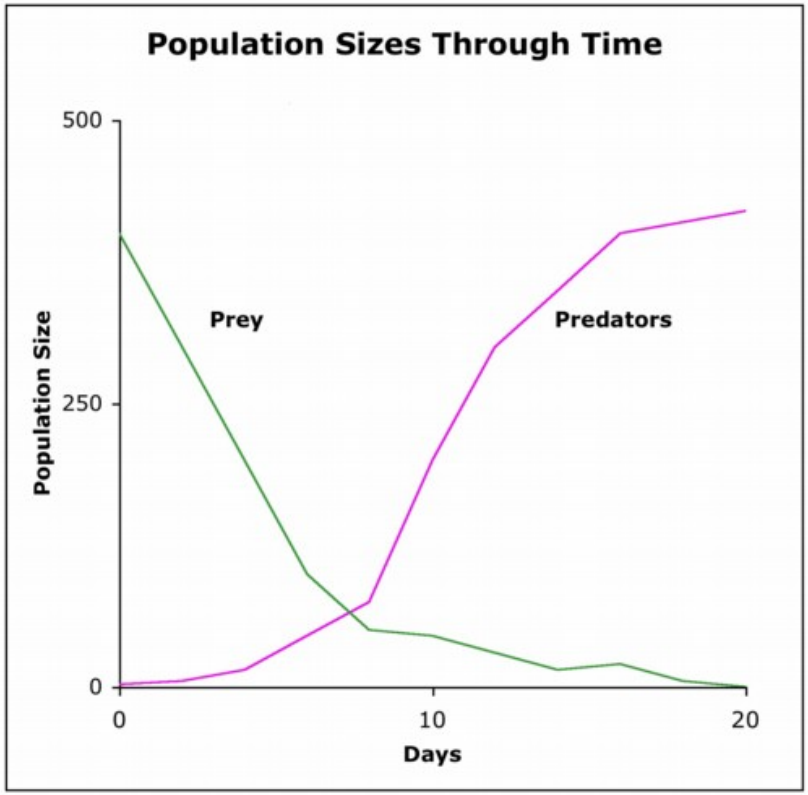
Start putting together your 2 main elements

1) Simple, effective data displays

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



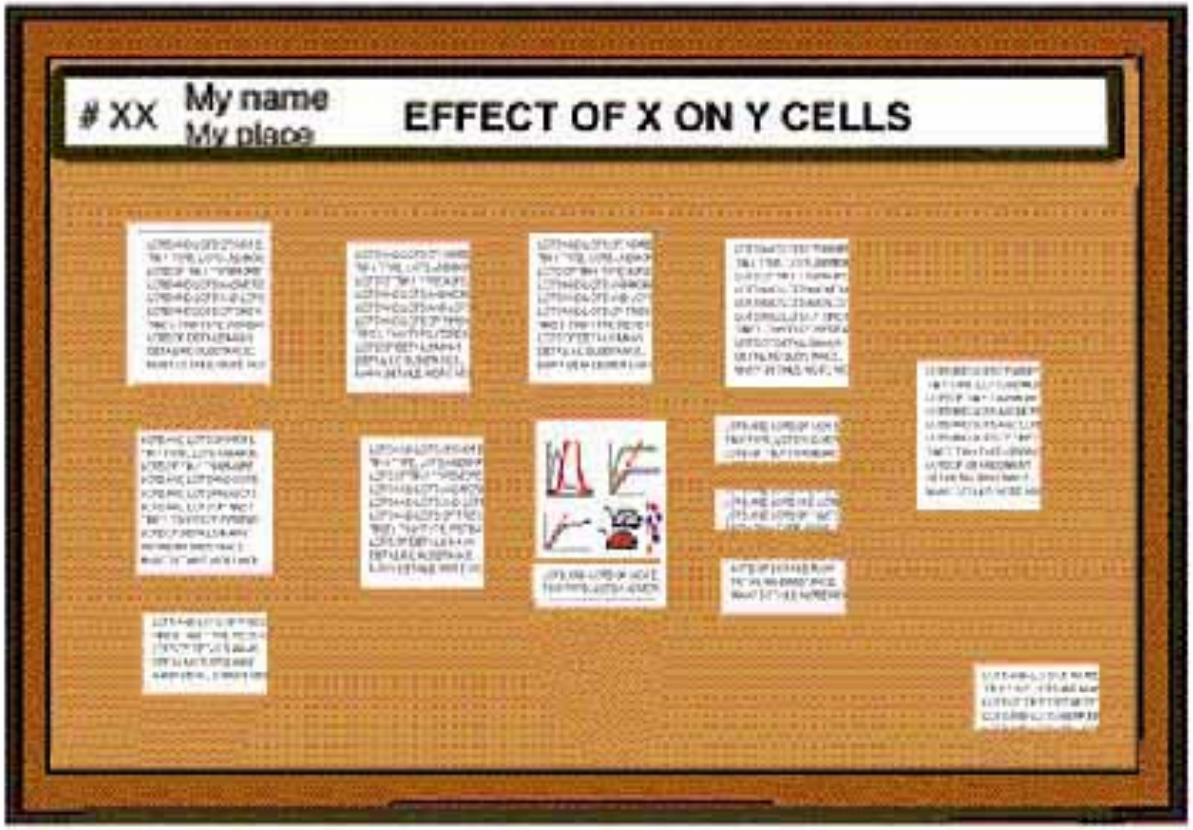

Population Sizes Through Time
Population Size
450
400
350
300
250
200
150
100
50
0
0
2
4
6
8
10
12
14
16
18
20
Days
Predators
Prey


Population Sizes Through Time
Population Size
500
250
0
0
10
20
Days
Prey
Predators

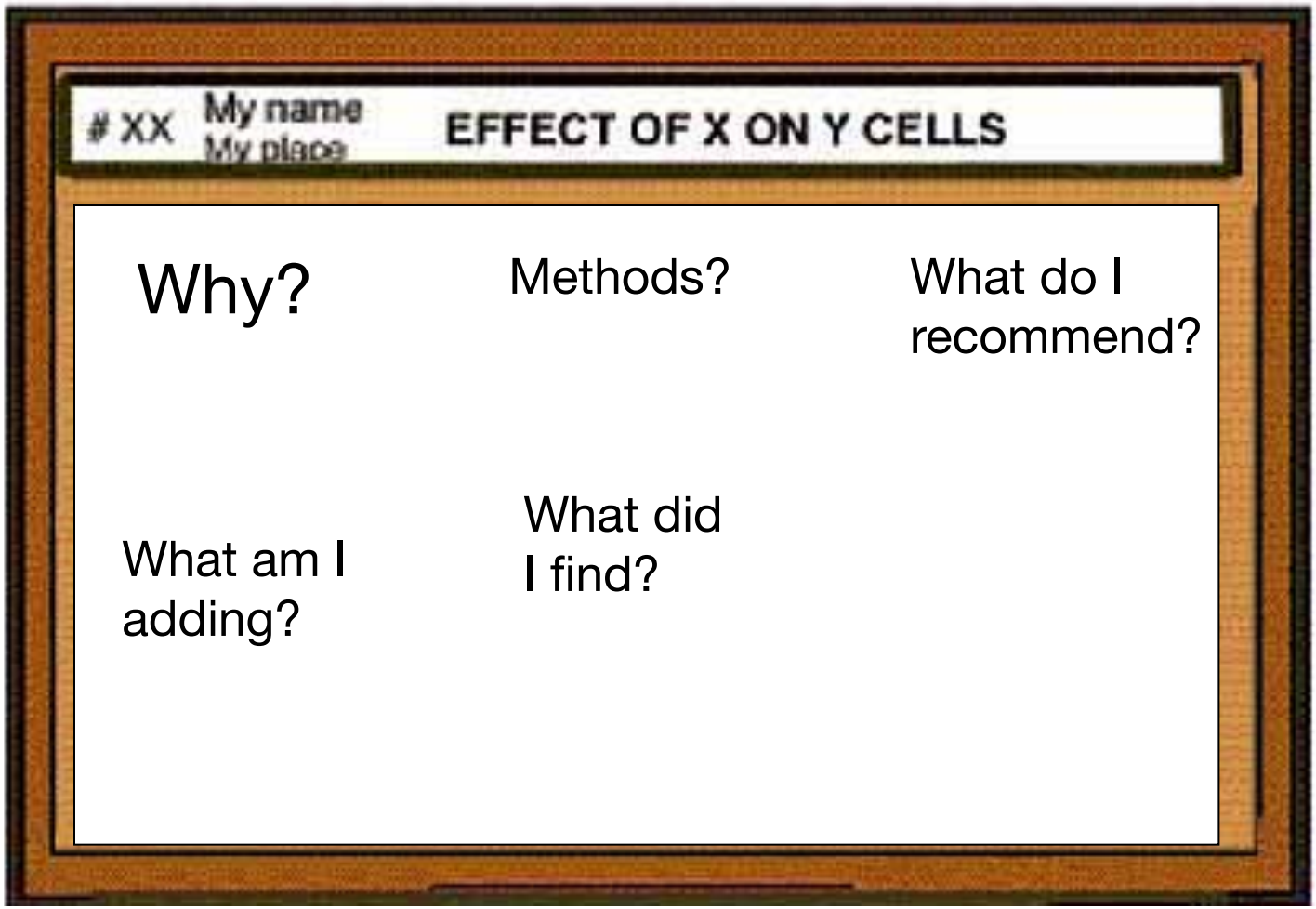
Keep it simple but effective

2) Small blocks of supporting text

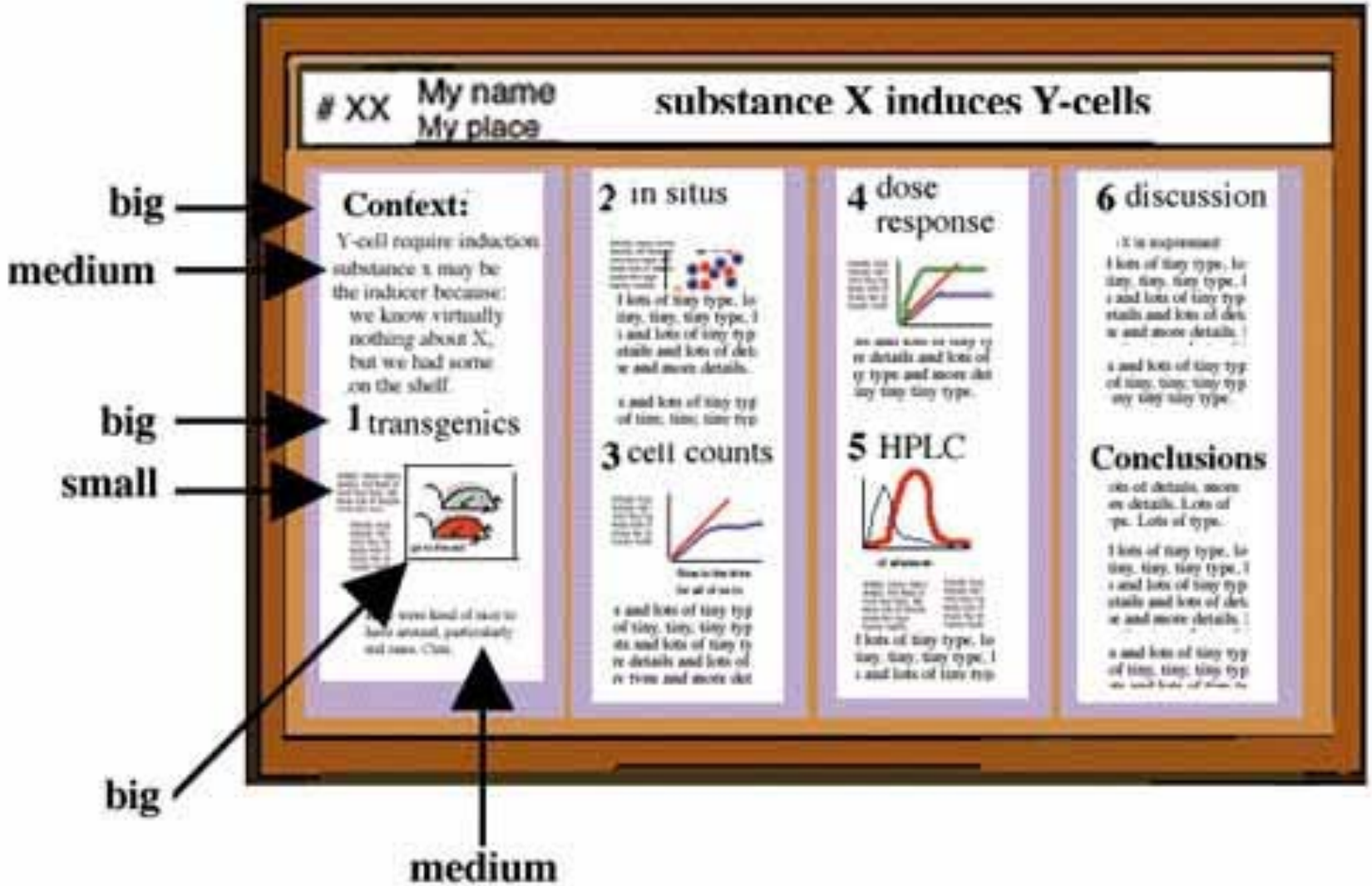
The need for chairs in front of your poster will not go over well

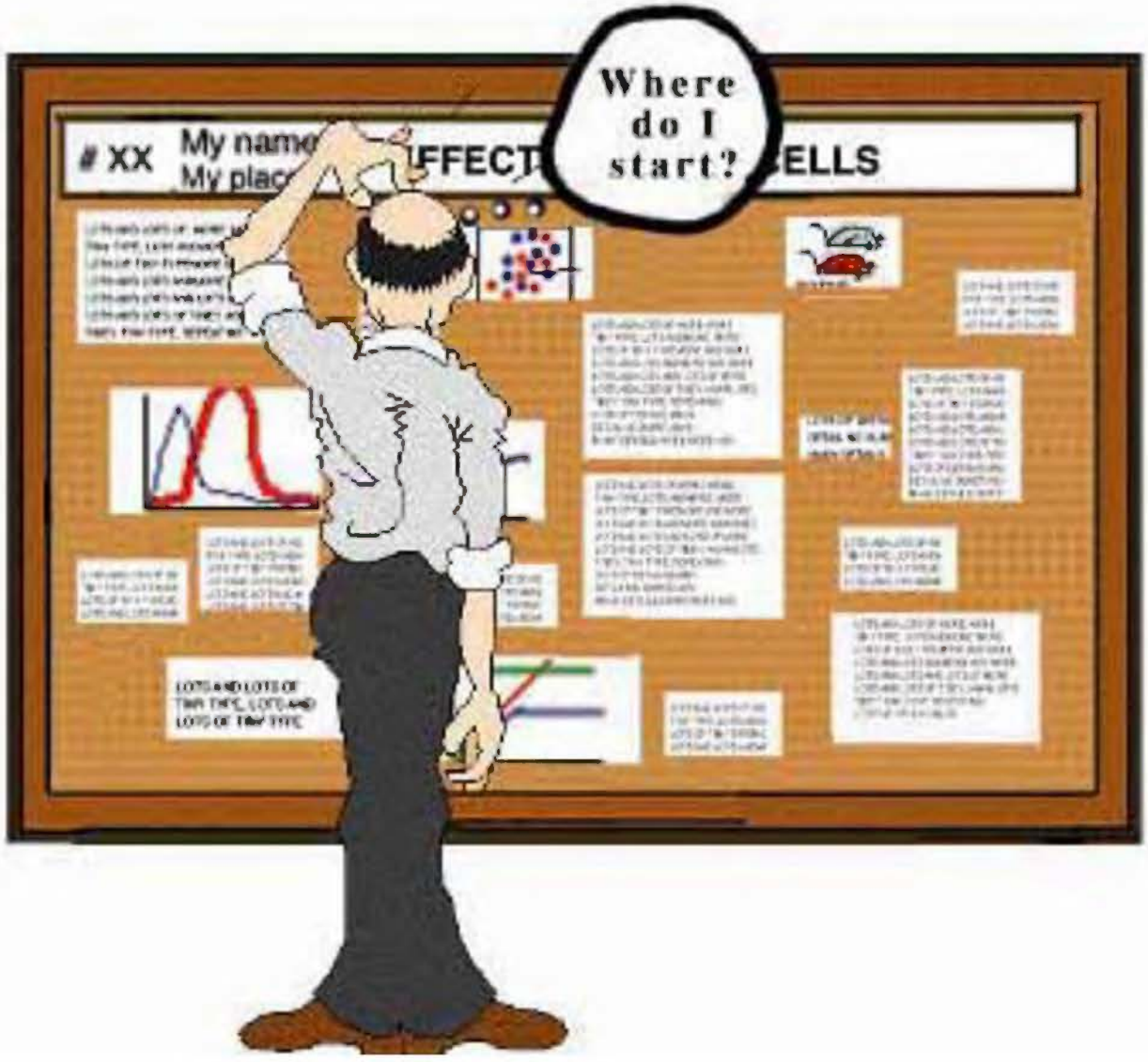


Your copy should answer...



I could actually read this




Where do I start?
XX
My name
My plac
FFECT
ELLS

Pick a software program

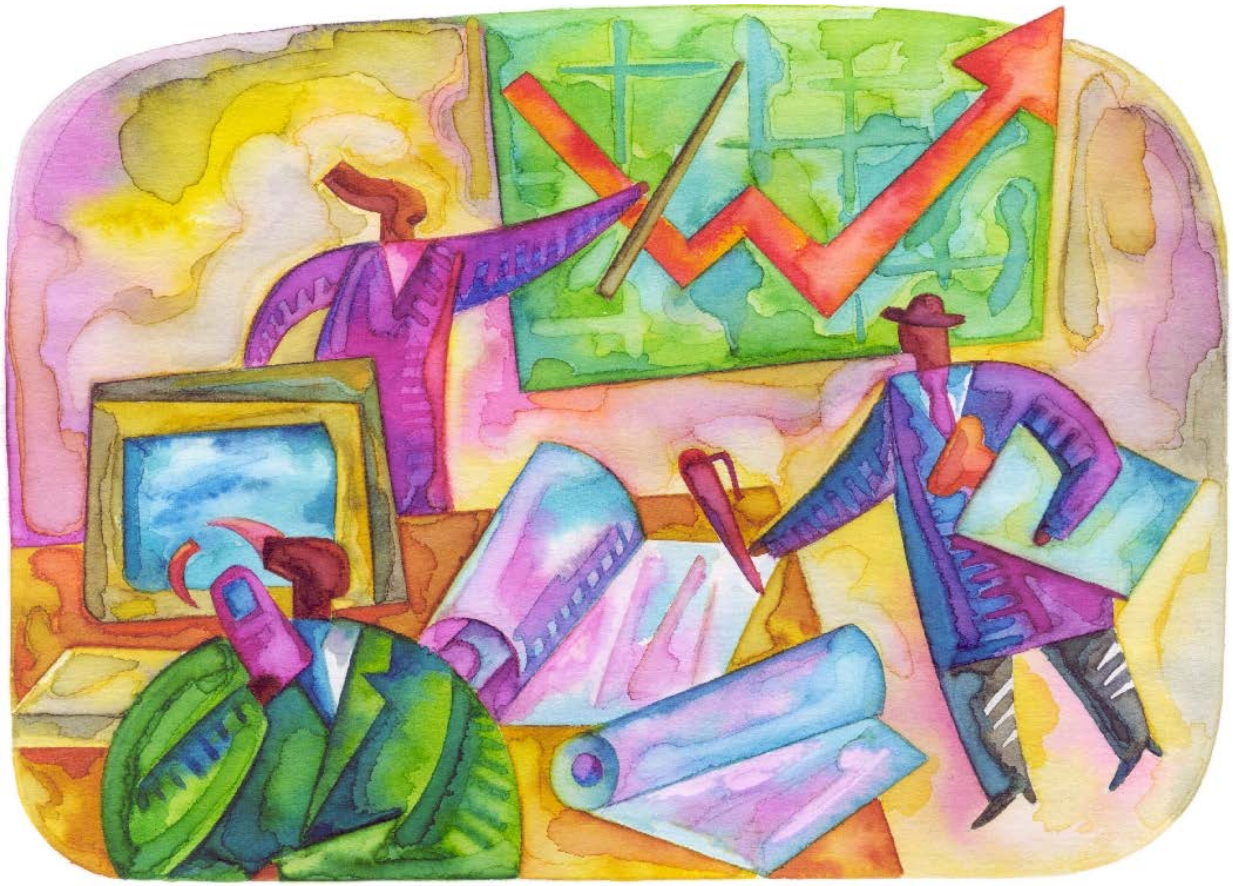
Although you'll probably gravitate towards PowerPoint, consider a true design program.

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.



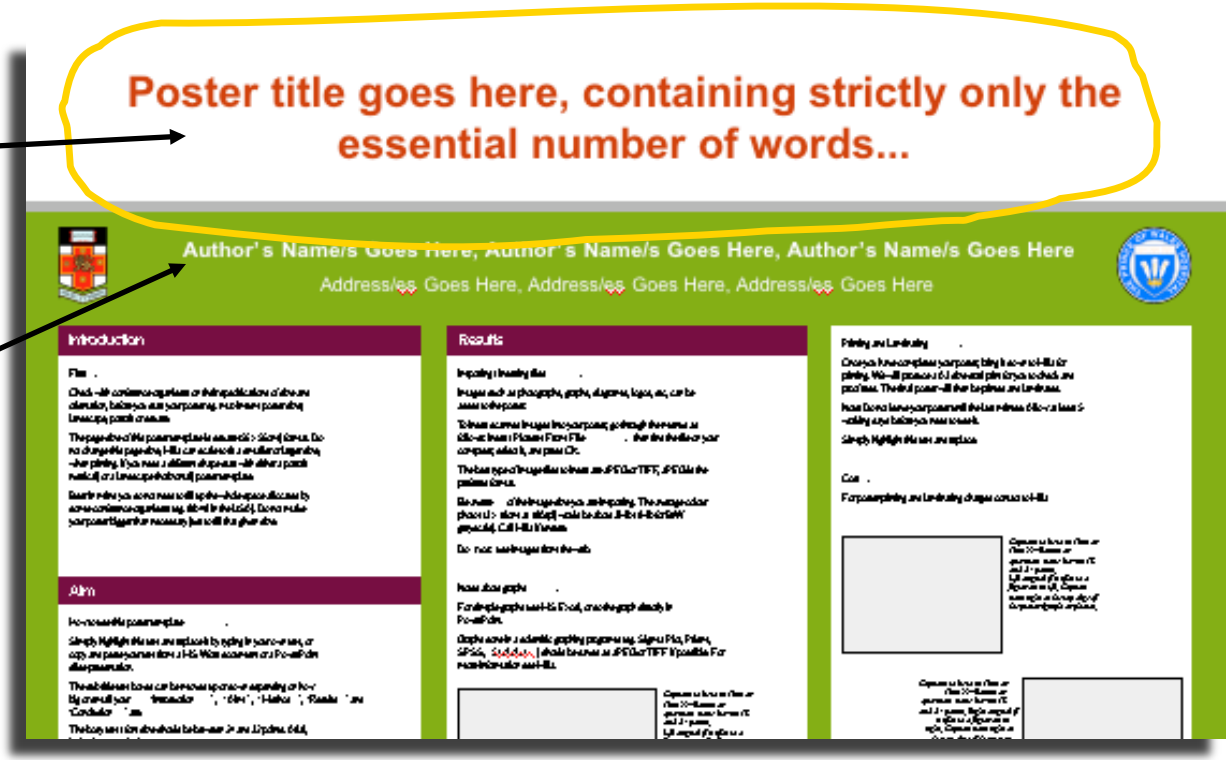
Let's design a poster!

Your poster title:

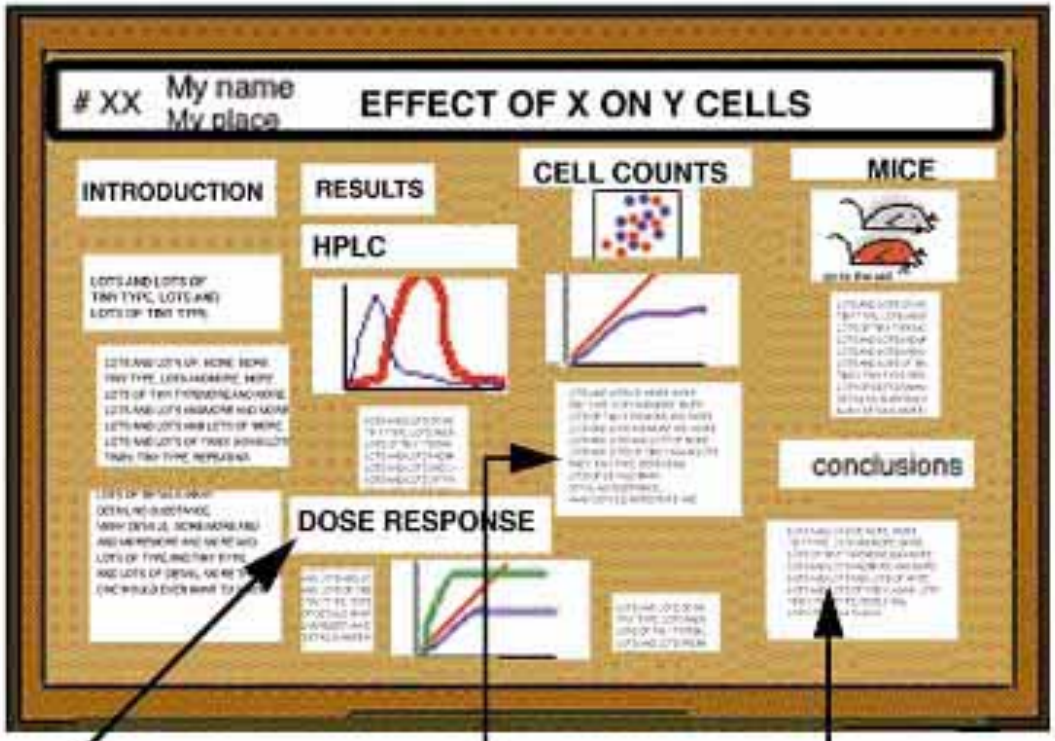
Think BIG! Really Big!

Your biggest impact!
Boldface type
Not all caps!

Group authors names and affiliations



The Secrets of Readable Text:



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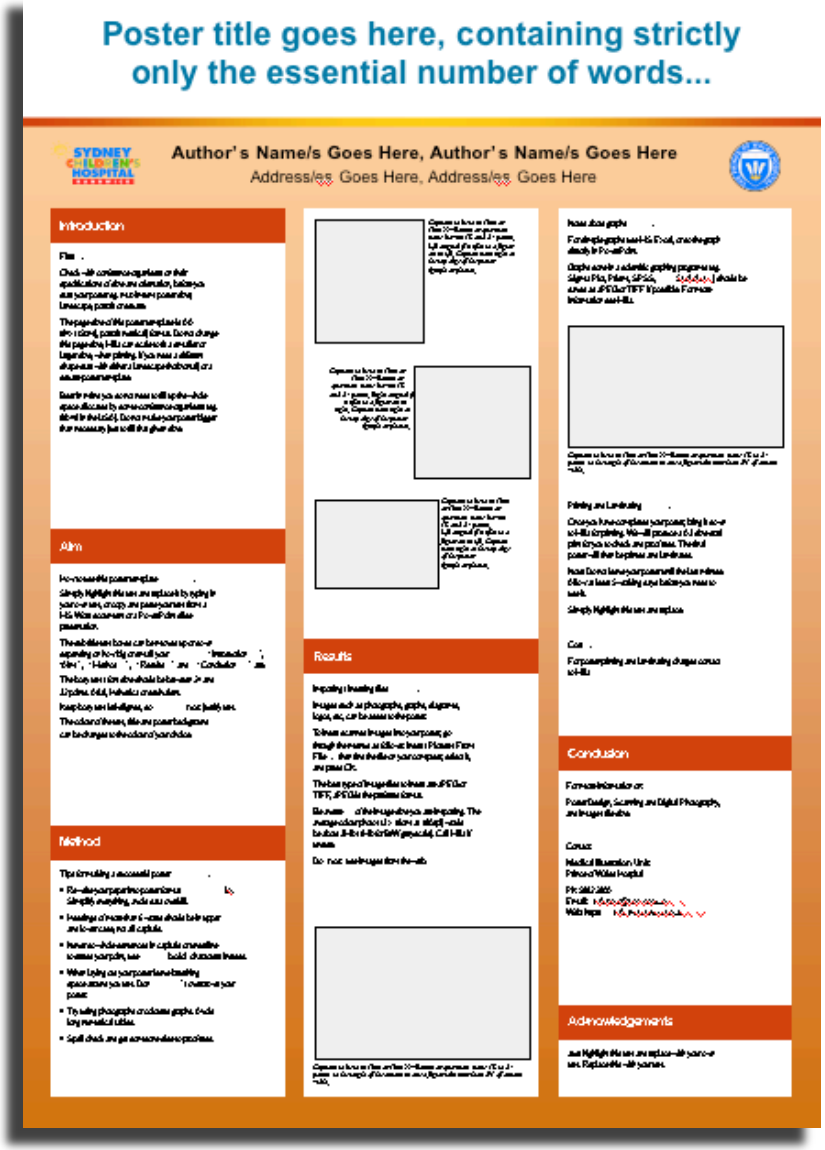
Carefully omits interpretations



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

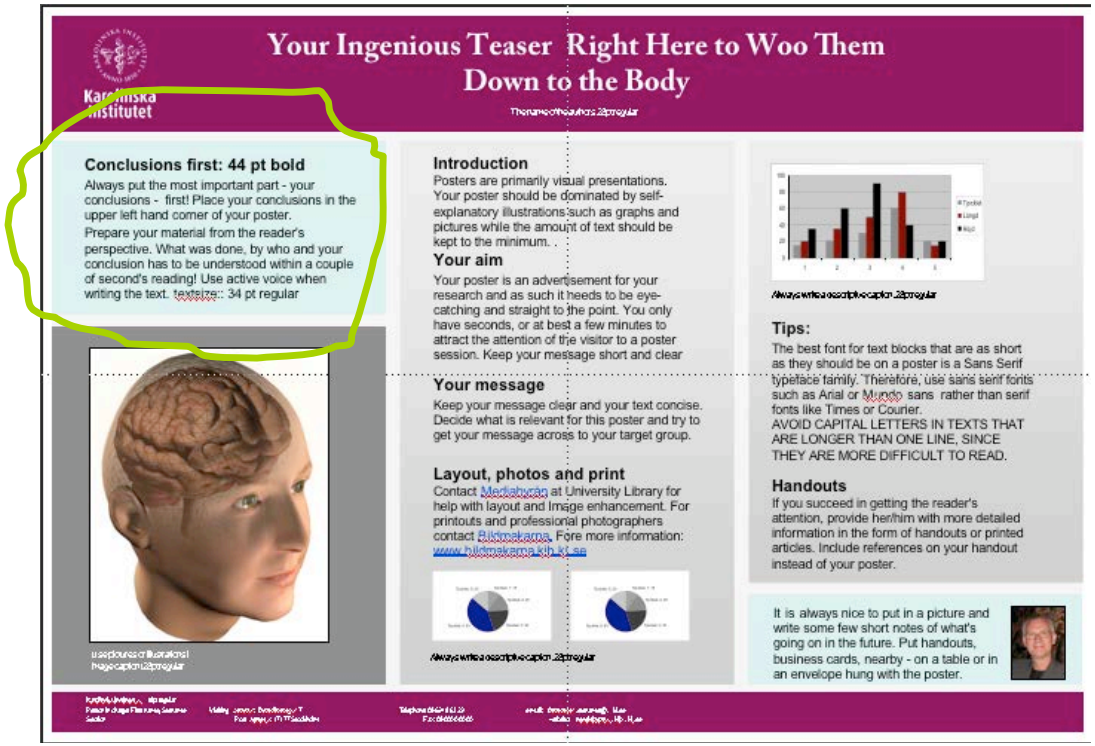
The reason is…

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

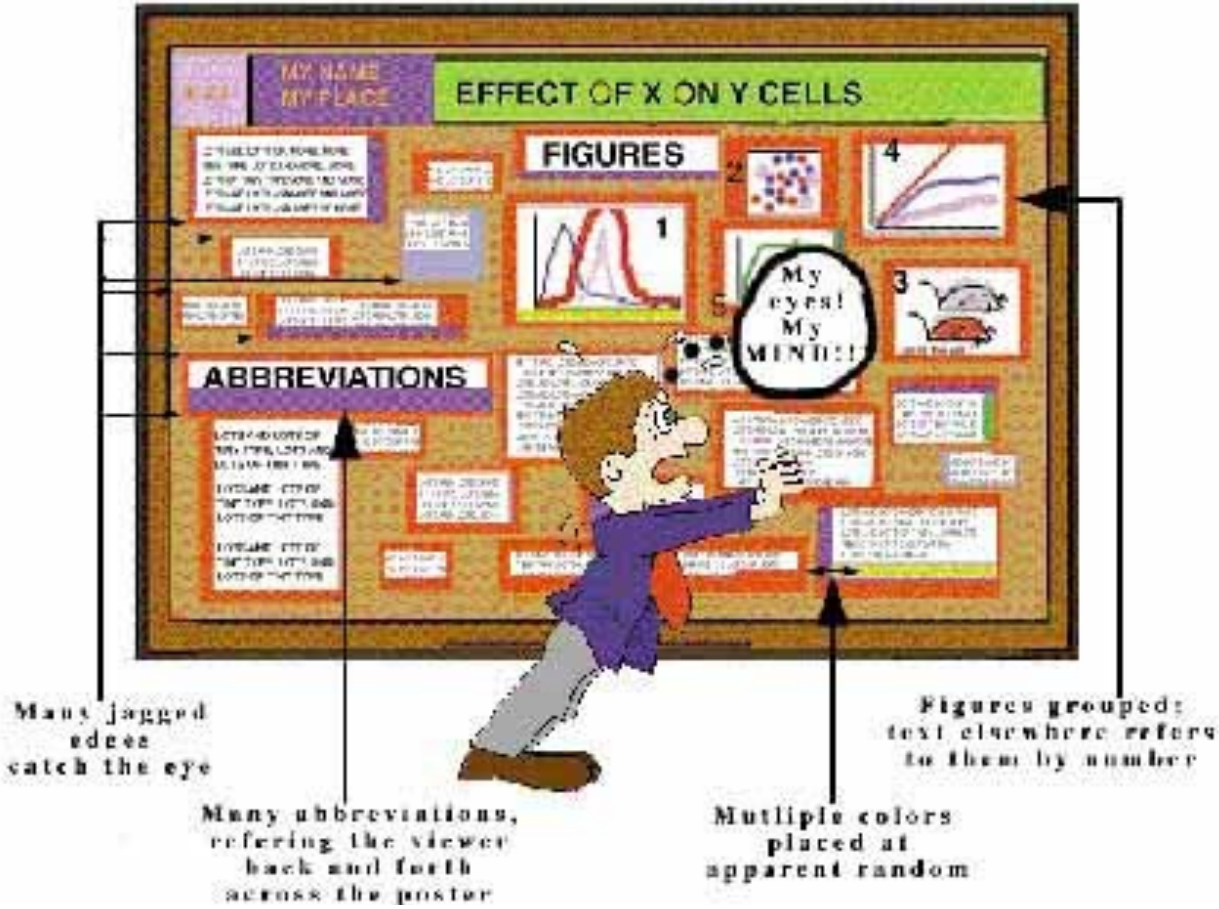
Hi there, my name is mitch collinsworth and I would like to tell you about myself and how I got this job at cornell. Well you see, my uncle had a friend who knew my cousin on the other side and his daughter worked for facilities. I was down on my luck and my sister told me she knew a guy who's nephew's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

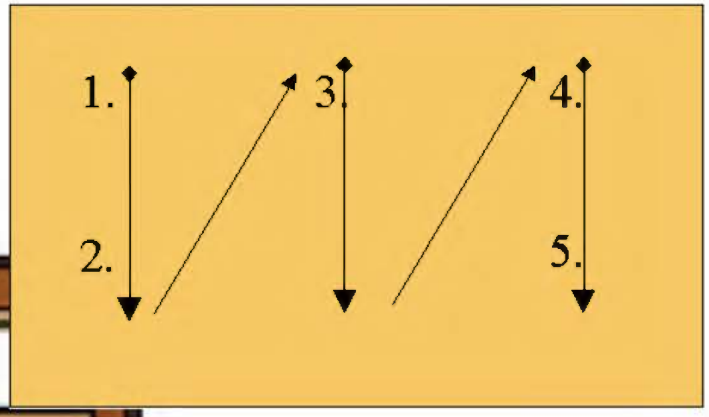
- Put the most important part first!
- Short and to the point!
- Upper left hand corner

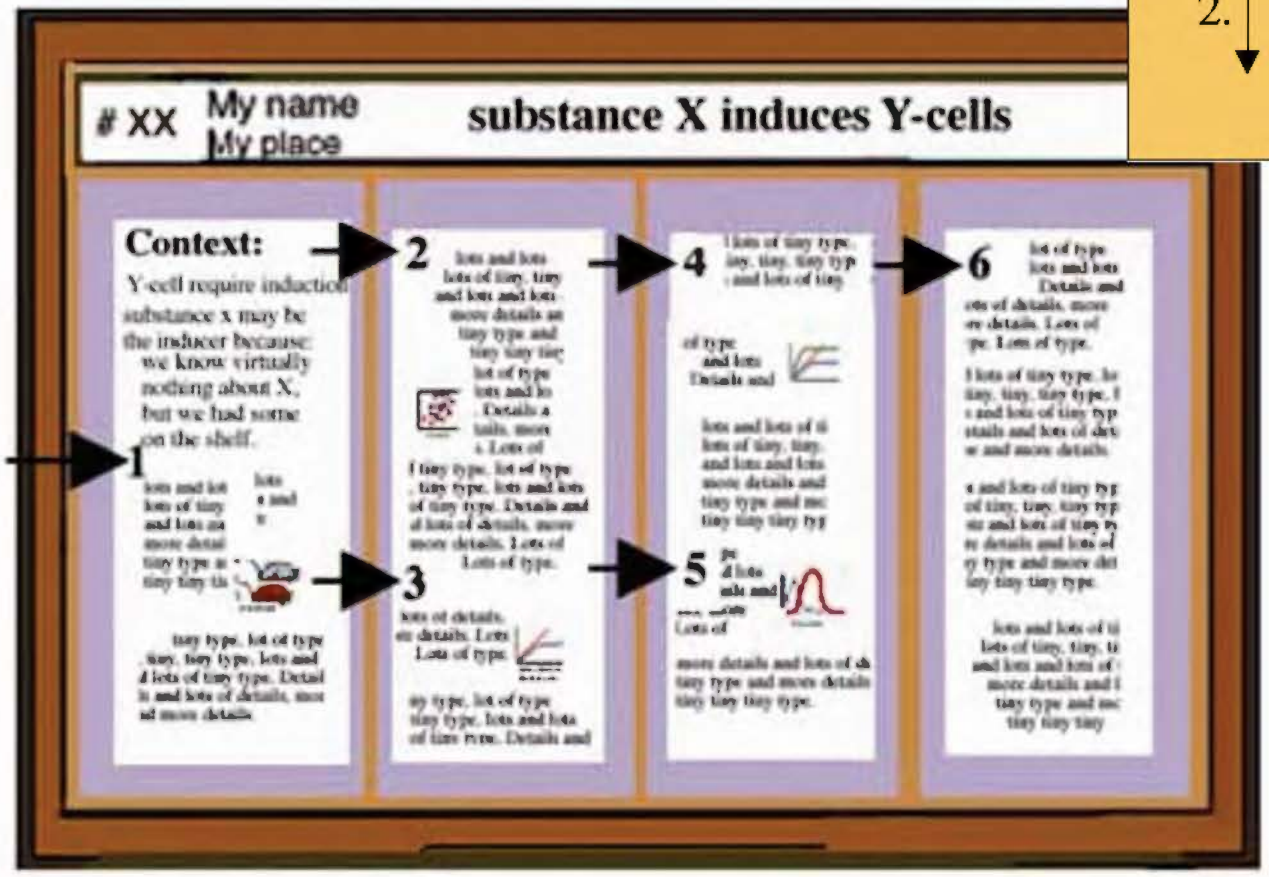


Easy for the eye to follow

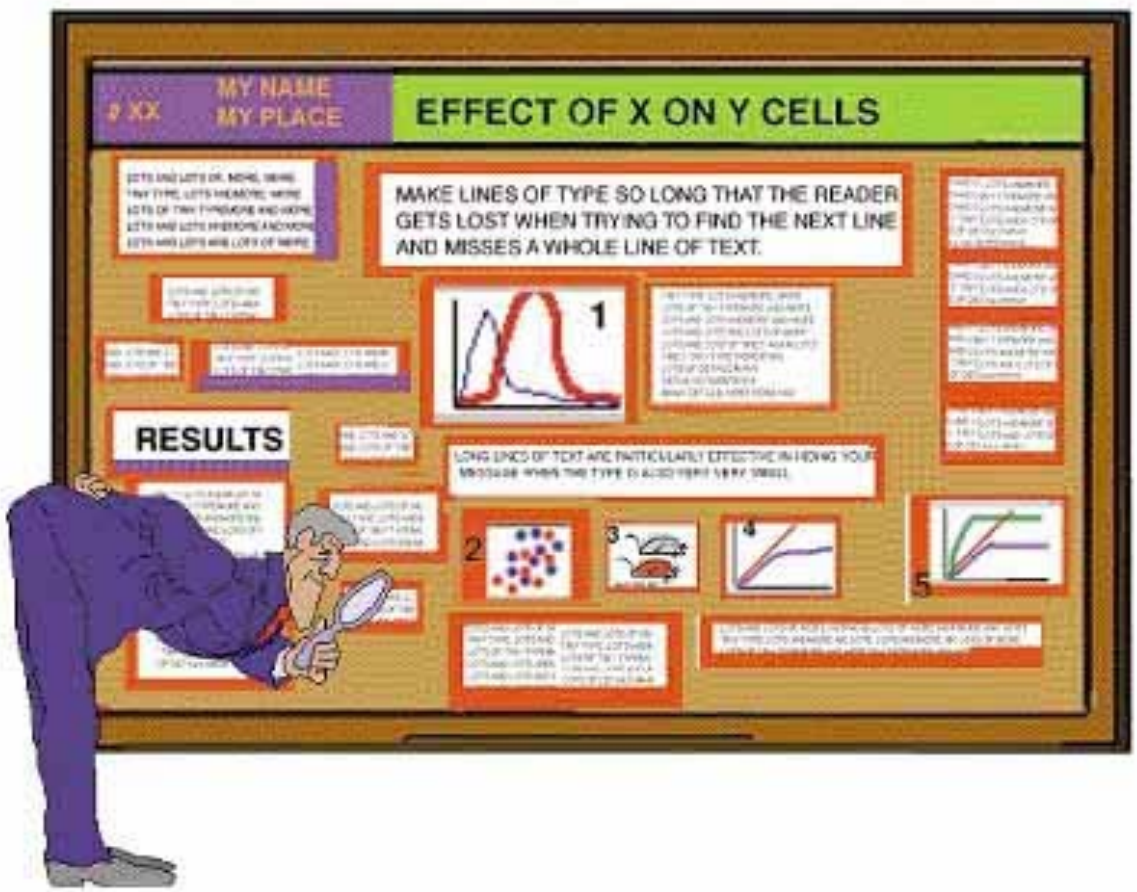


Utter chaos will make folks dizzy!


1.
2.
3.
4.
5.


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
2
3
4
5
6

Can anyone read your body text?



Text sizes:

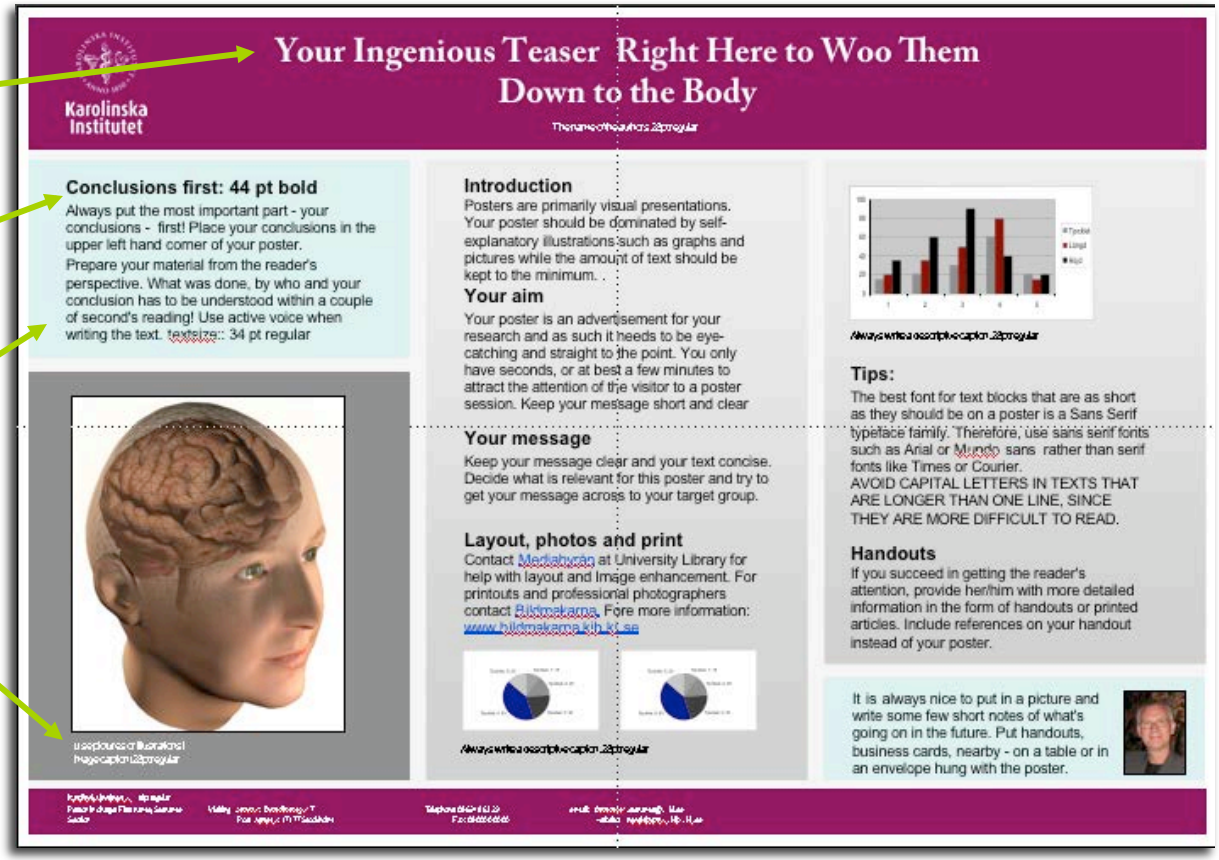
Title: 85 point

Authors: 56pt

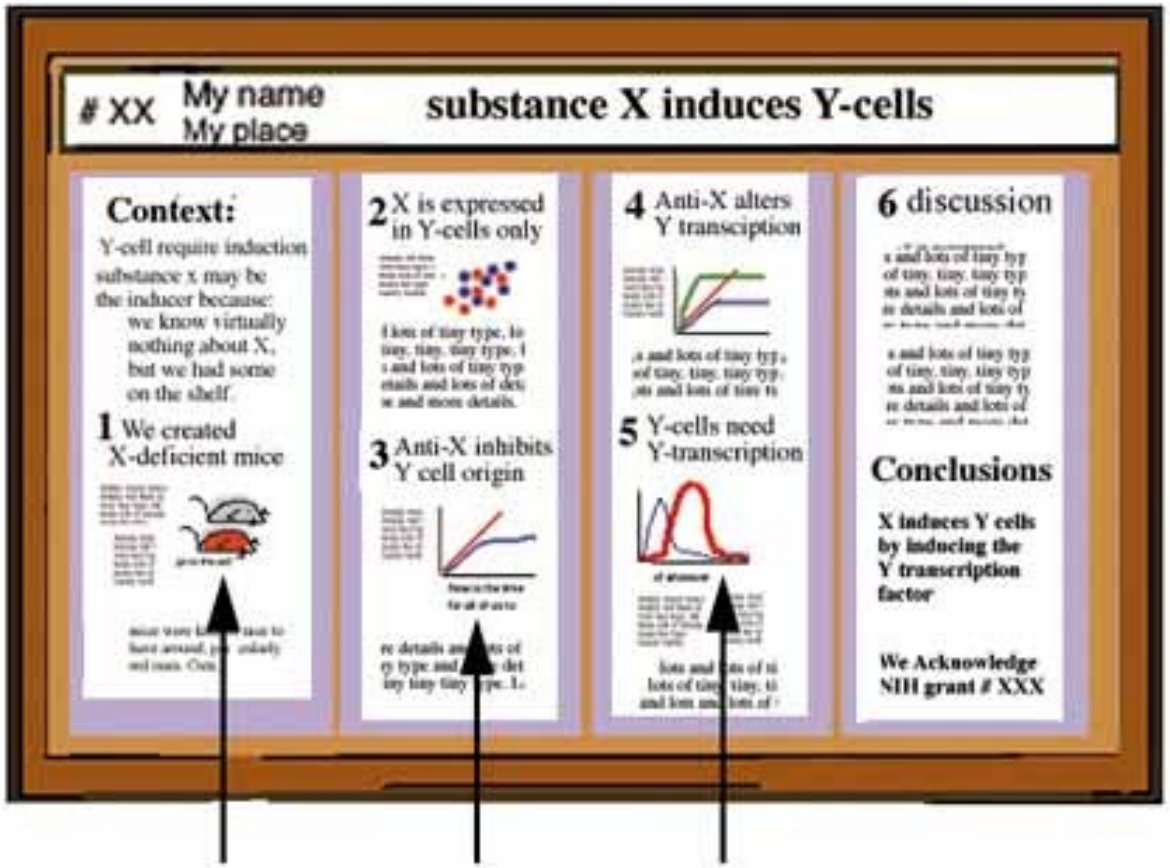
Sub-headings: 36pt

Body text: 24pt

Captions: 18pt

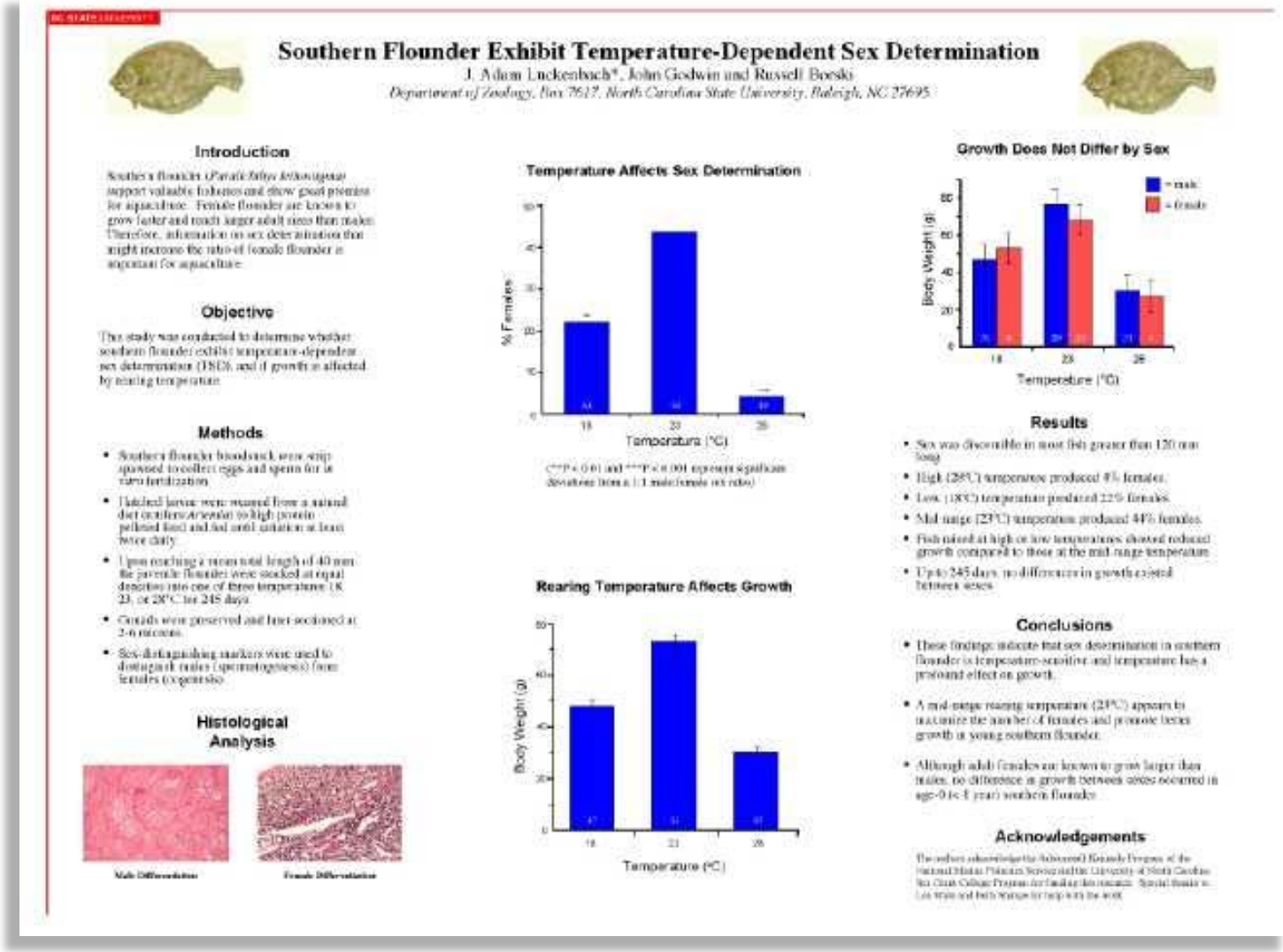


Images and graphs say much more than words



BIG figures that use color

Keep posters visual!



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 broodstock were strip spawned to collect eggs and sperm for in vitro fertilization.
- Hatched larvae were weaned from a natural diet (rotifers/*Artemia*) to high protein pelleted 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 248 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 Differentiation

Female Differentiation

Temperature Affects Sex Determination

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 8% 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 248 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

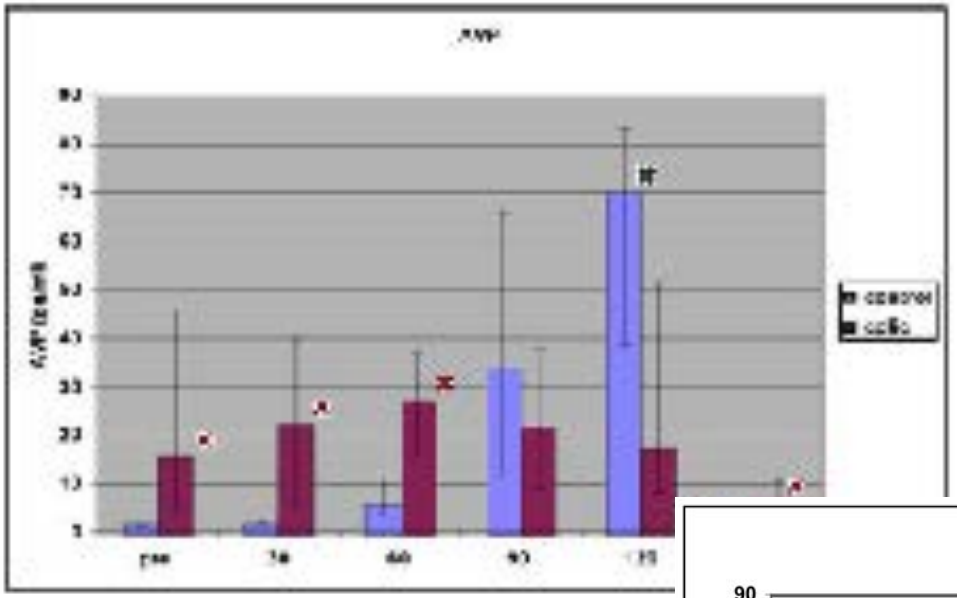
The authors acknowledge the Advanced Research Program of the National Science Foundation, the University of North Carolina Sea Grant College Program for funding this research. Special thanks to Lee White and Beth Stanton for help with the work.

Picture perfect photos

- Avoid resolution overkill!
  At least 150 dpi, but no more than 300 dpi

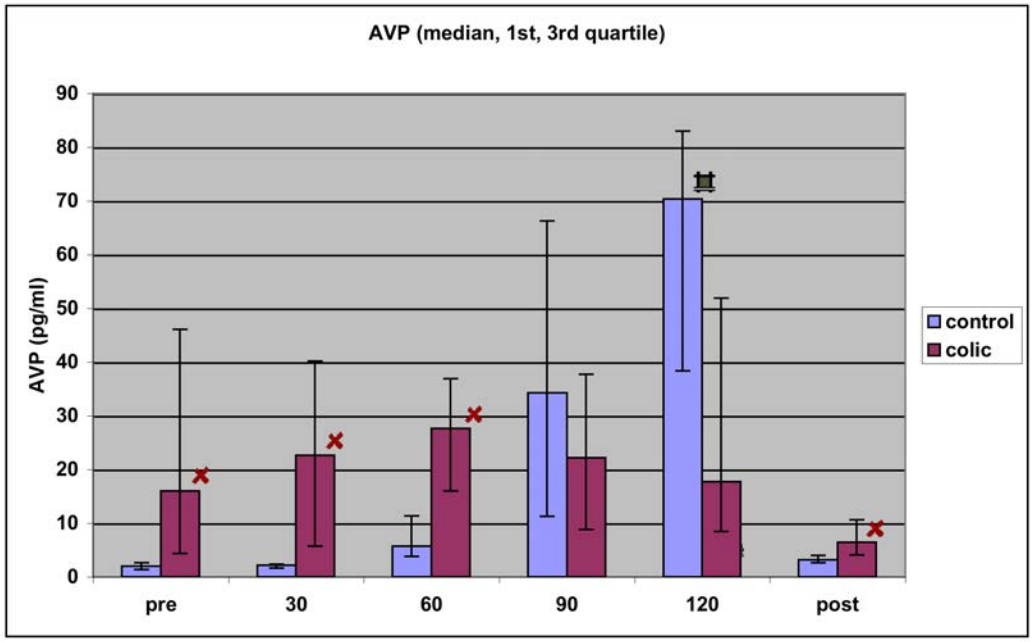
- Save photos as jpg or png
  Line art as a png (graphs)

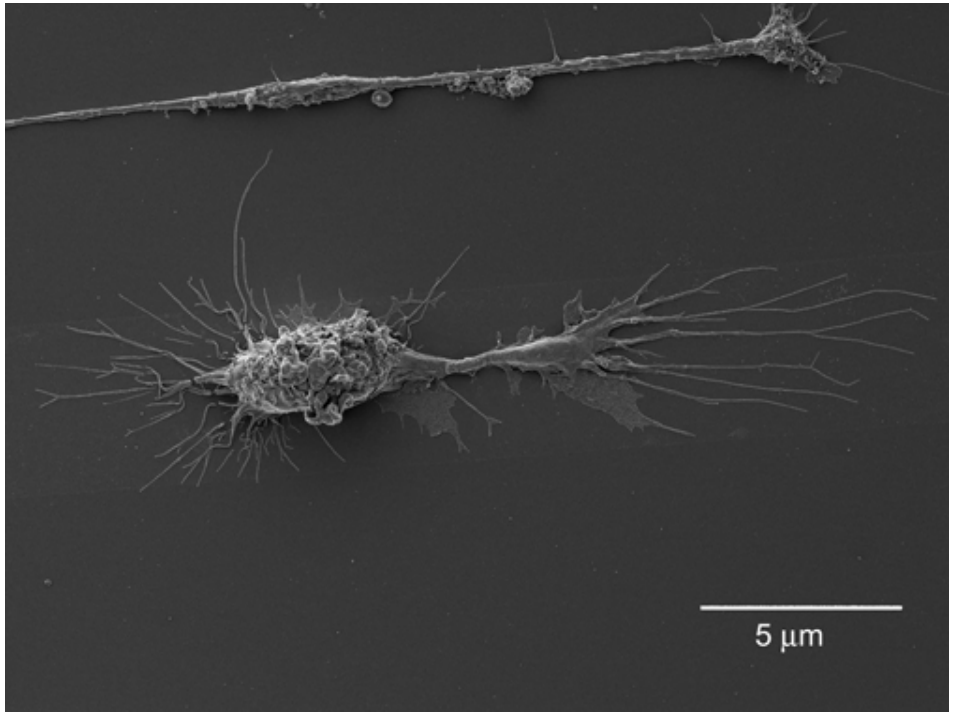
- Web images are usually
  poor resolution



jpg

png


AVP (median, 1st, 3rd quartile)
AVP (pg/ml)
90
80
70
60
50
40
30
20
10
0
pre
30
60
90
120
post
control
colic

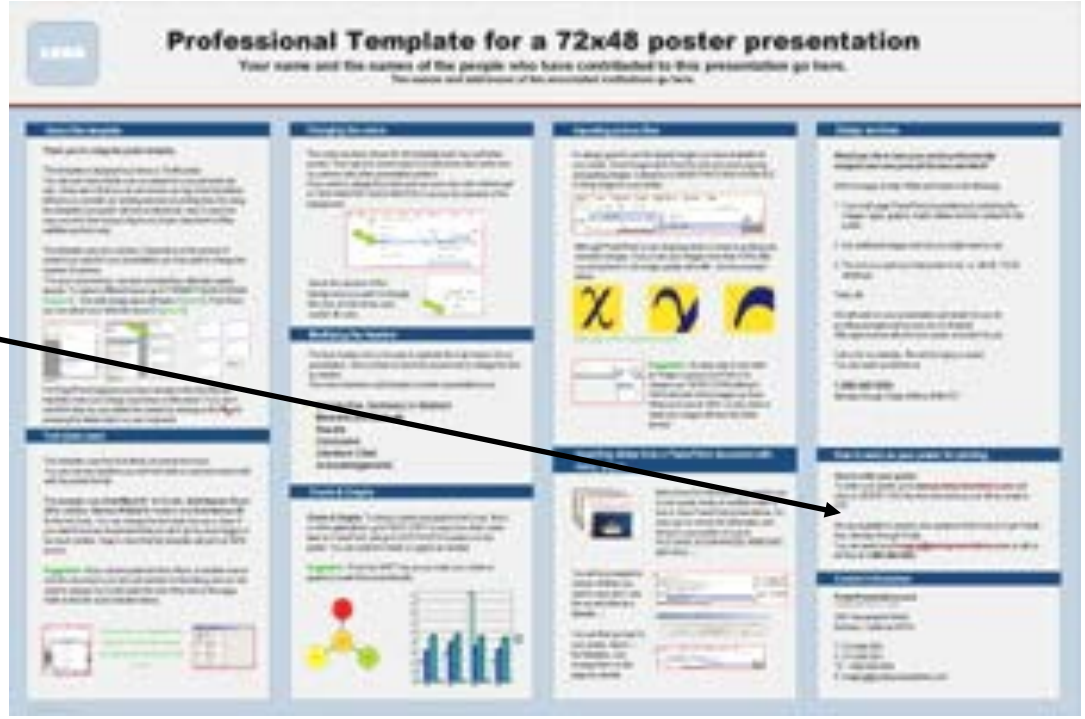


Your cool images mean nothing without a scale bar or description

Don't forget your funding acknowledgements

CNF-NSF-BMR, etc

Your department can provide you with the required wording

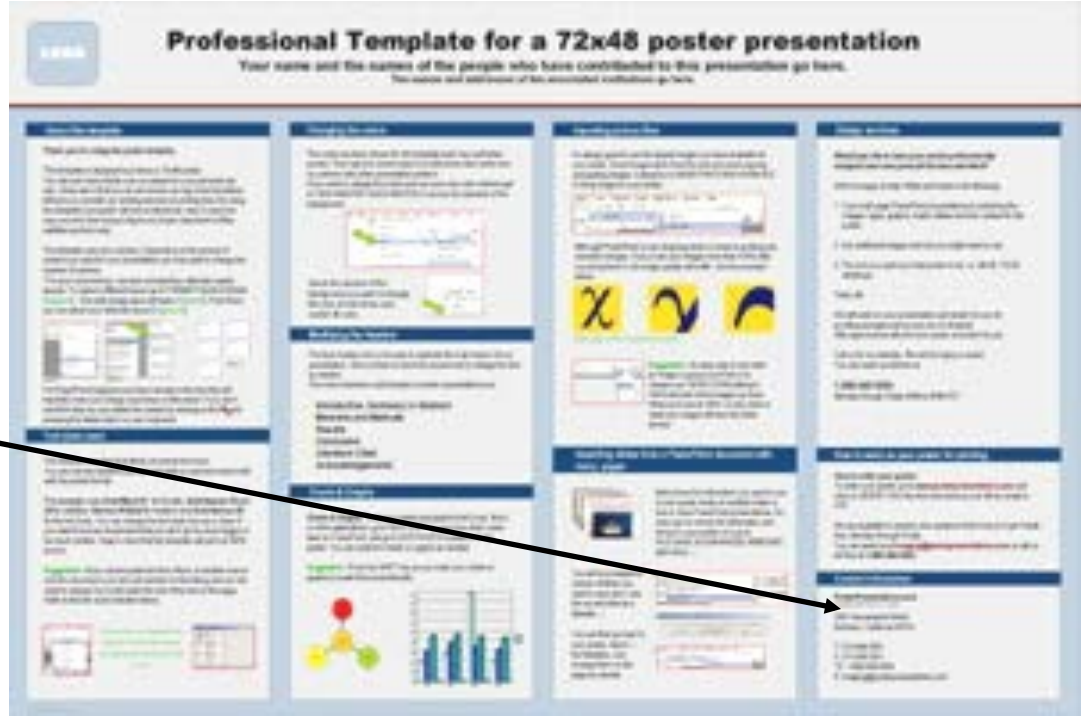


Your contact info!!!

Without it you' ll become
"ya know, those guys with the awesome poster"

Include all contact info:

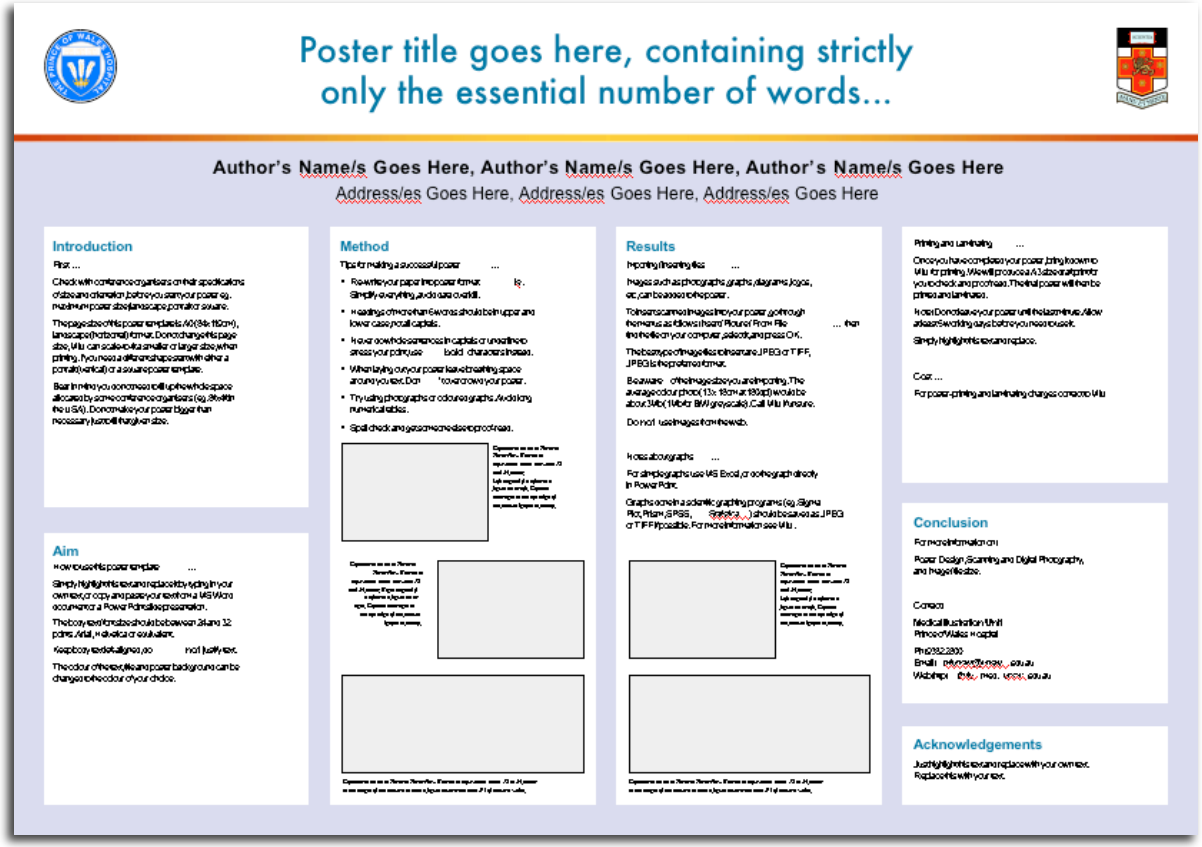
- Mail address
- Phone
- E-mail



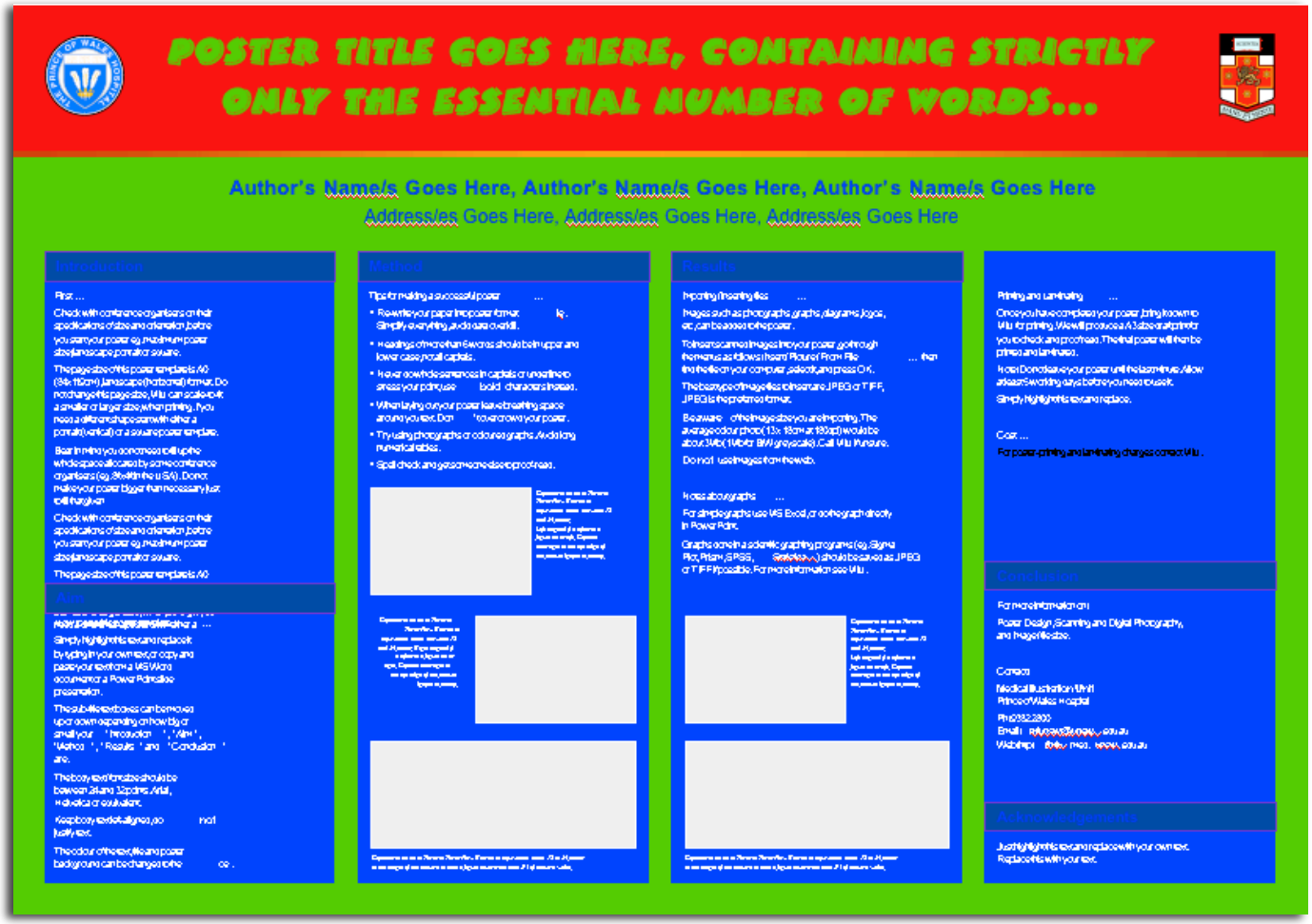
Using color to engage your readers

2-3 colors, no more!

Dark type on
light color background

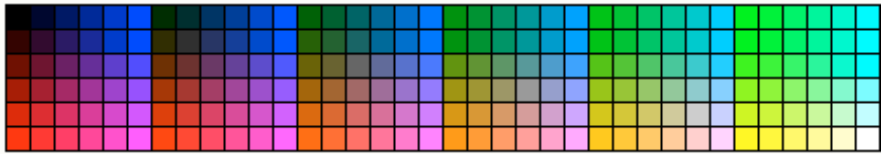


Whoa! Where's my sunglasses?



This attracts attention but tires out the eye

Be carefull with the primary colors



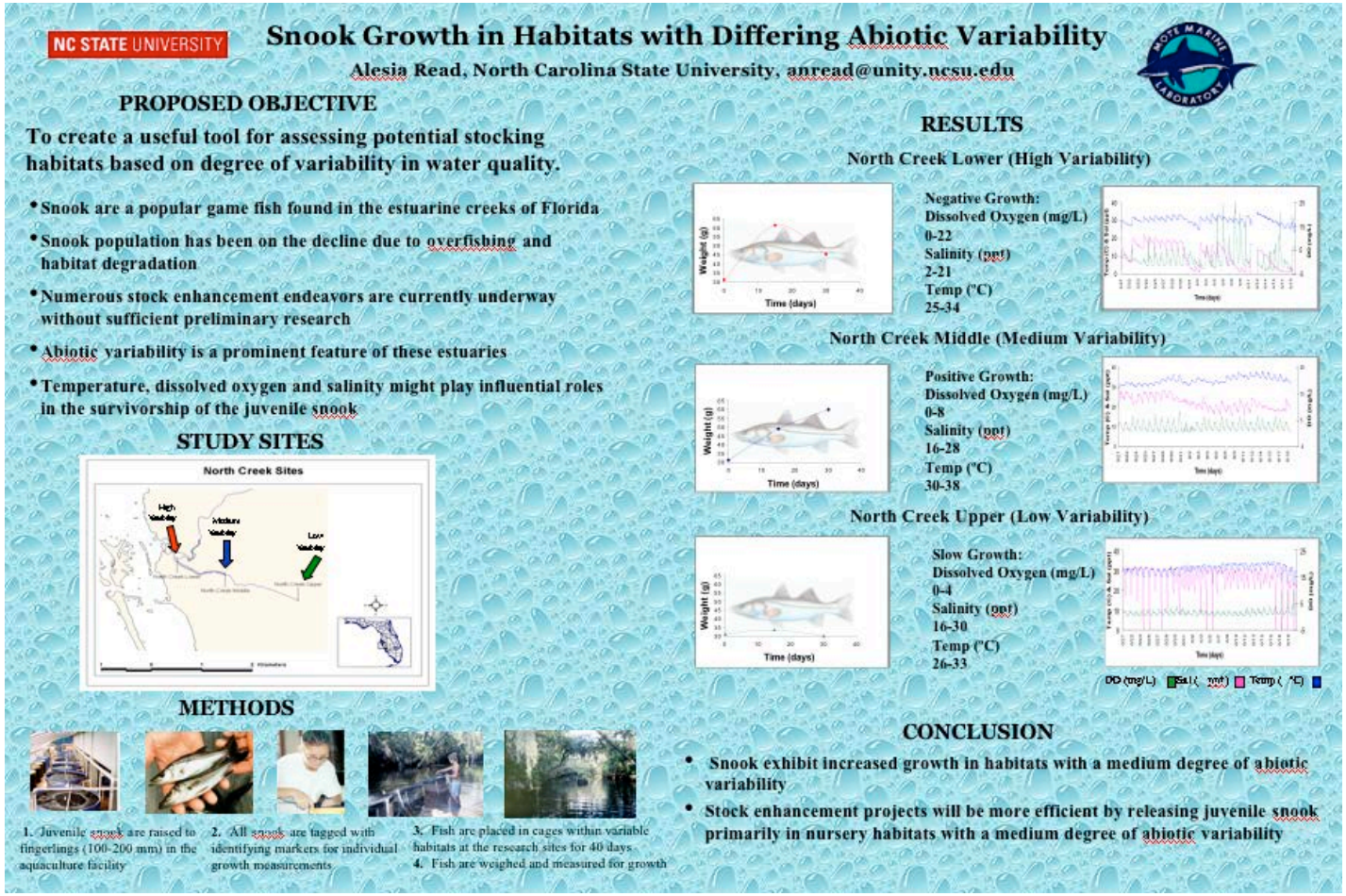
Blue on Red appears blurry to the human eye.

Yellow on white is hard to read

Red on Blue appears blurry to the human eye.

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

Be aware of busy backgrounds



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

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Southern flounder (*Paralichthys lethostigma*) support valuable fisheries and show good 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

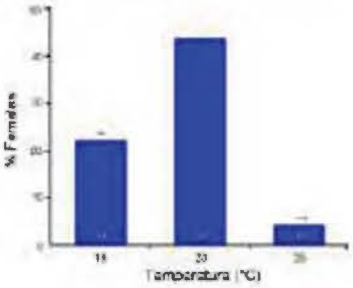
- Southern flounder broodstock were strip spawned (needless eggs and sperm for artificial fertilization).
- Thalidol larvae were reared from a natural diet (rotifers *Brachionus* to high protein pelleted feed) and had until metamorphosis (~60 days).
- Upon reaching a mean total length of 40 mm, the juvenile flounder were stocked at equal densities into one of three temperatures (18, 23, or 28°C) for 248 days.
- Controls were preserved and later sectioned at 2-6 months.
- Sex-distinguishing markers were used to distinguish males (spermatogonia) from females (oogonia).

Histological Analysis

Male Differentiation

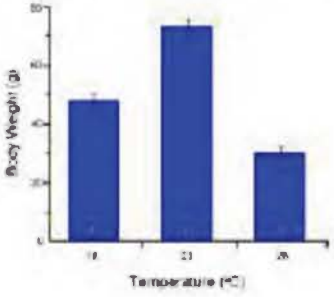
Female Differentiation

Temperature Affects Sex Determination

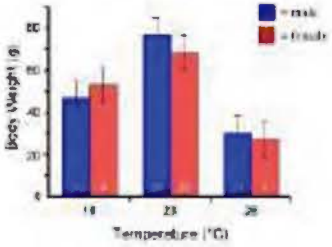


(***P < 0.01 and ****P < 0.001 represent significant deviations from a 1:1 male:female sex ratio)

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 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 248 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 prominent 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

[illegible]

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.

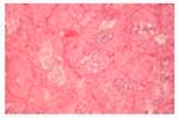
Objective

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 broodstock were strip spawned to collect eggs and sperm for *in vitro* fertilization.
- Hatched larvae were weaned from a natural diet (*artemia*) to high protein pelleted 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).

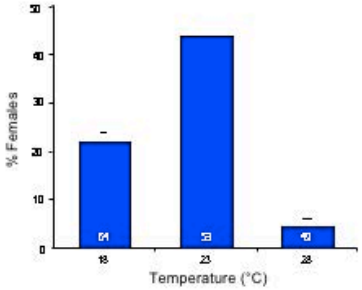
Histological Analysis



Male Differentiation

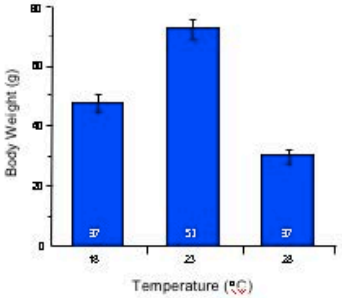
Female Differentiation

Temperature Affects Sex Determination

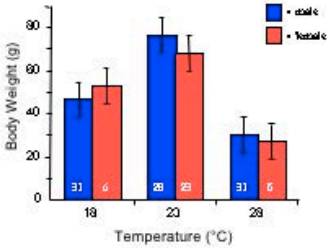


(** P < 0.001 and *** P < 0.0001 represent significant deviations from a 1:1 male:female sex ratio)

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.

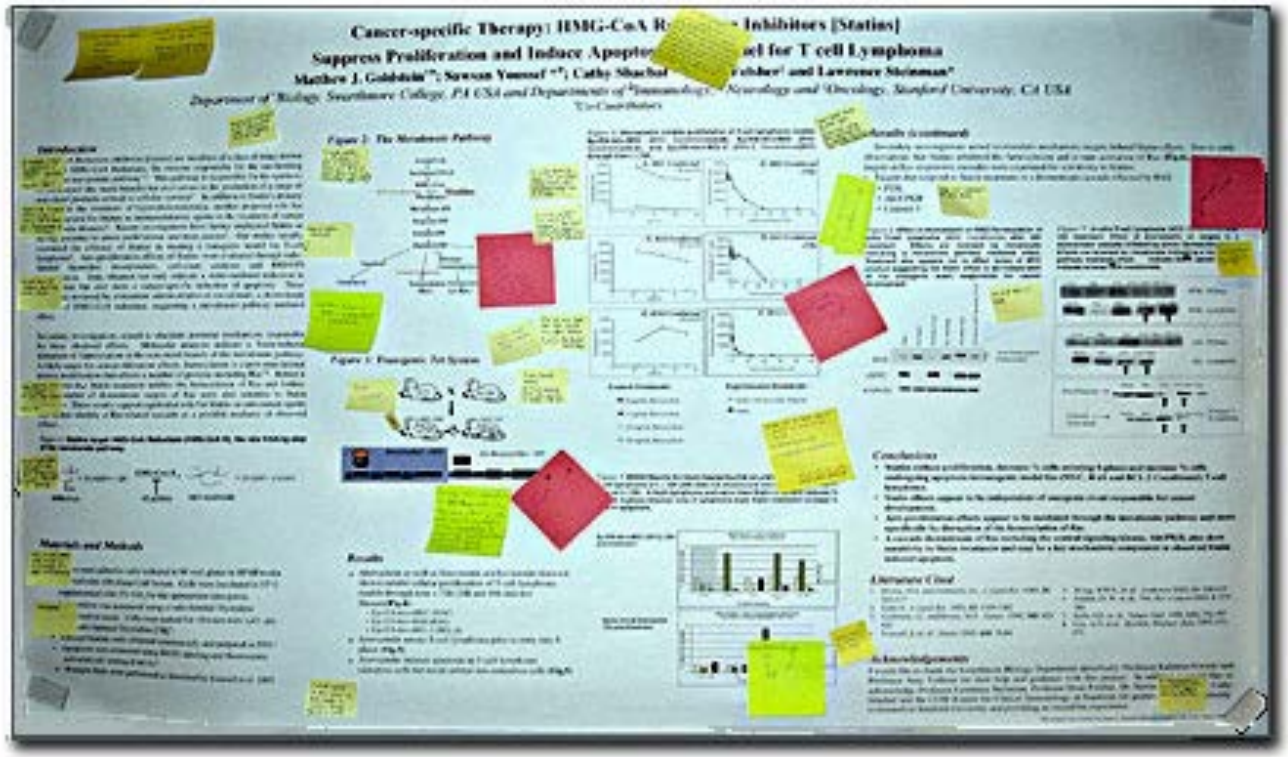
Conclusions

- 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 [illegible] National Marine Fisheries Service of the University of North Carolina Sea Grant College Program for financial support. Special thanks to Lee Ware and Bob [illegible] for help with the work.

Edit, Edit, Edit and Evaluate!



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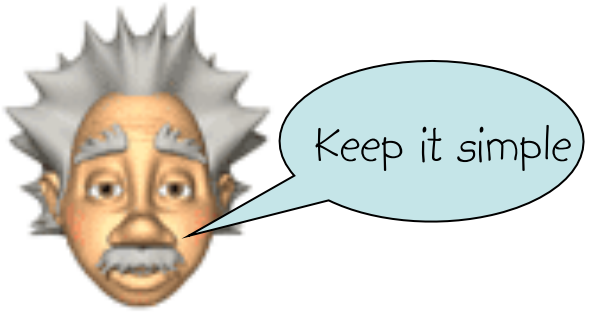
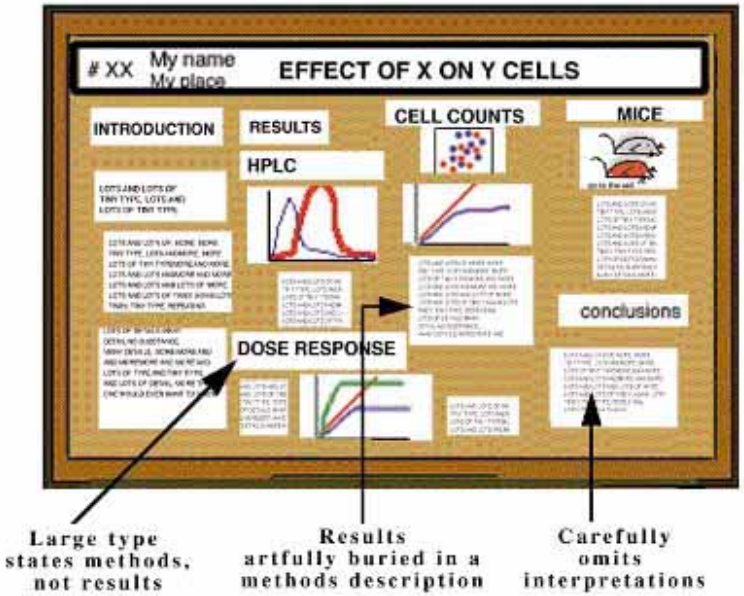
Does it look too busy?

Do my main points pop?





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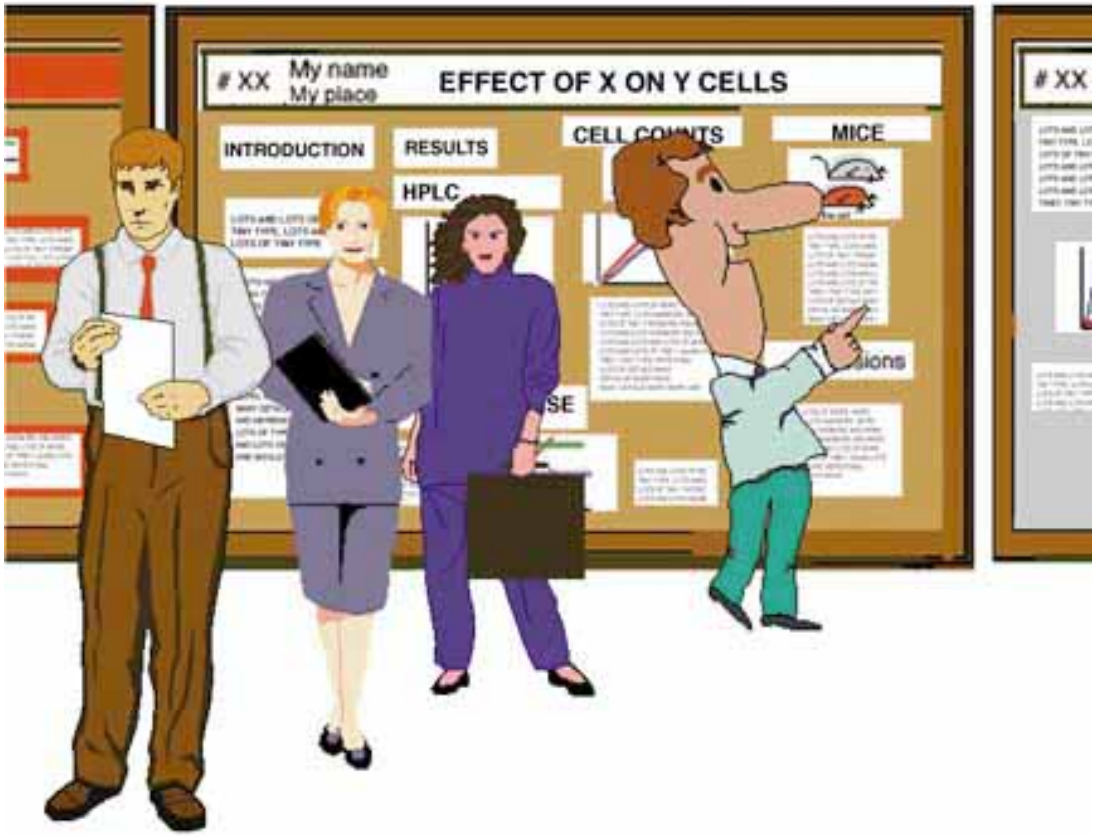

Prepare mini size poster handouts

- Provides a written record for interested folks
- Makes you look together
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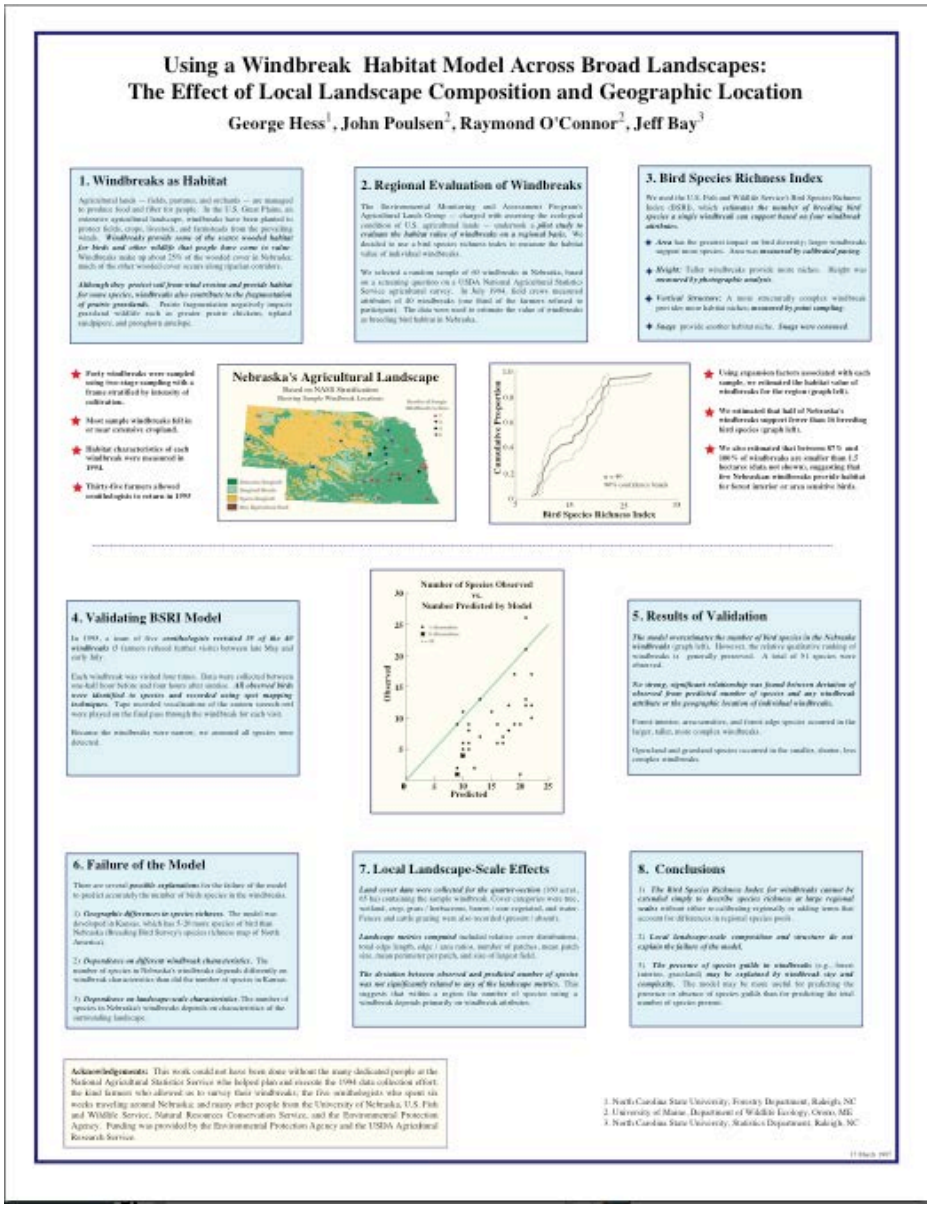


Using a Windbreak Habitat Model Across Broad Landscapes: The Effect of Local Landscape Composition and Geographic Location

George Hess[1], John Poulsen[2], Raymond O'Connor[2], Jeff Bay[3]

1. Windbreaks as Habitat

2. Regional Evaluation of Windbreaks

3. Bird Species Richness Index

Nebraska's Agricultural Landscape

Cumulative Proportion

Bird Species Richness Index

4. Validating BSRI Model

Number of Species Observed vs. Number Predicted by Model

Observed

Predicted

5. Results of Validation

6. Failure of the Model

7. Local Landscape-Scale Effects

8. Conclusions

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 (Carolinum), 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 osteoarthrosis

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.

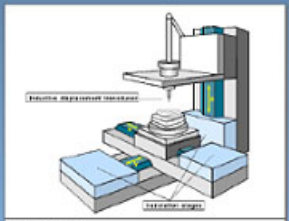


Fig. 2: Test setup

- **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/ Catman 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 gains/losses (wear, resin torsion, water sorption, etc.) are shown in **Fig. 3** (stabilization splints) and **Fig. 4** (distraction splints).

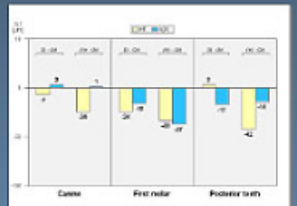


Fig. 3: Occlusal vertical gains/losses (median) of the resin in situ over a period in situ of six months (n = 10 stabilization splints)

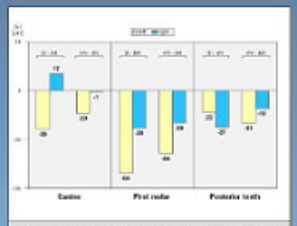
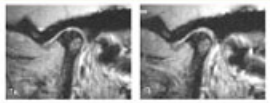


Fig. 4: Occlusal vertical gains/losses (median) of the resin in situ over a period in situ of six months (n = 10 distraction splints)

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

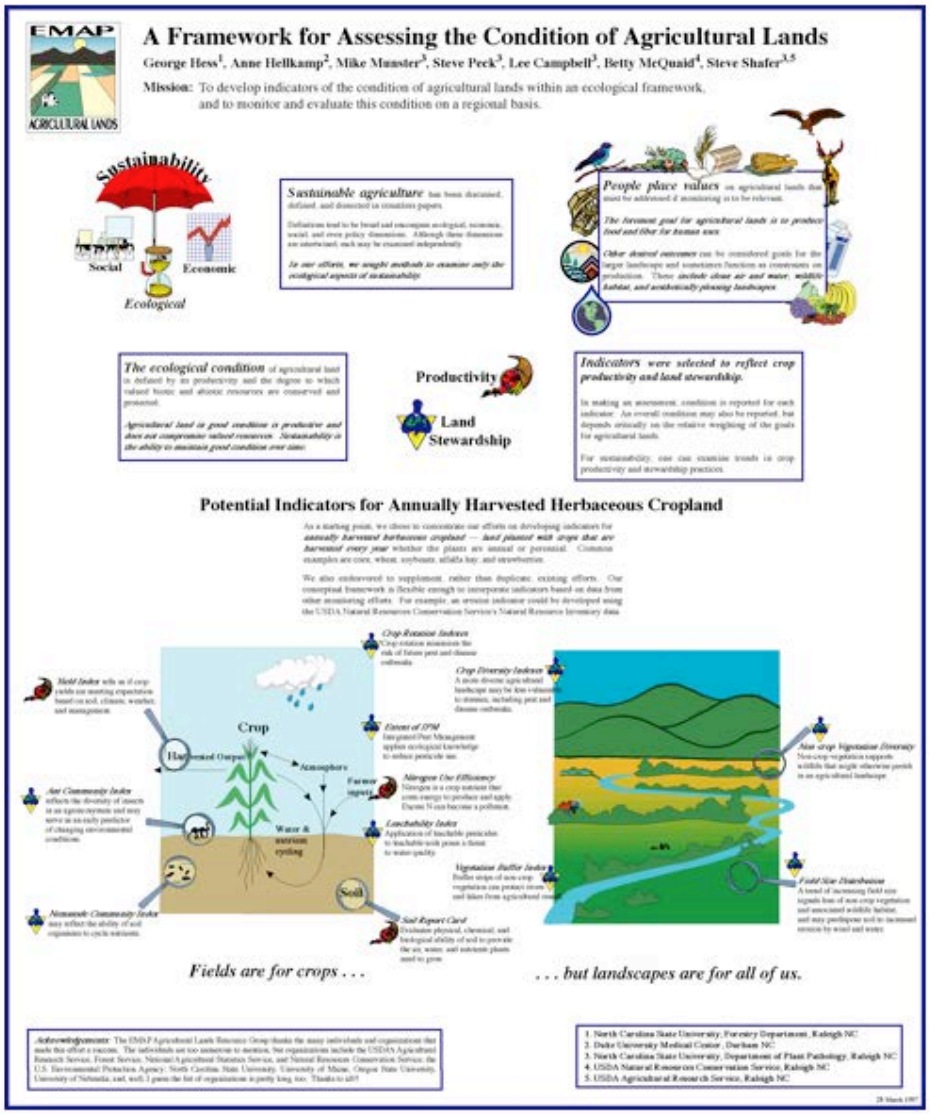


Figs. 5a and b: Sagittal oblique images (MS) of the condyle/fossa relationship without splint (Fig. 5a) and with distraction splint inserted (Fig. 5b) following six months of wearing

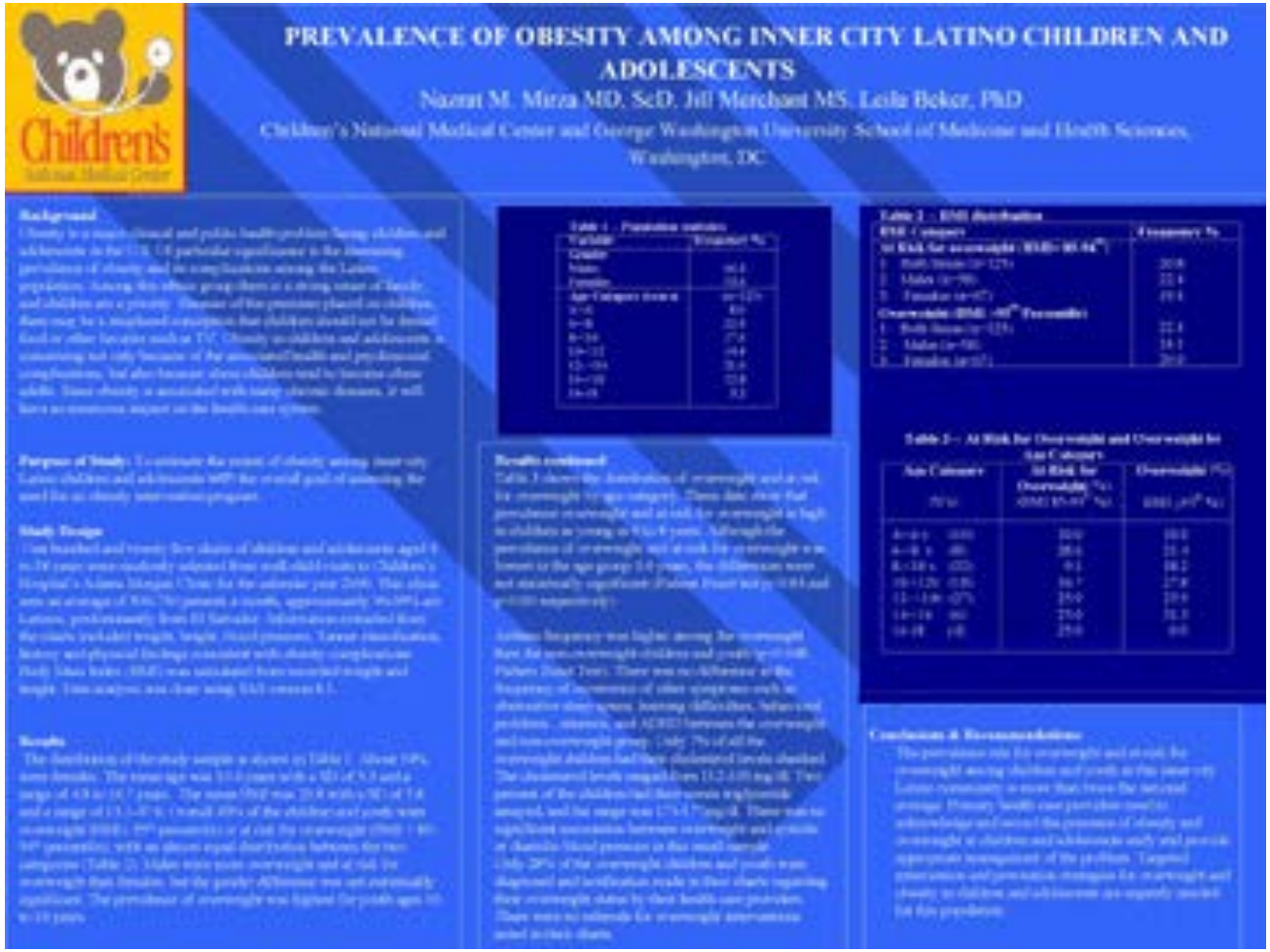
Conclusions

- 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

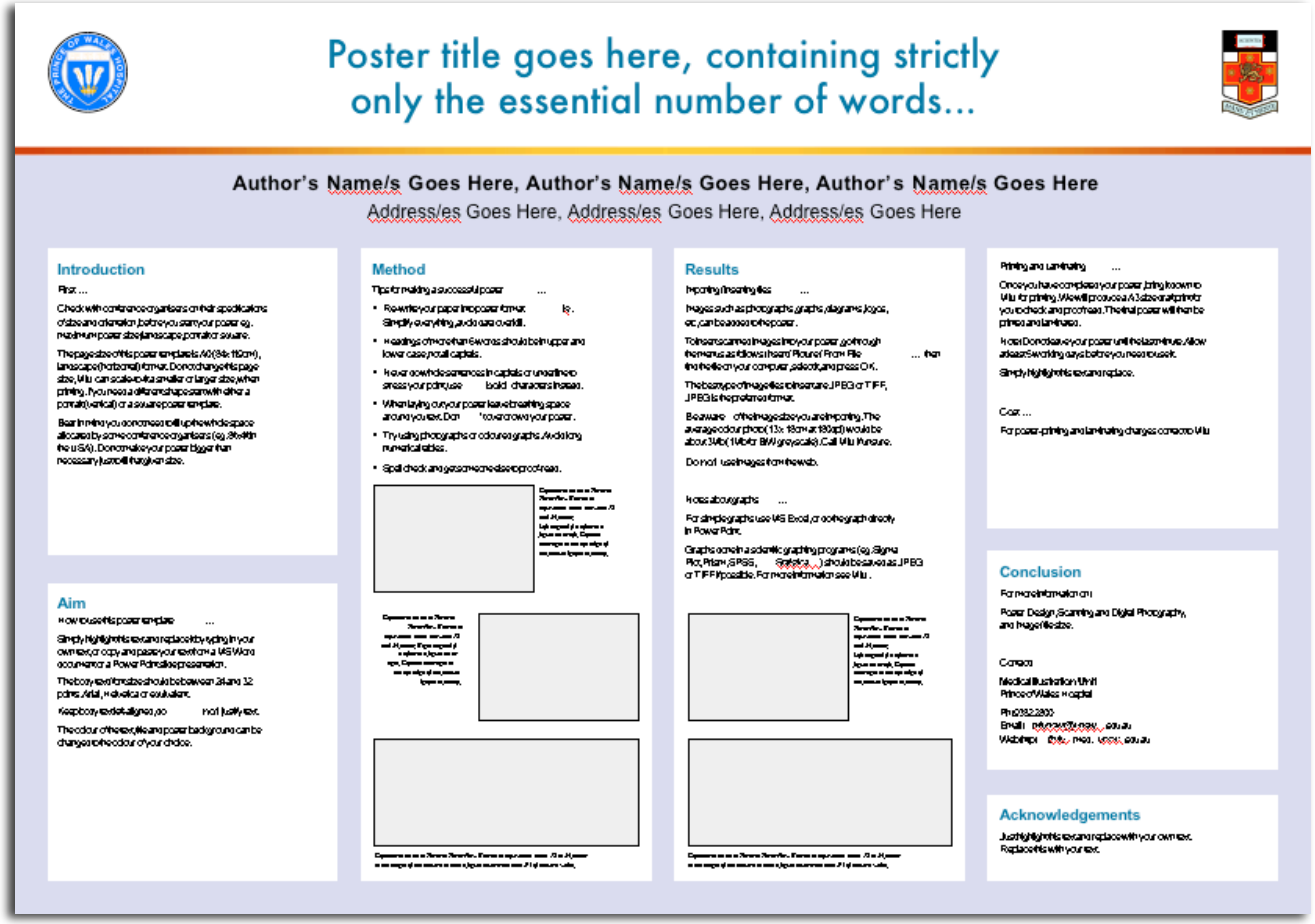


Where do I begin?



I'm feeling sleepy

OK, but which way do I go?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Aim
Method
Results
Conclusion
Acknowledgements

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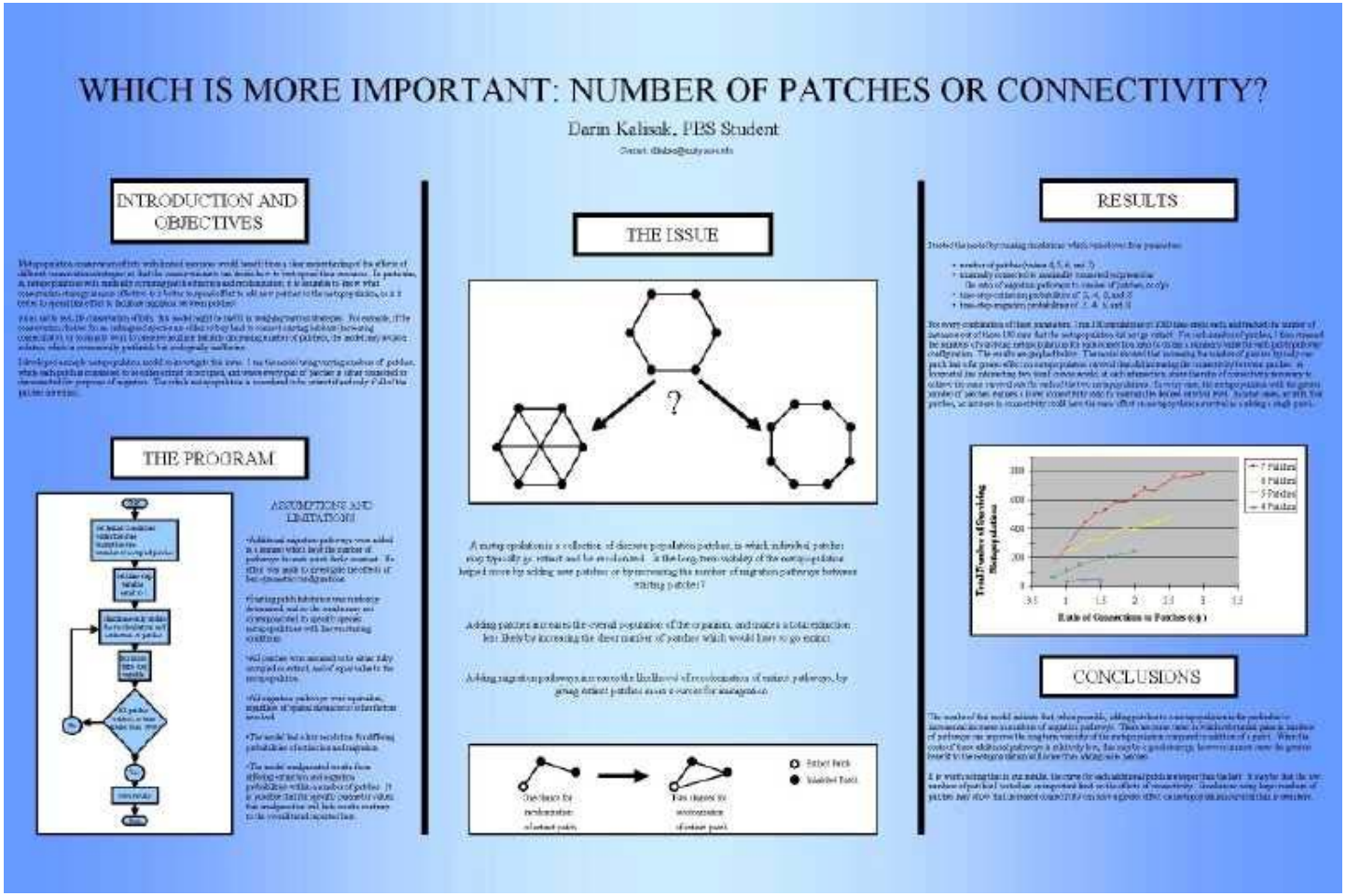
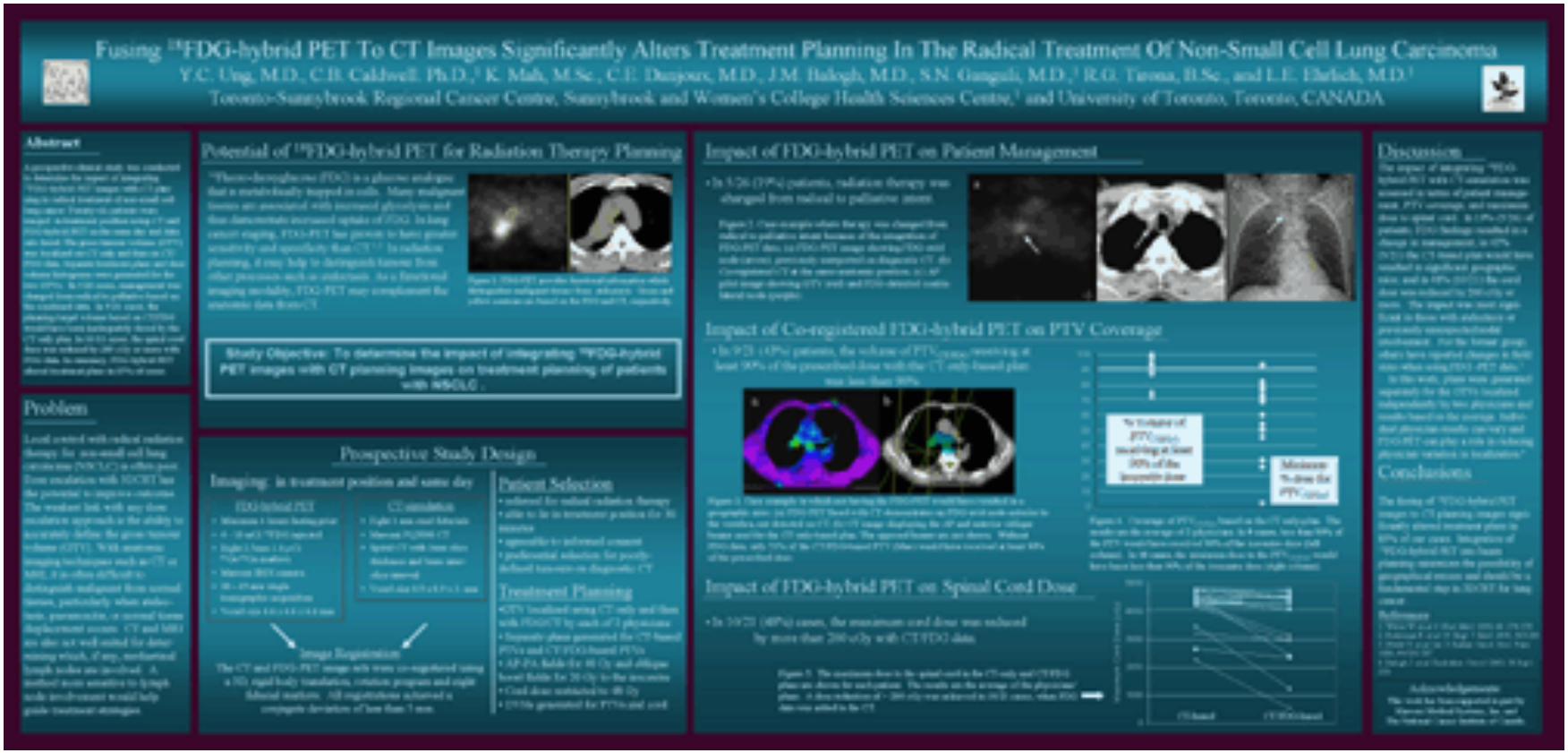
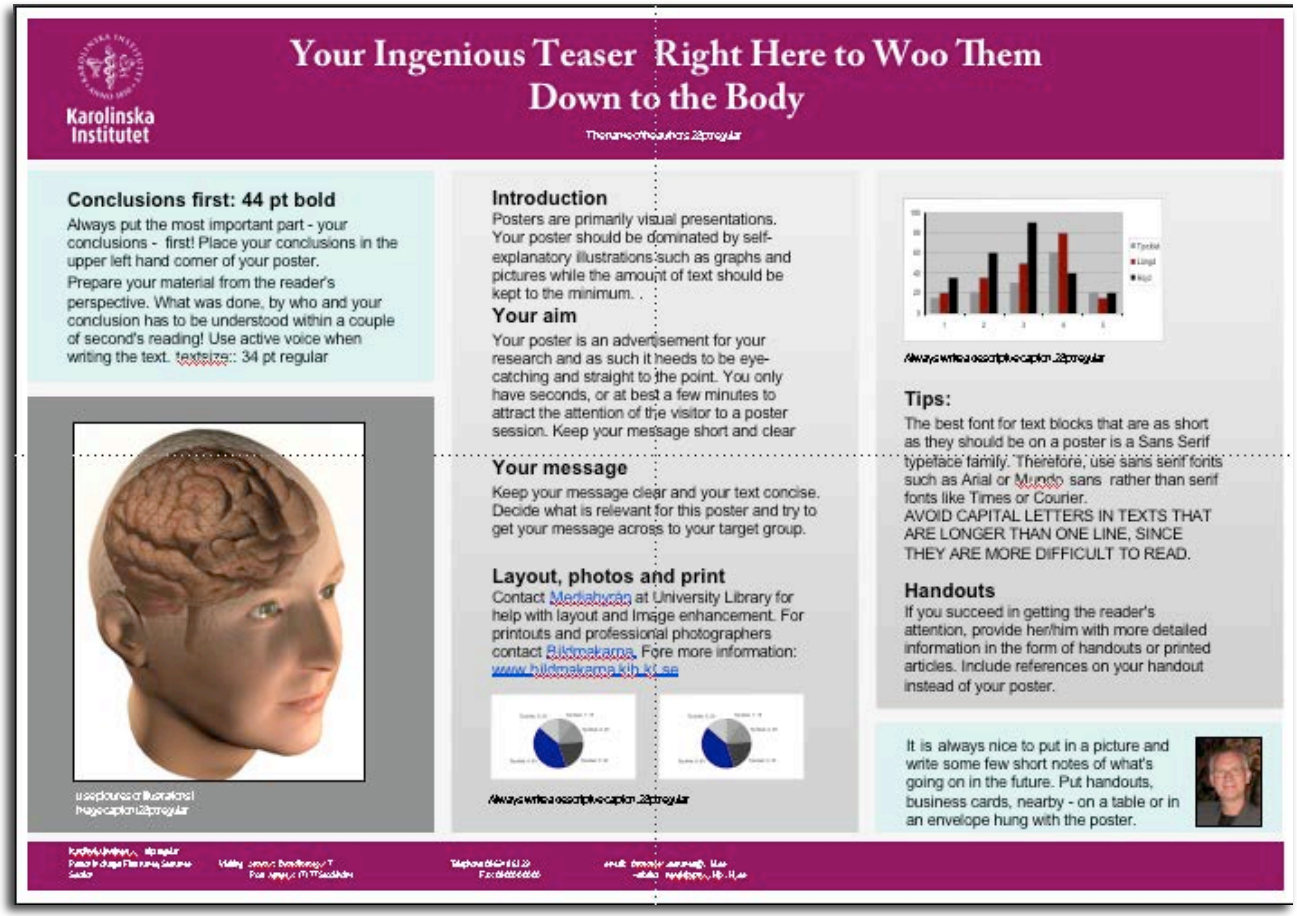


Nice flow, but too metallic



I've fallen,
and I can't get up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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
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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.
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Always write a descriptive caption 28 pt regular
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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 forits such as Arial or Mundo sans rather than serif fonts like Times or Courier.
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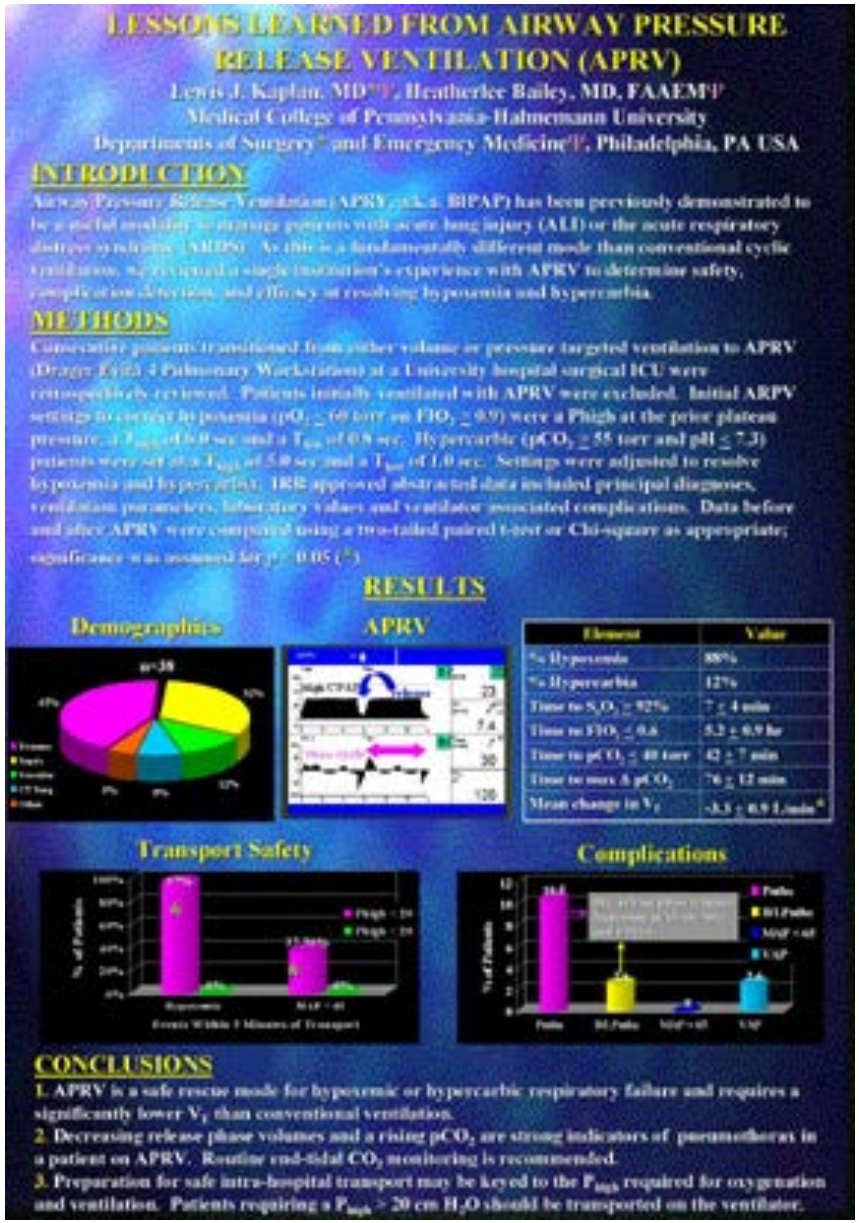
If you succeed in getting the reader's attention, provide her/him with more detailed information in the form of handouts or printed articles. Include references on your handout instead of your poster.
It is always nice to put in a picture and write some few short notes of what's going on in the future. 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*†, Heatherlee Bailey, MD, FAAEM†
Medical College of Pennsylvania-Hahnemann University
Departments of Surgery* and Emergency Medicine†, 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 ventilation, 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 (Drager Evita 4 Pulmonary Workstation) at a University hospital surgical ICU were retrospectively reviewed. Patients initially ventilated with APRV were excluded. Initial ARPV settings to correct hypoxemia ($pO_2 \leq 60$ torr on $FIO_2 \geq 0.9$) were a Phigh 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 ≤ 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, ventilation 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 $p < 0.05$ (*).

RESULTS

Demographics

APRV

Element	Value
% Hypoxemic	88%
% Hypercarbic	12%
Time to $S_aO_2 \geq 92\%$	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 Δ pCO_2	76 ± 12 min
Mean change in V_E	-3.3 ± 0.9 L/min*

Transport Safety

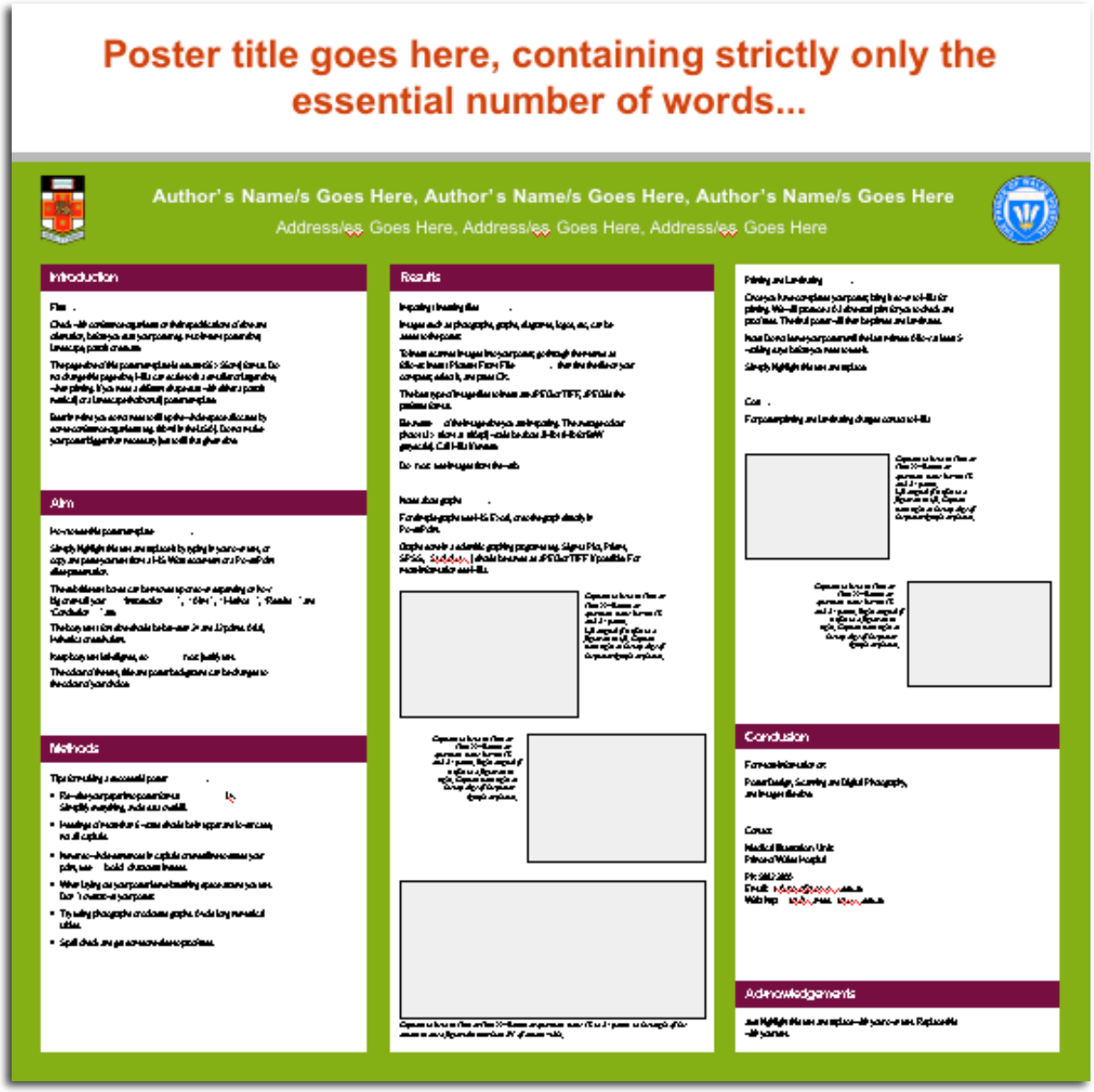
Complications

CONCLUSIONS

1. APRV is a safe rescue mode for hypoxemic or hypercarbic respiratory failure and requires a significantly lower V_E 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

Fer sure!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