Scientific Poster Design

How to keep your poster from resembling an "abstract painting"

CornellEngineering

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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

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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

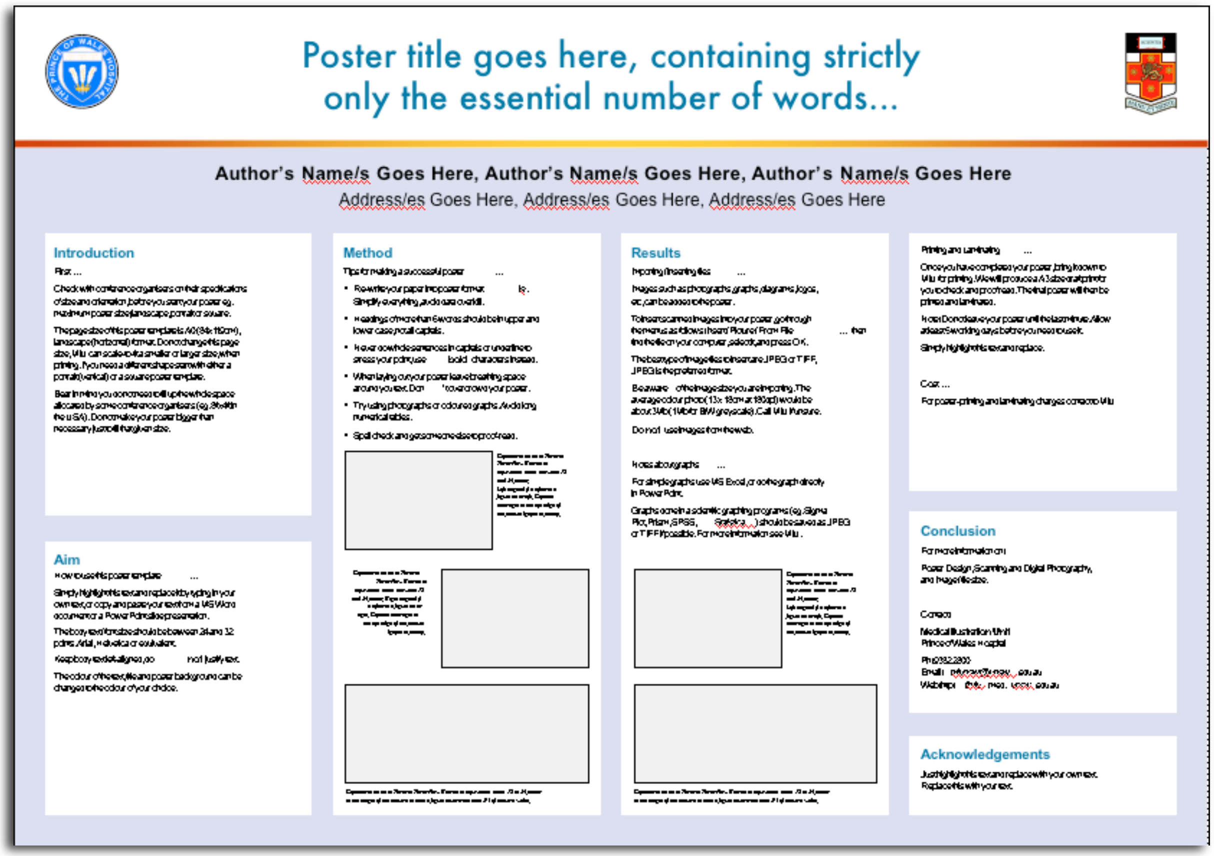
POSTER SESSION
May 23, 2005

SIMULATIONS OF POLYMER NETWORKS WITH A BIMODAL CHAIN LENGTH DISTRIBUTION

Dhananjay Bhawe, 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.



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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?

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A portrait of a grad student

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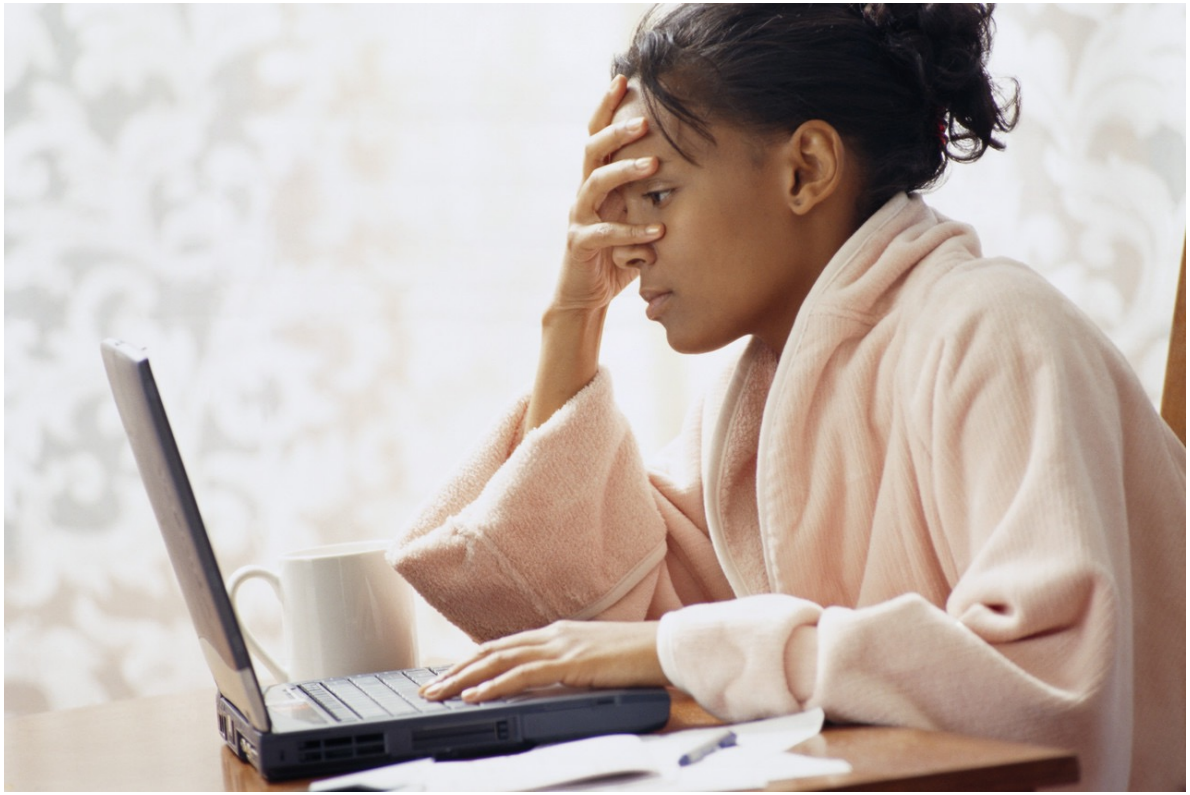

@#&%!@#$, I have 12 hours to throw this thing together and get it printed before it’s due.

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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

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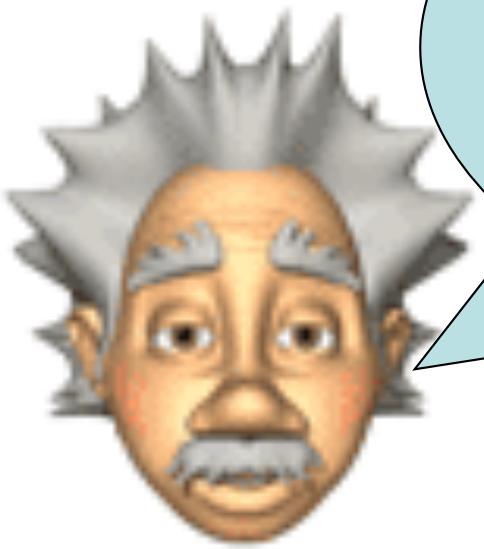

Recite after me,
Less is best!

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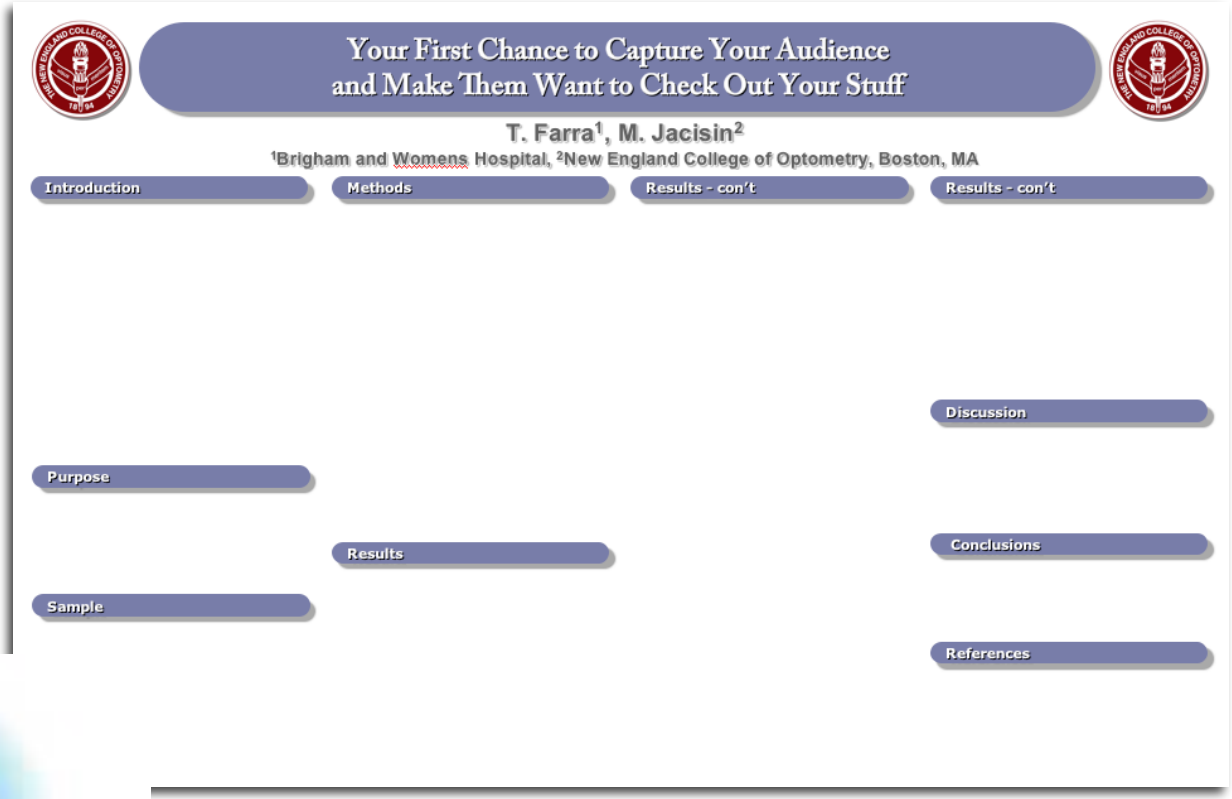
Simplify your paper into poster format



Find out the size required!

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Who's my audience?

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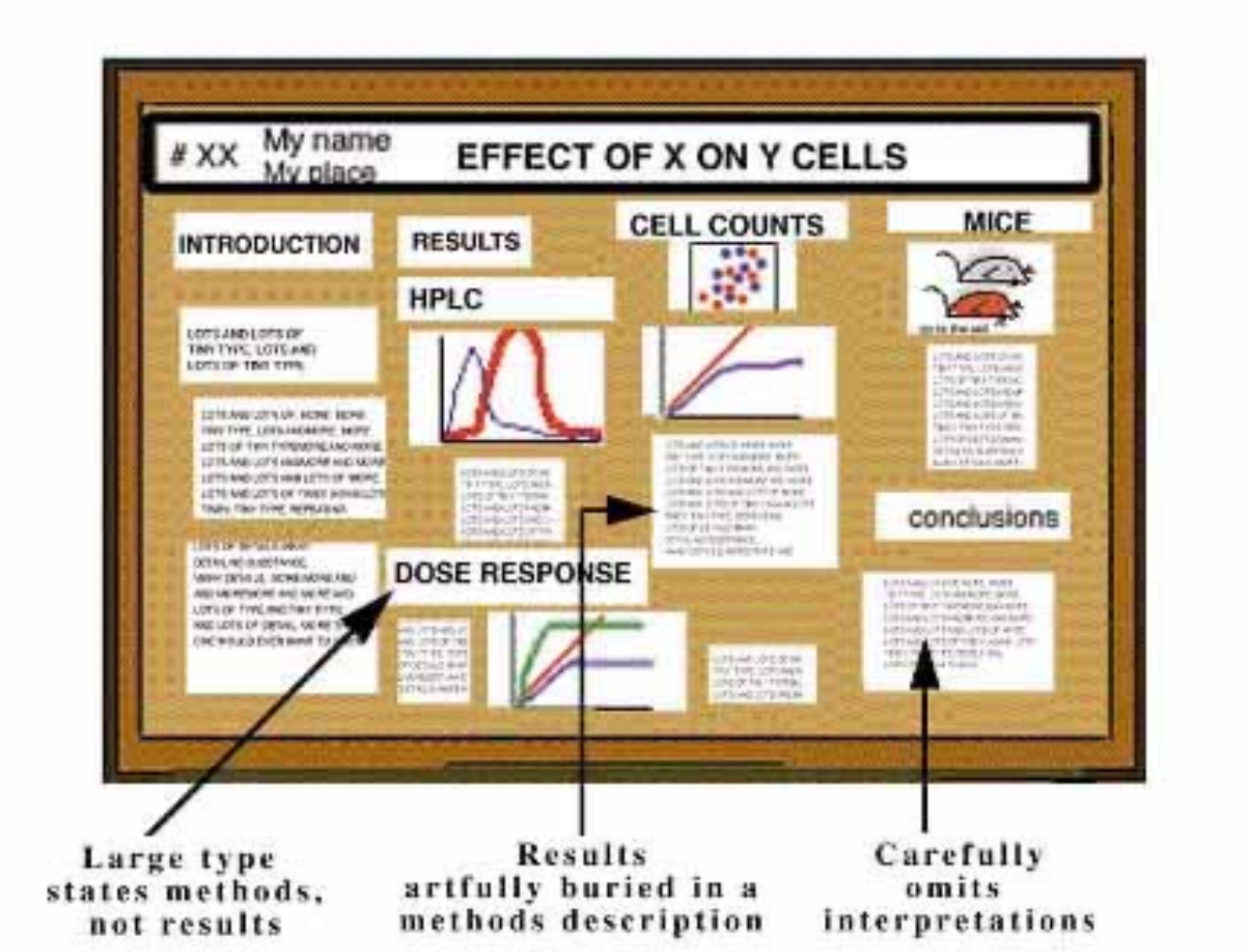
Remember, most of these "scientists" come for the free food



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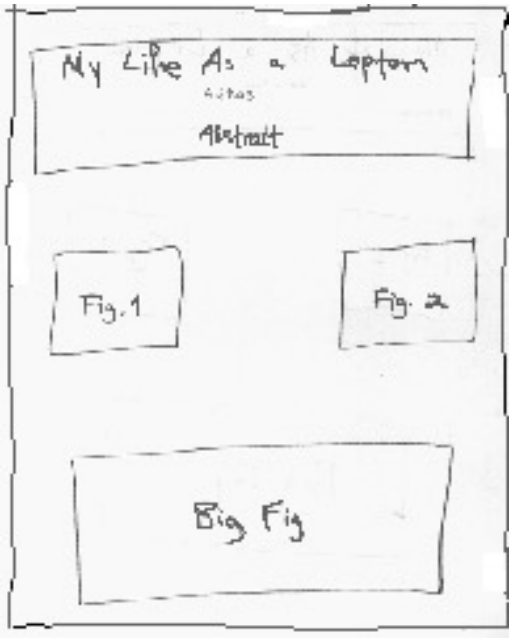

Start putting together your 2 main elements

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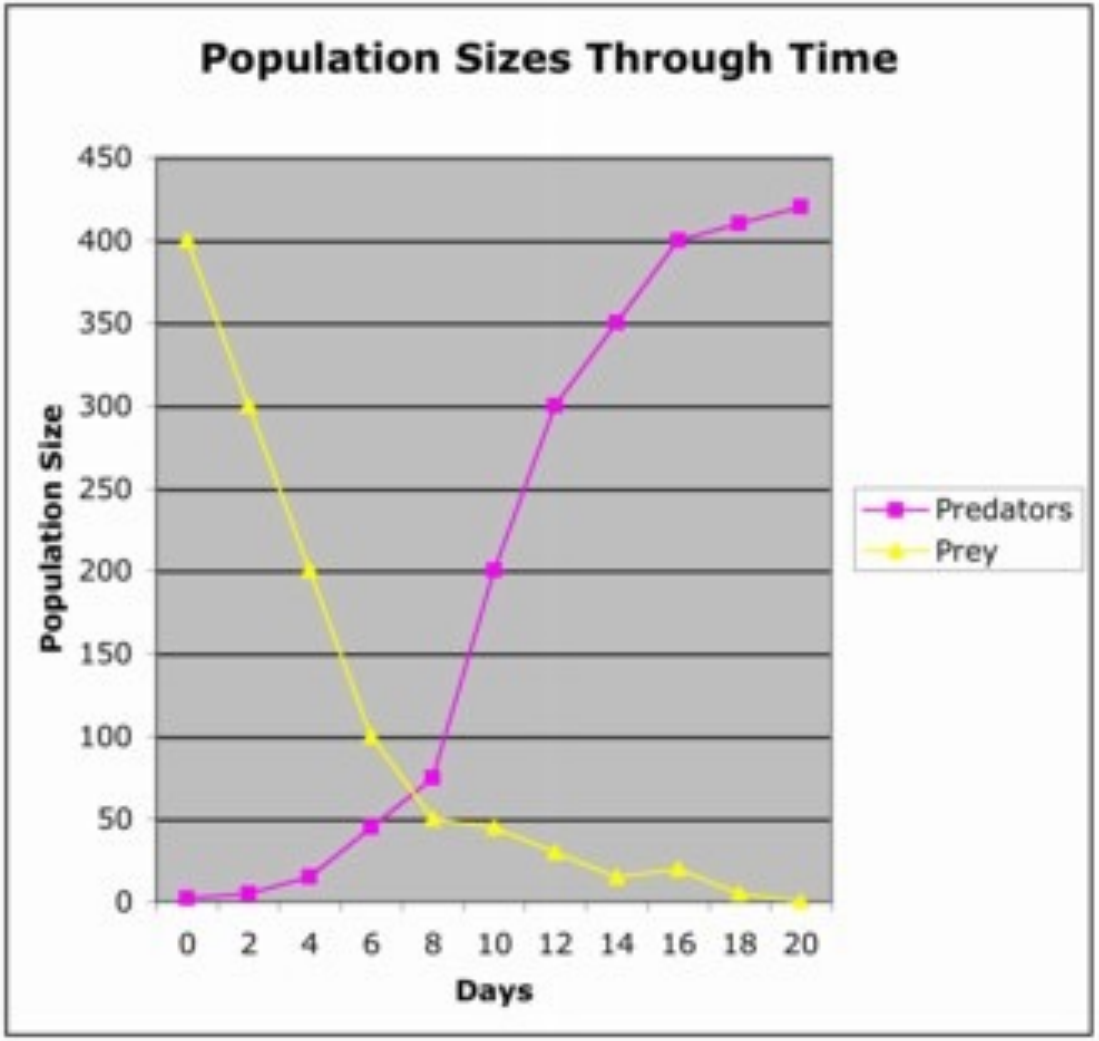
1) Simple, effective data displays

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



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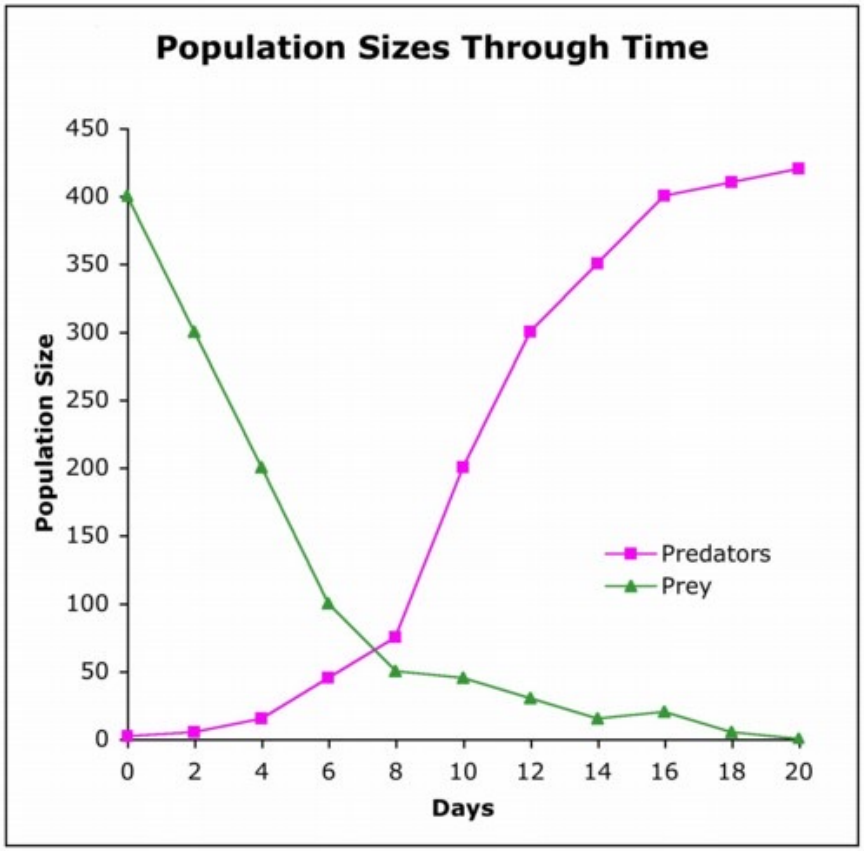

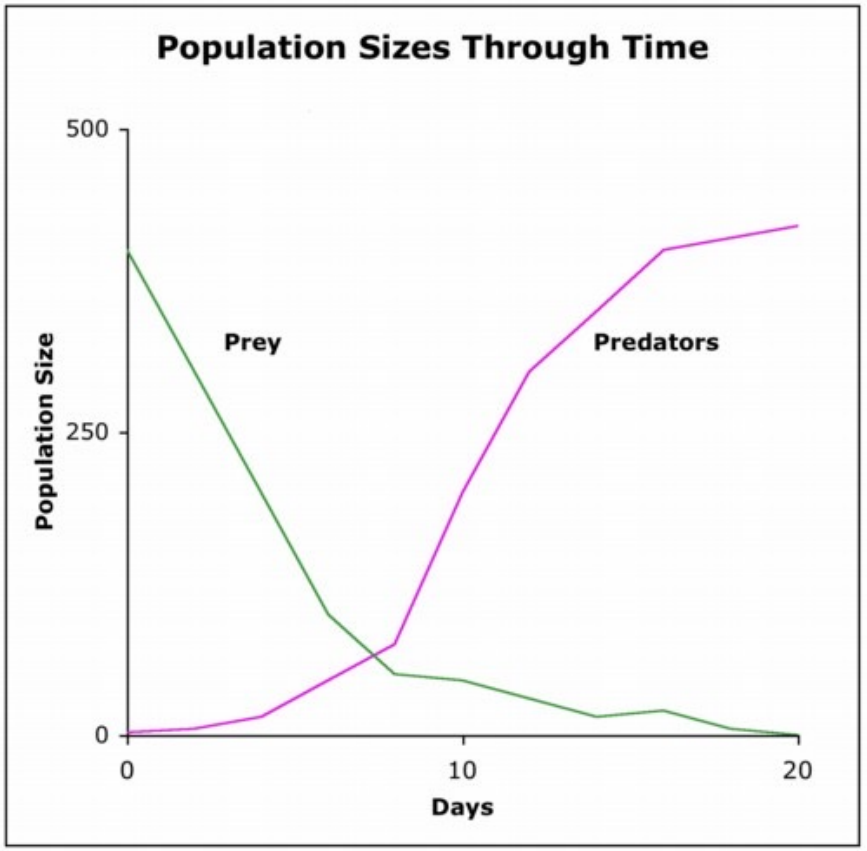

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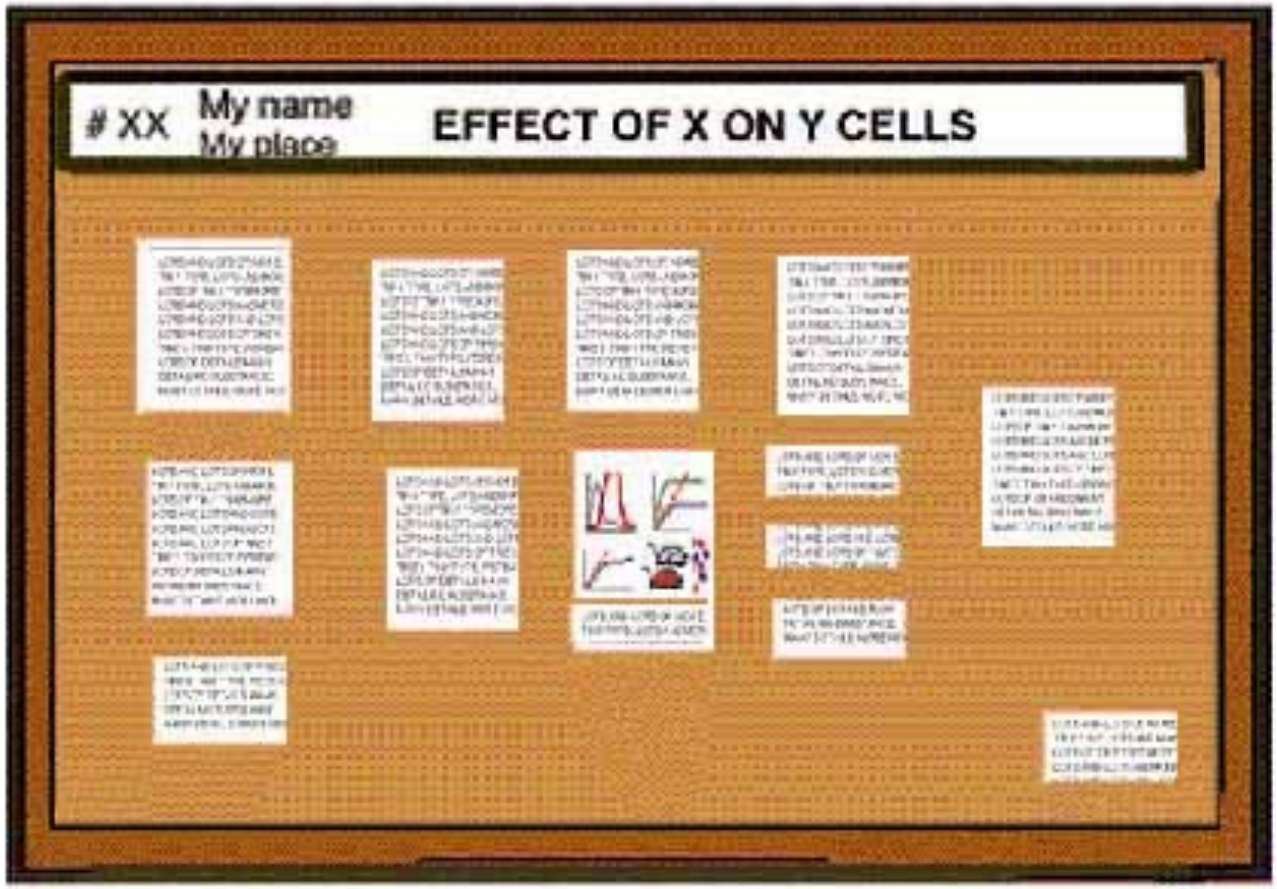
2) Small blocks of supporting text

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



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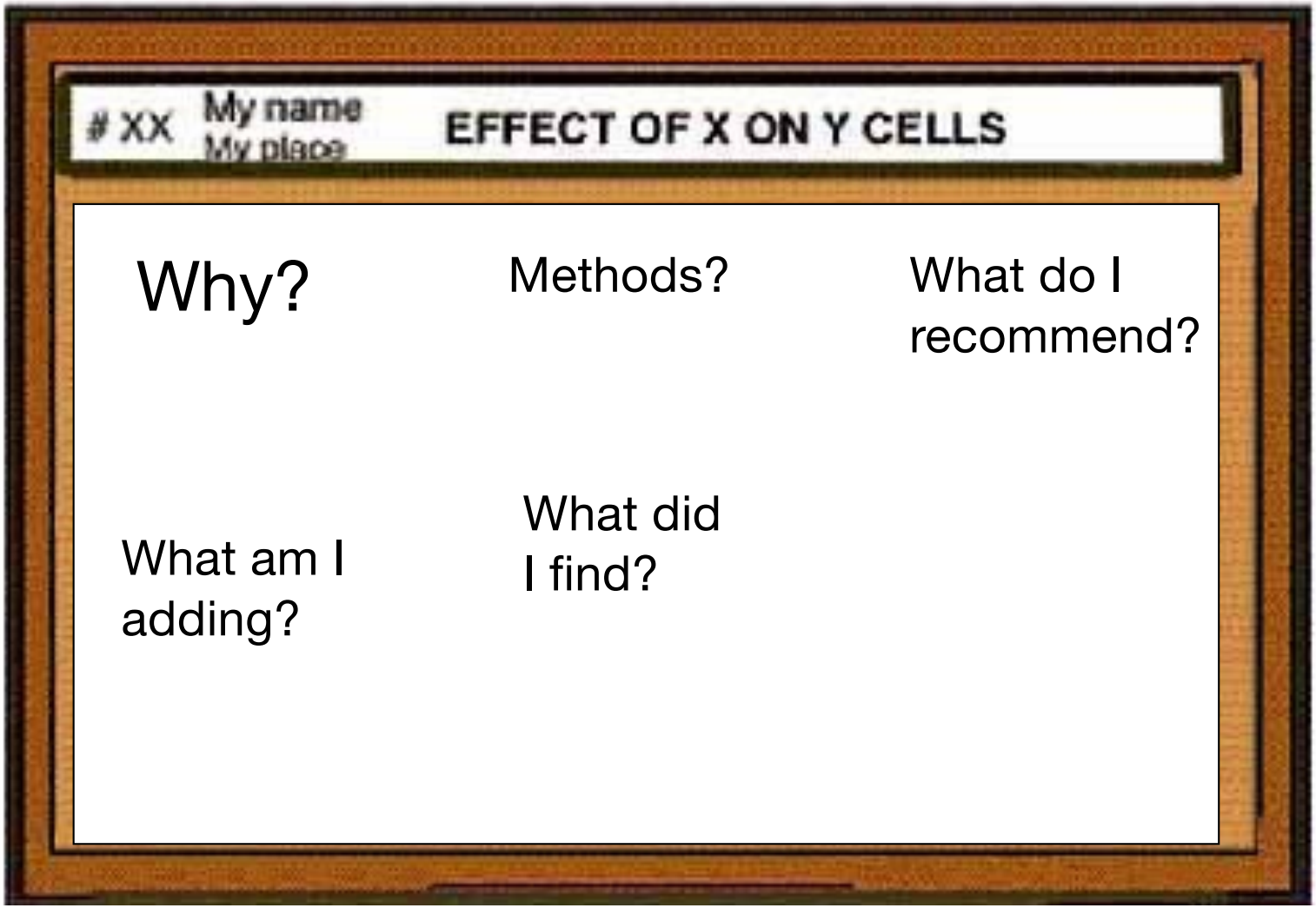
Your copy should answer...



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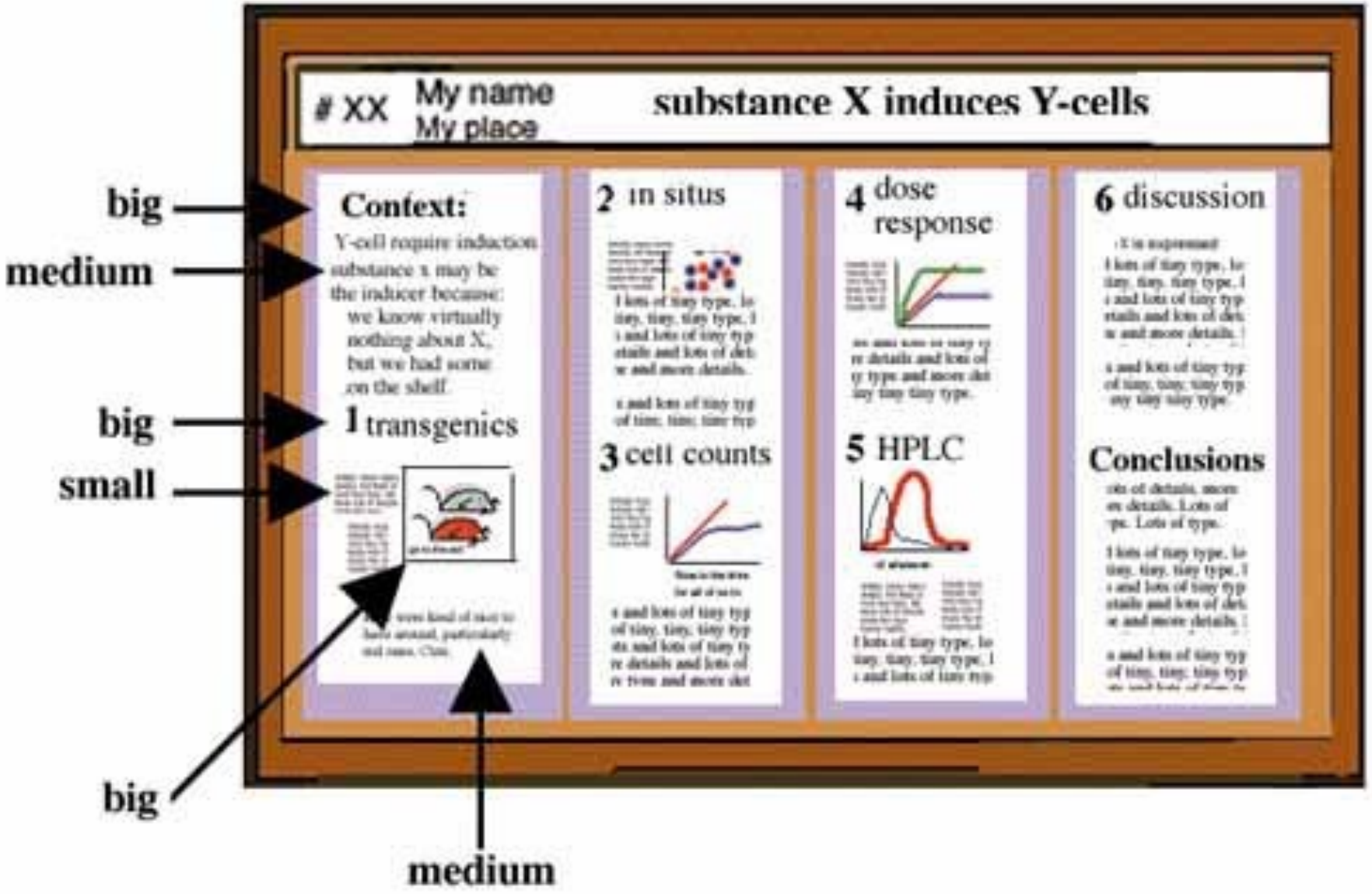
I could actually read this



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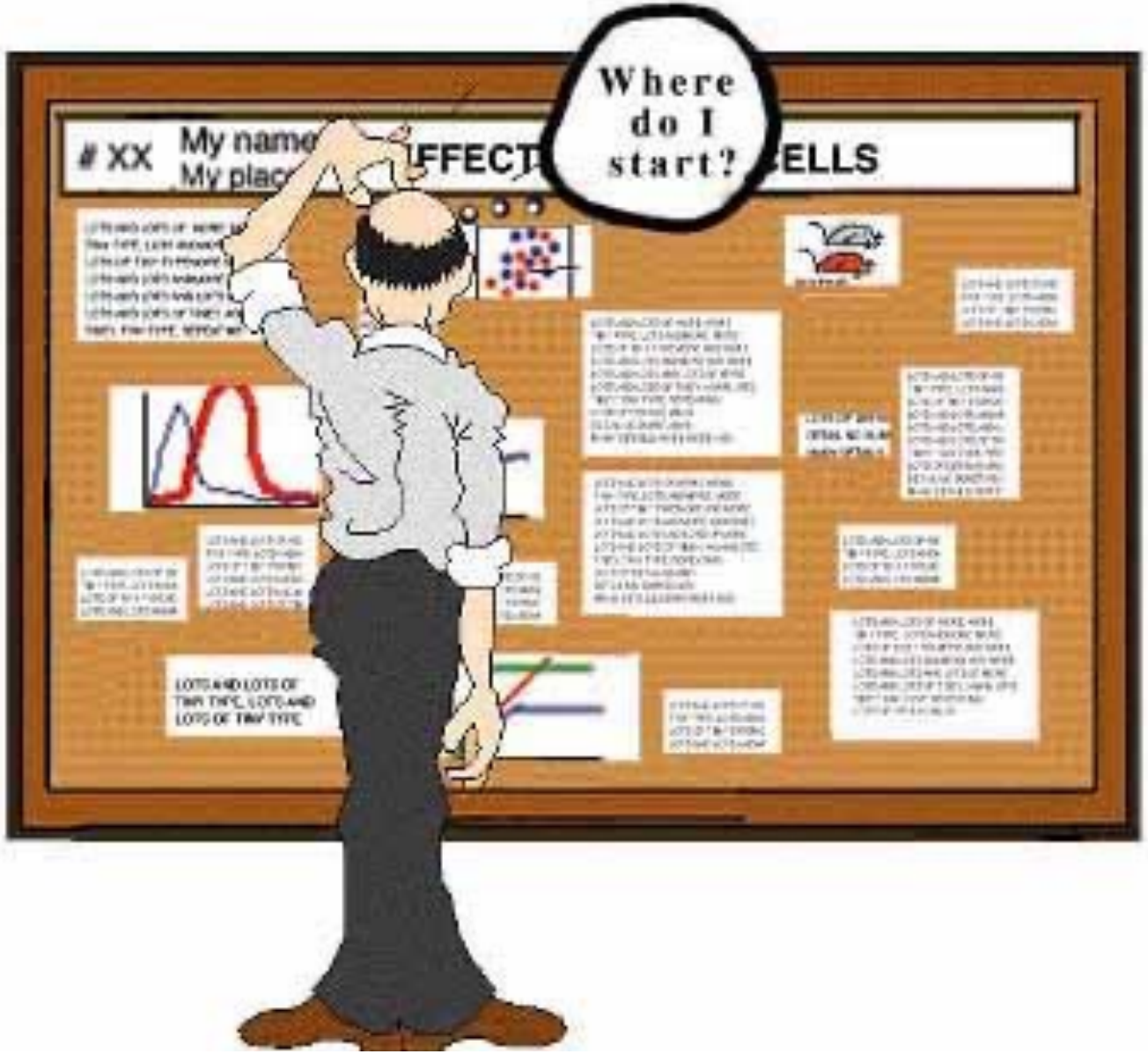

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Pick a software program

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

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PowerPoint

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

(be sure to print a color proof to
see actual colors you have chosen)

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Adobe Illustrator or InDesign

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

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Let's design a poster!

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Your poster title:

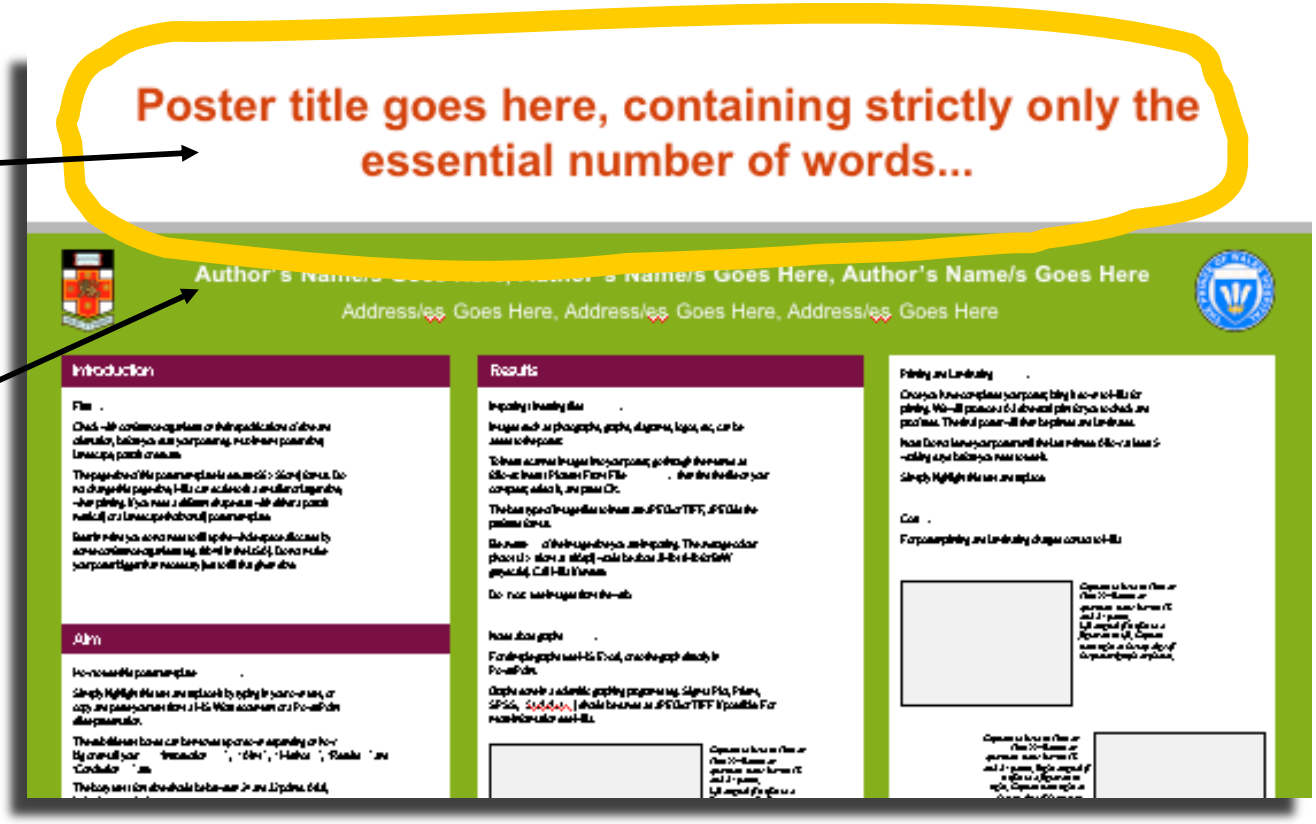
Think BIG! Really Big!

Your biggest impact!

Boldface type

Not all caps!

Group authors names and affiliations



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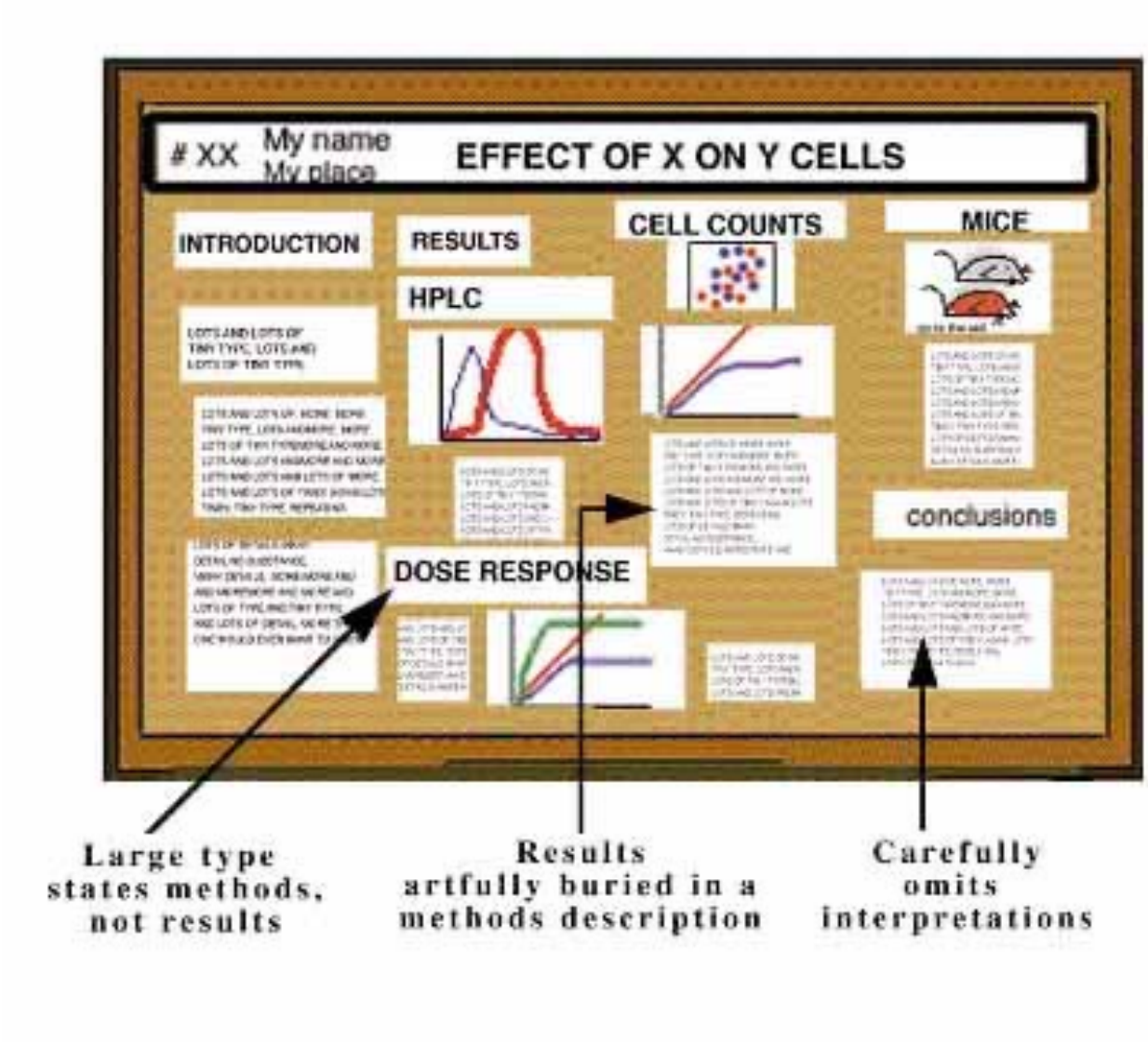
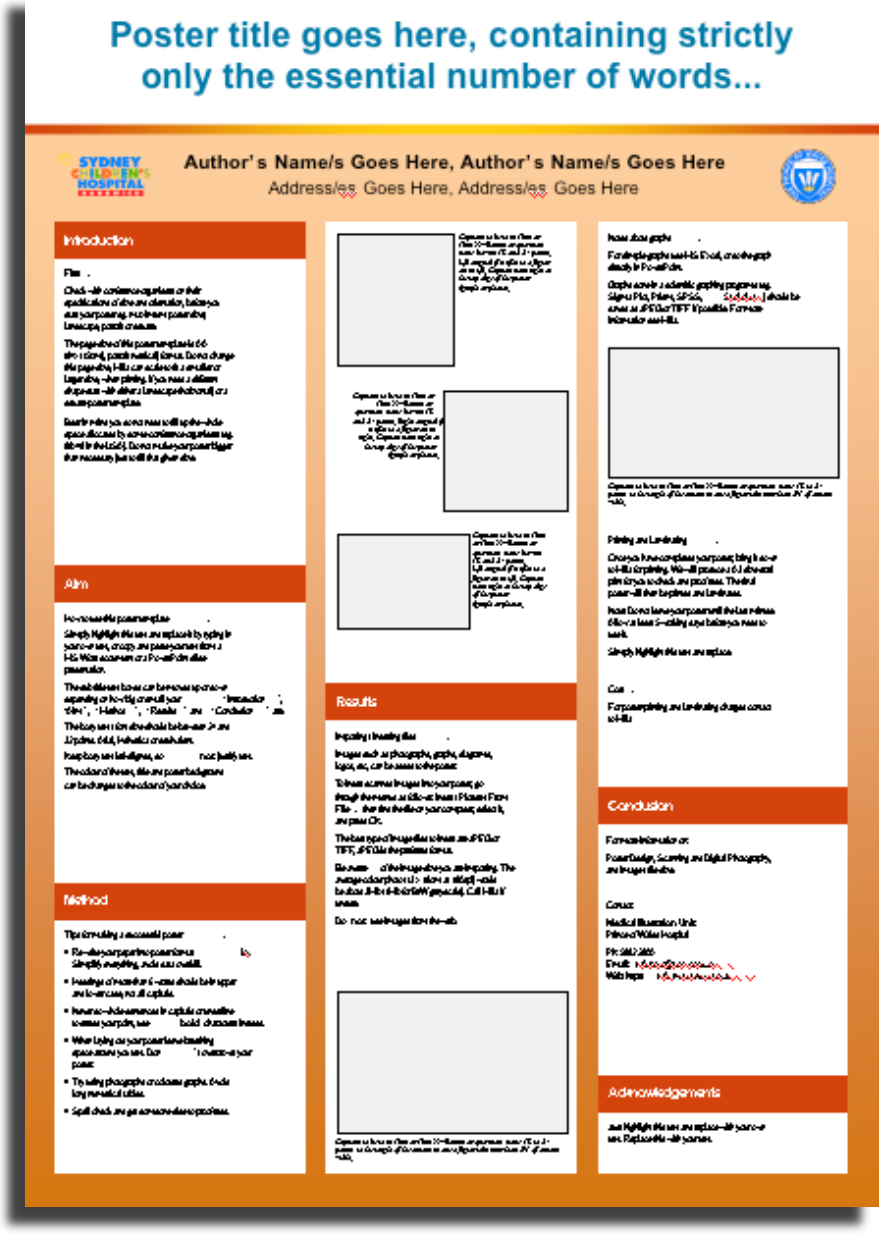
The Secrets of Readable Text:



CornellEngineering



- Leave breathing space around your text
- Serif font works great here for the small text
- Same size and style in all blocks of copy

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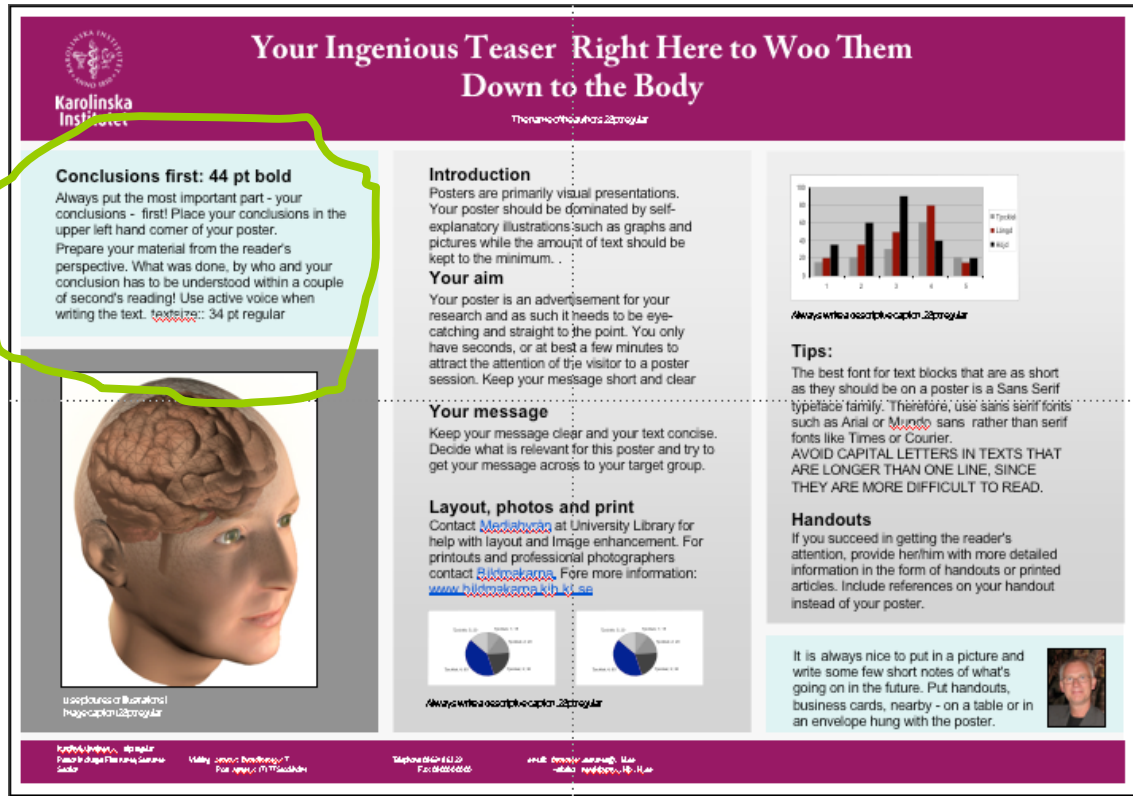
Conclusions first!

- Put the most important part first!
- Short and to the point!
- Upper left hand corner
- If they like it, they will stick around!



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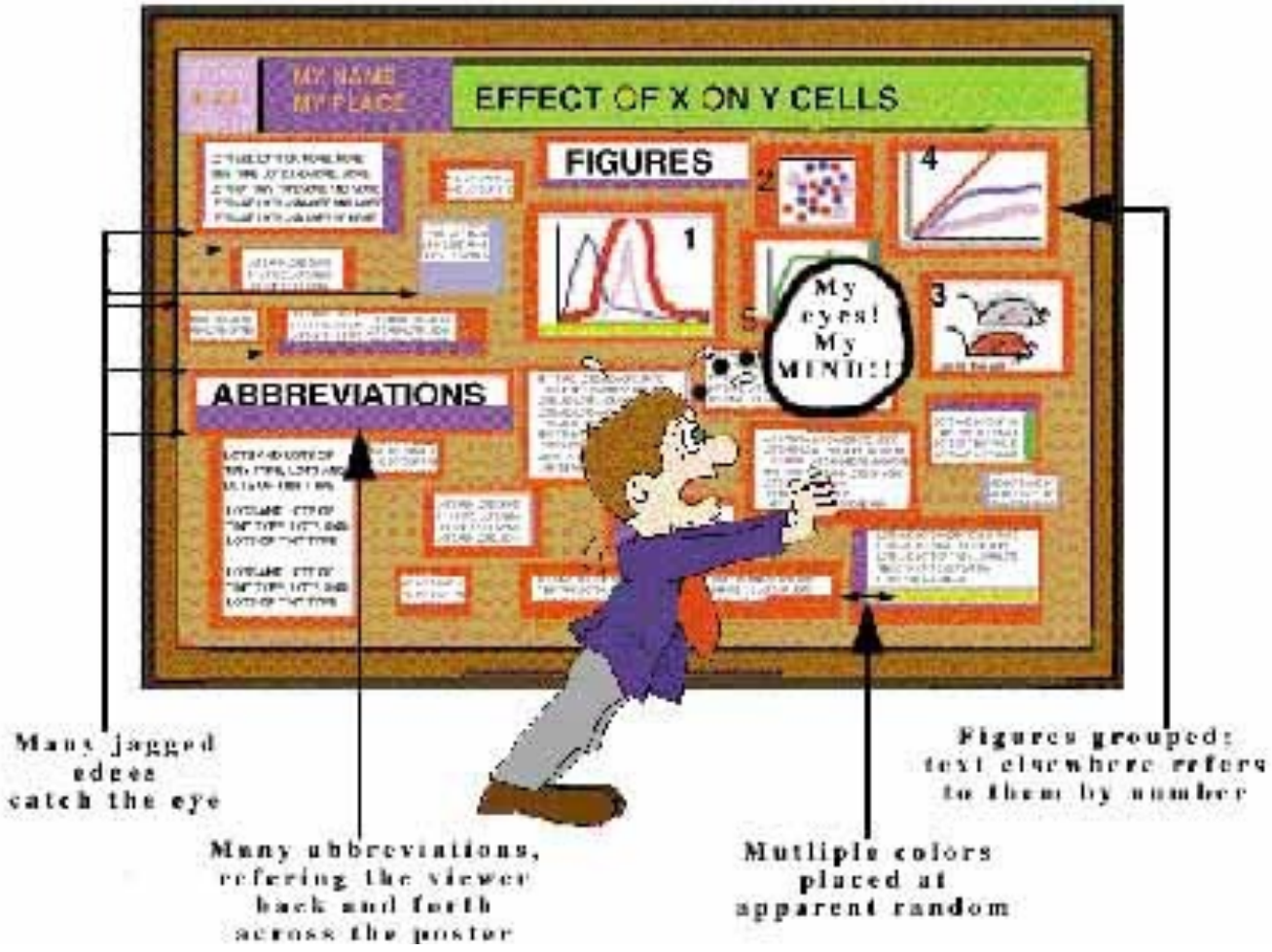
Design it easy for the eye to follow



Utter chaos will make folks dizzy!

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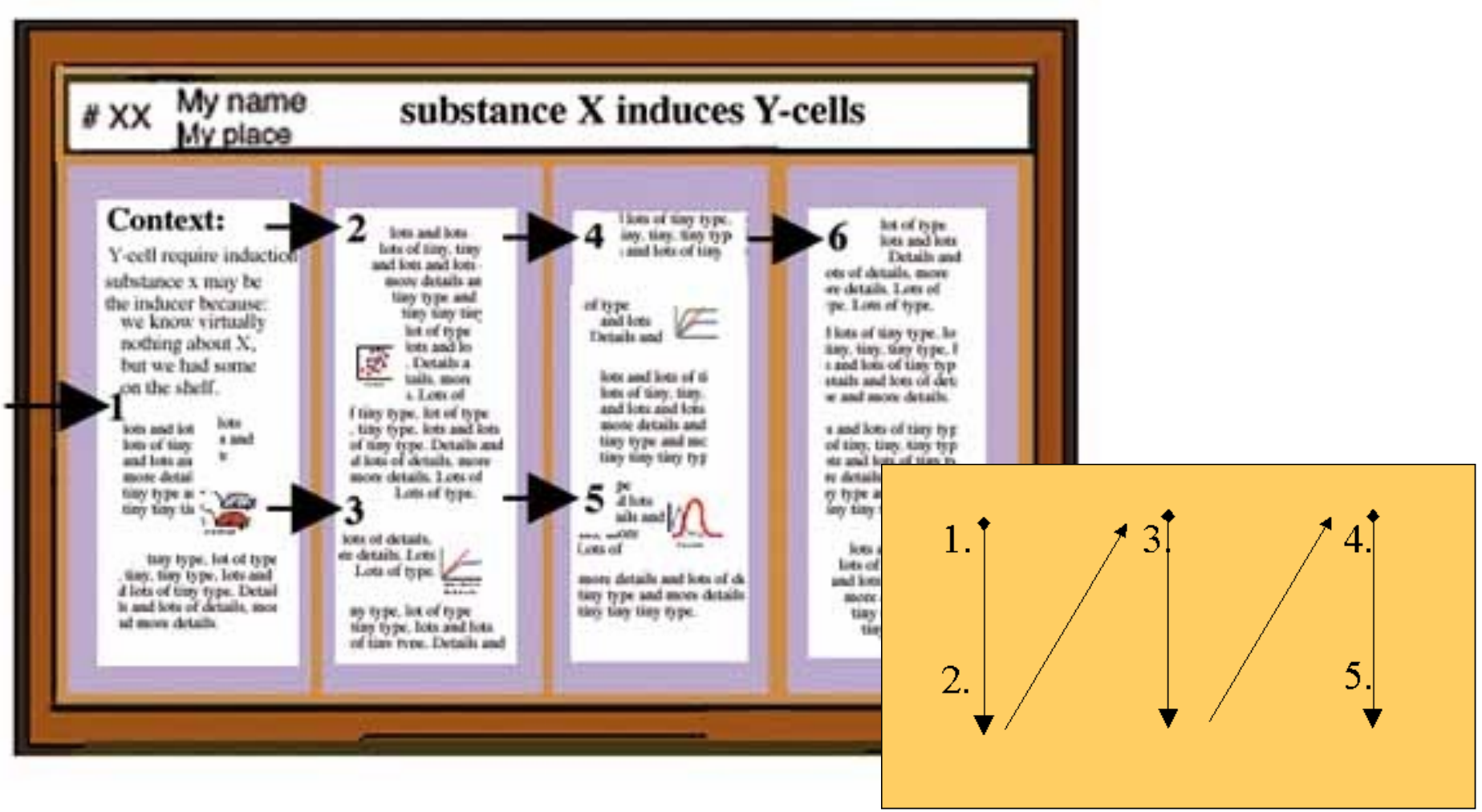
This is the goal for easy reading



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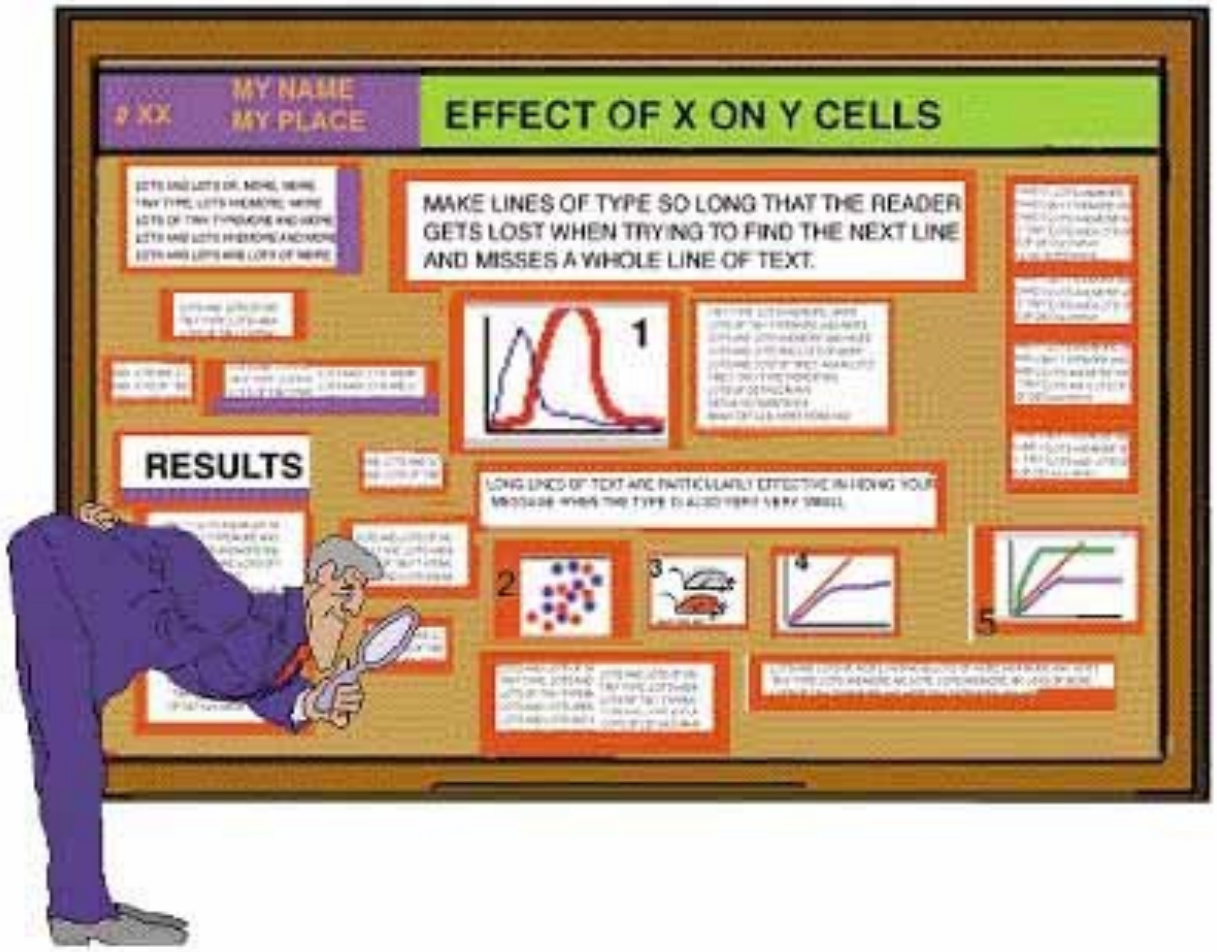
Can anyone read your poster?



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Text sizes:

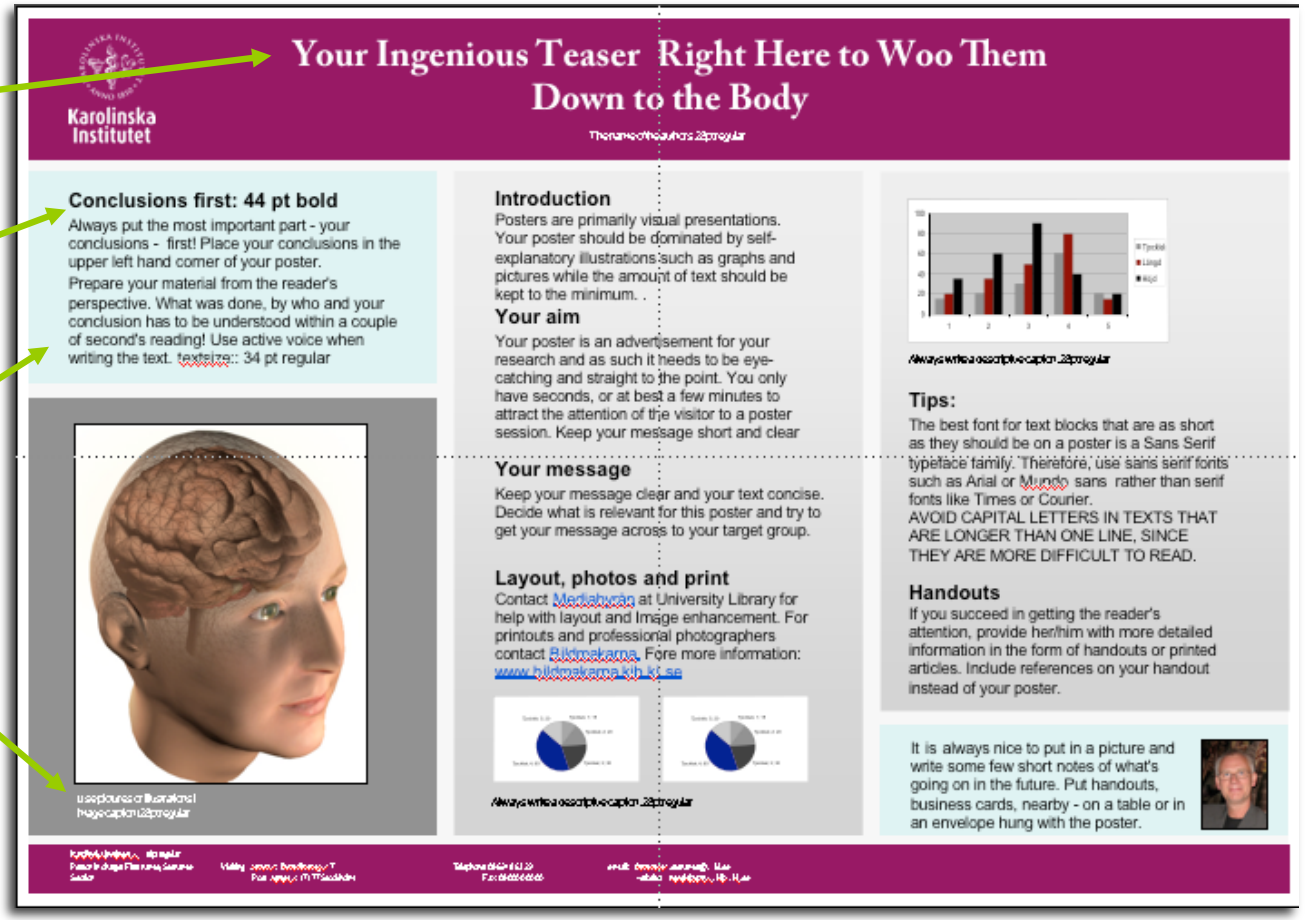
Title: **85 point**

Authors: **56pt**

Sub-headings: **36pt**

Body text: **24pt**

Captions: **18pt**



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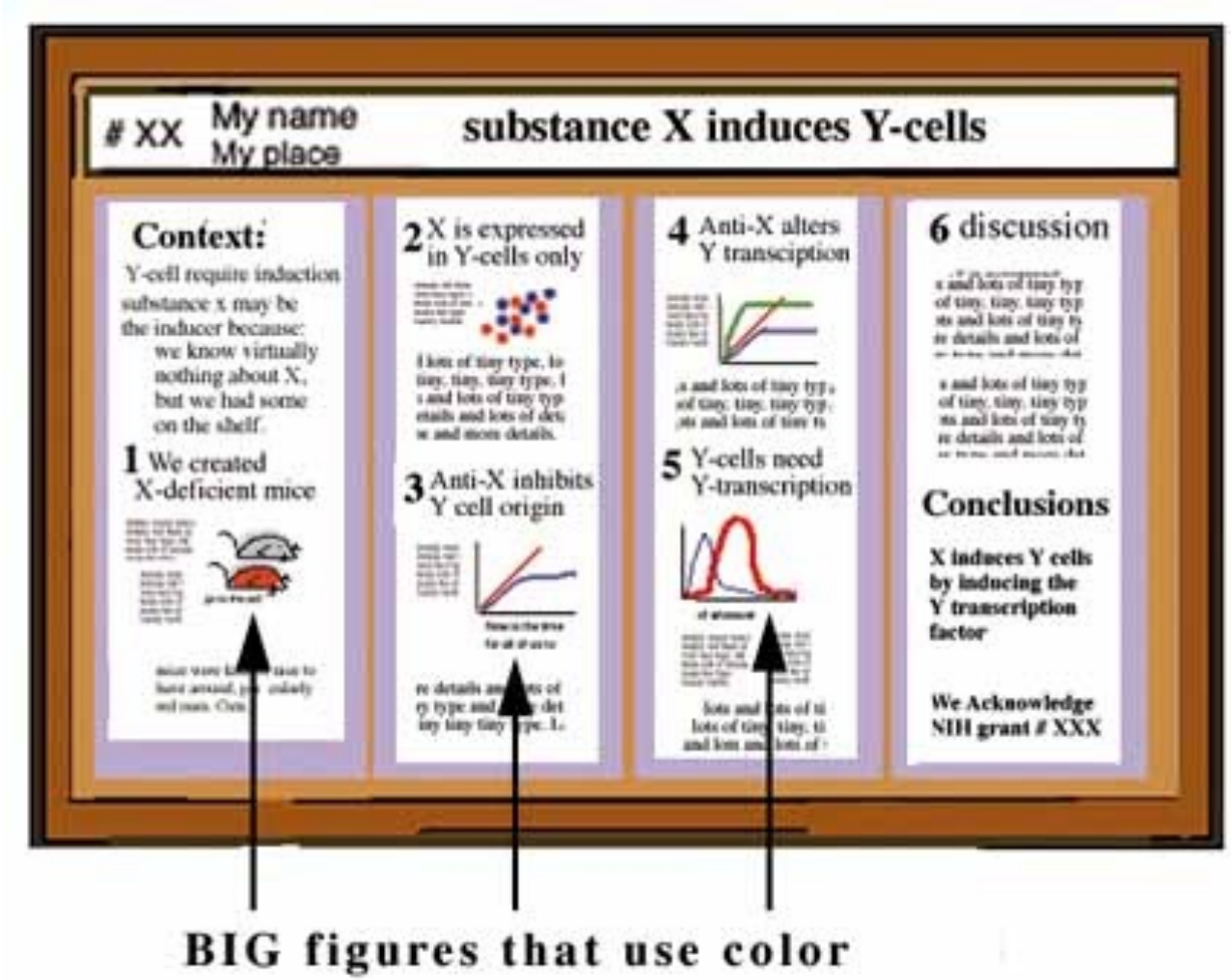
Images and graphs say much more than words



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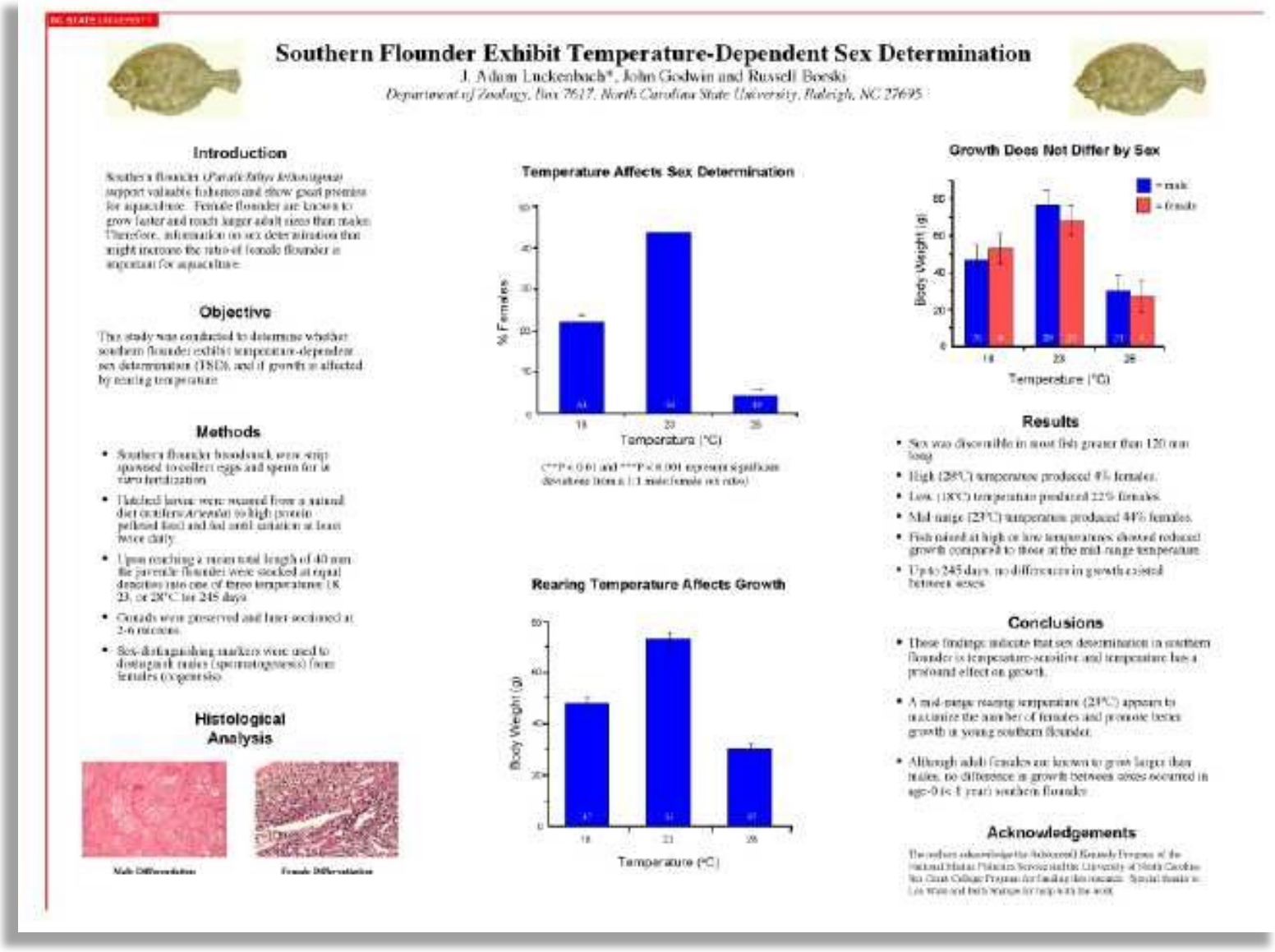
Keep posters visual!



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

The 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 reared 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 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 < 0.01) 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 Saltonstall-Kennedy Program of the National Marine Fisheries Service and the University of North Carolina Sea Grant College Program for funding this research. Special thanks to Lee Ware and Barb Wallace for help with the work.

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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 72 dpi

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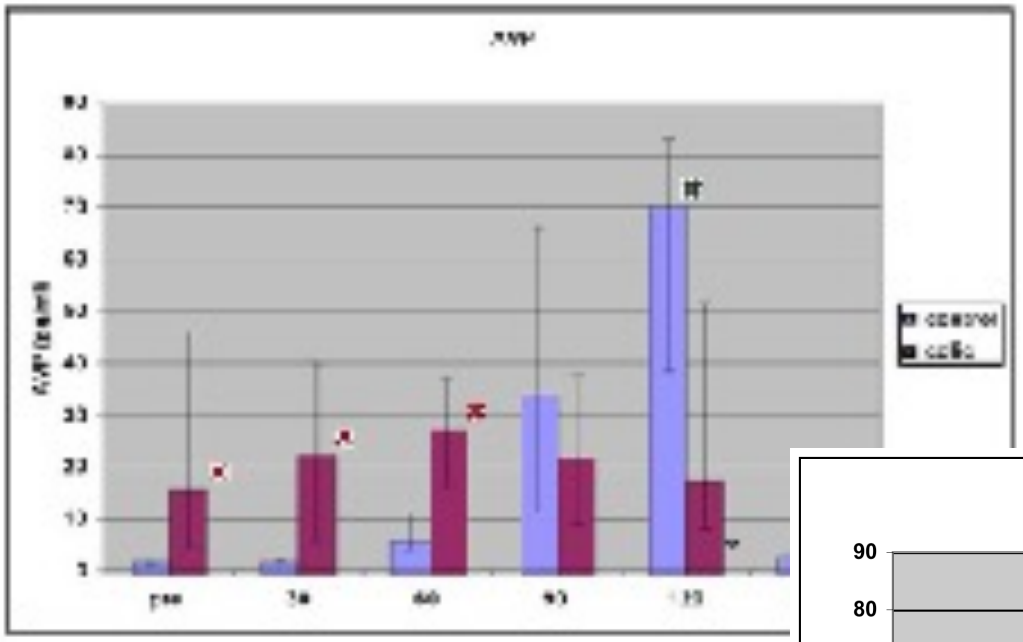
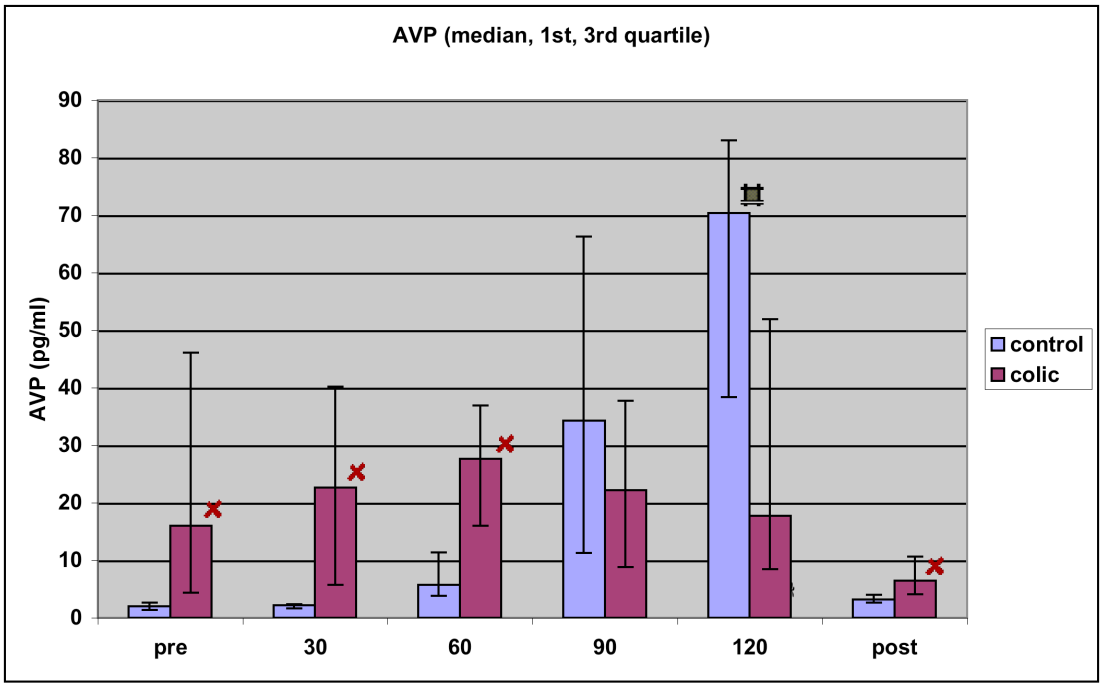
Line art is best displayed as a “png”



jpg (not as crisp)



png

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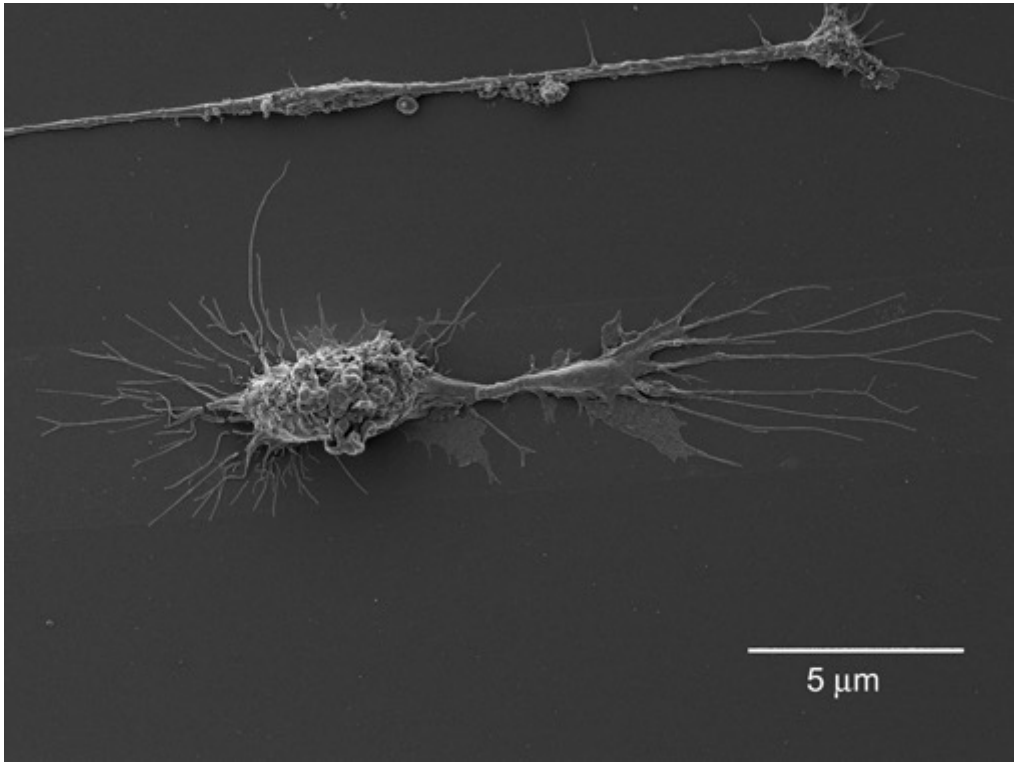

This is a biological something that is…

Your cool images mean nothing without a scale bar or description

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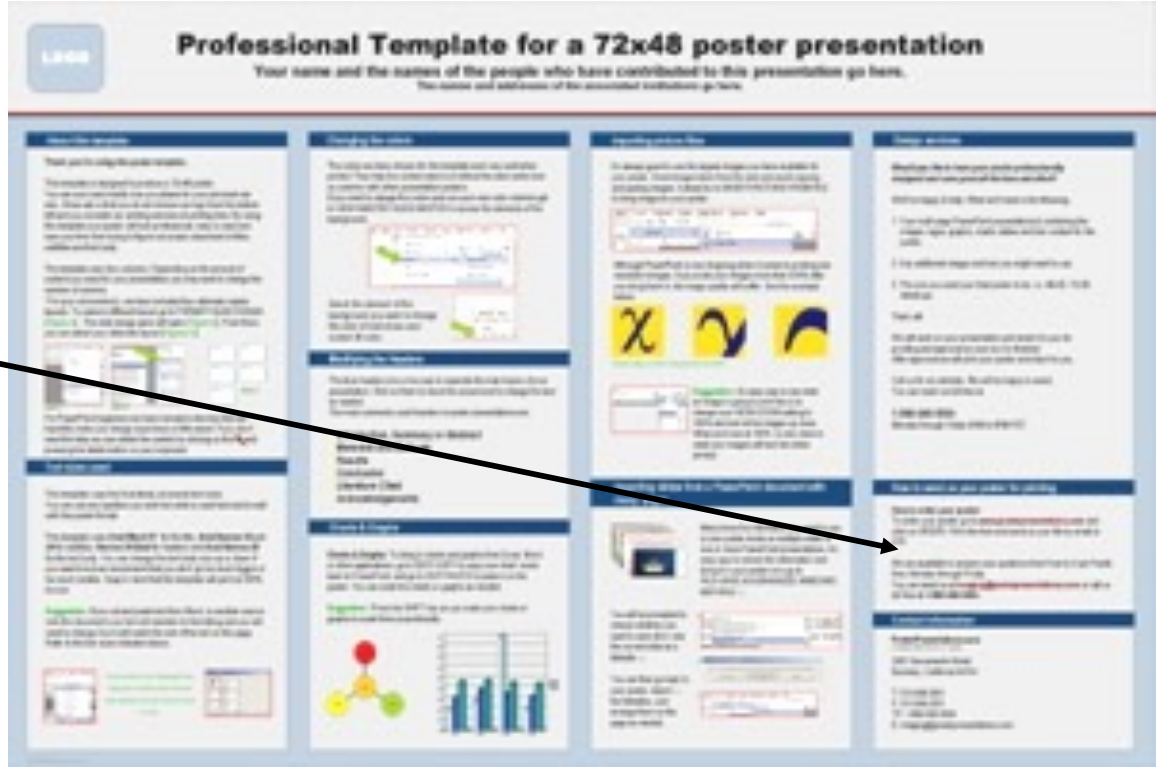
Don't forget your funding acknowledgements

Eng, ECE, BME, etc

Your department can provide you with the required wording



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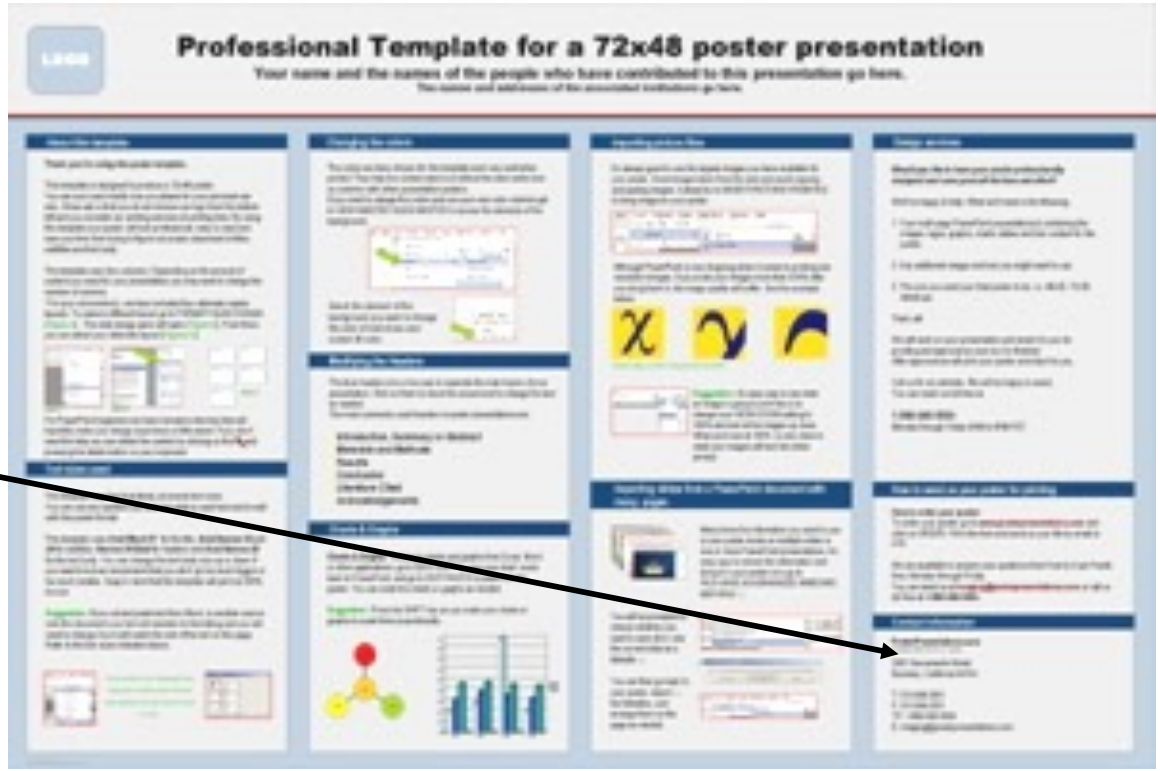
Your contact info!!!

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

Include all contact info:

- Mail address
- Phone
- E-mail



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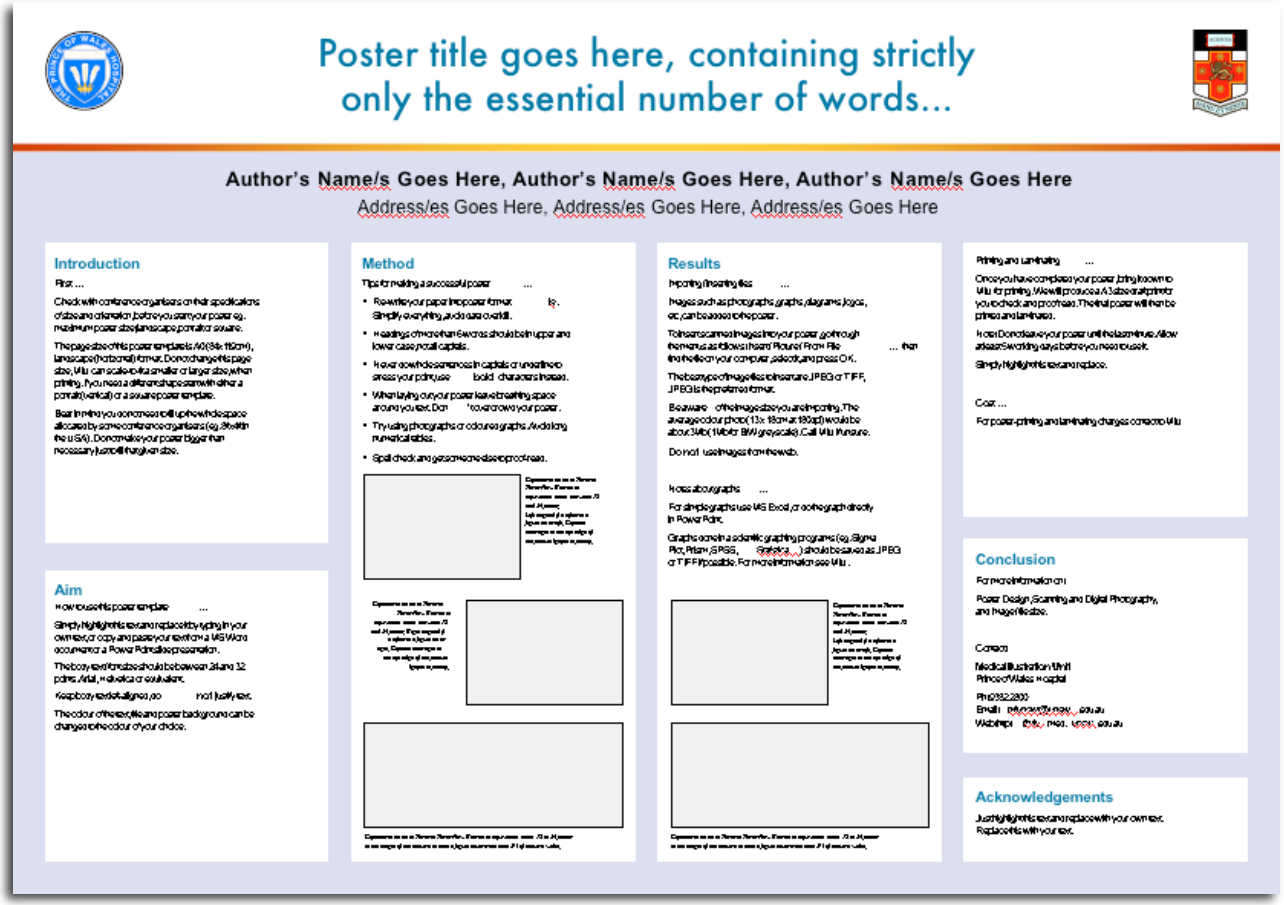
Using color to engage your readers

2-3 colors, no more!

Dark type on

light color background



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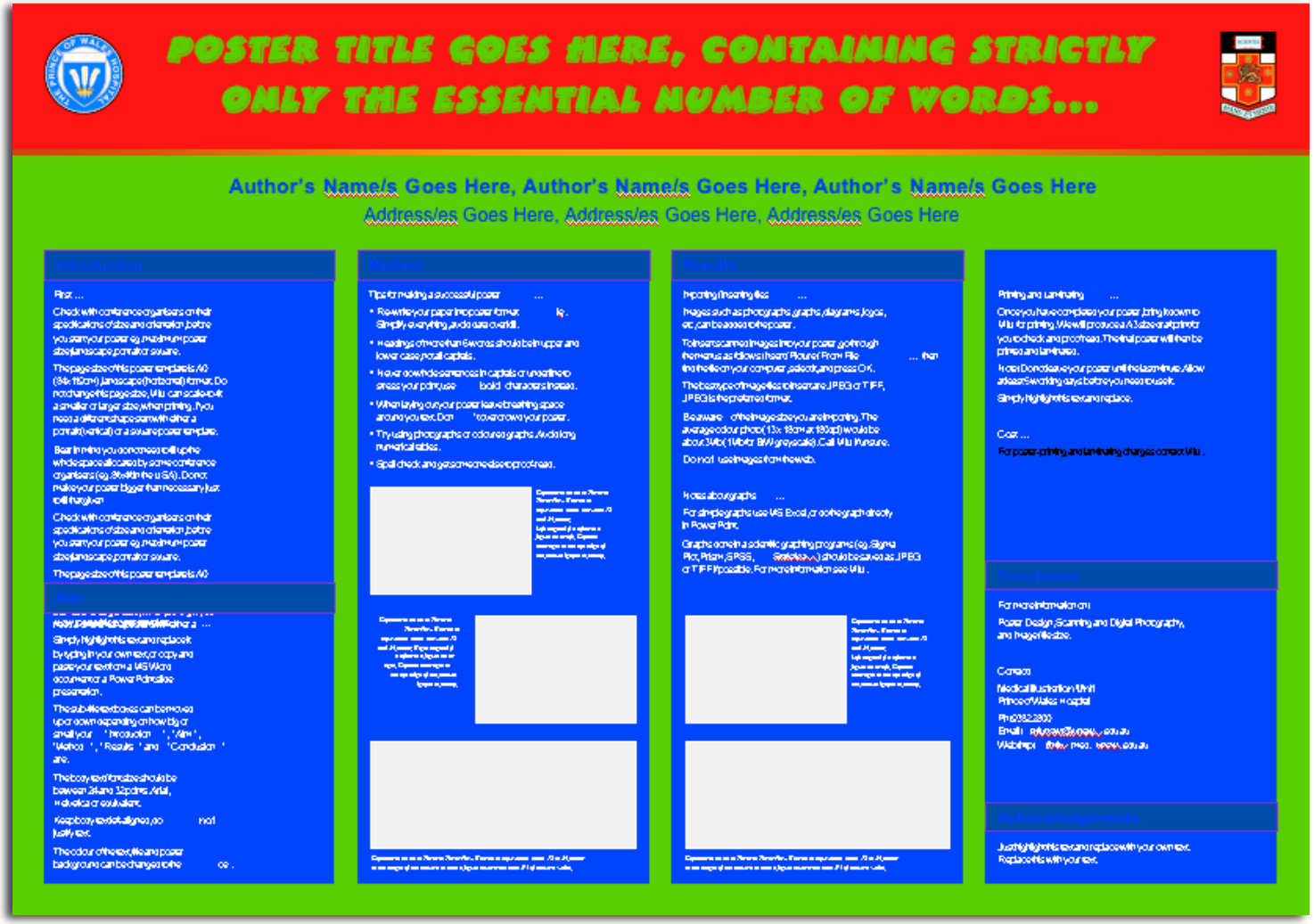
Whoa! Where's my sunglasses?



This attracts attention but tires out the eye

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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.

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Be aware of busy backgrounds

NC STATE UNIVERSITY

Snook Growth in Habitats with Differing Abiotic Variability

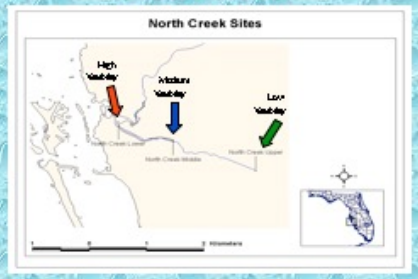
Alesia Read, North Carolina State University, anread@unity.ncsu.edu

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

STUDY SITES

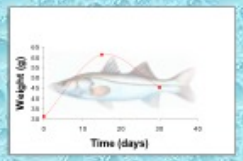


METHODS

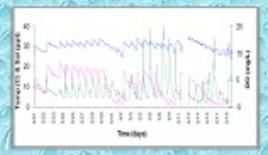
1. Juvenile snook are raised to fingerlings (100-200 mm) in the aquaculture facility
2. All snook are tagged with identifying markers for individual growth measurements
3. Fish are placed in cages within variable habitats at the research sites for 40 days
4. Fish are weighed and measured for growth

RESULTS

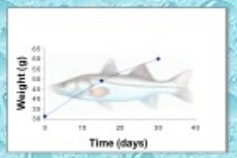
North Creek Lower (High Variability)



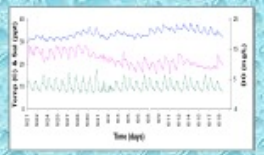
Negative Growth:
Dissolved Oxygen (mg/L)
0-22
Salinity (ppt)
2-21
Temp (°C)
25-34



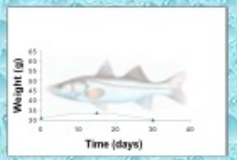
North Creek Middle (Medium Variability)



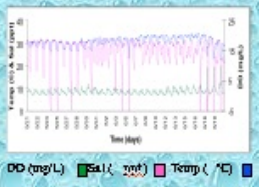
Positive Growth:
Dissolved Oxygen (mg/L)
0-8
Salinity (ppt)
16-28
Temp (°C)
30-38



North Creek Upper (Low Variability)



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



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

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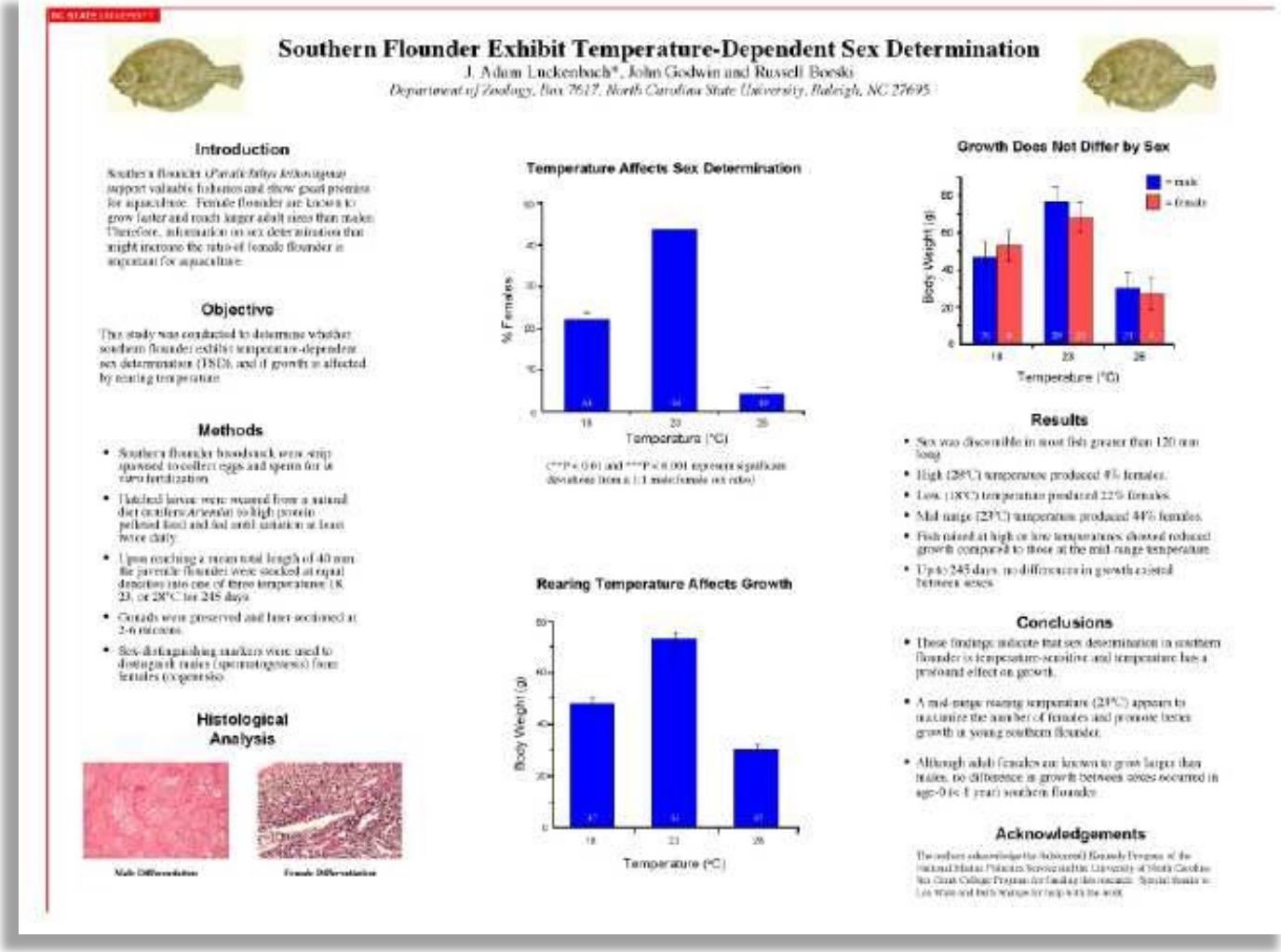
This is an award winning poster, too the point, simple images, easy to read in a couple minutes.



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

Objective

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 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

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 0% 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 faster 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

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A little background color added

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.

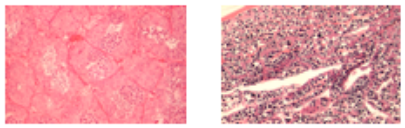
Objective

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 (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 245 days.
- Gonads were preserved and later sectioned at 2-6 microns.
- Sex-distinguishing markers were used to distinguish males (spermatogenesis) from females (oogenesis).

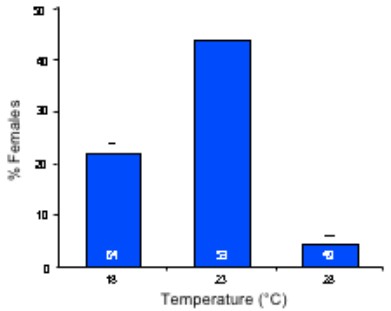
Histological Analysis



Male Differentiation

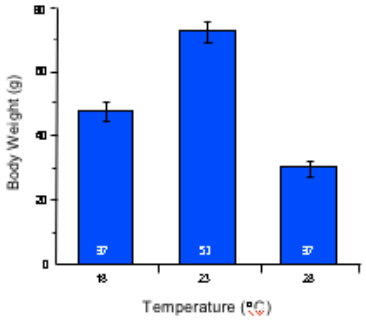
Female Differentiation

Temperature Affects Sex Determination

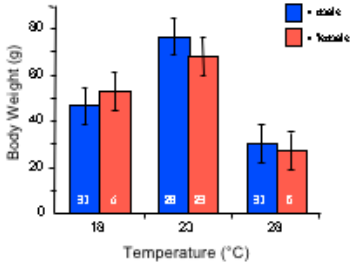


(* = P < 0.01 and ** = P < 0.001 represent significant deviations from a 1:1 male:female sex ratio)

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 [illegible] National Marine Fisheries Service and the University of North Carolina Sea Grant College Program for [illegible] Research Specialists Lee Weaver and Beth [illegible] for [illegible] work.

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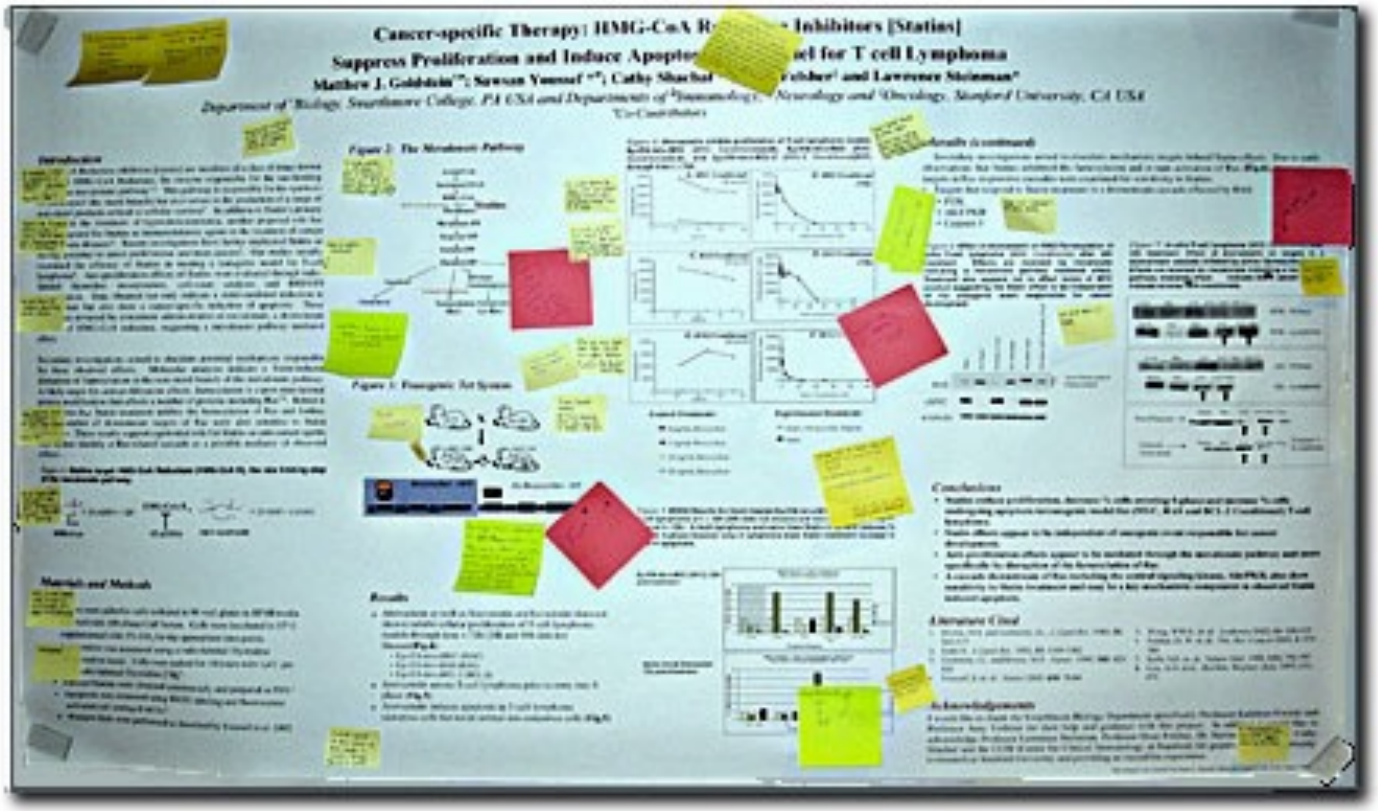
Edit, Edit, Edit and Evaluate!



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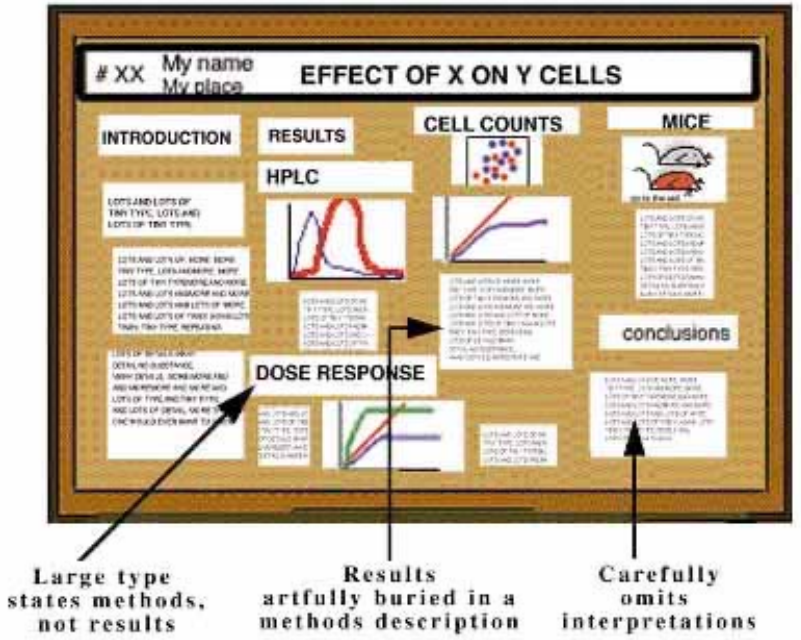
Print out a letter size draft

Can you read the type?

Are these the colors you really want?

Does it look too busy?

Do my main points pop?



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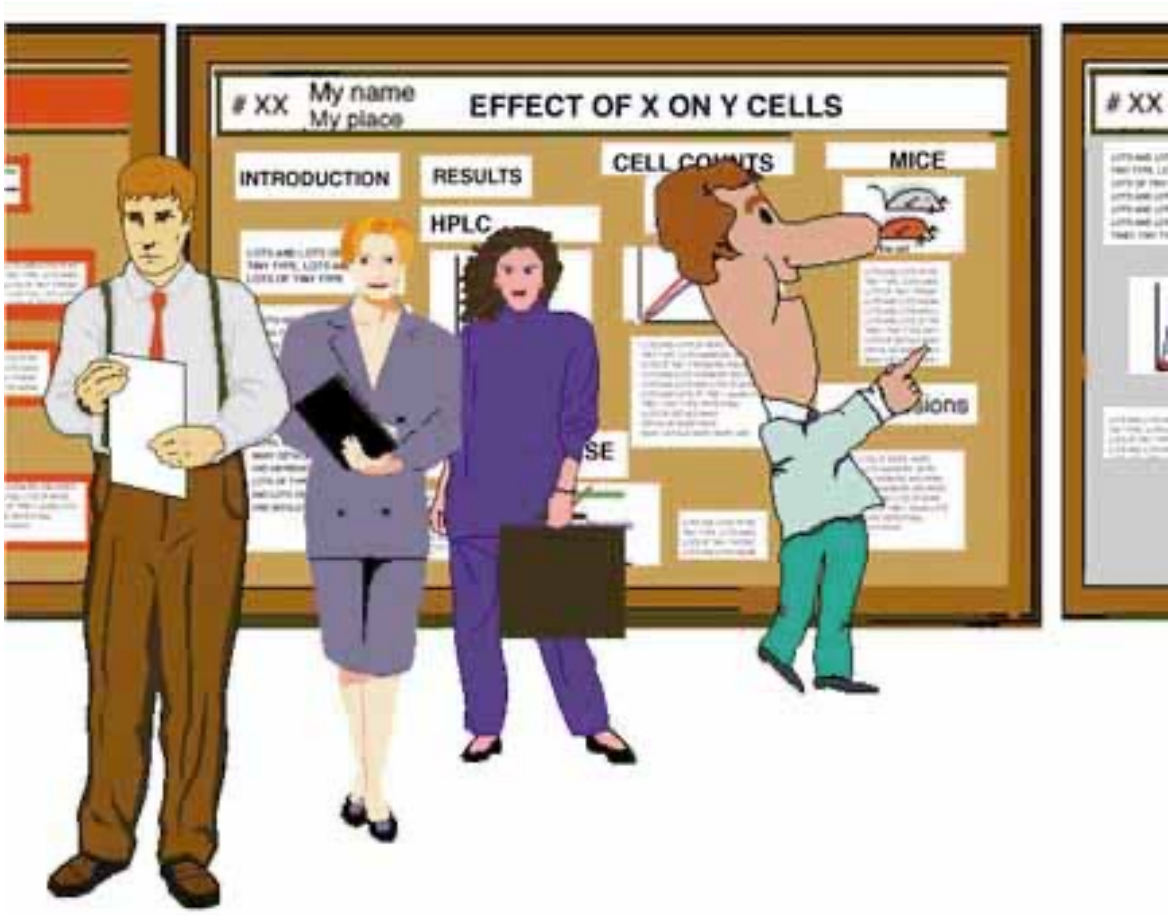
You're not done yet...

Prepare a 3-5 minute verbal explanation



Is he ever going to SHUT UP???

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Prepare mini size poster handouts

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

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

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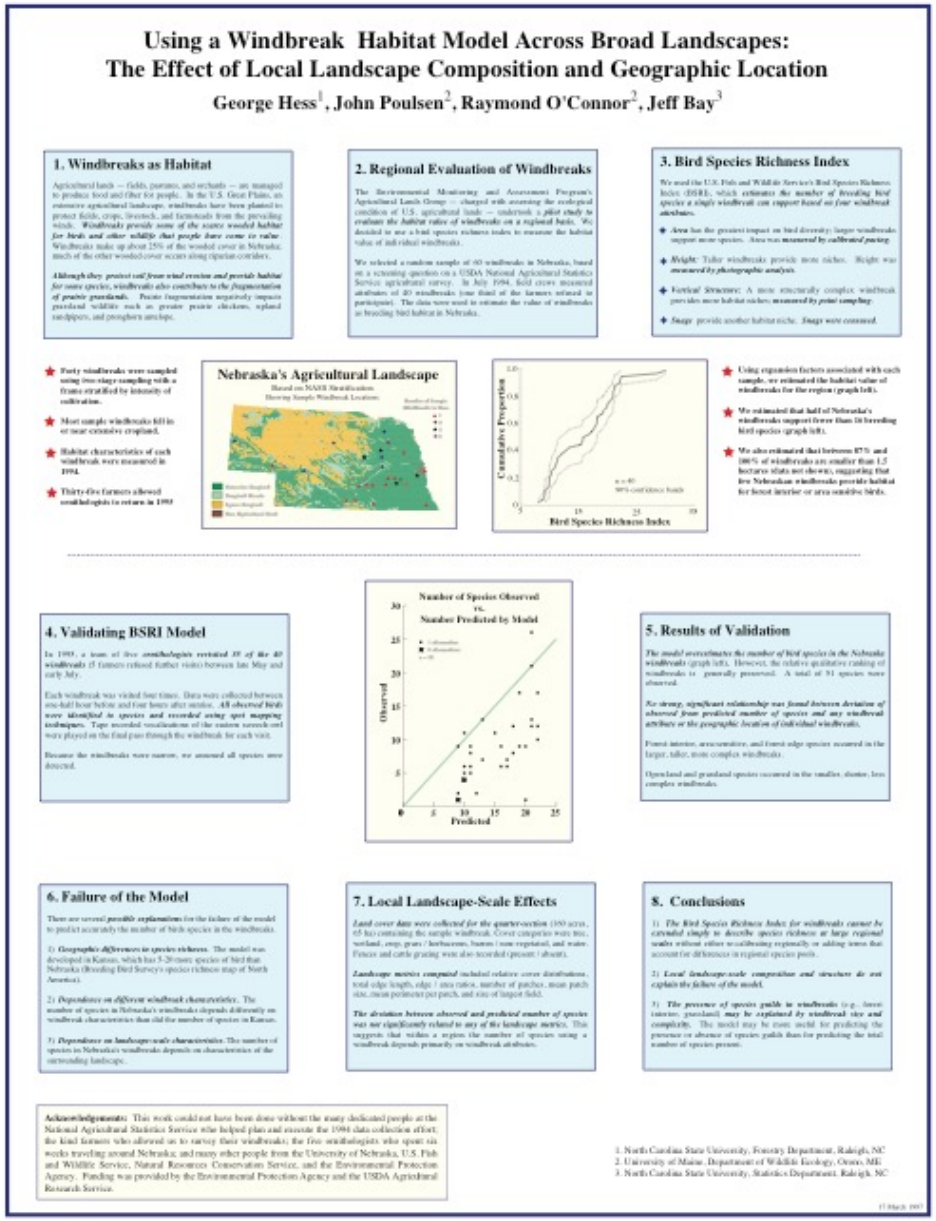

Using a Windbreak Habitat Model Across Broad Landscapes:
The Effect of Local Landscape Composition and Geographic Location

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

Acknowledgements

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.

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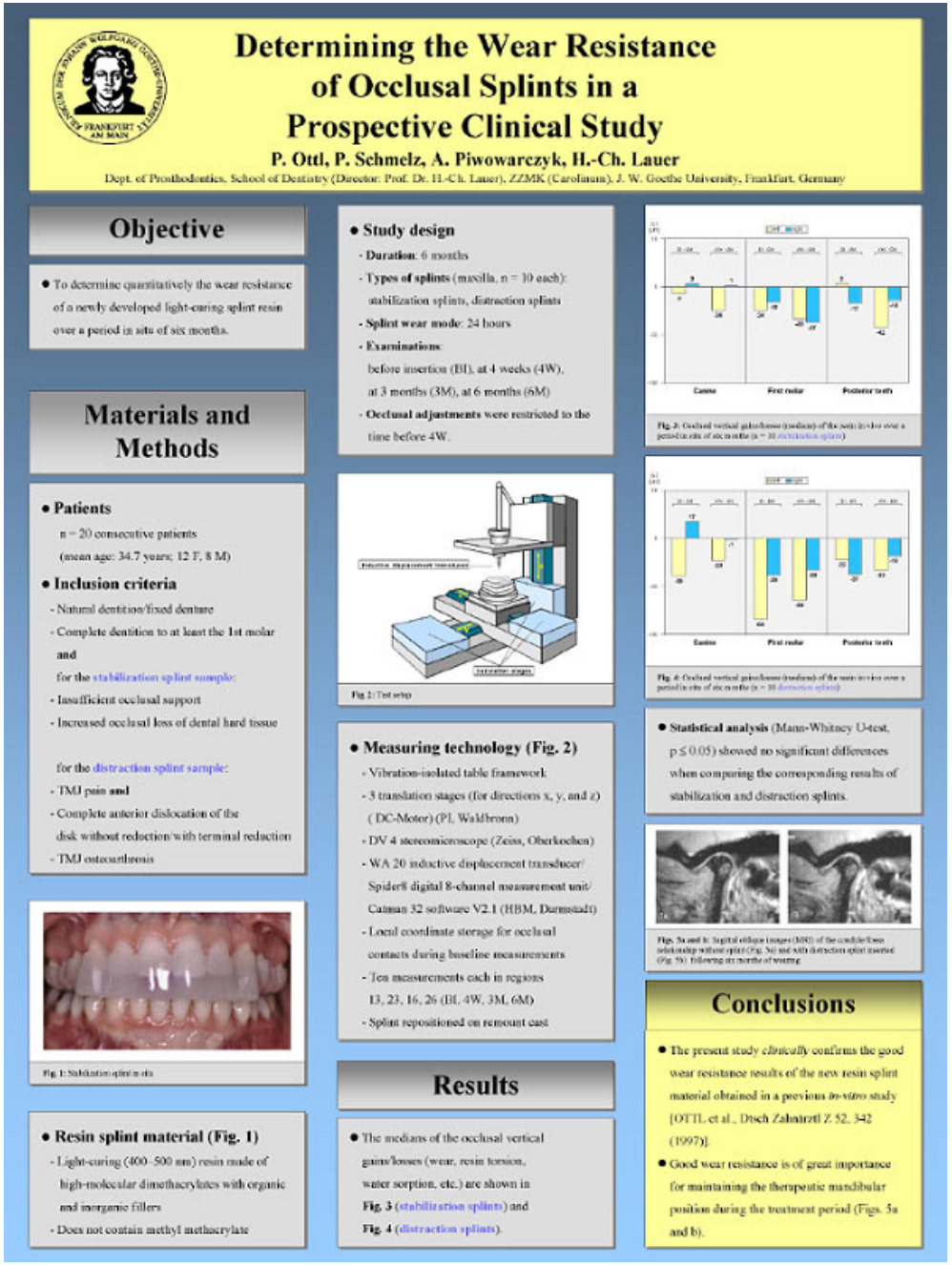

Determining the Wear Resistance of Occlusal Splints in a Prospective Clinical Study

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 sets 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 gain/losses (medians) of the resin in vivo over a period in sets of six months (n = 10 stabilization splints)

Fig. 4: Occlusal vertical gain/losses (medians) of the resin in vivo over a period in sets 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 (MSI) 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

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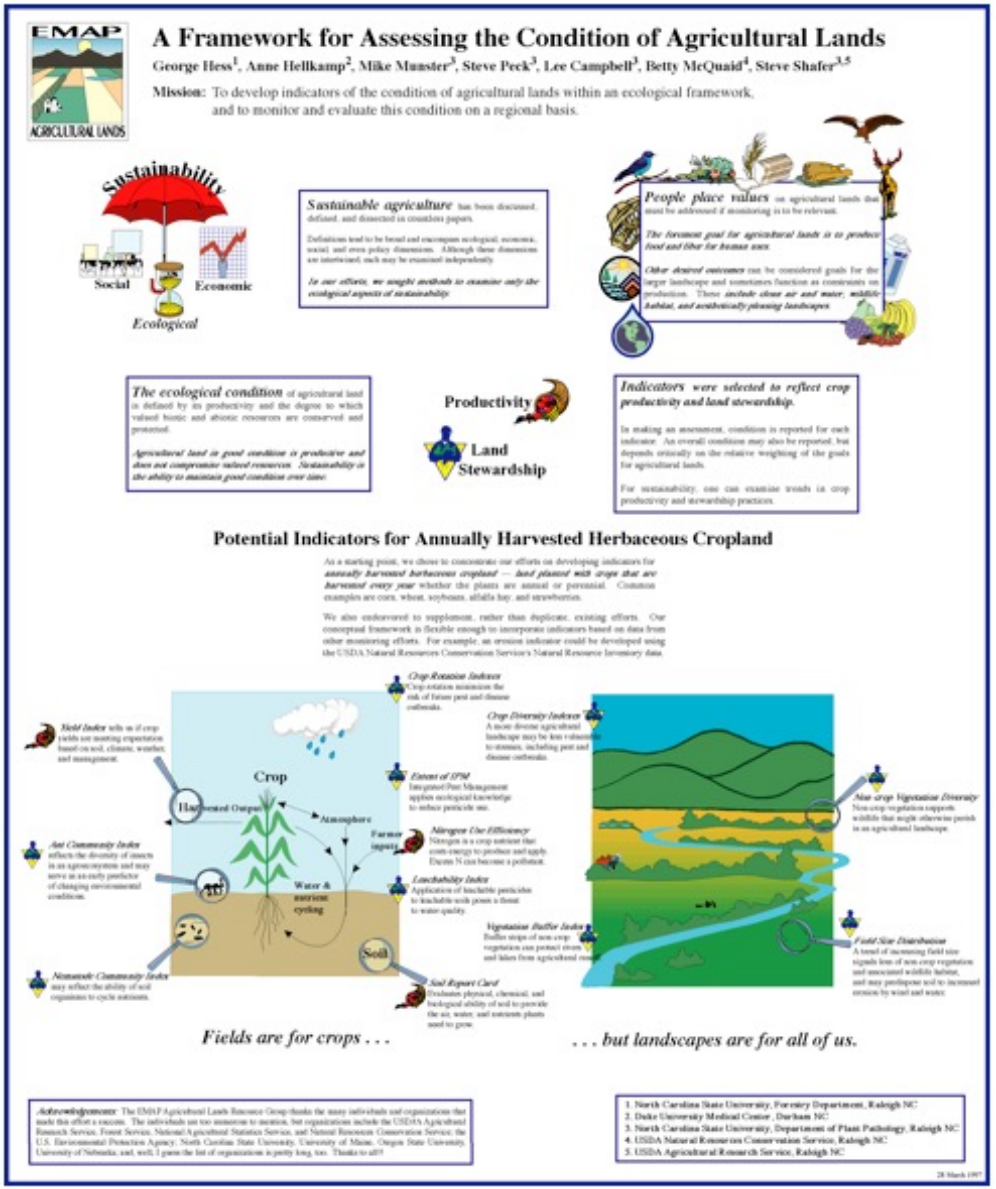

EMAP AGRICULTURAL LANDS

A Framework for Assessing the Condition of Agricultural Lands

George Hess[1], Anne Hellkamp[2], Mike Munster[3], Steve Peck[3], Lee Campbell[3], Betty McQuaid[4], 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.

Sustainability

Social

Economic

Ecological

Sustainable agriculture has been discussed, defined, and dissected 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 examined independently.

In our efforts, we sought methods to examine only the ecological aspects 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 valued biotic and abiotic resources are conserved and protected.

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

Productivity

Land Stewardship

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 strawberries.

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 Natural Resource Inventory data.

Crop Rotation Indexes
Crop rotation minimizes the risk of future pest and disease outbreaks.

Crop Diversity Indexes
A more diverse agricultural landscape may be less vulnerable to stressors, including pest and disease outbreaks.

Yield Index tells us if crop yields are meeting expectation based on soil, climate, weather, and management.

Crop

Harvested Output

Atmosphere

Farmer inputs

Extent of IPM
Integrated Pest Management applies ecological knowledge to reduce pesticide use.

Nitrogen Use Efficiency
Nitrogen is a crop nutrient that costs energy to produce and apply. Excess N can become a pollutant.

Ant Community Index
reflects the diversity of insects in an agroecosystem and may serve as an early predictor of changing environmental conditions.

Water & nutrient cycling

Leachability Index
Application of leachable pesticides to leachable soils poses a threat to water quality.

Vegetation Buffer Index
Buffer strips of non-crop vegetation can protect rivers and lakes from agricultural runoff.

Non-crop Vegetation Diversity
Non-crop vegetation supports wildlife that might otherwise perish in an agricultural landscape.

Field Size Distribution
A trend of increasing field size signals loss of non-crop vegetation and associated wildlife habitat, and may predispose soil to increased erosion by wind and water.

Nematode Community Index
may reflect the ability of soil organisms to cycle nutrients.

Soil

Soil Report Card
Evaluates physical, chemical, and biological ability of soil to provide the air, water, and nutrients plants need to grow.

Fields are for crops . . .

. . . but landscapes are for all of us.

Acknowledgements: The EMAP Agricultural Lands Resource Group thanks the many individuals and organizations that made this effort a success. The individuals are too numerous to mention, but organizations include the USDA 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

28 March 1997

Where do I begin?

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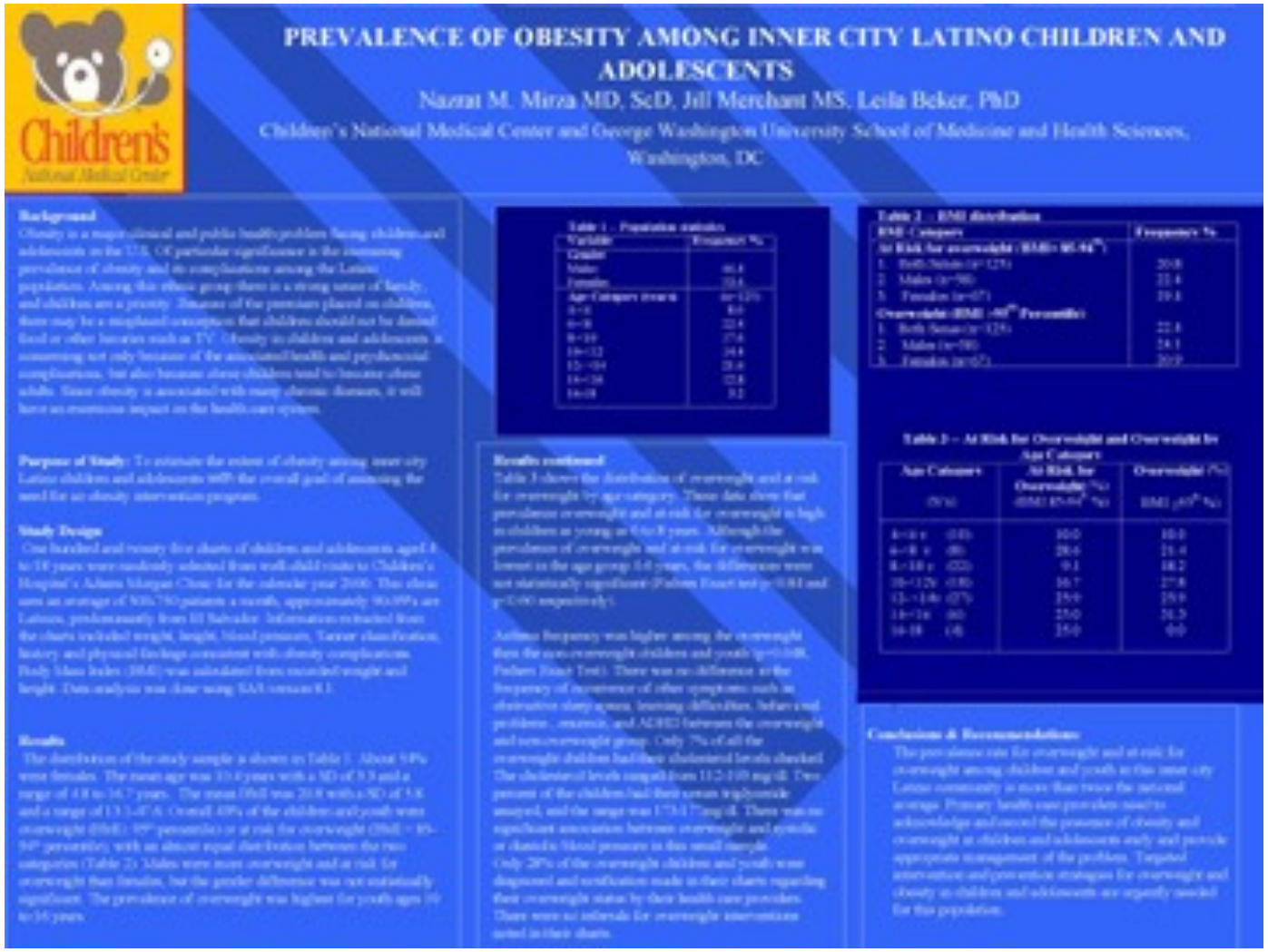

PREVALENCE OF OBESITY AMONG INNER CITY LATINO CHILDREN AND ADOLESCENTS

Nazrat M. Mirza MD, ScD, Jill Merchant MS, Leila Beker, PhD

Children's National Medical Center and George Washington University School of Medicine and Health Sciences, Washington, DC

I'm feeling sleepy

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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. Garfin[1], M.D., Isador H. Lieberman[2], M.D., Mark A. Reiley[3], M.D., Joseph M. Lane[4], M.D., Frank M. Phillips[5], M.D., Hallett B. Mathews[6], M.D., Hansen A. Yuan[7], M.D., Berton H. Sachs[8], M.D., for the Kyphoplasty Study Group

[1]University of California, San Diego, Medical Center, San Diego, CA; [2]Cleveland Clinic, Cleveland, OH; [3]Berkeley Orthopedic Medical Group, Berkeley, CA; [4]Hospital for Special Surgery, New York, NY; [5]University of Chicago Spine Center, Chicago, IL; [6]Mid-Atlantic Spine Specialists, Richmond, VA; [7]State University of New York Health Sciences Center, Syracuse, NY; [8]Albany Medical Center, Albany, NY

BACKGROUND

- 700,000 VCF's per year
- 275,000 diagnosed, >60% due to pain
- Spinal deformity associated with
  - Significant morbidity
  - 23% increased mortality (Kado, Ann Int Med 1999)
- Current treatments ineffective
  - Open surgeries fail
  - Medical management palliative
- Vertebroplasty
  - Bilateral transpedicular cement fill
  - Relieves pain
  - Requires high pressure and runny cement
  - High risk of cement leaks
    - Up to 73% where documented (Weill et al., Radiology 1997)
  - Major complications (Chiras, J Int Neurorad 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 osteopenia. 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 fine manual control and low pressure. The steps of Kyphoplasty are illustrated in Fig 3.

Fig. 1

Fig. 2

Fig. 3

STUDY DESIGN AND METHODS

A retrospective multi-center review to assess early outcomes with Kyphoplasty. Pain was localized by physical examination. The presence of marrow edema and collapse 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, midline and posterior in the first 27 vertebral body fractures treated by one surgeon (MAR). 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 lost height restored. One set of X-rays by one surgeon (FMP) are used to show an example height restoration (Fig. 5A) and deformity correction (Fig. 5B). Device-related major complications from all procedures are reported. PMMA leaks in the first 70 procedures performed by one surgeon (IHL) were assessed with X-ray and MRI.

PRELIMINARY RESULTS

CONCLUSIONS

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

OK, but copy needs to be cut!

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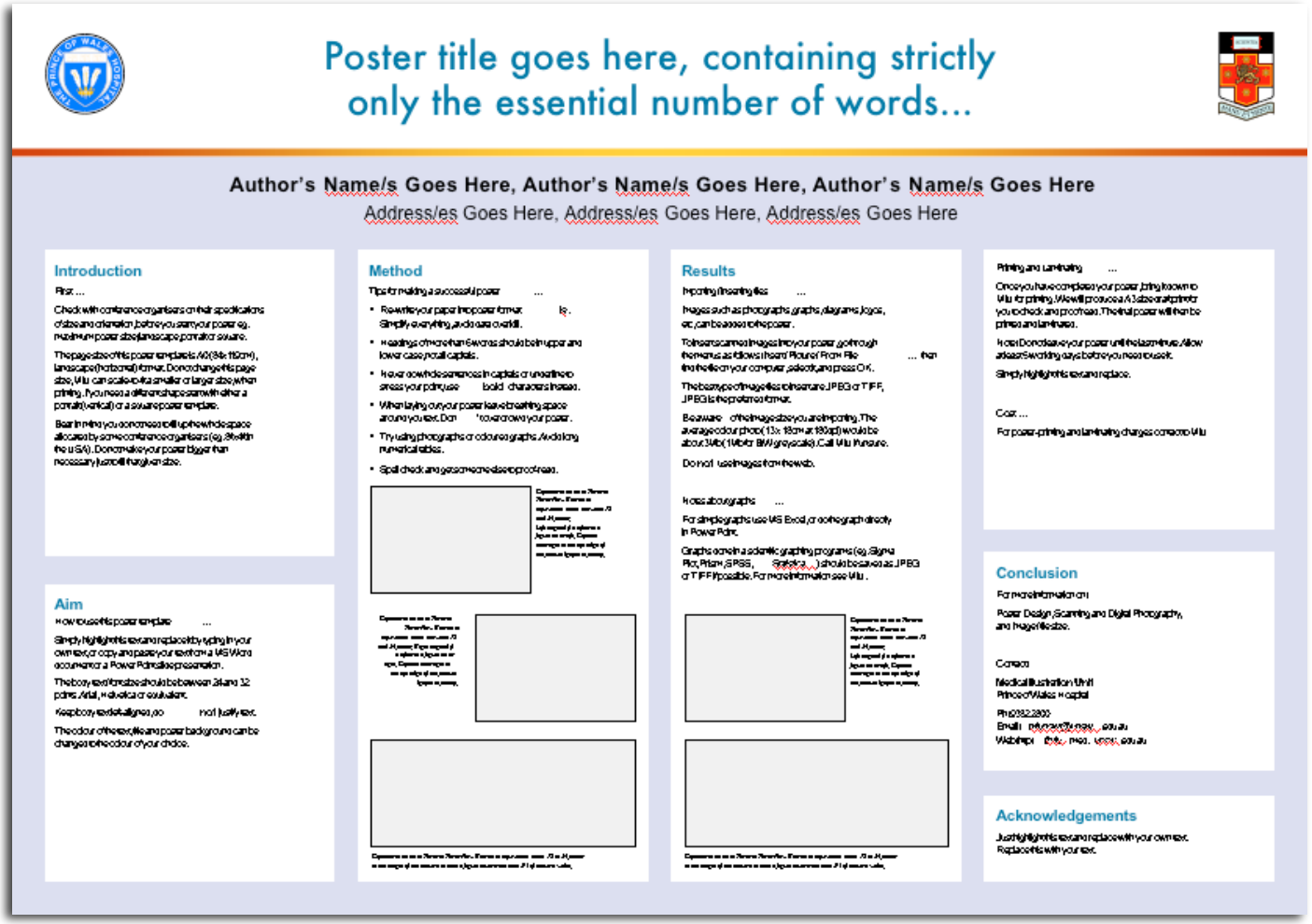

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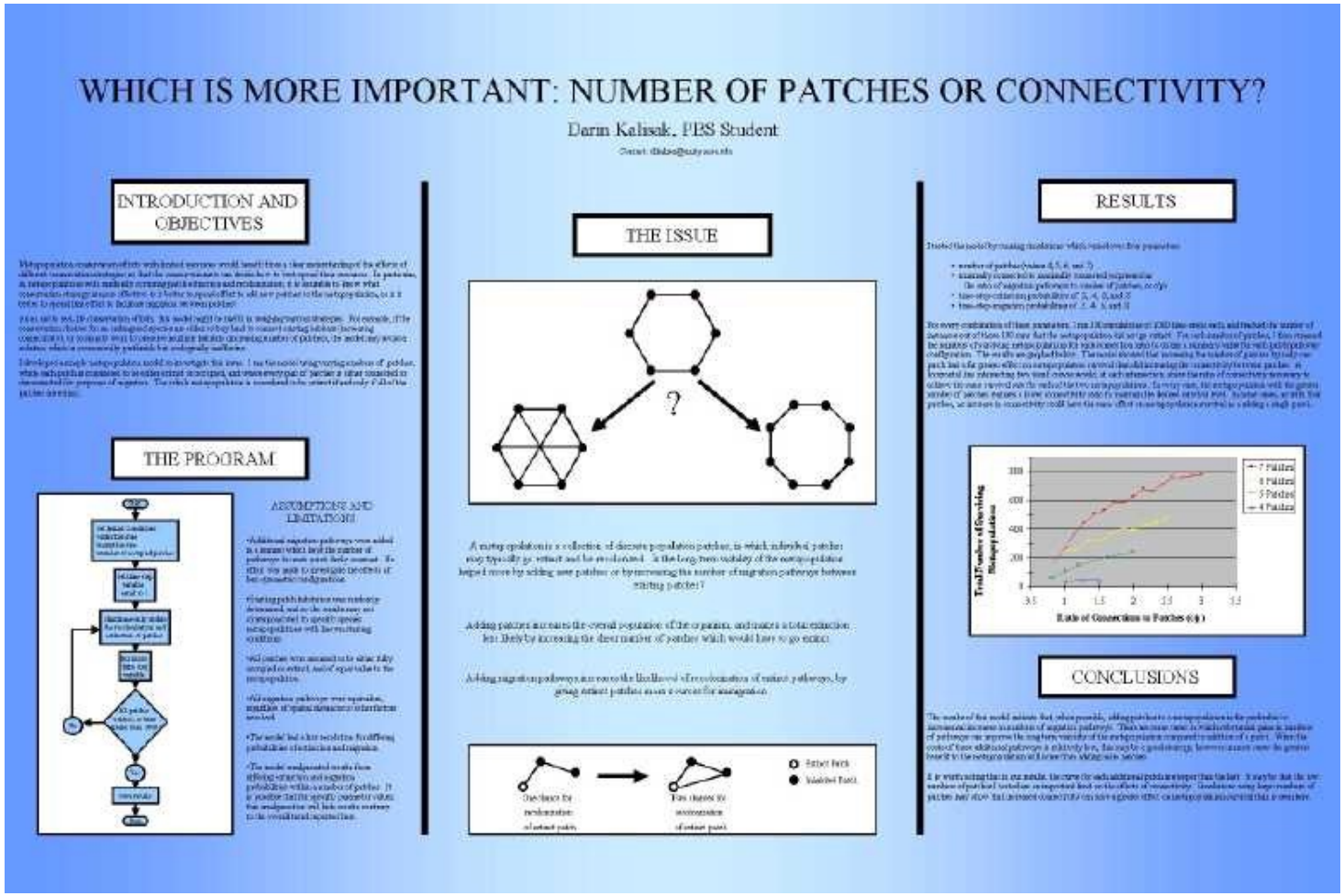

WHICH IS MORE IMPORTANT: NUMBER OF PATCHES OR CONNECTIVITY?

Darin Kalisak, PBS Student

INTRODUCTION AND OBJECTIVES

THE PROGRAM

ASSUMPTIONS AND LIMITATIONS

THE ISSUE

RESULTS

CONCLUSIONS

Nice flow, but a lighter background for reading

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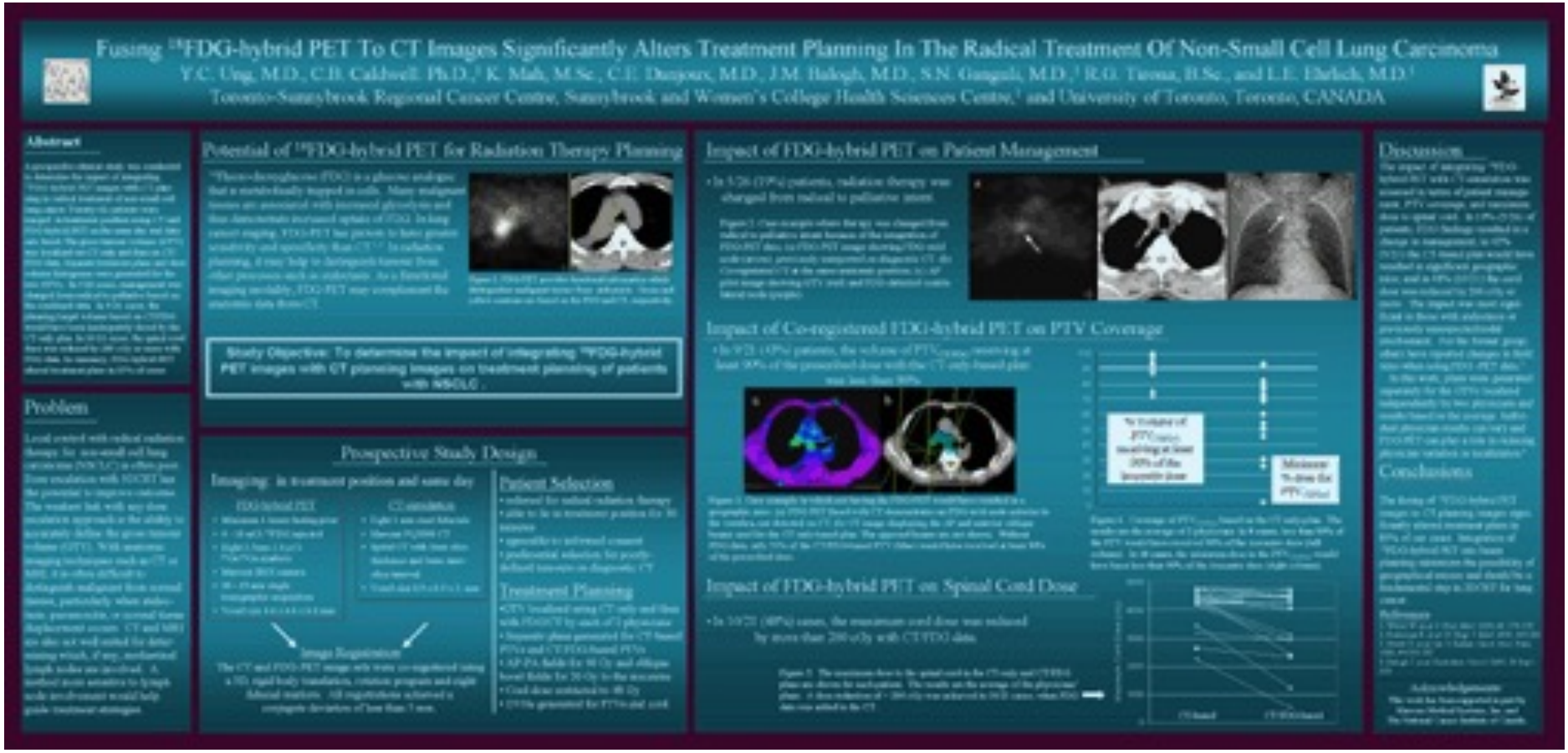

I've fallen,
and I can't get up

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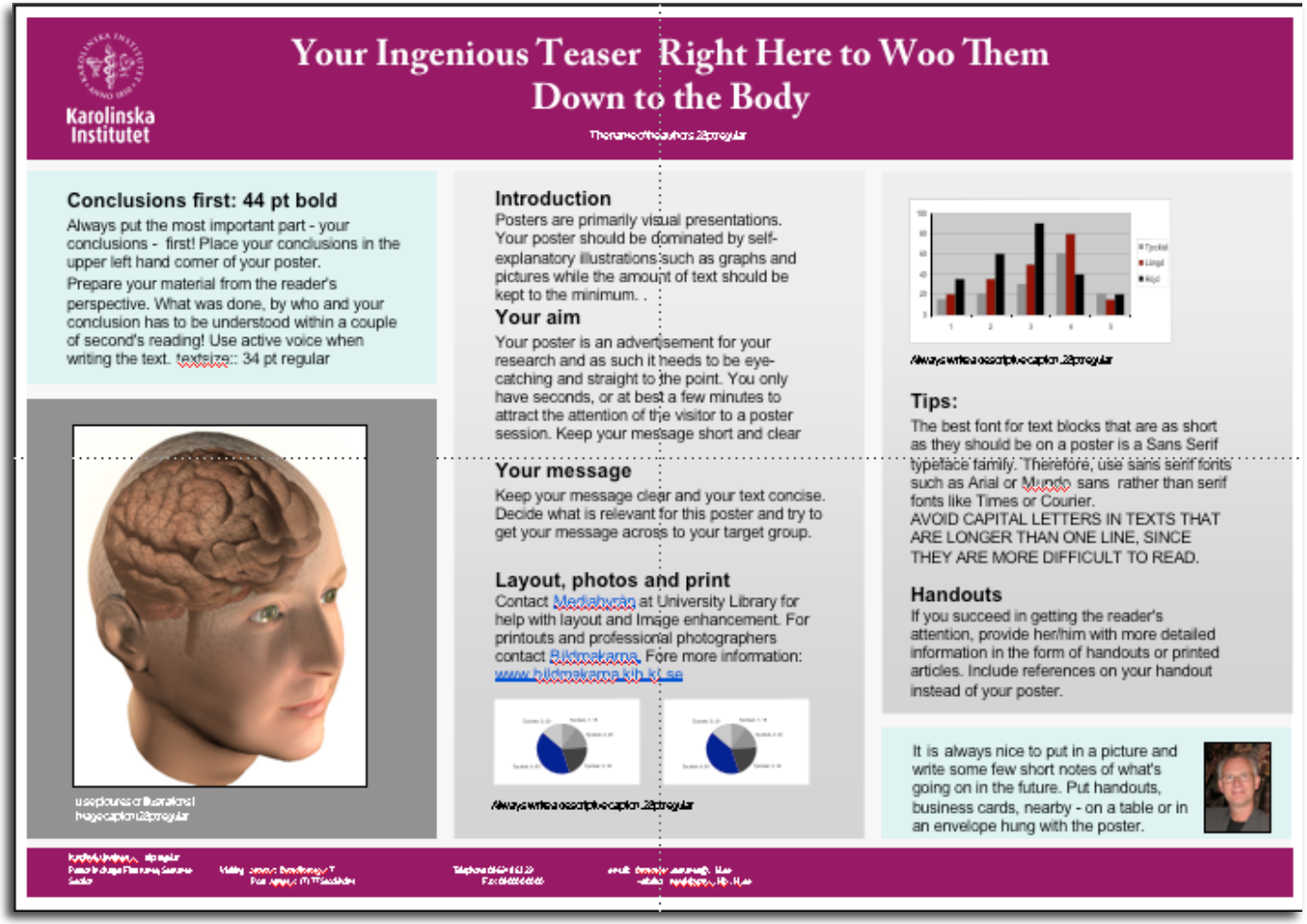

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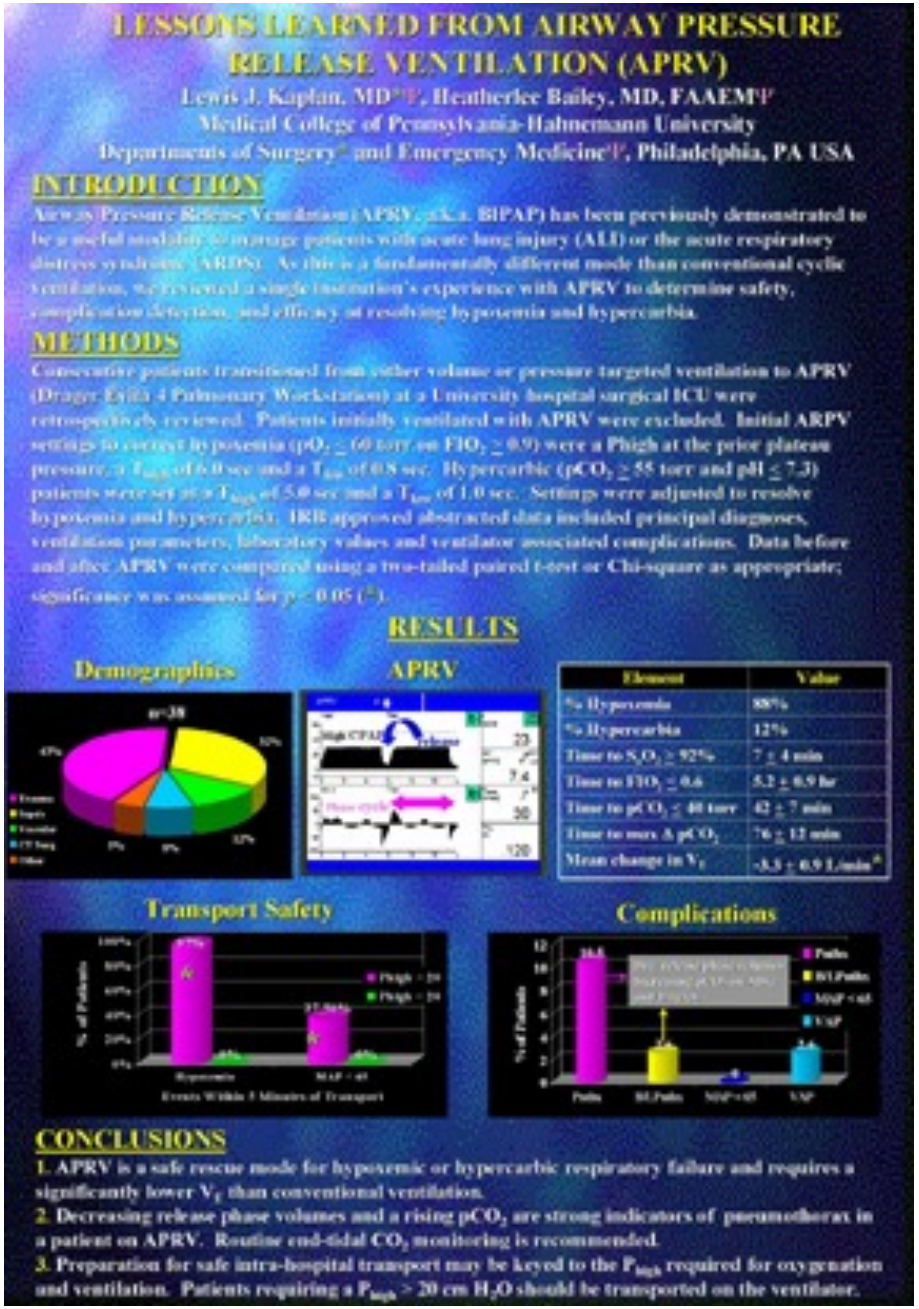

LESSONS LEARNED FROM AIRWAY PRESSURE RELEASE VENTILATION (APRV)

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 (Dräger Evita 4 Pulmonary Work-station) 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 $pH \leq 7.3$) patients were set on 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
% Hypoxemia	88%
% Hypercarbia	12%
Time to $S_pO_2 \geq 92\%$	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[Δ]

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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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

Methods

Results

Conclusion

Acknowledgements

This works!

LiLynn Graves

College of Engineering Webmaster

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Great Resources

http://www.ncsu.edu/project/posters

http://colinpurrington.com/tips/poster-design

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