Scientific Poster Design

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

Your First Chance to Capture Your Audience and Make Them Want to Check Out Your Stuff

T. Farra¹, M. Jacisin²
¹Brigham and Women's Hospital, ²New England College of Optometry, Boston, MA

Introduction  Methods  Results - cont  Results - cont

Purpose

Results

Sample

Discussion  Conclusions  References

Find out the size required!
Who’s my audience?

- Rabid competitor
- Workers in your general area
- Workers outside your general area
Remember, most of these “scientists” come for the free booze.
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...

Why?

Methods?

What am I adding?

What did I find?

What do I recommend?
I could actually read this
Where do I start?
Pick a software program

Although PowerPoint is the easiest, consider a true design program if you have the time.
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)
Adobe Illustrator or InDesign

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

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**Poster title goes here, containing strictly only the essential number of words...**
The Secrets of Readable Text:
• Leave breathing space around your text

• Times works great here

• Same size and style in all blocks of text

• 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 guy who’s 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.
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 guy’s 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!
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 of tiny, tiny, tiny, tiny, tiny type
2. lots of tiny type
3. lots of tiny type
4. lots of tiny type
5. lots of tiny type
6. lots of tiny type

Details:
details of tiny type, details of tiny type, details of tiny type, details of tiny type, details of tiny type, details of tiny type.

1. lots of tiny type
2. lots of tiny type
3. lots of tiny type
4. lots of tiny type
5. lots of tiny type
6. lots of tiny type
Can anyone read your body text?
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 seconds’ reading! Use active voice when writing the text: *features: 34 pt regular*

**Introduction**
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**Your aim**
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**Your message**
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**Tips**
The best font for text blocks that are as short as they should be on a poster is a linear font (serif family). Therefore, use linear, serif fonts such as Arial or Times. Sans serif fonts like Times or Courier should be avoided. Avoid all CAPS 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 him with more detailed information in the form of handouts or printed articles. Include references on your handout instead of your poster.

**Layout, photos and print**
Contact Photoservice at University Library for help with layout and image enhancement. For prints and professional photographers contact Bulkeks, Photoservice. For more information, see our website at www.hamburg-lege.de.

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.
Images and graphs say much more than words
Southern Flounder Exhibit Temperature-Dependent Sex Determination

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

Introduction
Southern flounder (Paralichthys lethostigmus) 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 stripped and eggs and sperm were fertilized at appropriate temperatures.
- Fertilized eggs were incubated in a rearing tank with high protein pelleted food and kept under conditions of high temperature.
- Upon reaching a mean total length of 40 mm, the juvenile flounder were reared at equal densities in one of three temperatures: 20, 23, or 26°C for 245 days.
- Growth was measured at 245 days.

Results
- Sex was discernible in most fish greater than 120 mm long.
- High (28°C) temperatures produced 67% females.
- Low (15°C) temperature produced 83% 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 545 days, no differences in growth are noted 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 to 1.5-year southern flounder.

Acknowledgments
The authors acknowledge the Advanced Research Program of the National Science Foundation and the University of North Carolina at Chapel Hill College of Pharmacy for financial support. Special thanks to Dr. Lisa and Bill Mahoney for help with the project.
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
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 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.
http://www.colorshemer.com/online.html
Be aware of busy backgrounds

**Snook Growth in Habitats with Differing Abiotic Variability**
Alesis Read, North Carolina State University, aread@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 in tanks (0.08-0.26 m) in the aquatic facility.
2. Adults are tagged with identifying marks for individual growth measurements.
3. Fish are placed in ex situ 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) 16-20
  - Temp (°C) 30-38

- **North Creek Upper (Low Variability)**
  - Slow Growth
  - Dissolved Oxygen (mg/L) 0.4
  - Salinity (ppt) 16-20
  - Temp (°C) 25-34

**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.
Southern Flounder Exhibit Temperature-Dependent Sex Determination

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

Introduction
Southern flounder (Pippa dilly) support valuable fisheries and show great promise for aquaculture. Female flounder are known to grow faster and reach larger sizes than males. Therefore, information on sex determination that might increase the ratio of females flounder in populations for aquaculture is important.

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 bred in the lab were spawn to collect eggs and sperm for larval rearing.
- Hatchlings were reared under a natural diet of brine shrimp to a high protein pelleted feed and fed until reared to at least twice body.
- Fish reared at a mean total length of 30 mm the parents flounder were reared at equal duration rate one of three temperature (18, 23, or 26°C) for 245 days.
- Females were preserved and best sexed at 24 months.
- Sex distinguishing markers were used to distinguish male from females (sex-sense)

Histological Analysis
Male Differentiation
Female Differentiation

Temperature Affects Sex Determination

Results
- Sex was distinguishable in most fish greater than 120 mm body length.
- High (28°C) temperature produced 2% females.
- Low (18°C) temperature produced 22% females.
- Mid-range (23°C) temperature produced 44% females.
- Fish reared at high or low temperature showed reduced growth compared to those at mid-range temperature.

Rearing Temperature Affects Growth

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) appear 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
The authors acknowledge the support and funding provided by the National Science Foundation, Department of Science and Technology, North Carolina Sea Grant, and the University of North Carolina at Chapel Hill. Special thanks to Lisa Proctor and Beth Engelman for their help with the work.
Southern Flounder Exhibit Temperature-Dependent Sex Determination

J. Adam Luckenbach, John Godwin and Russell Borski
Department of Zoology, Box 7612, North Carolina State University, Raleigh, NC 27695

Introduction
Southern flounders (Paralichthys dentatus) 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 (TBD), and if growth is affected by rearing temperature.

Methods
- Southern flounder fry were spawned to collect eggs and sperm for in vitro fertilization.
- Hatched larvae were reared from a natural diet (mussel and Artemia) to high protein (zooplankton and fish) diets 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 265 days.
- Gonads were preserved and later sectioned at 2.6 microns.
- Sex-distinguishing markers were used to distinguish males (spermomere/mesonephros) from females (ovary).

Histological Analysis
![Male Differentiation](image1)
![Female Differentiation](image2)

Results
- Sex was discernible in most fish greater than 120 mm long.
- High (23°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 265 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 (or 1 year) southern flounder.

Acknowledgements
Thank you to our sponsors and collaborators.
Edit, Edit, Edit and Evaluate!
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?

Keep it simple
You’re not done yet...

Prepare a 3-5 minute verbal explanation

Is he ever going to SHUT UP???
Prepare mini size poster handouts

• 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
A bit text heavy and not sure which way to go?
Determining the Wear Resistance of Occlusal Splints in a Prospective Clinical Study

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

Dept. of Prosthodontics, School of Dentistry, University of Graz, Austria; J. C. Wehrli, University of Bern, Switzerland

Objective

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

Materials and Methods

- Patients
  - n = 20 consecutive patients
  - mean age: 40.7 years; 11 F, 9 M

- Inclusion criteria
  - Natural dentition with fully erupted jaws
  - Complete absence of any occlusal trauma
  - For the stabilization splint sample:
    - Insufficient occlusal support
    - Increased occlusal load due to functional habits
  - For the destruction splint sample:
    - TMJ pain
    - Complete anterior dislocation of the disk without reduction with terminal reduction
    - TMJ tenderness

- Measuring technology (Fig. 2)
  - Vibration-controlled table framework
  - 3 translation axes (for deviations x, y, and z)
  - DC-Motor (Pie, Hildesheim)
  - DT 4 measurement microscope (Zeiss, Oberkochen)
  - WA 26 inductive displacement transducer
  - 8 Splint digital 1-channel measurement unit
  - Gema 32 software V2.1 (HBM, Bürscheid)
  - Local anesthesia for occlusal contacts during baseline measurements
  - Ten measurements each in regions 11, 12, 13, 21, 22, 23 (11/21/31, 21/22/32, 13/23/33)
  - Splint positioned on a centric occlusion

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

Conclusions

- The present study clinically confirms the good wear resistance of the new resin-splint material obtained in a previous in-vitro study (Ottl et al., Dtsch Zahnmed 27, 924-929 (1977)).

- Good wear resistance is of great importance for maintaining the therapeutic mandibular position during the treatment period (Figs. 3a and b).
Where do I begin?
I’m feeling sleepy
I would get dizzy trying to go back and forth trying to read the copy on this!
Perfect!
Oh my gawd!
WHICH IS MORE IMPORTANT: NUMBER OF PATCHES OR CONNECTIVITY?

Darun Kalivas, PBS Student
Cornell University

INTRODUCTION AND OBJECTIVES

The objective of this study is to determine the impact of connectivity on population dynamics in fragmented landscapes. The study examines the relationship between the number of patches and the connectivity between them, and how these factors affect population growth and persistence.

THE PROGRAM

A computer simulation was developed to model the population dynamics of an organism in a fragmented landscape. The simulation includes the following components:

- Patch distribution
- Connectivity
- Population growth
- Survival

RESULTS

The results of the simulation show that connectivity has a significant impact on population dynamics. The population growth rate is highest when the patches are well-connected, and lowest when the patches are isolated.

CONCLUSIONS

The results of this study suggest that connectivity is more important than the number of patches for population persistence in fragmented landscapes. Policy makers and conservationists should focus on enhancing connectivity to improve population survival.
I’ve fallen, and I can’t get up
Conclusions first: 44 pt bold
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