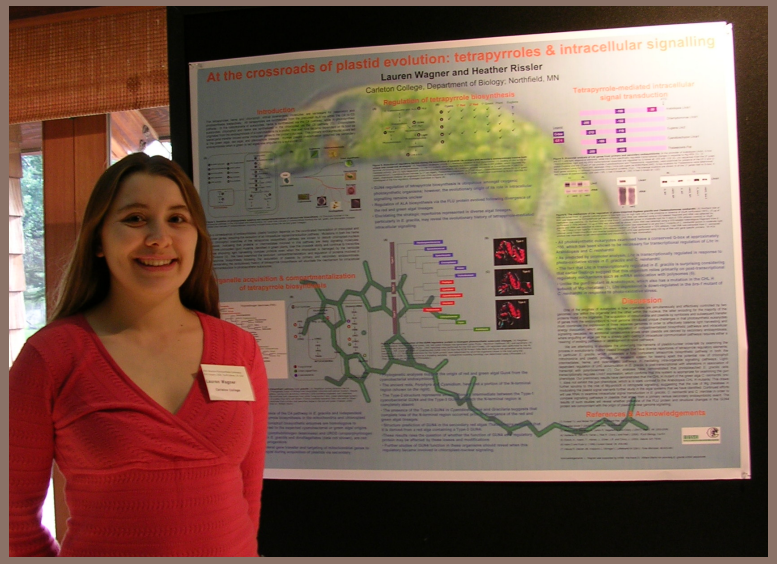
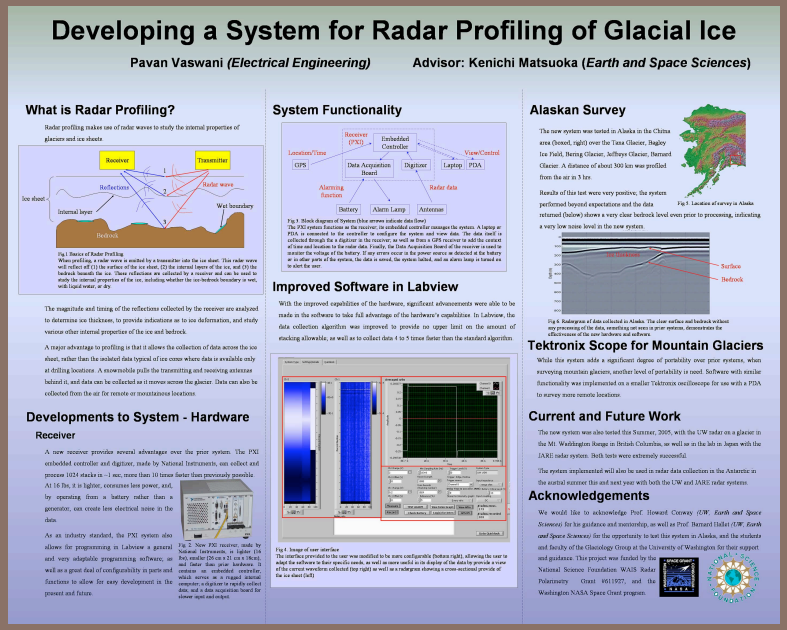
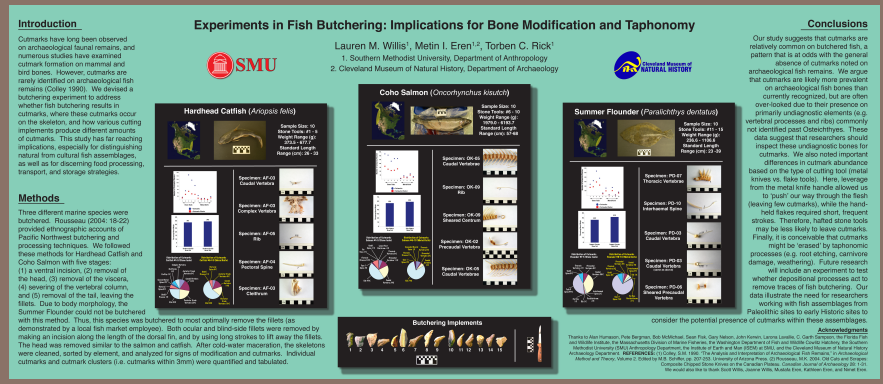






THE PERFECT POSTER

The World of Museums: Logistics, Laws and Loans

Effective Poster Presentations

- Purpose: communication of information and ideas to peers and colleagues
- Pick a program: PPT, Adobe
- Pick a size: 24 X 36 or 16 X 20

What is a poster??

- **A visual communication tool**
- **An effective poster will help you …**

… engage colleagues in conversation.

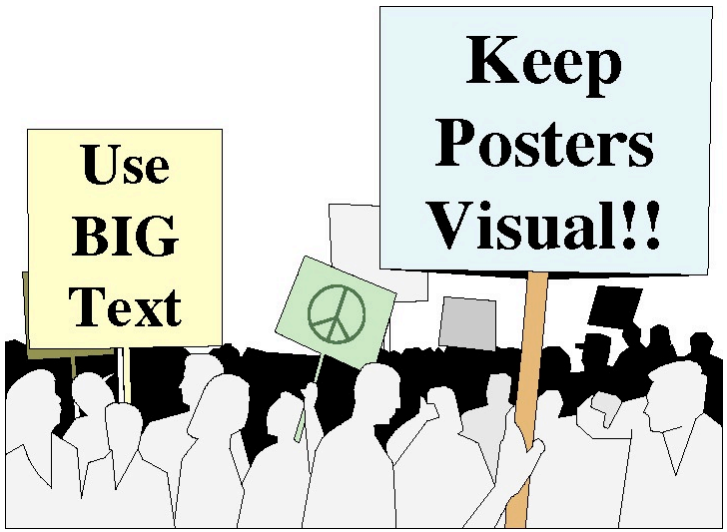
What is a poster??

- **A visual communication tool**
- **An effective poster will help you …**

… get your main point across to as many people as possible.

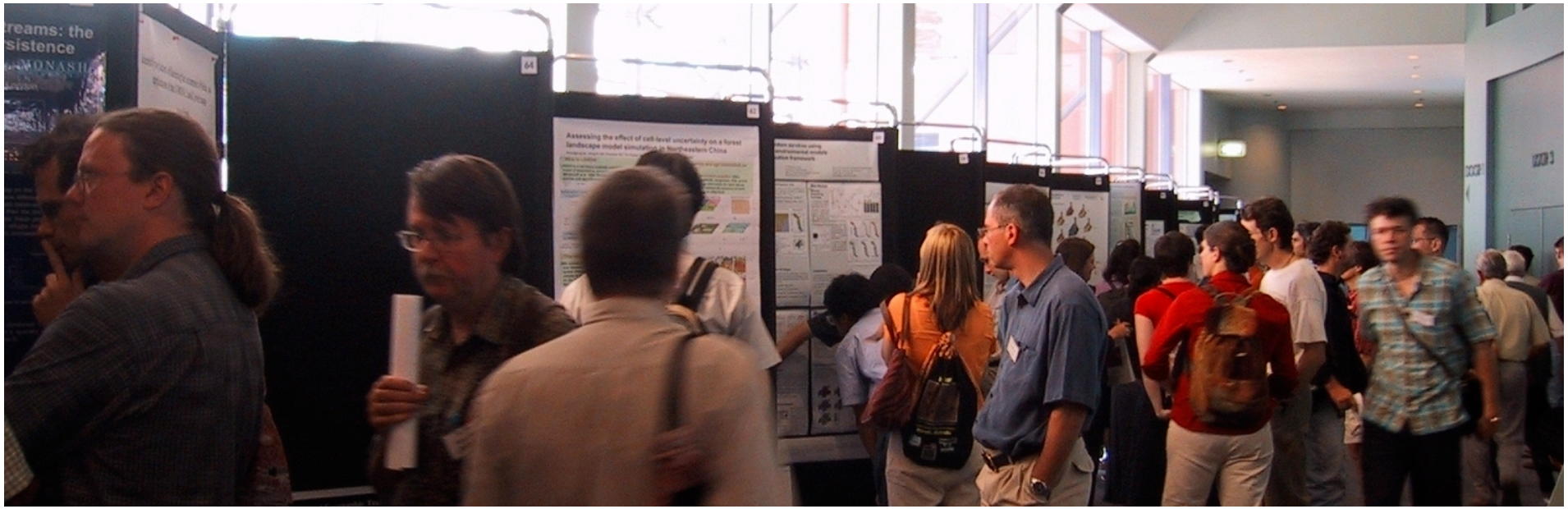
An effective poster . . .

- **delivers a clear message,**
- **is highly visual, and**
- **is easily read from 1-2 meters away.**



Know your audience

- **Specialists only**
- **Wide-ranging discipline**
- **Very general audience**



Layout

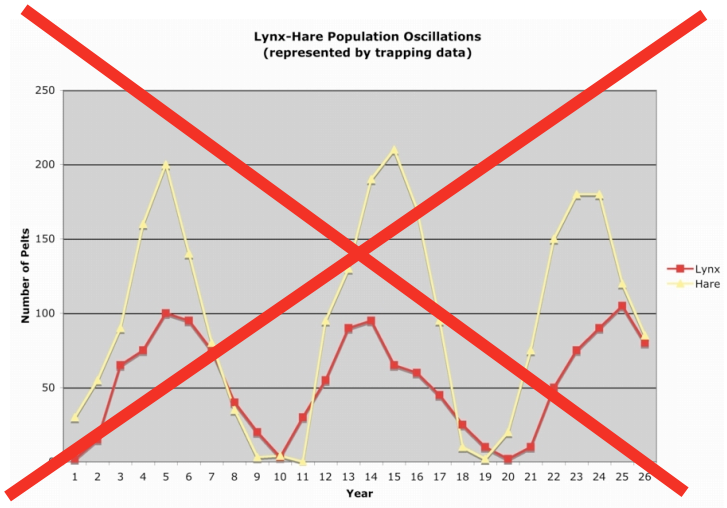
- **Headings identify key sections**
- **Balance placement of text & graphics**
- **Use white space creatively**
- **Don’t fight “reader gravity”**
- **Use a column format**

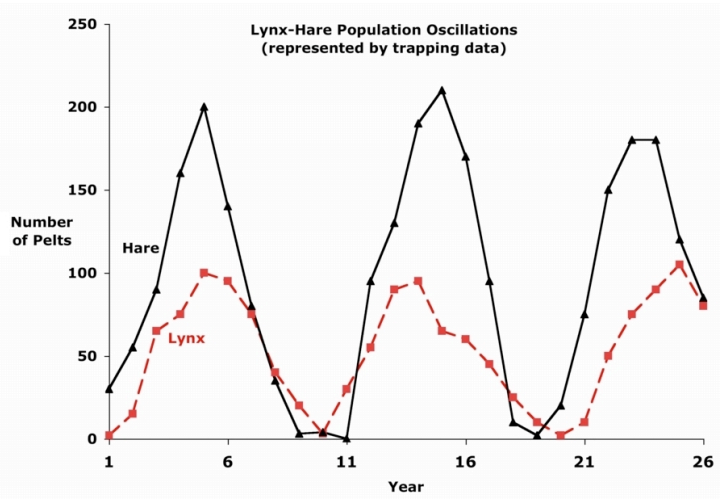
Text

- **Keep text elements short**
- **Use phrases and active voice**
- **Use serif font for text**
- **San-serif font OK for title & headings**

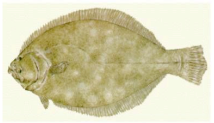
Graphs

- **Graphs communicate relationships**
- **Keep them simple and clean**
- **Avoid 3D graphs unless you're showing 3D data - and then be careful**





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.

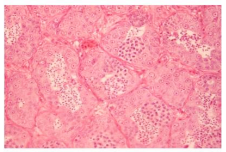
Objective

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

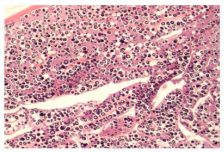
Methods

- 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

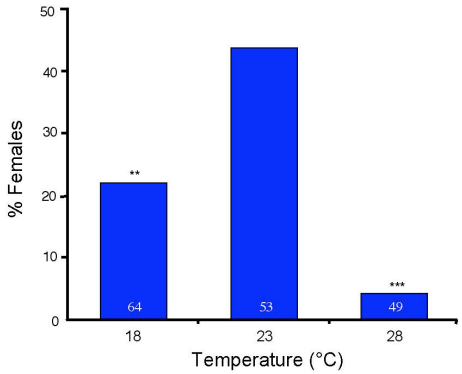


Male Differentiation



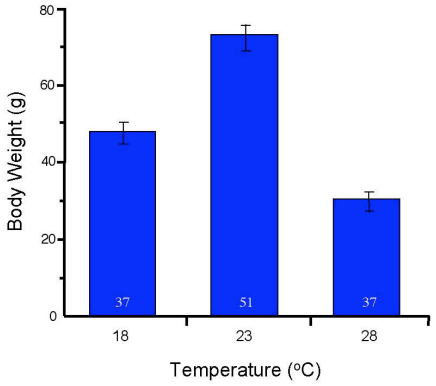
Female Differentiation

Temperature Affects Sex Determination

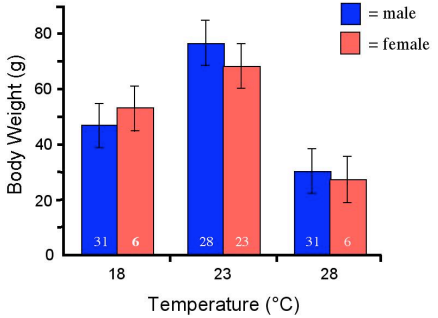


(**P < 0.01 and ***P < 0.001 represent significant deviations from a 1:1 male:female sex ratio)

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 Salstonstall-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 Lea Ware and Beth Shimps for help with the work.

Developing a System for Radar Profiling of Glacial Ice

Pavan Vaswani *(Electrical Engineering)* **Advisor: Kenichi Matsuoka (*Earth and Space Sciences*)**

What is Radar Profiling?

Radar profiling makes use of radar waves to study the internal properties of glaciers and ice sheets.

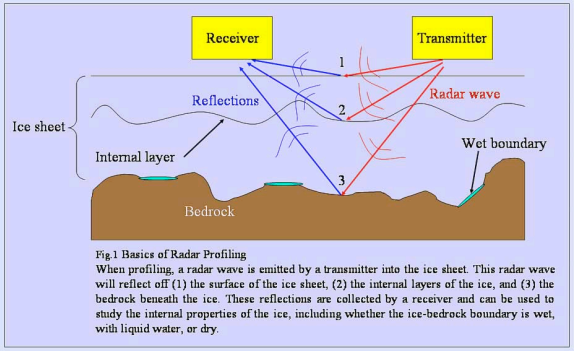


Fig.1 Basics of Radar Profiling
When profiling, a radar wave is emitted by a transmitter into the ice sheet. This radar wave will reflect off (1) the surface of the ice sheet, (2) the internal layers of the ice, and (3) the bedrock beneath the ice. These reflections are collected by a receiver and can be used to study the internal properties of the ice, including whether the ice-bedrock boundary is wet, with liquid water, or dry.

The magnitude and timing of the reflections collected by the receiver are analyzed to determine ice thickness, to provide indications as to ice deformation, and study various other internal properties of the ice and bedrock.

A major advantage to profiling is that it allows the collection of data across the ice sheet, rather than the isolated data typical of ice cores where data is available only at drilling locations. A snowmobile pulls the transmitting and receiving antennas behind it, and data can be collected as it moves across the glacier. Data can also be collected from the air for remote or mountainous locations.

Developments to System - Hardware

Receiver

A new receiver provides several advantages over the prior system. The PXI embedded controller and digitizer, made by National Instruments, can collect and process 1024 stacks in ~1 sec, more than 10 times faster than previously possible. At 16 lbs, it is lighter, consumes less power, and, by operating from a battery rather than a generator, can create less electrical noise in the data.

As an industry standard, the PXI system also allows for programming in Labview a general and very adaptable programming software; as well as a great deal of configurability in parts and functions to allow for easy development in the present and future.

Fig 2. New PXI receiver, made by National Instruments, is lighter (16 lbs), smaller (26 cm x 21 cm x 18cm), and faster than prior hardware. It contains an embedded controller, which serves as a rugged internal computer; a digitizer to rapidly collect data; and a data acquisition board for slower input and output.

System Functionality

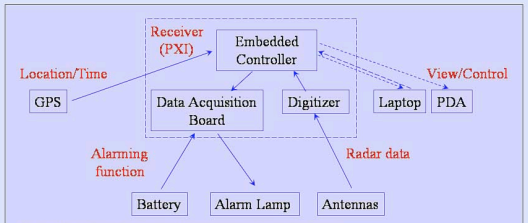


Fig 3. Block diagram of System (blue arrows indicate data flow)
The PXI system functions as the receiver; its embedded controller manages the system. A laptop or PDA is connected to the controller to configure the system and view data. The data itself is collected through the a digitizer in the receiver; as well as from a GPS receiver to add the context of time and location to the radar data. Finally, the Data Acquisition Board of the receiver is used to monitor the voltage of the battery. If any errors occur in the power source as detected at the battery or in other parts of the system, the data is saved, the system halted, and an alarm lamp is turned on to alert the user.

Improved Software in Labview

With the improved capabilities of the hardware, significant advancements were able to be made in the software to take full advantage of the hardware's capabilities. In Labview, the data collection algorithm was improved to provide no upper limit on the amount of stacking allowable; as well as to collect data 4 to 5 times faster than the standard algorithm.

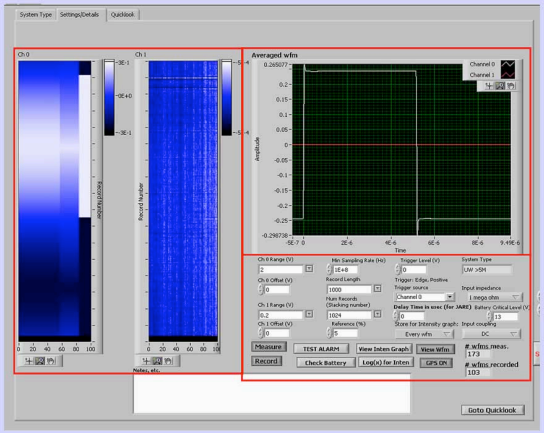


Fig 4. Image of user interface
The interface provided to the user was modified to be more configurable (bottom right), allowing the user to adapt the software to their specific needs, as well as more useful in its display of the data by provide a view of the current waveform collected (top right) as well as a radargram showing a cross-sectional provide of the ice sheet (left)

Alaskan Survey

The new system was tested in Alaska in the Chitna area (boxed, right) over the Tana Glacier, Bagley Ice Field, Bering Glacier, Jeffreys Glacier, Barnard Glacier. A distance of about 300 km was profiled from the air in 3 hrs.

Fig 5. Location of survey in Alaska

Results of this test were very positive; the system performed beyond expectations and the data returned (below) shows a very clear bedrock level even prior to processing, indicating a very low noise level in the new system.

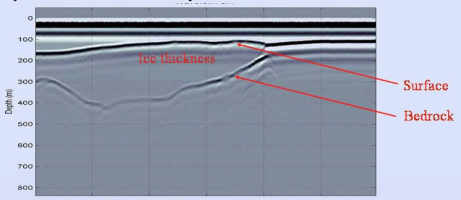


Fig 6. Radargram of data collected in Alaska. The clear surface and bedrock without any processing of the data, something not seen in prior systems, demonstrates the effectiveness of the new hardware and software.

Tektronix Scope for Mountain Glaciers

While this system adds a significant degree of portability over prior systems, when surveying mountain glaciers, another level of portability is need. Software with similar functionality was implemented on a smaller Tektronix oscilloscope for use with a PDA to survey more remote locations.

Current and Future Work

The new system was also tested this Summer, 2005, with the UW radar on a glacier in the Mt. Waddington Range in British Columbia, as well as in the lab in Japan with the JARE radar system. Both tests were extremely successful.

The system implemented will also be used in radar data collection in the Antarctic in the austral summer this and next year with both the UW and JARE radar systems.

Acknowledgements

We would like to acknowledge Prof. Howard Conway *(UW, Earth and Space Sciences)* for his guidance and mentorship, as well as Prof. Barnard Hallet *(UW, Earth and Space Sciences)* for the opportunity to test this system in Alaska, and the students and faculty of the Glaciology Group at the University of Washington for their support and guidance. This project was funded by the National Science Foundation WAIS Radar Polarimetry Grant #611927, and the Washington NASA Space Grant program.

WHEN RIGHT IS WRONG:

Methods for Resolving Cold Identity Cases

Dana Austin, Ph.D., DABFA, Kathleen A. Kasper, D.D.S., and Roger Metcalf, D.D.S.

1982 Missing Person Case

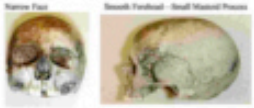
- Donna Williamson disappears
- Her car was found abandoned
- She was never heard from again

1993 Unidentified Skeleton

- Female skeleton evaluated at the Johnson County Medical Examiner and biological profile submitted to NCIC

2003 Re-evaluation of Skeleton

White Female



PMI greater than 5 years

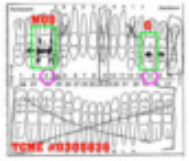
Age 16-23 years

Multiple Stab Wounds

2003 Follow Up

- NCIC entry modified with new biological profile
- Over 100 potential matches
- North Richland Hills PD submits reference sample for Donna Williamson to the Texas Missing Persons DNA Database

NCIC Dental Profile



Postmortem Dental Profile

- Decedent was ***correctly excluded*** as a "match" with Donna Williamson based on Williamson's NCIC dental profile

Conclusions

- It is ***imperative*** to have a trained forensic odontologist review the original records and the dental profile prior to NCIC entry

2004 Identity

- Texas Missing Persons DNA Database identifies skeleton as Donna Williamson
- First COLD HIT for the database

2004 Resolution of Conflicting Dental & DNA Results

- Careful examination reveals that the treating dentist's original odontogram was incorrect

Antemortem Radiographs as Charted

Mirror Image = Correct View

Comparison of odontograms

Properly oriented radiographs show consistent dental features

So, sometimes, **left** can be **right**, and **right** can be **wrong**!

Summary

- **Poster = visual communication**
- **An effective poster will help you …**

… engage colleagues in conversation …

… get your main point across to as many people as possible.

Effective Posters

An effective poster is a *visual* communications tool.

An effective poster will help you ...

... engage colleagues in conversation.

... get your main point(s) across to as many people as possible.

An effective poster is ...

Focused Focused on a single message.

Graphic Lets graphs and images tell the story; uses text sparingly.

Ordered Keeps the sequence well-ordered and obvious.

In a hurry?

Try the QUICK REFERENCE from our RESOURCES PAGE.

Need some help?

Define the message

All visuals and text should relate to a succinctly stated message.

Your goal is to convey a clear message and support it with a compelling combination of images and short blocks of text.

Know your message!
What is the *one* thing you want your audience to learn?

FOCUS on your message throughout the poster.
If it doesn't reinforce your message, *leave it out*!!

Be bold & be explicit.

- **If you have an interesting result, state it explicitly in the title.**

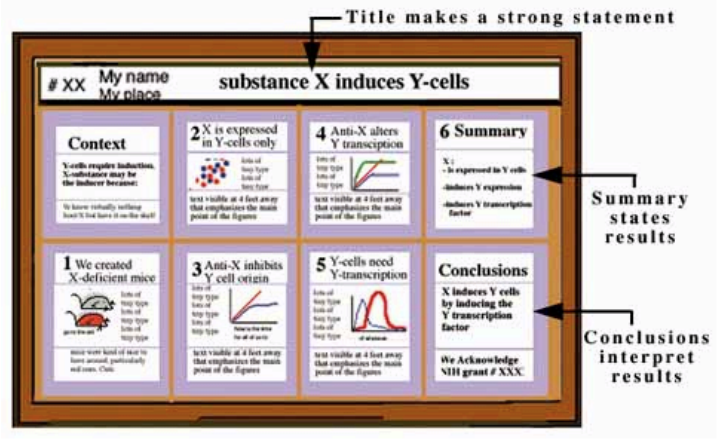
~~***The Effect of X on Y***~~
Substance X Induces Y-cells

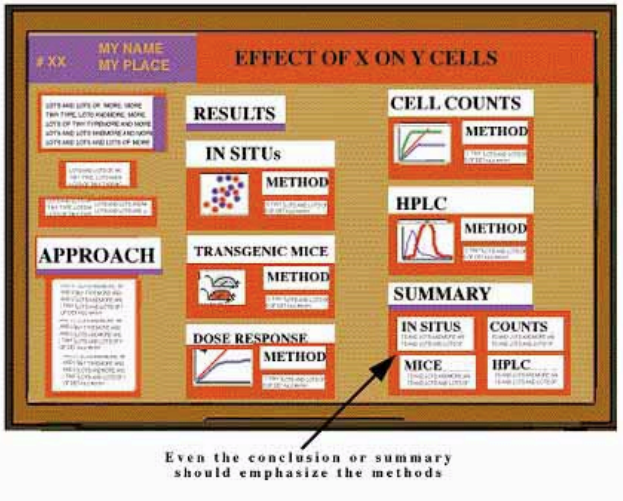
>>EXAMPLE>>

- **Make the strongest statements your data will support.** Why soft-peddle exciting findings?
- Rather than merely repeating the results, **state your interpretations in the conclusion section**.

Do this

Not that





Do this ...

Be bold and be explicit!

- If you have an interesting result, then state it explicitly in the title: ***Water Temperature Affects Flounder Growth Rates***
- Make the strongest statements your data will support. Why soft-peddle exciting findings? "Substance X is essential to apoptosis in Y cells."
- Interpret your findings in the conclusion - what do they *mean*?? "Greenways must be wider to support forest interior birds." (Of course, your results must support such a statement.)

... not this

Hedge wherever you can.

- Make the title as non-committal (and boring) as possible: ***The Effect Water Temperature on Flounder Growth Rates***
- Avoid committing yourself to any strong statement: "Antibody to X abolishes the response." Add qualifying words in abundance, such as: probably, perhaps, may, might.
- In the conclusion section, instead of interpreting your data, merely repeat the results - then say further study is required. "The effect of greenway width on forest interior birds needs further study." Since virtually everything needs further study, you can't be faulted.

Effective Abstracts

An effective abstract is your first opportunity to hone your message.

An abstract is a succint description of your work. It should ...

- **Explain why your work is important** - set the context and pre-empt the question "So what?"
- **Describe the objective(s) of your work.** What are *you* adding to current knowledge?
- **Briefly explain the methods.** Unless the research is about methods, this should not be a major focus of your abstract (or your poster).
- **Succintly state results, conclusions, and recommendations.** This is what most people want to know. Do not say "We present the results of our study and recommendations for action" - tell them what you found and recommend!

We do *not* recommend including an abstract on your poster. It is redundant, because a poster is already a succinct description of your work. Writing a good abstract, however, is an important part of having your work accepted for presentation at a conference. An abstract can also serve as an outline for your poster, which can be thought of as an illustrated abstract.

Overview

- Planning – the message
- Focus – simple
- Layout – clearly defined visual grammar
- Headings – orient and convey
- Graphics – clear and dominate
- Text – graphics first!
- Colors – caution
- Editing – ruthlessness
- Software

Planning

- What's my message? Everything you put on your poster relates to a carefully crafted message.
- You must be able to state your main point(s) and conclusion(s) clearly and succintly. ***All*** visuals and text should relate to those points and conclusions.
- How much room do I have? what you can fit, what you'll have to leave out, layout (landscape vs. portrait orientation), and how things will be organized.

Focus

- Create a mock-up poster focused on your main message.
- Ask yourself which details are *absolutely essential* for conveying your message.
- Omit anything that is not essential.
- Edit text carefully - simplify verbiage, reduce sentence complexity.
- SIMPLICITY IS KEY!
- you supply the details – that's why you stand with a poster

Layout

- **use a visual grammar** to guide readers to the important parts of your poster.
- **use a column format** to make your poster easier to read in a crowd.
- **use organization cues** to guide readers through your poster.
- **use "reader gravity"** which pulls the eye from top to bottom and left to right.
- **use headings intelligently** to help readers find your main points and key information.
- **balance the placement of text and graphics** to create visual appeal. **use white space creatively** to help define the flow of information.

Heading: orient and convey

- **Summarize** Use headings as opportunities to summarize your work in large letters. A hurried reader should be able to get the main points from the headings alone.
- **Organize** Good headings are part of the visual grammar that helps move readers through your poster.
- **Be Hierarchical** The more important the point, the larger the type.
- **Be Bold** Make the strongest statements your research allows.

Graphics

- Good graphics - graphs, illustrations, photos - are the centerpiece of your poster.
- Good graphs communicate relationships quickly. Graphs should be simple and clean. Write explanations directly on figures, instead of referencing from elsewhere.
- Use simple 2-dimensional line graphs, bar charts, pie charts. Avoid 3-dimensional graphs unless you're displaying 3-dimensional data. Text on graphs must follow same guidelines as all other text so that it will be visible.
- Use photos that help deliver your message.
- All elements, even the figure legends, are visible from 4 feet away.

Text: simple, direct, and large

- Minimize text - use images and graphs instead
- Keep text elements to 50 words or fewer
- Use phrases rather than full sentences
- Use an active voice. Avoid jargon. Left-justify text
- Use a serif font (e.g., Times) easier to read
- Sans-serif font (e.g., Helvetica) for titles & headings
- Text should be **at least** 24 point in text, 36 for headings
- Title should be **at least 5cm tall**

Color

- Use color to attract attention, organize, and emphasize - but don't overdo it
- Stick to a theme of 2 or 3 colors - much more will overload and confuse viewers
- Use a light color background and dark color letters for contrast

Editing

- If it doesn't provide critical support for your main message, ELIMINATE IT!
- Edit! Edit! Edit ruthlessly! to reduce text.
- Edit all text to simplify verbiage, to reduce sentence complexity, and to delete details.
- Have colleagues comment on drafts.
- Evaluate your work and 60 second test!
- Are your objective and main message obvious?

Software

- MicroSoft PowerPoint is a relatively easy-to-use tool for creating posters
- Adobe Illustrator and InDesign have more features
- MicroSoft Excel can create graphics and export them for PowerPoint
- OpenOffice offers no-cost alternatives to MS Office.
- Adobe Photoshop is great for manipulating images, but is also complex and expensive.