How to Create Award-Winning Displays

Displays will be a Digital Slide Presentation for 2022

Criteria for <u>Virtual</u> Presentations

- Create in Google Slides, PowerPoint or Keynote

- Presentation Time Limit – **6 minutes**

- Document Name for uploading must include Student Name

- <u>**Maximum**</u> slide limit - **15 slides**

- *"Pictures are better than words"* - show clear photos of <u>you</u> working on your project

- **Photos** must be *by student or parents*; other graphics must have credits

- Explore the <u>**"What NOT to do in PPT"**</u> (Powerpoint) presentation before you create your presentation...

<u>**Virtual Presentation Slide Template**</u> may be downloaded **from Google Drive**

Courtesy of White House Science Fair 2015

What NOT to Do on a PowerPoint Project

These are REAL examples from previous Biome projects... Sound effects and animations are what <u>NOT</u> to do...

Digital Slides Formatting

- Use the **SLIDES with white backgrounds in this template** as your Virtual Science Project Display for Judging

- **Follow the directions on each slide**: type over the directions when you are ready.

- **Don't change the slide titles** (these will be the same for all students)

- **Title Fonts**: 35pt, choice of style, color (must be readable!)

- **Body Fonts:** Arial

- **Body Font <u>size</u>**: Minimum = 18pt

- Slide Backgrounds should <u>not</u> be busy – text must be *easy to read*

- Slide animations and transitions **should not be used** as they cannot be replicated on a backboard.

Remove Criteria and Formatting Slides 1 and 2 for your final presentation.
Save this ppt **with a your name: keep the original** for directions

Science or Engineering Project

Replace text above with a Creative Title for your project

Sub-title (if necessary)

Replace "sub-title" text above with a title that really explains what your project is about

Insert cool photo of your project or use a creative background that pertains to your project

Your name
Your teacher's name
Your school

Abstract

Write the abstract **last**, after all your results and analysis are finished

The abstract is a summary (**250 words or less**) of your project and must include:

- **Problem**

- **Procedures**

- **Data** and brief analysis (no graphs)

- **Conclusion** (State whether and WHY your hypothesis or proposed solution was or was not validated).

Problem

- This is the **Problem Statement**, *written as a question* - - *What is the problem to be solved?* You may add a graphic or photo to explain the problem.
    - According to the "Science and Engineering PRACTICES": In Science, we refer to a question to be solved and written in the form of a question that includes both the independent and dependent variables.
        - **Example:** *How does (independent) affect (dependent)?*

    - **In Engineering,** it is usually stated AS A PROBLEM: **Examples:**
        - Problem: Controlling hillside erosion in our city; or
        - Problem: Removing flood water from orange tree orchard; or
        - Problem: Removing litter from Alameda Bay sea floor.

Introduction (Background Research)

- Brief summary of the background research needed to understand your problem.

- **For engineering**, include the criteria/constraints necessary to solve your problem.   Example: size, reusability, safety; time, money, materials that must or may not be used.

- Include citations when referencing other scientists' work.

- Optional: an explanatory graphic, species photo, map of field research location, etc.

Hypothesis

- For **Science Projects,** based on the research you have done, you will be writing an answer – your best educated guess – to your question.

One way to write a hypothesis:

"If [this is done, then   [this]   will happen." (Fill in the blanks with the appropriate information from your own project.)

Another way to write a hypothesis:

"I think _____ because _____

- For **Engineering, Computer or Math projects;** draw and label the **solution/prototype model** to the problem that you are testing. Briefly explain **WHY** you chose <u>this</u> solution to test.

Materials

- Type a **bulleted list** of the items you needed to complete your project.

- **Be specific** about the amounts used.

Procedure

- **List and number** all of the steps used in completing your project, including any retesting you did.

- **Draw and label** a drawing/photo of any prototype or set-up that you used to test your solution.

- **Optional: Add photos** (with captions) to show the steps of your procedures.

- Up to 2 slides **if absolutely necessary**

Procedure (continued)

- **OPTIONAL:** 2nd slide **if absolutely necessary**

Results

- Include <u>any</u> data you collected while testing your hypothesis or prototype.

- If your testing procedures had repeated trials, make a **<u>data table AND/or graph</u>**(s) to show your results.

- Add your written **<u>qualitative</u> observations** (color, smell, behavior, etc.) as well.

- **<u>For Engineering Projects</u>,** if you changed your solution/prototype <u>after</u> testing your original solution, then:

    o include any new data from the re-testing

    o also include labeled drawings of your REVISED solution/prototype and WHY you made those changes

- Up to 2 slides **if absolutely necessary**

Results (Contin.)

- **OPTIONAL:** 2nd slide **if absolutely necessary**

Discussion

- **Summarize** and **ANALYZE** your data including trends, **errors** and variables that could have influenced the results.

- **Develop arguments** for and against your hypothesis or solution/final prototype, using <u>statistics</u> *(average, % error, a variety of statistical tests.)*

- Relate your findings to **other studies** and cite those studies.

   (Up to 2 slides **if absolutely necessary** – OK to add graphics)

Discussion (Contin.)

- **OPTIONAL:** 2nd slide **if absolutely necessary**

Conclusion

- Type a **brief summary** here of what you discovered based on the results of your testing. You need to indicate whether or not the data supports your hypothesis or proposed solution and the reason for your conclusion. **(no more than 250 words)**

Reflection/Application

Things you might want to reflect on:

- *What did you learn from doing this project?*

- *What you might have done differently?*

- *What would be your next steps for researching this problem?*

- *How can your results be applied in everyday life?*

- *How could your results be applied to other studies?*

- *Teams: what were the benefits/challenges of working as a team to find a solution?*

References Cited

- Be sure to include both print and electronic sources and put them in alphabetical order.

- **Use APA Citation formatting**

- ***Make sure your references match any citations in your Introduction or Discussion.***

  o Jr Projects = Minimum 3 references

  o Sr Projects = Minimum 5 references

Hand-made Displays

- Abstract
- Introduction
- Materials & Methods
- Results
  - Data Tables
  - Graphs
  - Observations
- Discussion
- Conclusion *(optional)*
- Name/school on back

Width = 32 in

PROBLEM

PROJECT TITLE

ANALYSIS

RESULTS

HYPOTHESIS

CONCLUSION

INTRODUCTION

PROCEDURE

NEXT TIME

Top of display to table-top = 6.5 ft

Depth = 15 in.

REPORT

MODEL

JOURNAL
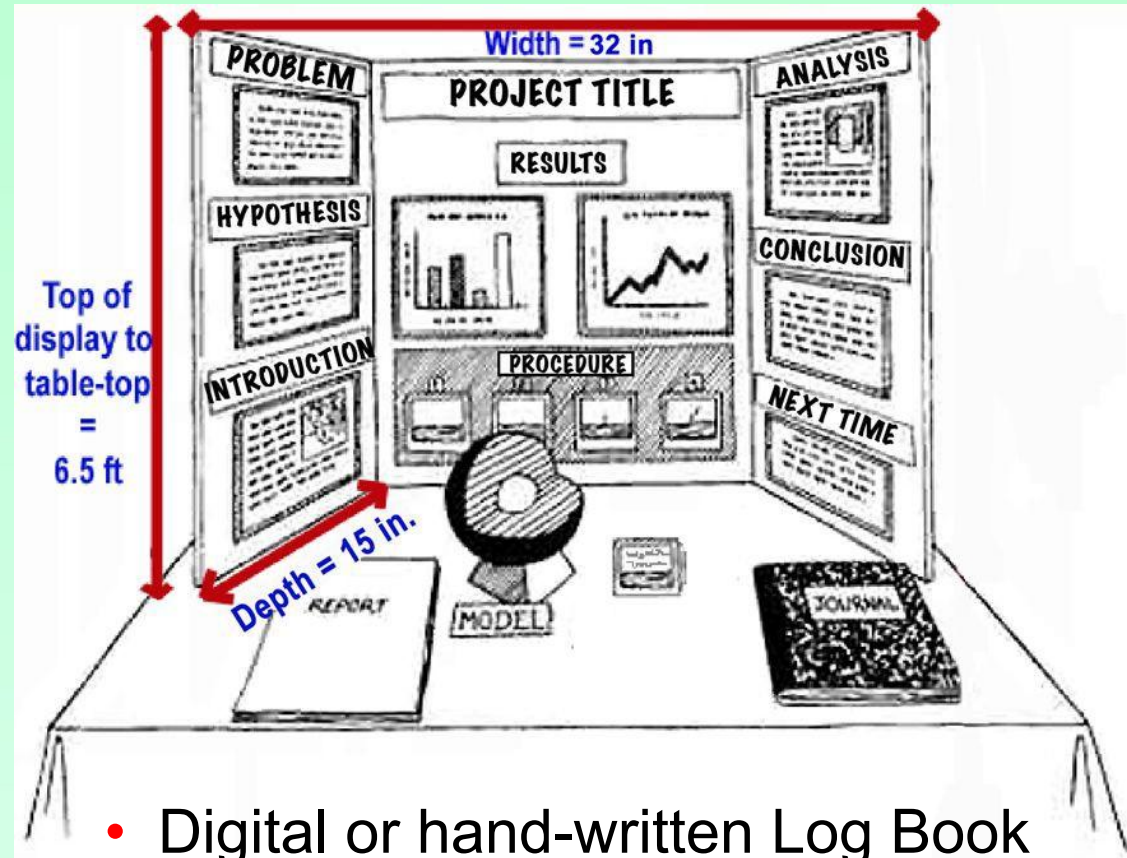
- Digital or hand-written Log Book
- Research Report w/References
- Acknowledgements *(optional)*

Hand-made Display Sizes

- **Maximum exhibit size** is 32 inches wide by 15 inches feet deep by 6-1/2 feet tall.

    – The exhibit – including the display board – must be able to be placed on the designated table space and <u>all</u> materials must fit within that space.

    – Oversized exhibits *will not be eligible to be judged* for awards and <u>*may*</u> not be able to be displayed.

    – **Other materials and equipment** *may shown during* *virtual student interviews*

Have Your <u>Log Book</u> Present

- A **"journal"**, detailing <u>all</u> activities: ~~cross-out~~, **don't erase** changes

- Include actual data collected, relevant materials

- Key elements will be **uploaded** for judging *(exact details will be sent closer to the fair)*

Log Books may be **hand-written** or **digital** for 2022
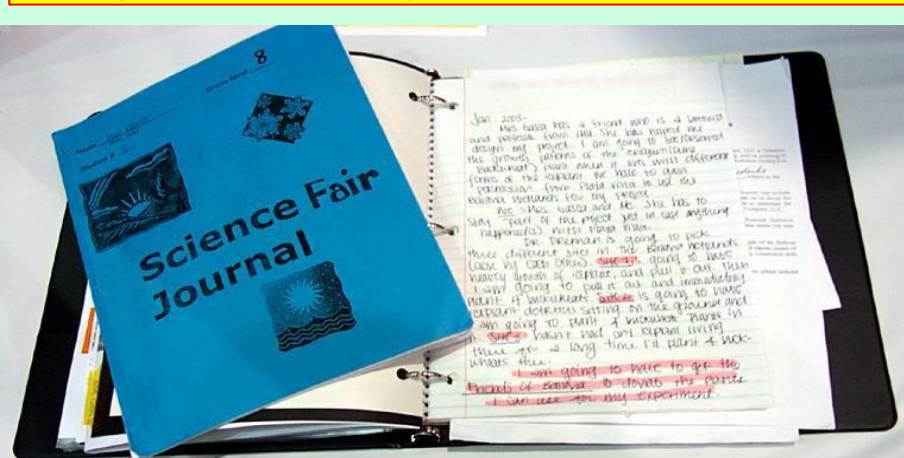
Link to Log Book description/details

Include a Formal Report

- ALL reports should be typed
- Follow format and sequence (see **"Writing Reports" PDF**)
- **PDF** of the report will be **uploaded** for judging

Debunking EMF Hazards: The effect of electromagnetic fields on *drosophila melanogaster*.

By Sean Currey
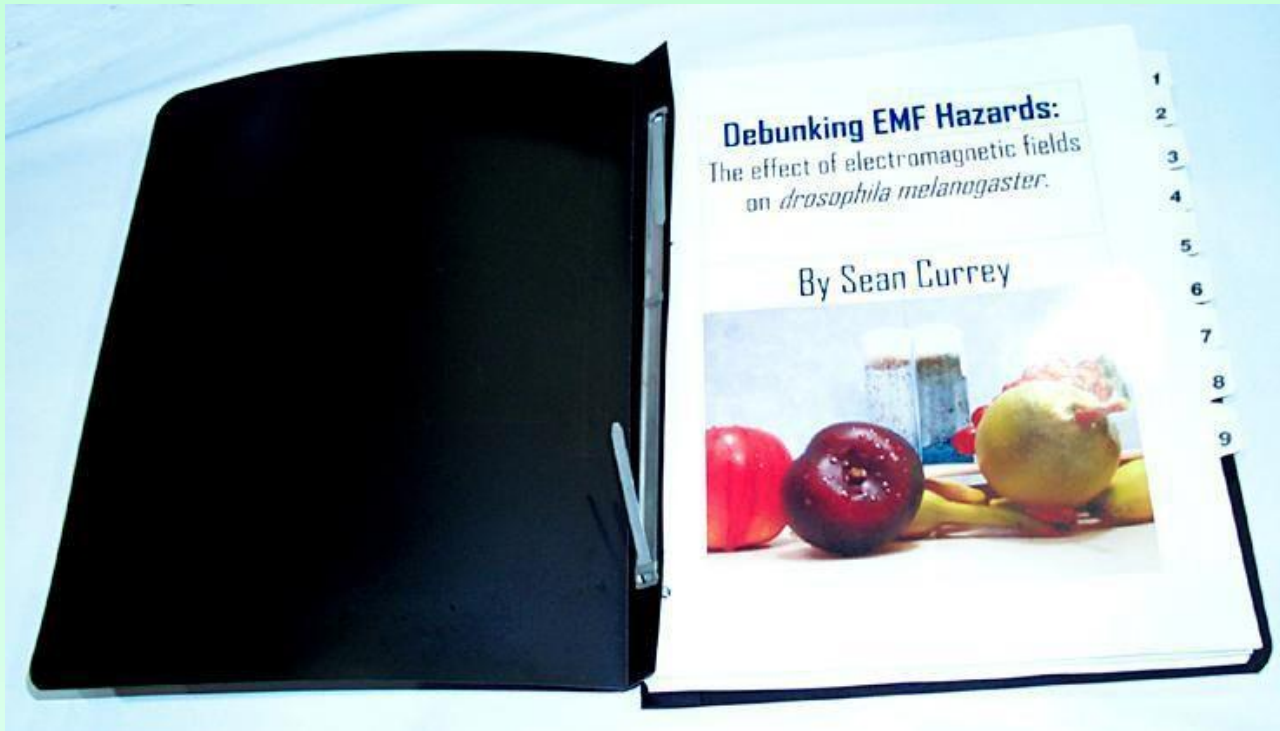
Display All Elements

- Log Books should follow proper format and sequence

Log Books may be hand-written or digital for 2022
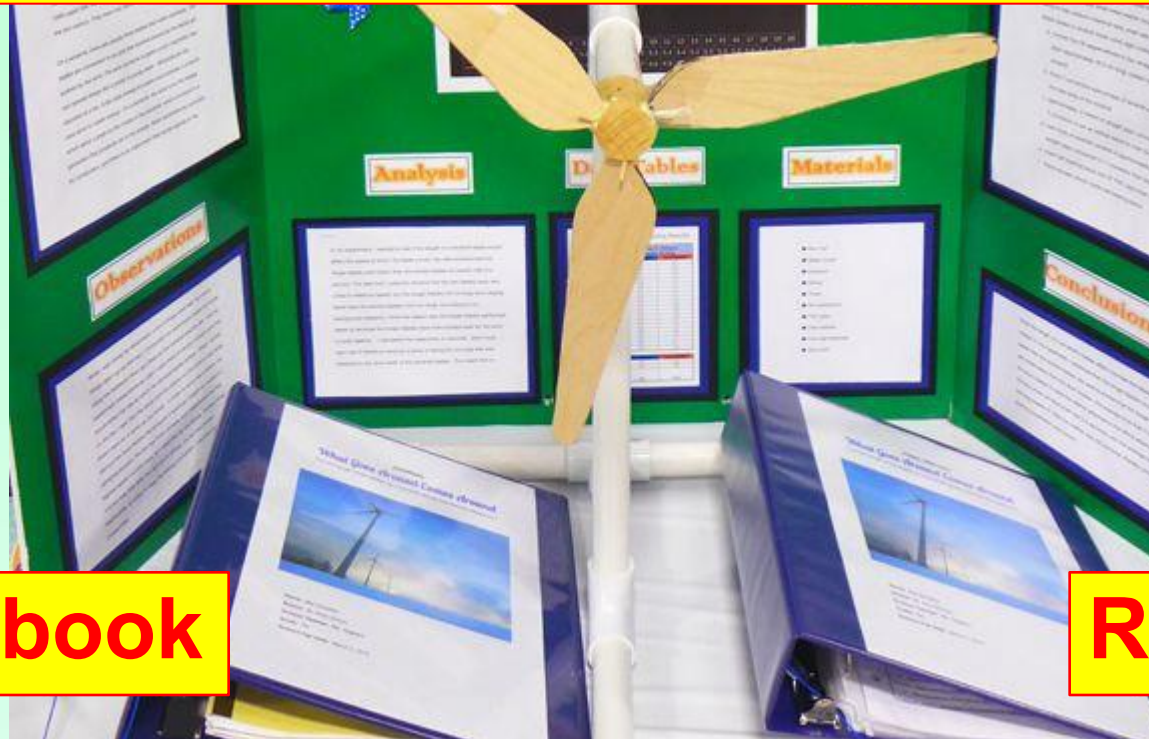
Log book

Report

Display Regulations

- **Display fits** within the prescribed space

- Uses a **title descriptive of your study**
  - Subtitles may be used for clarification

- **NO** **live animals or plants** on display

- **NO** **tissues or microorganisms** on display *(use pictures or a model instead…)*

- **NO** photos which show procedures **hurtful to animals**.

Too Tall To Read

Too Small

Floor Displays

- Must be safe and keep to height requirements **(9 ft)**
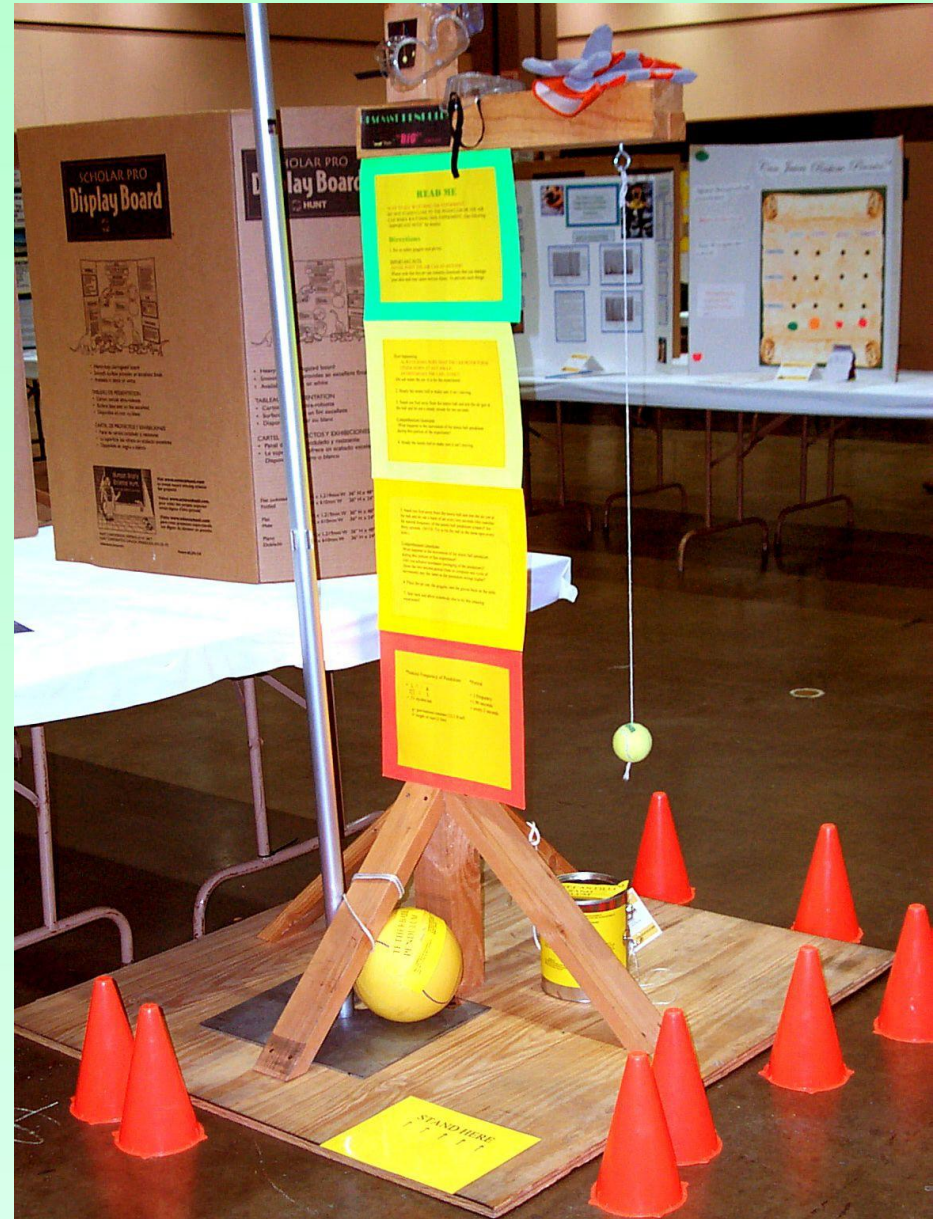
Display Size

- Stay within fair space requirements
  - Board size
  - Table size

You cannot spill over onto another student's project area, even if they are "no shows."
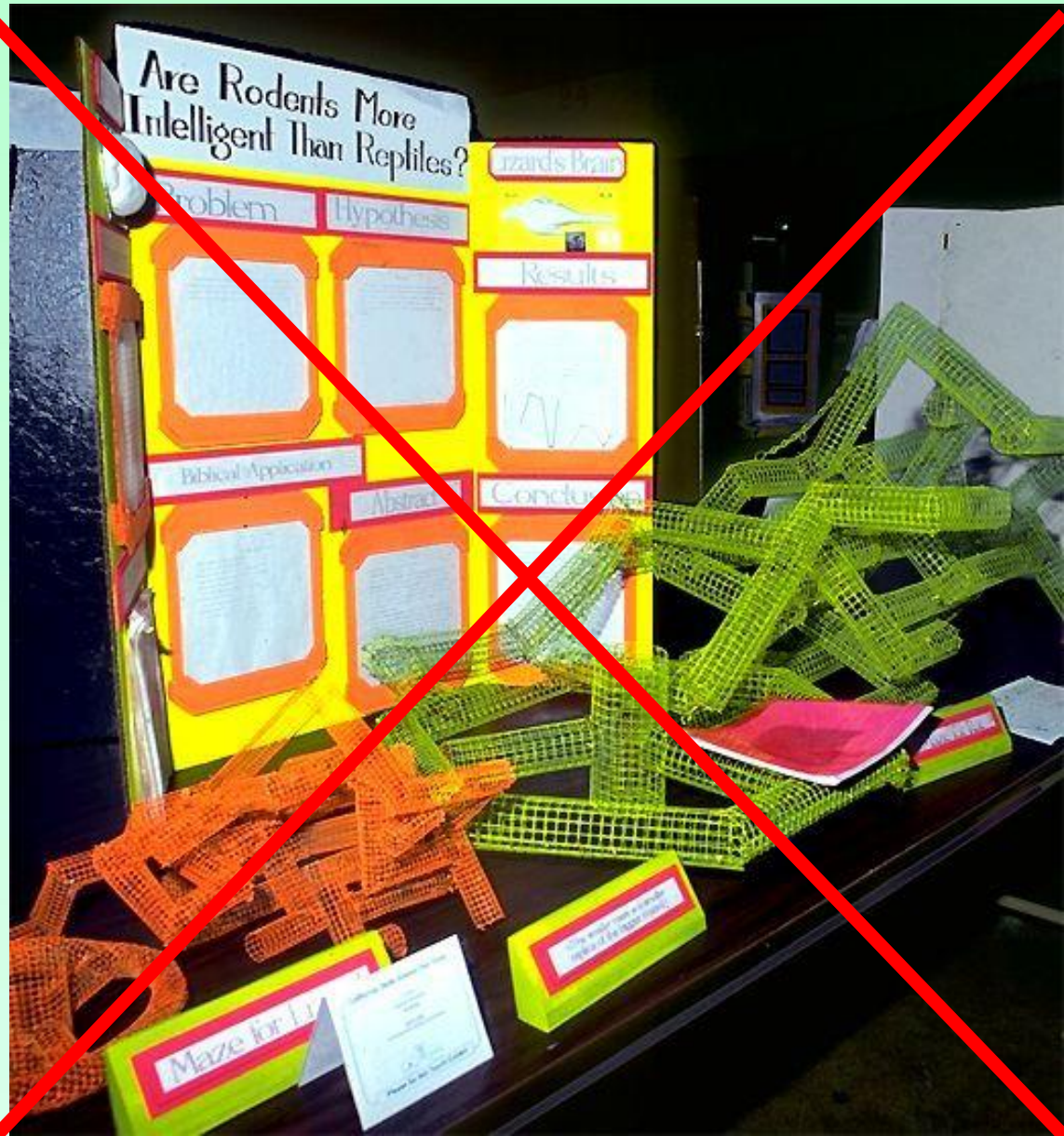
Construction

- Display should **stand alone**
- Pieces should ***NEVER*** fall off!
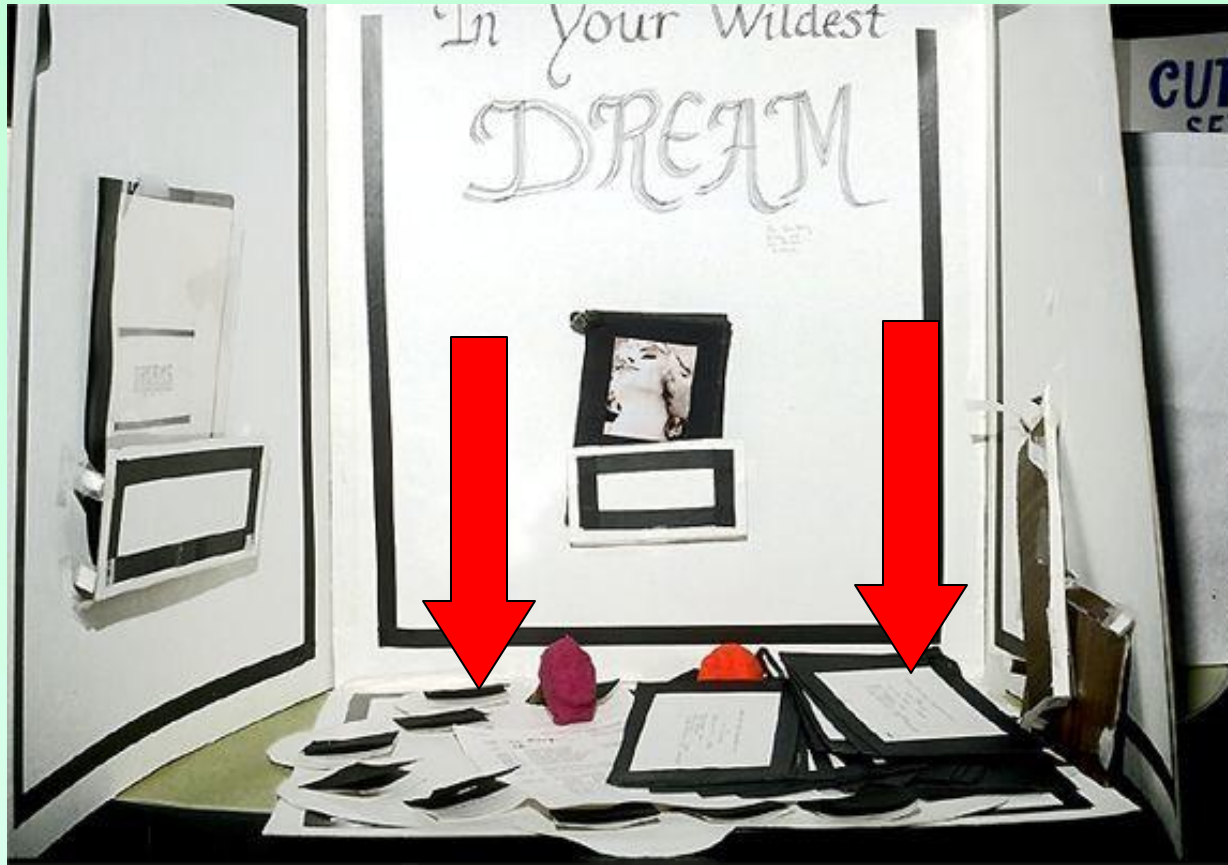
Common Materials

- Foam Core Board

- Colored Cardboard

- Plywood or particle board
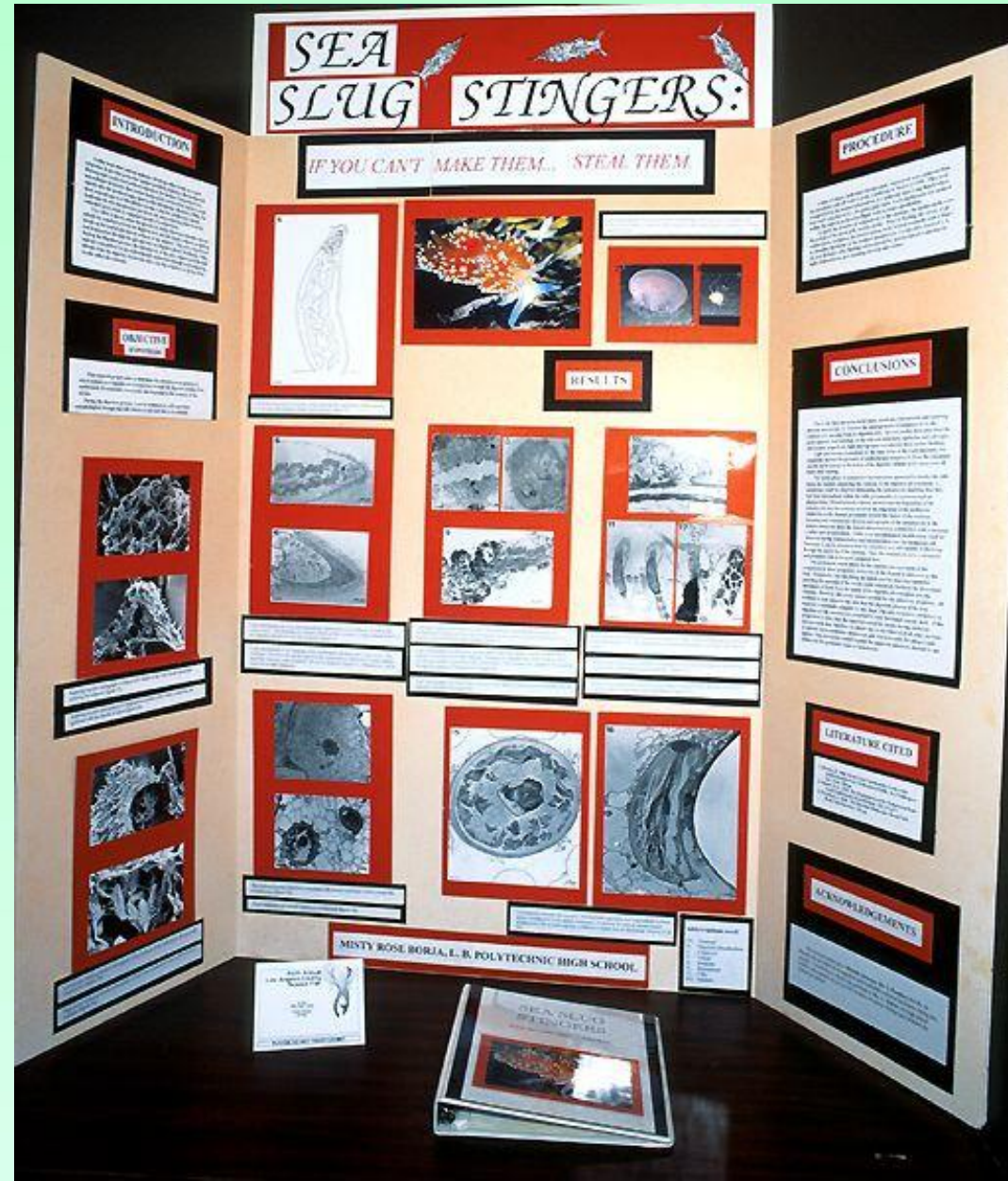
Uncommon Materials

- PVC Piping

- Lattice Fencing

- Peg-board

- Plastic

Titling Size & Content

- **Main Title:** 3+ *in*
- **Subtitles:** 2+ *in*
- **Text:**
  - 14+ font
  - Bold
  - Concise
  - *Understandable*

JR exhibit example

QUESTION

How will atmospheres with carbon dioxide concentrations of 700ppm and 1400ppm affect *Mentha piperita*?

HYPOTHESIS

I think that due to the higher amount of carbon dioxide in the atmosphere, the plants will perform photosynthesis at a faster rate thus increasing their growth rates. This, in turn, will make them larger and more plentiful.

Formatting

- Make sure all sections are neatly & **clearly displayed**

- Be **concise**

JR exhibit example
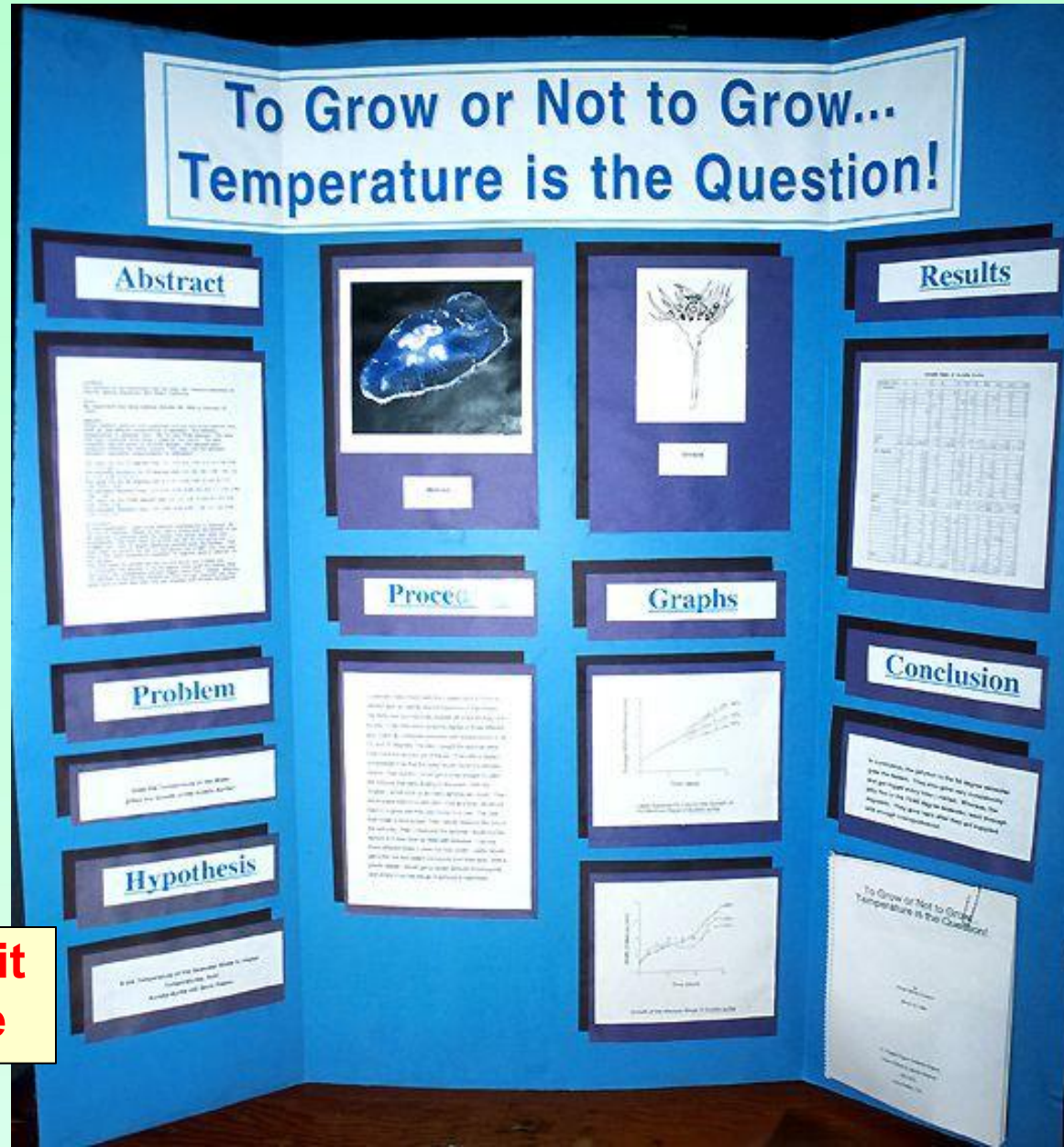
Be Selective

- *Don't put EVERYTHING* from your report on to the display
- The report is there to read…

Don't overkill
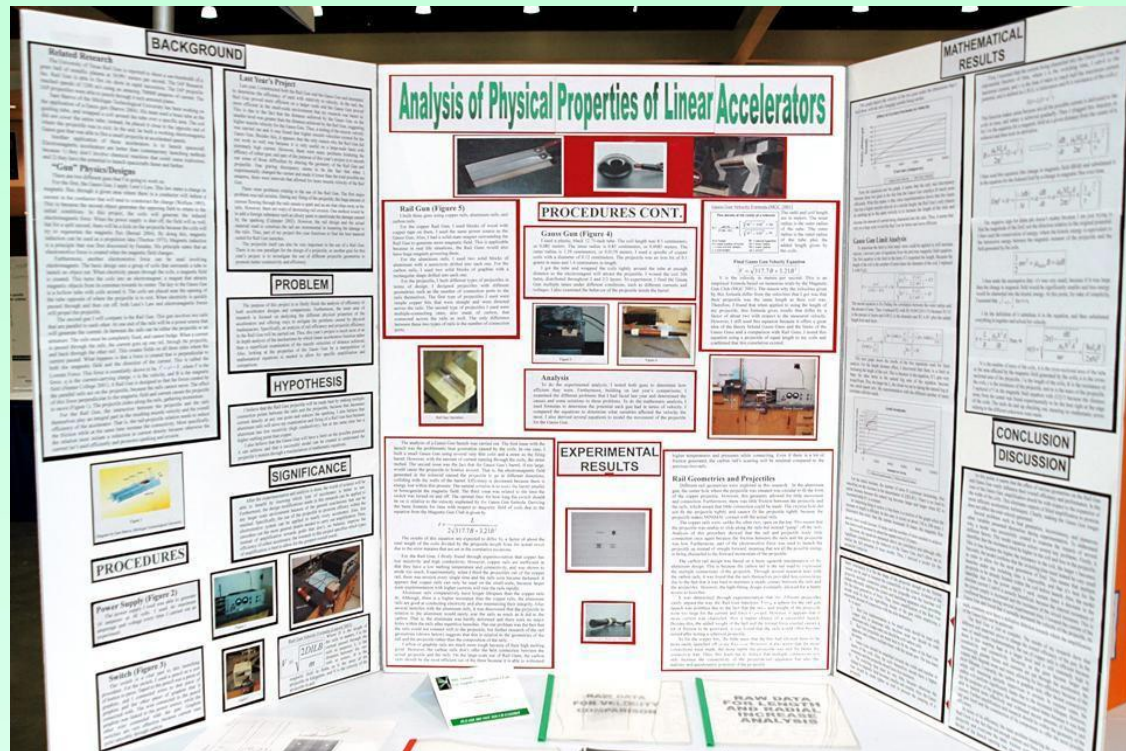
Titling and Text

- **TYPED & PROOFREAD!!**
  - *Spelling counts…*
  - *Neatness counts*
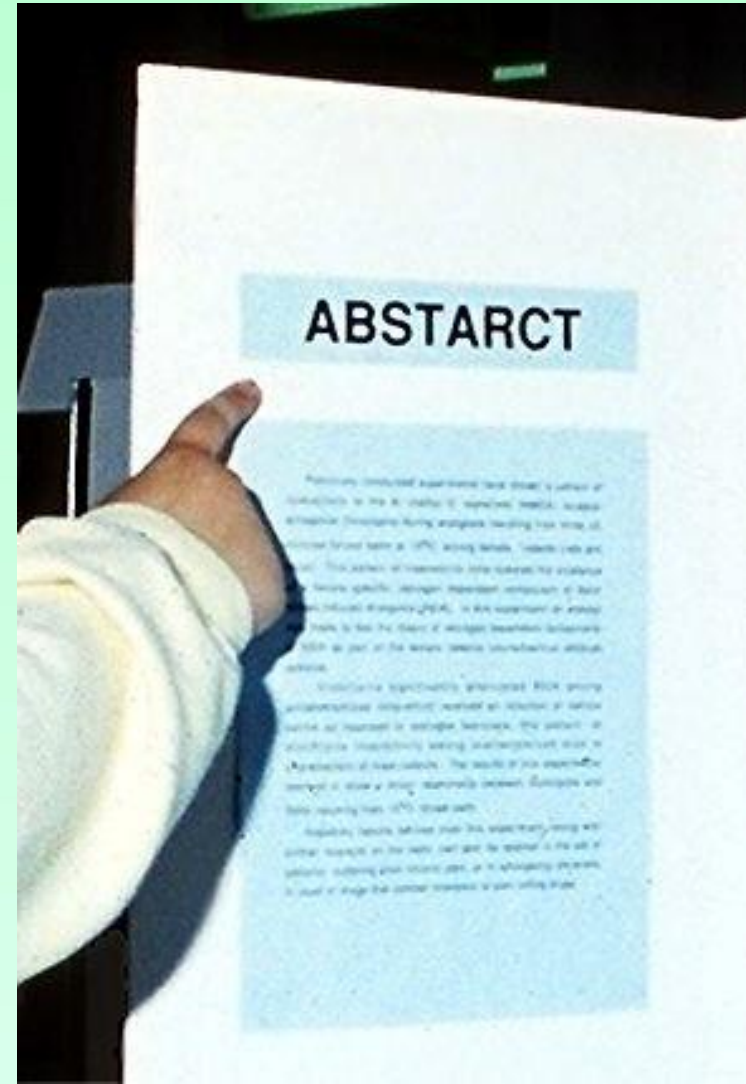
Explanatory Title

- Make sure your title is not confusing

- If necessary, use a **sub-title** for a clear explanation
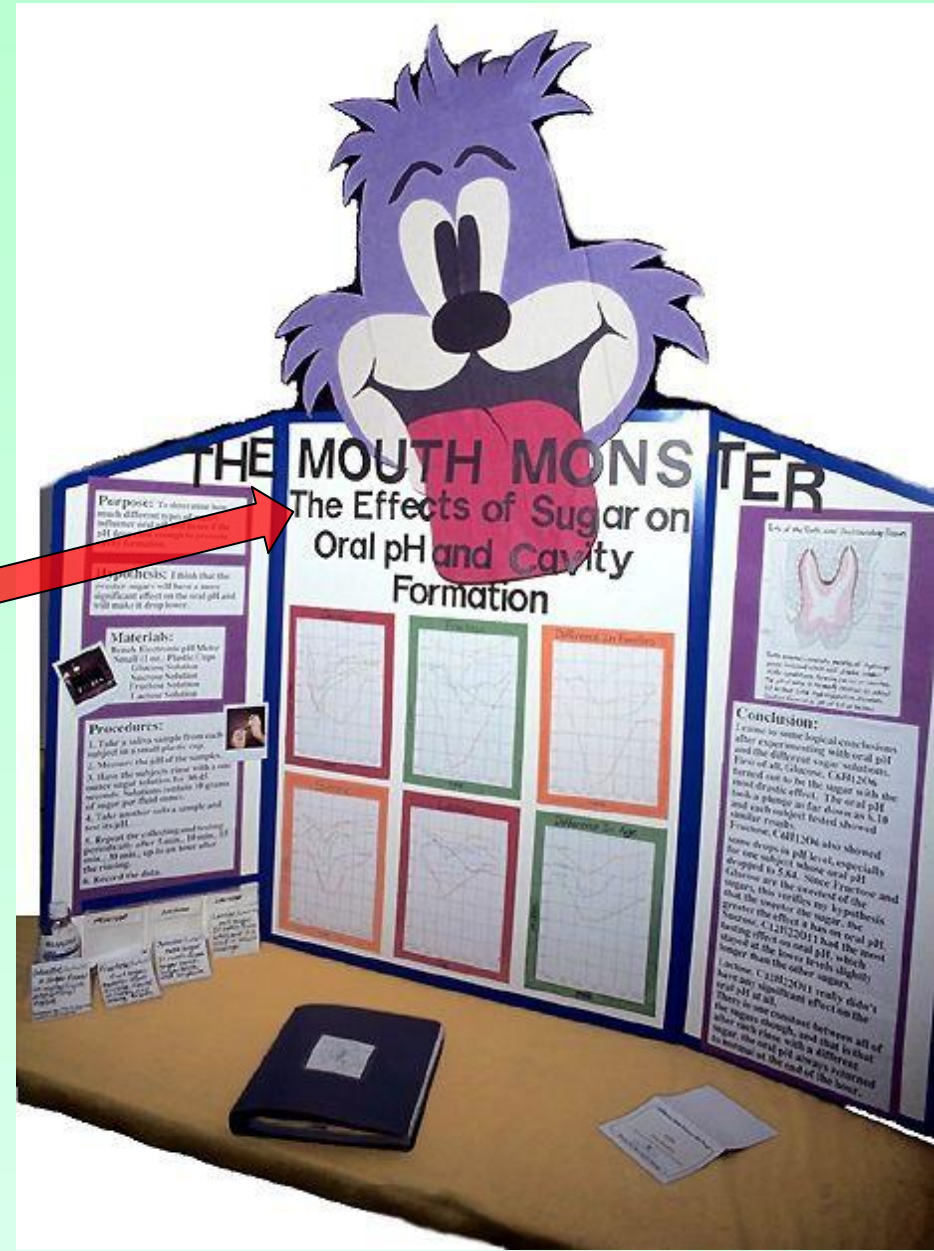
Titling Enhancement

- Use novel ways to make titles "pop"

Extra Foam Core Board & Computer Graphics
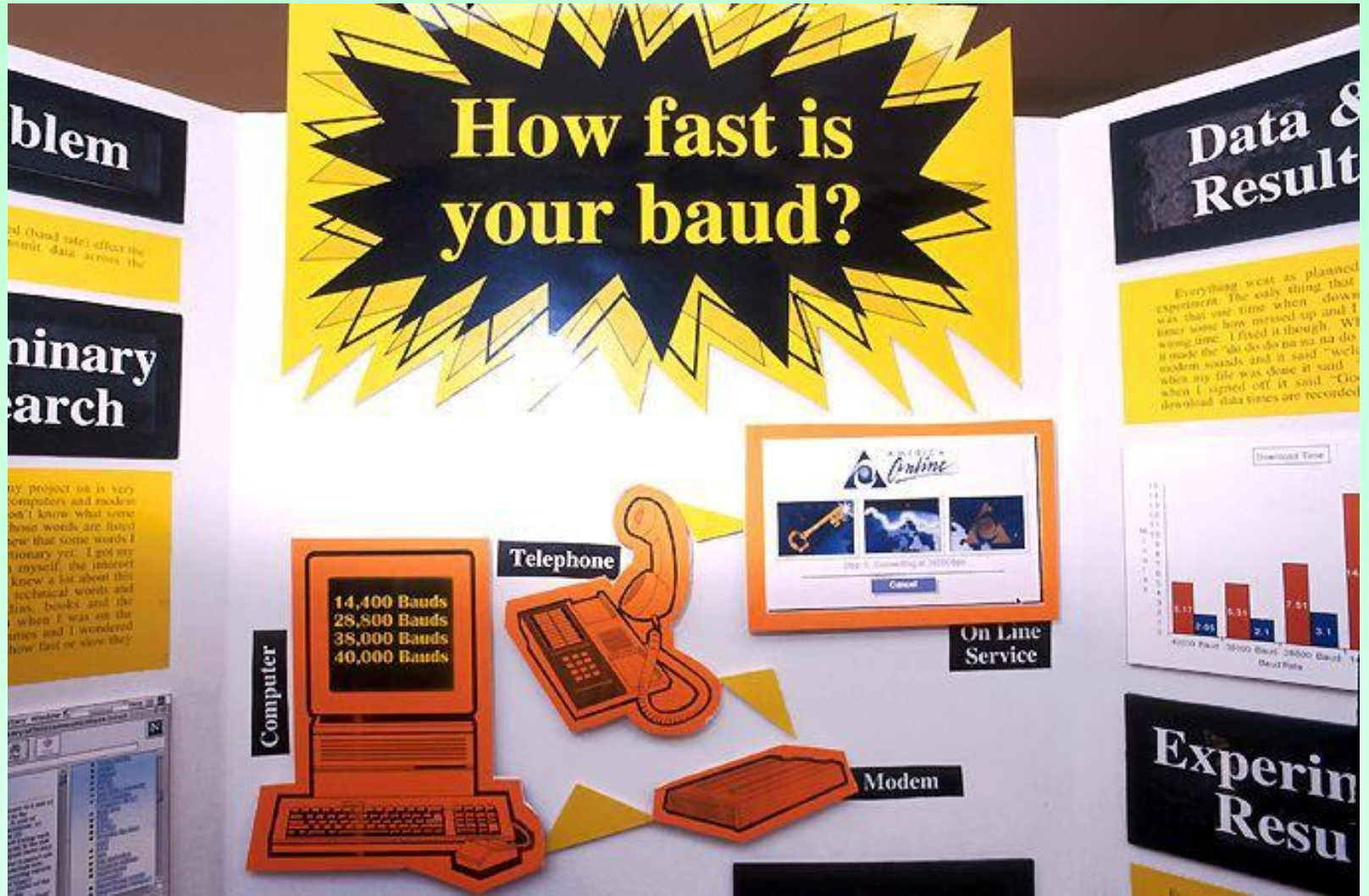
Graphs and Figures

- **Keep Graphs**
  - Large
  - Interesting
  - Properly labeled
  - Readable

- **Keep data increments** comparable

Use Drawings to Explain Difficult Concepts

How viruses attack
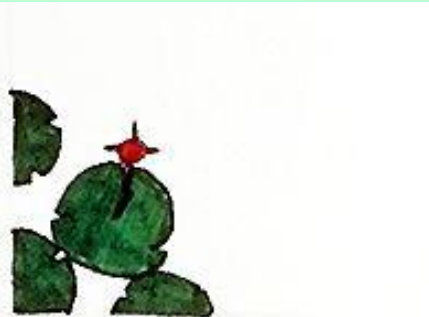
Virus enters through receptor

Cell begins manufacturing new viruses

How the body fights back
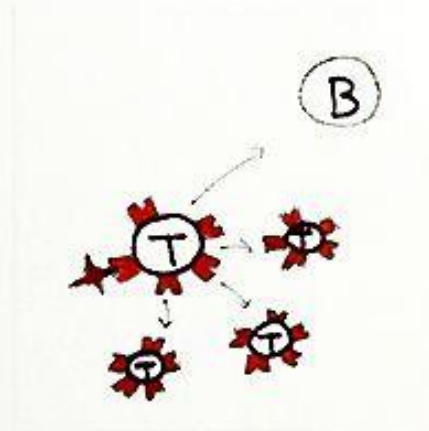
T cells are produced
B cells are activated

B cells produce antibodies

Pick a Unifying Theme

- Fonts, background and/or graphics that go with the **theme** of your project
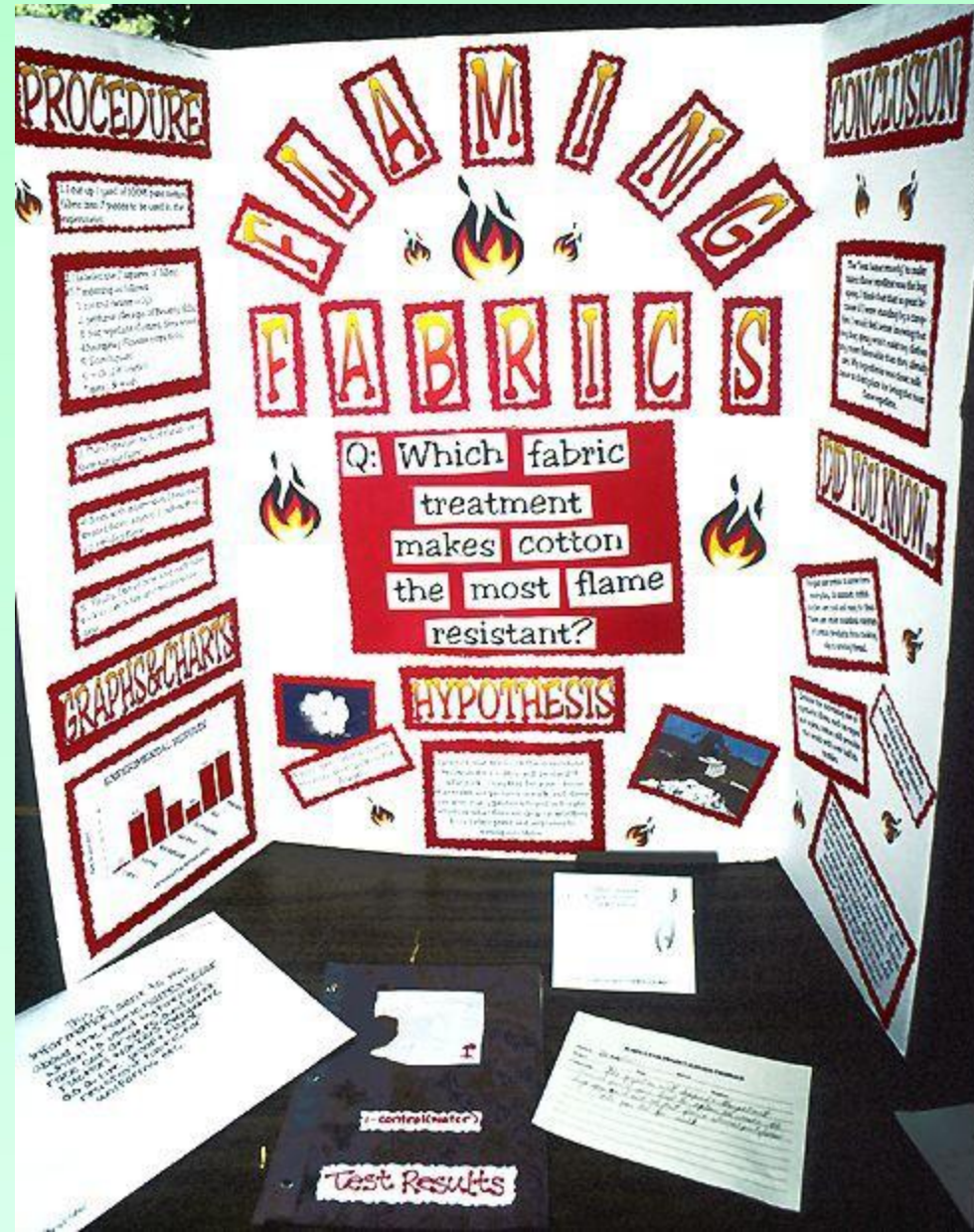
Picking a Font

- Don't use *extra* fancy fonts

- You want judges to be able to read & focus on your *information*

Project Title

PROJECT TITLE

Project Title

Project Title

Project Title

Color

- Color use **tied to the project**

- Recommended:
  - No more than **3 colors**
    - *Dominant*
    - *Accent*
    - *Background*
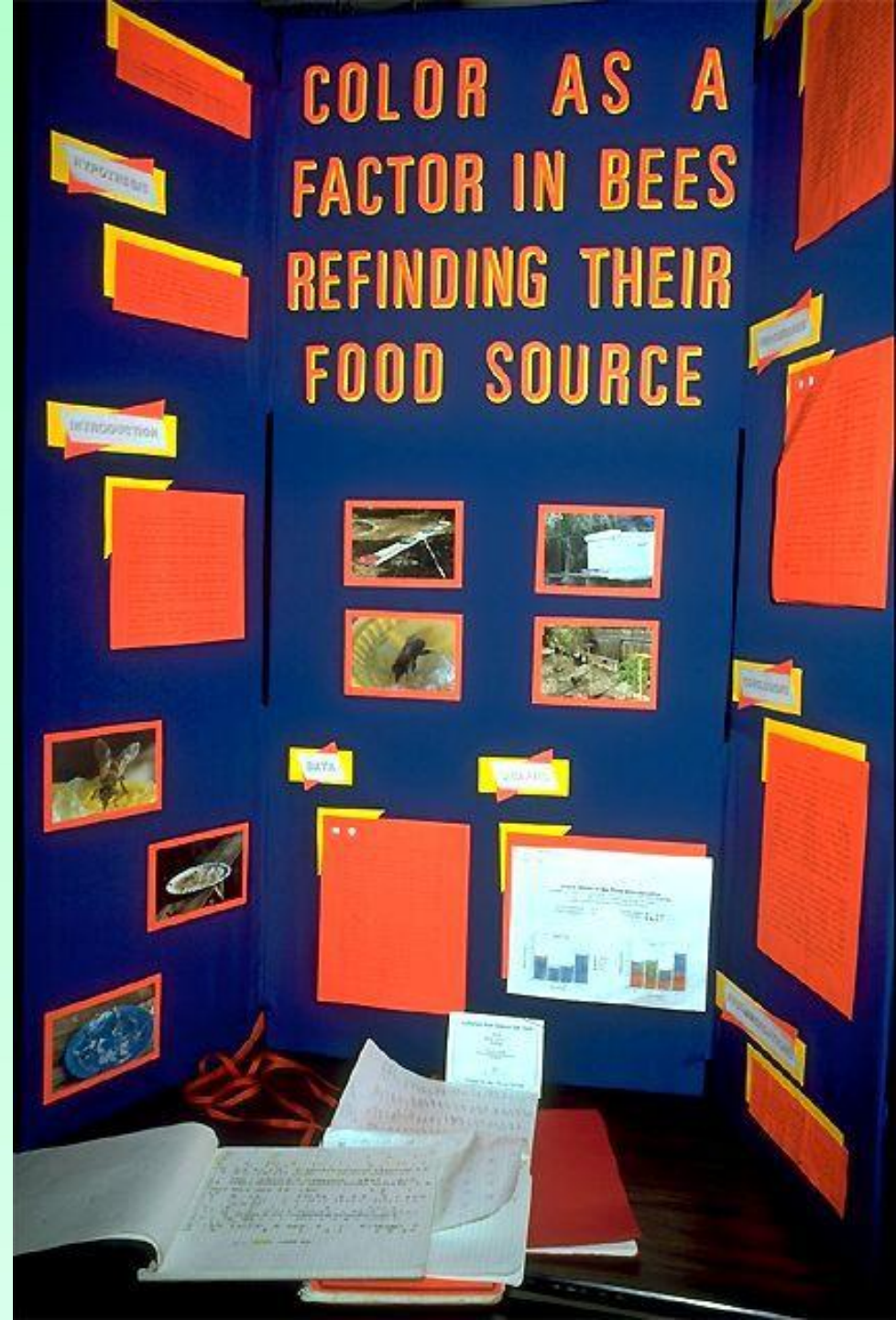
Too *MUCH* Color!

- Your eye doesn't know where to land

- No focal point

- Disturbing

Graphics

- **Liven up** a presentation
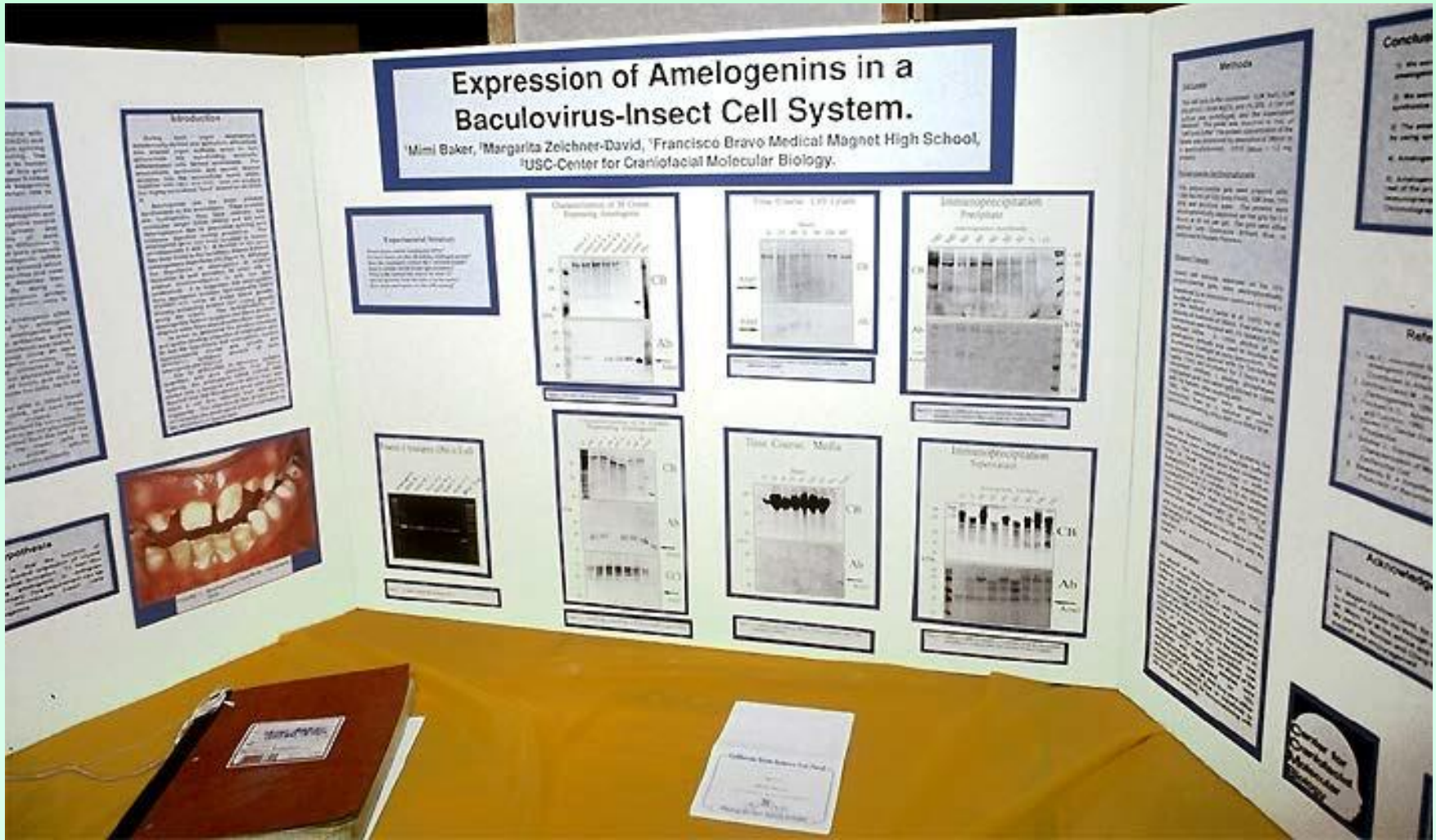
Background Graphics

- Make the display board represent a **study site**
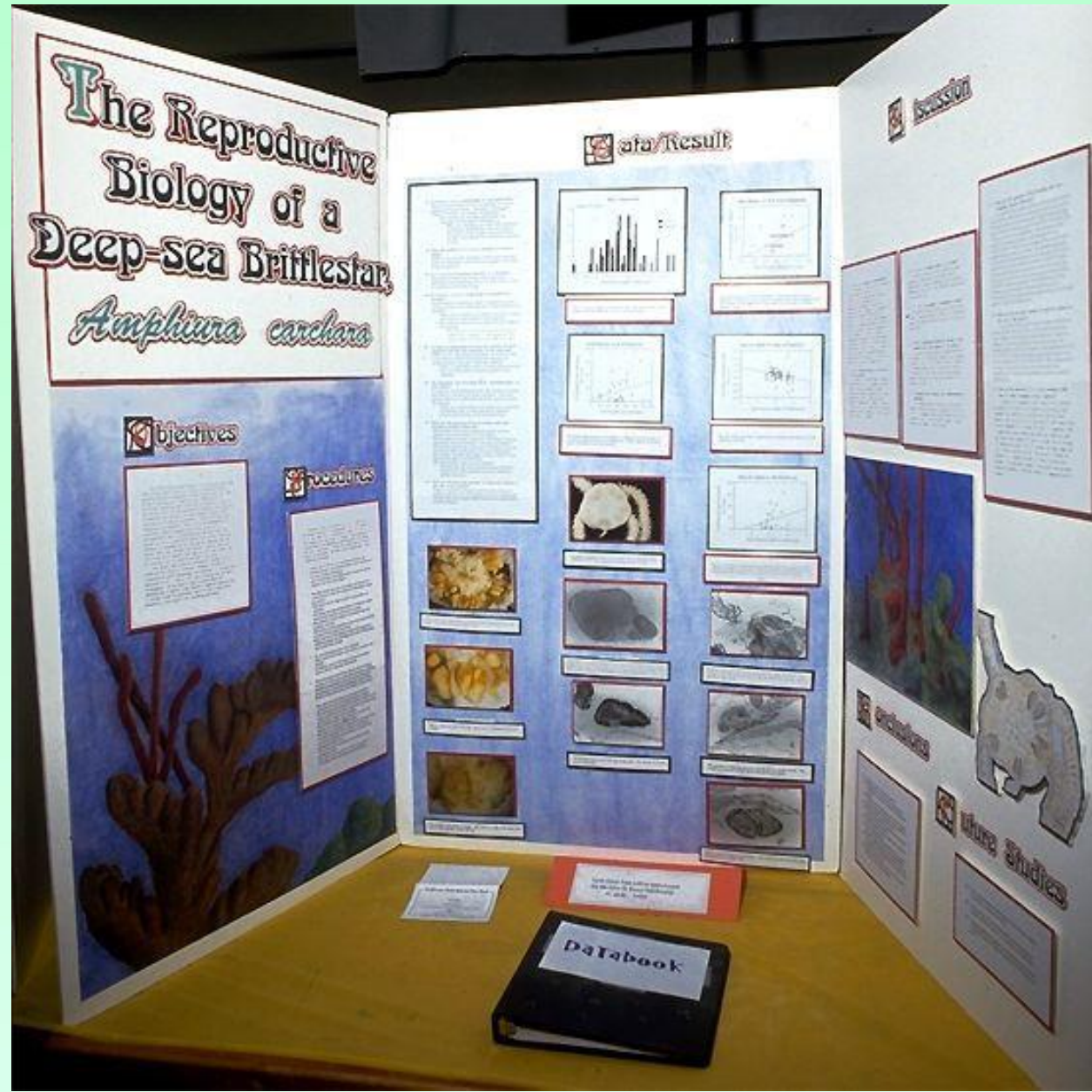
Photos

- Can **visually** demonstrate procedures

Photos

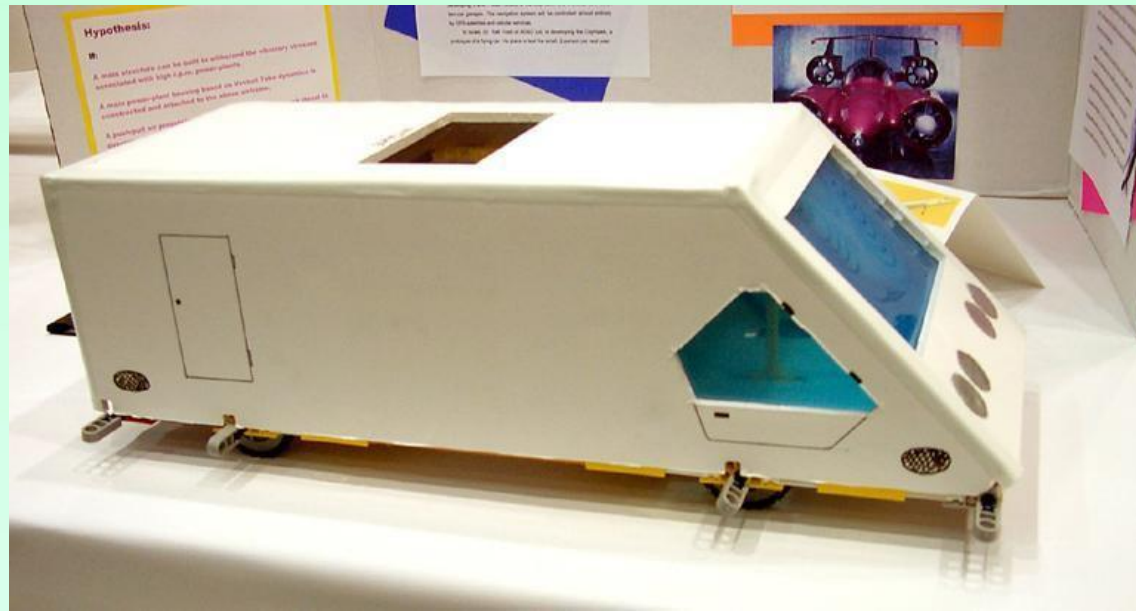- <u>Must</u> protect the identity of participants!
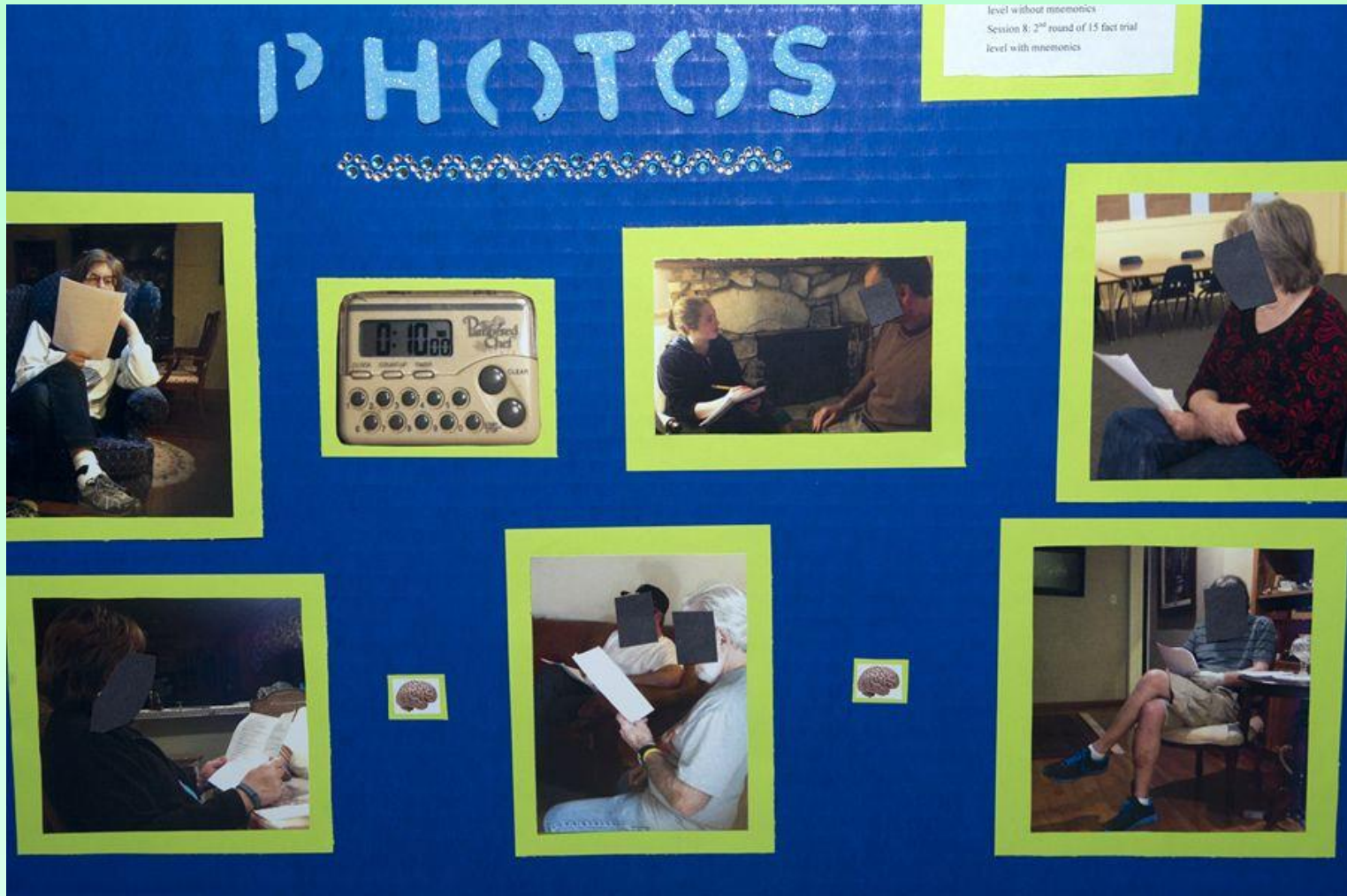
3-D Displays

- 3-D Displays are **encouraged!**

- If you can, display the **actual equipment** you used to test your hypothesis or invention.

3-D Displays

- Should be **student-designed**
- **Directly tied** to the project
- **Follow rules** on what may be displayed

Scientific Naming

- When living organisms are the subject of the study, their SCIENTIFIC NAME should be displayed on the board at least once (within text); *italicized* or <u>underlined</u>
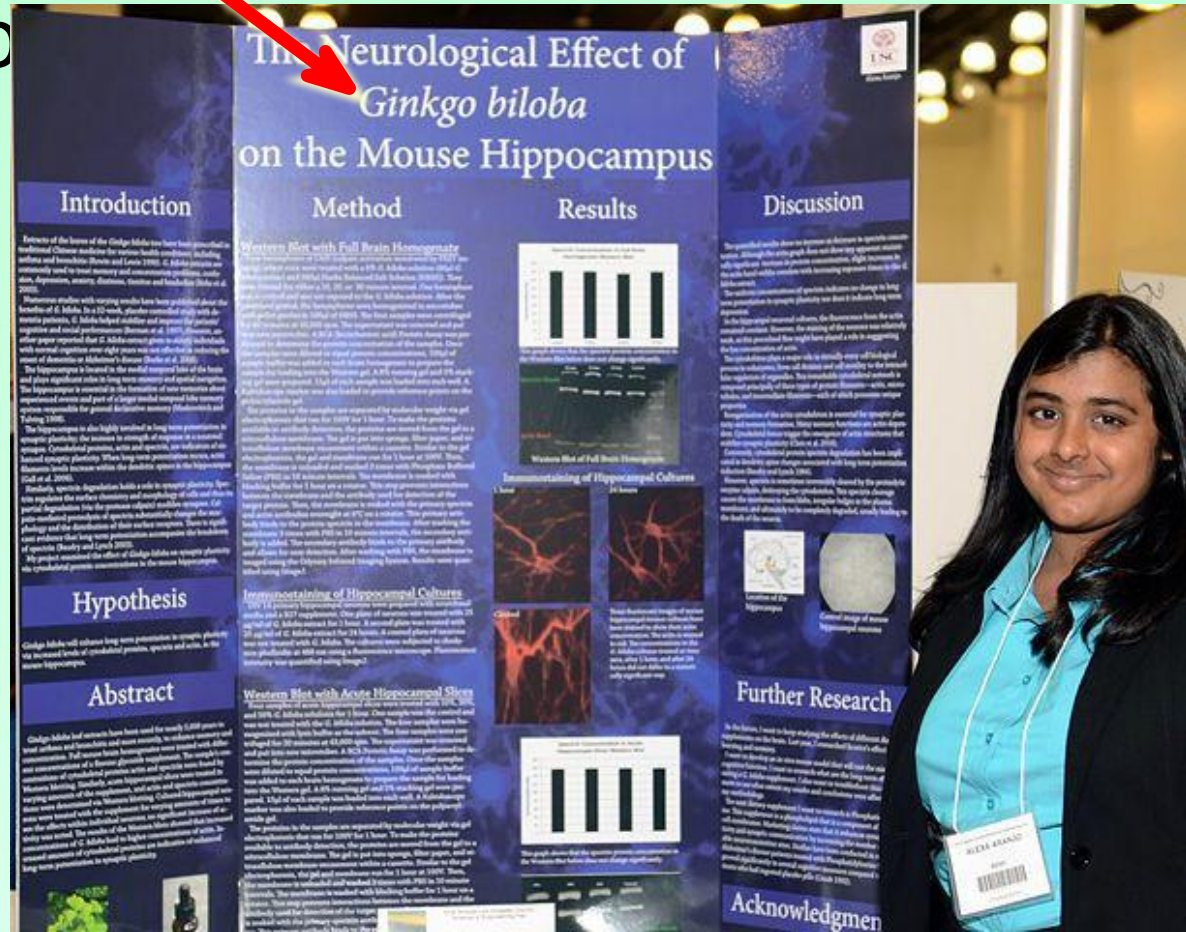
<u>NO</u> Live Organisms

- **NO living organisms** (including plants) can be displayed: *use a substitute*

DON'TS

- Don't include **living or dead bacteria, viruses or fungi** in your display
  - *Use photos or models instead*

Display "DON'TS"

- **<u>NO</u> LASERS**…period

- **<u>NO</u> un-insulated electrical devices** *above 12 Volts*

- **<u>NO</u> LIQUIDS** (as part of the display)

- **<u>NO</u> FOOD** (as part of the display)

<u>NO</u> Hazardous Materials

- **No toxic** materials

- **No drugs** (of any kind)

- **No radioactive or hazardous** materials

- **No caustic** materials (acids, bases)

DON'TS

- **Don't** include **highly expensive pieces** *unless you are willing to remove them immediately after the interview*

Display Regulations

- **Equipment** that is small or expensive *should be brought to an interview and removed promptly*

- Give attention to **safety**

Remember...

- No matter <u>how</u> fancy & eye-catching the display…

★ *It can't take the place of solid, well-documented and analyzed research*

Designed & Photographed by

Anne F. Maben

Science Consultant, UCLA Science Project

for the

LA County Science & Engineering Fair