



FIGURE FOR  
PUBLICATIONS

# AGENDA

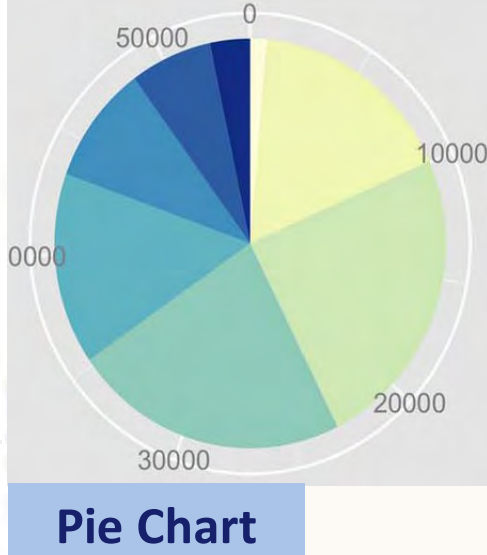
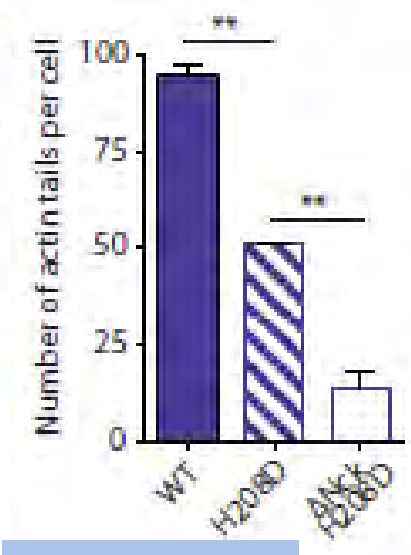
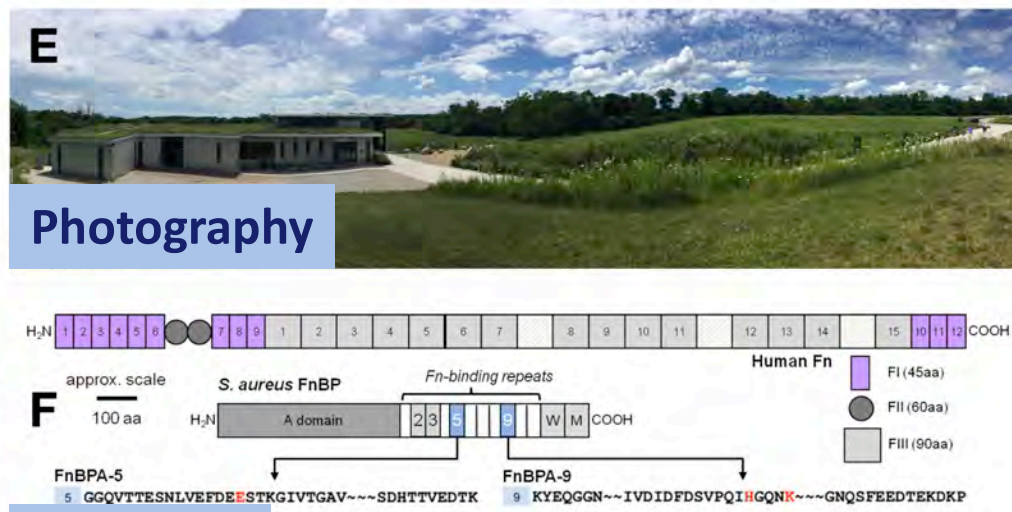
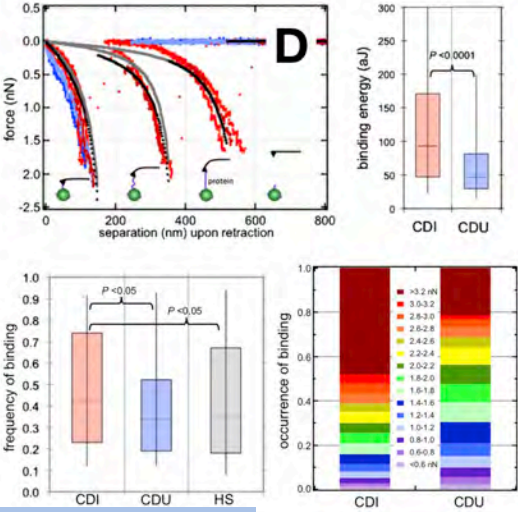
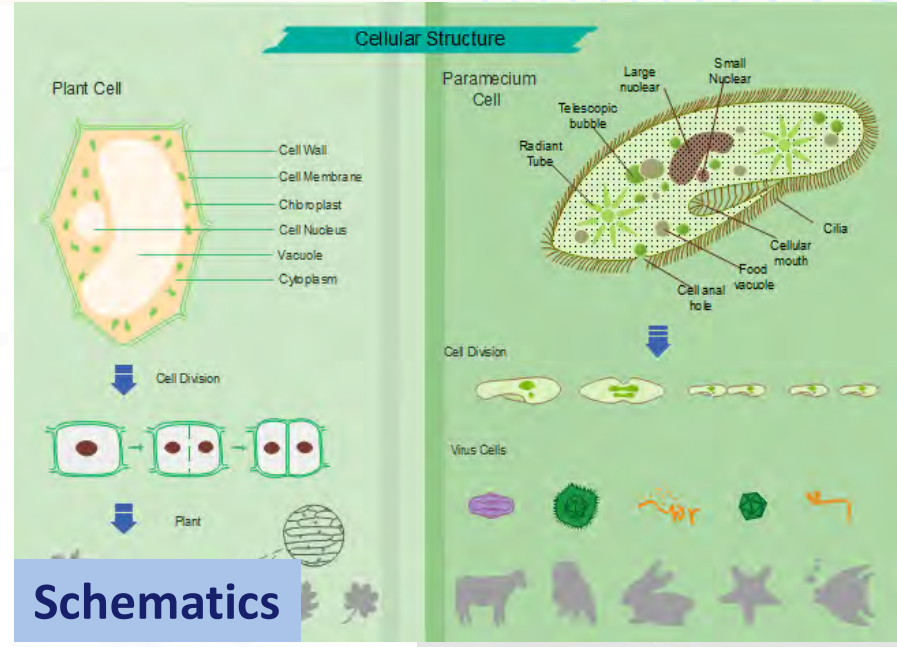
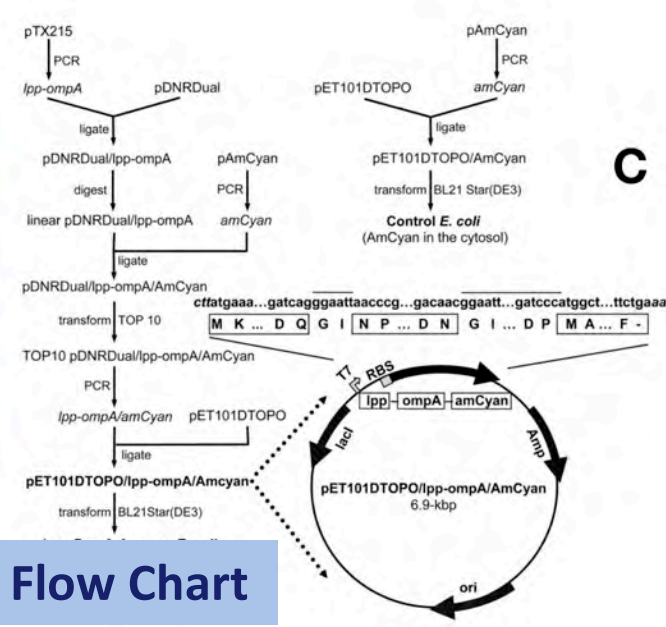
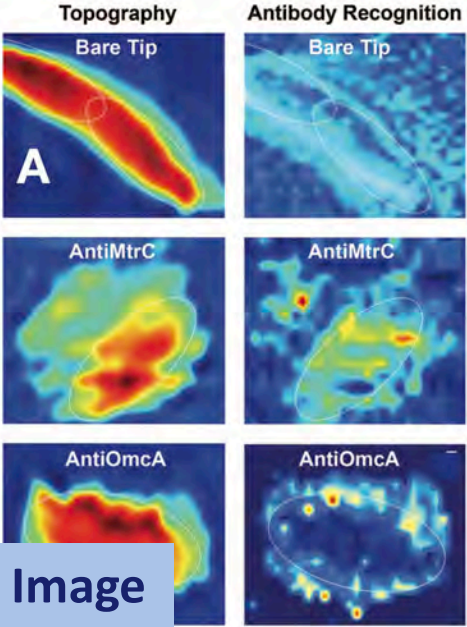
- **Imaging essentials**
- **Guide of using science images for publication**
- **Guidelines for designing scientific illustrations and figures**
- **General figure submission guidelines for publication**
- **Poster making tips**
- **Recommended links for publication**



# IMAGING ESSENTIALS

**Basic imaging concepts**

# TYPES OF SCIENTIFIC FIGURES



# WHAT IS RASTER IMAGE ?

- Built with fixed pixels, When a raster image is resized to fit a larger or smaller space, it can become distorted or blurry.
- Editing raster graphics can be difficult because it involves editing individual pixels using software like Adobe Photoshop.
- Commonly used in photographs and images
- The image resolution is measured in PPI (Pixels per inch).
- The file formats that are typically raster include:



Joint Photographic Expert Group



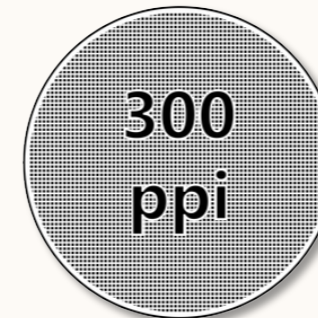
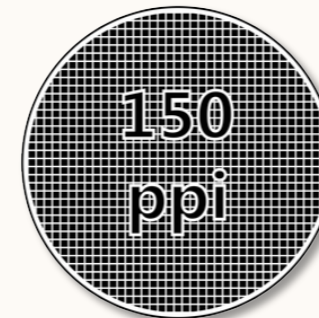
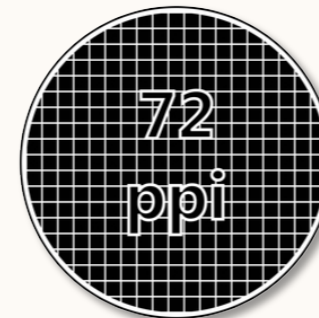
Portable Network Graphics



Tagged Image File Format



Photoshop Document

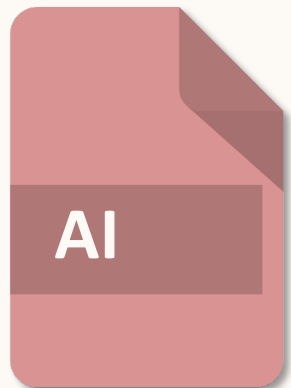


Pixels: Individual squares on a grid makes up an image and each square are made up of a color.

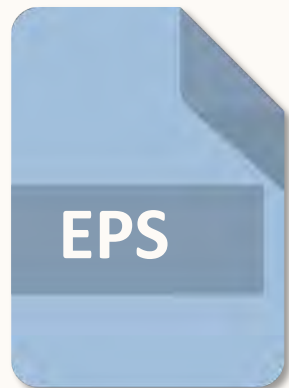


# WHAT IS VECTOR IMAGE ?

- Made up of mathematically described points, lines, and areas, which means they can be scaled up or down infinitely without losing quality.
- Easier to edit because the elements of an image are recognized as individual, overlapping shapes.
- Can be converted into raster images, but rasterized an image can be a bit tricky (E.G. You can convert raster images to vector artwork in Adobe Ai by using image trace)
- Graphs ,diagrams, schematics, text, charts, tables are usually created in a vector format, keeping edges looking crisp & sharp.
- The file formats that are typically vector include:



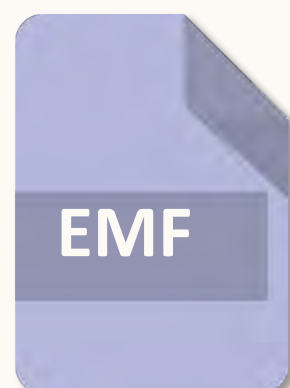
Adobe Illustrator



Encapsulated PostScript

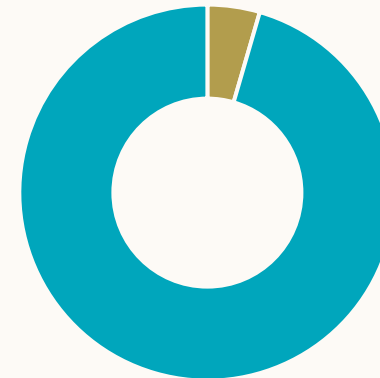


Scalable Vector Graphics



Enhanced Metafile

2022 Statistics on Flexible Admission Arrangement



- Flexible Admissions Arrangement (~4-5%)
- Satisfied 332233

For example:

- Diagrams (vector file) can be copied and pasted from excel to PowerPoint directly

**Raster image  
(Jpg)**



**Vector image  
(in Adobe Ai)**



## THE DIFFERENCES BETWEEN RASTER AND VECTOR FILES

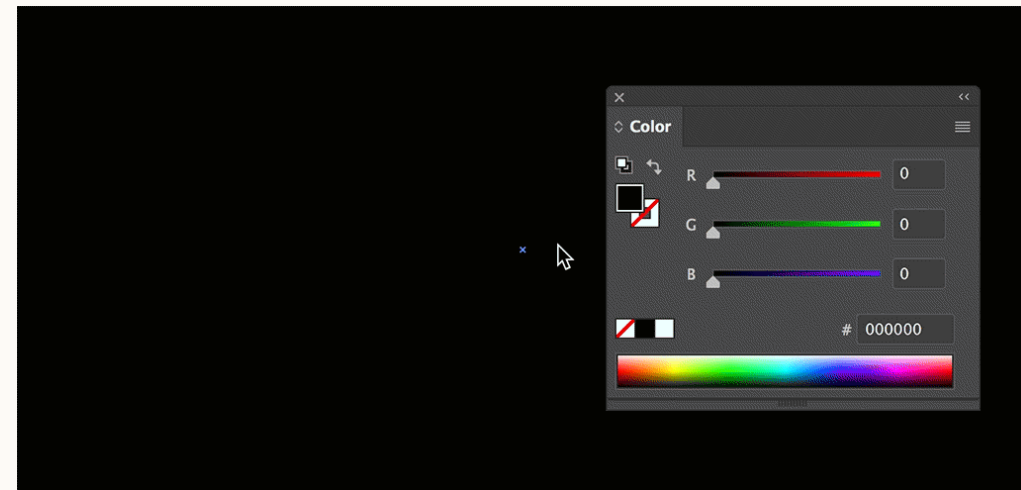
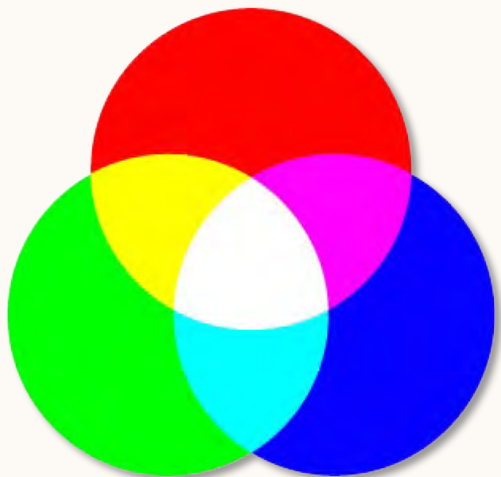
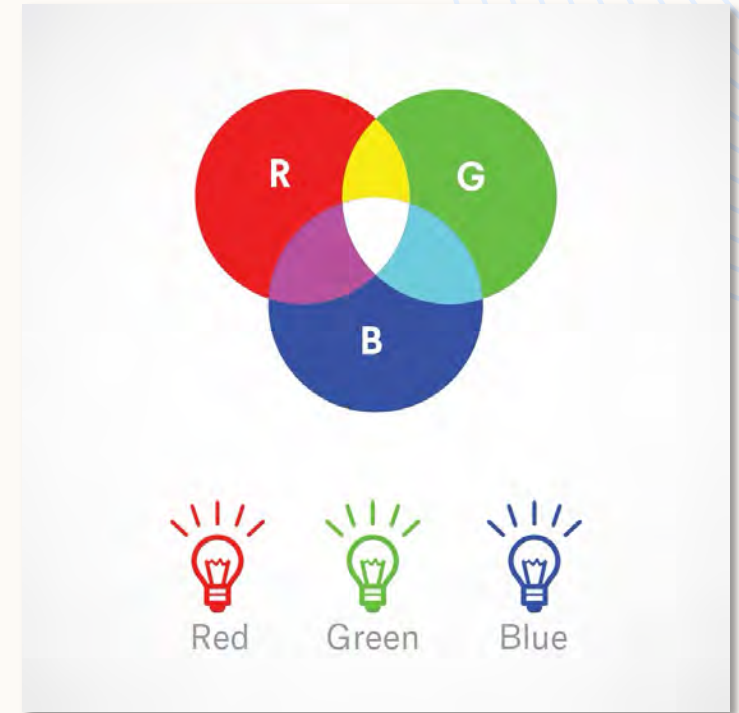
	Raster		Vector	
Characteristics	<ul style="list-style-type: none"> <li>Pixel based images (aka bitmap images)</li> <li>Images that composed of grid of pixels</li> </ul>		<ul style="list-style-type: none"> <li>No pixels/ no resolutions</li> <li>Mathematical formulas</li> </ul>	
Resolution	Identifies the number of pixels <ul style="list-style-type: none"> <li>Described using Pixels Per Inch (PPI)</li> <li>Lose image quality when resized</li> </ul>		Made up of mathematical formulas <ul style="list-style-type: none"> <li>Resize, rescale, and reshape vectors infinitely without losing any image quality</li> </ul>	
Uses	<ul style="list-style-type: none"> <li>Common for images and web-based graphics</li> </ul>		<ul style="list-style-type: none"> <li>Common for logos, graphic design, illustration, typography and print</li> </ul>	
File sizes	Generally larger than vector files <ul style="list-style-type: none"> <li>Contains millions of pixels and high levels of details</li> </ul>		More lightweight than raster files <ul style="list-style-type: none"> <li>Only the mathematical formulas that determine the design</li> </ul>	
Compatibility and conversion	<ul style="list-style-type: none"> <li>Common for images and web-based graphics</li> </ul>		<ul style="list-style-type: none"> <li>Requires specialized software to open &amp; edit</li> </ul>	
Usual file types	<ul style="list-style-type: none"> <li>JPG</li> <li>TIFF</li> <li>GIF</li> </ul>	<ul style="list-style-type: none"> <li>PNG</li> <li>PSD</li> <li>BMP</li> </ul>	<ul style="list-style-type: none"> <li>AI</li> <li>SVG</li> </ul>	<ul style="list-style-type: none"> <li>EPS</li> <li>EMF</li> </ul>



# WHAT IS COLOR MODE?

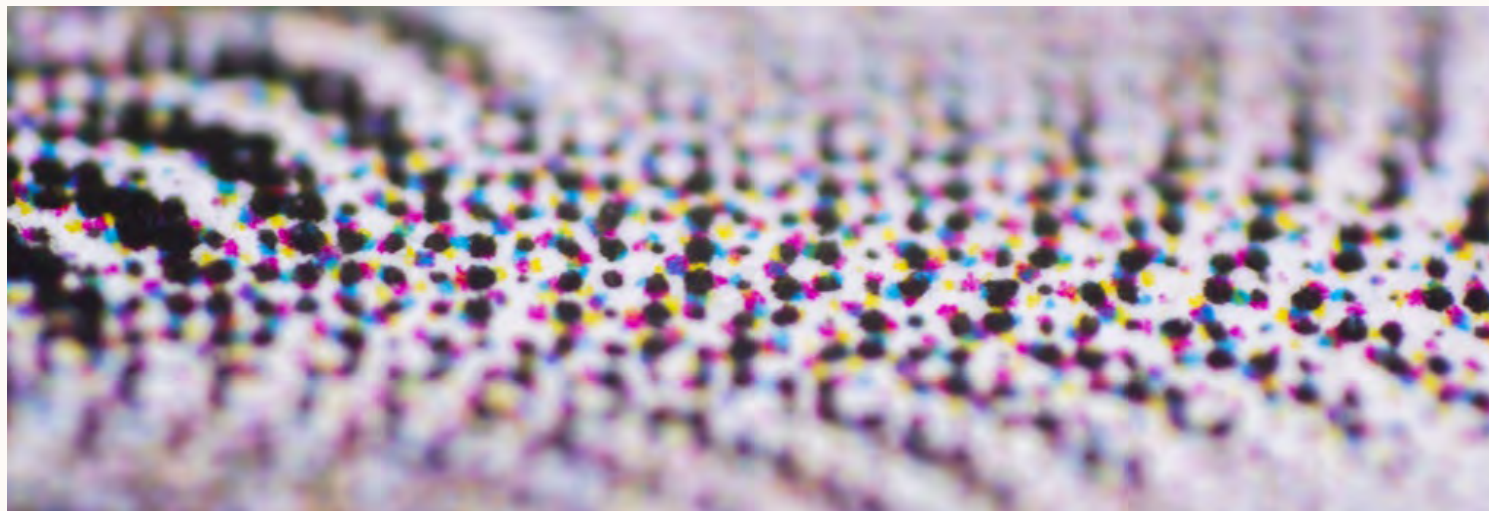
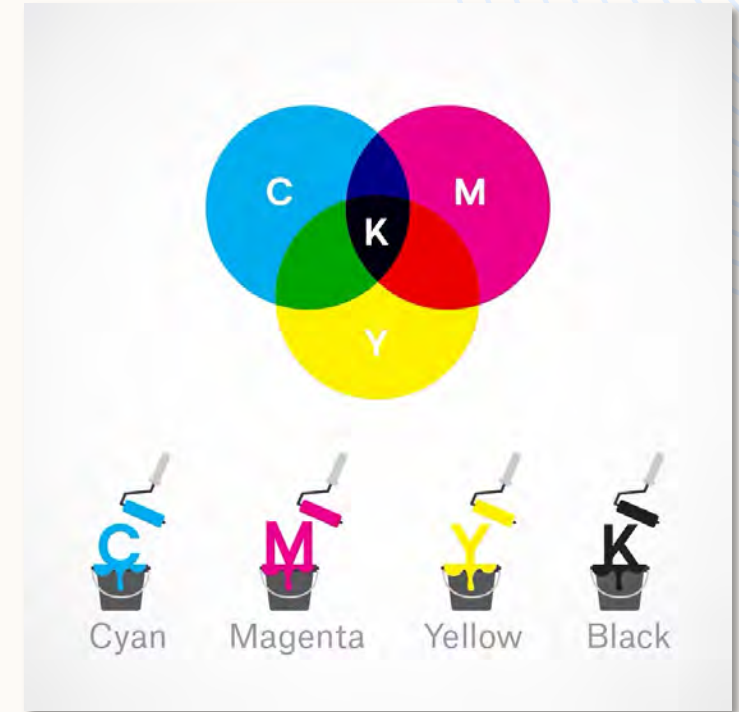
## ○ RGB

- RGB is known as an 'additive' color profile, because you add the primary colors of light together to create new colors
- Colors begin as black and then red, green and blue light is mixed at equal intensity; they create pure white.
- Exists exclusively in digital formats



## ○ CMYK

- Comprises cyan, magenta, yellow and key(black), which combine to produce a range of hue.
- Known as a 'subtractive' color profile, Subtractive color begins with white (paper) and ends with black; as color is added, the result is darker.
- Used in commercial printing to create full-color graphics and images.
- This four-color process works for any type of printer; you can see the four-color dots that layer to create different hues and gradations.
- **DPI** refers to the physical **Dots of ink Per Inch** on a printed or scanned image

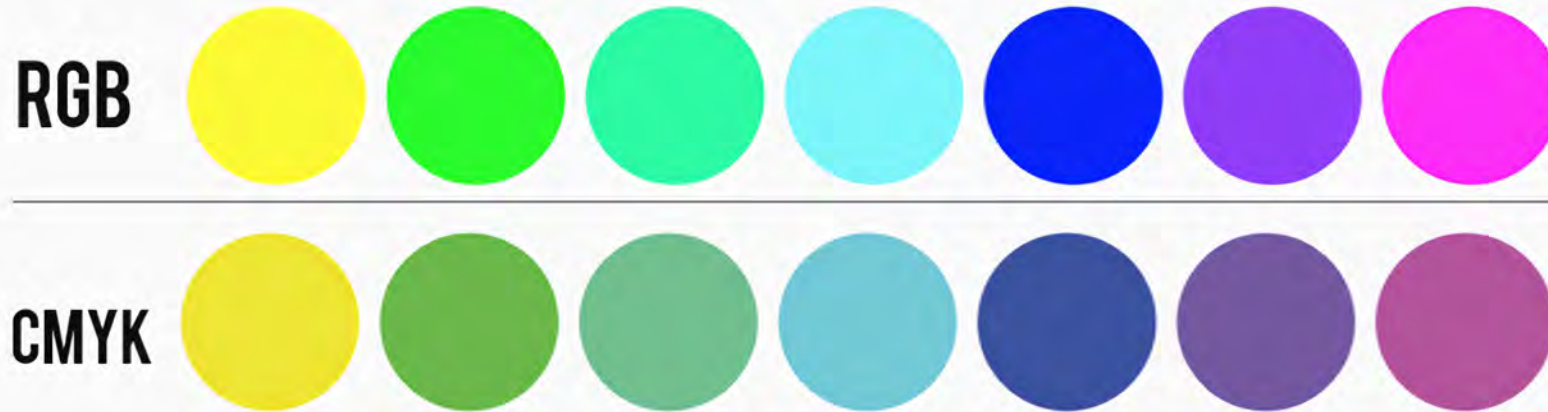


x



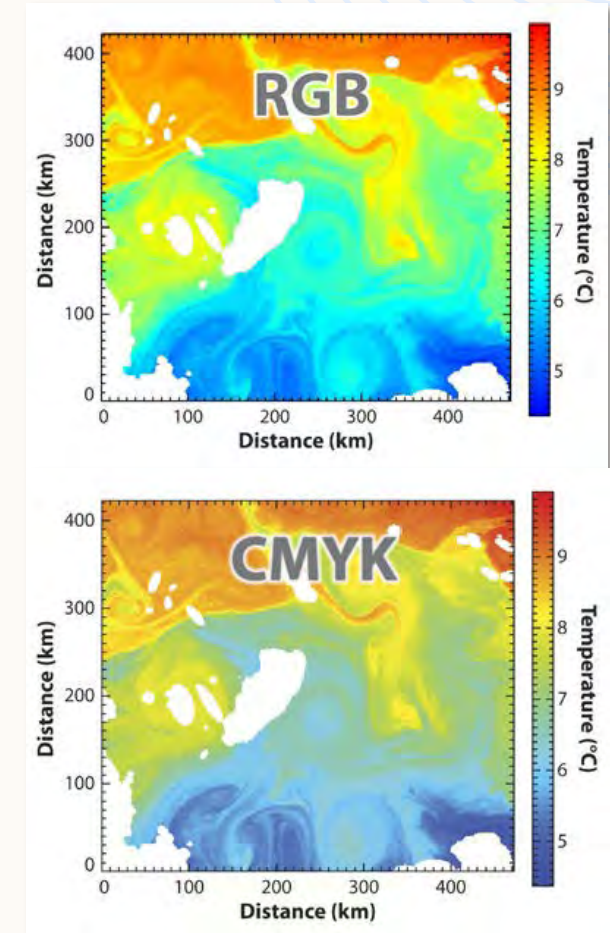
# WHAT HAPPENS OF YOU PRINT RGB INSTEAD OF CMYK?

## WHAT YOU SEE ON SCREEN



## HOW IT WILL PRINT

- The RGB color space is slightly larger than the CMYK color space due to the properties of transmitted versus reflected light
- Therefore, certain colors that can be shown RGB will look less bright when converted to CMYK.
- Most printers will convert your RGB file to CMYK, which can result in some colors appearing washed out

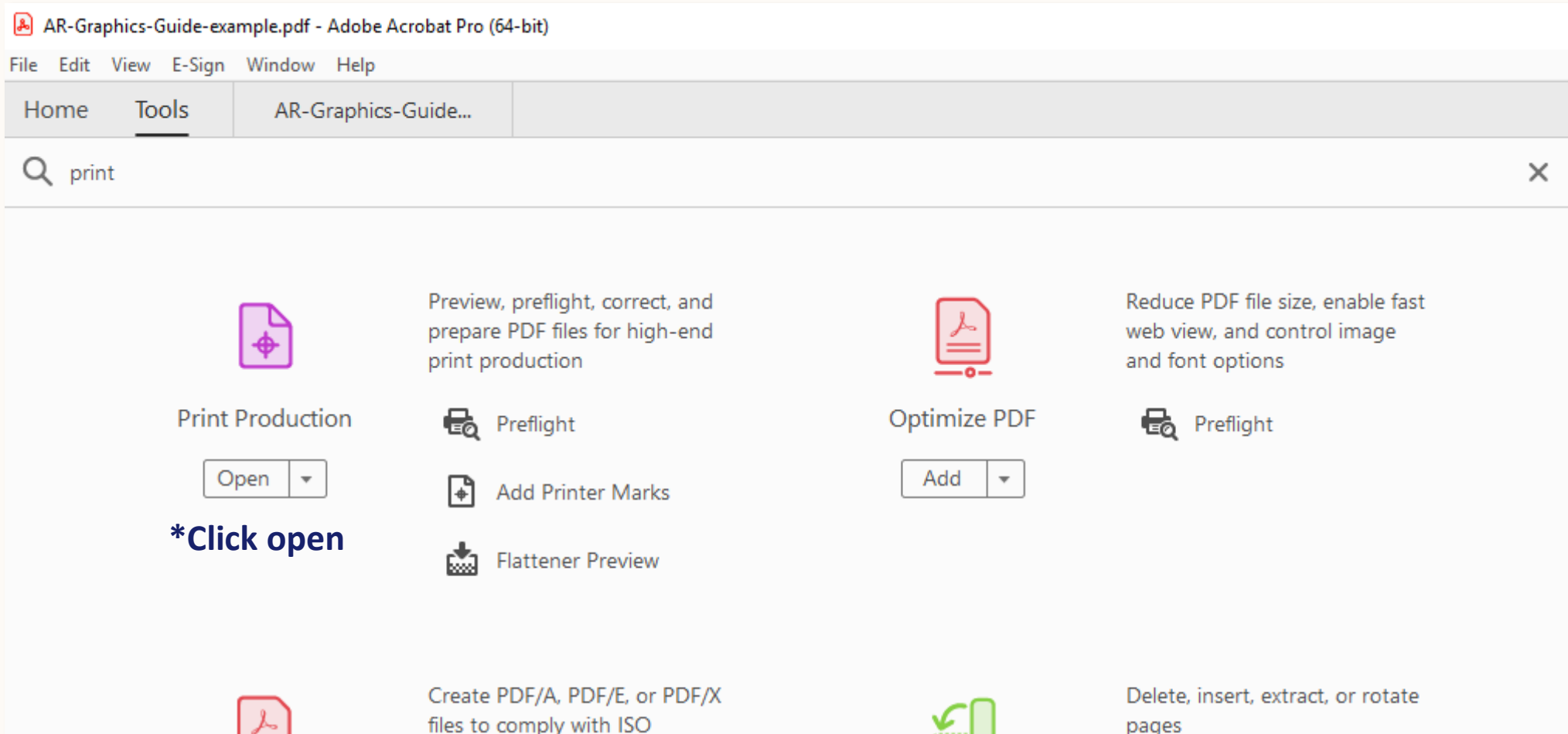


Example of the same image in RGB  
VS CMYK colour space

# HOW TO CONVERT RGB TO CMYK COLOR?

## ○ PDF file in Adobe Acrobat

1. Open the PDF in Acrobat
2. Choose Tools > Print Production > Choose Convert Colors





3. Select the RGB color space
4. Select the **FOGRA39 profile** (this is a print industry standard)
5. Check which pages you would like to convert and click OK

**3. Select the RGB colour space**

**4. Select the FOGRA39 profile**

**5. Check which pages to convert and click OK**



**REMEMBER**

**“ RGB FOR SCREEN  
CMYK FOR PRINT ”**

**Any colors produced with RGB on the digital space will not create the same output on the physical print.**

# GUIDE TO USING SCIENCE IMAGES FOR PUBLICATION

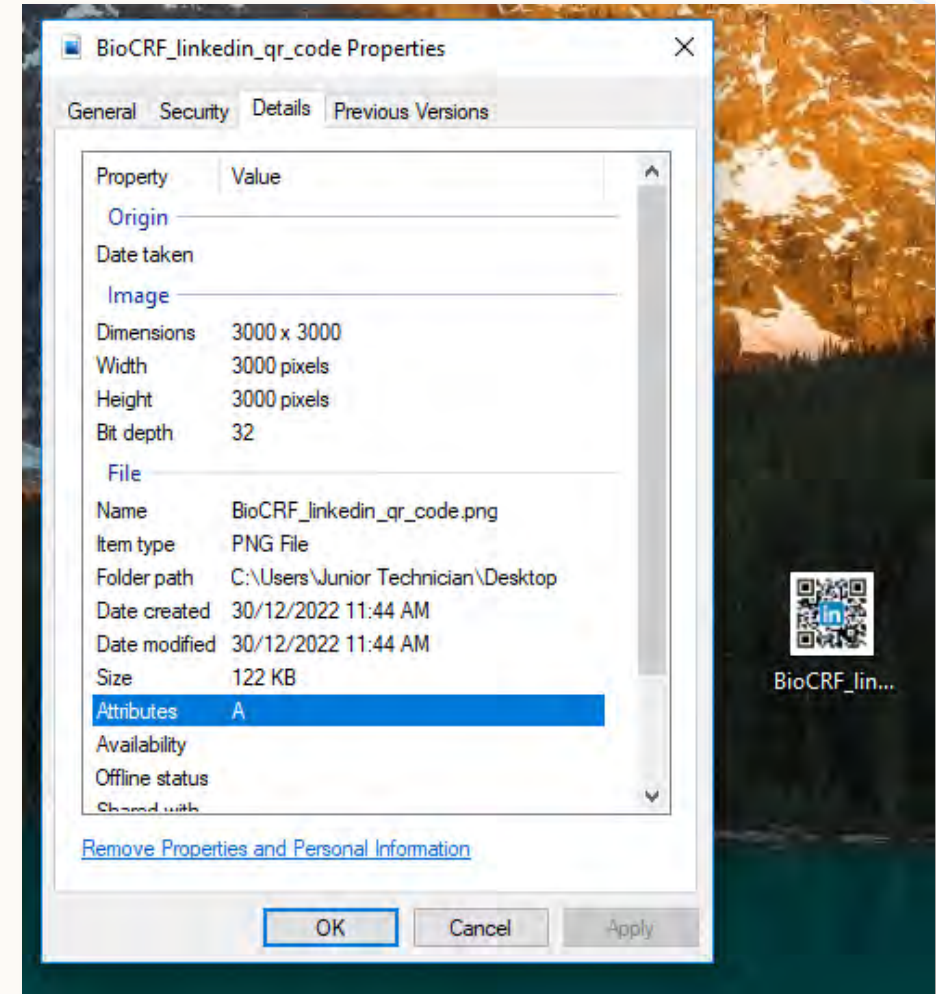
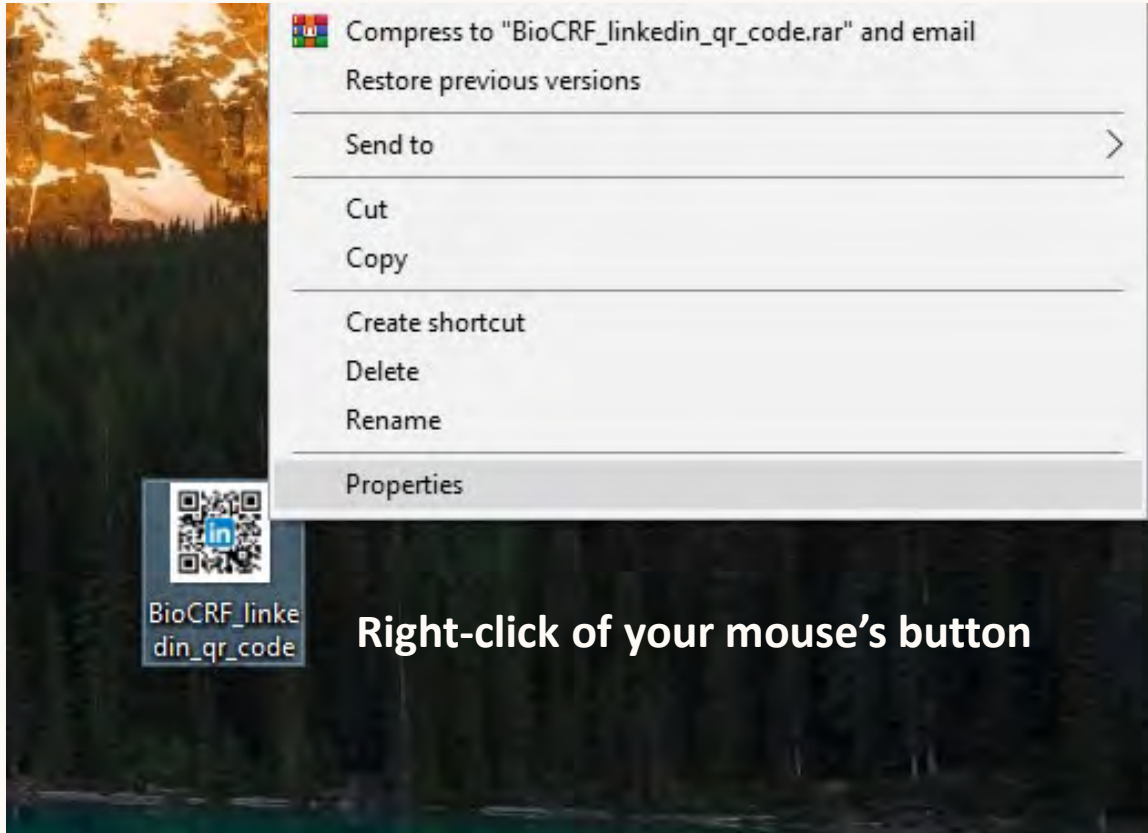
# METHODS TO ADD DESIGN AND DATA TO GRAPHICAL ABSTRACT

- **Download editable images and template designs that have appropriate copyrights.**
  - Download images from online databases such as Freepik.
  - Make sure that the images have high resolution and are permitted for use in publications with attribution.
- **Draw your own illustrations.**
  - Draw illustrations using Adobe illustration, power point...
- **Import and optimize graphs from software such as Excel.**
  - Graphing software has a lot of designs that will allow you to design and export graphs that match your graphical abstract color, size and spacing.
- **The most important aspect of downloaded image or scientific figure – resolution**
  - A low-resolution image will have around 72 PPI
  - Most scientific journals require images and figures to be at least 300 PPI/DPI
  - "PPI" stands for **Pixels Per Inch** and is used when referring to digital file resolution
  - "DPI" stands for **Dots Per Inch** and is used for printing resolution.

# HOW TO CHECK IMAGE RESOLUTION?

## ○ In Windows OS

- Right-click on the file, select properties, then details and you will see the DPI in the image section, labeled horizontal resolution and vertical resolution.



# HOW CAN I FIND COPYRIGHT-FREE IMAGES?

## ○ Types of copying licenses for scientific use:

- **Public Domain**

- Images generally become public domain 70 years after the creator's death. If the copyright is not renewed on the creator's behalf, the image can become part of the 'public domain', and the copyright no longer applies.

- **Creative Commons license**

- You can adapt and share the image in any way you like, but this license requires attribution, so you will need to include the original creator in the acknowledgements of the research paper, posters, and acknowledged on your presentation slides.

- **Stock Images**

- Image databases that allow you to license the designs. Make sure to read the fine print on how you are allowed to use the image (e.g., personal and commercial uses).





# ETHICAL CONSIDERATIONS

## ○ If you are using previously published figures:

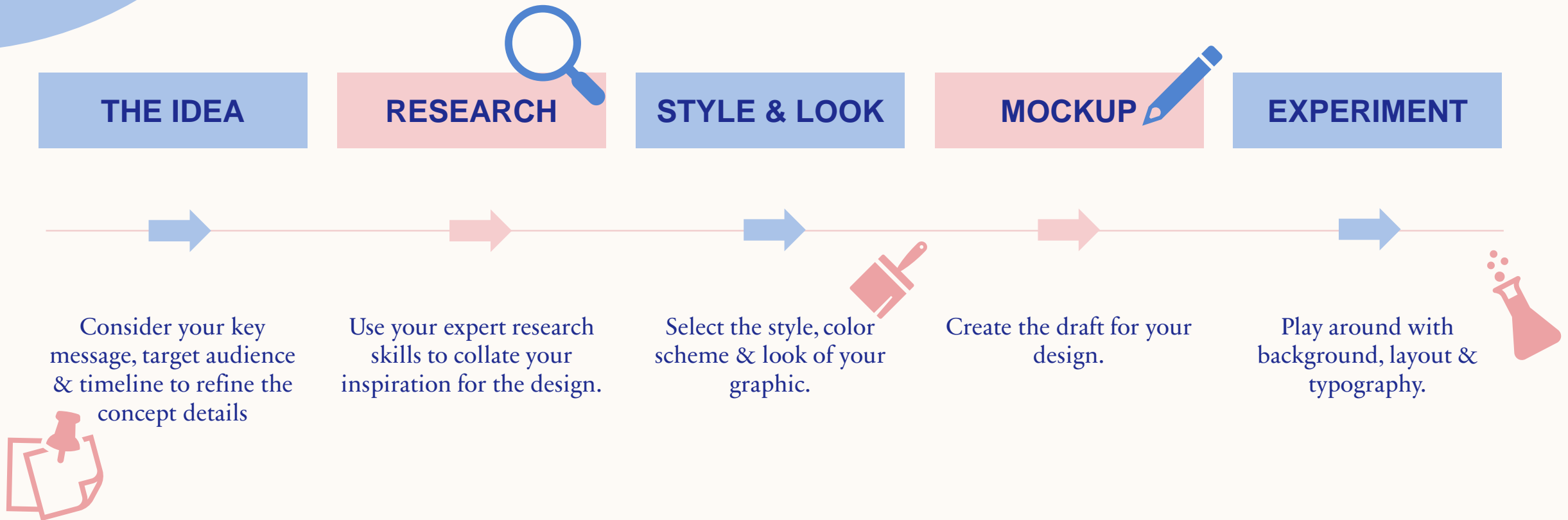
- Be careful with the copyright, resolution, and sizing rules of using downloaded images in academic journals
- Request permission from the copyright holders to adapt figures; include citations/ license / permission info in the captions
- **Redrawing a figure does not change the copyright;** the original author would recognize the figure as theirs, permission to adapt/ modify the figure must be obtained





# GUIDELINES FOR DESIGNING SCIENTIFIC ILLUSTRATIONS AND FIGURES

# DESIGN PROCESS



The background features a vertical line on the left side. To the left of this line, there are concentric white circles on a light green background. To the right of the line, there are four colored regions: a light blue semi-circle at the top, a light green rectangle below it, a light pink triangle at the bottom left, and a light red triangle at the bottom right.

**“ HOW TO MAKE GOOD FIGURES  
FOR SCIENTIFIC PUBLICATIONS? ”**

# FOUR RULES TO CREATE HIGH QUALITY FIGURES



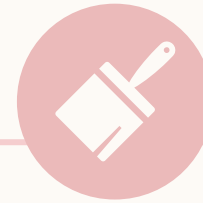
## PURPOSE

- Is the figure explain a process, compare or contrast, show a change, or establish a relationship?



## COMPOSITION

- What are the components of the figure and how do you arrange them to clearly show the purpose?



## COLOUR

- Do you use color to focus on important information and to tell a compelling story?



## CLARITY

- How easily do people understand the purpose of the figure?

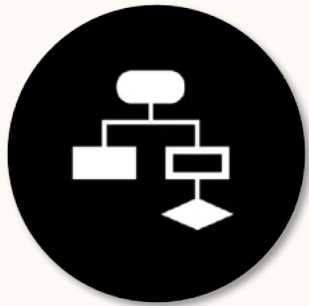


# Rule 1. Clearly show the main purpose to your audience

## ○ Here are the common types of graphs and figures

### ▪ Explain a process

- Flow chart, diagram, infographic, Gantt chart, illustration, and timeline, etc.



**Flow Chart**



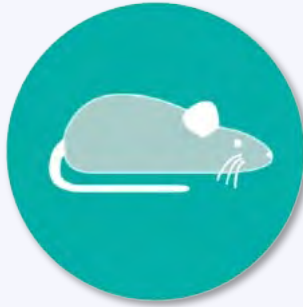
**Diagram**



**Infographic**



**Gantt Chart**



**Illustration**

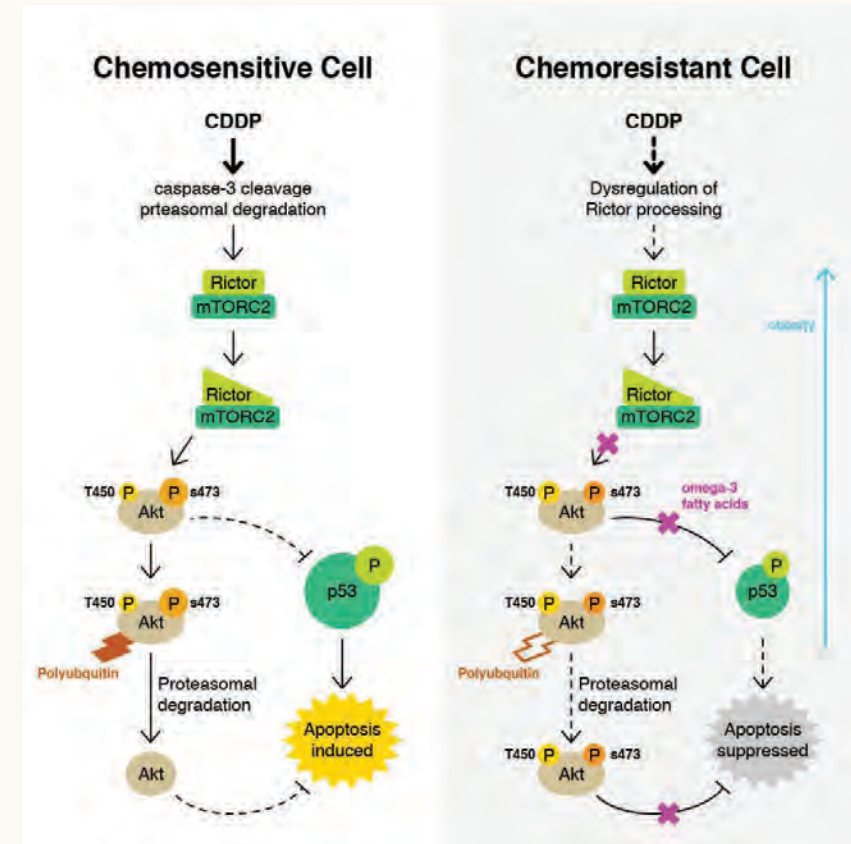
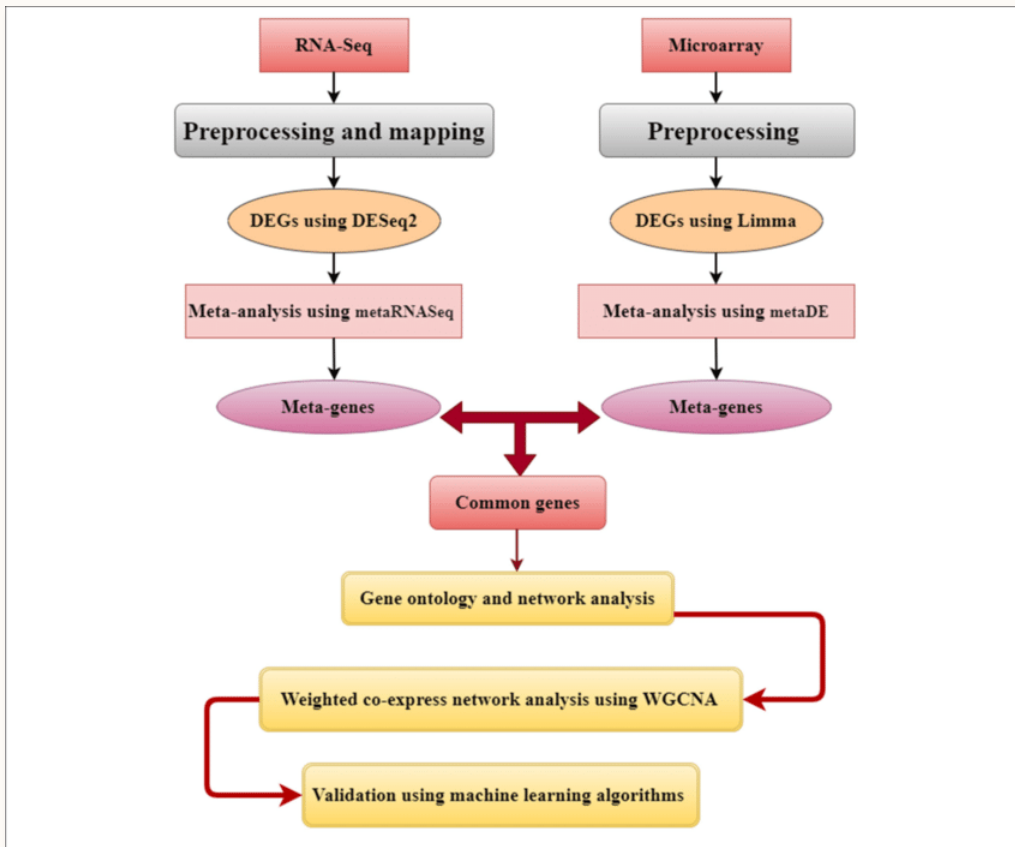


**Timeline**

❖ They could quickly help your audience understand your research methods or scientific model.

# For example: Flow Chart

- Shows the steps in a process
- Visualizing the sequence of actions or information needed for training, documenting, planning, and decision-making.



# Rule 1. Clearly show the main purpose to your audience

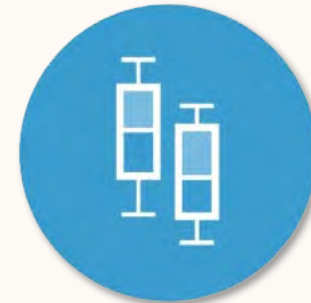
- **Compare, contrast, or show a change**
  - Bar chart, line chart, box & whisker, bubble chart, stacked area, and pie chart, etc.



**Bar Chart**



**Line Chart**



**Box & Whisker**



**Bubble Chart**



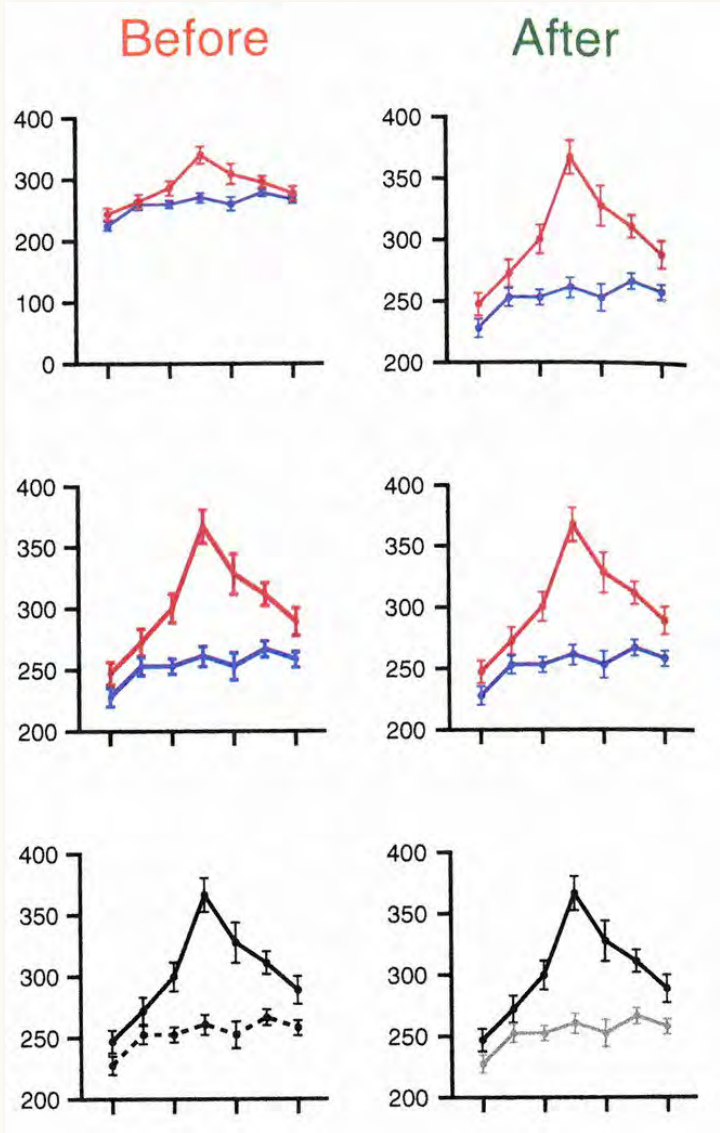
**Stacked Area**



**Pie Chart**

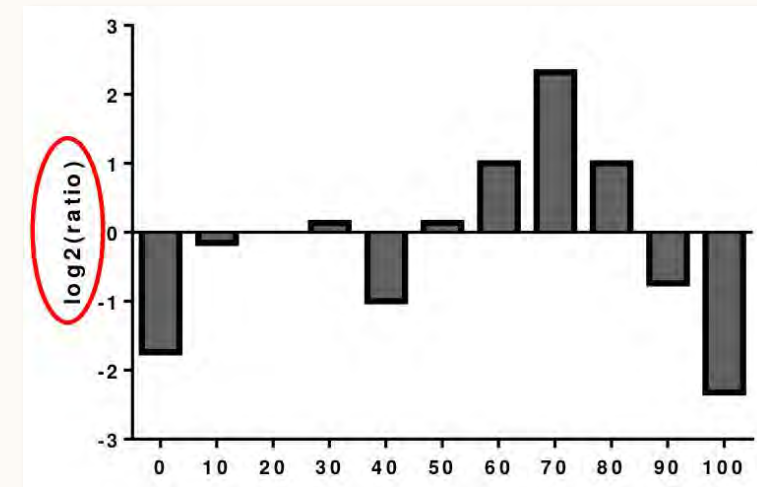
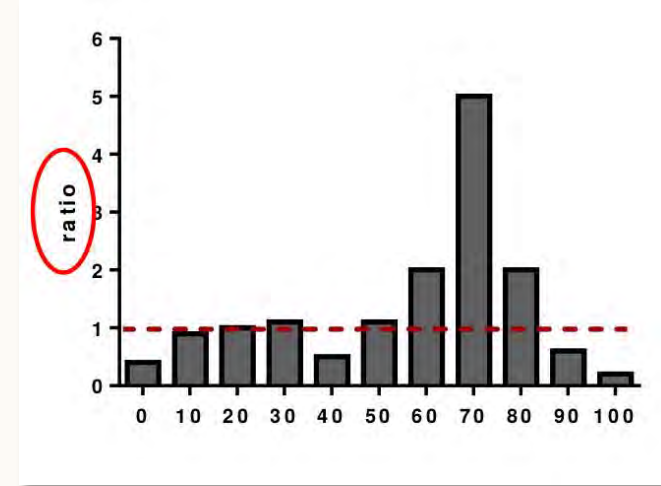
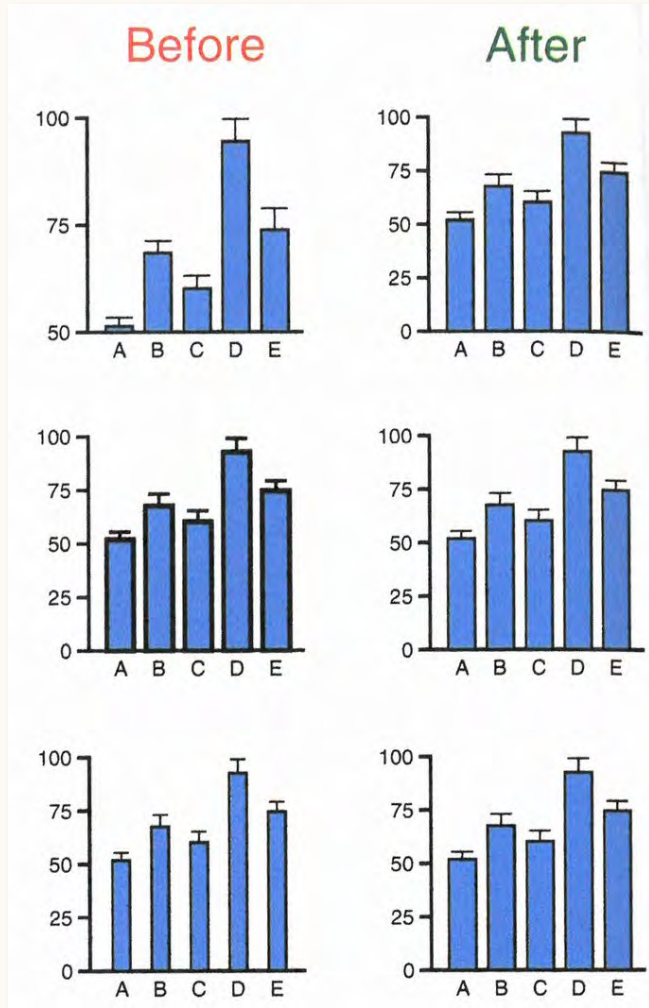
❖ **Help you highlight contrasts or compare your datasets.**

# For example: Line Chart



- To show a trend of continuous data (usually over time)
- Suitable for matched, paired, or repeated data, as well as for time-series.
- To tell a story about how data change, rather than just showing discrete values of the data.

# For example: Bar Chart



- To compare discrete quantities of non-continuous data
- Useful for presenting results and emphasizing differences.

- The choice of the x axis and point of reference can affect how comparisons are perceived



# Rule 1. Clearly show the main purpose to your audience

- **Establish a relationship**

- Network diagram, heatmaps, maps, radar chart, mosaic chart, venn diagram, chord diagram or arc diagram, etc.



**Network diagram**



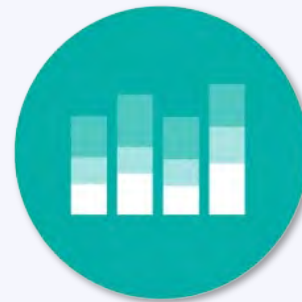
**Heat maps**



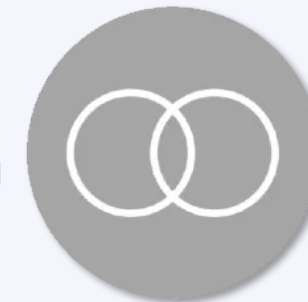
**Maps**



**Radar chart**



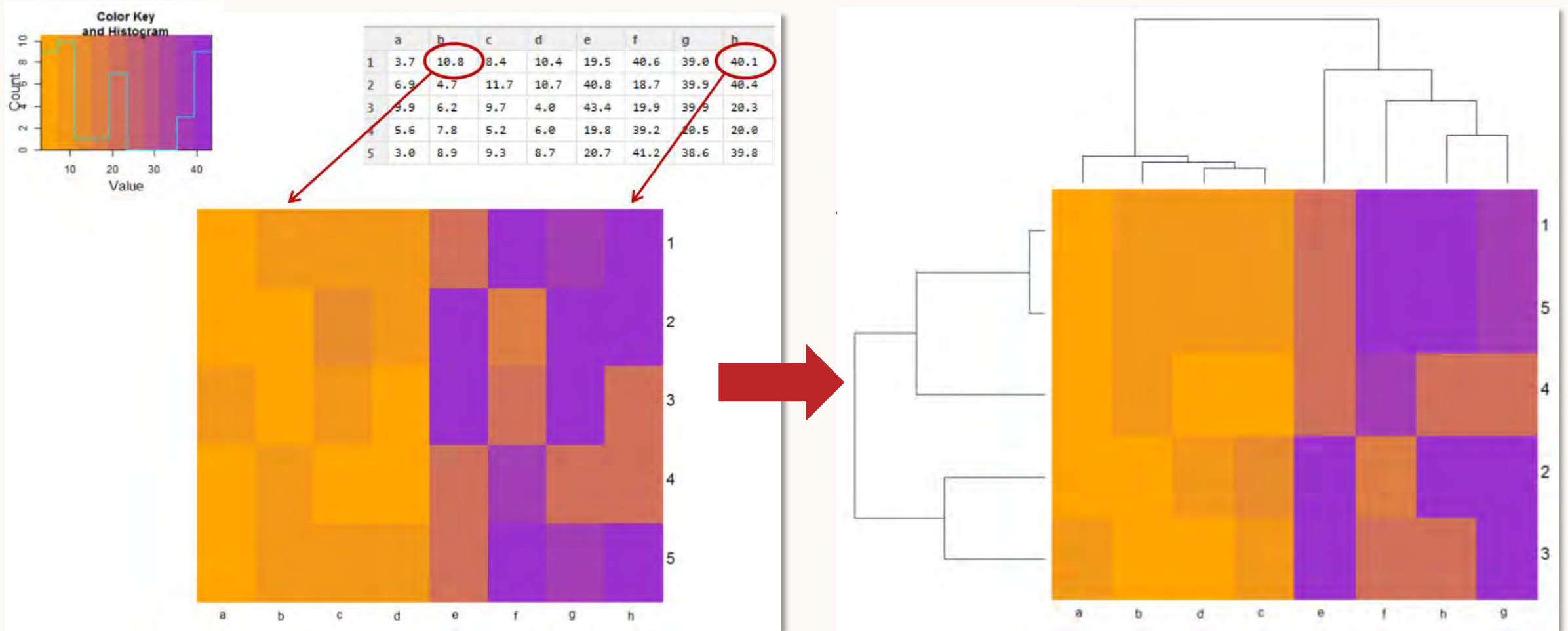
**Mosaic diagram**



**Venn Diagram**

- **Highlight the relationship between datasets and can help you highlight the main point in their connection.**

# For example: Heatmap

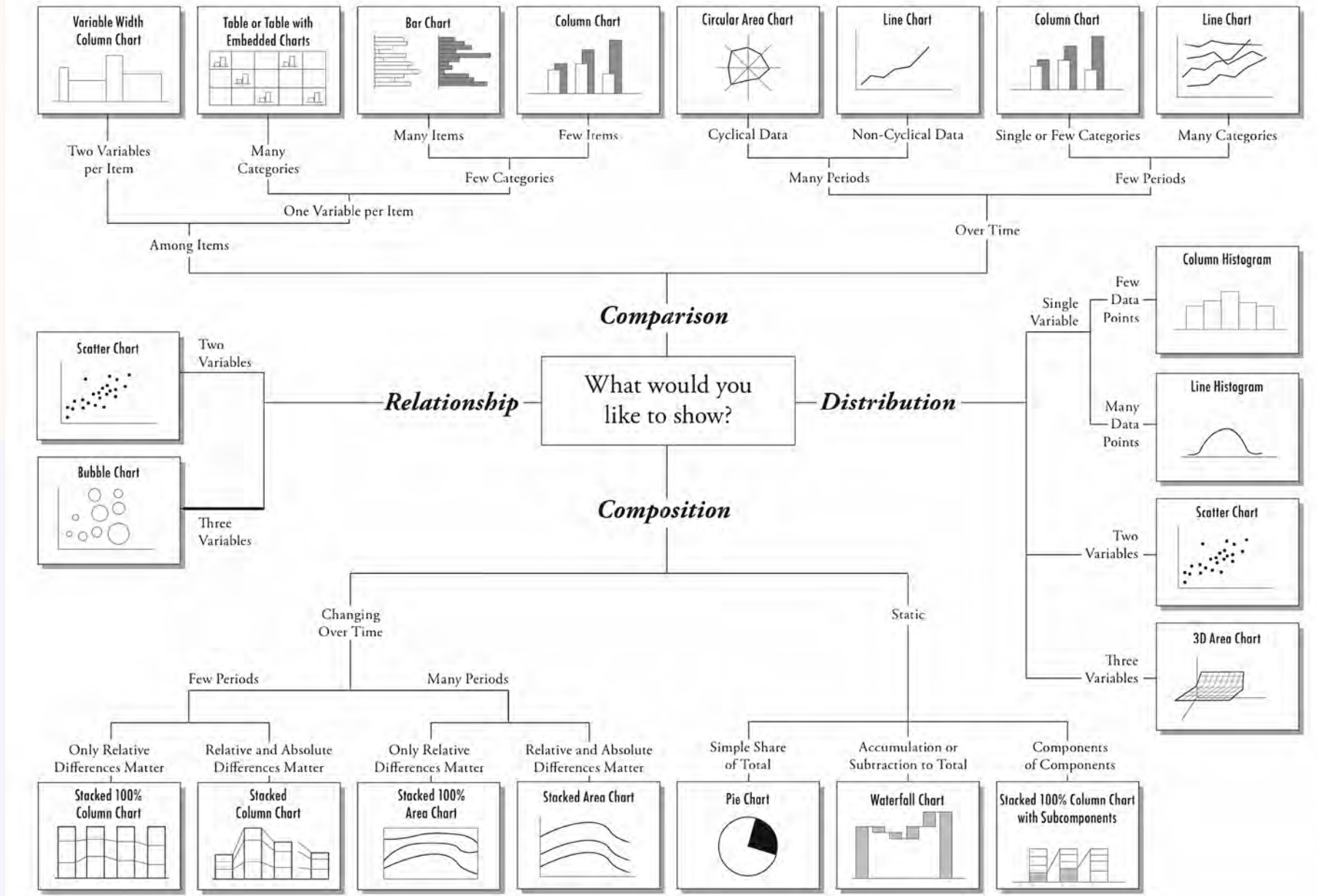


- A heatmap is essentially a table that uses colors instead of numbers.

- Can be used for grouping data through clustering

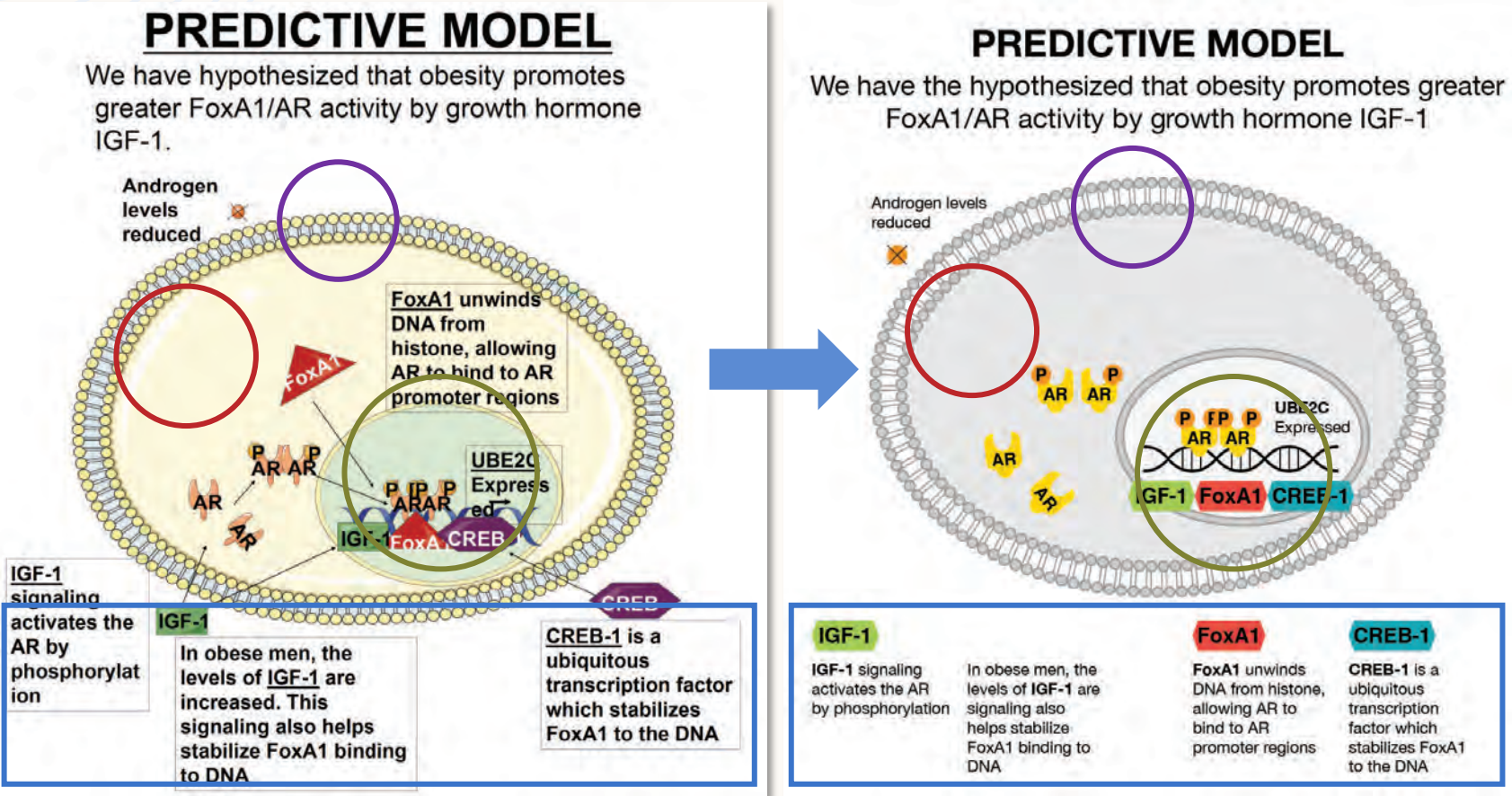


# Chart Suggestions—A Thought-Starter



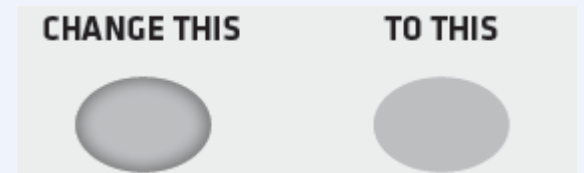
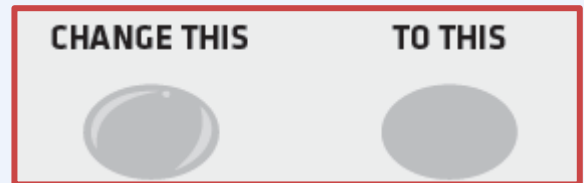
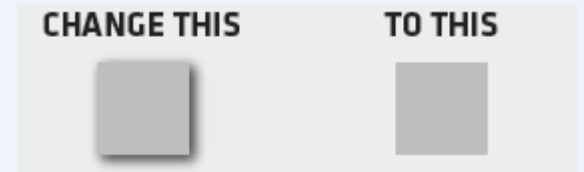


# Rule 2. Use composition to simplify the information



❑ The overall arrangement of your figures

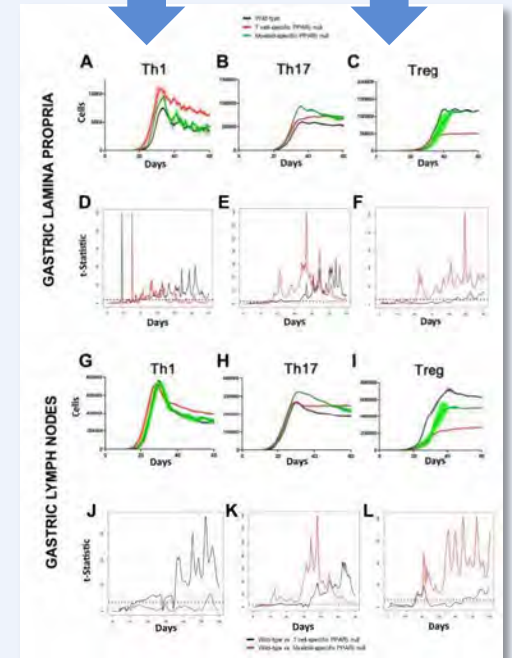
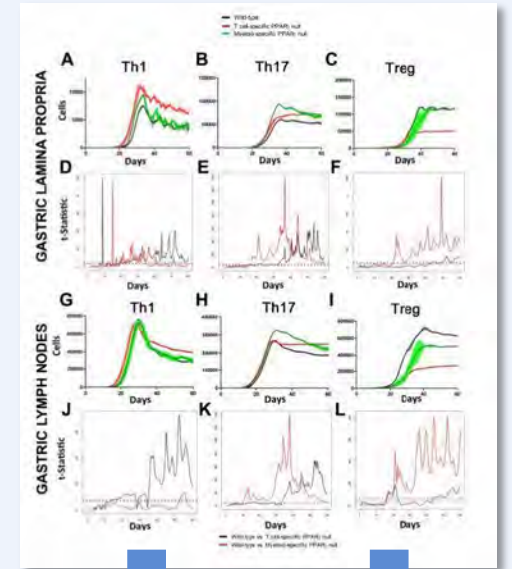
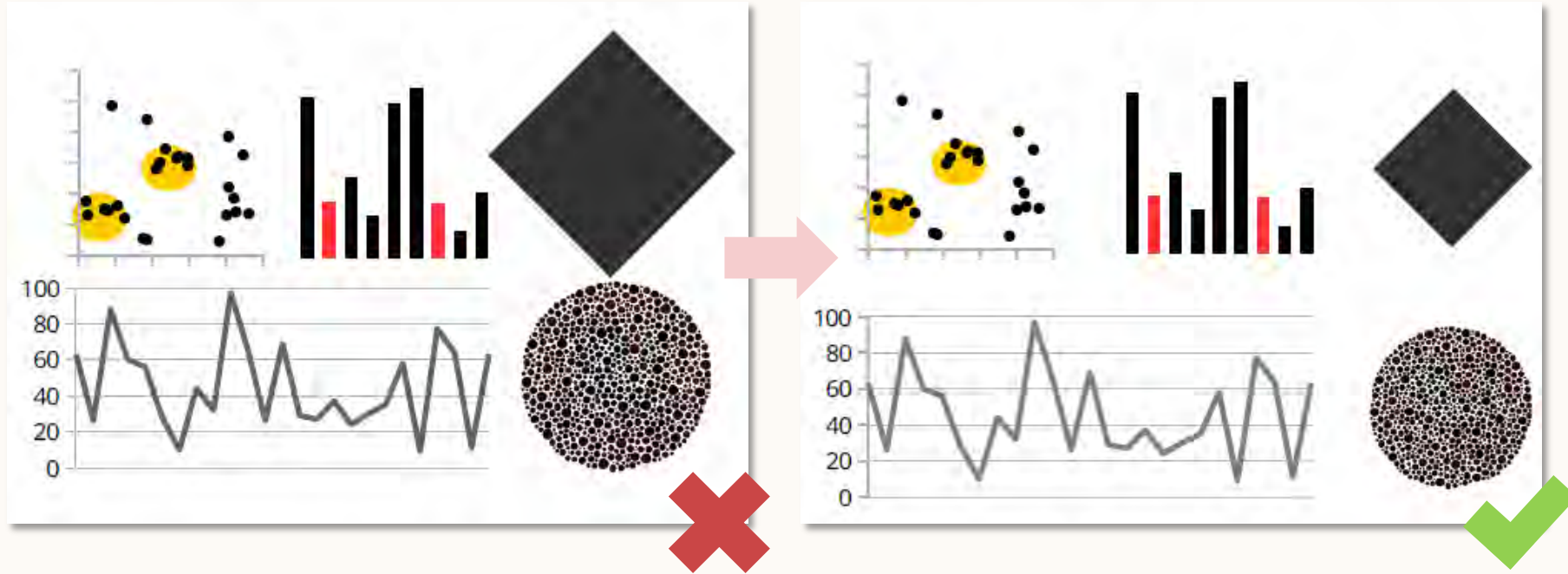
- Design flow should be from left to right, top to bottom or in logical flow
- Make sure the most important data is the focus of the design
- Remove or adjust excess data and text
- Make text easy to read
- Reduce contrast of bold lines
- Remove repeated elements
- Remove shadows



## Rule 2. Use composition to simplify the information

### ○ Visual balance

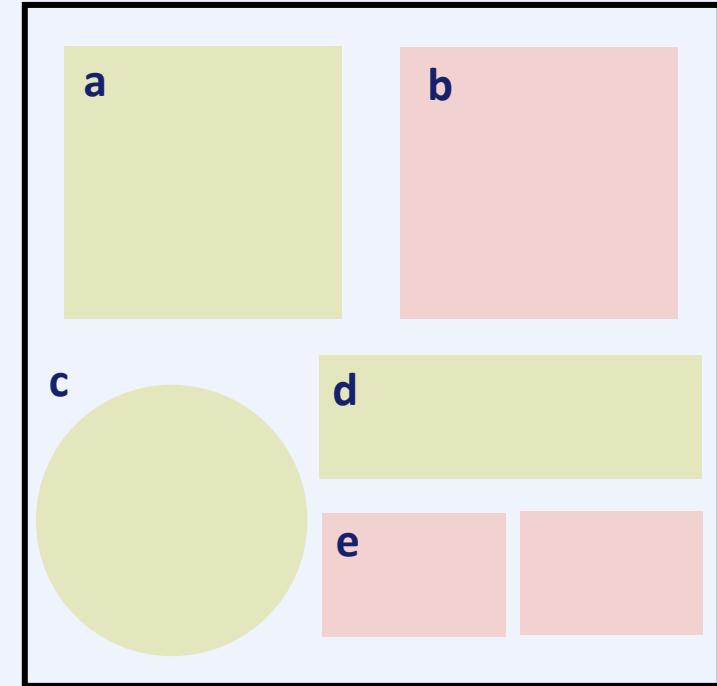
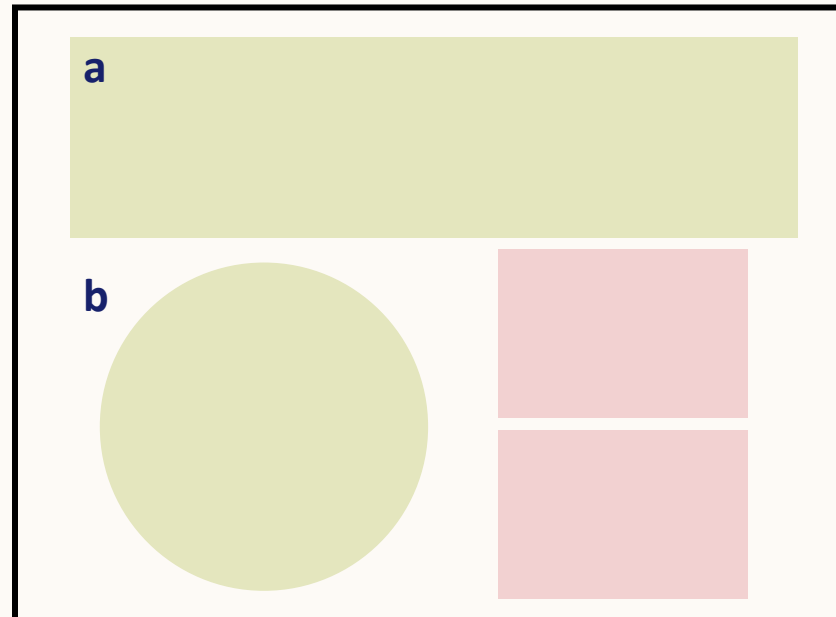
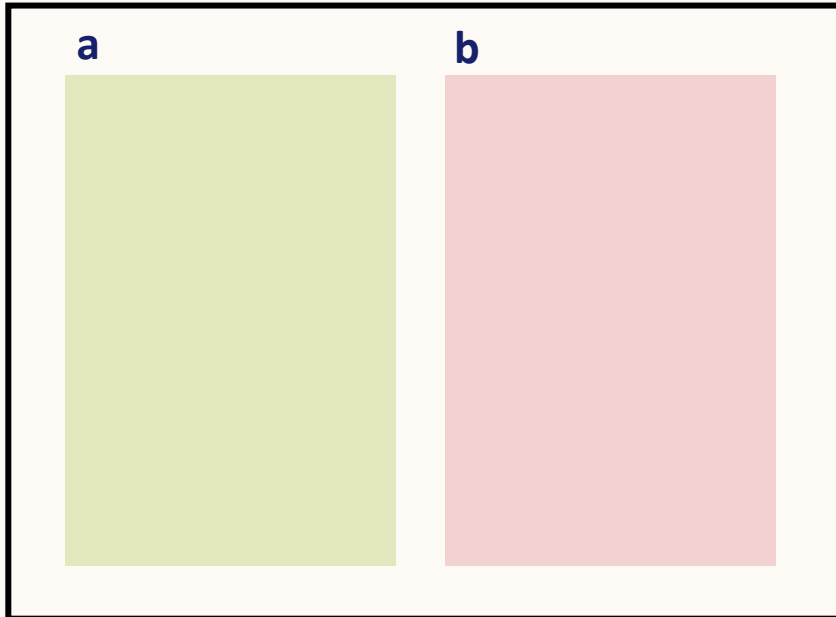
- A measure of how much an object on the page attracts and retains the attention of your viewer
- Keep a balance between white space, text and figures



## Rule 2. Use composition to simplify the information

### ❑ No overcrowded figures

- Avoid trying to fit too much information into a small space
- This can cause cognitive overload and reduces comprehension
- Labels and images that are too small are not accessible or legible for those with visual impairments



**Don't** cram lots of panels and small labels into one figure

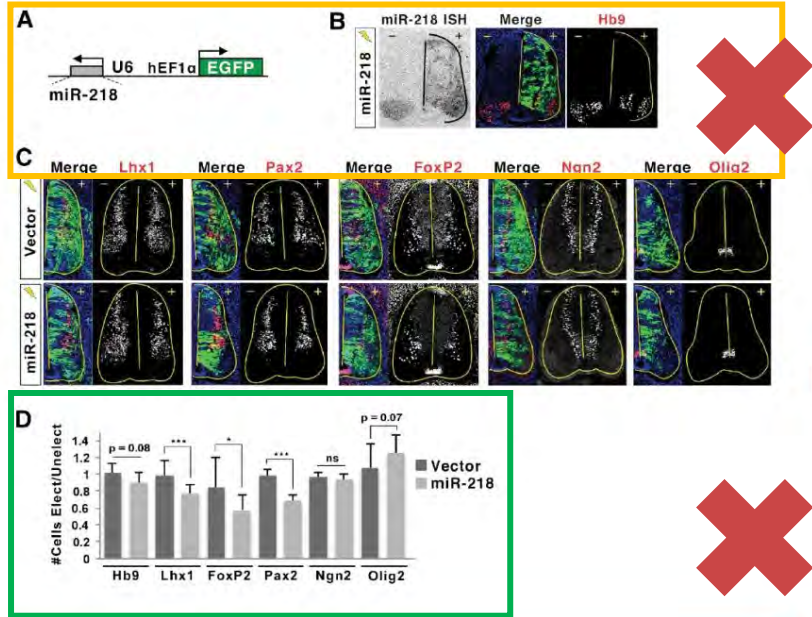


**Do** give images the space they require to be legible, with at least 7-point size text in your draft figures



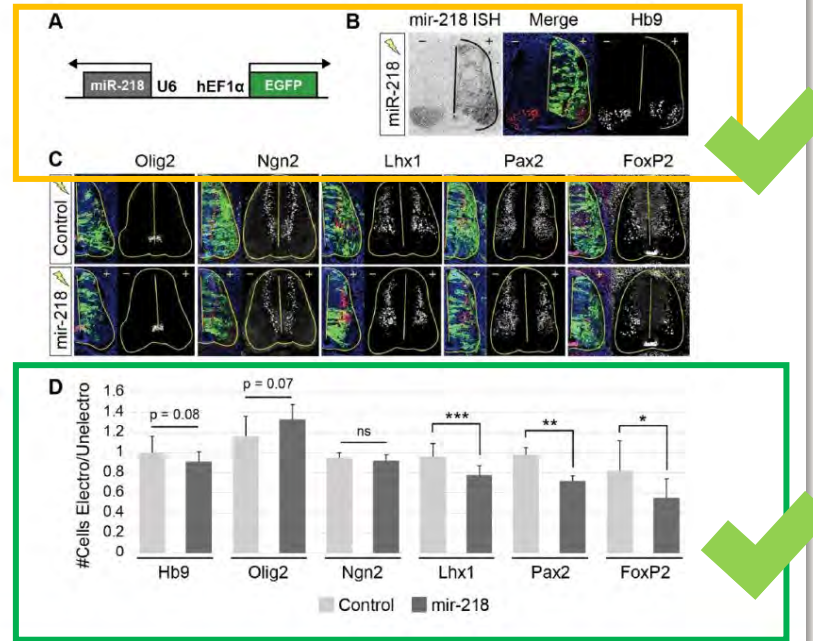
## Rule 2. Use composition to simplify the information

○ For example:



Initial Layout

Follow journal rules and format from left-right and top-bottom



Improved Composition

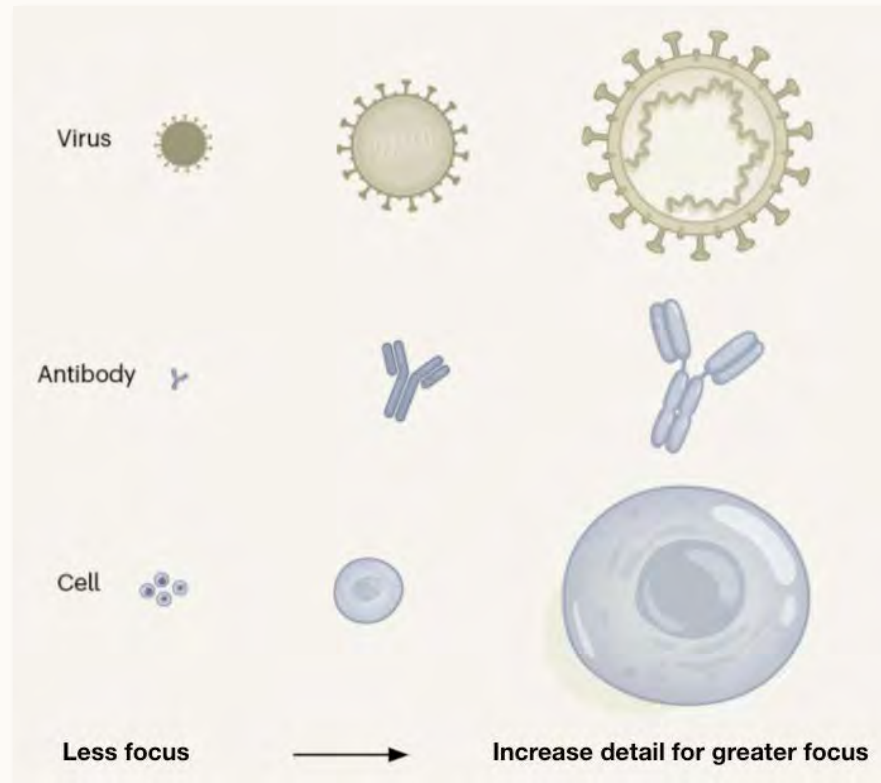
Remove or adjust distracting data, lines, and repeated elements

- Taking an initial layout (figure on the left) and then use formatting to fill the space, simplify information
- Reorder the data to show the main purpose of the research more clearly.

## Rule 2. Use composition to simplify the information

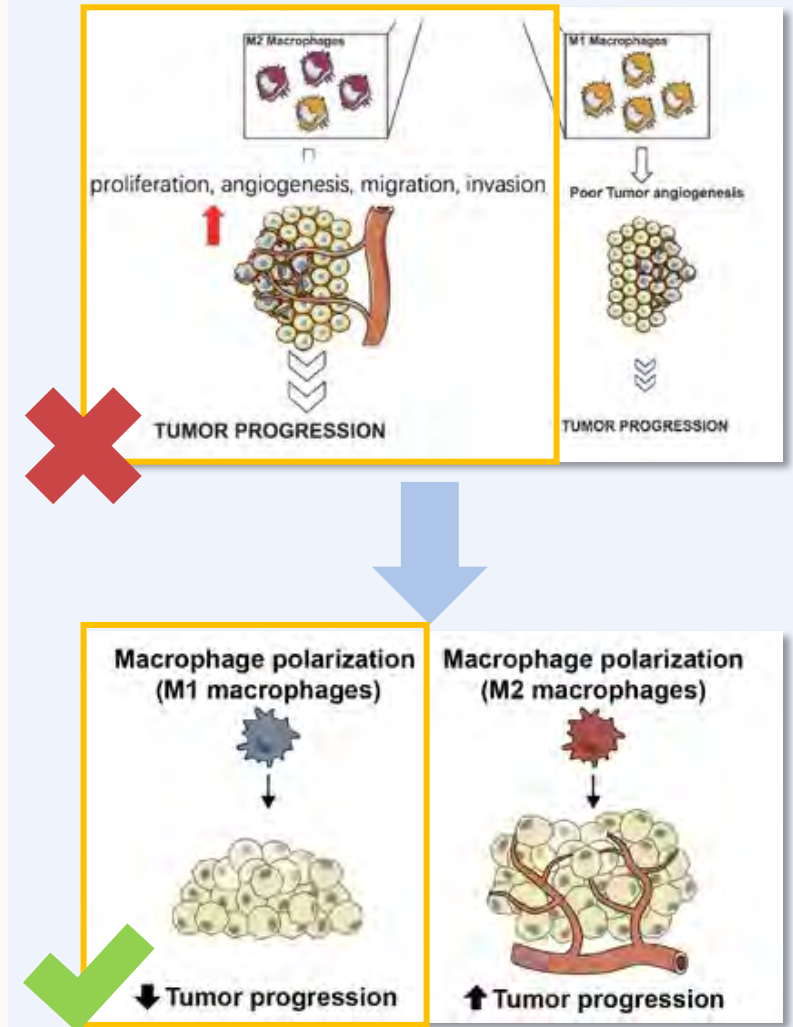
### ○ Hierarchy

- The composition of a graphic object and the emphasis on each element will determine the hierarchy between the elements and how the eye will flow and where it will focus



### • Drawing for focus

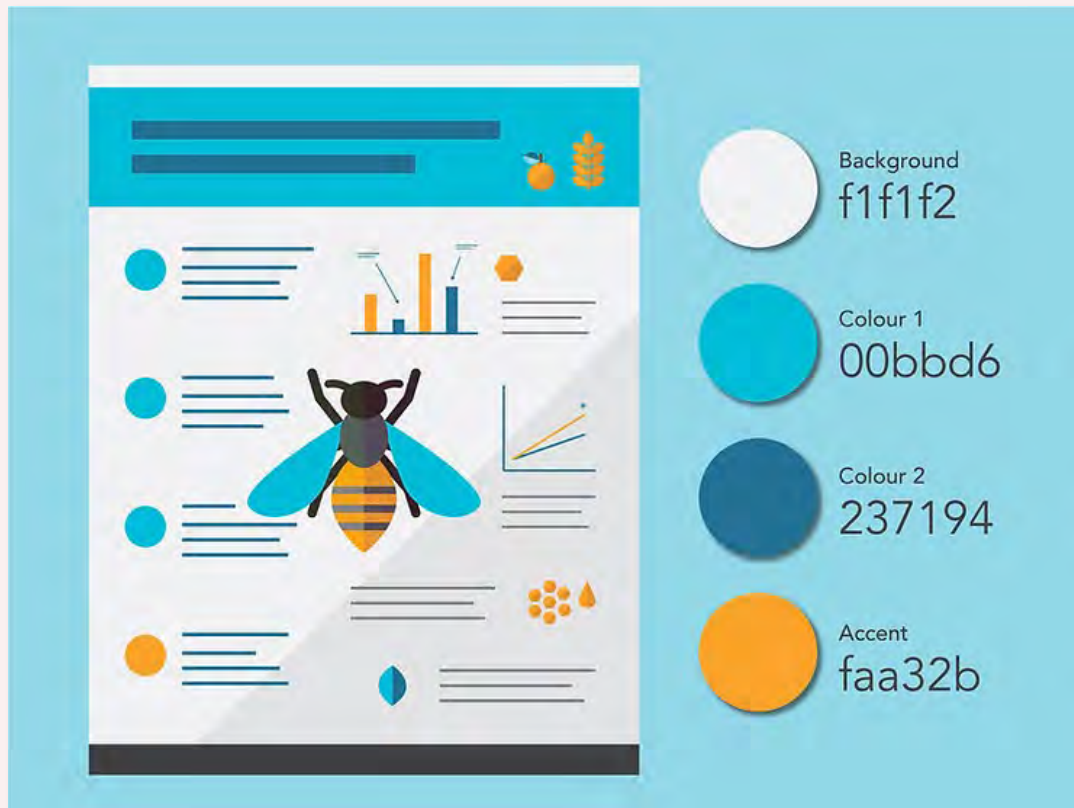
- For areas of focus, add depth and detail
- For areas of less focus, simplify



The story behind this figure is that M1 macrophages help suppress tumor growth and M2 macrophages promote tumor growth.

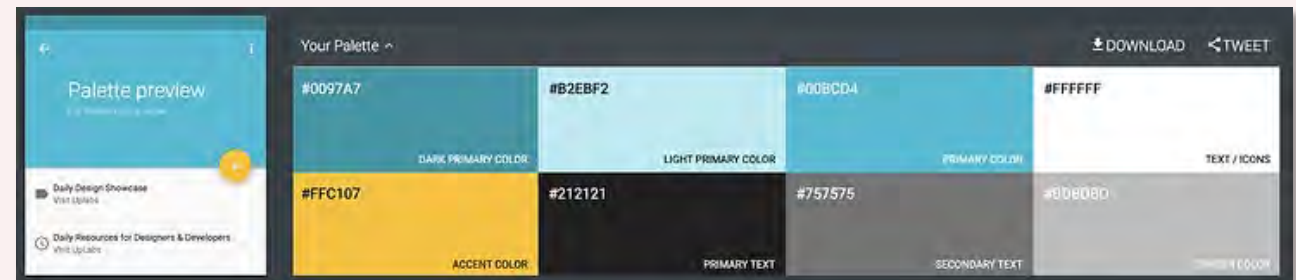
## Rule 3. Use colors to highlight the main points of the figure

- **Too many color/ random uses of color**
  - The most important elements of a figure should be the most saturated and weighted by significance, with background elements in a neutral tone.
  - Use a consistent color palette for areas of focus within each figure or set of figures.



### Material Palette

- An online colour palette generator
- Simply pick 2 colors that you like, and it'll give you recommendations on how to put them in use on your poster.
- Then, download the palette and use the eye-dropper tool to sample the colors.





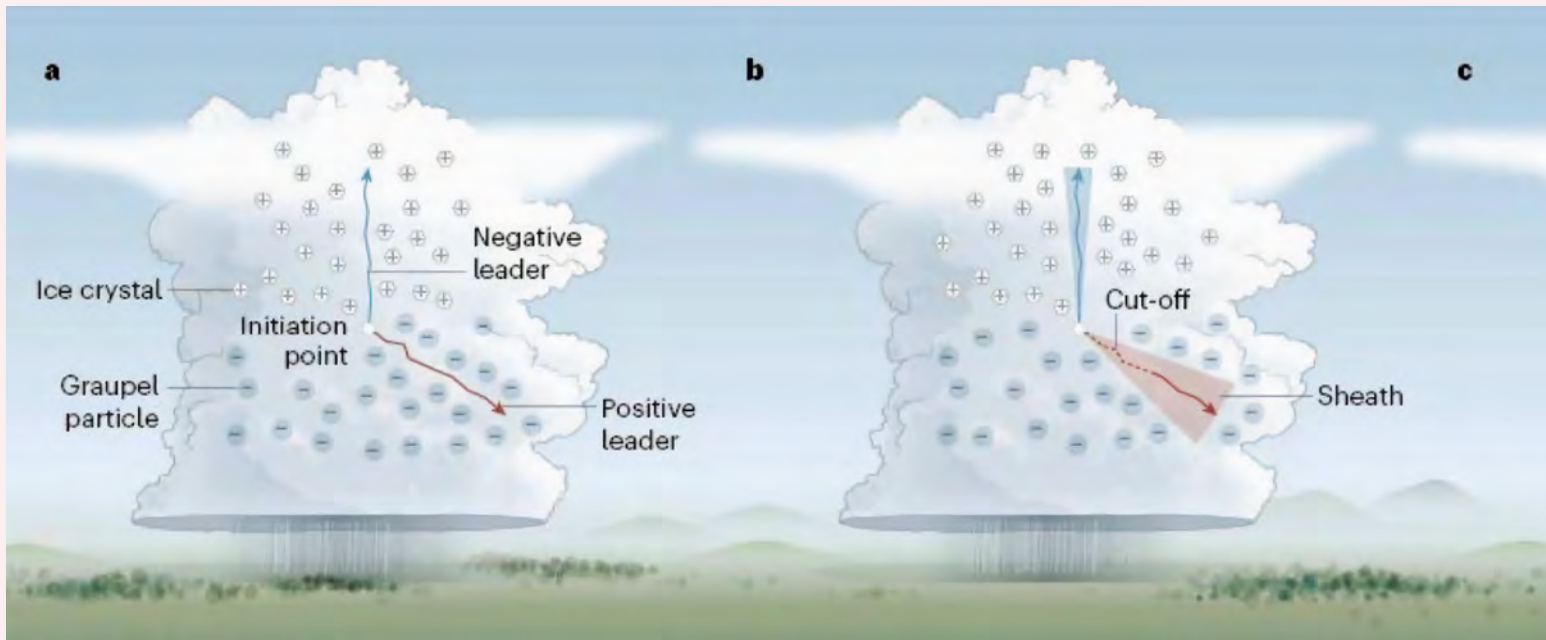
## Rule 3. Use colors to highlight the main points of the figure

### ○ We use color thoughtfully , for:

- Hierarchy
- Categorizing information
- Scientific conventions or real-world depictions (color as found in nature, as appropriate)

### ❖ Representations of the natural world

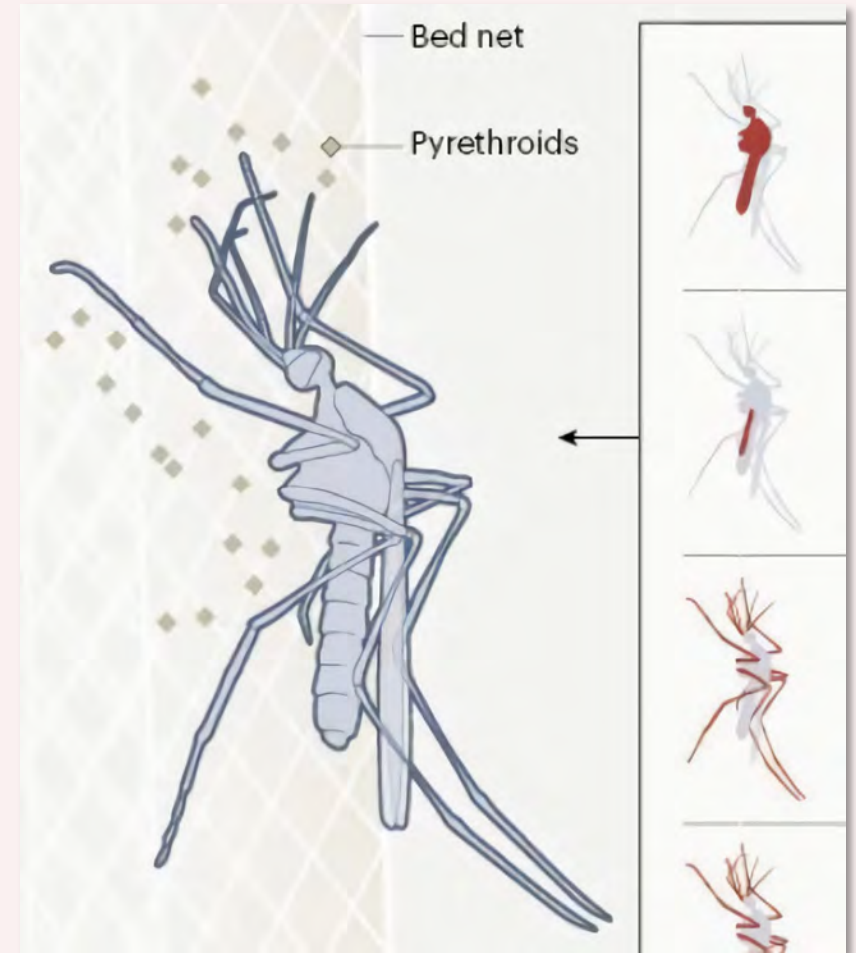
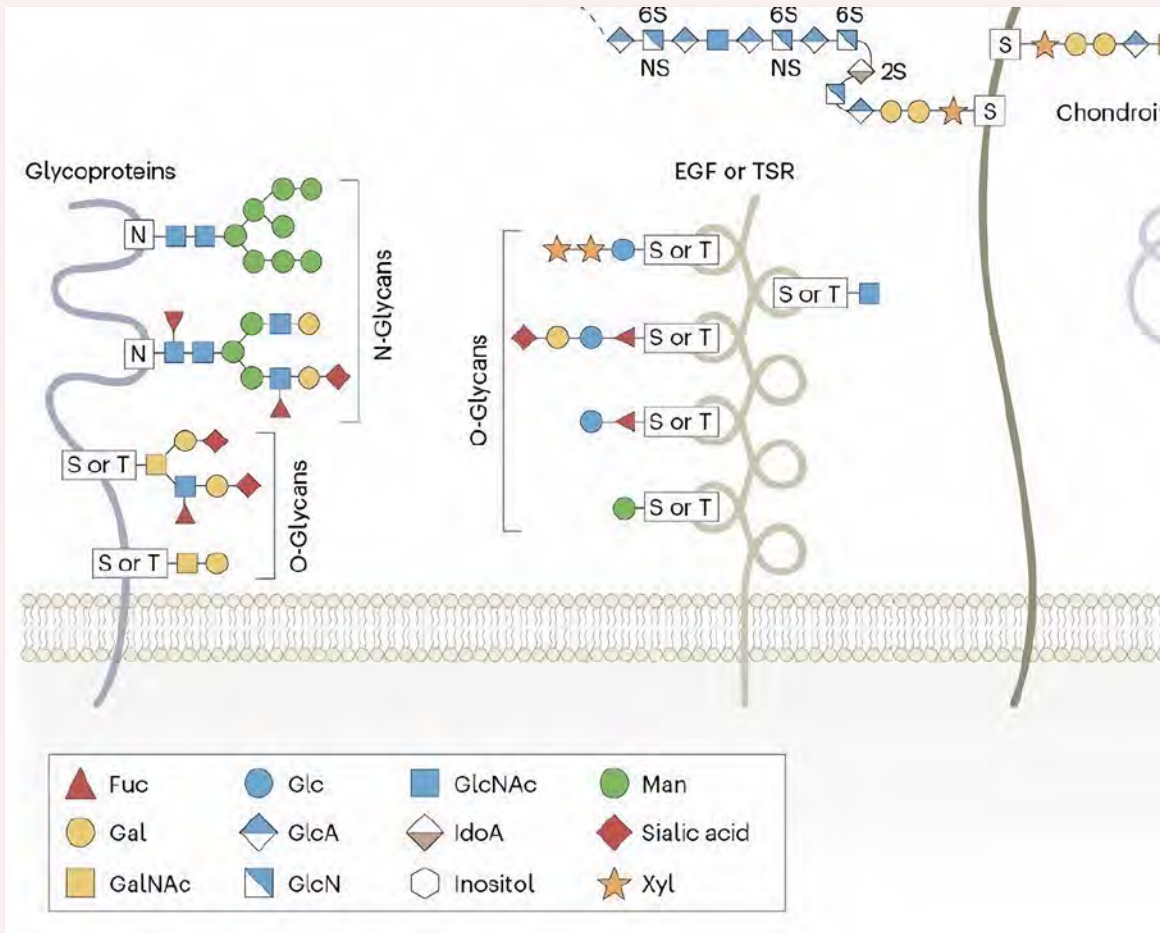
- Such as plants , animals, bodies of water and environmental scenes, can be drawn realistically as needed, using the extended colour palette.
- This is usually necessary when they are the focus of an illustration, rather than in the background



## Rule 3. Use colors to highlight the main points of the figure

- ❖ Some scientific disciplines use specific colors
  - Important elements in illustrations can be highlighted with the main accent colors from the palette
  - Background elements share the same neutral tone

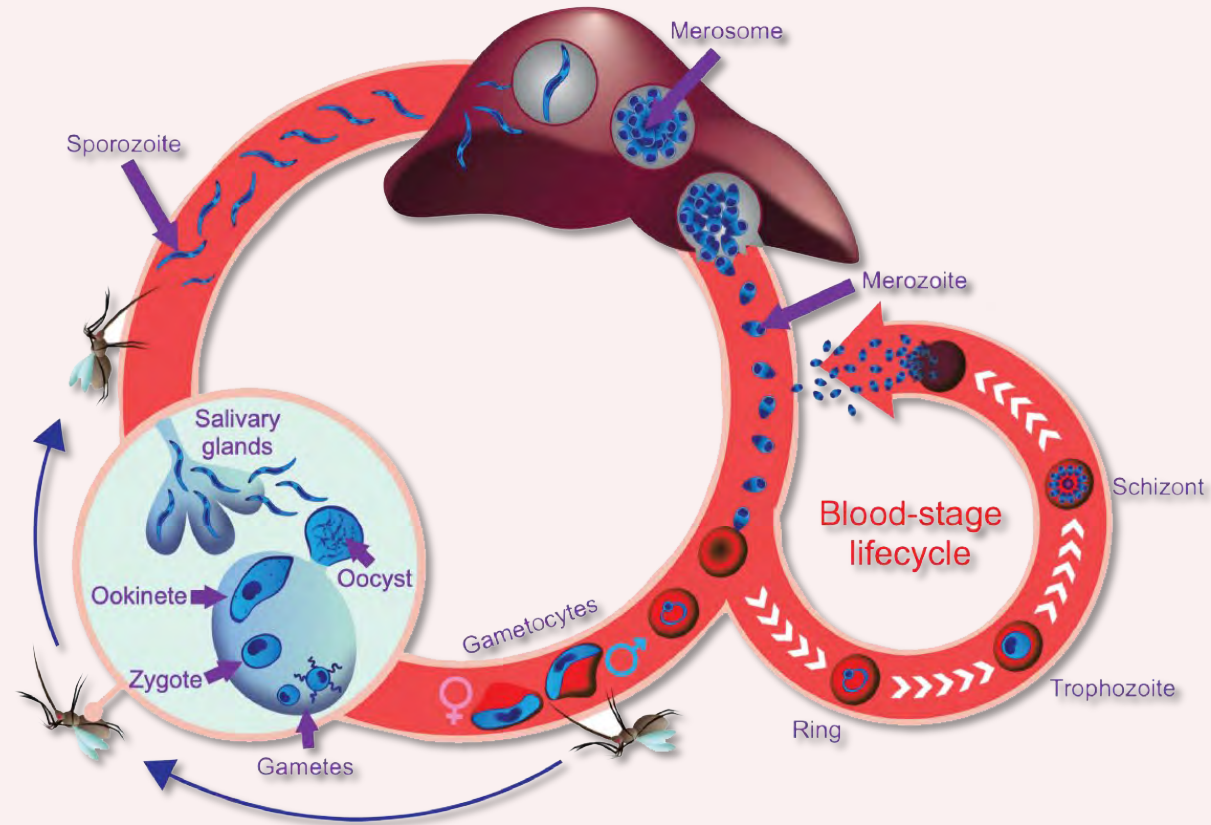
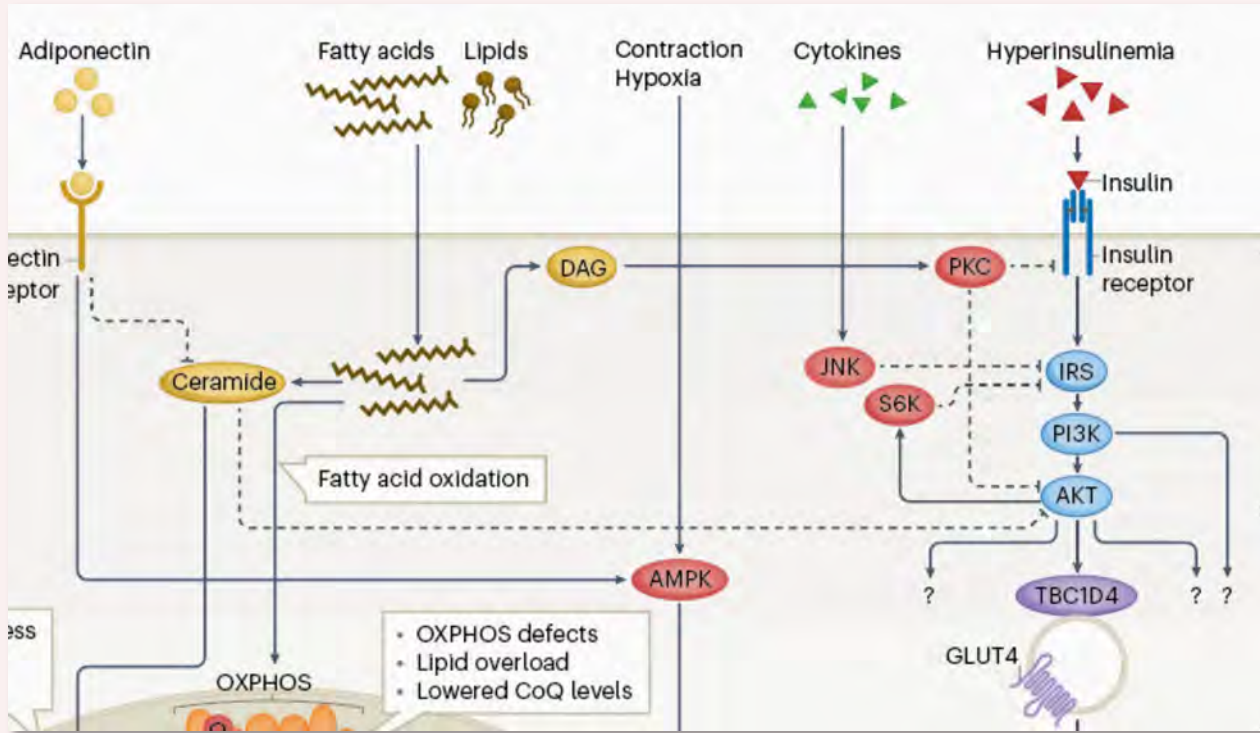
- ❖ Summary figures require focused attention to important elements



# Rule 3. Use colors to highlight the main points of the figure

## ❖ Categories information and ground elements







- In complex figures and multi-panel figure sets, colors can be used to help categorize information.





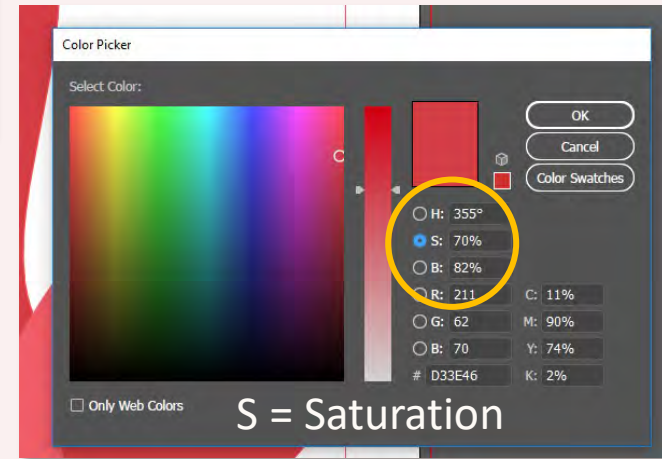
# Rule 3. Use colors to highlight the main points of the figure

❖ Use colour saturation and lightness to create contrast

	HEX	RGB	HSL	
		#c1272d	rgb(193,39,45)	hsl(357.66,66.38%,45.49%)
		#e7bcbc	rgb(231,188,188)	hsl(0,47,25%,82.16%)
		#8d1f17	rgb(141,31,23)	hsl(4.07,95%,32.16%)



For example, in Adobe Ai



- You can use any combination of colors if they are highly contrasting, even if they are different shades of the same color.
- The three main color characteristics are hue, saturation, and lightness.
- By adjusting any of these three of these characteristics, you can create an effective color palette using any colors that represent your dataset

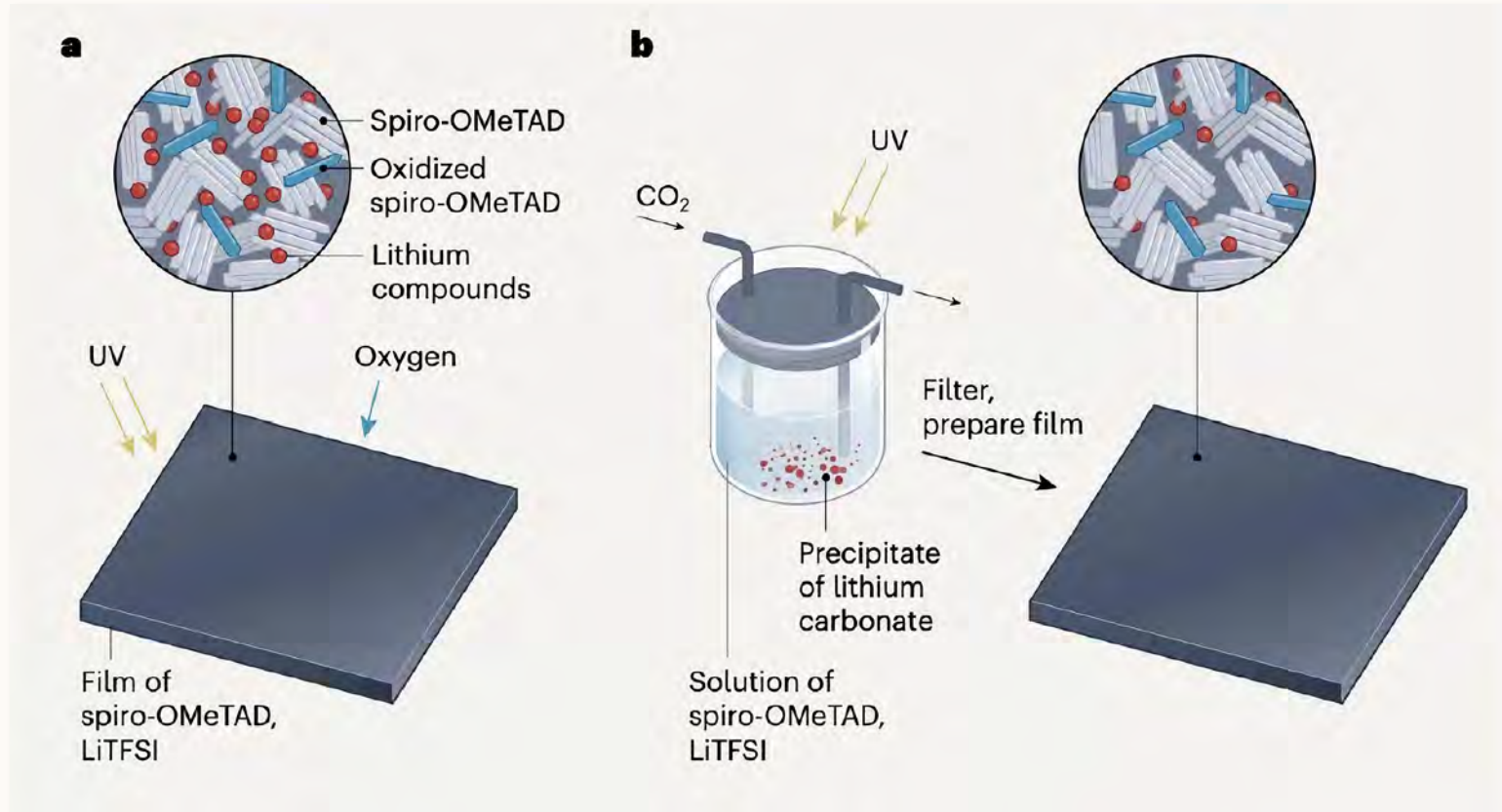




## Rule 4. Refine and repeat the process until the story is clear

### ○ Aim to :

- Explain all elements in labels or the legend.
- Label the first instance of every object.
- Use figure parts (a, b, etc.) and subheadings to give the figure hierarchy and structure.
- Remove unnecessary elements.



**DO** clearly define all elements in a figure.

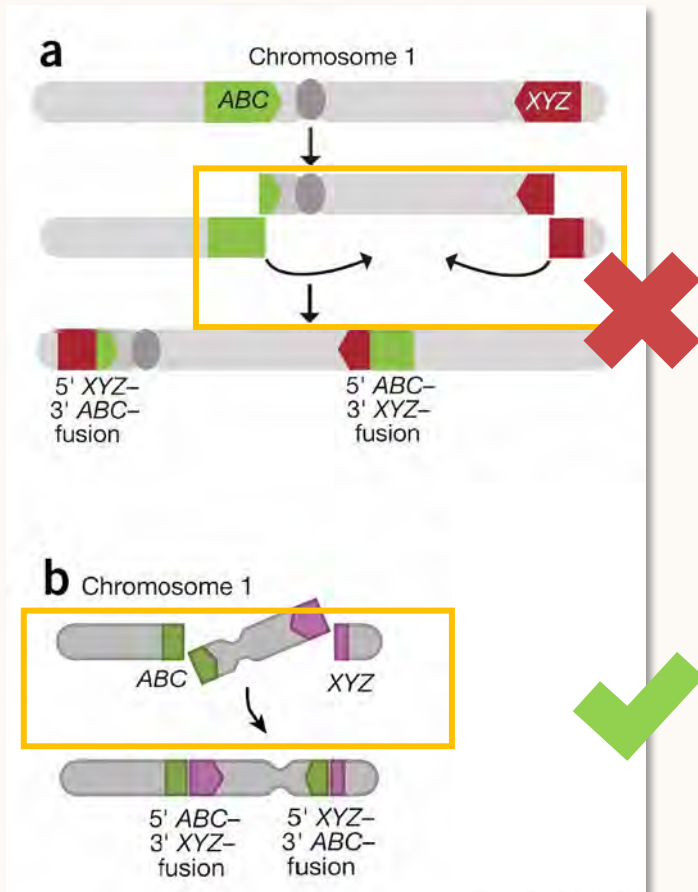
### ○ We ask ourselves:

- What are the essential elements?
- Is anything missing?
- What can we remove and still clearly communicate?
- Is there unnecessary repetition?
- Is there unnecessary decoration?

## Rule 4. Refine and repeat the process until the story is clear

### ○ Try to avoid:

- Using icons purely for decoration. Only use icons to enhance understanding and provide context.
- Using multiple arrow weights and styles when their meaning is unclear.
- Over-editing visuals.

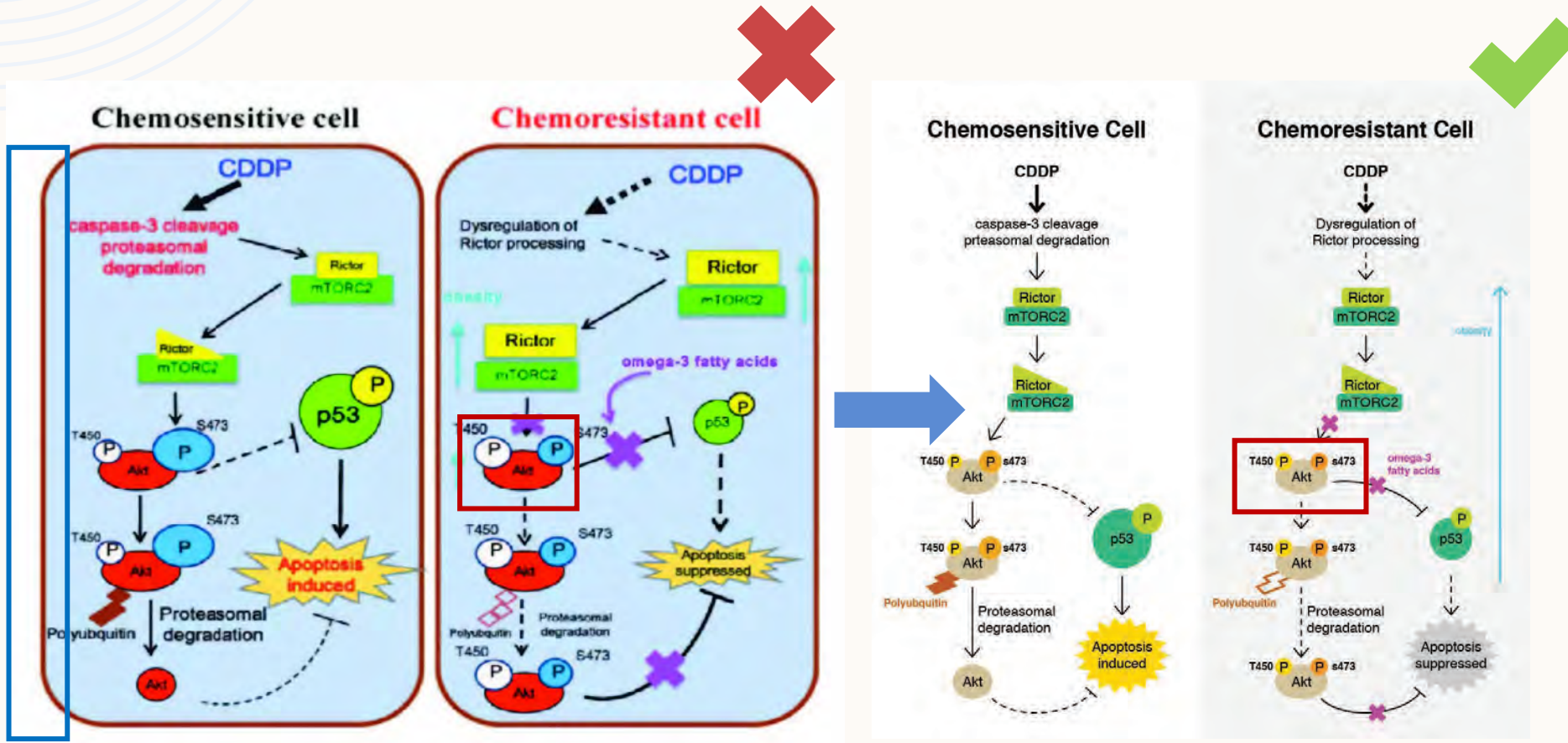


### Visual editing

- In the top figure (a), there are redundant elements and ambiguous arrows.
- By simplifying the action with a single arrow, the process is more clearly and intuitively shown in figure (b)."

# Rule 4. Refine and repeat the process until the story is clear

○ For example:



- Removing these lines will make the image look more polished,
- Also increase the contrast between the text and shapes.
- Minimizing the space arrows to give the shapes and text more breathing room

CHANGE THIS	TO THIS

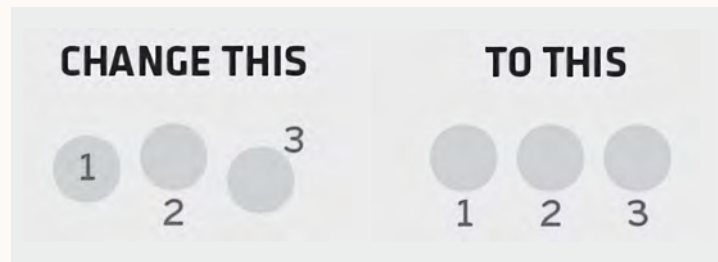
## Rule 4. Refine and repeat the process until the story is clear

### ○ Text



#### Reduce text size when possible

- When creating a graph, consider how large it will be viewed.
- Choose a text size that is appropriate for the scale.
- The text doesn't need to be the most prominent element in the graph.



#### Align similar information

- To create visual connections between information, align them horizontally or vertically in the figure

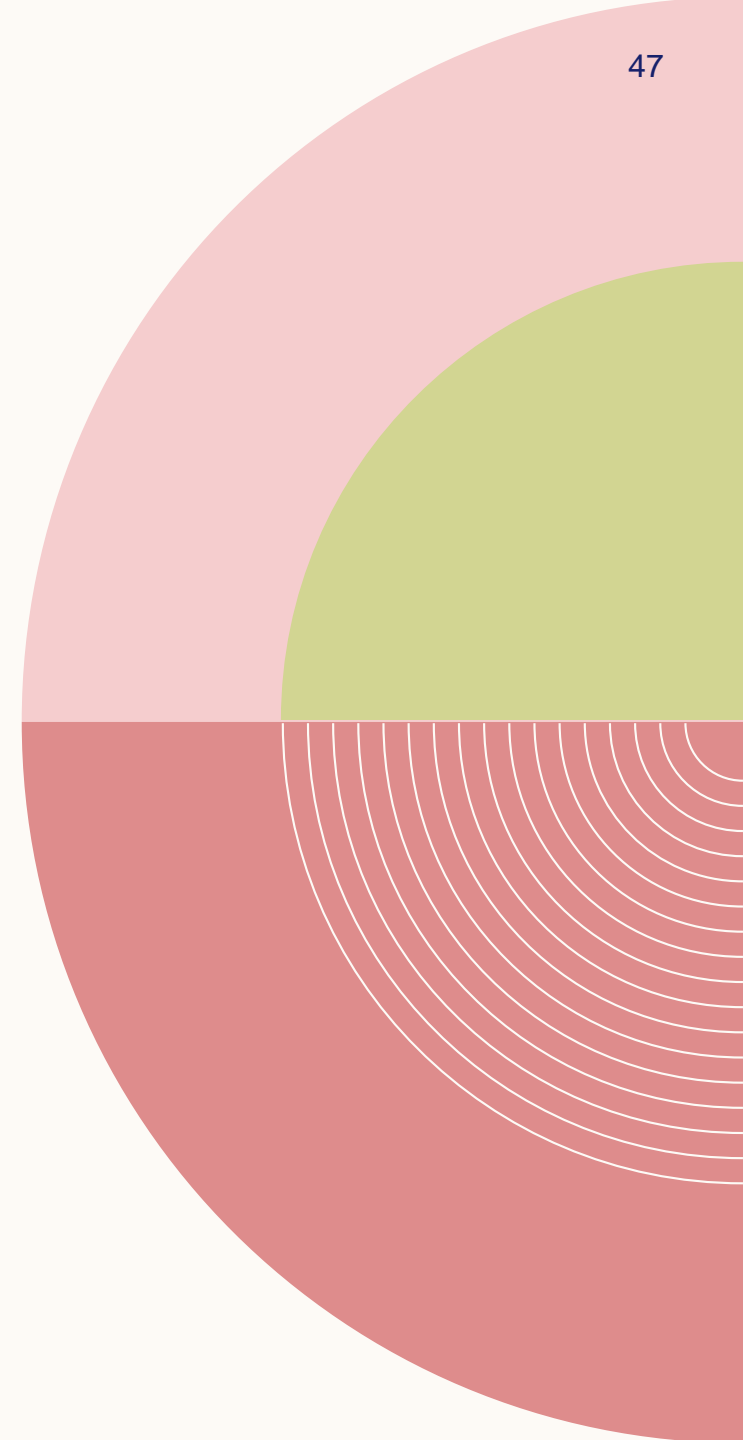
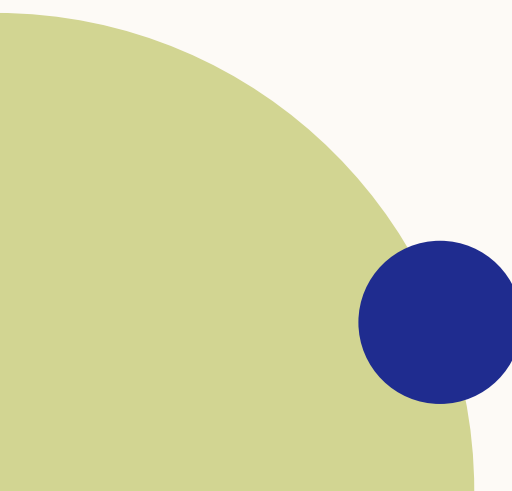


#### Rethink placement of labels

- Positioning labels closer to their corresponding element can clarify the label and make the figure less cluttered.

# SUMMARY

- 1. Clearly show the main purpose of your audience.**
- 2. Use composition to simplify the information.**
- 3. Use colors or grayscales to highlight the main points of the figure.**
- 4. Refine and repeat the process until the story is clear**



# SUMMARY OF GENERAL PUBLICATION REQUIREMENTS



## File types and resolution

Line art (Vector graphic)	Images
<ul style="list-style-type: none"> <li>includes graphs, flowcharts, diagrams, scatter plots, and other text-based figures that are not tables.</li> <li>If a figure includes both line art and images, follow the line art guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Includes photographs, drawing, imaging system outputs, and other graphical representation</li> </ul>
Preferred file types: <ul style="list-style-type: none"> <li>EPS &gt; AI &gt; PDF</li> </ul>	Preferred file types: <ul style="list-style-type: none"> <li>TIFF &gt; EPS &gt; PNG</li> </ul>
Preferred resolution: 600 dpi / 1000 dpi / 1200 dpi (if vector files couldn't be supplied, different for different publishers)	Preferred resolution: 300 dpi

## Image sizes

Small images	Large images
<ul style="list-style-type: none"> <li>Occupied one-quarter of the page</li> <li>The preferred minimum image size is an 80 mm canvas size or a pixel width of 1800px.</li> </ul>	<ul style="list-style-type: none"> <li>Occupied a half- or full-page</li> <li>The preferred minimum image size is a 180 mm canvas size or a pixel width of 1800px.</li> </ul>



## File size

- Each individual figure file should be less than 10 MB, and the zipped file of all figure files should be less than 500 MB.

## File name

- Name figure files only with the word “figure” and the appropriate number. For example: Figure\_1.tiff

## Legend and labelling

- Figure legends or captions should use Arabic numerals, follow the order in which they appear in the manuscript, and explain any abbreviations or symbols that appear in the figure.

## Colour

- Original research content should be supplied in RGB color mode
- All other content (including Perspective, Progress Articles and Review Articles) should be supplied in CMYK color mode

## Permission

- Clarify the source of any images that you do not own
- Cannot publish any third-party images without securing the appropriate rights



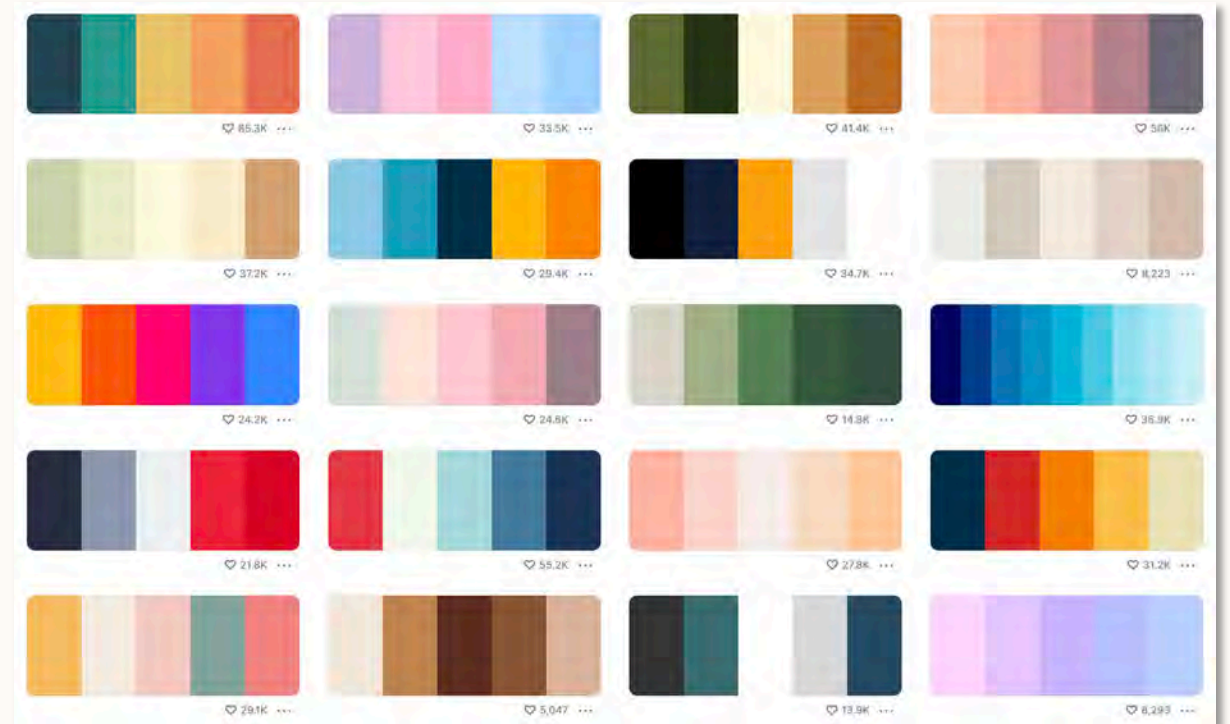
# POSTER MAKING TIPS

The background features a vertical line that divides the space. To the left of this line, there are several overlapping geometric shapes: a light green circle with white concentric lines, a blue semi-circle, a light green triangle, a pink triangle, and a red triangle. To the right of the vertical line, the background is plain white.

**“ HOW TO MAKE A GOOD VISUAL  
DESIGN ON YOUR POSTER? ”**

# 1. Simplify the over color palette

- Color can make a poster stand out from the crowd and enhance audience understanding.



- Choose a light background color to avoid taking attention away from the main points

- Limit the total number of colors used to let key data shine

## 2. Refine text treatment

CHANGE THIS



TO THIS



### Choose the right font

- Use fonts with letters that aren't capped off with horizontal lines
- They are simple and don't add unnecessary complexity to an already complex image
- **Helvetica**, Arial and **Calibri** are widely used examples of San serif fonts

CHANGE THIS

**THING 1**  
*THING 2*

TO THIS

**THING 1**  
THING 2

### Reduce differences in style

- To indicate that a piece of text contains different information, change only one aspect of the text.
- For example, you can make it bold, a different colour, or larger in size. However, avoid changing all three aspects at the same time.

CHANGE THIS

For multiple lines of text, use left or right justification instead of centered.

TO THIS

For multiple lines of text, use left or right justification instead of centered.

### Adjust paragraph justification

- Use left justification instead of centre
- It gives nowhere for the viewer's eyes to anchor as they move through the lines



# 3. Poster composition

## O<sup>6</sup>-Benzylguanine Inhibits Tamoxifen Resistant Breast Cancer Cell Growth and Resensitizes Breast Cancer Cells to Anti-Estrogen Therapy

Joshua Smith<sup>1</sup>, George C Bobustuc<sup>1</sup>, Rafael Madero-Visbal<sup>1</sup>, Jimmie Colon<sup>1</sup>, Beth Isley<sup>1</sup>, Jonathan Ticku<sup>1</sup>, Kalkunte S. Srivenugopal and Santhi Konduri<sup>1</sup>

<sup>1</sup>Cancer Research Institute of M.D Anderson Cancer Center Orlando \*Texas Tech University Health Sciences Center, Amarillo, TX



### Abstract

Endocrine therapies using anti-estrogens are most toxic and very effective for breast cancers. However, tumor resistance to tamoxifen remains a stumbling block for successful therapy. Based on our recent study on the involvement of the RNA repair protein MGMT in tamoxifen resistant breast cancer (Breast Cancer Res. 14, 3681-3690), here we investigated whether MGMT expression in tamoxifen resistant breast cancer cells is associated with MGMT expression in tamoxifen sensitive breast cancer cells. We found that MGMT expression levels were significantly lower in tamoxifen resistant breast cancer cells compared to tamoxifen sensitive breast cancer cells. MGMT expression levels were significantly lower in tamoxifen resistant breast cancer cells compared to tamoxifen sensitive breast cancer cells. MGMT expression levels were significantly lower in tamoxifen resistant breast cancer cells compared to tamoxifen sensitive breast cancer cells.

Posters rarely need abstracts

### Introduction

Recent advances in breast cancer research have identified key pathways involved in the repair of DNA damage induced by chemotherapeutic agents. The ability of cancer cells to recognize DNA damage and initiate DNA repair is an important mechanism for therapeutic resistance and has a negative impact on therapeutic efficacy. A number of DNA-damaging alkylating agents attack the methylophilic O<sup>6</sup> position on guanine, forming mutagenic and highly cytotoxic interstrand DNA crosslinks. The DNA repair protein O<sup>6</sup>-methylguanine DNA methyltransferase (MGMT), encoded by the gene MGMT, is the primary mechanism of repair of this site and is responsible for protecting both tumor and normal cells from alkylating agents. MGMT is expressed constitutively in all cells and levels are upregulated in response to DNA damage. MGMT expression levels are upregulated in response to DNA damage. MGMT expression levels are upregulated in response to DNA damage.

Text dissolves into intimidating, boring gray

### Results

**Prolonged Treatment of Tamoxifen Increases MGMT Expression:** We developed a tamoxifen resistant MCF-7 cell line by serial passage of tamoxifen on the parental ER-positive breast cancer cell line, MCF-7. Tamoxifen-resistant MCF-7 cells proliferate at rates similar to the parental MCF-7. Prolonged treatment of tamoxifen resistant MCF-7 cells increased MGMT expression compared to parental MCF-7 cells by 2 fold (Fig. 1A).

**Knocking Down ERα Enhances MGMT Expression in Tamoxifen Resistant Breast Cancer Cells:** It is not known whether ERα and MGMT transcriptionally regulate each other in tamoxifen resistant breast cancer cells. We therefore investigated whether down regulation of ERα has any effect on endogenous MGMT expression in these cells. As expected, downregulation of ERα using specific siRNA significantly reduced ERα protein levels in these cells. Western blot analysis was performed and the results in the left panel (Fig. 2A) shows that silencing of ERα increases MGMT expression in these cells, and interestingly, the results in the right panel (Fig. 2B) show increased MGMT mRNA levels were increased as assessed by qRT-PCR. These data suggest that ERα-mediated signaling functions to repress MGMT gene expression in breast cancer cells.

**Transcriptional Regulation between MGMT and p53:** Previously, it was reported that p53 negatively regulates MGMT in breast cancer cells. Therefore, we addressed whether or not silencing the p53 enhances endogenous MGMT transcription. Tamoxifen resistant MCF-7 cells were transfected with either p53 siRNA (si53-KD) (Fig. 3C) or MGMT siRNA (MGMT-KD) (Fig. 3D) along with Non-specific siRNA (NS) siRNA. MGMT expression was consistently increased in p53 knock down cells with different experiments (showing a 4 fold augmentation (Fig. 3A) and as expected, knocking down MGMT decreased MGMT transcription where as p53 mRNA levels were unaffected in MGMT knockdown cells (Fig. 3B). These results confirm that p53 can regulate MGMT at the transcriptional level.

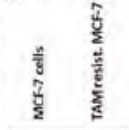


Figure 1. MCF-7 parental cell line treated with tamoxifen (100 nM) for 72 hours. MGMT mRNA levels were increased as assessed by qRT-PCR. These data suggest that ERα-mediated signaling functions to repress MGMT gene expression in breast cancer cells.

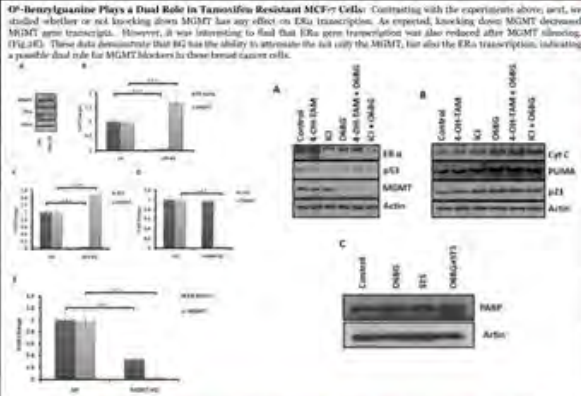


Figure 2. Tamoxifen resistant MCF-7 breast cancer cells were treated with ERα siRNA (si53-KD) or control siRNA (NS) for 72 hours. MGMT mRNA levels were increased as assessed by qRT-PCR. These data suggest that ERα-mediated signaling functions to repress MGMT gene expression in breast cancer cells.

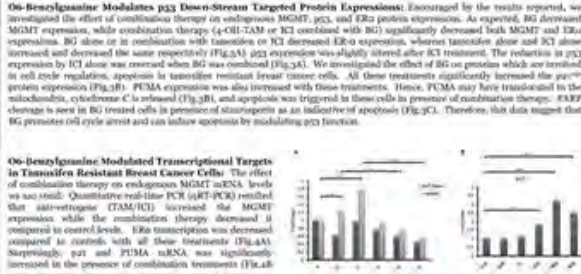


Figure 3. Tamoxifen resistant MCF-7 breast cancer cells were transfected with p53 siRNA (si53-KD) or MGMT siRNA (MGMT-KD) along with Non-specific siRNA (NS) siRNA. MGMT expression was consistently increased in p53 knock down cells with different experiments (showing a 4 fold augmentation (Fig. 3A) and as expected, knocking down MGMT decreased MGMT transcription where as p53 mRNA levels were unaffected in MGMT knockdown cells (Fig. 3B). These results confirm that p53 can regulate MGMT at the transcriptional level.

Caption not aligned with figure



Figure 4. Tamoxifen resistant MCF-7 breast cancer cells were treated with O6-benzylguanine (BG) in combination with tamoxifen (TAM) or control siRNA (NS) for 72 hours. MGMT mRNA levels were increased as assessed by qRT-PCR. These data suggest that ERα-mediated signaling functions to repress MGMT gene expression in breast cancer cells.

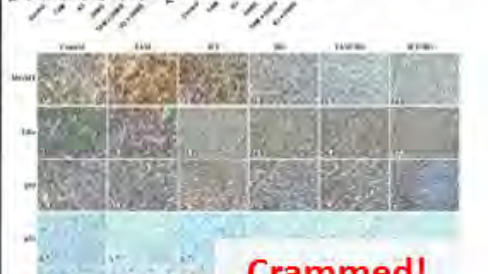


Figure 5. Tamoxifen resistant MCF-7 breast cancer cells were treated with O6-benzylguanine (BG) in combination with tamoxifen (TAM) or control siRNA (NS) for 72 hours. MGMT mRNA levels were increased as assessed by qRT-PCR. These data suggest that ERα-mediated signaling functions to repress MGMT gene expression in breast cancer cells.

Crammed!

Conclusions

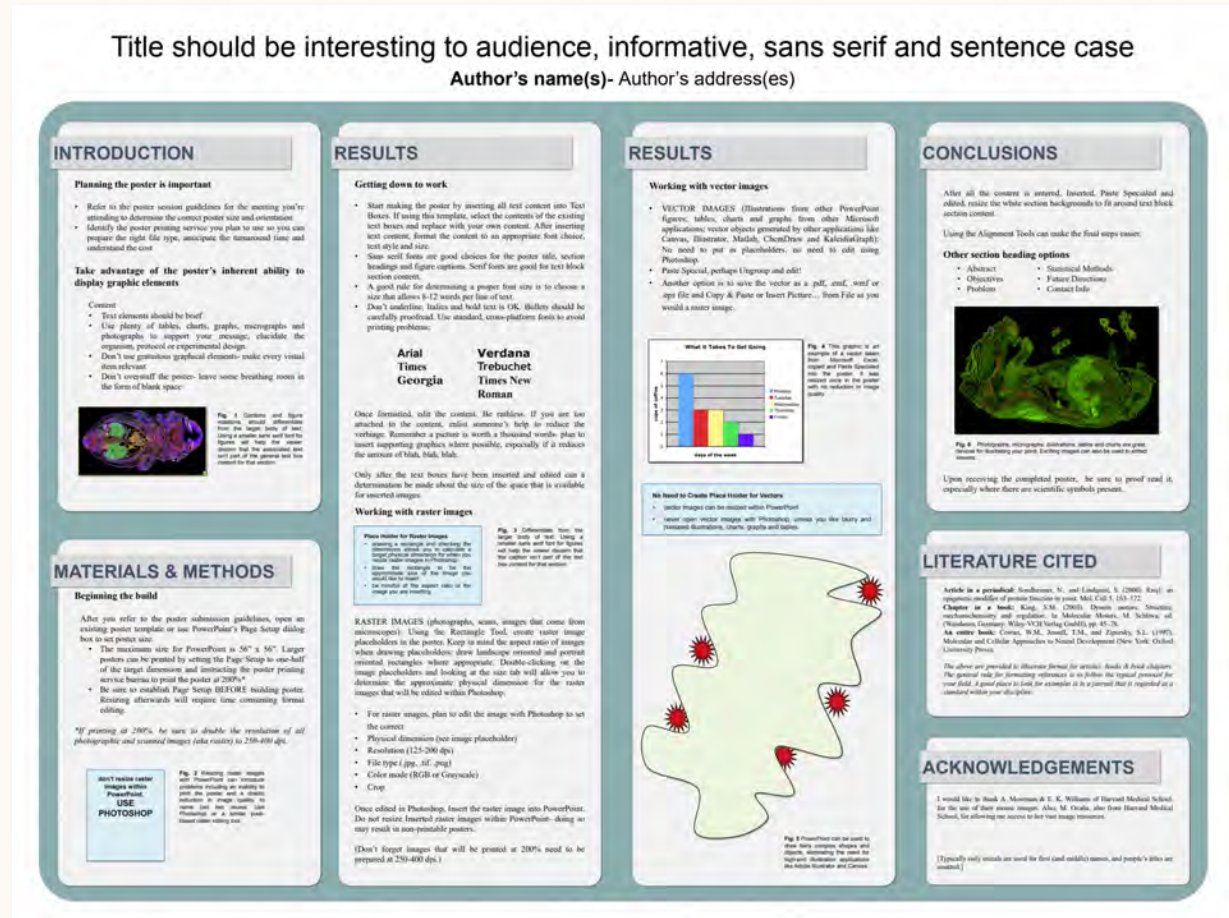
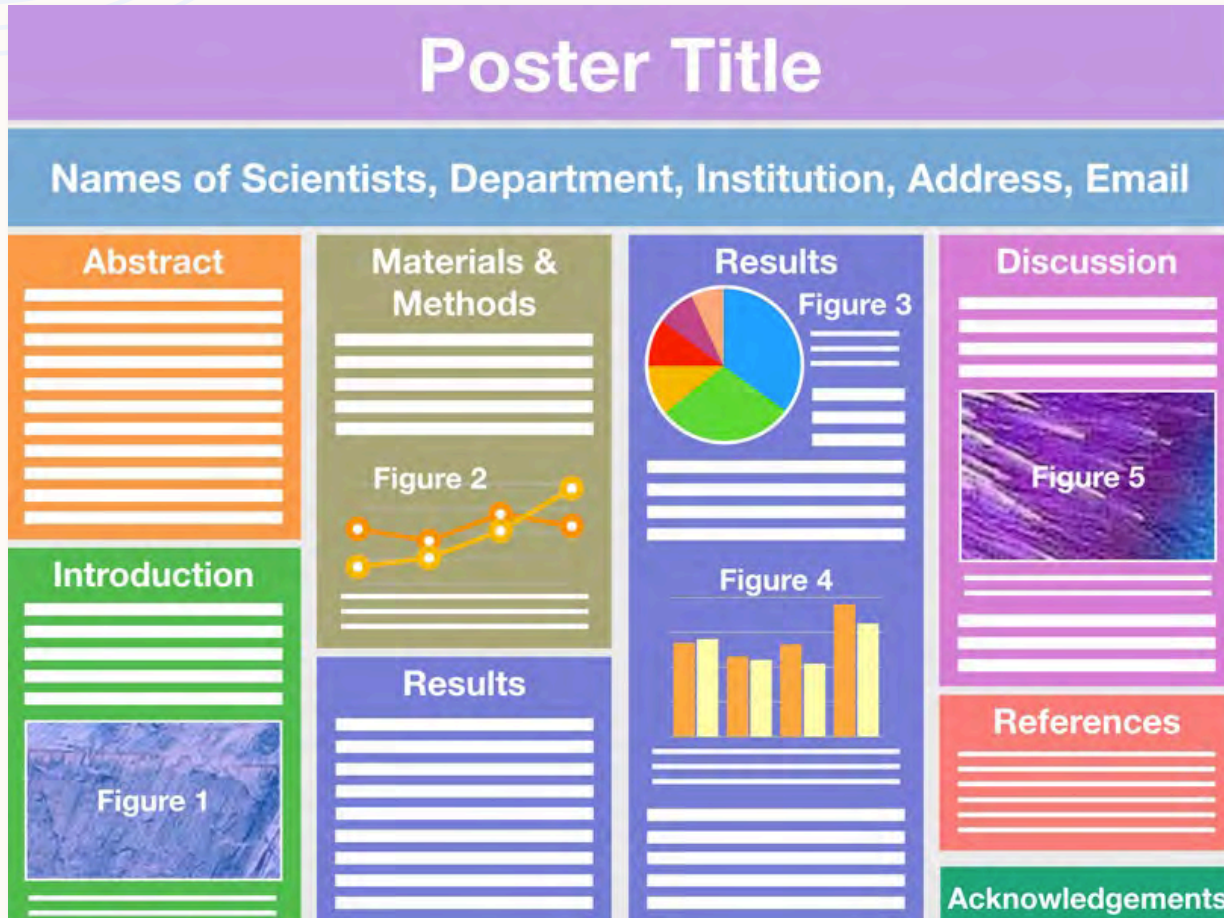
- In the present study, we observed that prolonged treatment with anti-estrogen causes drug resistance by inducing the DNA repair protein O<sup>6</sup>-methylguanine DNA methyltransferase (MGMT).
- Downregulating the expression of MGMT by exposing breast cancer cells to BG sensitized these cells to anti-estrogen therapy (tamoxifen and ICI).
- We also observed that combination therapy of anti-estrogen and MGMT blockers not only overcomes the MGMT derived drug (tamoxifen and ICI) resistance but also increases the efficacy of anti-estrogen therapy by decreasing estrogen receptor expression and restoring the functional activity of p53 in tamoxifen resistant breast cancer cells.
- Combination therapy inhibited tamoxifen resistant breast tumor growth in vivo.

Acknowledgements

- An example of a poorly designed poster
- overcrowded graphs and figures
  - Avoid trying to fit in too much information
- This causes cognitive overload and reduces comprehension
- Labels and images that are too small are not accessible or legible for those with visual impairments



- An example of a good designed poster
- A better layout can help reviewers appreciate your content
  - Organize the information from left to right, top to bottom, or in a pattern

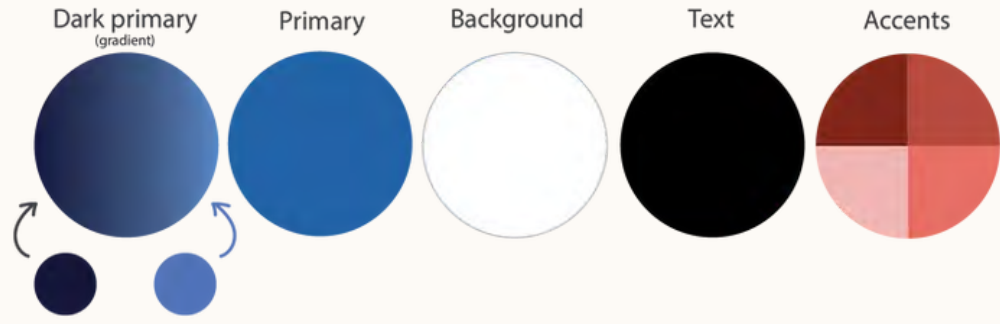
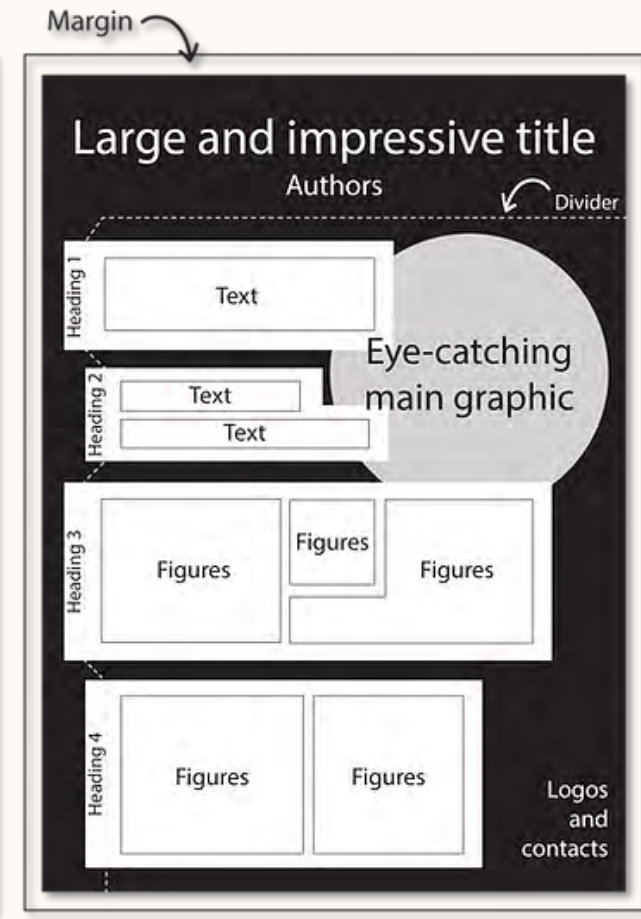
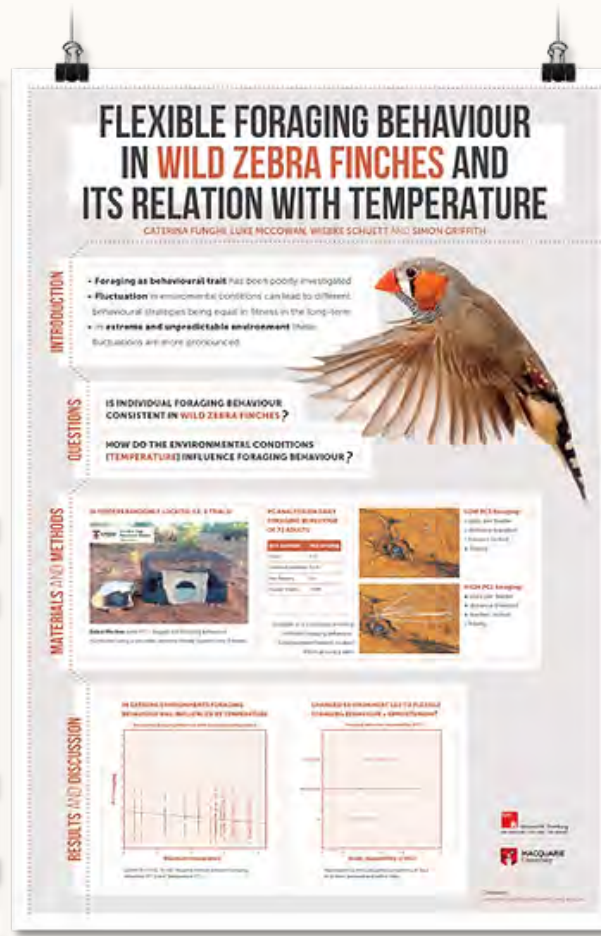
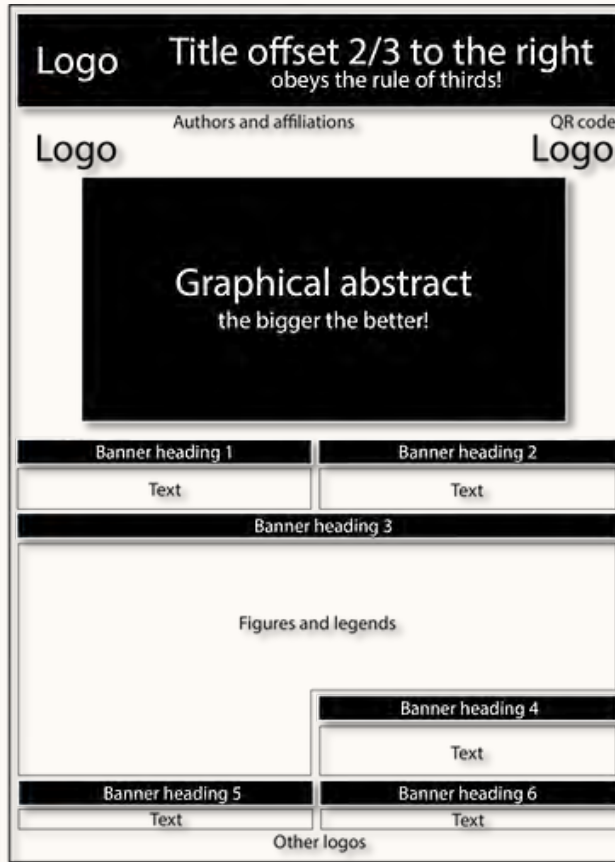
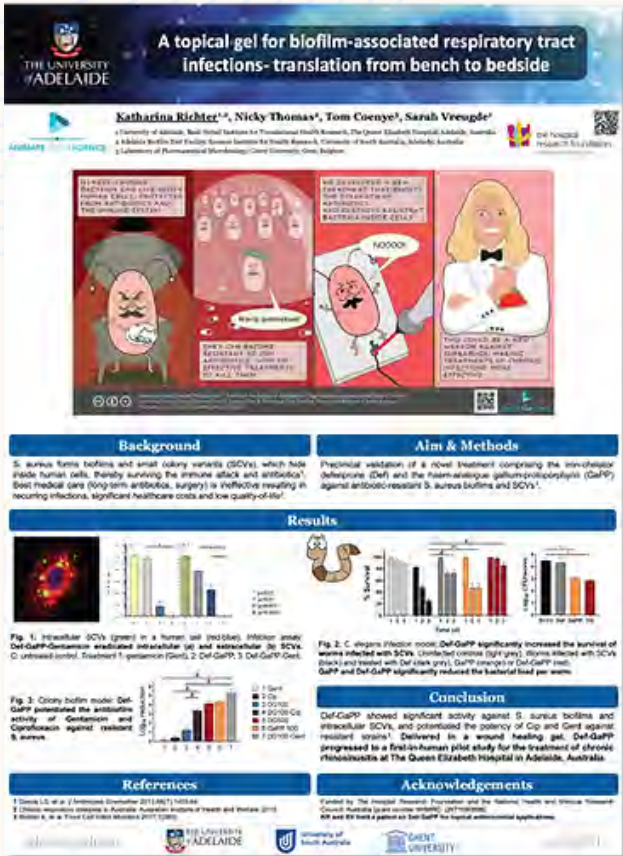


Title should be interesting to audience, informative, sans serif and sentence case  
 Author's name(s)- Author's address(es)

☐ You may download poster templates online

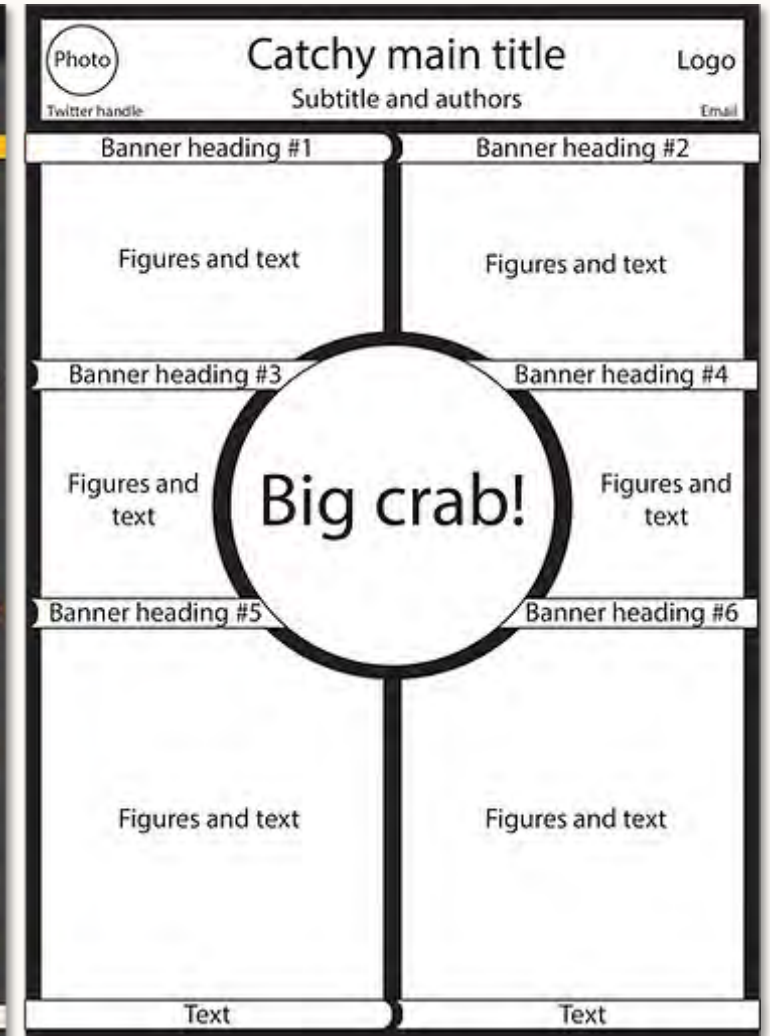
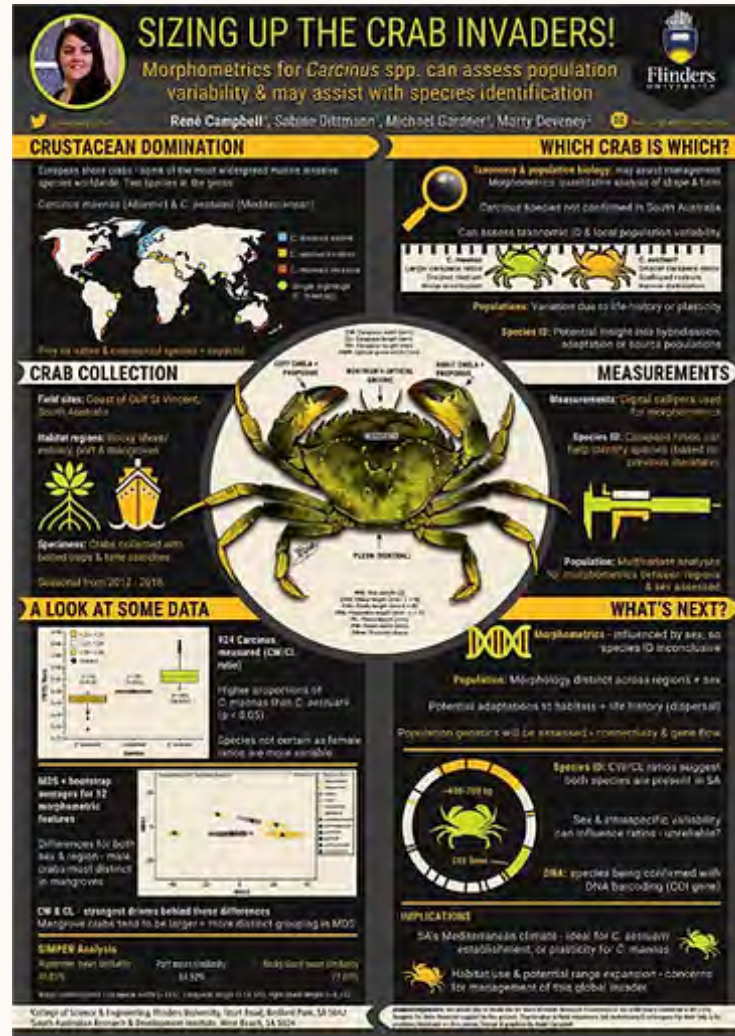
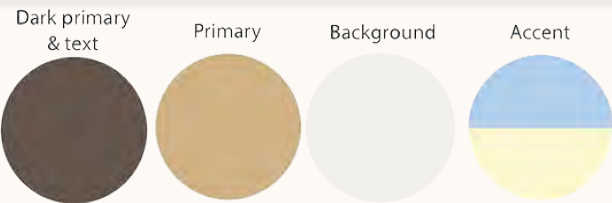
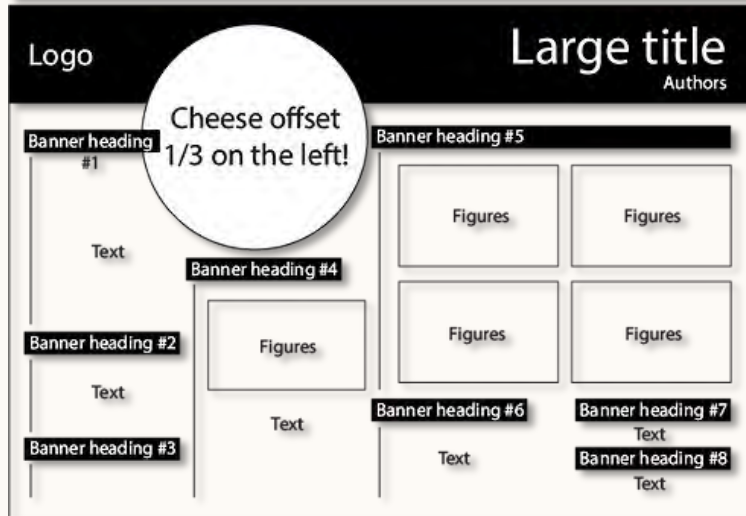
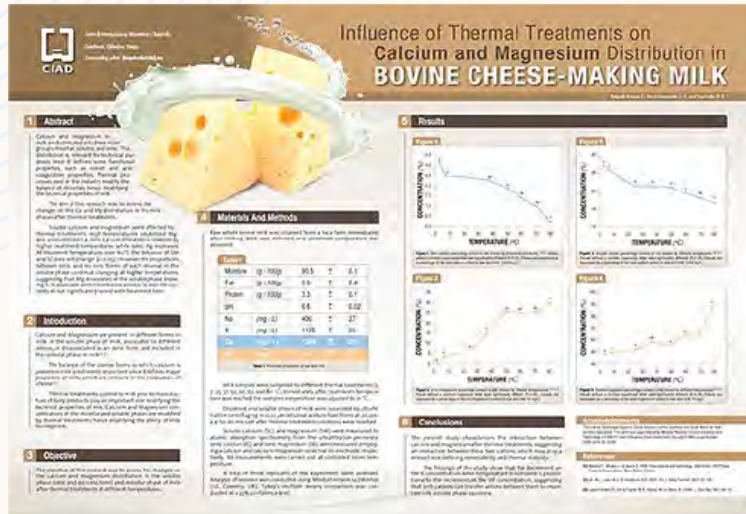


○ Another example for poster composition



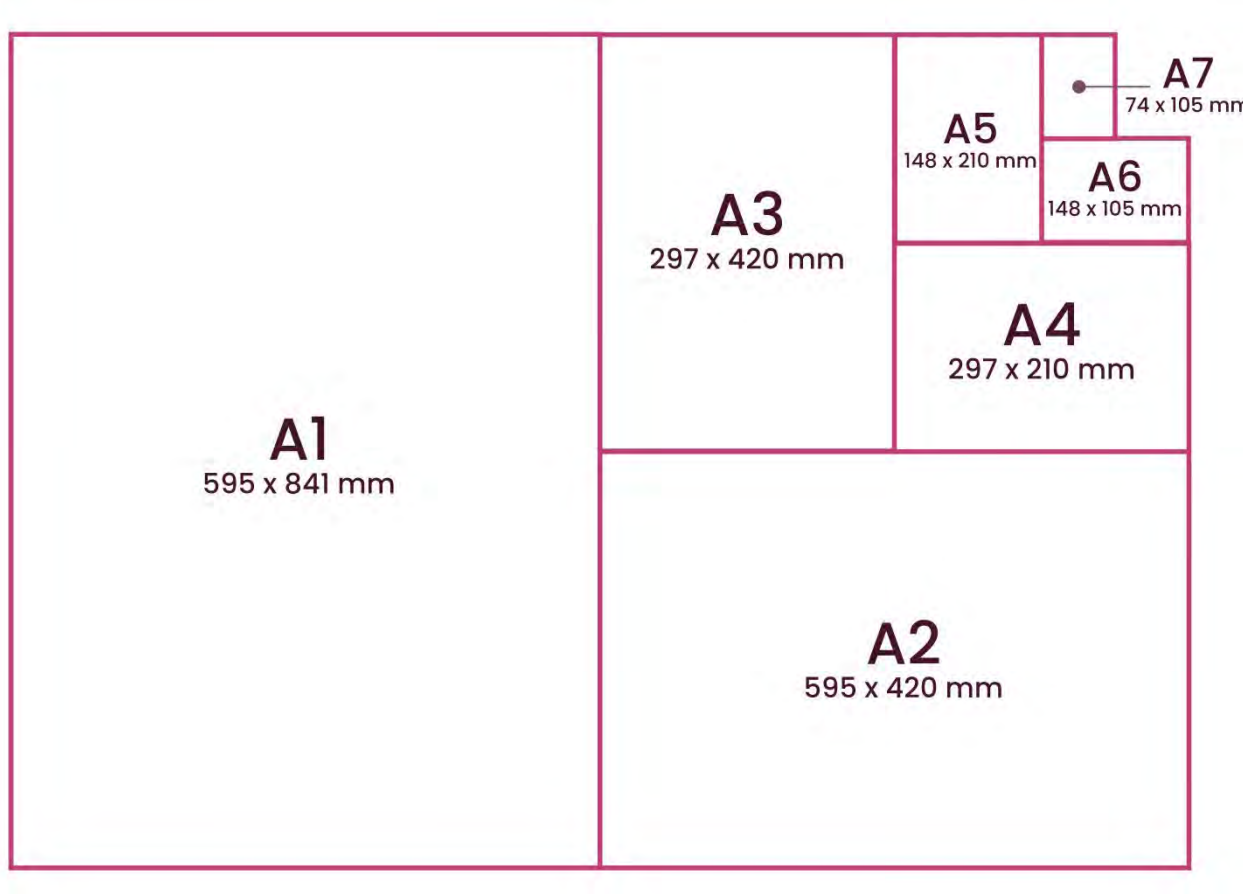


Another example for poster composition



○ **Paper size**

- Standard International Paper Sizes and Measurements



Paper Size	Millimetres	Centremetres	Inches
<b>A0</b>	841 x 1189mm	84.1 x 118.9cm	33.1 x 46.8in
<b>A1</b>	594 x 841mm	59.4 x 84.1cm	23.4 x 33.1in
<b>A2</b>	420 x 594mm	42 x 59.4cm	16.5 x 23.4in
<b>A3</b>	297 x 420mm	29.7 x 42cm	11.7 x 16.5in
<b>A4</b>	210 x 297mm	21 x 29.7cm	8.3 x 11.7in
<b>A5</b>	148.5 x 210mm	14.85 x 21cm	5.8 x 8.3in
<b>A6</b>	105 x 148.5	10.5 x 14.85cm	4.1 x 5.8in
<b>A7</b>	74 x 105mm	7.4 x 10.5cm	2.9 x 4.1in
<b>A8</b>	52 x 74mm	5.2 x 7.4cm	2.0 x 2.9in
<b>A9</b>	37 x 52mm	3.7 x 5.2cm	1.5 x 2.0in
<b>A10</b>	26 x 37mm	2.6 x 3.7cm	1.0 x 1.5in

The background features a vertical line on the left side. To the left of this line, there are concentric white circles on a light green background. To the right of the line, there are four colored triangular sections: a blue one at the top, a light green one in the middle, a light pink one at the bottom left, and a reddish-pink one at the bottom right.

**“ HOW TO MAKE POSTERS IN  
POWER POINT? ”**



UNIVERSITY / DEPARTMENT / ADDRESS

# Title of Research Study

Authors Name and University Contact Information

## ABSTRACT

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## INTRODUCTION

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Header, to label the figure or table below

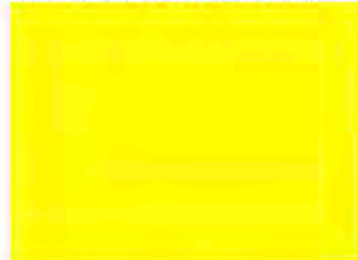


Figure Caption: Small text describing the figure content, including author names and affiliations.

## MATERIAL & METHODS

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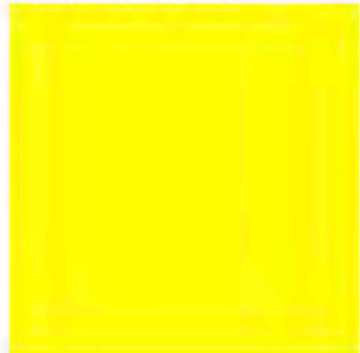


Figure Caption: Small text describing the figure content, including author names and affiliations.

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Figure Caption: Small text describing the figure content, including author names and affiliations.

## RESULTS & DISCUSSION

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Header, to label the figure or table below



Figure Caption: Small text describing the figure content, including author names and affiliations.

Header, to label the figure or table below

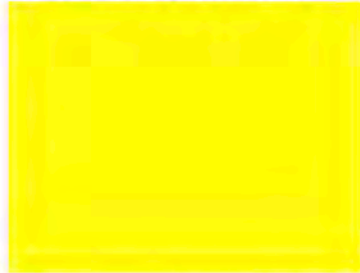


Figure Caption: Small text describing the figure content, including author names and affiliations.

## CONCLUSION

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## REFERENCES

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## ACKNOWLEDGEMENTS

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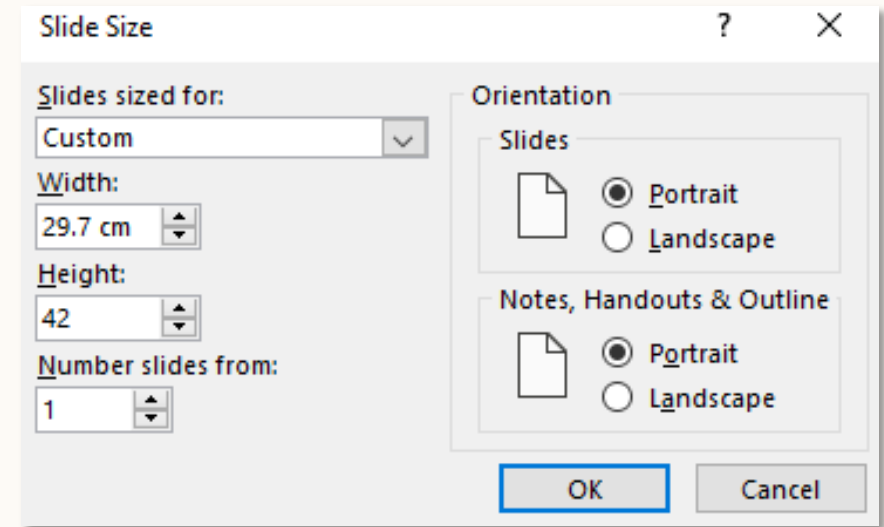
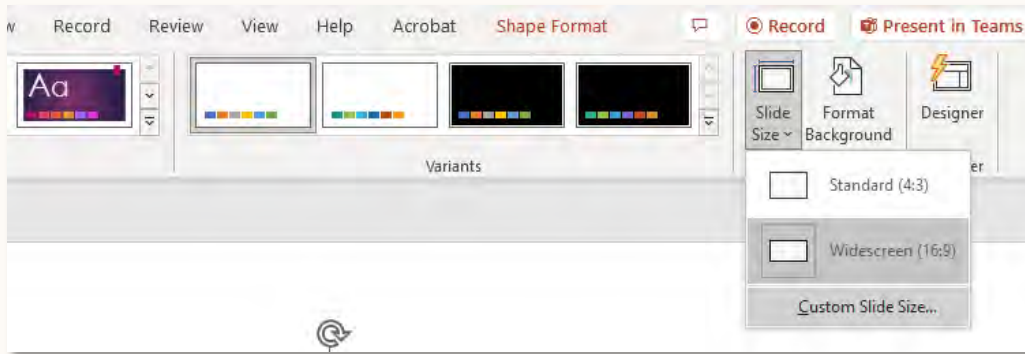
# Poster Title

Names of Scientists, Department, Institution, Address, Email

<h3>Abstract</h3> <p>Horizontal lines representing text.</p>	<h3>Materials &amp; Methods</h3> <p>Figure 2: Line graph showing data points.</p>	<h3>Results</h3> <p>Figure 3: Pie chart showing data distribution.</p>	<h3>Discussion</h3> <p>Figure 5: Microscopic image of tissue.</p>
<h3>Introduction</h3> <p>Figure 1: Microscopic image of tissue.</p>	<h3>Results</h3> <p>Horizontal lines representing text.</p>	<h3>Figure 4</h3> <p>Bar chart showing data comparison.</p>	<h3>References</h3> <p>Horizontal lines representing text.</p>
<h3>Acknowledgements</h3>			

## 1. Create your 'storyboard' by knowing what your target dimensions are.

- ❑ You may download poster templates from [https://www.dropbox.com/s/wl4ccwqxd0sf186/poster\\_templates\\_for\\_web.zip?dl=0](https://www.dropbox.com/s/wl4ccwqxd0sf186/poster_templates_for_web.zip?dl=0)
  - If using a template, insert text content into existing text boxes
  - If starting from scratch, use the Text Box Tool to insert text boxes, then add text content
- ❑ Refer to submission guidelines:
  - The size of your display space
  - The orientation of the display space ( landscape or portrait )



a) Open a template or new presentation in PowerPoint

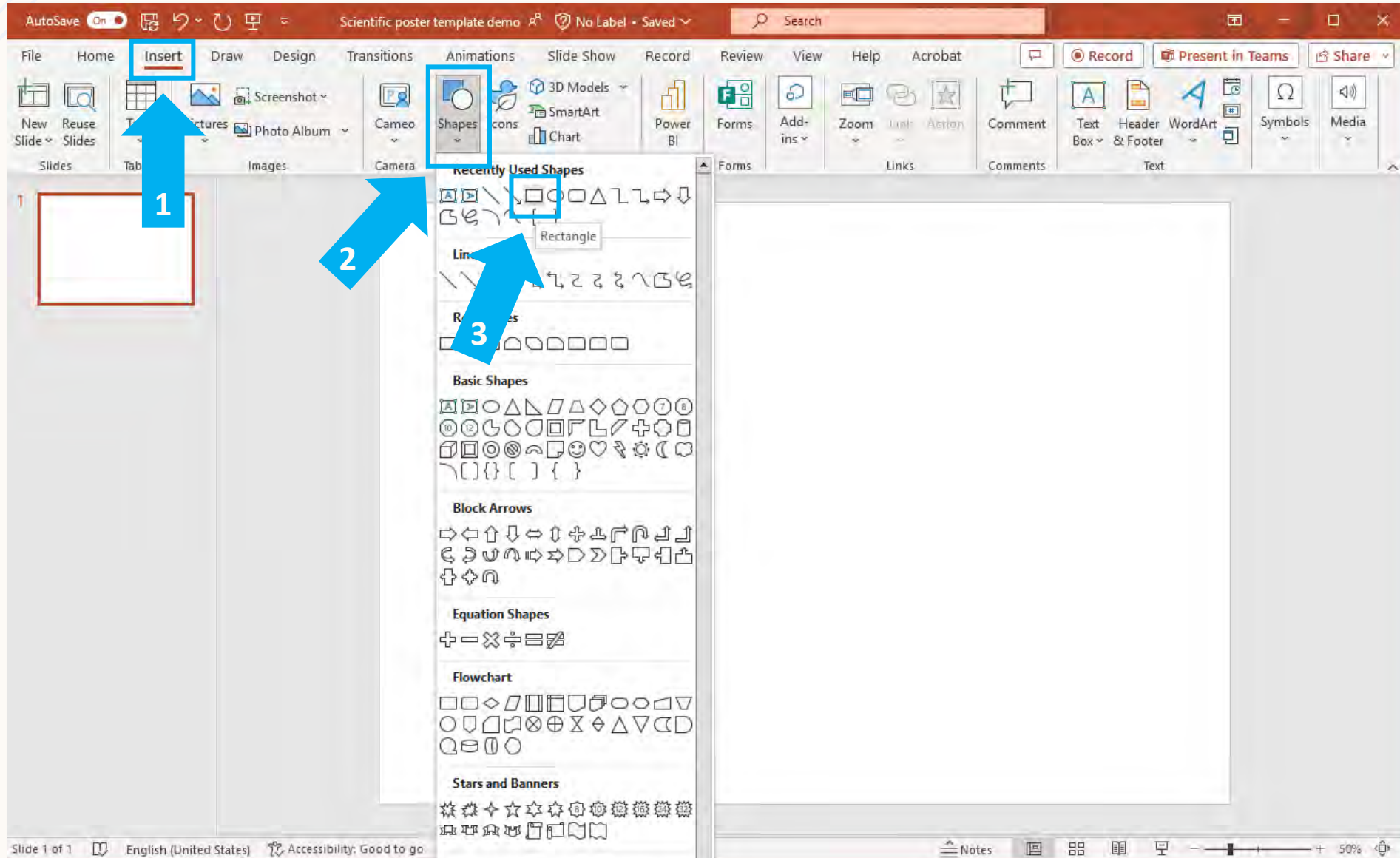
b) Design > Slide size > custom slide size

c) Set up size ( for example: making an A3 landscape size)

- The number should be equal to actual size of the poster

## 2. Define your layout

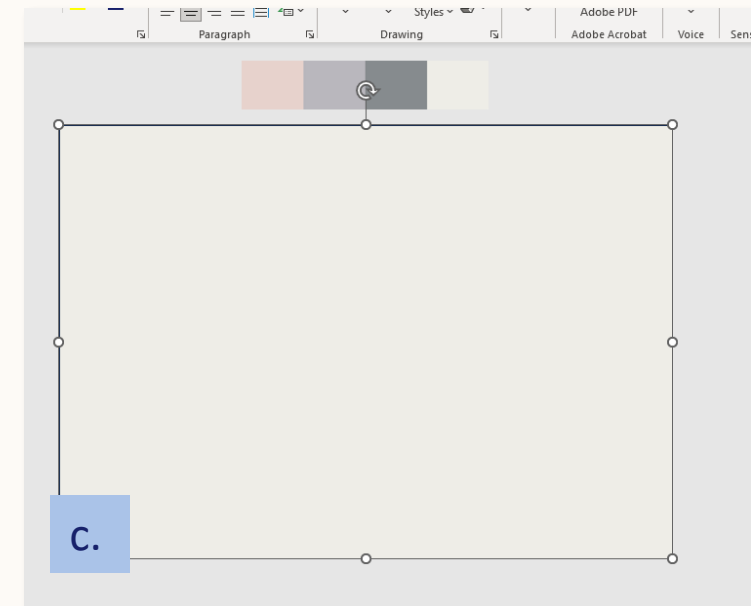
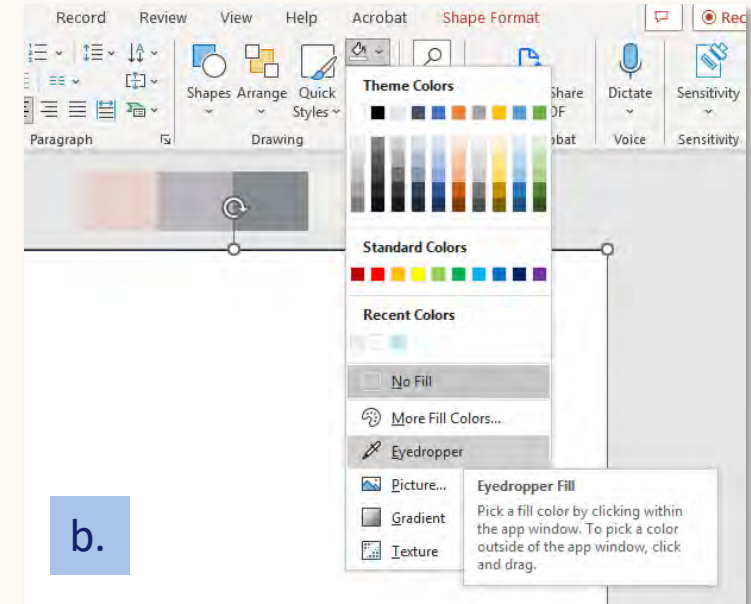
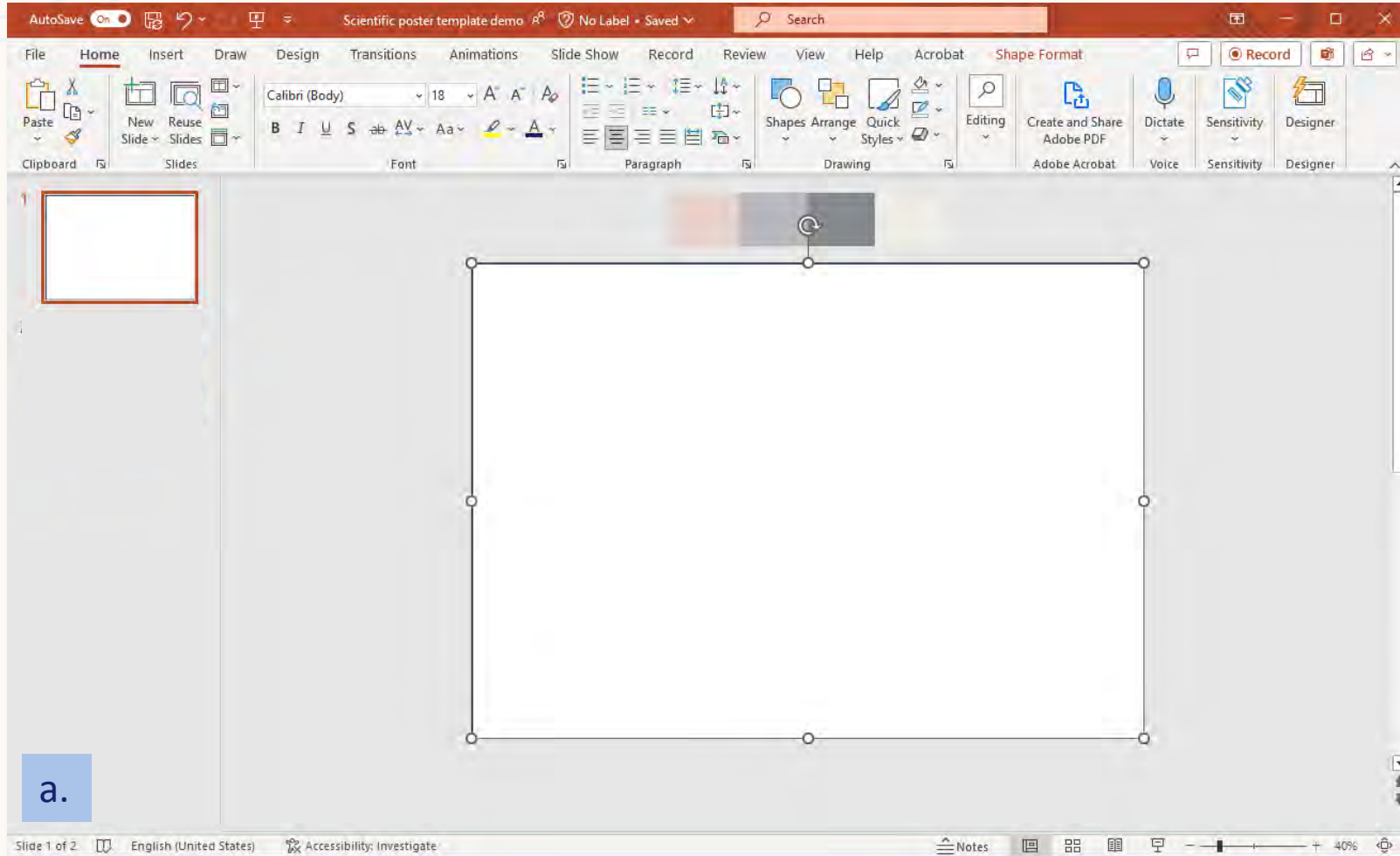
- As beginners, we'll create a simple and effective layout first!
- a) Insert > Shapes ( To make a blueprint of different sections using rectangles)





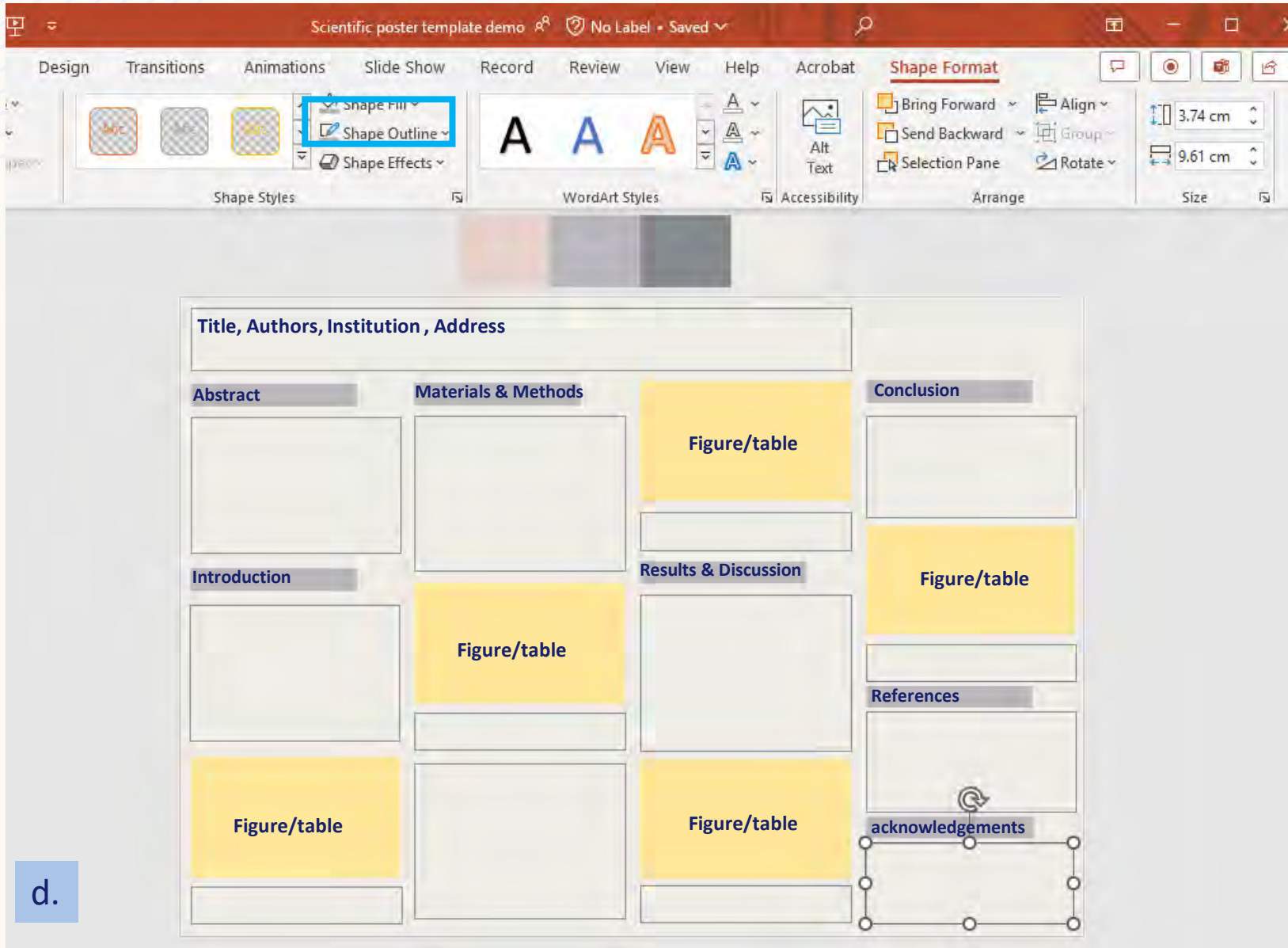
### 3. Choose a color palette

- a) Create a color palette and export the image
- b) Paste the image on PowerPoint, extract the colours using the eyedropper tool
  - Click the rectangle → Shape format → create background for the poster first
- c) Using the color palette, you can now add color to the background by using eyedropper



## 4. Create layout

d) use colored outline to create a simple layout

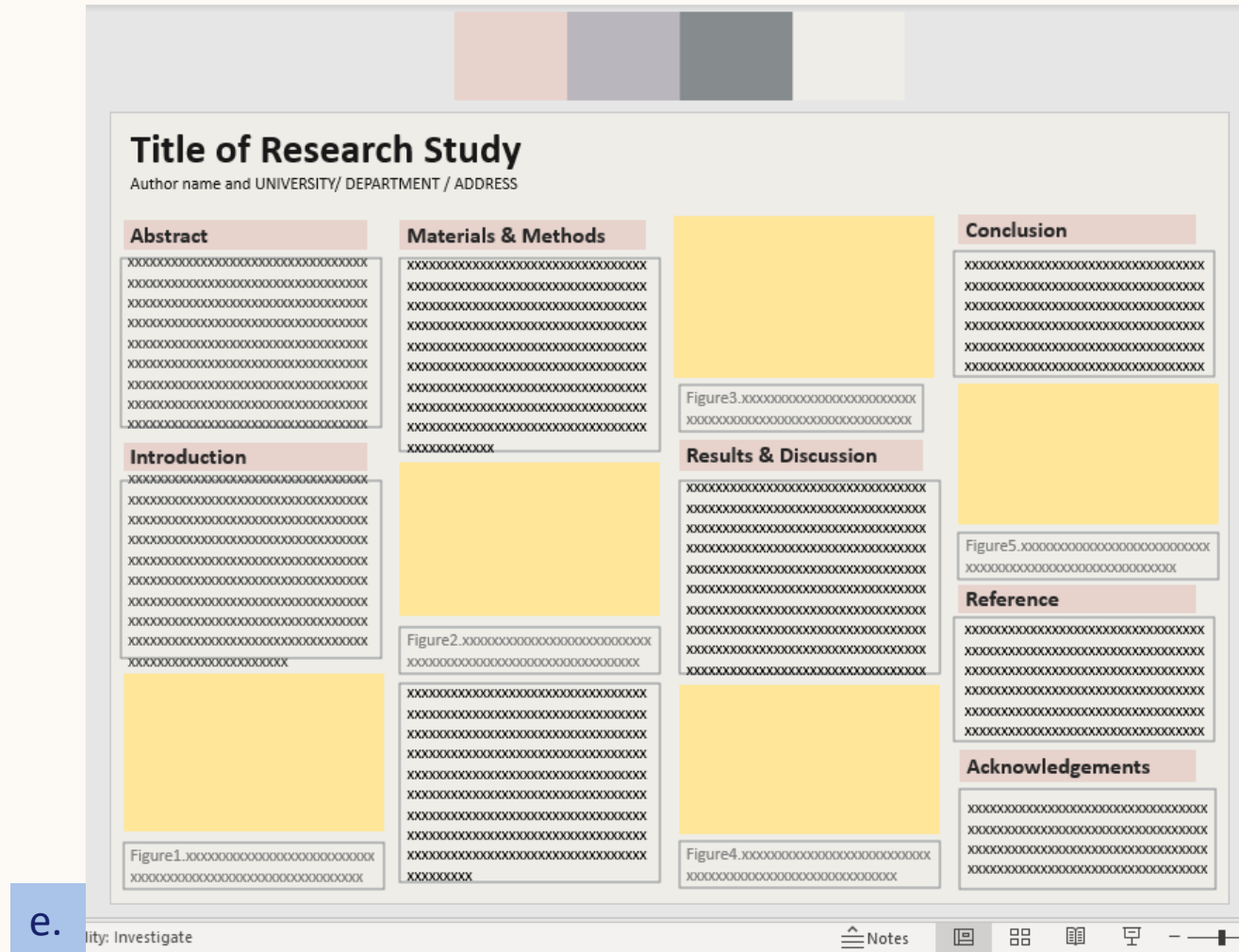


- Complete poster contains Title, Authors, Institution, Address, Abstract, Introduction, Materials & Methods, Results & Discussion, Conclusion (optional), References and Acknowledgements.
- Placeholders for Figures and/or Tables are shown with yellow boxes. Figure and/or table captions are shown under each yellow box.
- Figures and Tables can be placed anywhere in the poster



## 5. Insert text content to poster

- e) Edit content so the message is conveyed with minimal words
  - i. Font should be sized to keep the number of words per line to about 12-24 (**depends on your poster size**)

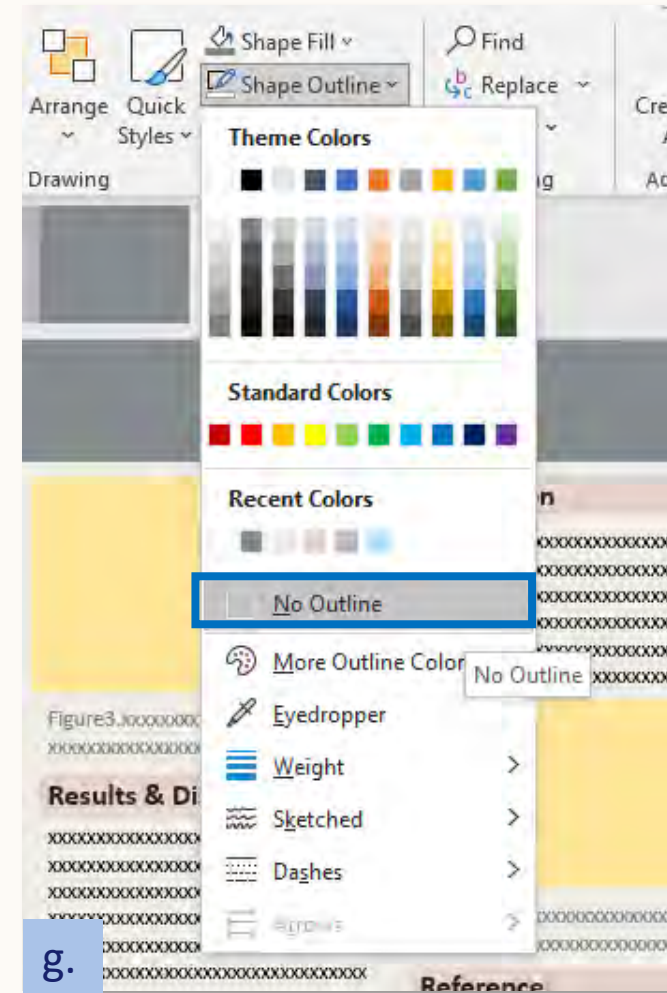
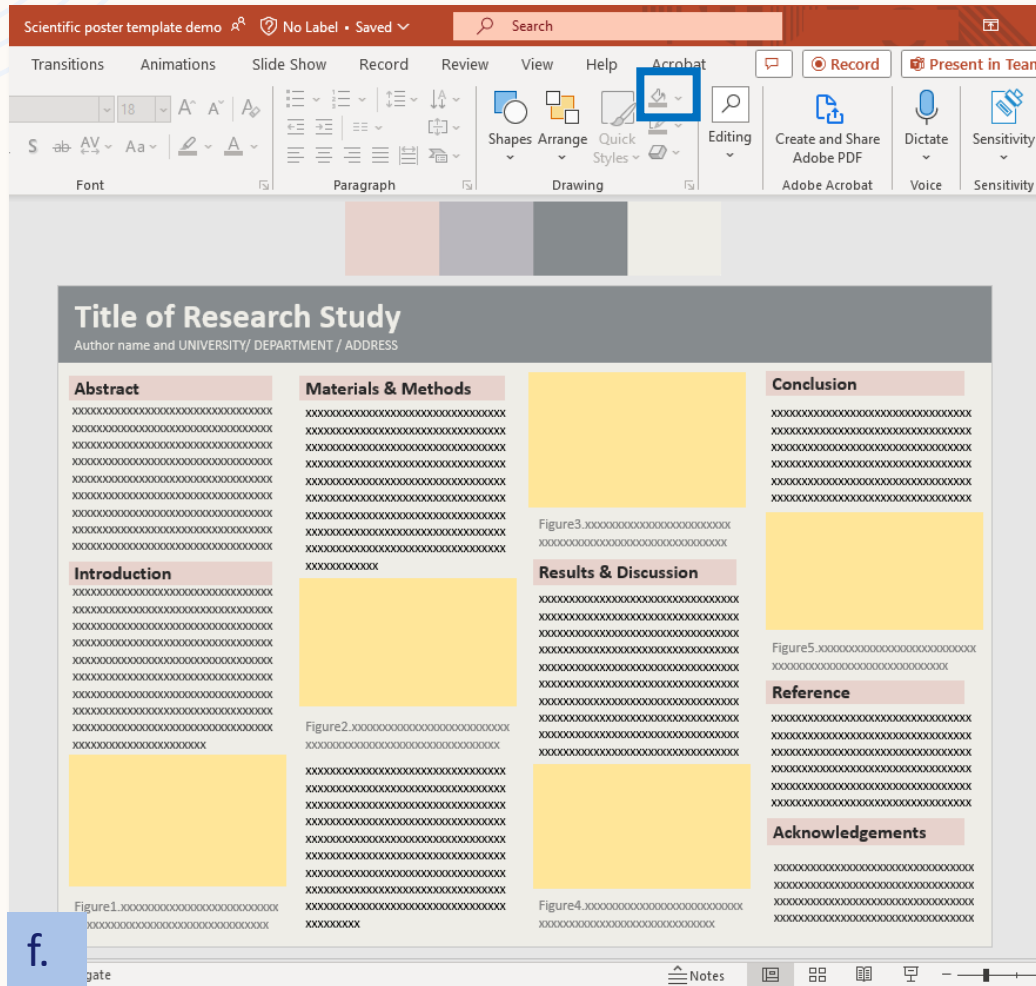


e.

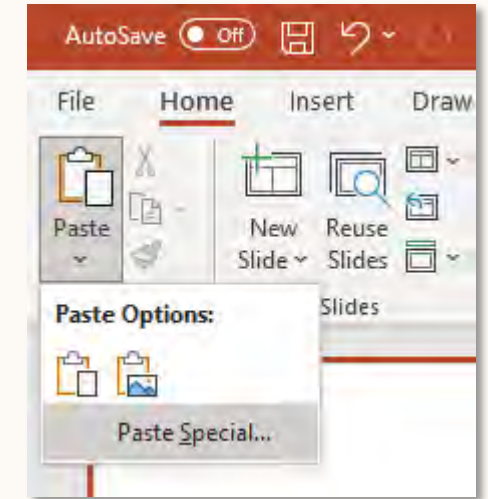
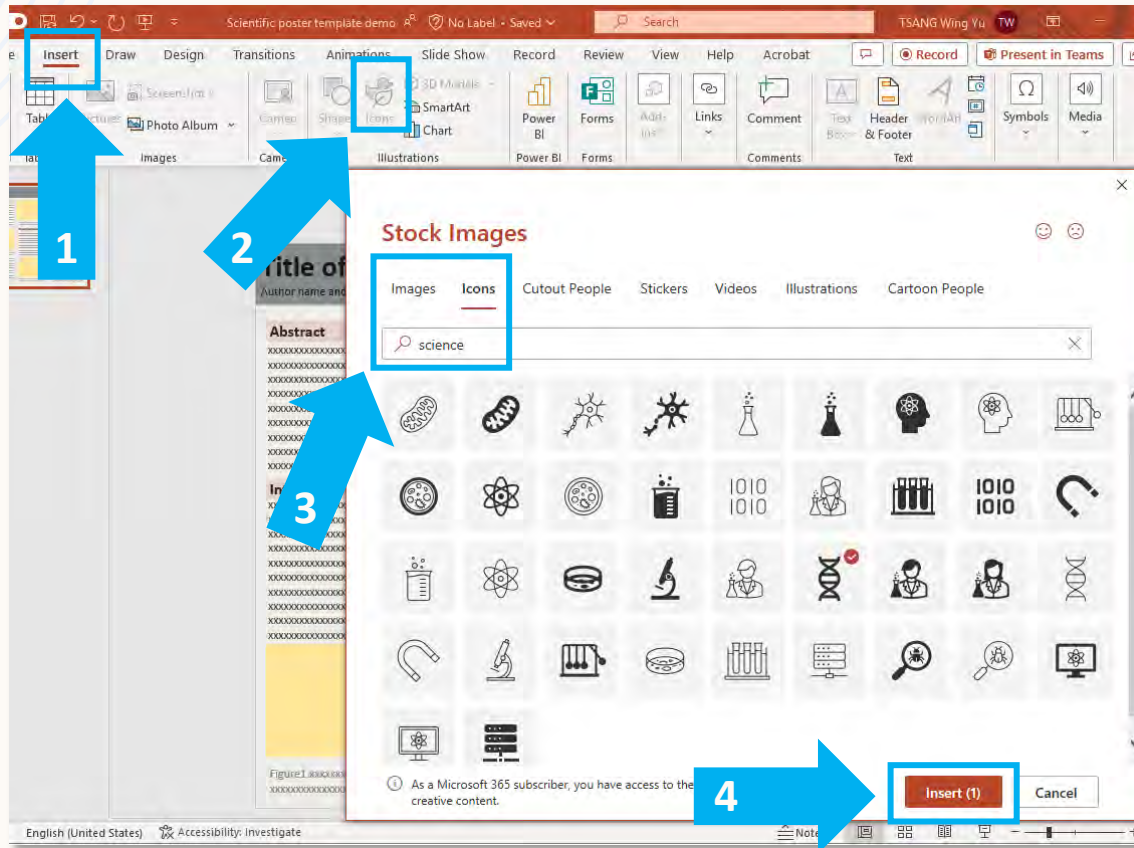
- ❖ Font choice is important. If the publisher or event organizer does not specify a particular font, choose a versatile, cross-platform font like **Helvetica**, Arial or **Calibri**.

## 5. Insert text content to poster

- f) Edit the text box's background color by using shape fill
- g) To remove the outline : shape outline > no outline



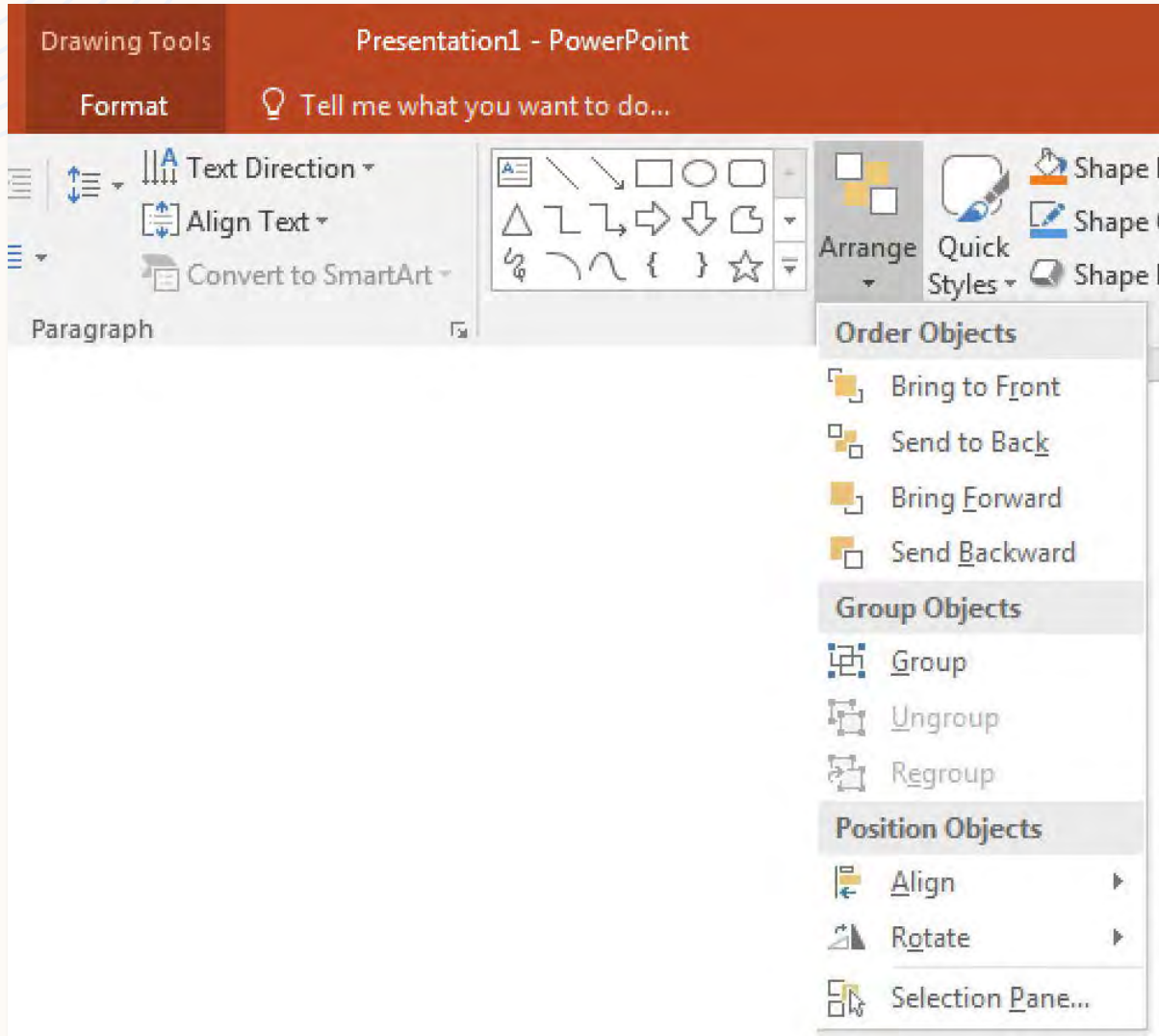
## 6. Insert vectors: Tables, Charts, Graphs and Drawing Objects



- For example, you could insert icons in PowerPoint
  - From **Insert**, click **Icons** which will bring up a menu of Stock Images on the right.
  - Type out “science” to see what images are available and find one that suits you. I’ve chosen a neuron in this case. **Click it** and then click **Insert** at the bottom of the Stock Image panel.
  - It will be added to your poster. Drag it to your preferred size, and color it **from the Graphics Fill panel**. Orange was the accent color we chose earlier.

- Data-generated tables, charts and graphs, graphics
  - Avoid rasterization (blurring) by using Copy & Paste or Paste Special...

## 7. Finishing touches: Arrange, Align and Group

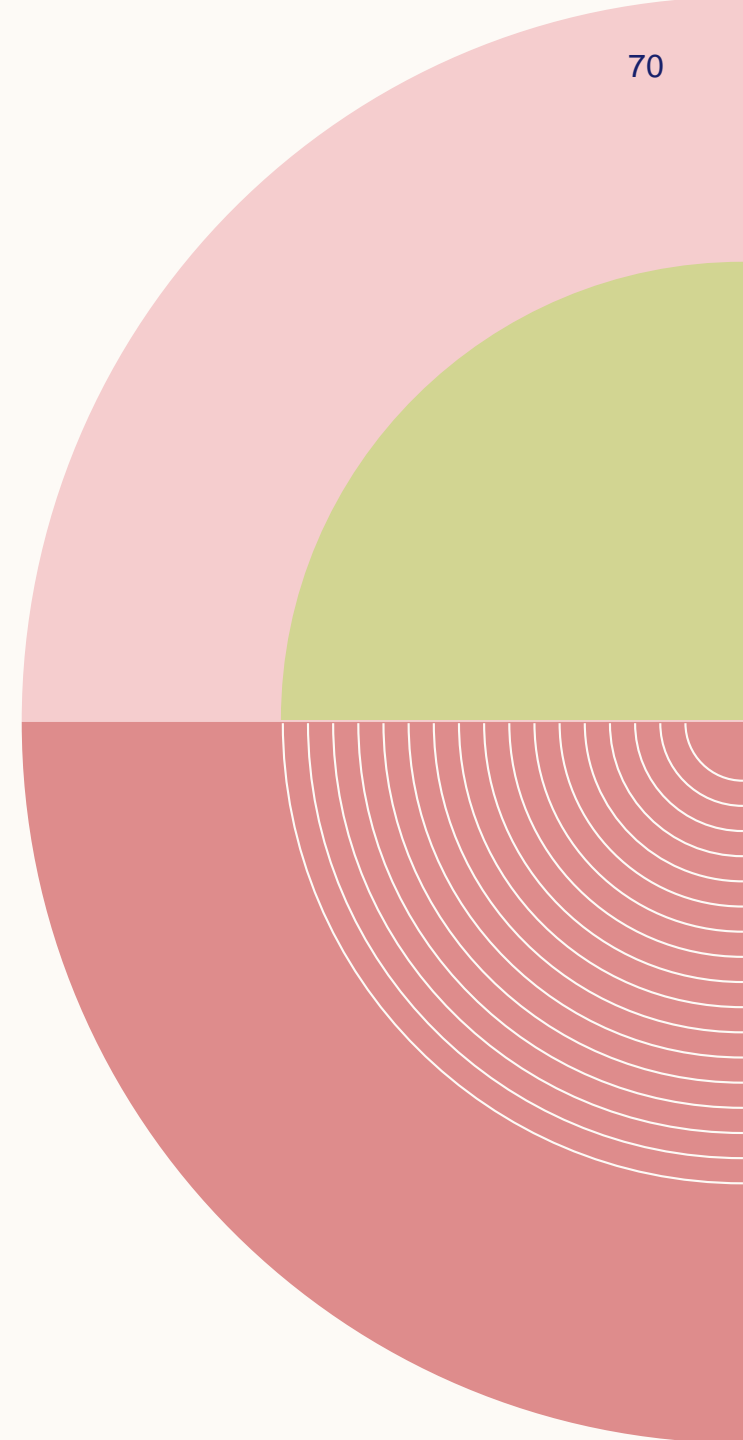
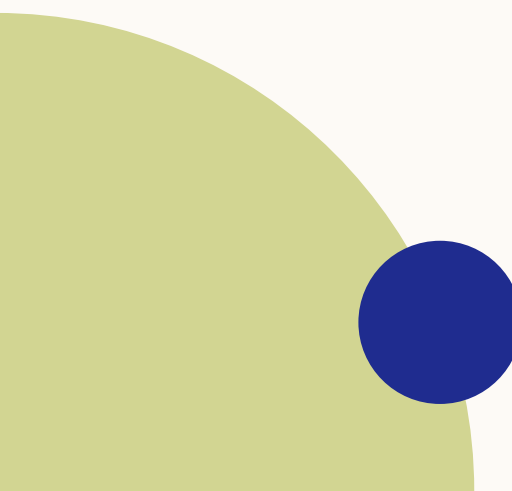


- Aligning and Grouping objects will ensure all elements remain where you intend them to be. Failing to Group leaves you vulnerable to the possibility of inadvertently moving something.
- Once done annotating and arranging all objects, Select all objects, then Group all selected objects.
- Using the Align or Distribute Tools, click on the To Slide option and click on the Center Align buttons (there is one for horizontal and another for vertical)



# SUMMARY

- 1. Check out the submission guidelines of publishers/ journals**
- 2. Download templates and adjust the size of your poster**
- 3. Add designs and data to the graphical abstract**
- 4. Export high resolution files for publications, presentation, and posters**







RECOMMENDED  
LINKS FOR  
PUBLICATIONS

<b>Online poster making</b>	Adobe Express	<a href="https://www.adobe.com/tw/express/">https://www.adobe.com/tw/express/</a>
	Canva	<a href="https://www.canva.com/">https://www.canva.com/</a>
<b>Colour palette generator</b>	Adobe Colour	<a href="https://color.adobe.com/create/color-wheel">https://color.adobe.com/create/color-wheel</a>
	Canva colour	<a href="https://www.canva.com/colors/">https://www.canva.com/colors/</a>
	Material design palette	<a href="https://www.materialpalette.com/">https://www.materialpalette.com/</a>
<b>Template for biological diagram</b>	Freepik	<a href="https://www.freepik.com/">https://www.freepik.com/</a>
	Simplified science	<a href="https://www.simplifyscience.com/">https://www.simplifyscience.com/</a>
	Wikimedia commons	<a href="https://commons.wikimedia.org/wiki/Main_Page">https://commons.wikimedia.org/wiki/Main_Page</a>
<b>Enhance image resolution with AI</b>	Bigjpg	<a href="https://bigjpg.com/">https://bigjpg.com/</a>



GRAPHIC DESIGN  
FOR BIOCRF



# BioCRF TREASURE HUNT



DO YOU KNOW WHAT THESE INSTRUMENTS ARE?  
WE'VE HIDDEN LETTERED EGGS AROUND THEM.

1. I'm a real-time PCR machine, but I can handle 9216 reactions (with a reaction volume of ~9nL) at a time.
2. I can measure osmolality ranging from 0 to 2000 mOsm/kg H<sub>2</sub>O.
3. I can spin at 150,000 rpm max.
4. I'm a gel scanner that can detect and analyze 2 infrared dyes.
5. I have a programmable liquid handling system inside my body for automated biochemical and cell-based assays.
6. I can spin 6L of liquid at a time.
7. I can do around 1000 single-cell lysate SDS-page separation on a chip in 1 minute.
8. I have gel and nucleic acids running through me.
9. I have a built-in fraction collector in my body.
10. I can do automated immunoassay and run up to 96 samples in one overnight run.

Free entry from now til

03 | 09  
APR | PM

### FOLLOW OUR PAGE

Please follow BioCRF's LinkedIn and Twitter account.

### JOIN THE GAME

Look for hidden letters in Rm 6127 to figure out the secret message, submit your answer to Qualtrics.

### LIKE & REPOST

Like and share to your friends.

### WINNER ANNOUNCEMENT

The 10 earliest correct submissions win a prize and will be notified on 4/4, via email.



SUBMIT YOUR ANSWER



LOOK FOR THEM IN RM 6127 AND BUILD A SECRET MESSAGE.

FOLLOW US



# MERRY CHRISTMAS!



HAPPY 3.14 DAY!



- 1 FOLLOW OUR PAGE
- 2 JOIN THE POLL
- 3 LIKE & REPOST







# REFERENCE LIST



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# THANK YOU

**ANY COMMENTS ? QUESTIONS ?**

Mabel Tsang

[mabeltsang@ust.hk](mailto:mabeltsang@ust.hk)