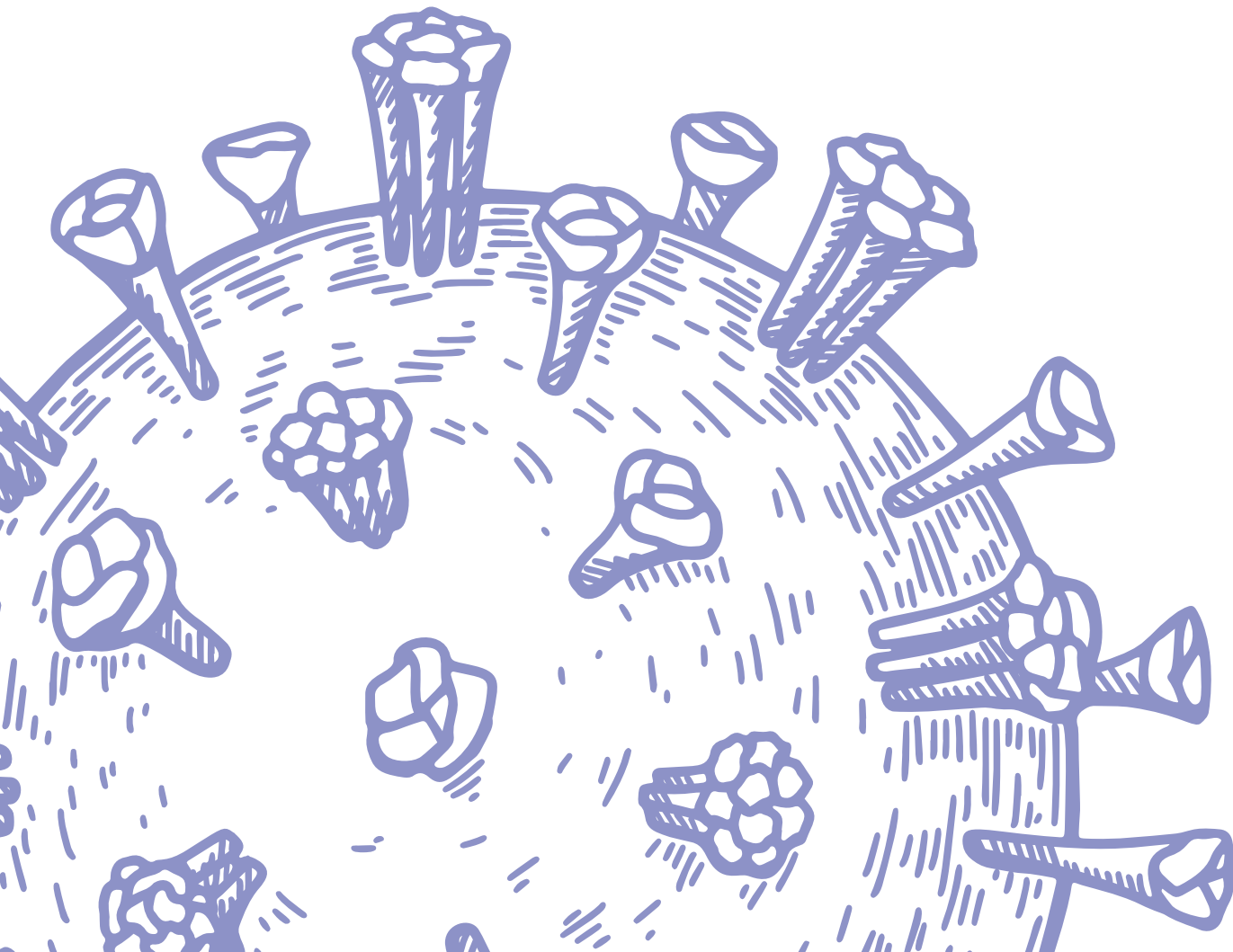




# Scientific Visuals Checklist

8 essential steps for creating successful scientific figures





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# Scientific Visuals Checklist

## 8 essential steps for creating successful scientific figures

This guide is designed specifically for professionals who are creating their own scientific visuals. With a few simple steps, you can take your visuals from “good” to “great”. Let’s make your images stand out!

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### ☐ Understand the context

Identify the intended placement, audience, and tone of the image

### ☐ Goals

Pinpoint the #1 goal for the image

### ☐ Research

Collect images, written resources, and other content about the topic

### ☐ Ideation

Develop 3-5 sketches of potential layouts

### ☐ Decide on a composition

Choose a sketch, scale it to the correct size, and add detail

### ☐ Refine the image

Clean up the sketch, add color, and add text or labels

### ☐ Gather feedback

Ask 2-3 people to review the image and give feedback

### ☐ Finalize!

Make any edits and complete the image



## Step 1: Understand the context

### Placement

Where will your image live? This informs your decisions on content, style, and dimensions of your image. These things will influence the composition.

Where will it live (ex, research paper) \_\_\_\_\_

Write the dimensions (ex, 4 inches x 3 inches) \_\_\_\_\_

Are there formatting standards because of where it will live (ex, publication image requirements)? If so, write them here!

\_\_\_\_\_

### Audience

Understanding your audience will help dictate the type of information necessary to explain your subject. Are they people who are very familiar with this topic? The general public? Children? Adults?

Who is your target audience? \_\_\_\_\_

### Tone

What type of feeling do you want to provoke with your image? This may be connected to your intended audience. Do you want it to be playful? Professional? Concise?

Write three adjectives that describe the tone of your image:

\_\_\_\_\_



## Step 2: Goals

What is the goal of your image? Keep it short and sweet. This will help determine the best way to visualize the subject

**Example:** Show the differences between gram positive and gram negative cell walls in bacteria.

Write your image goal here! \_\_\_\_\_



## Step 3: Research

View other images related to your goal, reach out to other experts about this subject, and collect additional written content about your topic.

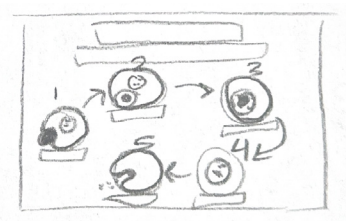
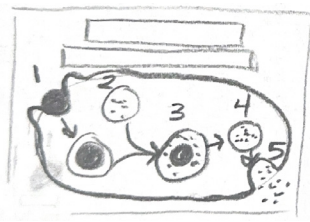
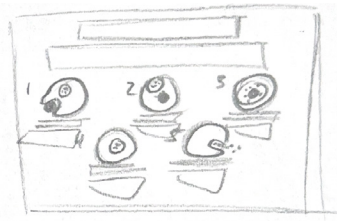
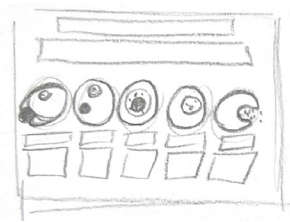
Review and take notes about these resources on a separate sheet of paper. What information would be more clear as a visual compared to text alone?



## Step 4: Ideation

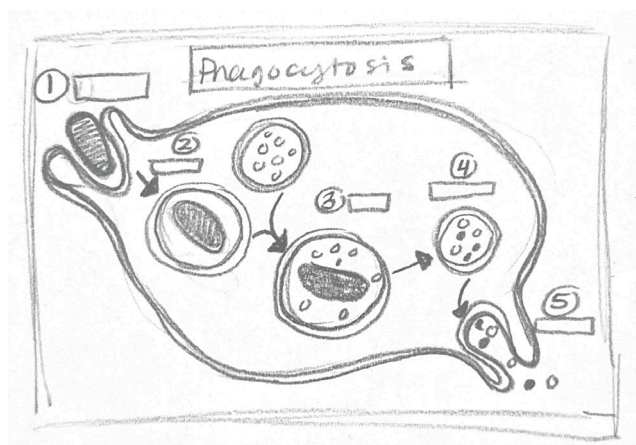
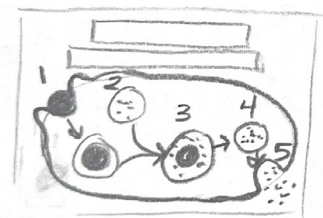
Doodle 3-5 potential layouts for your image within the dimensions from step 1. They can be scaled down versions. This allows you to explore layout and composition options.

**Example sketches:**



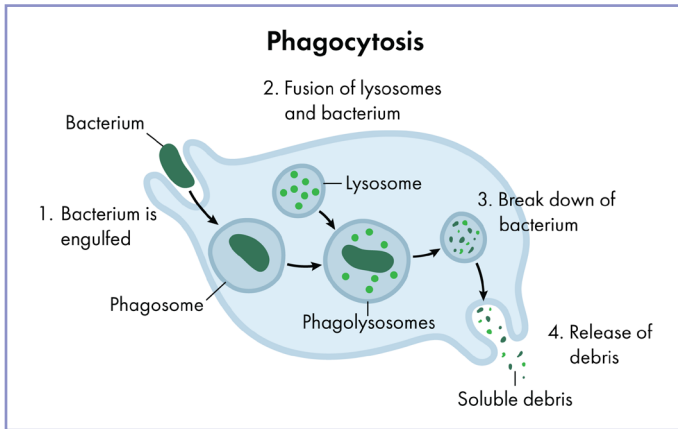
## Step 5: Decide on a composition

Choose one of the layouts from Step 4. Make this image to-scale and add more detail to this sketch. Make sure to include space and plan for any text that will be included.





## Step 6: Refine the image



Whether you are using digital software or traditional techniques to create your image, you will need to refine your sketch, potentially add color, and officially add your text or labels.

### Tip!

Check in with yourself. Does your image reflect your goal from Step 2? Is there any unnecessary information that can be reduced to make sure your goal is the focus of the image?

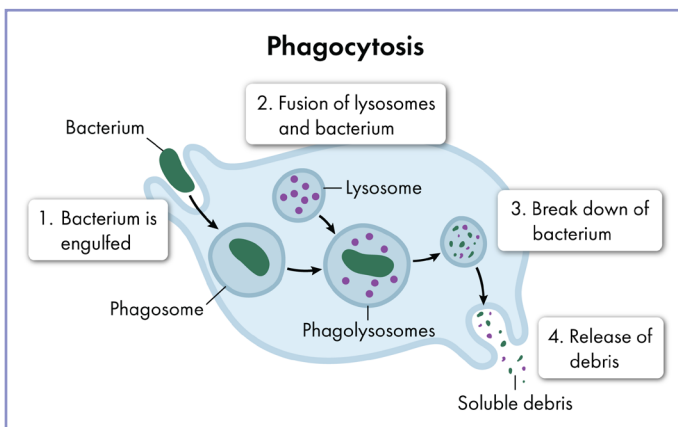


## Step 7: Gather feedback

Your peers and collaborators are a great resource for feedback. Ask 2-3 people to review your image. What do they think is the goal of the image? If it is the same as your intended goal from Step 2, you are doing something right!



## Step 8: Finalize!



Make any recommended edits in the visuals and the text. Pat yourself on the back because you just created a scientific visual!

# Bonus content!

## 5 tips to take your image to the next level



Print this page!

### Remove clutter

Removing clutter is the quickest way to add clarity to your images. By reducing text, reducing colors, adding white space, or replacing text with pictures or graphics, you will simplify your images greatly.

Title



Heading

Luptibus autecabor  
maximoluptat aut  
doluptas estorum ide  
pro essiminveles



Heading

Luptibus autecabor  
maximoluptat aut  
doluptas estorum ide  
pro essiminveles



Heading

Luptibus autecabor maximoluptat aut  
doluptas estorum ide pro essiminveles

### Enhance the Composition

Composition defines the way elements in an image are arranged or organized. This includes pictures, text, graphics, or anything else in the image. Try to organize the composition in a way that is natural, like from left to right.

Title



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### Develop Visual Heirarchy

While composition focuses on the overall structure image, visual hierarchy is what guides the viewer's eye through the content in the intended order. It also emphasizes the most important information.

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### Adjust Type

A reliable rule to go by is to not use more than three fonts for an image. There could be one font for the headings, one for the body text, and one for the title or accent text.

Title



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### Create Contrast

Contrast in design is creating differences in color, shape, size, or value among elements. Adjusting the contrast will allow the most important sections to come forward.

Title



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Heading

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# Remove Clutter

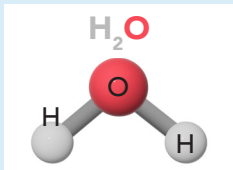
Removing clutter is the quickest way to add clarity to your images. By reducing text, reducing colors, adding white space, or replacing text with pictures or graphics, you will simplify your images greatly.

## Colors

More colors does not make the image better. In fact, it often makes it more confusing for the viewer. Maintaining a limited color palette will make it easier to understand.

## Text

Text can be reduced in two different ways: simply removing unnecessary words or replacing necessary words with a picture or graphic. By doing this, you are allowing more white space to be present in the image. White space increases the legibility of the image.



### Tip!

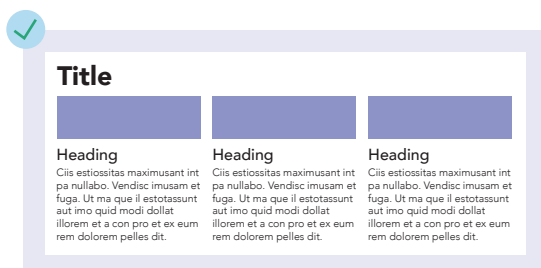
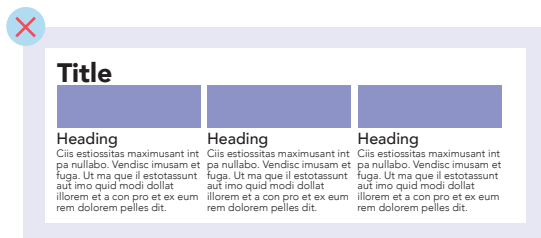
Color association is a great tool! For example, oxygen molecules are often depicted in red. Using red to connect the text to the hydrogen molecule could connect the text and picture.

# Enhance the Composition

Composition defines the way elements in an image are arranged or organized. This includes pictures, text, graphics, or anything else in the image. There are a few design concepts to consider when working on a composition.

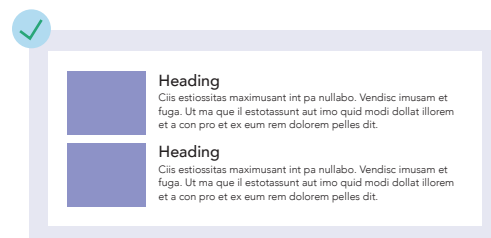
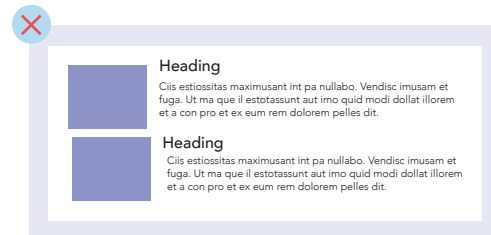
## Spacing

Adding space between elements will help draw attention to key parts, improve readability, and create visual clarity.



## Alignment

Alignment refers to how the elements are lined up in the composition. This helps balance, organize, and improve readability of the composition.

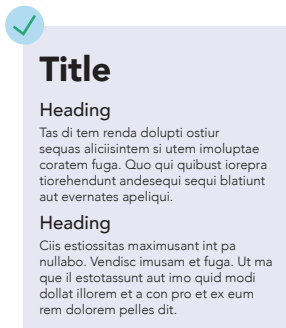
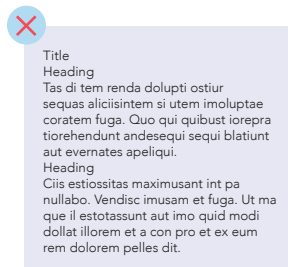


# Develop Visual Hierarchy

While composition focuses on the overall structure image, visual hierarchy is what guides the viewer's eye through the content in the intended order. It also emphasizes the most important information. This is accomplished by adjusting the size, color, placement, and contrast of certain elements.

## Text

Text hierarchy helps visually organize the key information in your image. For example, assigning different levels of headings allows the viewers to quickly skim and understand the important information.



## Pictures and graphics

Visual hierarchy is also relevant in pictures and graphics. This is done by bringing attention to the most important part of the picture. This can be done by utilizing color, contrast, call outs, or labeling systems.



# Adjust Type

A reliable rule to go by is to not use more than three fonts for an image. There could be one font for the headings, one for the body text, and one for the title or accent text. But, you could also just use one, reliable font and simply change the size for headings and the title.

## Fonts

Your choice of font matters. It should be legible, clear, and simple for most scientific images. Stay away from decorative fonts.

### Sans-serif

Helvetica

Arial

Avenir

Futura

### Serif

Times New Roman

Garamond

Georgia

Lora

### Non-legible fonts

**Impact**

*Lust Script*

**Opake**

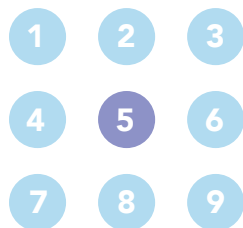
Papyrus

## Tip!

You don't want the text to be too small to read. Body text should be no smaller than 10pt, but preferably 12-15pt.

# Create Contrast

Contrast in design is creating differences in color, shape, size, or value among elements. Adjusting the contrast will allow the most important sections to come forward.

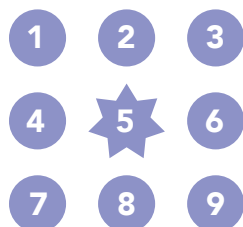


## Color

Color contrast is achieved when one color clearly sticks out against the others. This is done with a limited color palette and utilizing colors with different values. Value is the lightness or darkness of a color. For example, yellow has a lighter value than purple.

### Tip!

To test the contrast of your color images, you can temporarily change your image to be greyscale.



## Shape contrast

In pictures and graphics, you can create visual contrast by changing the shapes of important and key elements. You can also change the shape contrast of fonts, even if you are just using one font. To make the headings or title stand out more, you could try making them bold and/or increasing the size.

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## Questions?

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If you want to dive even deeper and take your figures to the next level, our trusted illustrators and designers are excited to help you with your project. We have experience in creating publication images, elaborate illustrations, exhibits, and more. We are looking forward to hearing about what you are working on!

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