

# Science tells a story

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LET'S MAKE IT **VISUAL**

# Graphic design principles for scientists

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EFFECTIVE GRAPHICAL ABSTRACTS AND OTHER SCIENTIFIC ILLUSTRATIONS

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EFFECTIVE GRAPHICAL ABSTRACTS AND OTHER SCIENTIFIC ILLUSTRATIONS



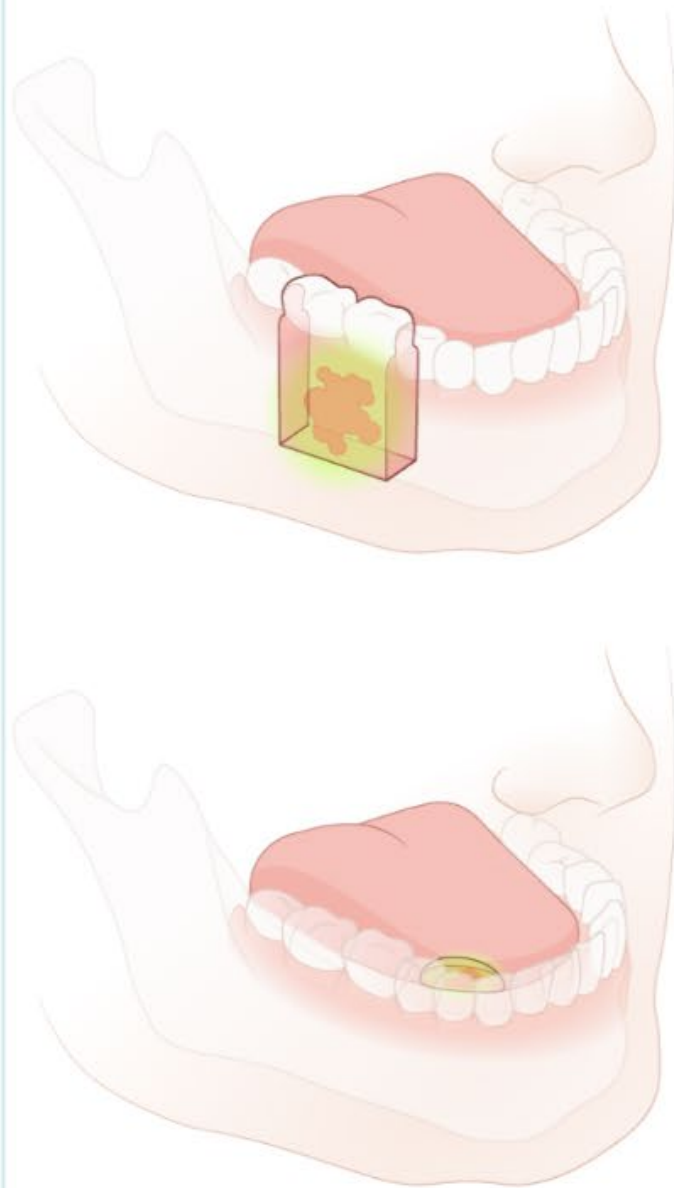
Anna Sieben-de Haan

medicine student to medical artist and scientific illustrator

[Sieben Medical Art](#)

[siebenmedicalart.nl](http://siebenmedicalart.nl)

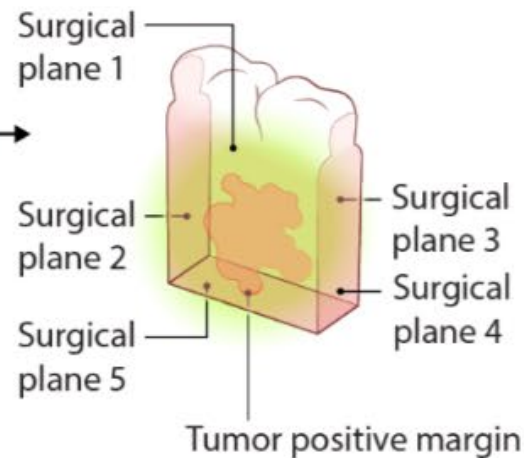
### A. In vivo imaging and spectroscopy



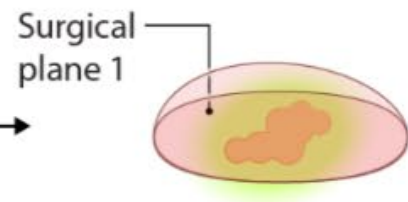
### B. Ex vivo whole specimen imaging

Three-dimensional view of excised specimen

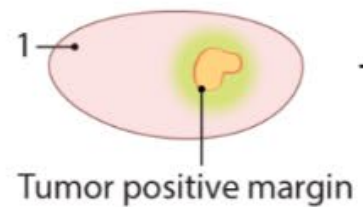
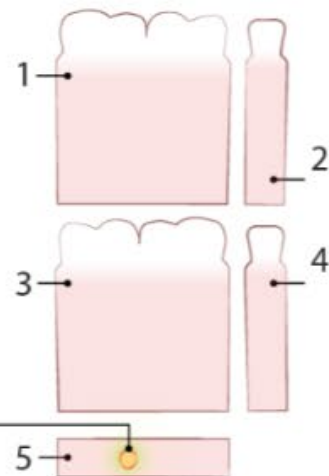
Complex specimen



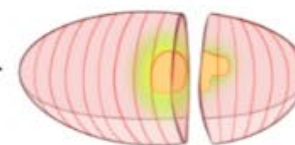
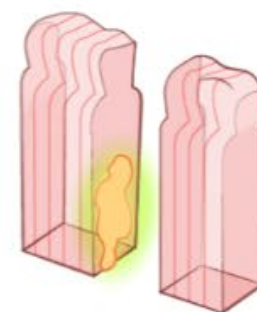
Simple specimen



Two-dimensional view of surgical planes

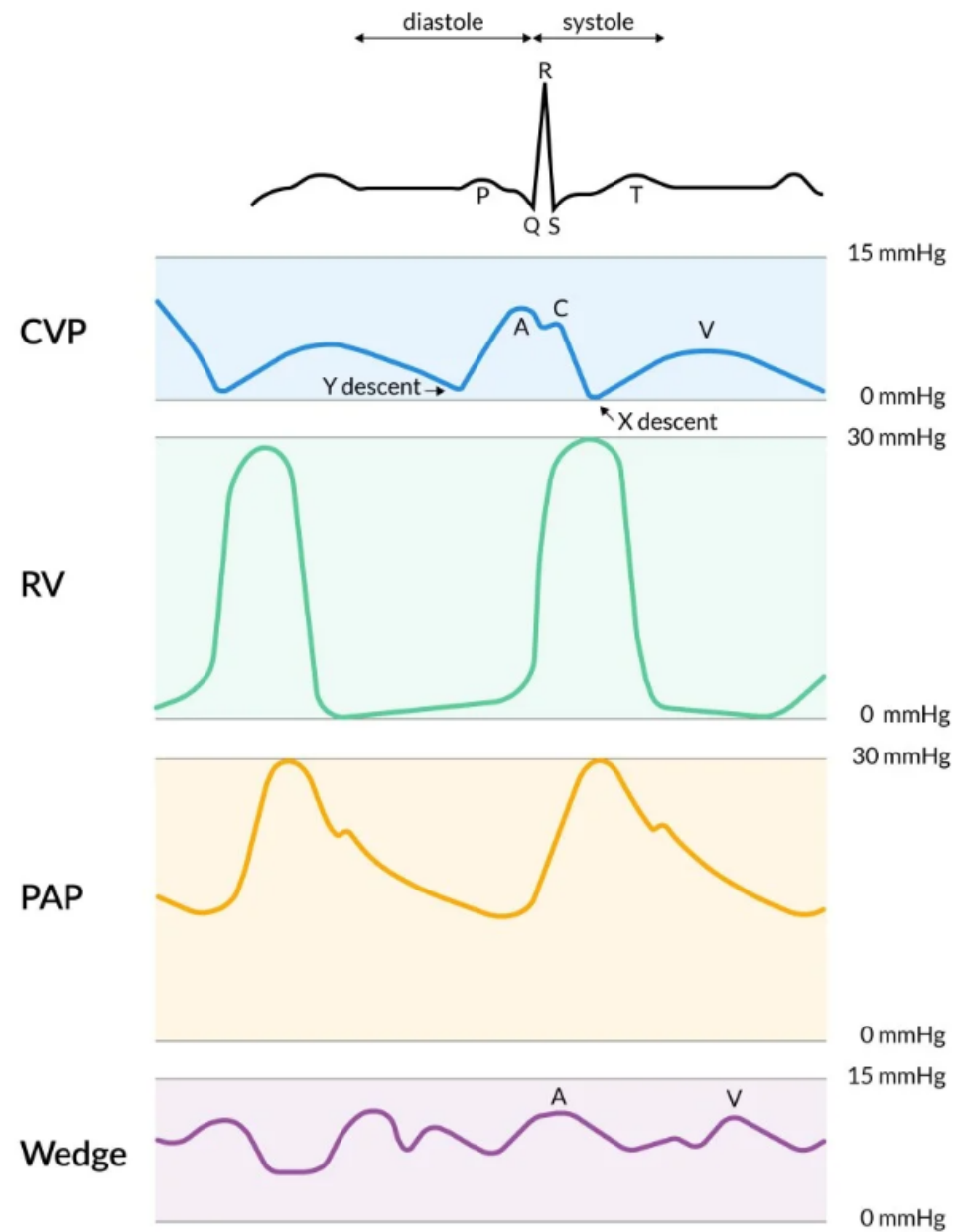
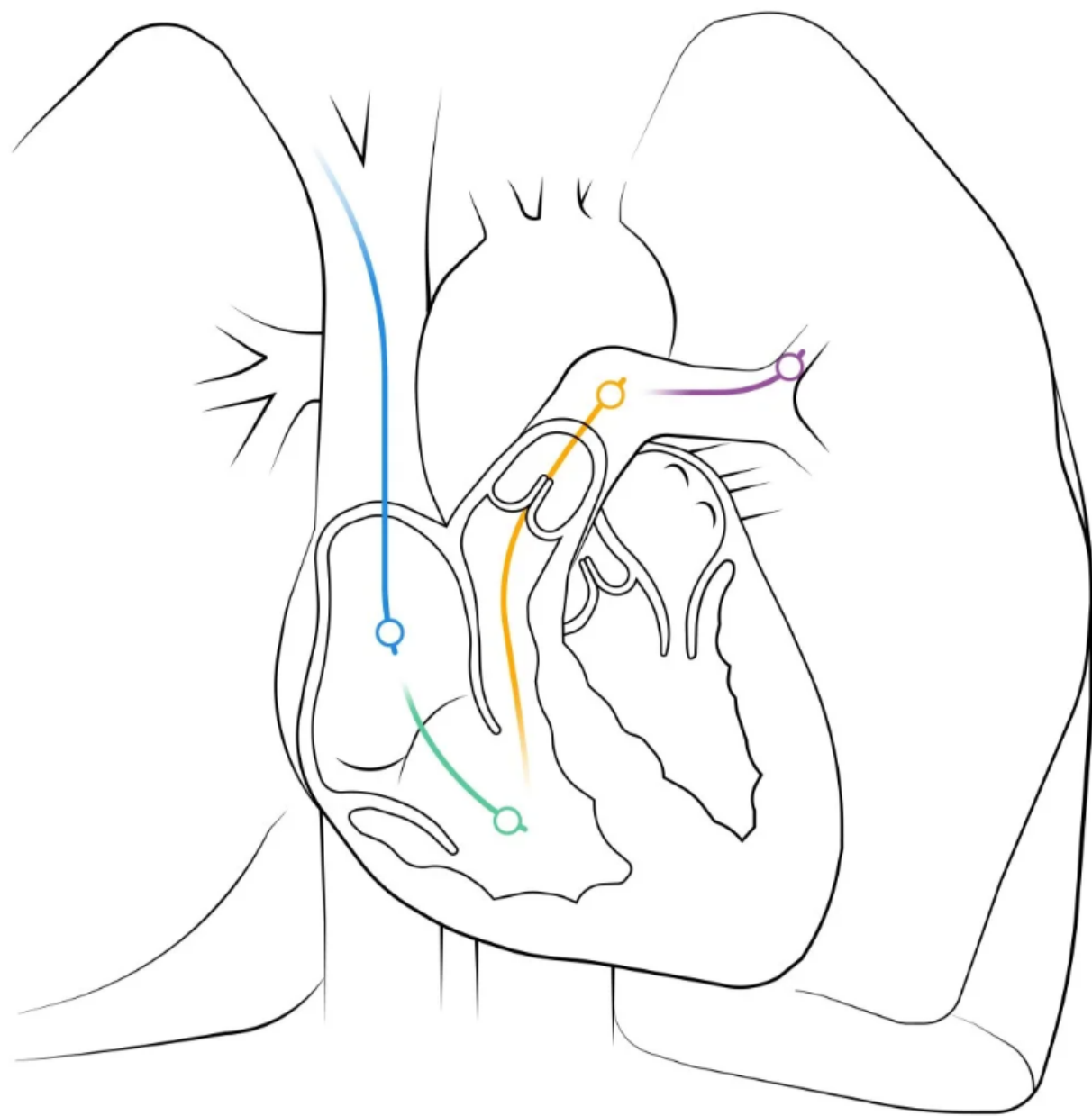


### C. Bread loaf slicing



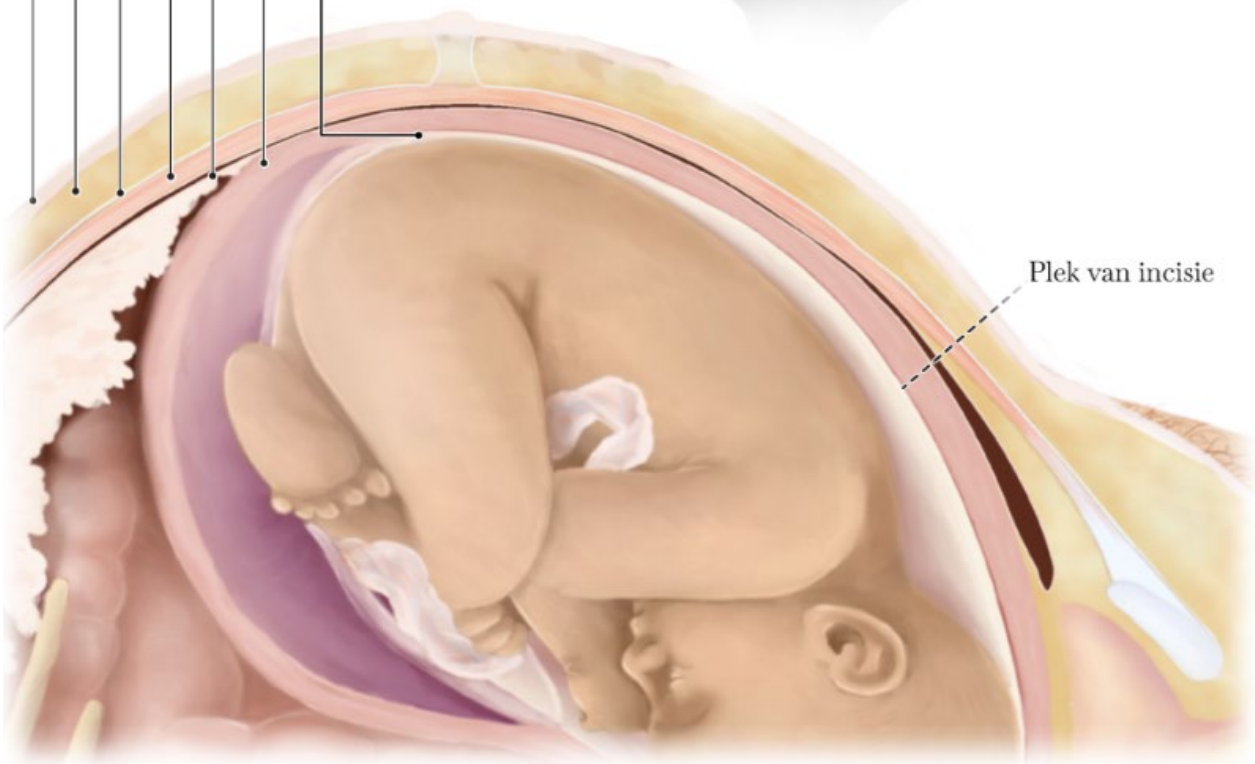
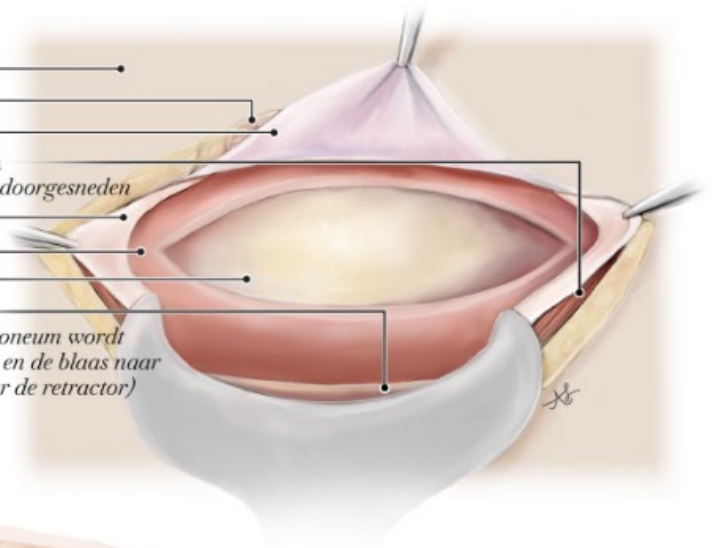
### D. H&E stained tissue section



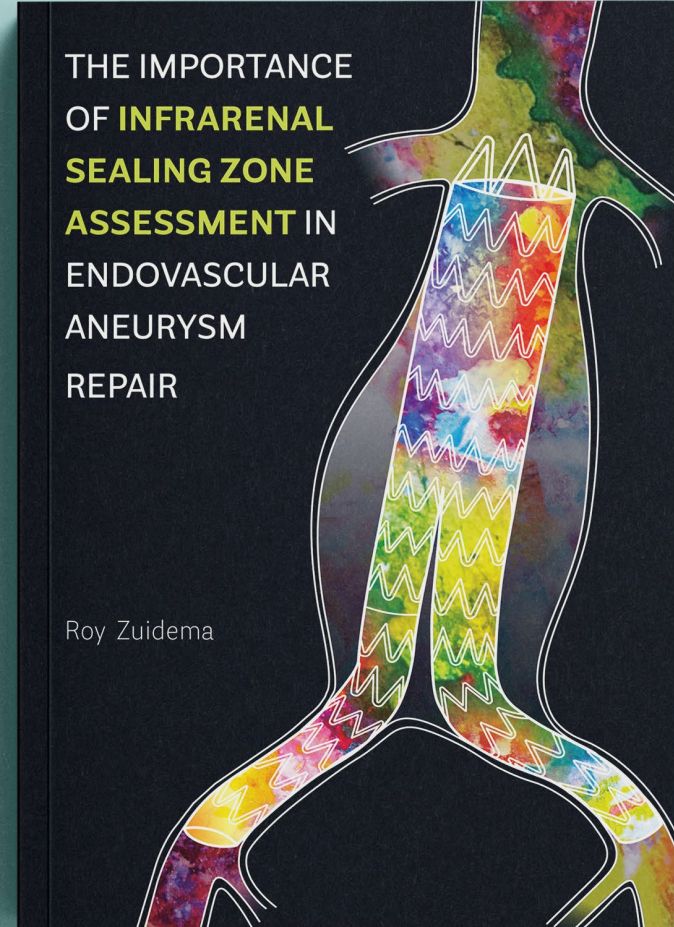
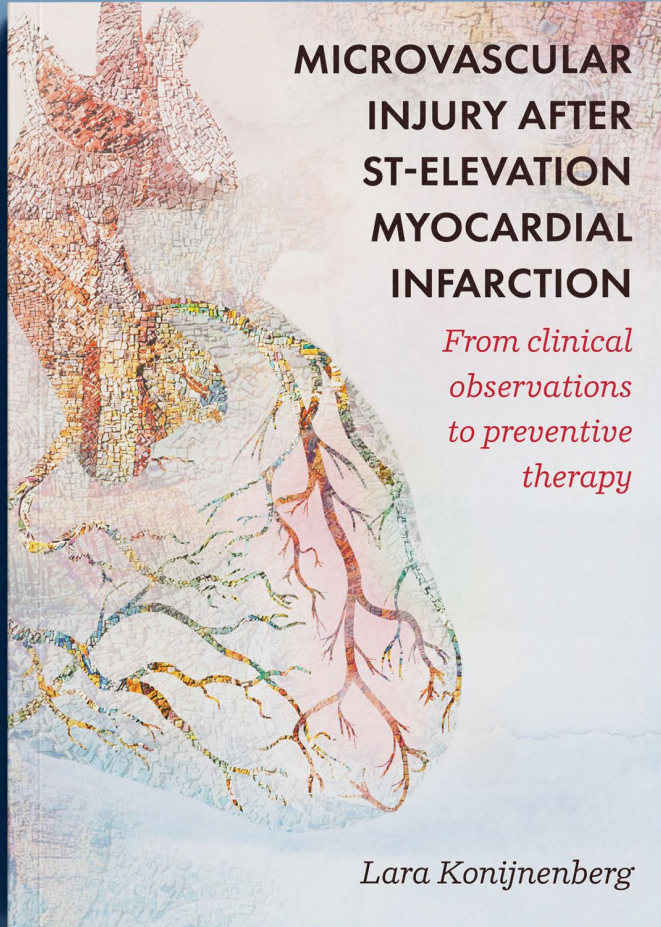


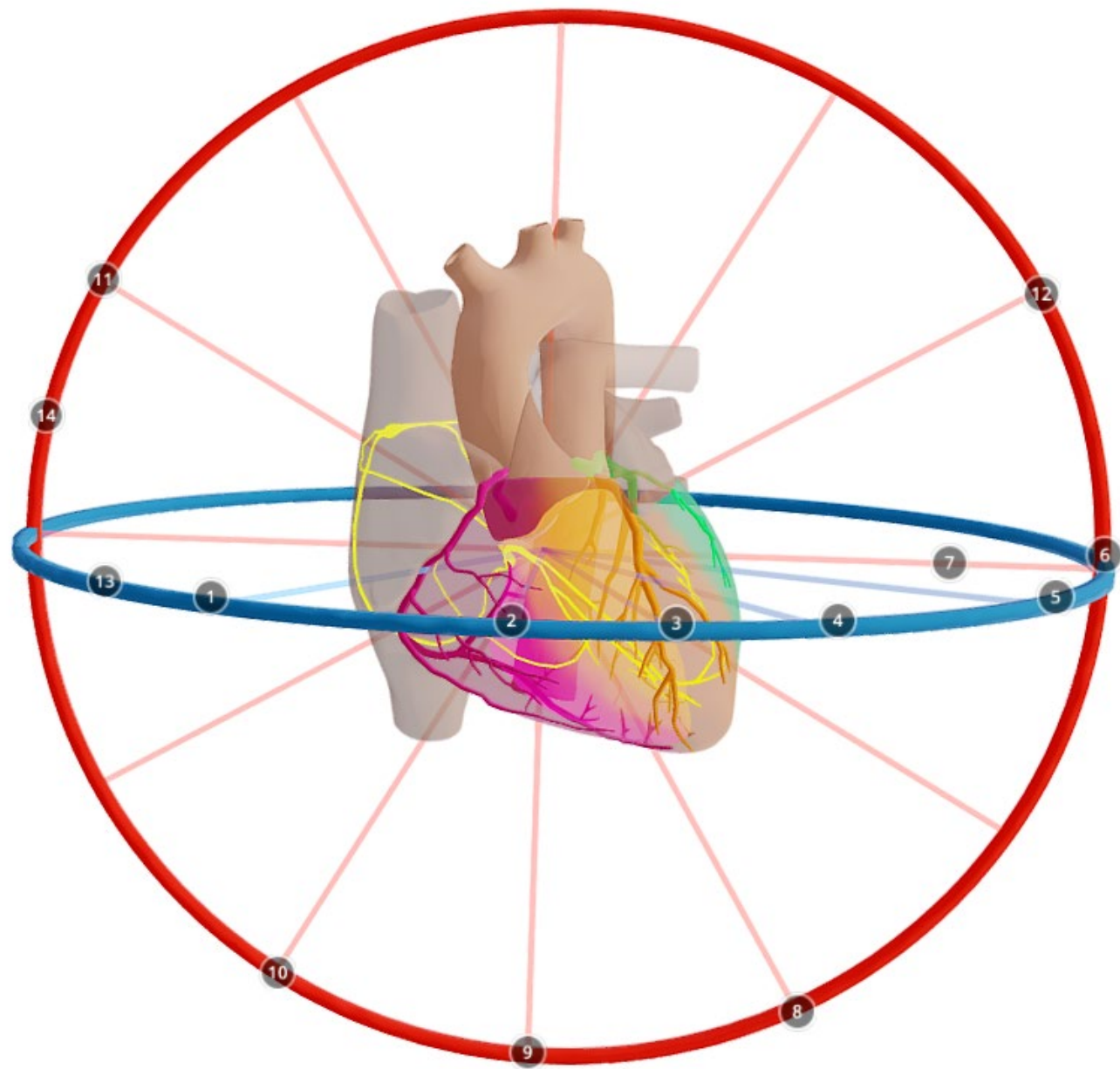
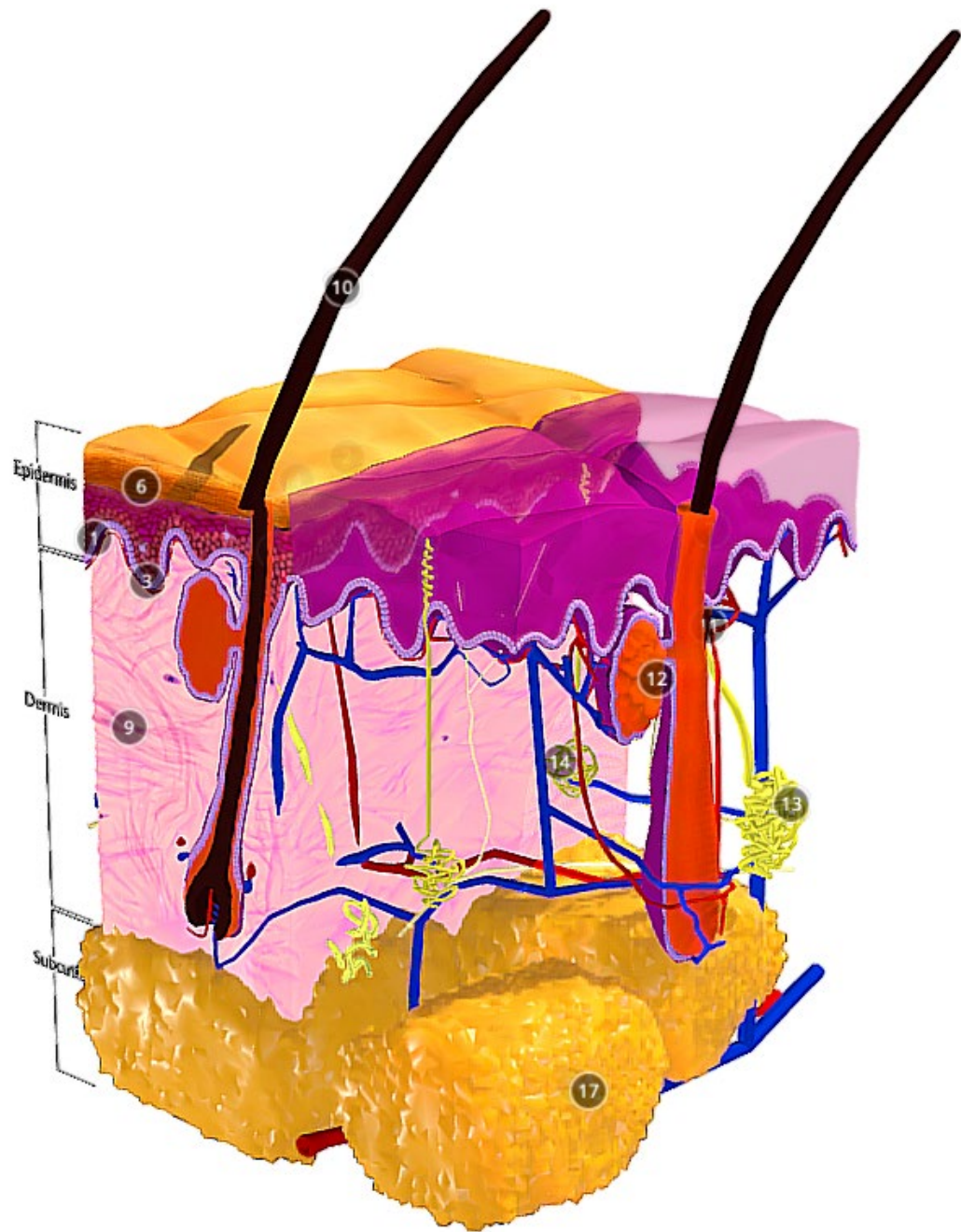


- Huid
- Subcutaan vet
- Fascie
- Rectus abdominalis spieren  
*meestal aan de kant geduwd, niet doorgesneden*
- Peritoneum
- Uterus
- Vliezen
- Blaas  
*Het blaasperitoneum wordt open gemaakt en de blaas naar beneden (onder de retractor) geschoven.*



Plek van incisie

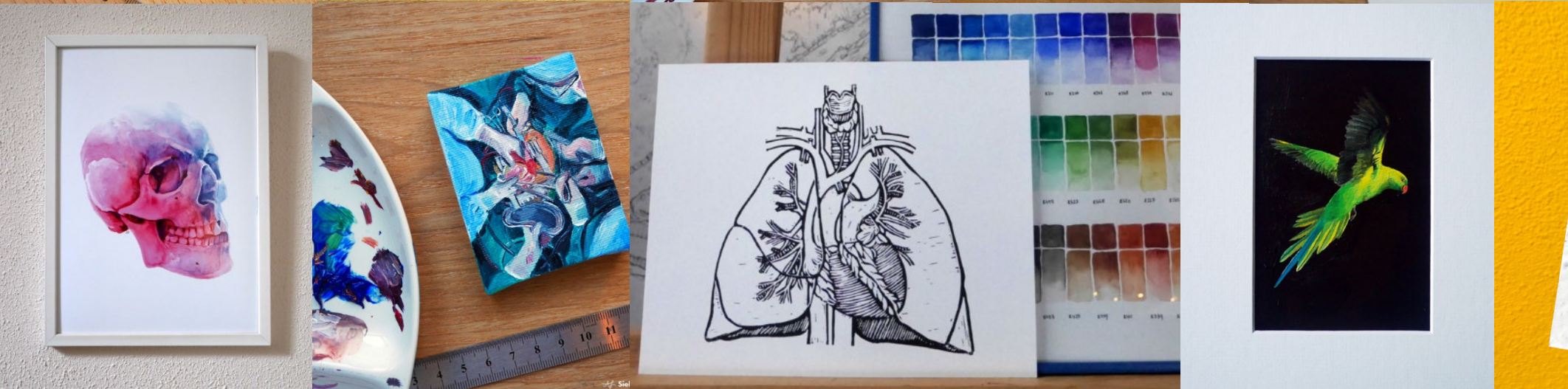








a small [webshop](#) filled with cards, paintings, prints and other goodies with a medicine or biology twist.



# We'll be discussing...

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- Visual hierarchy
- Background
- Arrows
- Consistency
- Typeface
- Photographs
- Colour
- Charts and figures
- About graphical abstracts specifically..
- The process

# Let's go

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MAKE IT VISUAL

# Before you even start sketching

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## 1. DO THE RESEARCH

What **exactly** are you trying to illustrate? What is its **relevance**?

# Before you even start sketching

---



## 1. DO THE RESEARCH

What **exactly** are you trying to illustrate? What is its **relevance**?



## 2. SET GOALS

Know your **key messages** and **priorities**

# Before you even start sketching

---



## 1. DO THE RESEARCH

What **exactly** are you trying to illustrate? What is its **relevance**?



## 2. SET GOALS

Know your **key messages** and **priorities**



## 3. KNOW YOUR AUDIENCE & CONTEXT

**Who** exactly are you illustrating for? What can you assume they know? Accessibility?

# Design principles to keep in mind

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WHEN YOU MAKE IT VISUAL

# Visual hierarchy

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**GUIDE** the reader

Less is more

Use **HIERARCHICAL STRUCTURE**  
*To emphasize main points*



# Visual hierarchy

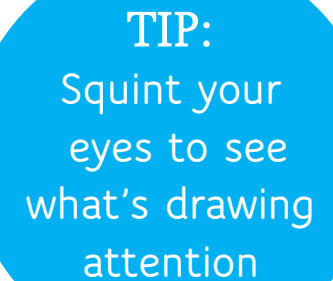
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**GUIDE** the reader

Less is more

Use **HIERARCHICAL STRUCTURE**

*To emphasize main points*

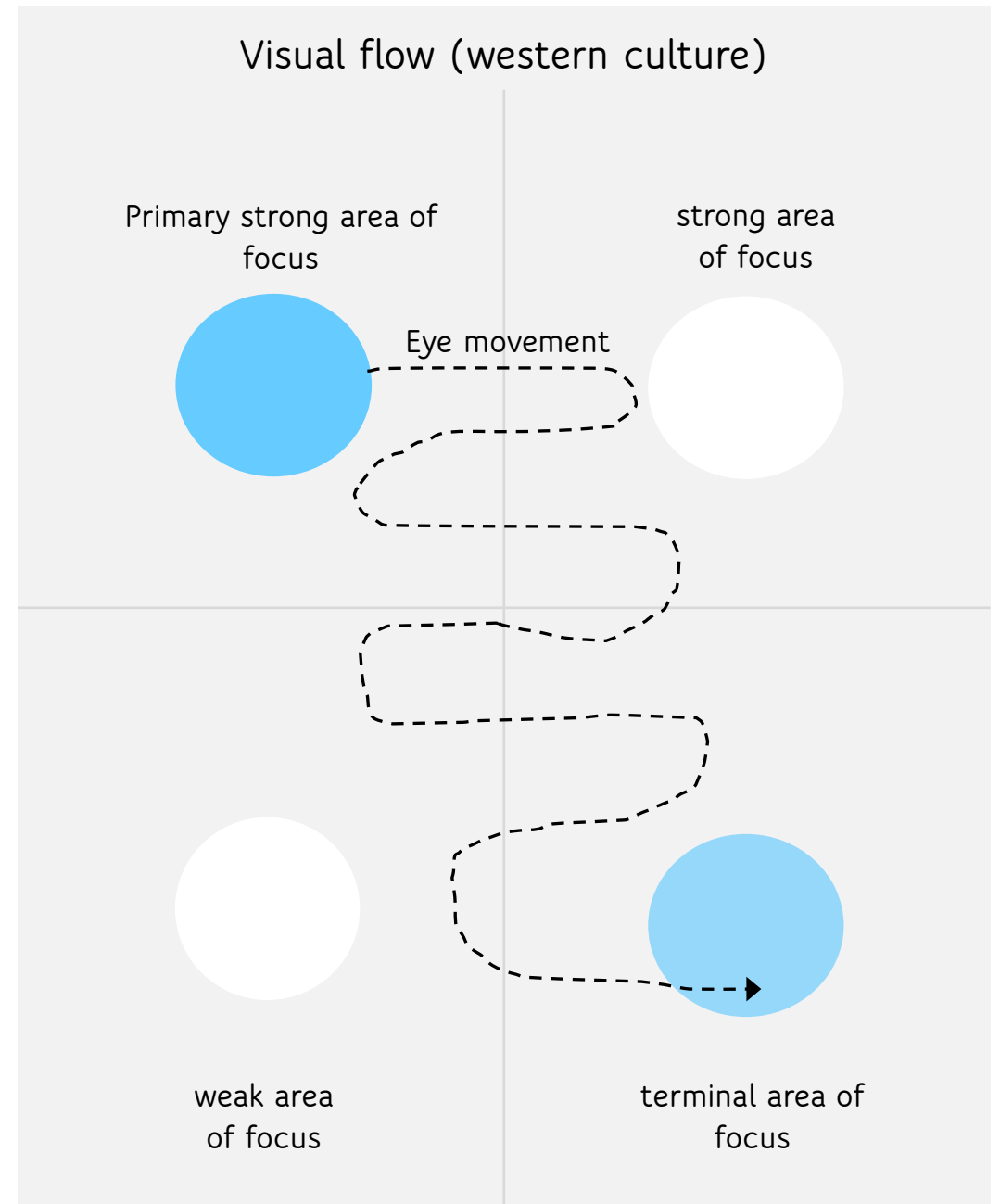


**TIP:**  
Squint your  
eyes to see  
what's drawing  
attention

# Organize information

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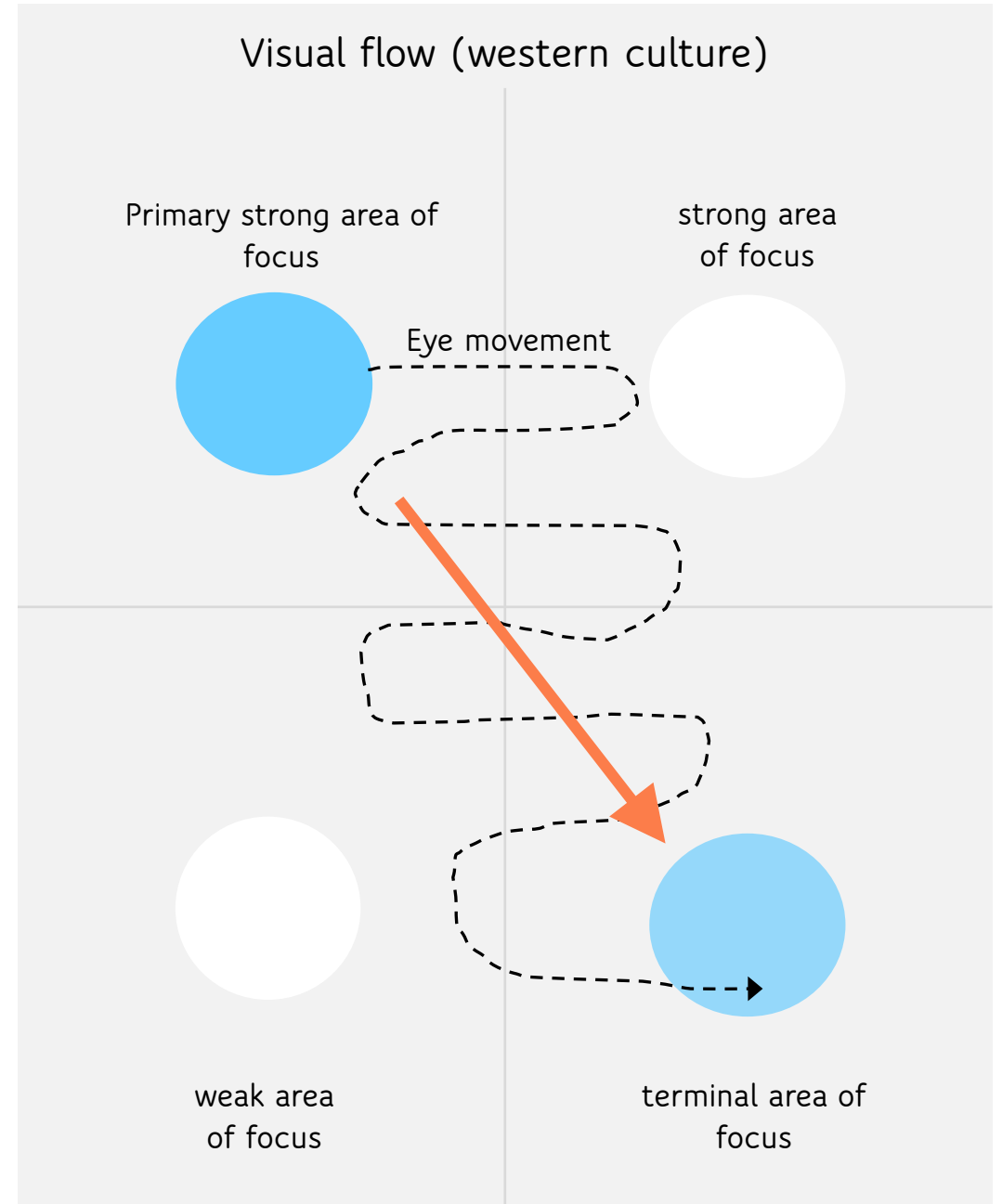
*Visual flow in scientific poster design*



# Organize information

---

*Visual flow in scientific poster design*

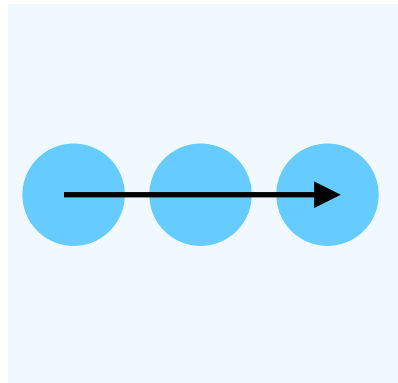




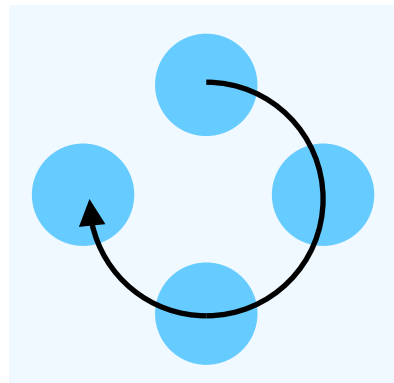
# Organize information

---

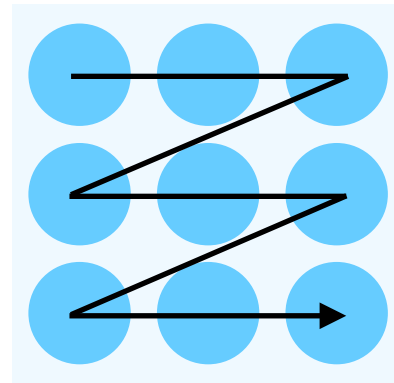
*Create a reading order that guides readers through the story*



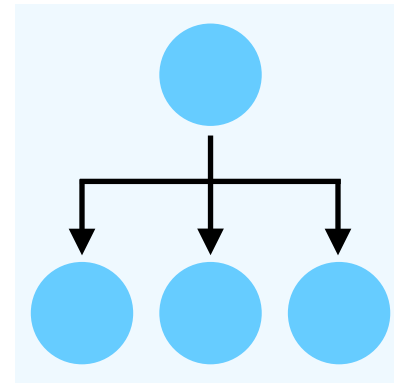
Linear



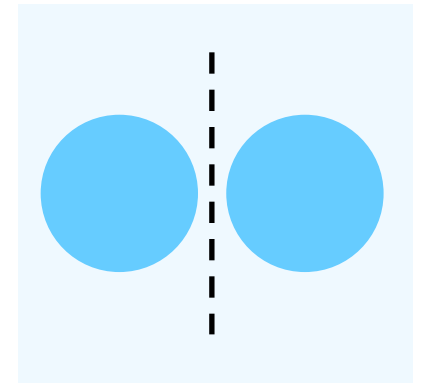
Circular



Zig-Zag



Fork-shaped



Parallel

# Organize information

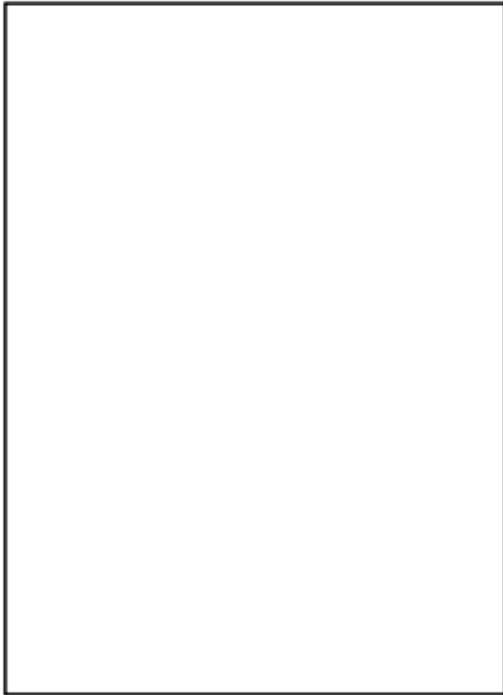
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*Use grids to design your layout to build in a logical and modular way*

# Organize information

---

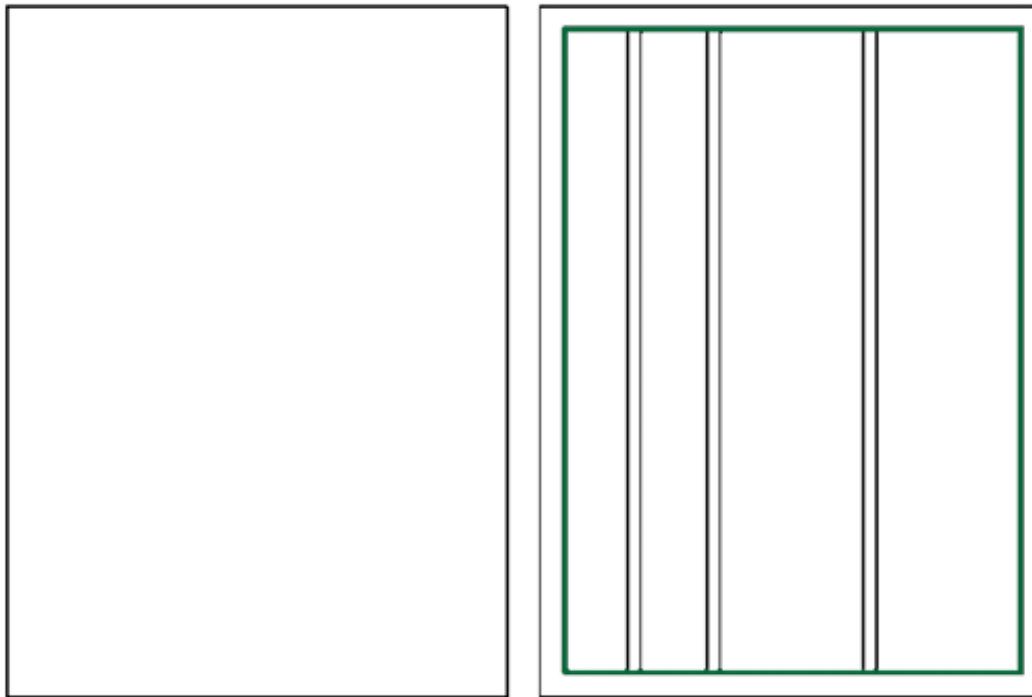
*Setting up a grid:*



# Organize information

---

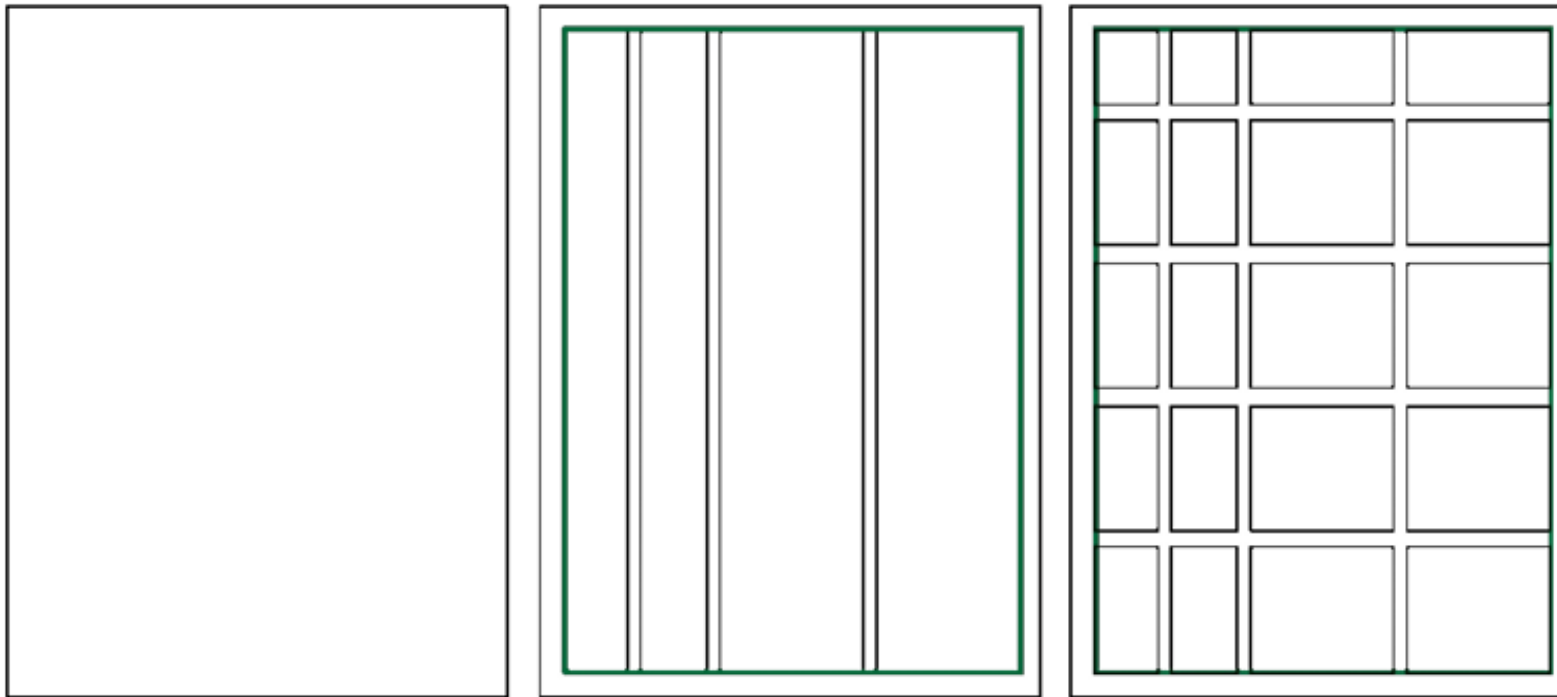
*Setting up a grid:*



# Organize information

---

*Setting up a grid:*



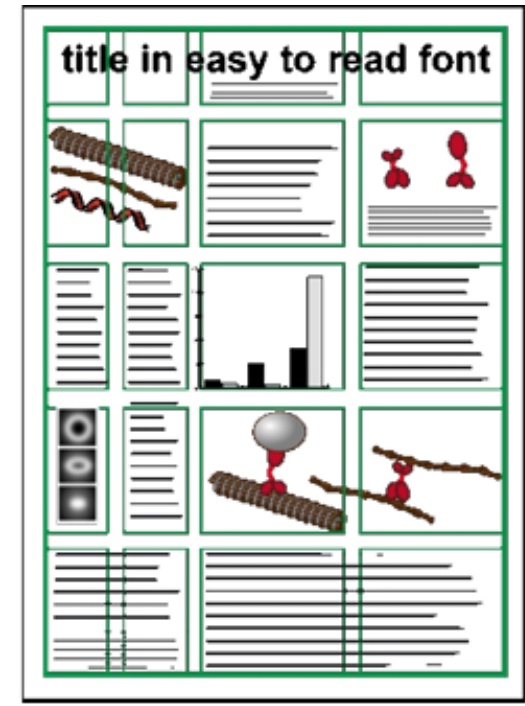
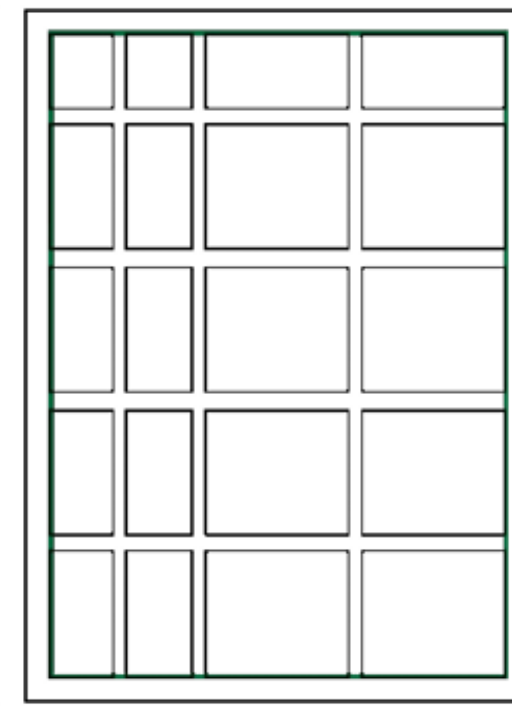
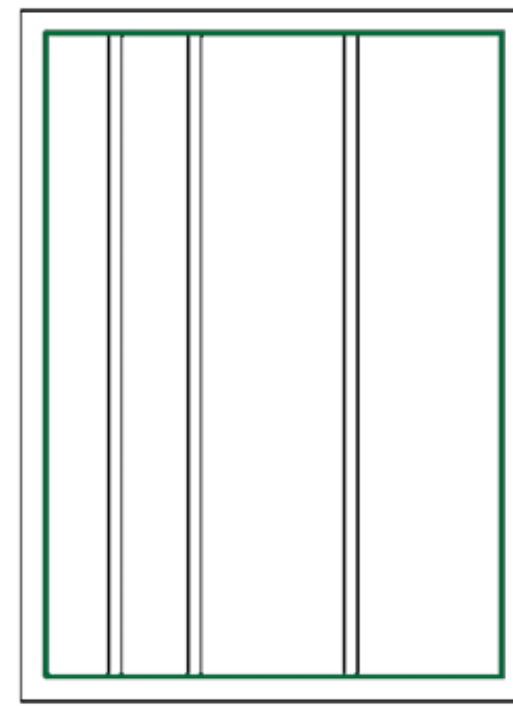
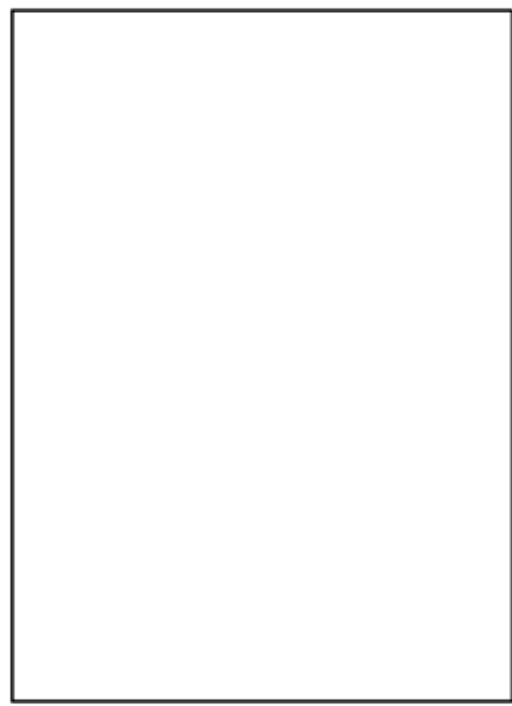




# Organize information

---

*Setting up a grid:*



# Natural directional elements in images

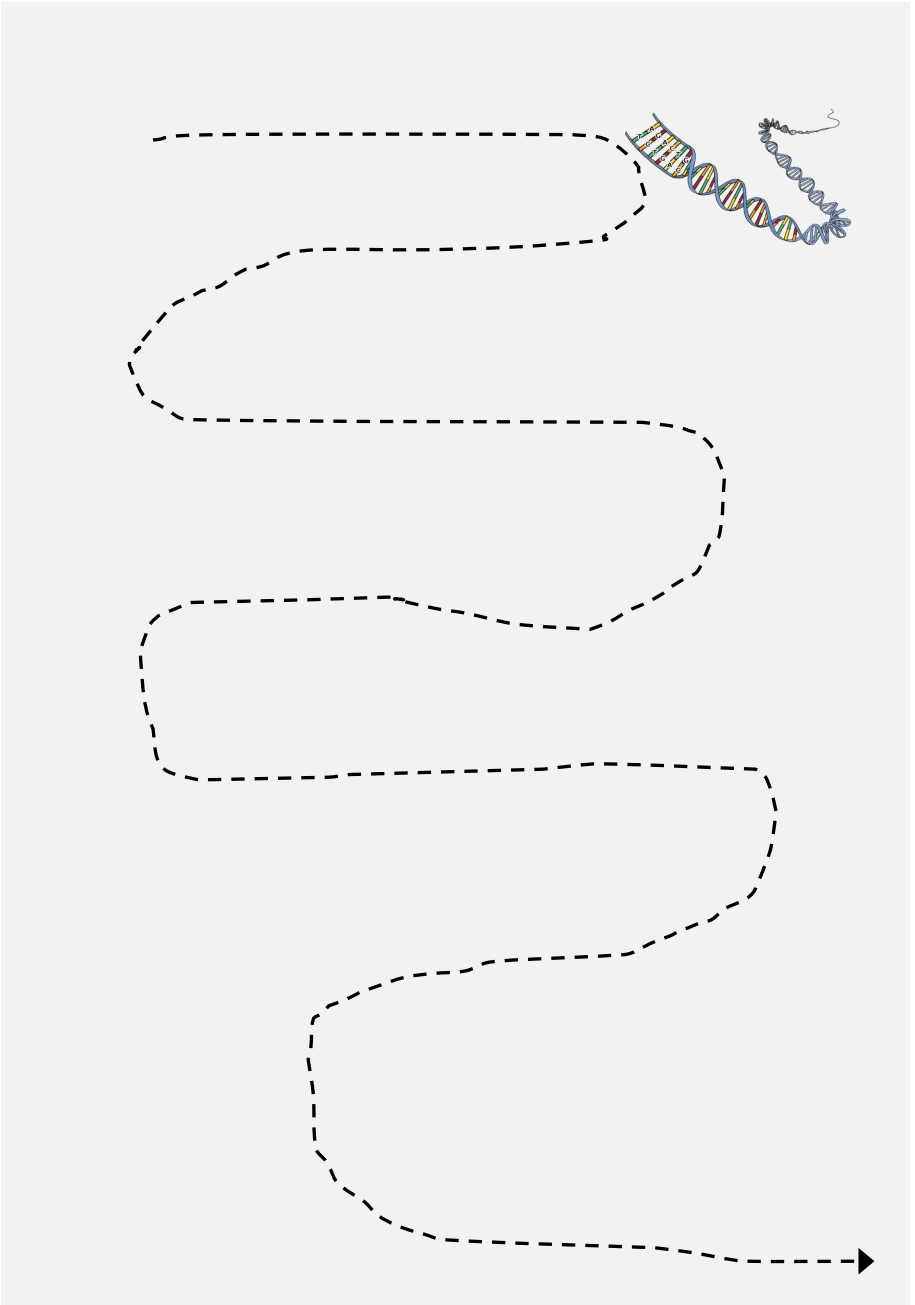
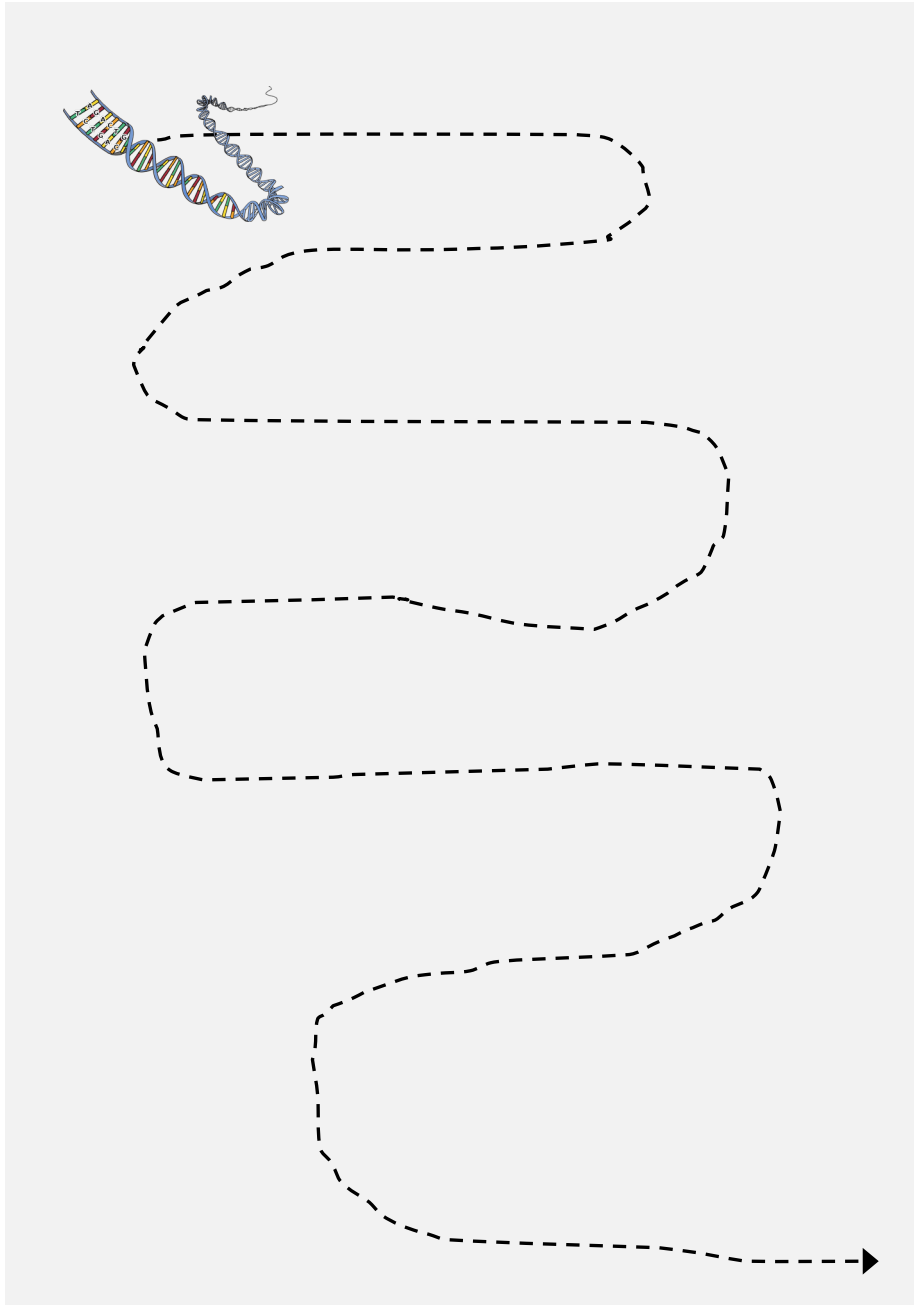
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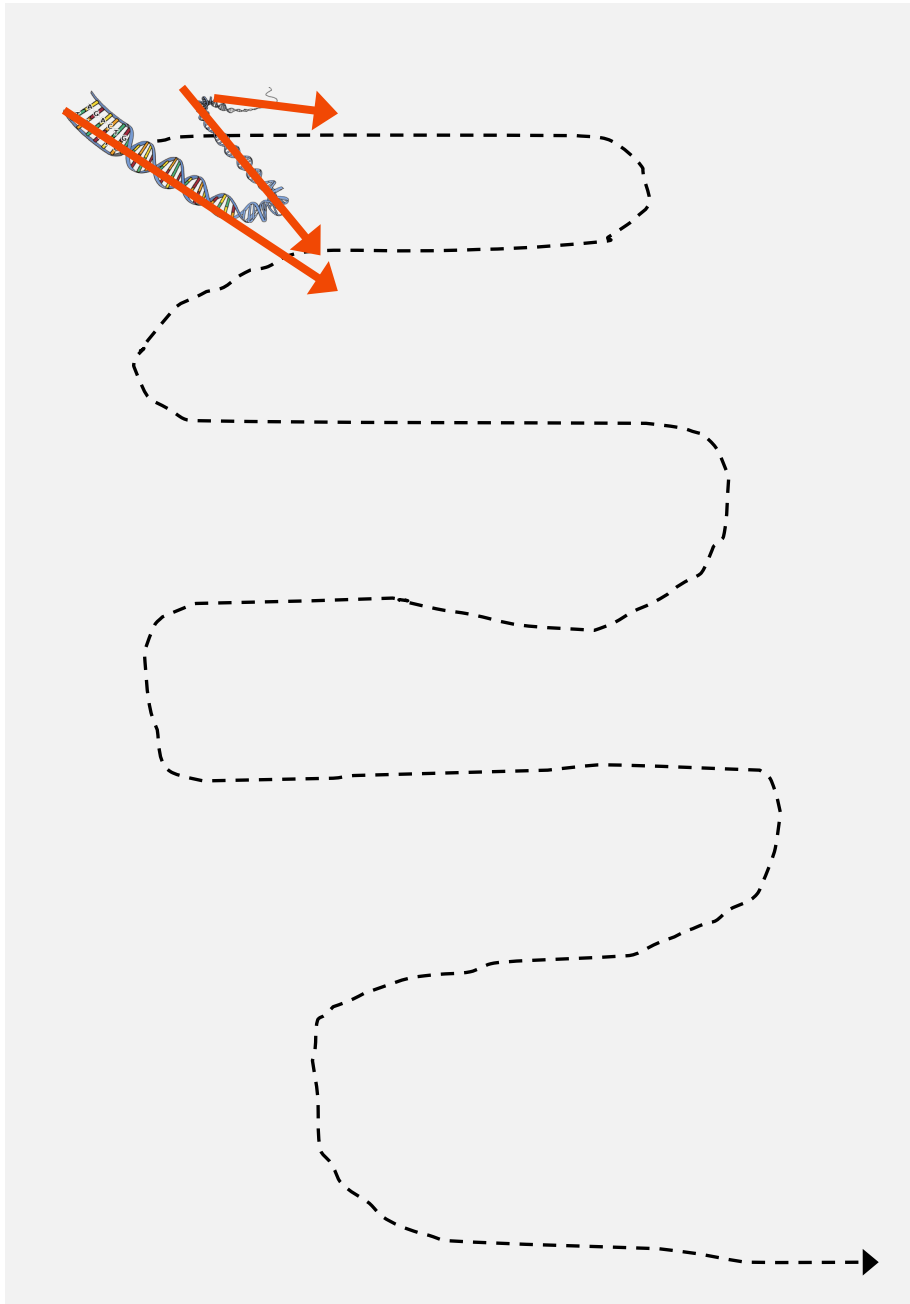


# Natural directional elements in images

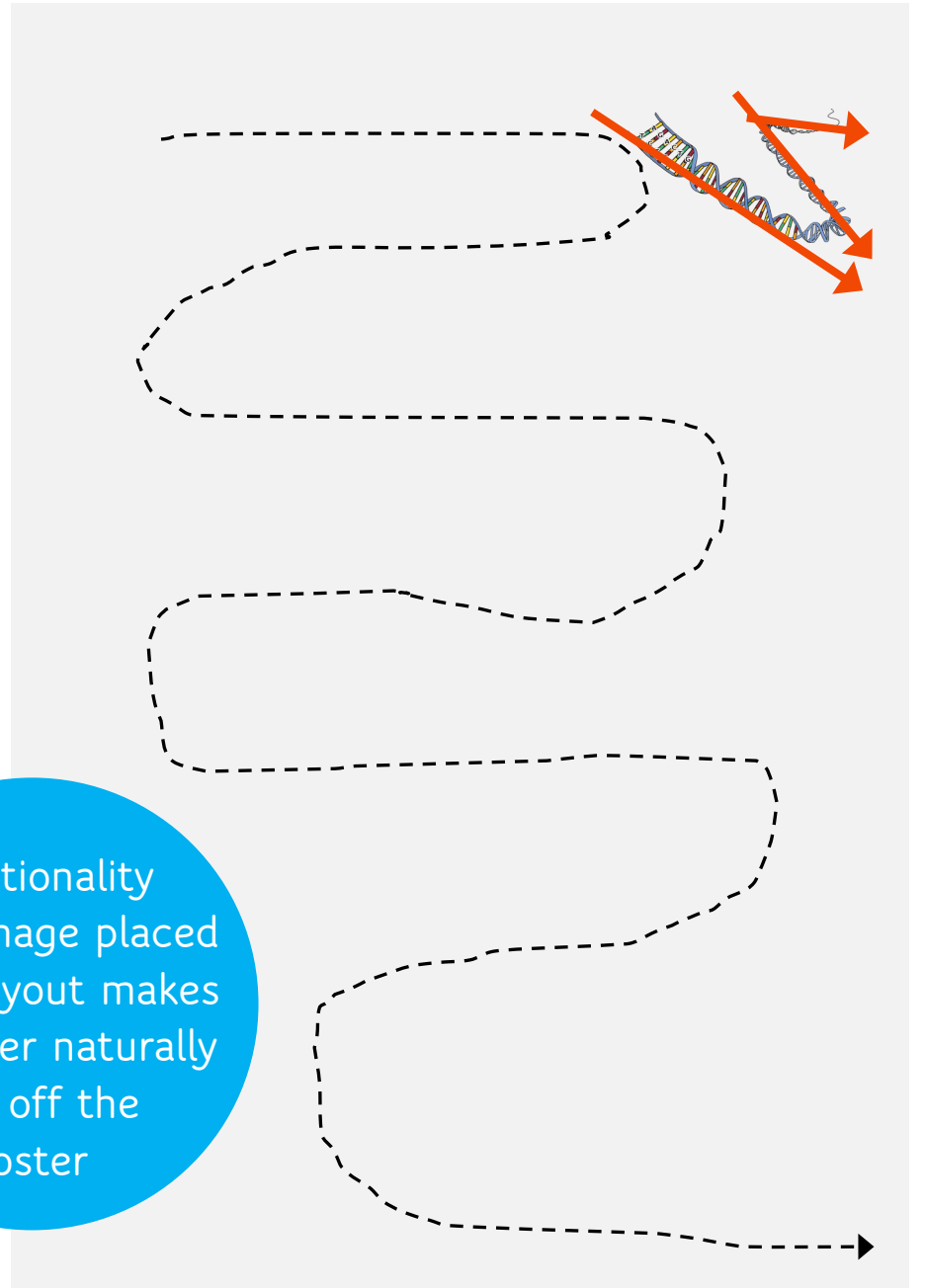
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Directionality  
of the image placed  
in this layout makes  
the viewer naturally  
look off the  
poster



# Visual hierarchy

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**SIZE** *Large elements are easier noticeable*

# Visual hierarchy

---

**SIZE** *Large elements are easier noticeable*

**COLOR** *Bright and bold colours attract more attention*

# Visual hierarchy

---

**SIZE** *Large elements are easier noticeable*

**COLOR** *Bright and bold colours attract more attention*

**CONTRAST**





# Visual hierarchy

---

**SIZE** *Large elements are easier noticeable*

**COLOR** *Bright and bold colours attract more attention*

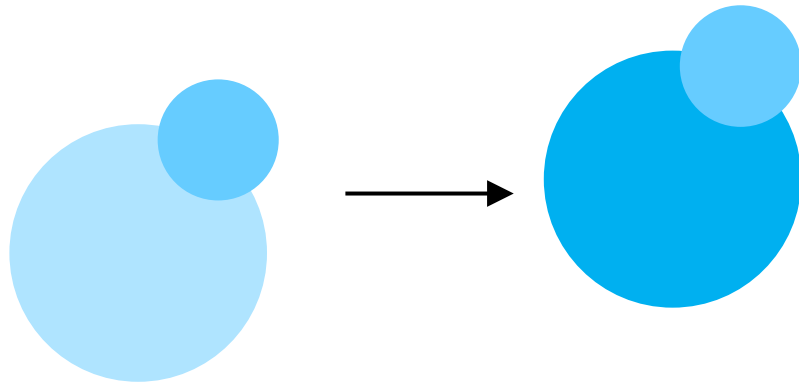
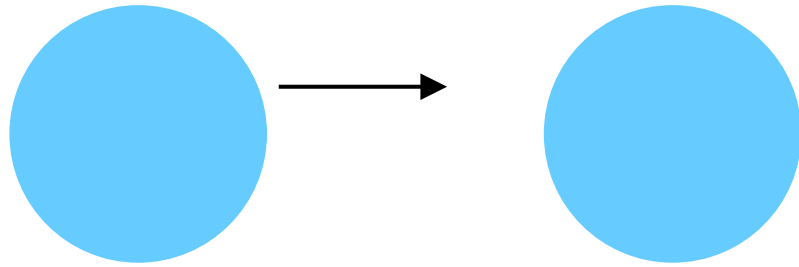
**CONTRAST**

**ALIGNMENT** *our brains are good at spotting things that break a pattern*



# Align the elements

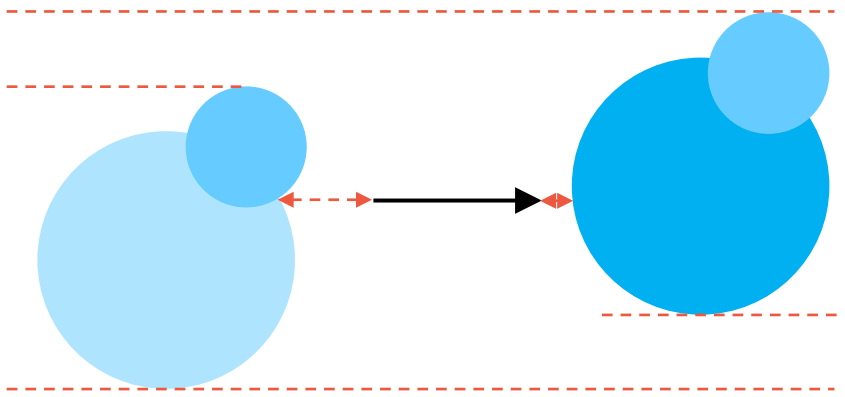
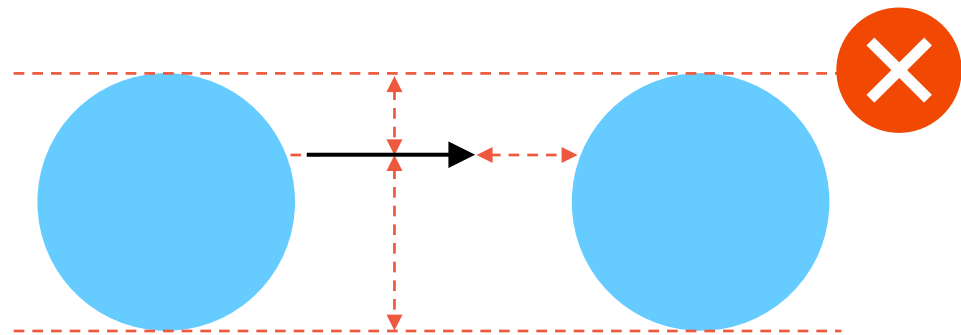
---





# Align the elements

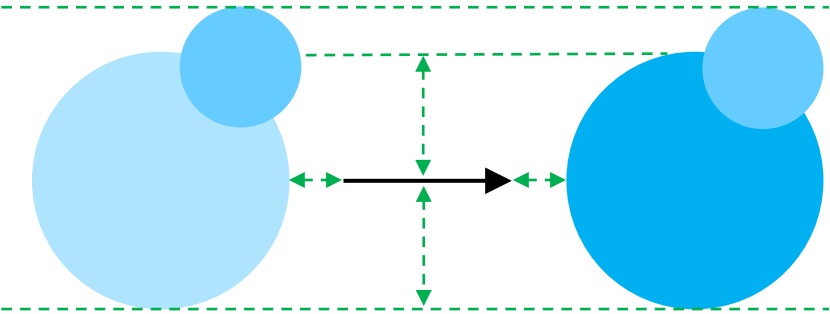
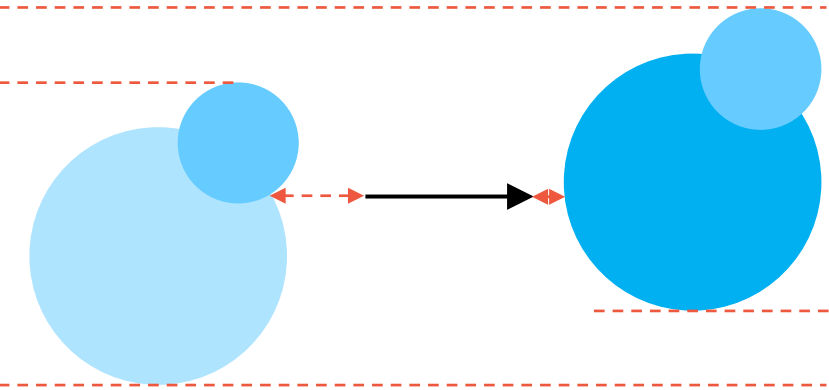
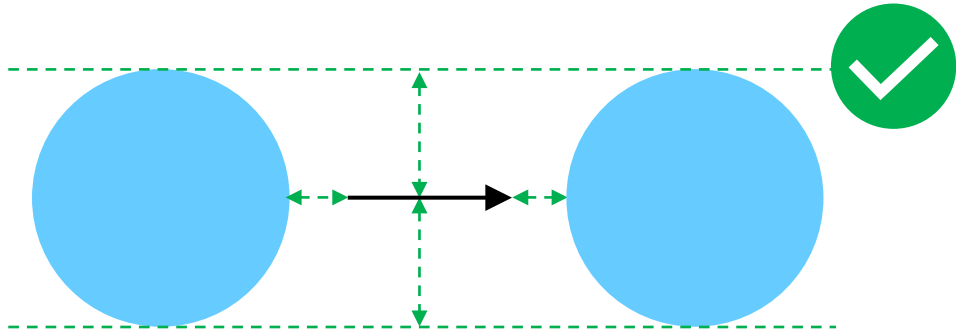
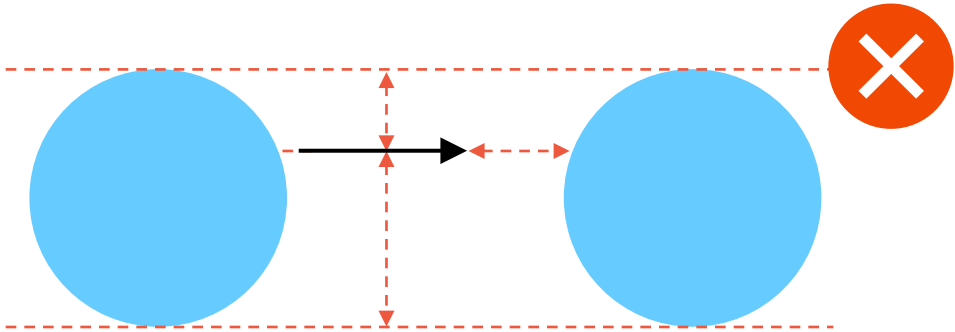
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# Align the elements

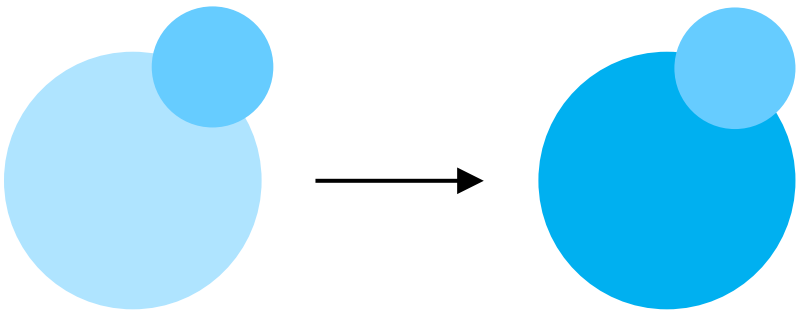
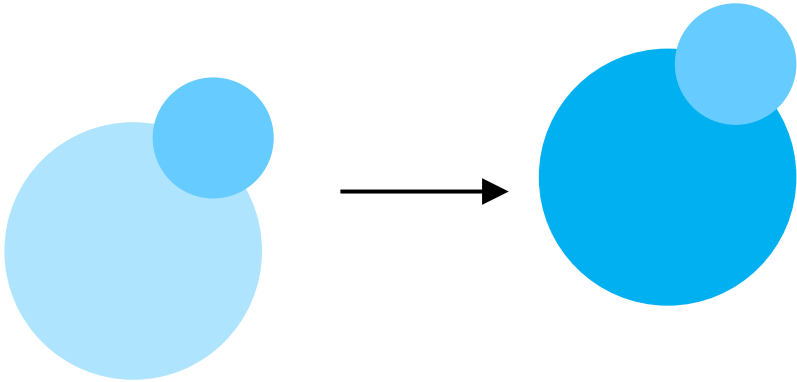
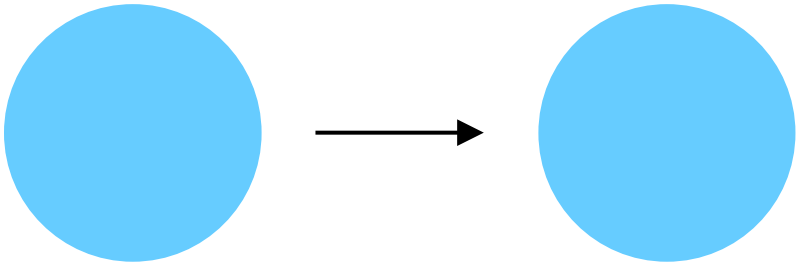
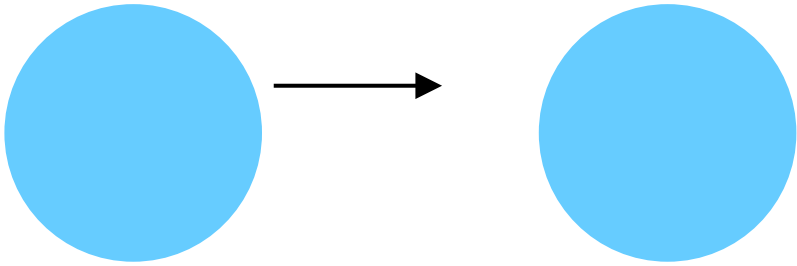
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# Align the elements

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# Characteristics of visual hierarchy

---

**SIZE** *Large elements are easier noticeable*

**COLOR** *Bright and bold colours attract more attention*

**CONTRAST**

**ALIGNMENT** *our brains are good at spotting things that break a pattern*

**REPETITION** *repeated styles suggest that the content is related*

# Characteristics of visual hierarchy

**SIZE** *Large elements are easier noticeable*

**COLOR** *Bright and bold colours attract more attention*

**CONTRAST**

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**PROXIMITY** *suggest elements are related*



# Characteristics of visual hierarchy

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**SIZE** *Large elements are easier noticeable*

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**CONTRAST**

**ALIGNMENT** *our brains are good at spotting things that break a pattern*

**REPETITION** *repeated styles suggest that the content is related*

**PROXIMITY** *suggest elements are related*

**WHITE SPACE**

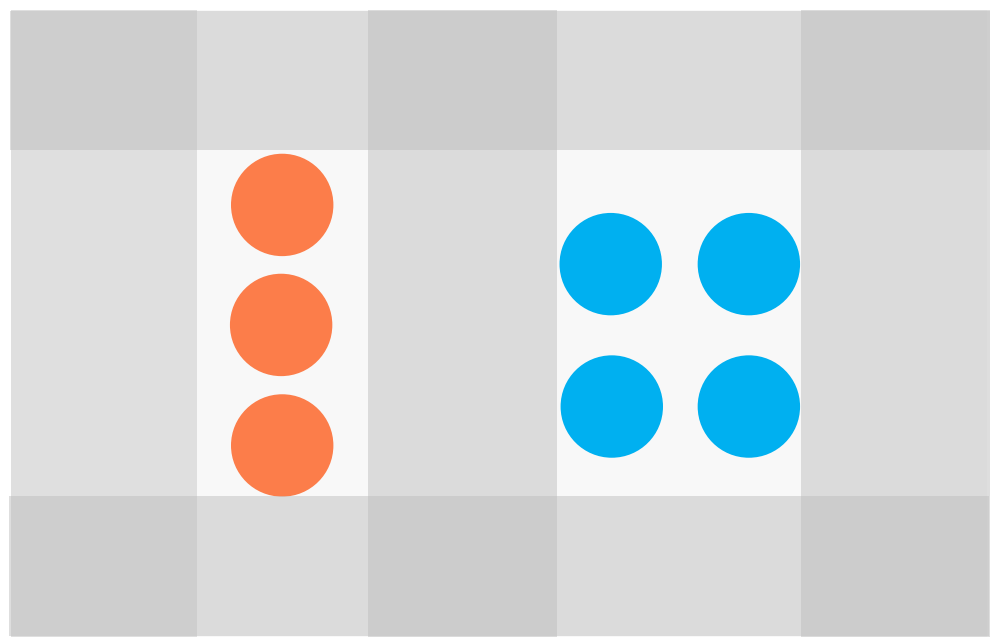
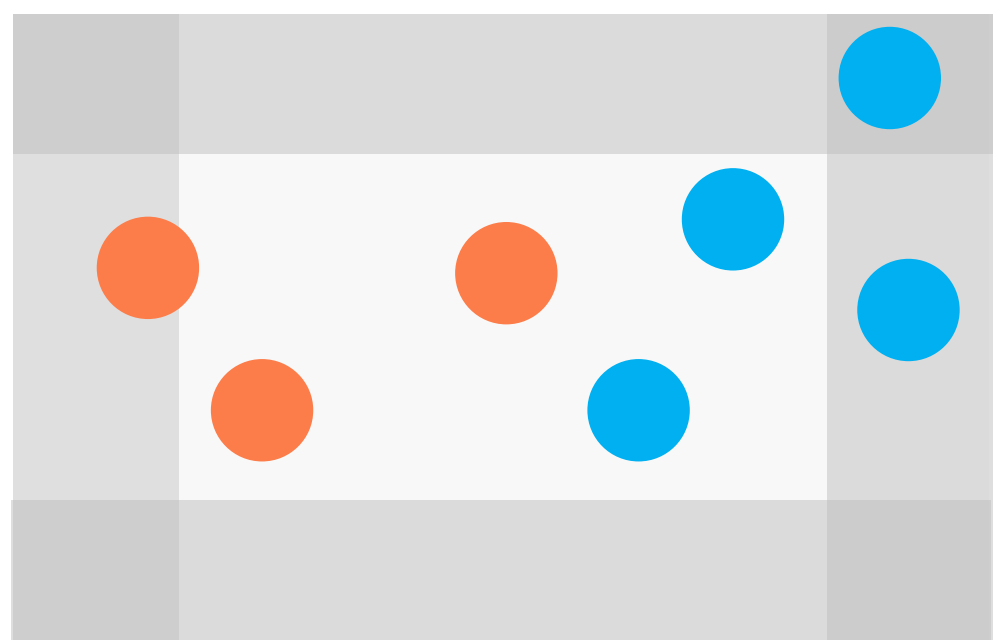






# Proximity and white space

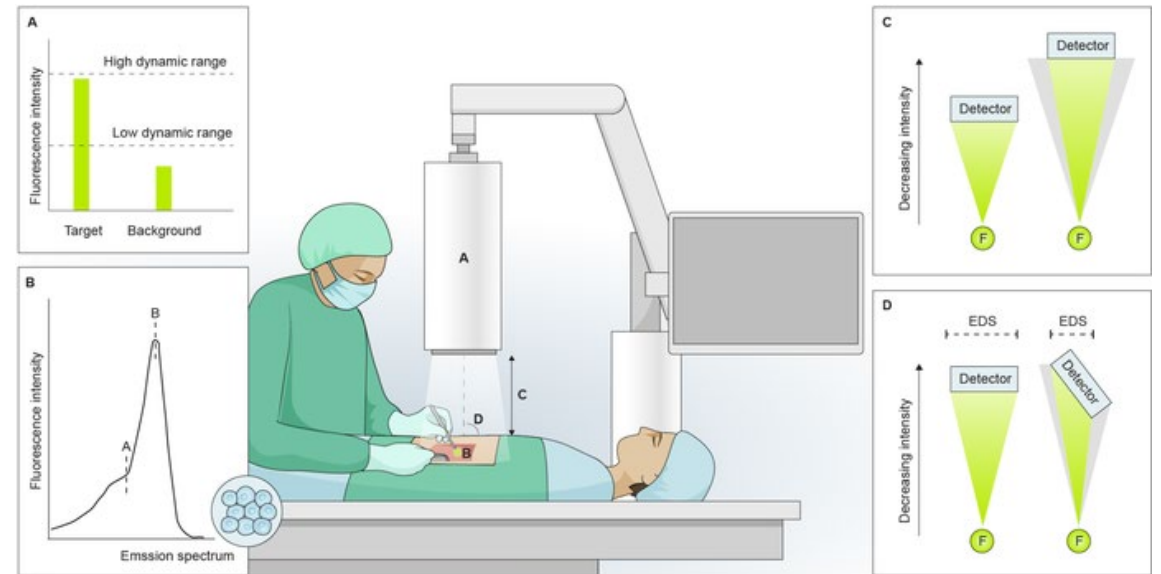
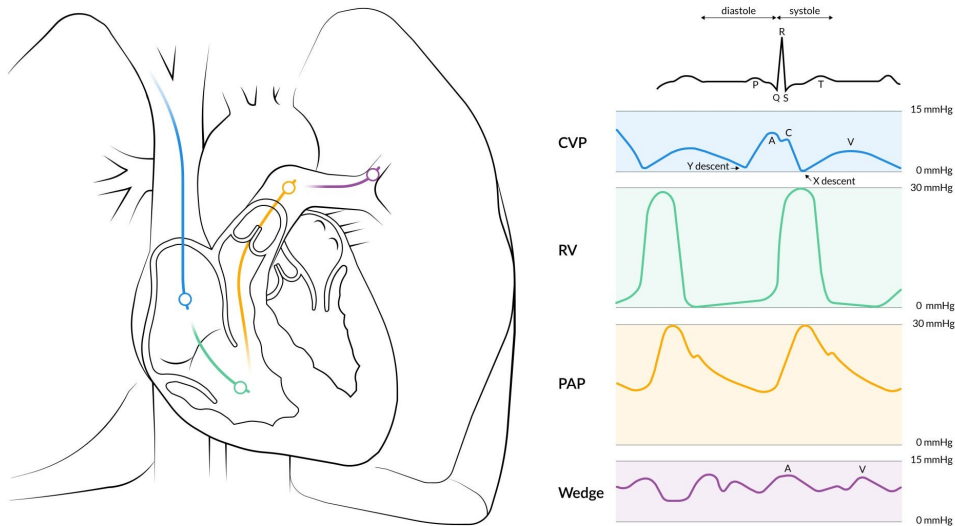
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# Background

*Plain, light coloured background shows your information best*

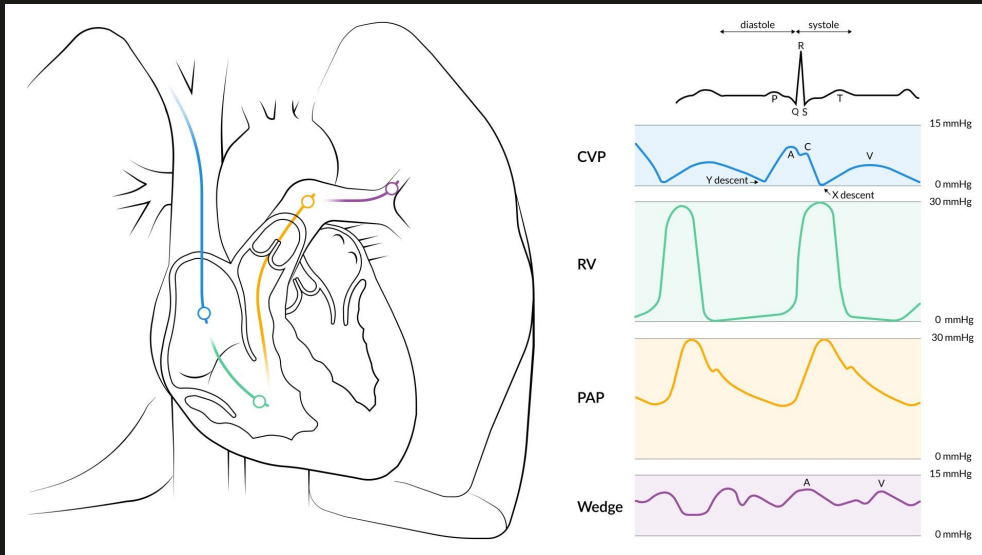
- Dark background with white or colored text is hard to read
- Dark background: unintentional white framing



# Background

*Plain, light coloured background shows your information best*

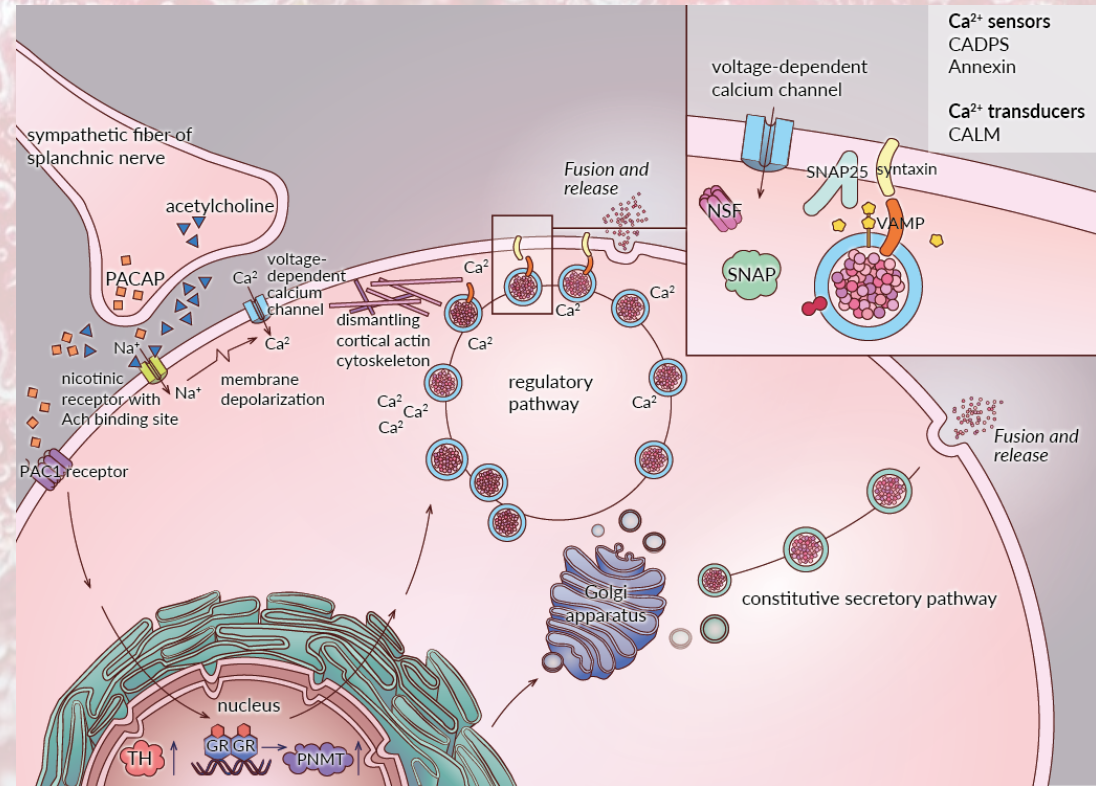
- Dark background with white or colored text is hard to read
- Dark background: unintentional white framing



# Keep your background simple

## *Busy backgrounds*

- compete with content and figures
- affect readability
- give people like me headaches



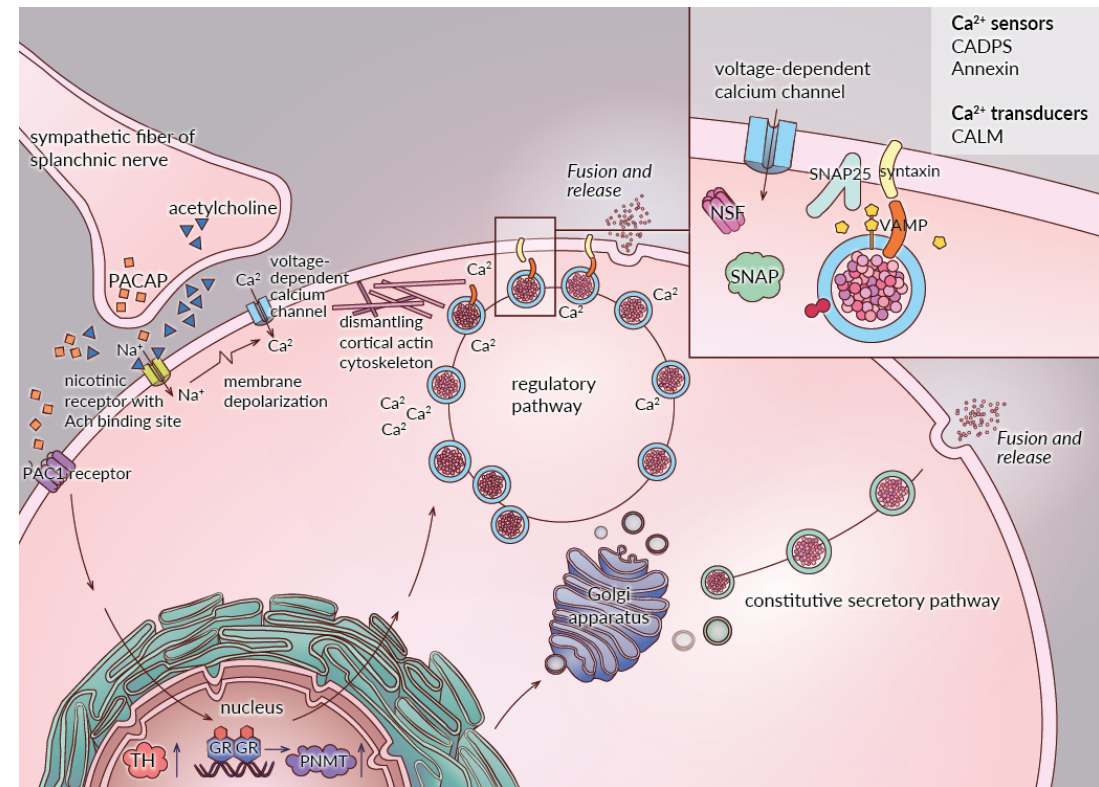
# Keep your background simple

## *Busy backgrounds*

- compete with content and figures
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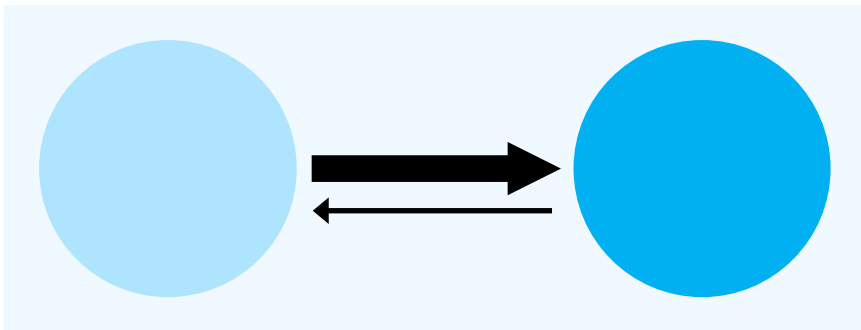
### TIP:

Do you want to play with textures etc?  
Do so on the title slide

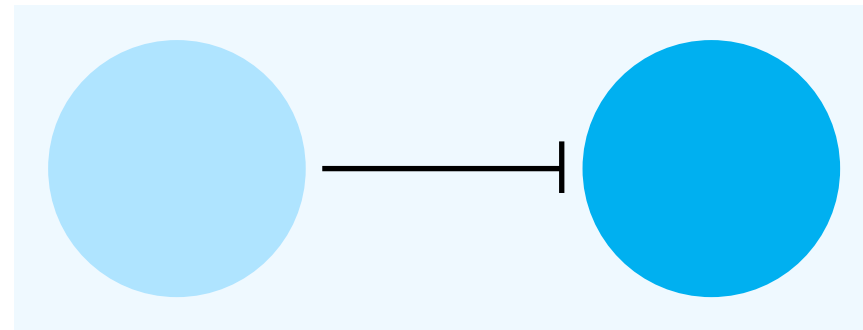


# Different arrows for different purposes

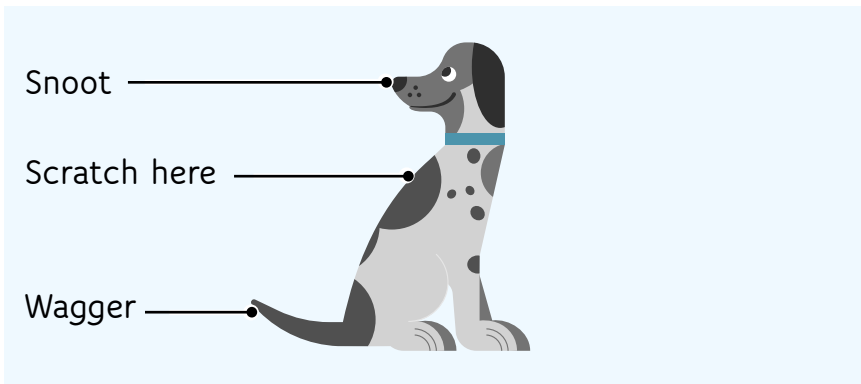
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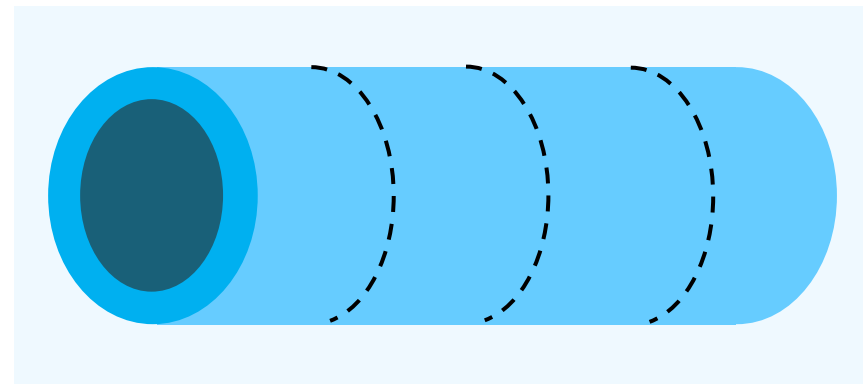
Strong/weaker signals



Inhibition



Labels



Dashed lines

# Different arrows for different purposes

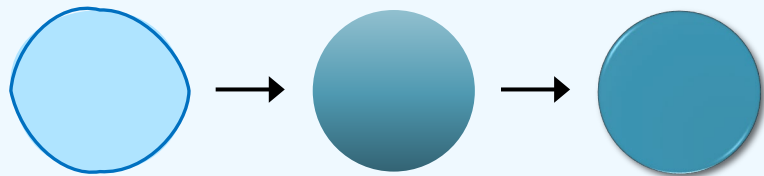
---

*Try not to cross the lines and be consistent*

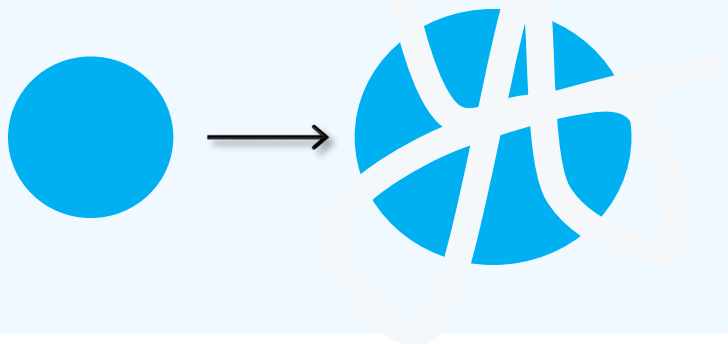
# Consistency is key

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First step



Second step

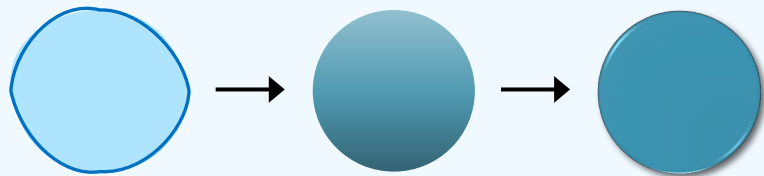




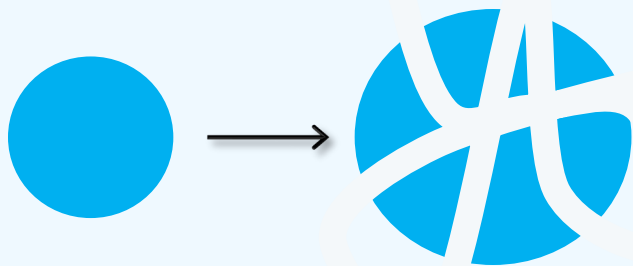
# Consistency is key

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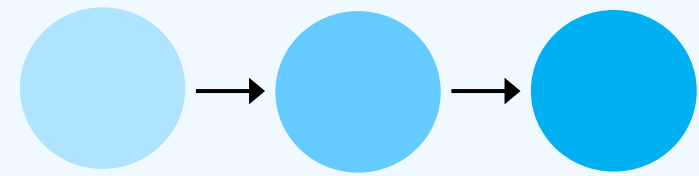
First step



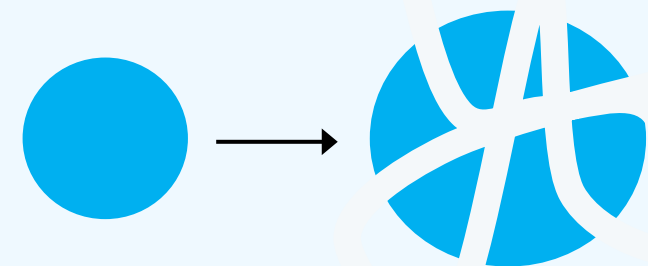
Second step



First step



Second step





# Use a clear typeface

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Keep it simple.

The letters 'Aa' in a bold, sans-serif font. The 'A' is a simple, geometric shape with a flat top and a wide base. The 'a' is a simple, rounded shape with a flat top and a wide base.

Sans serif

The letters 'Aa' in a bold, serif font. The 'A' has a classic serif design with a pointed top and a wide base. The 'a' has a classic serif design with a pointed top and a wide base.

Serif

# Photographs...go big or go home

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You can  
make your  
point here



You can make  
your point  
here





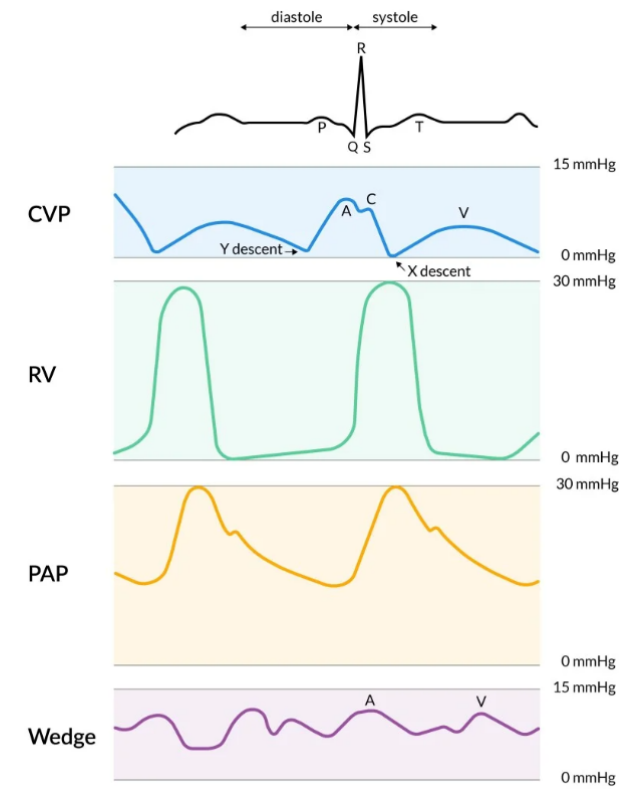
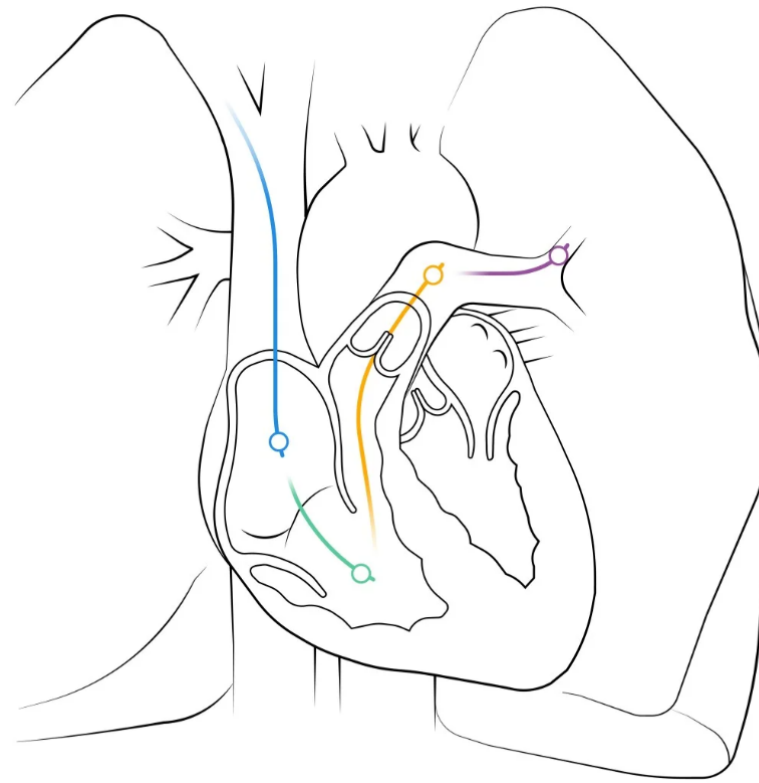
# COLOUR

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- use for impact

# COLOUR

- use for impact
- limit your colour palette



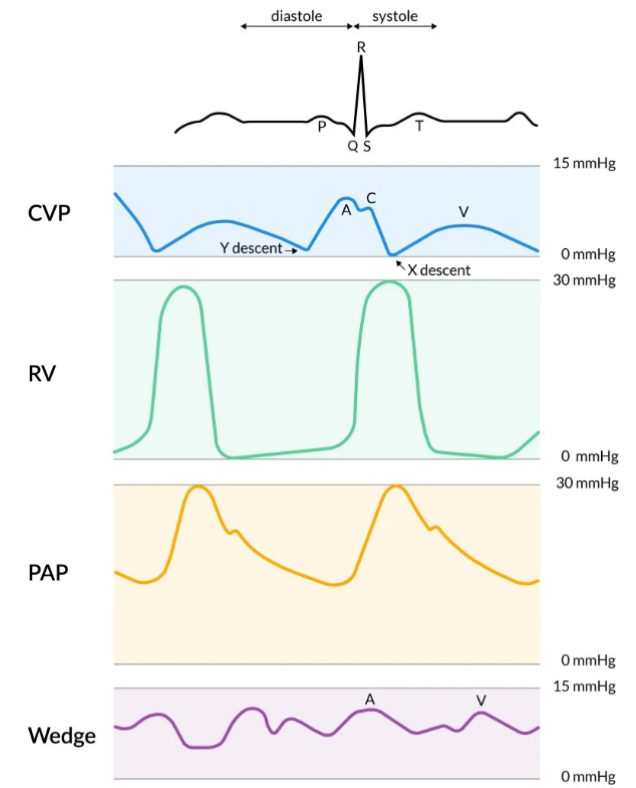
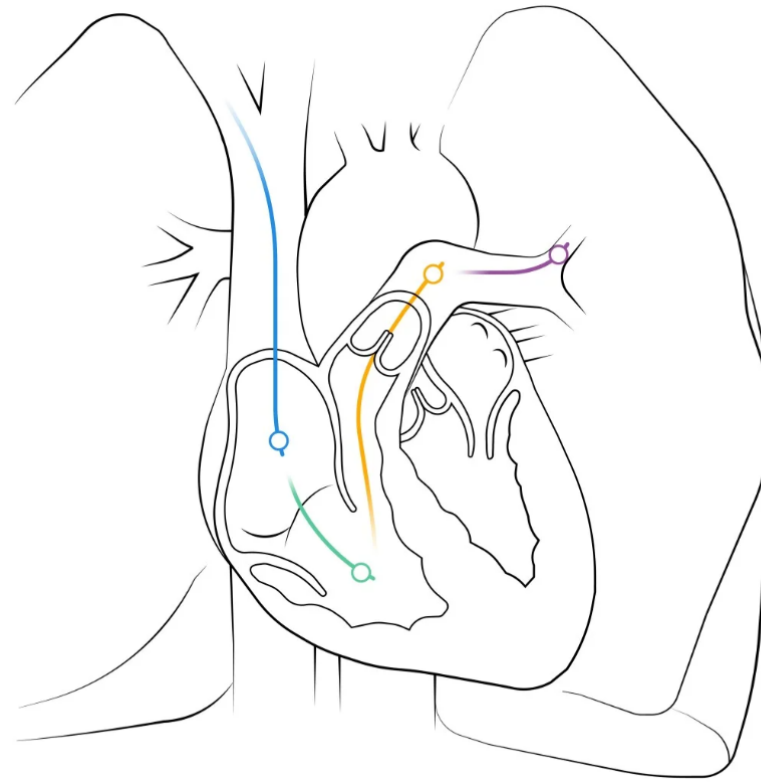


# COLOUR

- use for impact
- limit your colour palette

**TIP:**

If you do not know which colors to pick, check organizational branding or use the eyedropper to select colours which can link the poster to your institute / university or topic.





# COLOUR

---

- use for impact
- limit your colour palette
- create a colour scale

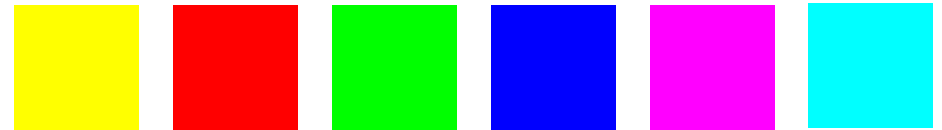




# COLOUR

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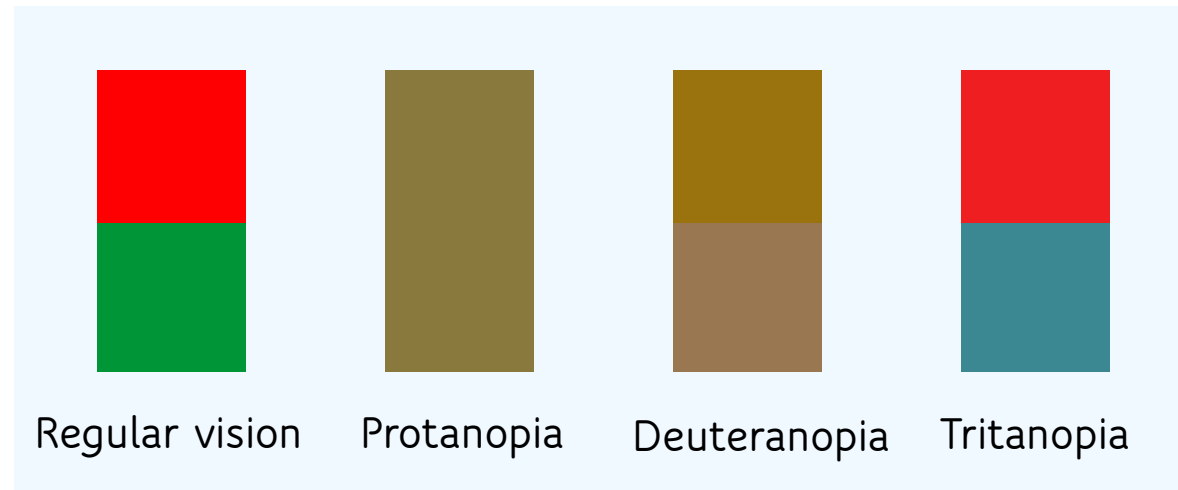
- use for impact
- limit your colour palette
- create a colour scale
- avoid using extreme colours



# COLOUR

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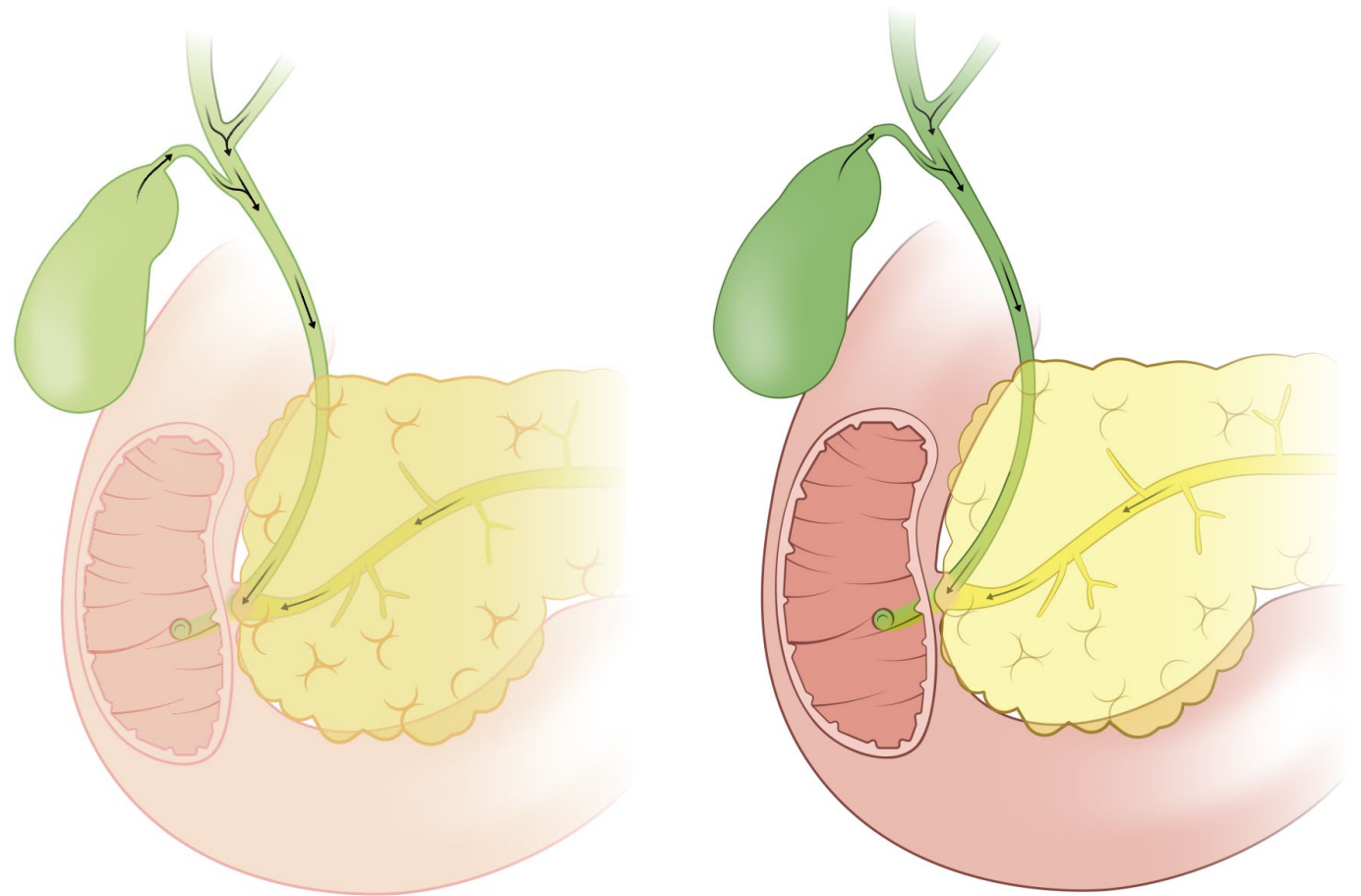
- use for impact
- limit your colour palette
- create a colour scale
- avoid using extreme colours
- keep colourblind people in mind



# COLOUR

---

- use for impact
- limit your colour palette
- create a colour scale
- avoid using extreme colours
- keep colourblind people in mind
- ensure enough contrast

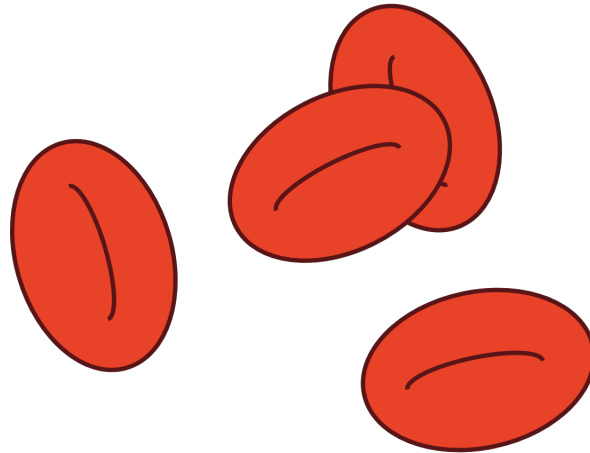




# COLOUR

---

- use for impact
- limit your colour palette
- create a colour scale
- avoid using extreme colours
- keep colourblind people in mind
- ensure enough contrast
- keep colour association in mind

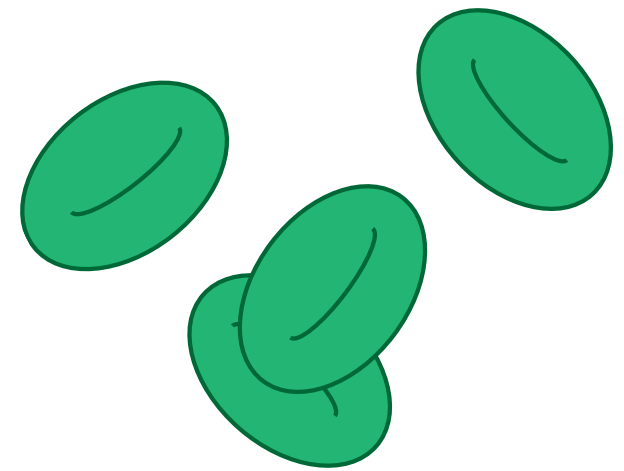




# COLOUR

---

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# CHARTS AND FIGURES

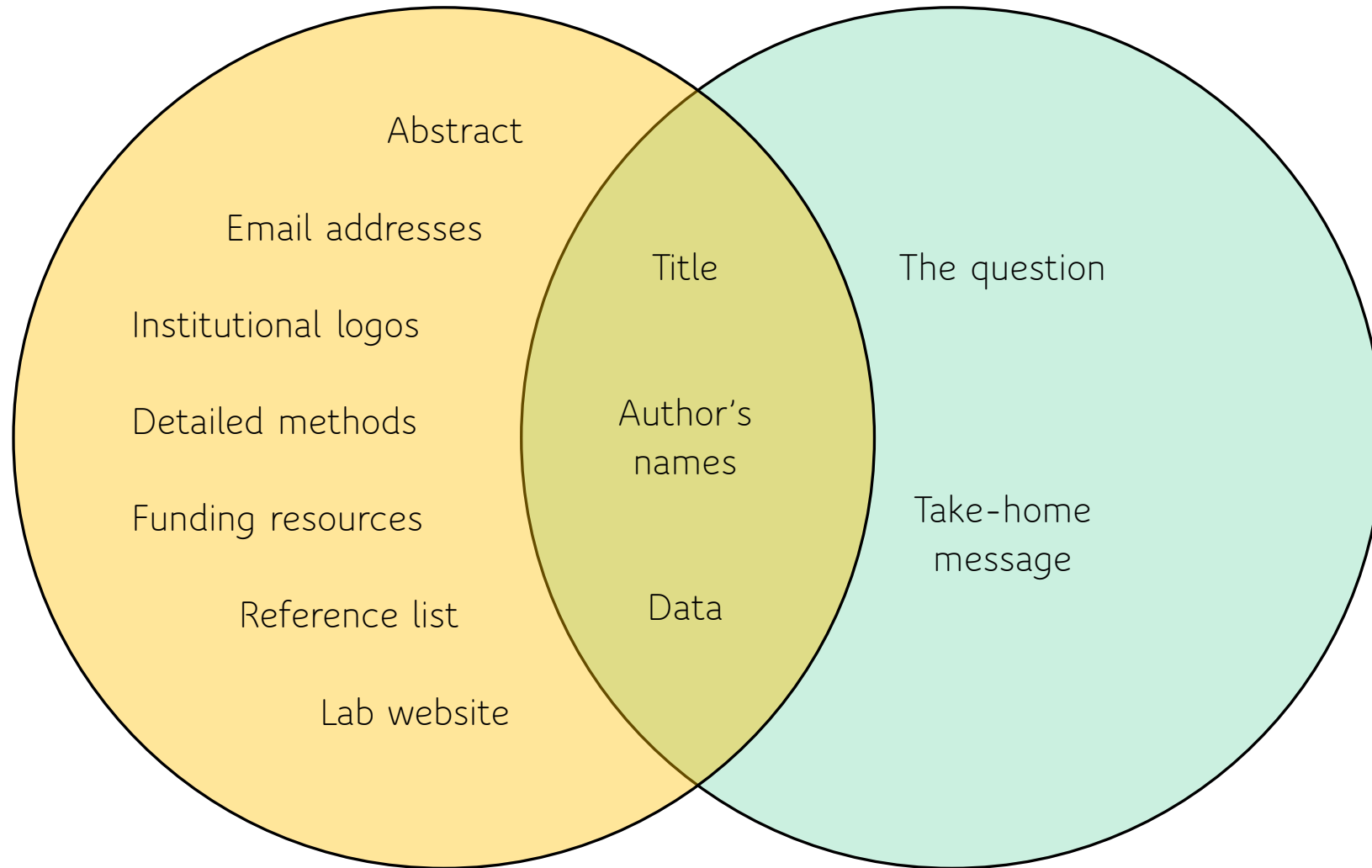
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- Images in posters: they must tell your story (without text) too
- Text in figures must be large



What researchers  
usually put on posters

What viewers  
care about





# GRAPHICAL ABSTRACTS

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ONE POINT/PROCESS *The essence of your take-home message*



# GRAPHICAL ABSTRACTS

---

**ONE POINT/PROCESS** *The essence of your take-home message*

**VISUAL FLOW** *Left – right or top – bottom*



# GRAPHICAL ABSTRACTS

---

ONE POINT/PROCESS *The essence of your take-home message*

VISUAL FLOW *Left – right or top – bottom*

BROADER CONTEXT (GRAPHICALLY) *if relevant*

# GRAPHICAL ABSTRACTS

---

ONE POINT/PROCESS *The essence of your take-home message*

VISUAL FLOW *Left – right or top – bottom*

BROADER CONTEXT (GRAPHICALLY) *if relevant*

ALL PARTS VISUAL



# GRAPHICAL ABSTRACTS

---

ONE POINT/PROCESS *The essence of your take-home message*

VISUAL FLOW *Left – right or top – bottom*

BROADER CONTEXT (GRAPHICALLY) *if relevant*

ALL PARTS VISUAL

FONT SIZE / USE



# GRAPHICAL ABSTRACTS

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ONE POINT/PROCESS *The essence of your take-home message*

VISUAL FLOW *Left – right or top – bottom*

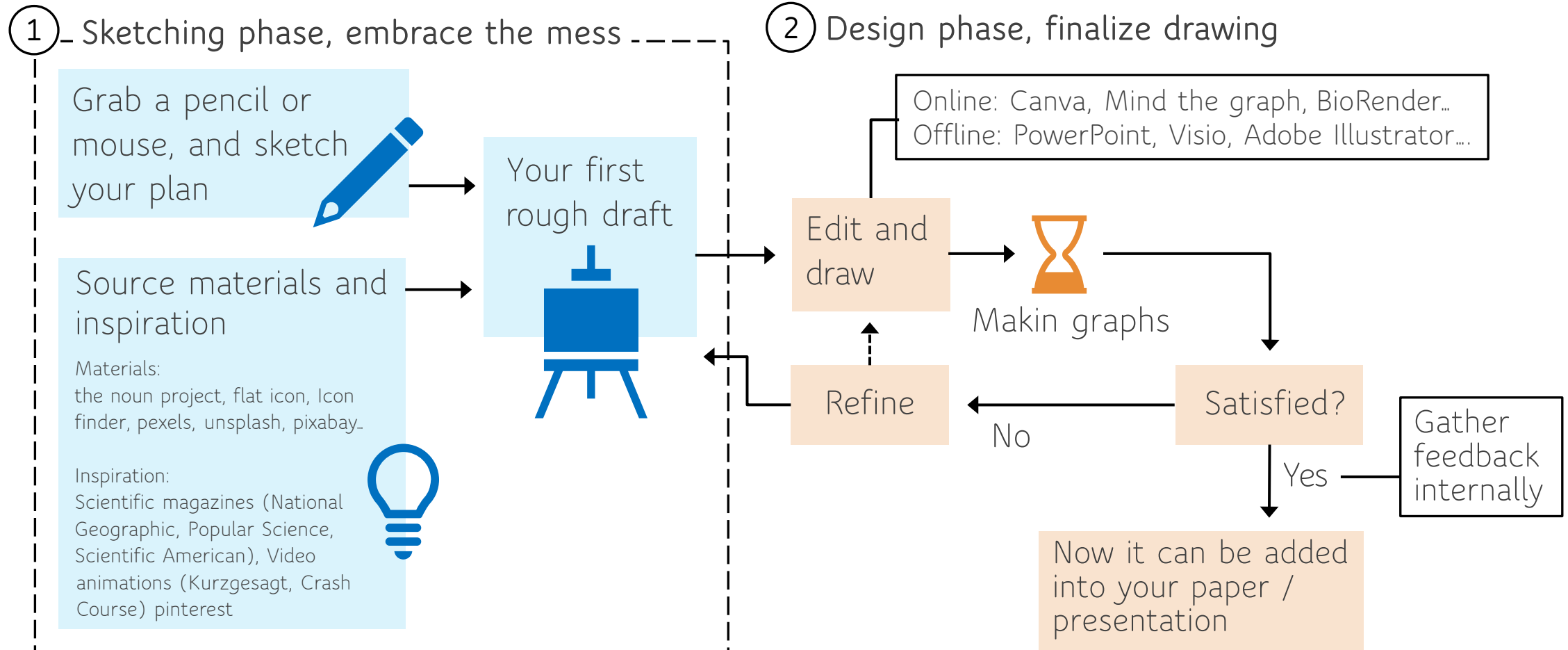
BROADER CONTEXT (GRAPHICALLY) *if relevant*

ALL PARTS VISUAL

FONT SIZE / USE

RESTRICTED COLOR PALETTE

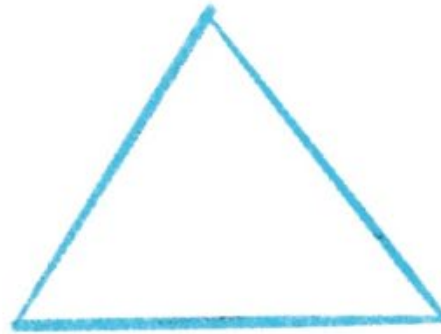
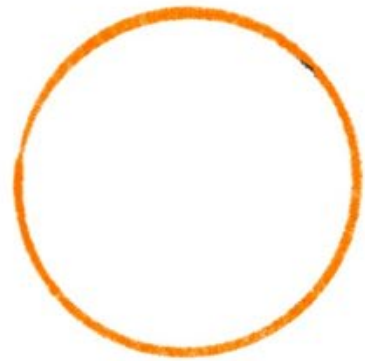
# The process





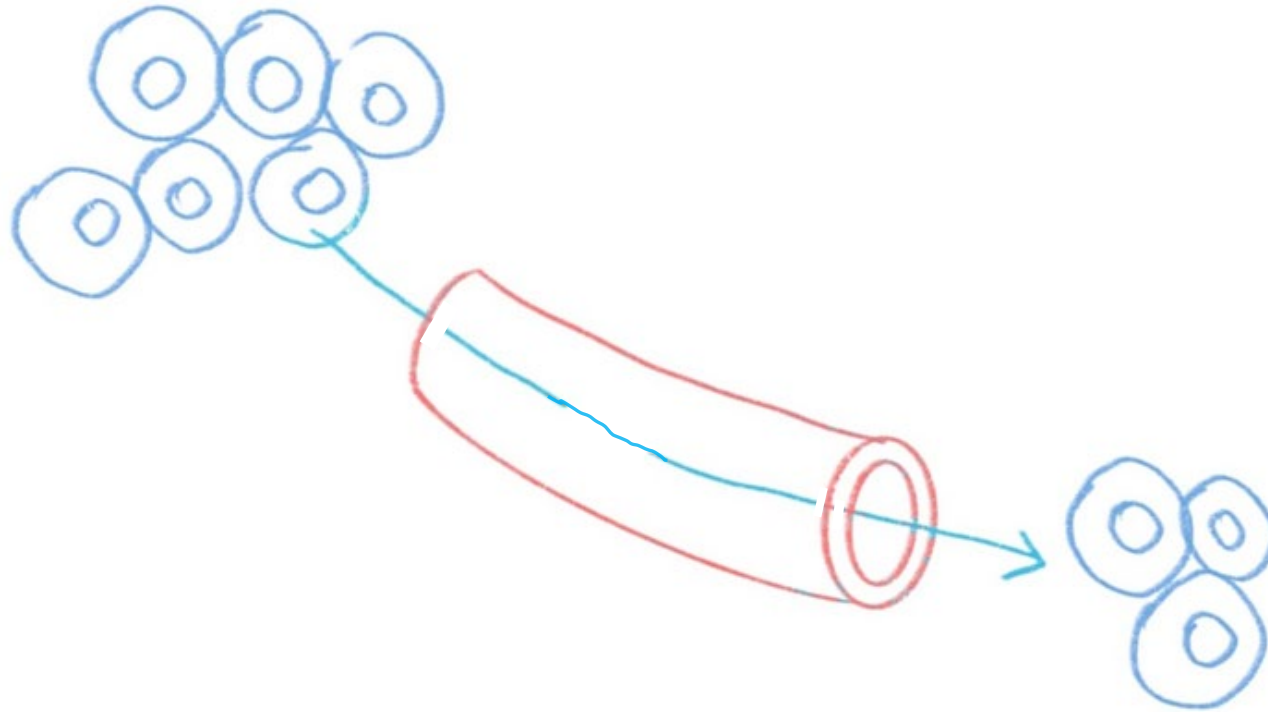
# The process

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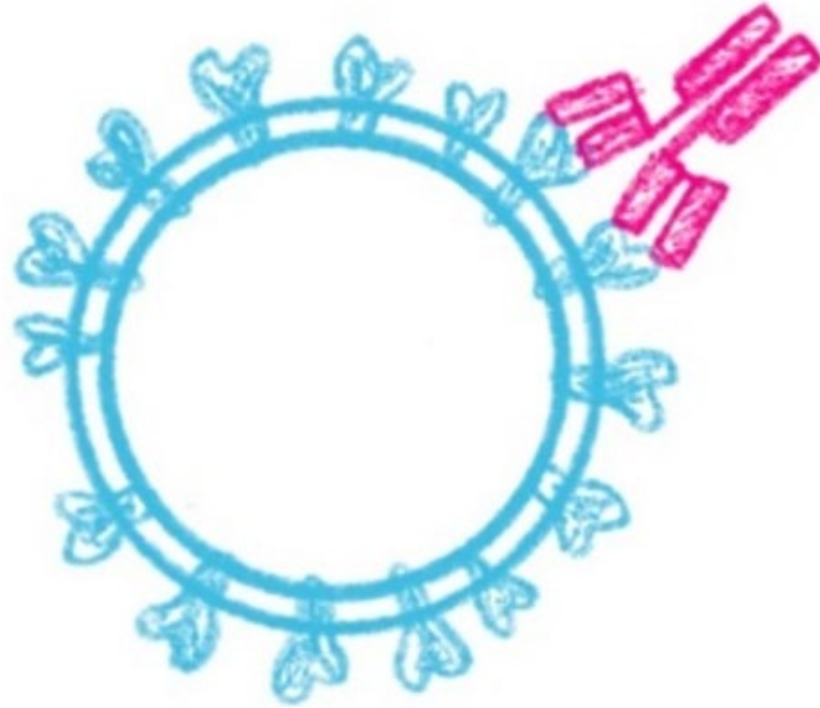
# The process

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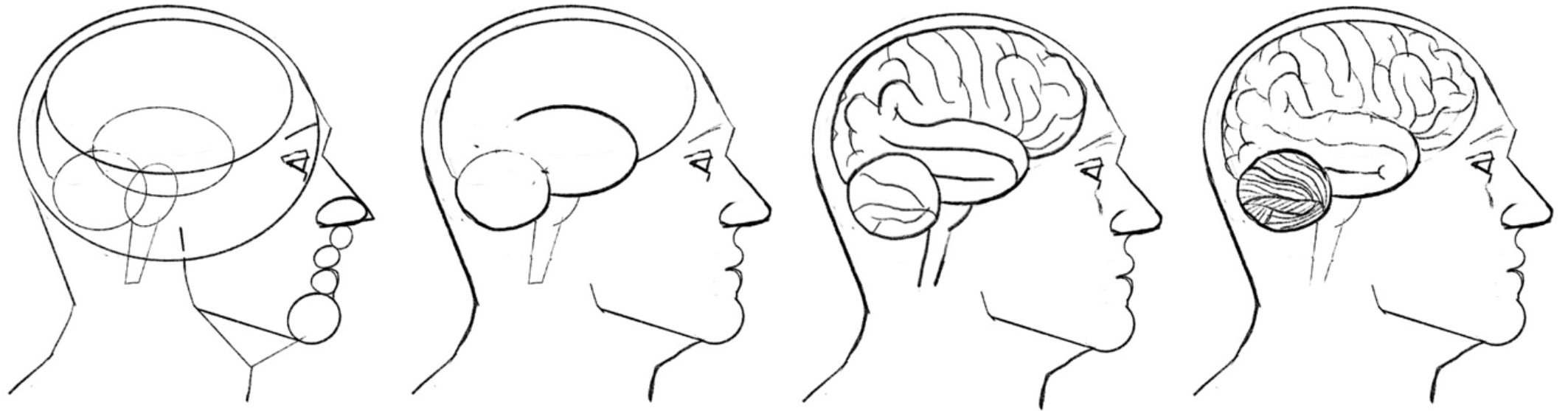
# The process

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# The process

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# Don't let aesthetics overtake

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It is imperative that scientific illustrations are both accurate and visually appealing

**TIP:**

Ask a friend / family member / colleague (or someone else that fits the target audience) to explain the visual. Listen closely, because this will likely reveal anything that needs further clarifying about the design.



# That's it

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ANY QUESTIONS?

