ASHBi
RESEARCH ACCELERATION UNIT

Making Figures Easily!

Introducing the new illustration tool for biologists

2021.03.12

Institute for the Advanced Study of Human Biology (WPI-ASHBi)

Hiromi Inoue, Research Coordinator

KYOTO UNIVERSITY

Institute for the Advanced Study of Human Biology ASHBi Kyoto University

wpi World Premier International Research Center Initiative

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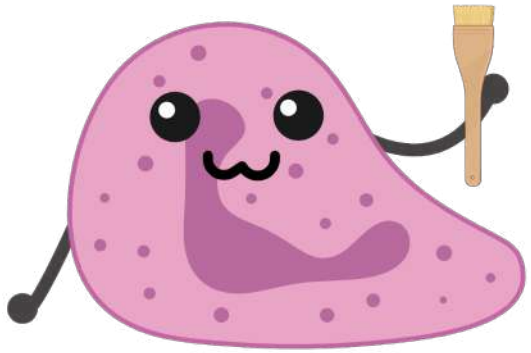
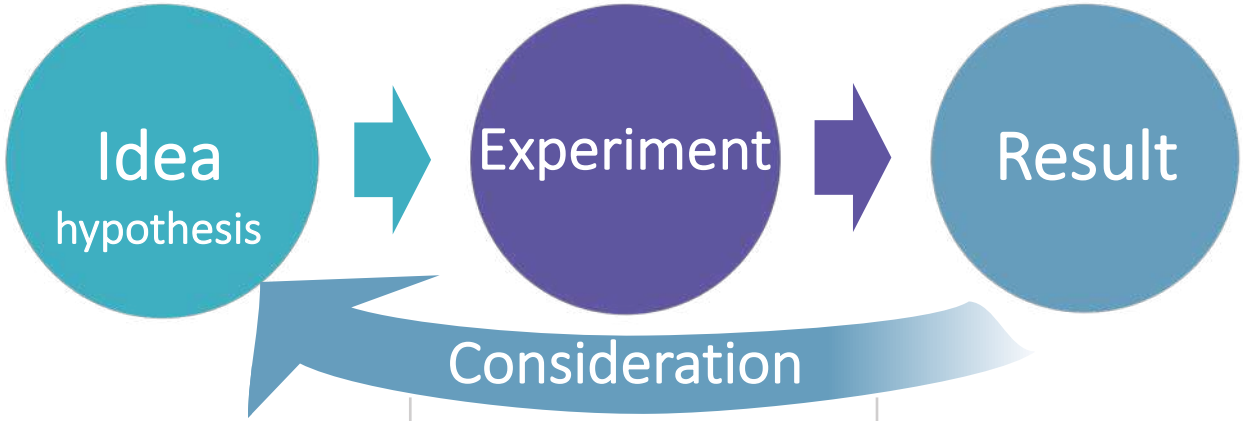
1. Scientific illustration

Your research and illustration objectives



Research stages and emphasis for illustration



	Idea	Experiment	Result	Emphasis of illustration
Early stage	Vague	Trial and error	Preliminary	**Flexibility**
Late stage	Distinct	Confirmation	Concluding	**High quality**

The emphasis for illustration will be changed based on your research stage.

BioRender allows flexiblity and high quality

Easy to create *flexible* and *high-quality* figures with BioRender!

BioRender icons

- Quick and easy interface
- Web-based
- One tool from beginning to end
- Lots of pre-made icons and templates
- Specialized in biomedical science

2. Examples

BioRender-made figures are frequently seen in top journals.

BioRender is used in high impact journals

Sorry, we can't share the example now.
We will update this page by May...

Graphical abstract

- Tells the story in JUST ONE picture
- You don't have much time until publication

⇨ **BioRender is the powerful tool for making graphical abstracts**

Cell 2021 184460-475.e21 DOI: (10.1016/j.cell.2020.11.007)

The figure can be the gateway of the story

A figure created with BioRender.

Figure in the paper

RESEARCH

Science AAAS

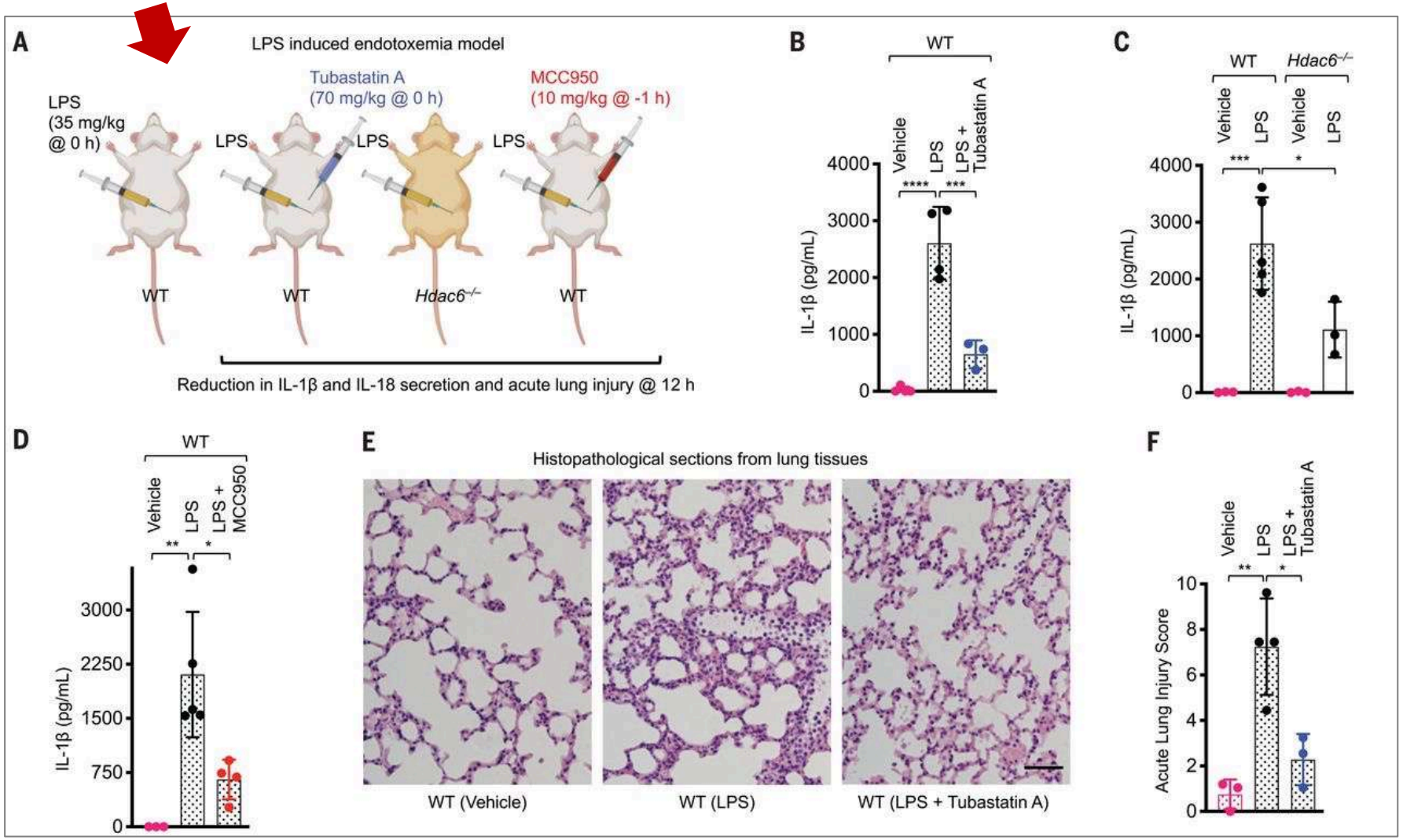
RESEARCH ARTICLE

INFLAMMASOMES

HDAC6 mediates an aggresome-like mechanism for NLRP3 and pyrin inflammasome activation

Venkat Giri Magupalli[1,2*†], Roberto Negro[1,2*†], Yuzi Tian[3,4*], Arthur V. Hauenstein[1,2*], Giuseppe Di Caprio[2,5], Wesley Skillern[2], Qiufang Deng[3,4], Pontus Orning[6,7], Hasan B. Alam[3], Zoltan Maliga[8], Humayun Sharif[1,2], Jun Jacob Hu[1,2], Charles L. Evavold[9], Jonathan C. Kagan[9], Florian I. Schmidt[10], Katherine A. Fitzgerald[6,7], Tom Kirchhausen[2,5], Yongqing Li[3†], Hao Wu[1,2†]

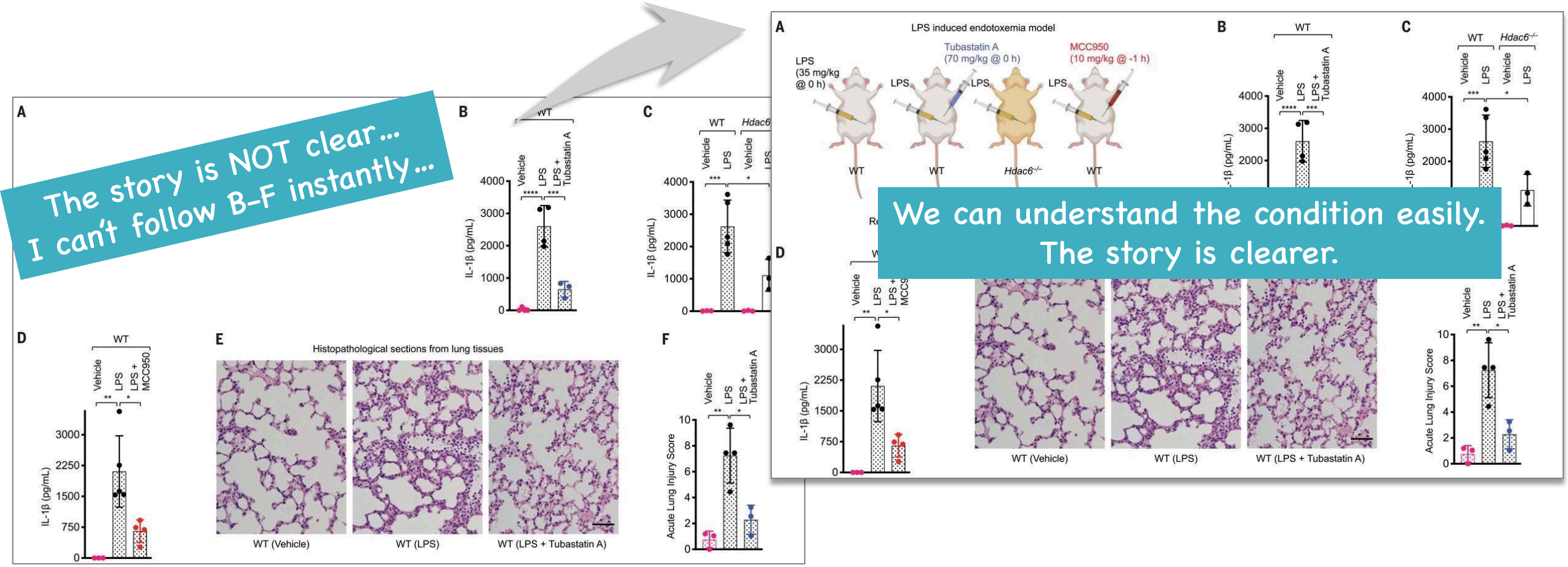
Inflammasomes are supramolecular complexes that play key roles in immune surveillance. This is accomplished by the activation of inflammatory caspases, which leads to the proteolytic maturation of interleukin 1β (IL-1β) and pyroptosis. Here, we show that nucleotide-binding domain, leucine-rich repeat, and pyrin domain–containing protein 3 (NLRP3)- and pyrin-mediated inflammasome assembly, caspase activation, and IL-1β conversion occur at the microtubule-organizing center (MTOC). Furthermore, the dynein adapter histone deacetylase 6 (HDAC6) is indispensable for the microtubule transport and assembly of these inflammasomes both in vitro and in mice. Because HDAC6 can transport ubiquitinated pathological aggregates to the MTOC for aggresome formation and autophagosomal degradation, its role in NLRP3 and pyrin inflammasome activation also provides an inherent mechanism for the down-regulation of these inflammasomes by autophagy. This work suggests an unexpected parallel between the formation of physiological and pathological aggregates.



Magupalli et al. *Science* 2020 (DOI: 10.1126/science.aas8995)

With BioRender

Part A is now the gateway of following data.
Now we can follow the data smoothly.



Without BioRender

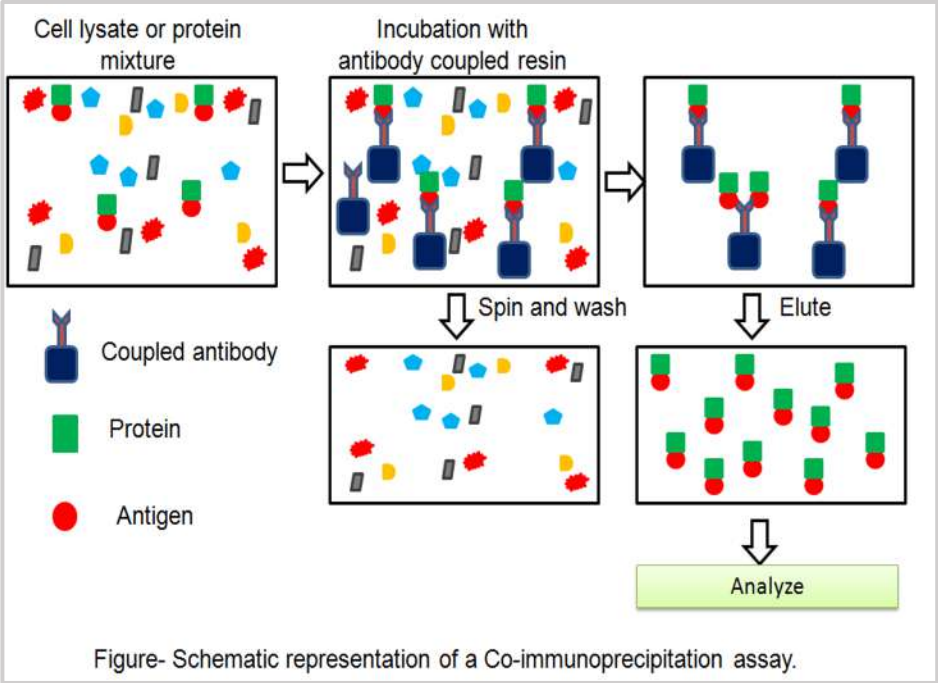
All graphs and picture have clear labels. Why we can't get it instantly?

Visualizing the process of the protocol

These two figures show the same experiment!

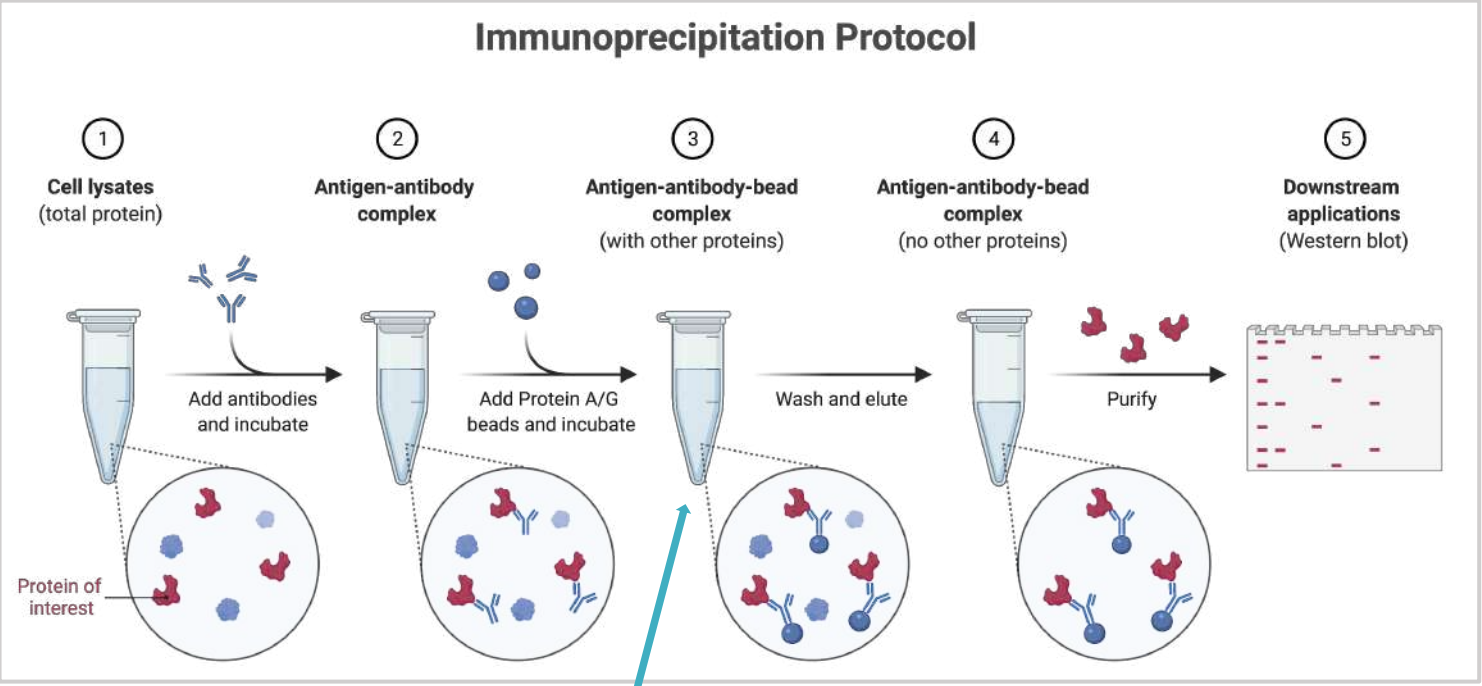
Without BioRender

We can't imagine what to do from this figure.



With BioRender

We now know the experimental steps.

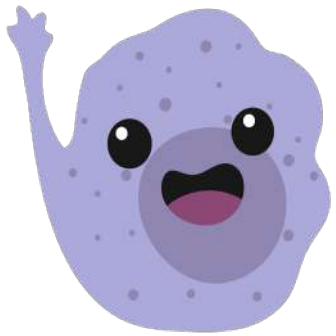


Identical icons means a lot!

百聞は一見に如かず

The Good picture can tell more than thousands of words!

3. How to use BioRender



This is a BioRender top page

BioRender

biorender.com

View our **2020 Nobel Prize CRISPR-Cas9 infographic** created in collaboration with the prize-winning Doudna lab. See Infographic

bio RENDER

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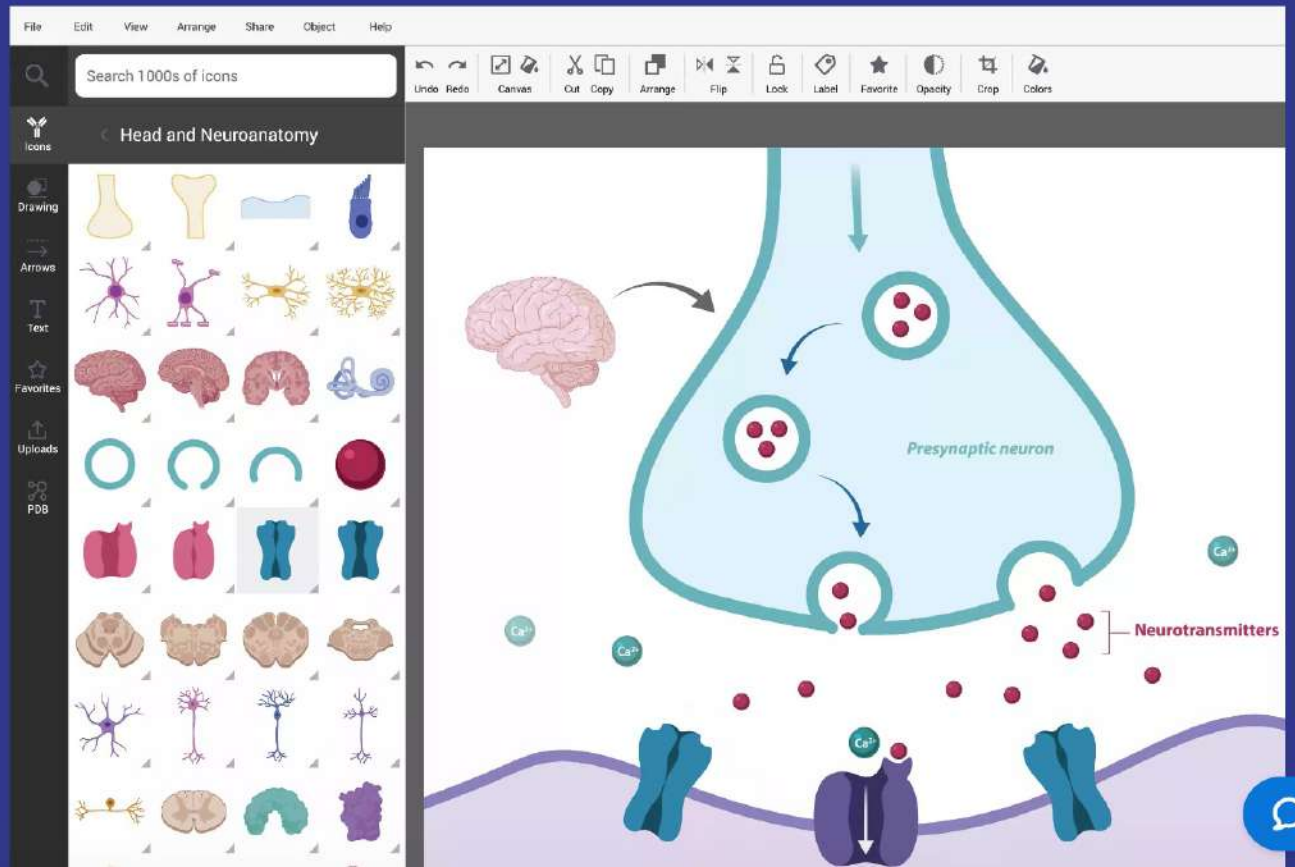

Chat

Start from here!!!

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Start a new illustration

Blank Illustration

Start with a template

See all BioRender templates

DNA Replisome (Eukaryotic Replication)

Administration Techniques for Mice - Part 1

Stomatal Opening and Closing

Lung Adenocarcinoma Histology

Patch-Clamp Recording Principle

Discriminative Pain Pathways

Gallery

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My templates

Create team

Folders +

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New folder

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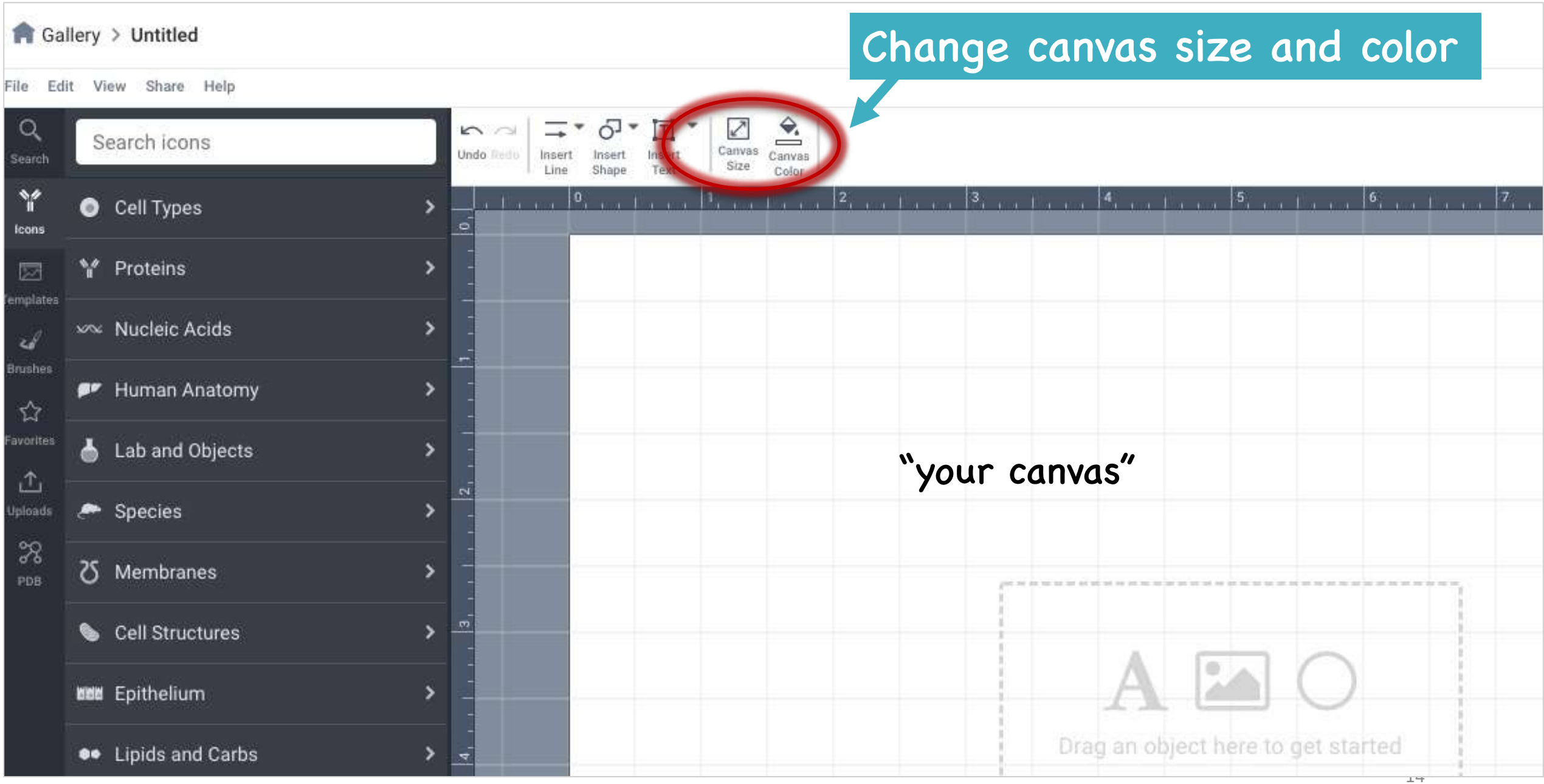
Immunoprecipitation Protocol
Opened Feb 25th, 21

Untitled
Opened Feb 25th, 21

SignAC worksho poster
Opened Dec 9th, 20

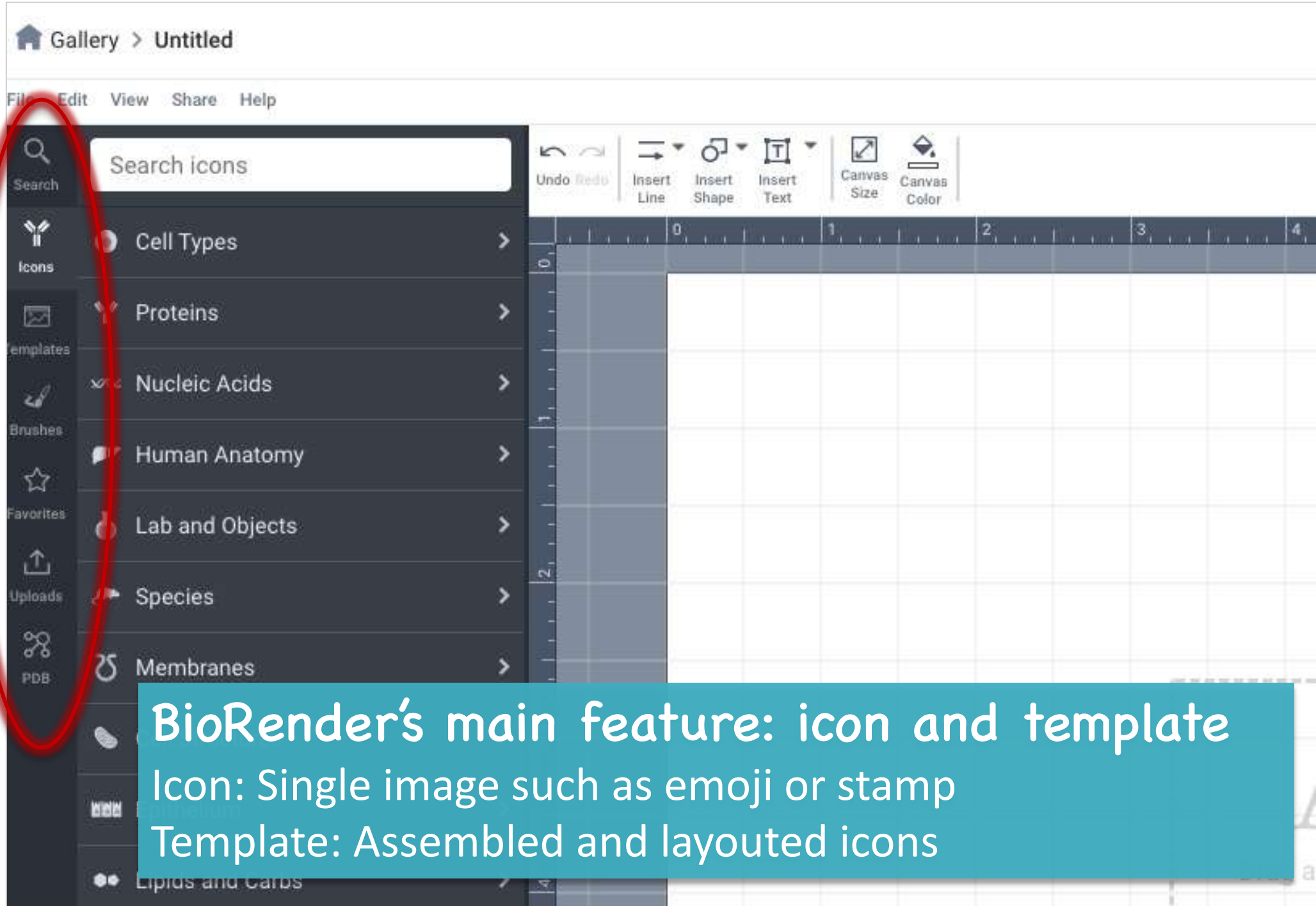
Change canvas size and color



Tab:

- **Icons**
- **Templates**
- Brushes
- Favorites
- Uploads
- **PDB***

*Protein Data Bank

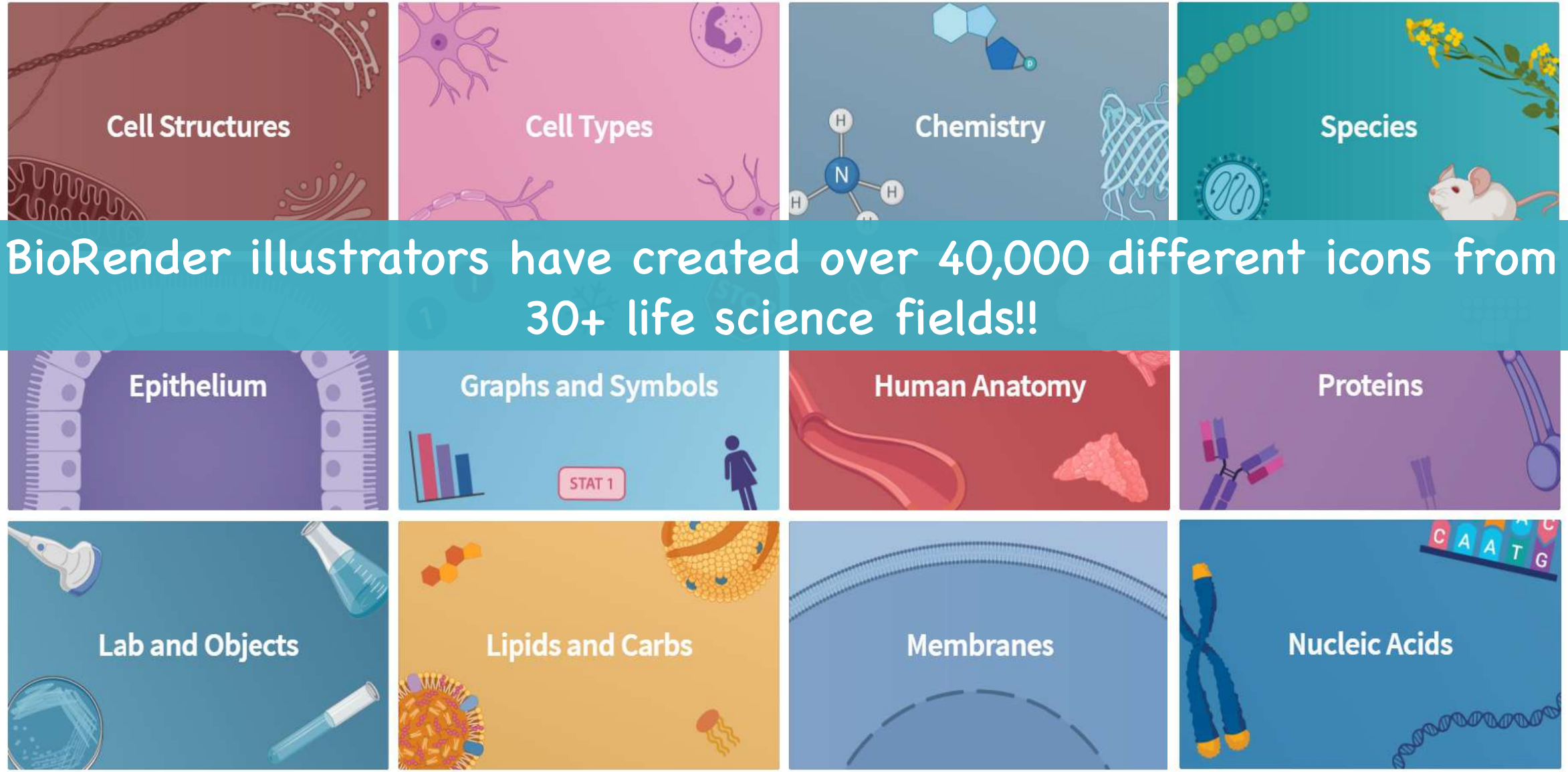


BioRender's main feature: icon and template

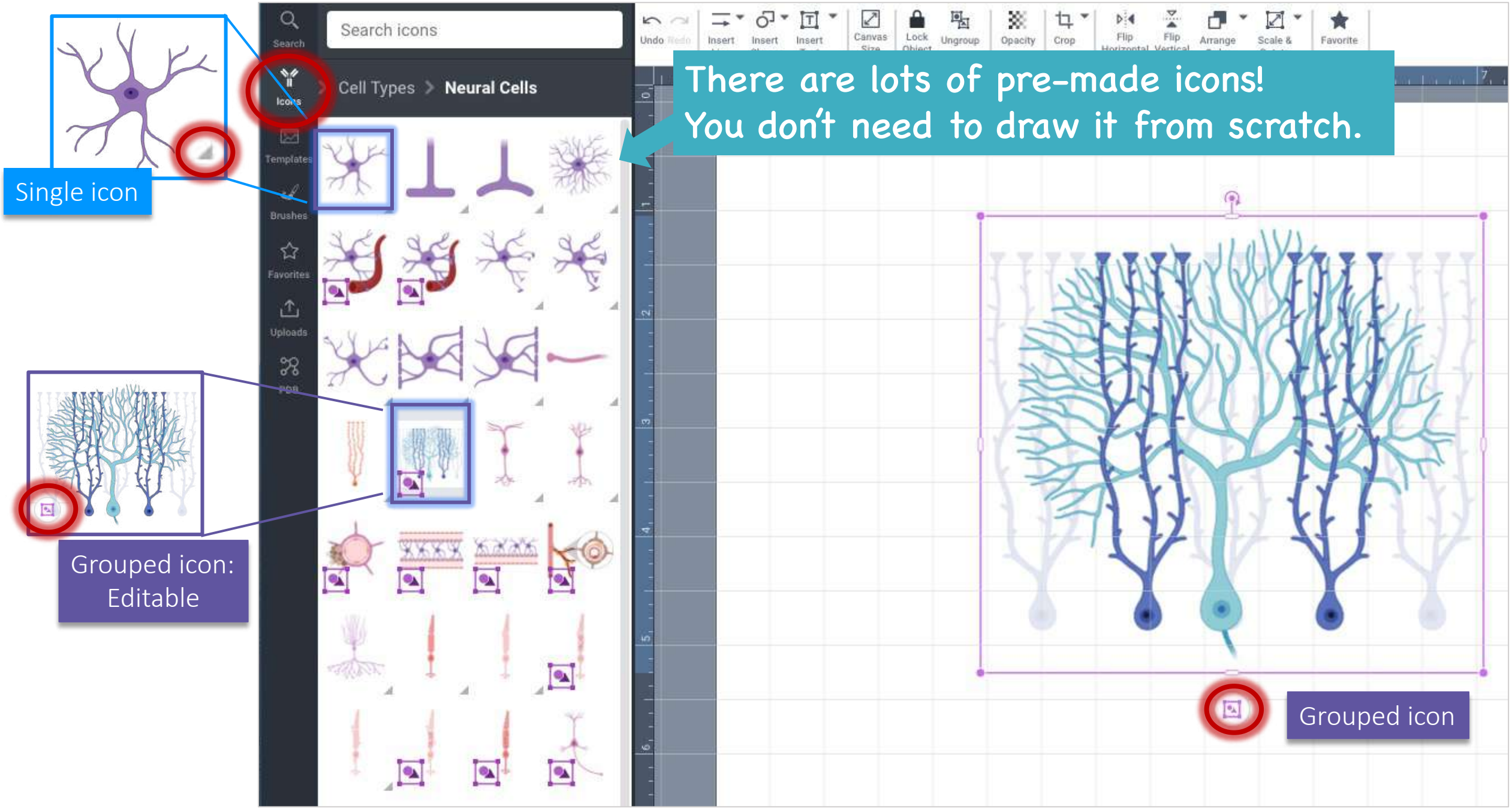
Icon: Single image such as emoji or stamp

Template: Assembled and layouted icons

BioRender icons are waiting for you



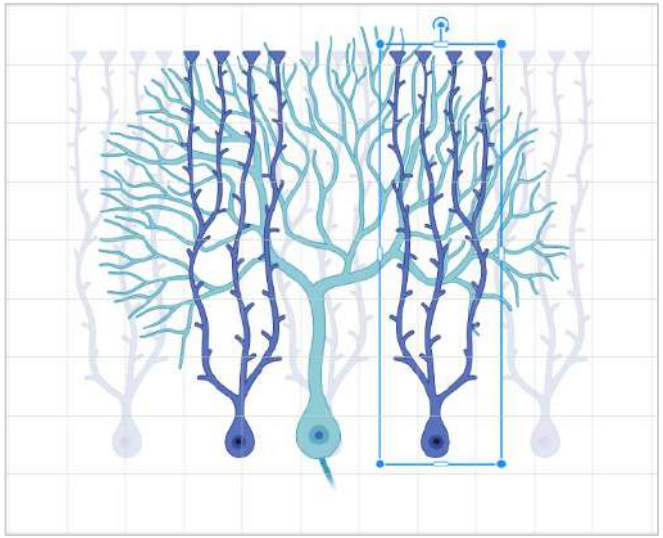
BioRender illustrators have created over 40,000 different icons from 30+ life science fields!!

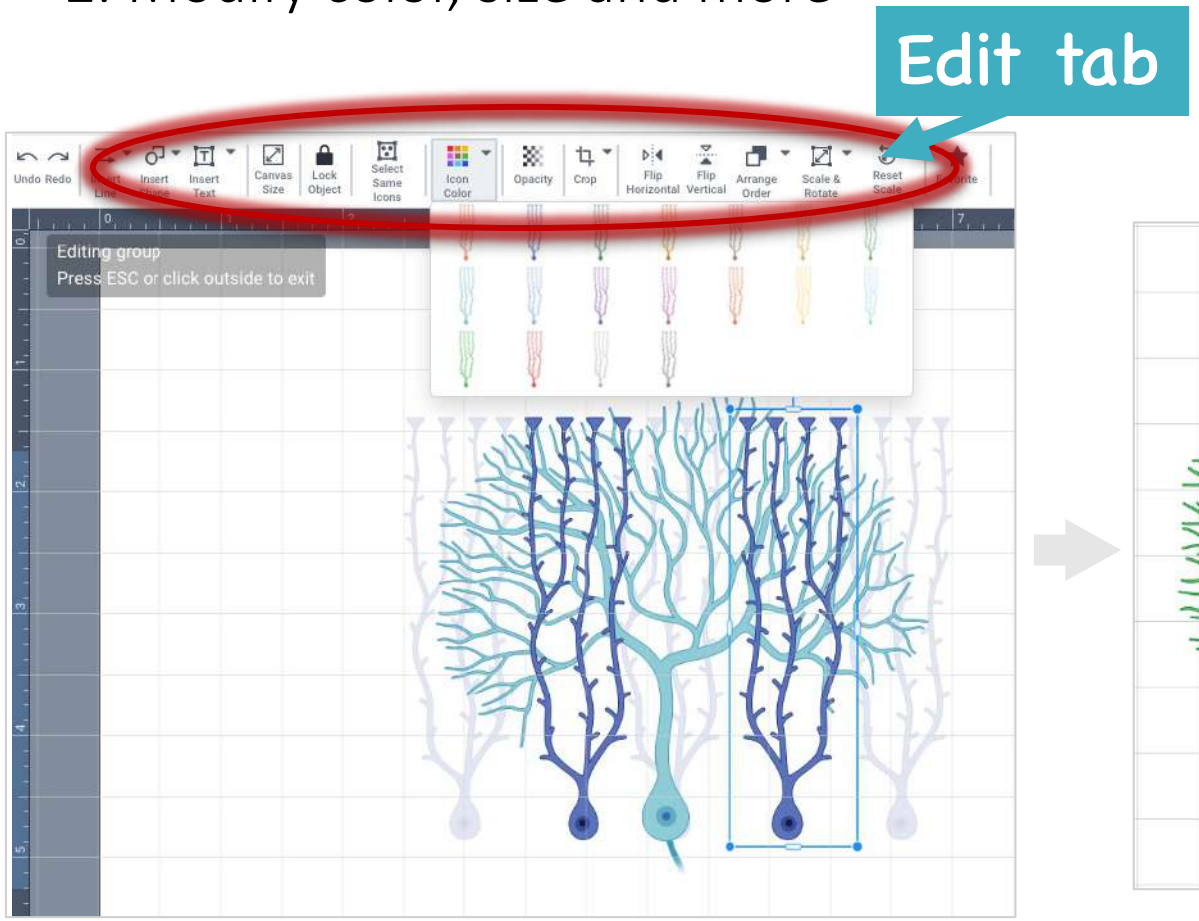

There are lots of pre-made icons!
You don't need to draw it from scratch.
Single icon
Grouped icon: Editable
Grouped icon
Search icons
Search
Icons
Templates
Brushes
Favorites
Uploads
Cell Types > Neural Cells
Undo
Insert
Canvas Size
Lock Object
Ungroup
Opacity
Crop
Flip Horizontal
Flip Vertical
Arrange
Scale &
Favorite

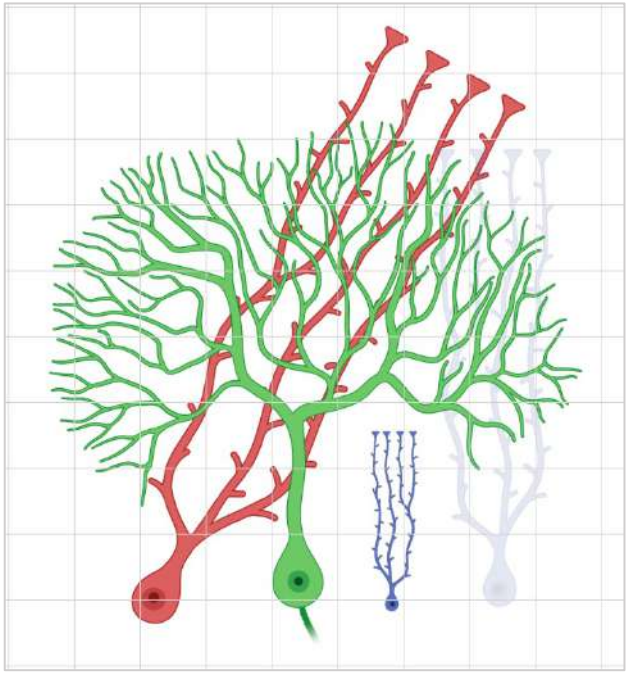
1. Choose single icon
(Indicated with blue, not purple)

2. Modify color, size and more

3. Own icon





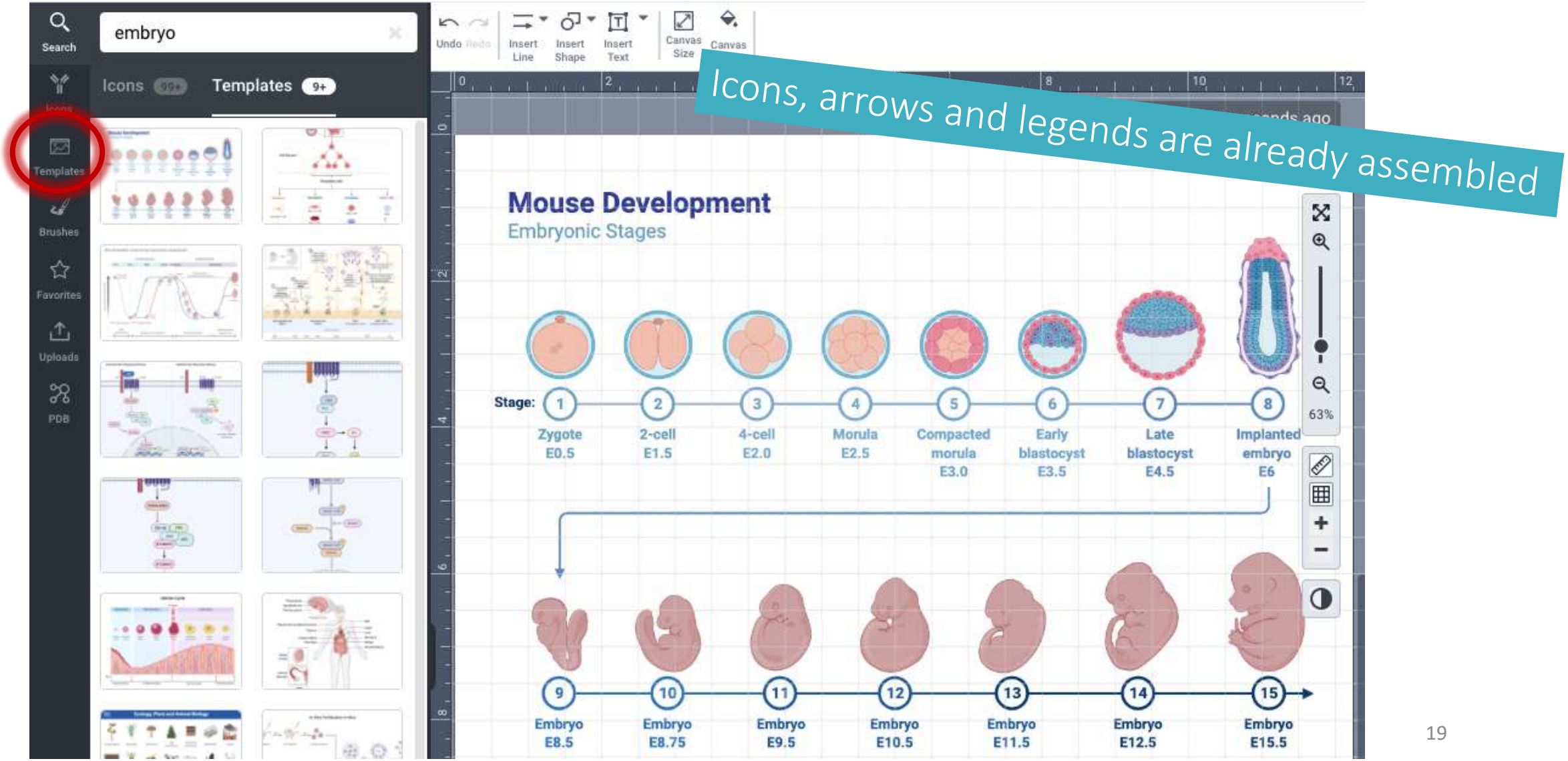


BioRender icon is vector image!

You can request new icon. BioRender team can create new icons for you in few days.

Chat

Templates: You can save time!



You don’t have to start from scratch!

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- All
- COVID-19
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- Community Templates
- CRISPR
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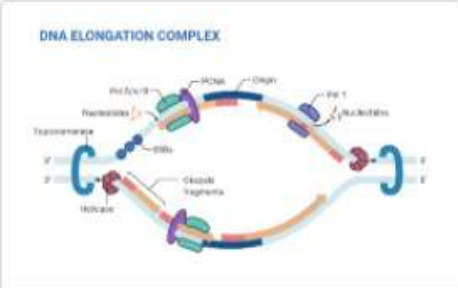
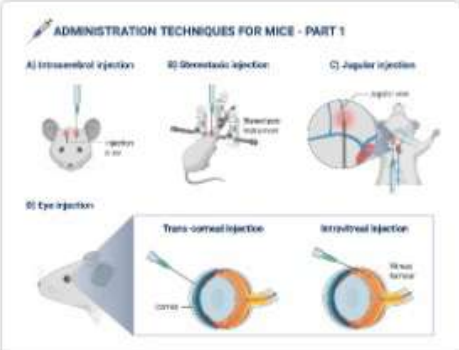
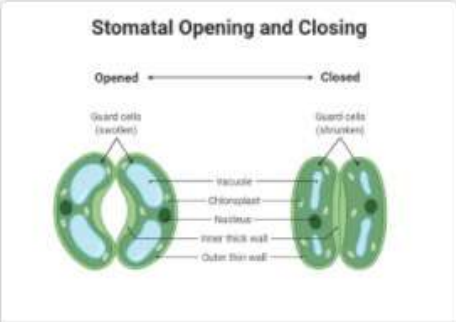
Newest first



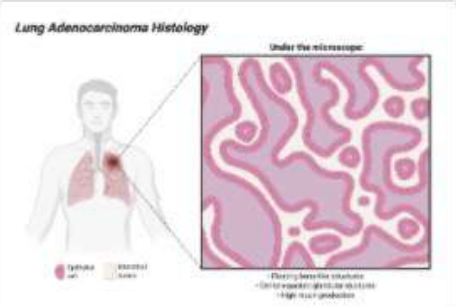
DNA Replisome (Eukaryotic Replication)



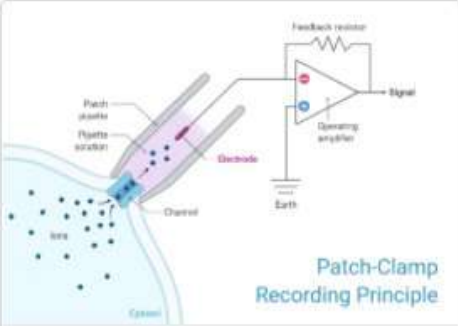
Administration Techniques for Mice - Part 1



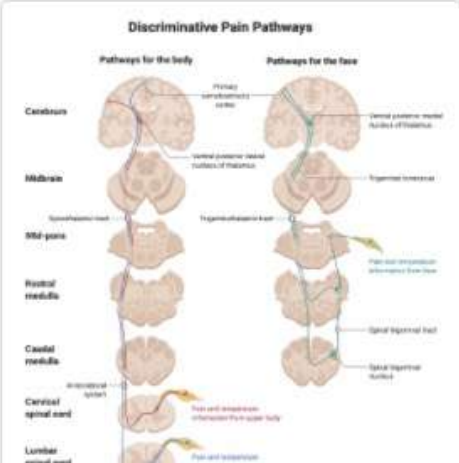
Stomatal Opening and Closing

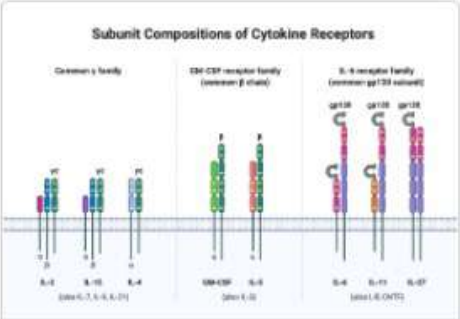


Lung Adenocarcinoma Histology

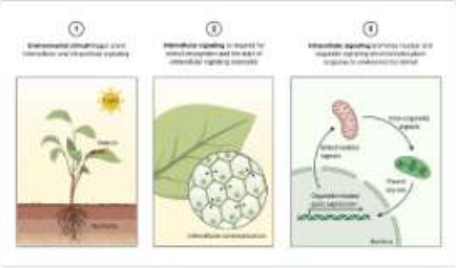


Patch-Clamp Recording Principle





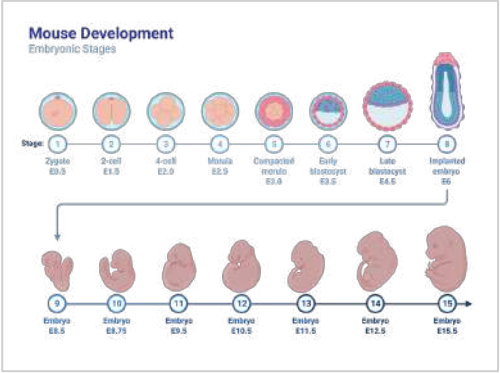
Subunit Compositions of Cytokine Receptors



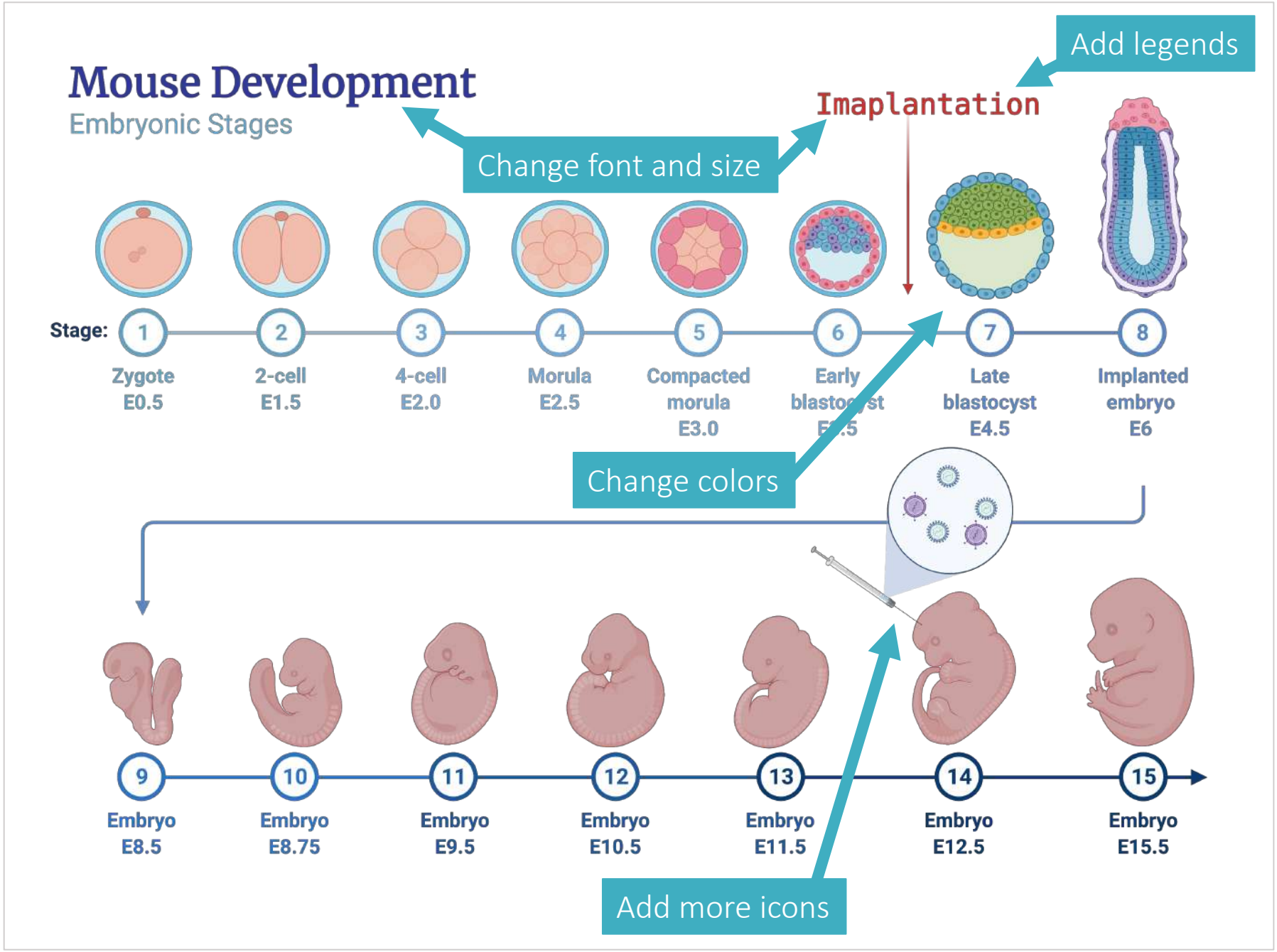
Plant Gene Expression

Streak Plate Method

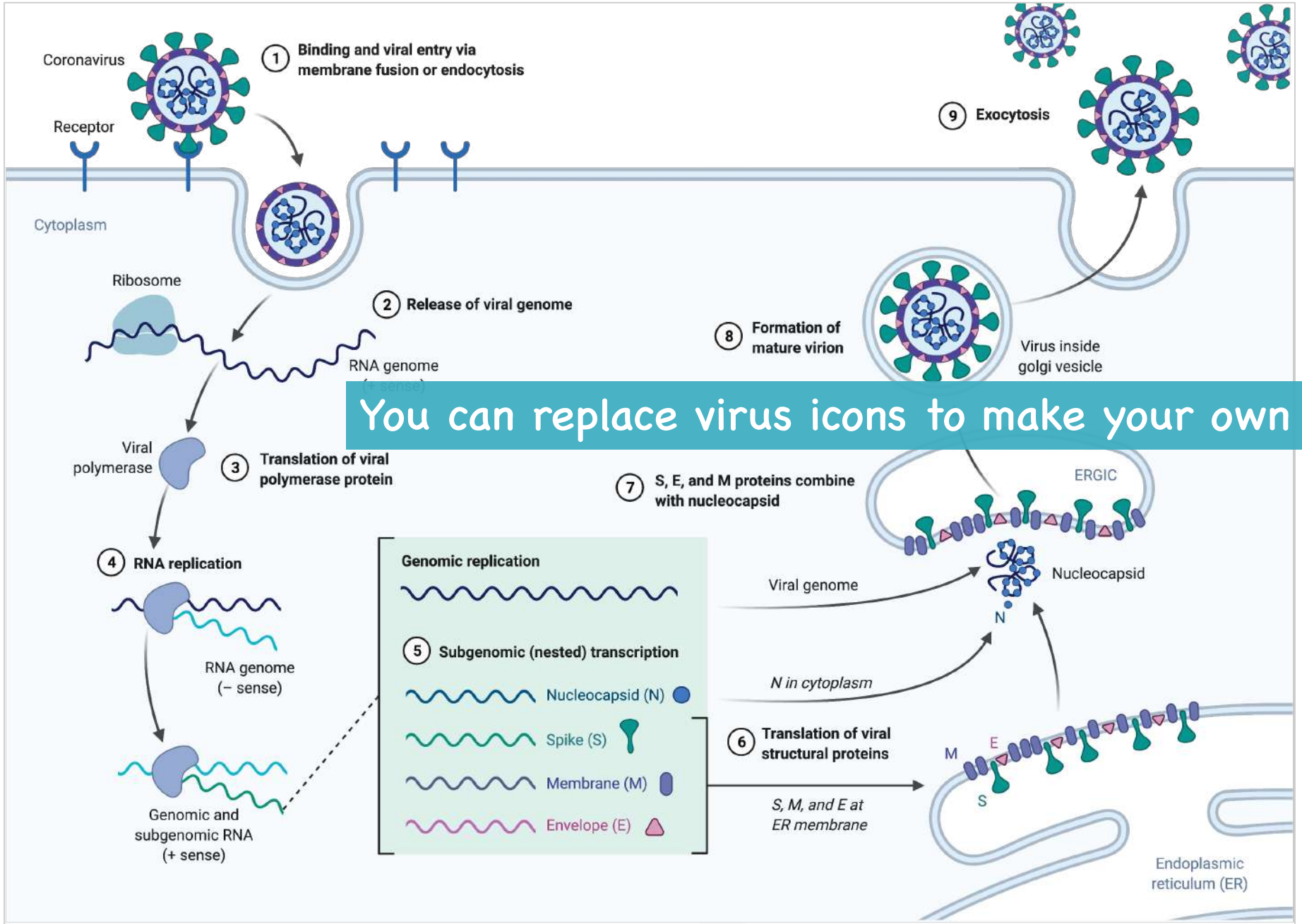
Your starting point.



The template is flexible.

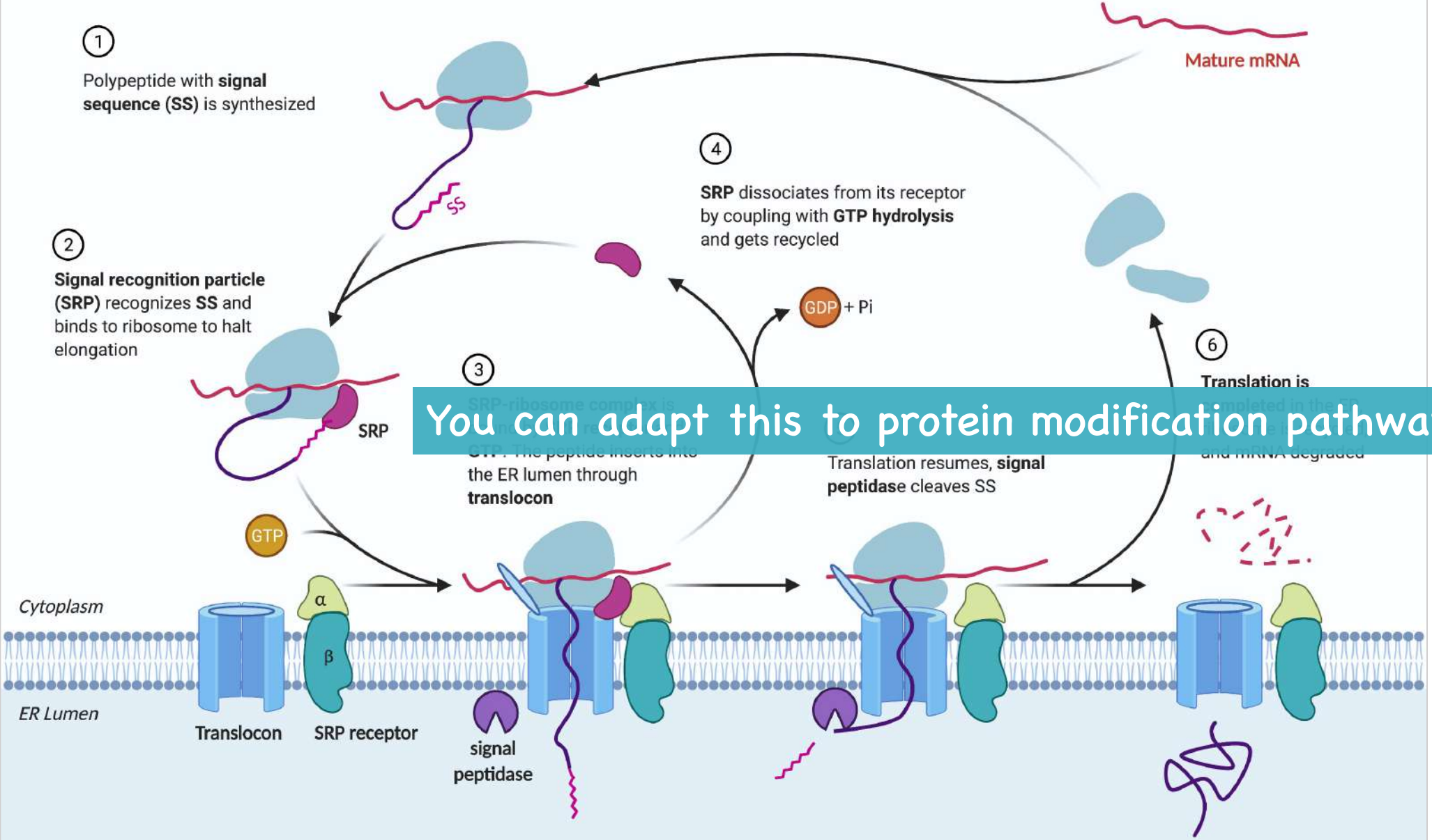


Template example : Coronavirus replication cycle



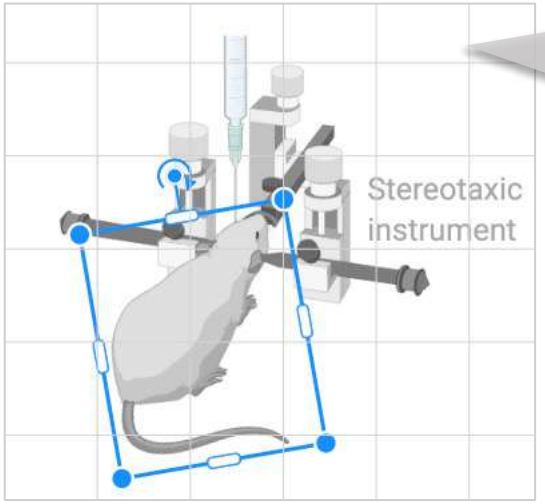
You can replace virus icons to make your own diagram

Template example : Protein targeting with signal recognition particle

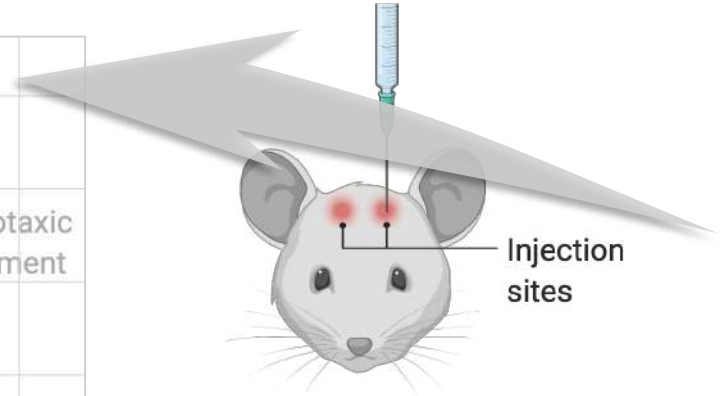


You can adapt this to protein modification pathway…

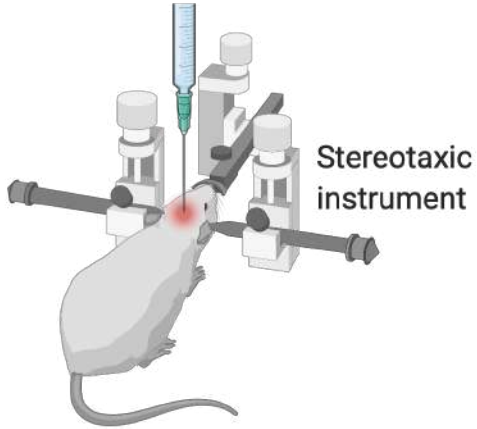
Template example : Mouse administrative techniques



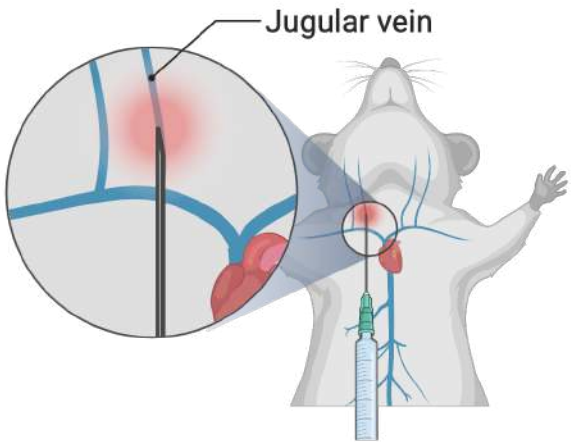
A) Intracerebral injection



B) Stereotaxic injection

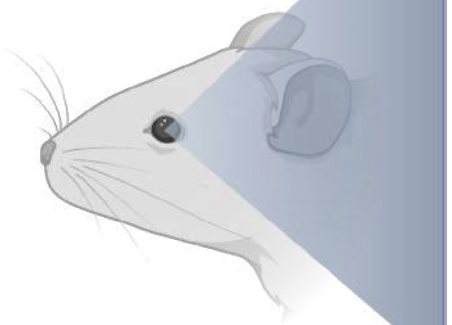


C) Jugular injection

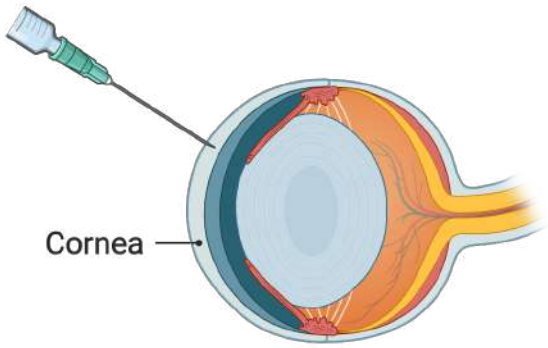


D) Eye injection

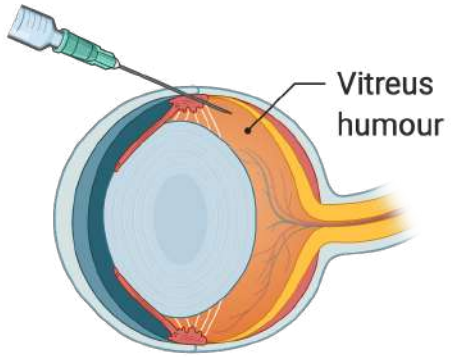
You can change the detail as you want.



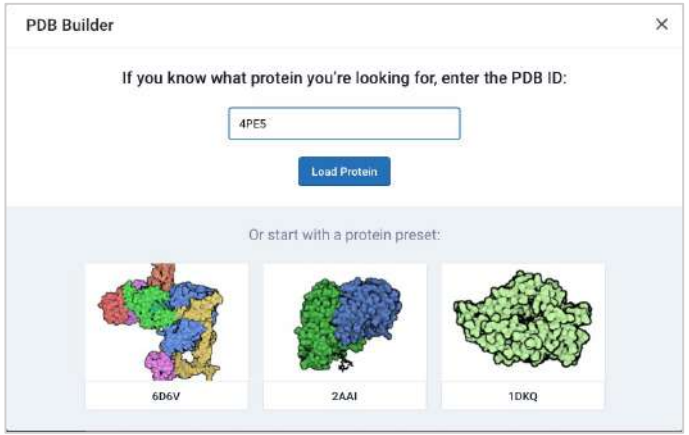
Trans-corneal injection

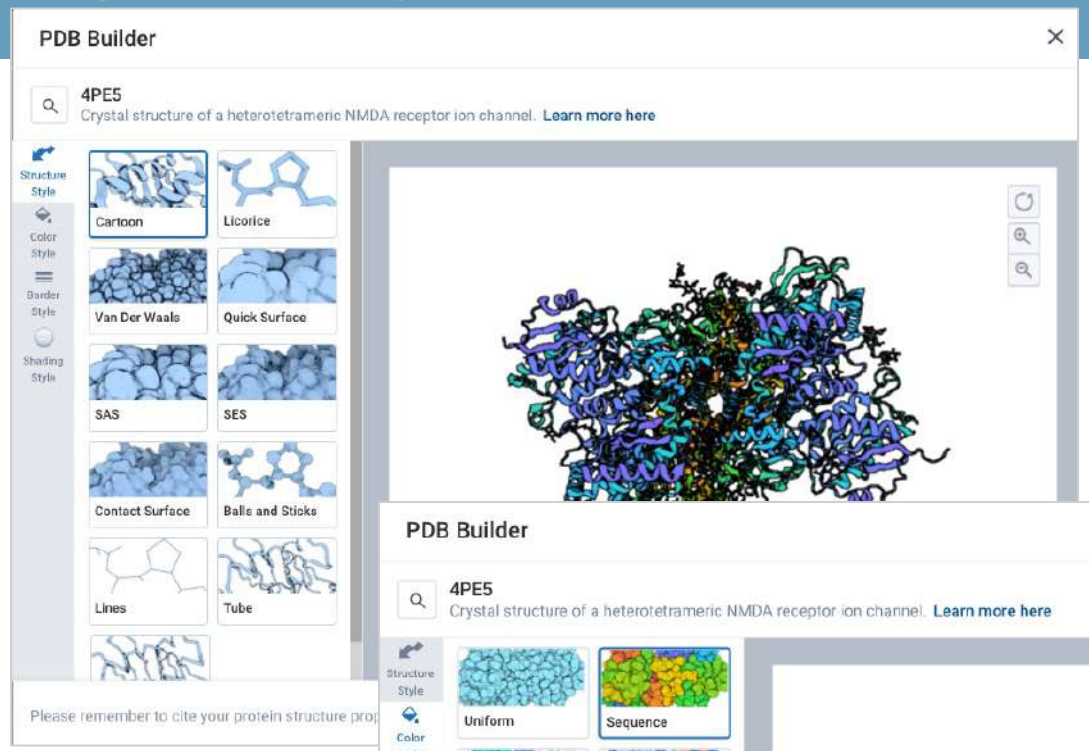


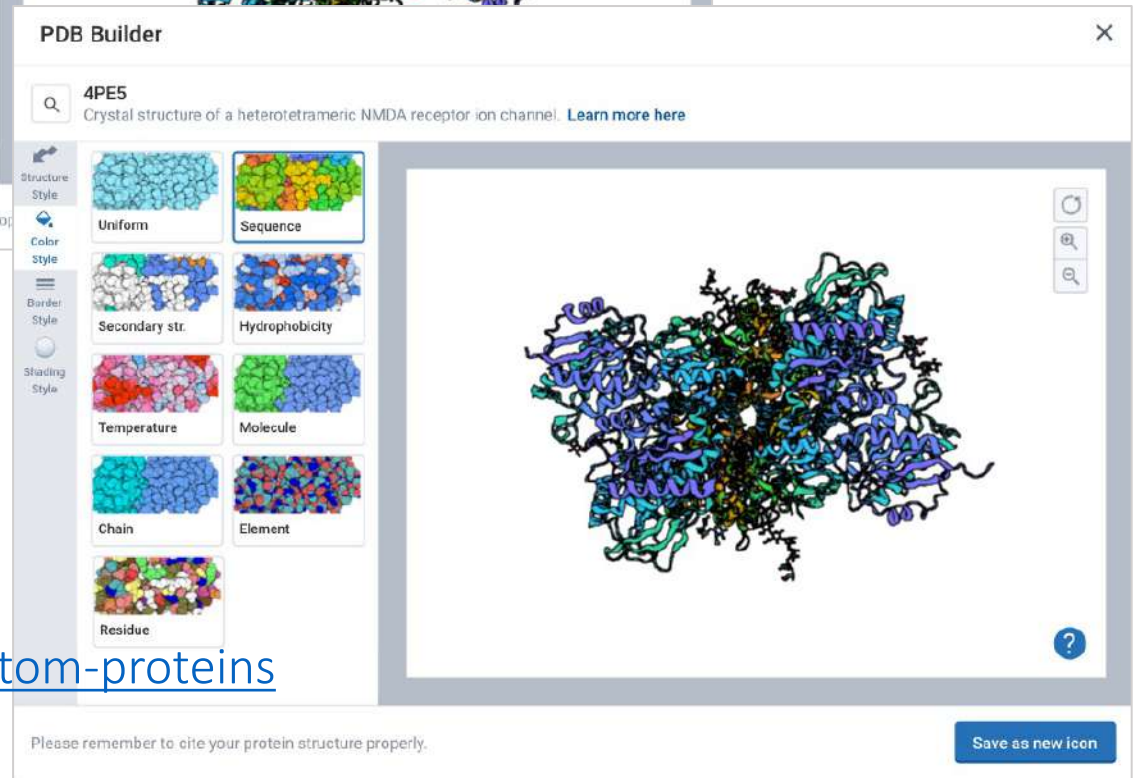
Intravitreal injection



PDB: creating own protein icons







1. Type PDB ID of your protein of interest
2. “Load protein”
3. Rotate and Zoom
4. Pick structure style, color etc on tabs on the left
5. Done!

More details: https://learn.biorender.com/tutorial/building-custom-proteins

BioRender resources

- **Step by step worksheet (Activity sheet on Template)**

- **Design tips webinar (BioRender website and YouTube)**

BioRedner learning hub: https://learn.biorender.com/
YouTube: https://www.youtube.com/channel/UCL-iaNP1DKUb8QXReKrwUzA

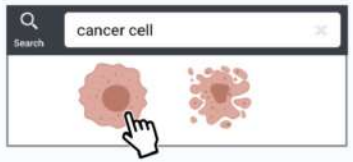
Activity sheet: Step by step instructions to make figures

Step by step instruction

Lesson 1: Icons & Arrows

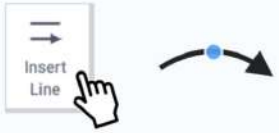
Step by step instruction

1. **Search** "cancer cell" in the library. **Drag and drop** icons on top of the gray placeholders in the activity area (bottom-right).



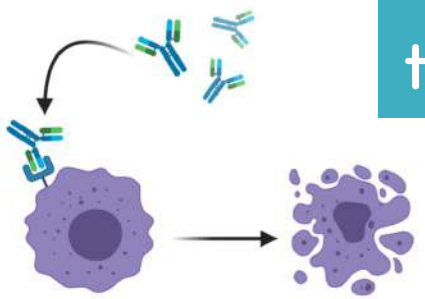
2. Select the cell and click **Icon Color** from the top toolbar. Change it to purple to match the example.

3. Click **Insert Line** from the top toolbar and add arrows over the gray placeholders. (All arrows are customizable).



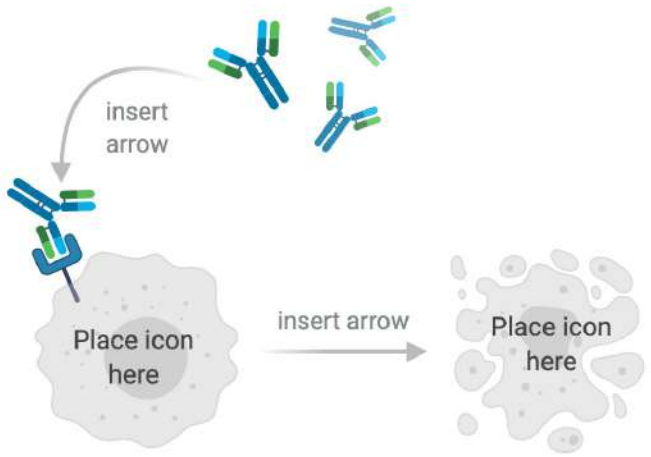
Click the blue circle to edit the arrow

Example:



Let's create this figure together!

Try it out here!

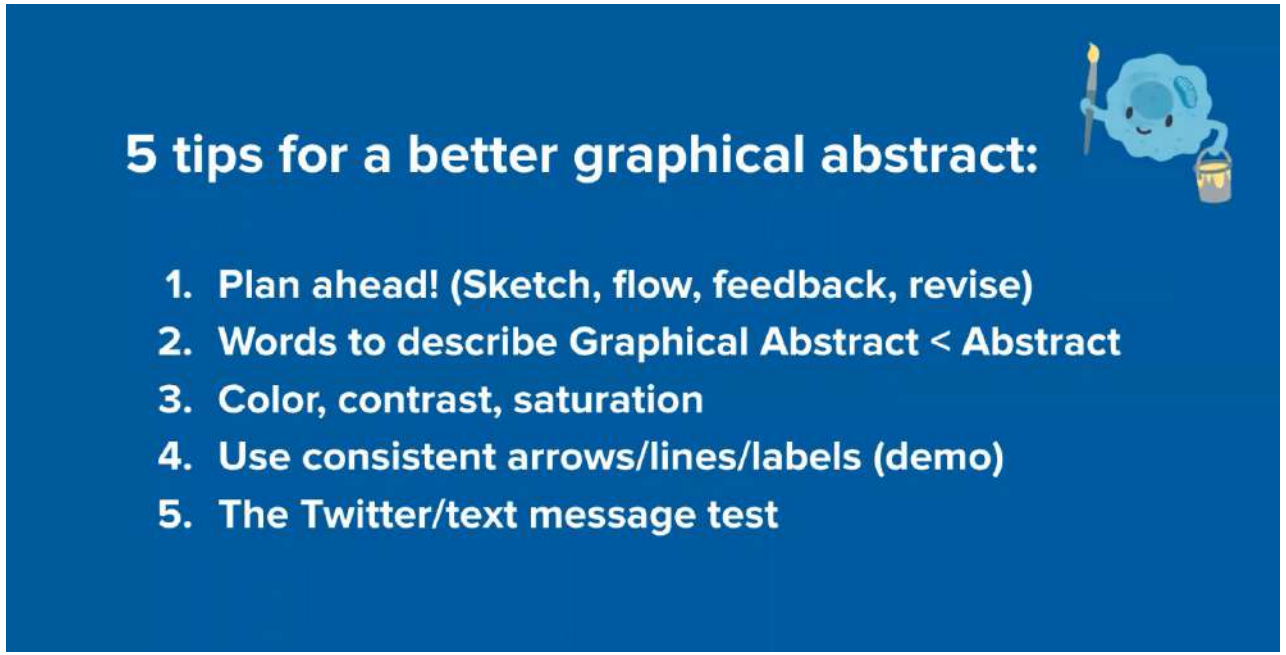


BioRender: developed by a world class illustrator

Shiz Aoki
CEO and co-founder

You can get the design tips from top artist

Shiz gave the lecture at webinars!



BioRedner learning hub: https://learn.biorender.com/
YouTube: https://www.youtube.com/channel/UCL-iaNP1DKUb8QXReKrwUzA

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Licensing and Usage

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Thesis/dissertation (unpublished)	✓	✓	✓
Internal meetings (lab or team)	✓	✓	✓
Conference presentation	✓	✓	✓
Assignment/exam	✓	✓	✓
Teaching slides	✓	✓	✓
Personal blog/website posts	✓	✓	✓
Personal social media posts	✓	✓	✓
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Journal publication		✓	✓
Textbook publication (< 5 figures)		✓	✓
Published thesis		✓	✓
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Any uses that generate profit			✓
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Trade show materials (e.g. brochures)			✓
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Thank you for your attention!
We are planning next seminar around June.
Please check ASHBi's website!!