Explaining scientific findings through figures in publications, presentations, and posters
Link, Accessibility, & FAQs Sheet
By: Nataliya Rokhmanova & Andrew K. Schulz

General Description: This sheet includes links to additional resources for creating effective publications, presentations, and posters. The sheet starts with open-source illustrations links that can help in any format. The sheet is sorted by sections for publications, presentations, and posters; some links will be helpful for multiple applications. At the end, there is a guide for creating accessible figures including links to full guides for accessibility of figures, PDF, color schemes, and more.

General Figure-Making Links/Resources:

Type of Resource	Link	Description
Publication	Hyperlink	Publication describing some key steps to creating publishable figures.
Social Media Thread	Hyperlink	Thread on Twitter that describes a workflow for creating nice figures
Publication/Report	Hyperlink	100 rules of research, many of which provide guides on scientific visualizations
Website: PicWish	Hyperlink	Quick AI photo editor that removes backgrounds from image
Blog Posts	Hyperlink	MindTheGap does blogs on designing graphics
YouTube Tutorials	Hyperlink	The Luminous Lab has tutorials on Blender, an open-source software for 3D graphics
YouTube Tutorials	Hyperlink	The Data Visualization Society has playlists and chats about creating illustrations
Blog Posts	Hyperlink	Science graphic designer group has posts on accessibility and more
YouTube Tutorials	Hyperlink	Workshops on how to use ggplot, a data visualization package for R
Tutorial	Hyperlink	Visualization technique for multiple linear modeling
QR Code Generator	Hyperlink	Python code for quick and semi-permanent QR Codes for webpages

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Open-source Illustration Links

Type of Resource	Link	Description
Website: Undraw	[Hyperlink]	Undraw has open source and customizable illustrations for a wide range of figures
Website: Phylopic	[Hyperlink]	Phylopic has silhouettes of different animals, humans, and other organisms for free download
Website: Datawrapper	[Hyperlink]	Datawrapper is a free to use visualization tool and a good way to start looking at different formats for data
Website: NounProject	[Hyperlink]	This website has 5 million open source icons of different nouns
Website: Wikimedia commons	[Hyperlink]	Wikimedia commons has free images for several types of images
Website: Biorender	[Hyperlink]	Biorender allows for making bio-interfacing figures/media/etc
Website: SciDraw	[Hyperlink]	Science draw has drawings for researchers to use in publications for free downloads with DOIs
Website: bioicons	[Hyperlink]	Bioicons has nearly 2500 icons for use for different experimental types
Website: NEJM	[Hyperlink]	The NEJM has a glossary of images for different medical images and types

Color-Palette Links:

Type of Resource	Link	Description
Website	[Hyperlink]	Coolors (color palette generator with options to toggle color blindness)
Social Media Thread	[Hyperlink]	Thread on Twitter that describes how to choose a nice color palette for your figures
Blog Post	[Hyperlink]	A blog post on how to think about color coordination for figures
Website	[Hyperlink]	Colorbrewer helps find colorblind accessible color schemes for categorical data
Website	[Hyperlink]	Adobe color wheel can make different colors for different formatting rules

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Poster Links & FAQs:

Type of Resource	Link	Description
Social Media thread	[Hyperlink]	A Twitter thread on how to create nice poster visualizations
Publication	[Hyperlink]	Science article with interviewed scientists describing posters
Blog Post	[Hyperlink]	Blog post that goes through fonts, images, and more of making a poster
Blog Post	[Hyperlink]	Tips and tricks for designing and creating a poster in BioRender
Blog Post	[Hyperlink]	Description of the #BetterPoster movement and some tips for how to implement it
YouTube Tutorial	[Hyperlink]	YouTube tutorial on creating a better poster in less time
YouTube Tutorial	[Hyperlink]	YouTube tutorial on science infographics on poster creation

Poster FAQ: What programs can you make your poster on?
Answer: Many people use Microsoft PowerPoint, but you can also use Adobe Illustrator; however, this program is not free. Other free software includes Inkscape as well as BioRender for creating posters.

Poster FAQ: How large do I make the poster?
Answer: For presenting a poster at a conference, always check the conference website, as it should include specific guidelines for size and spacing of maximum/minimum poster size. This can then be set on your program for the length (L) and width (W) dimensions.

Poster FAQ: How do I design my poster?
A: There are several formatting guides for making a poster. We have included links to creating your poster. Additionally, there are YouTube guides and tutorials for posters. Finally, remember that your poster will likely be hung up without you there to present it, so it should be interpretable on its own as well.

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Presentation Links & FAQs:

Type of Resource	Link	Description
Publication	Hyperlink	Cell article on the science of storytelling for scientific presentations
Publication	Hyperlink	The arcs of telling a good story; this approach can be used in presentations
Blog Post	Hyperlink	Creating a fantastic scientific talk
Blog Post	Hyperlink	10 lessons on presentations from TED talks
Publication	Hyperlink	Guide on how to give a great scientific talk
Publication	Hyperlink	Telling a compelling scientific story
Blog Post	Hyperlink	Satirical article on the 12 do-NOTS for presentations

Presentation FAQ: How long should a presentation be?

A: Most conferences list presentation time, which likely includes both the presentation and question time. If not, be sure to ask the organizers. Thesis presentations typically have a 1-hour time slot, where normally 15-20 minutes is reserved for questions.

Presentation FAQ: How do I minimize technical difficulties?

A: A common issue is playing videos: using GIFs instead of video is more reliable, but they will be of a lower resolution. Always be ready to troubleshoot presentation vs. presenter view.

Presentation FAQ: How do I minimize difficulties when using a Mac and Keynote?

A: Check the presentation room beforehand to make sure you have the right connection cable type, and always keep an extra converter with you. If presentations need to be uploaded beforehand, be sure you have a backup PowerPoint file, saved onto a USB drive.

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Publication Links & FAQs:

Type of Resource	Link	Description
Publication	[Hyperlink](#)	Science Robotics paper on making an effective graphical abstract
Blog Post	[Hyperlink](#)	Things to know before writing code that is shared publicly
Website	[Hyperlink](#)	Guide for making publication-quality figures and specific tools
Publication	[Hyperlink](#)	PLOS Computational Biology paper with ten rules for better figures
Publication	[Hyperlink](#)	A review of what works in data visualization techniques for publications

Publication FAQ: What are the limits to size, number of figures, or color for a publication?
A: Check the publication website. For instance, if you are submitting a paper to Journal of The Royal Society Interface, there is an "information for authors section" which provides information for size, format, etc. for figure files. Expectations may be different between review and publication.

Publication FAQ: How can I be sure that my publication figures will not be blurry in print?
A: There are two ways to ensure this. Always work in lossless formats. Additionally, when you receive your proofs for the publication, make sure you print it out and double-check the resolution in actual print.

Publication FAQ: Do I need to make visualizations in the Supplement look nice as well?
A: Many publications have strict page length requirements, which means there will be a large Supplemental section. Ensure that you are—at least—creating figures that are interpretable, legible, clear, and cohesive, so that all readers are able to interpret your work.

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Accessibility Links:

Type of Resource	Link	Description
Website	[Hyperlink]	Overview guide on creating accessible figures and tables
Website	[Hyperlink]	Tool to check contrast between text and background for different colors
Website	[Hyperlink]	Color contrast checker for different RGB or HEX colors
Website	[Hyperlink]	Colorblind-friendly visual palettes for *colorbrewer*, *cologroical*, and *chroma.js*
R Package	[Hyperlink]	R package to simulate colorblindness when using R studio for data visualization
Website	[Hyperlink]	Colorblindness emulator for uploaded images and photos
Blog Post	[Hyperlink]	Post about how to create alt-text for data visualizations
Website	[Hyperlink]	Blog post on making images accessible using alt-text
Website	[Hyperlink]	Adobe guide on creating and verifying PDF accessibility
Website	[Hyperlink]	Harvard guide on how and why accessible PDFs are important
Website	[Hyperlink]	Style guide for dyslexia-friendly fonts and font resources
Blog Post	[Hyperlink]	Designing visuals for neurodivergent individuals
Blog Post	[Hyperlink]	Good versus bad fonts for neurodivergent readers
Website	[Hyperlink]	The 10 rules of what a truly open-source tool is

Accessibility FAQ: Why should I make my figures accessible?

There are a few reasons why this is important. Accessible PDFs enable optical character recognition (OCR) which reads out PDF content for individuals with vision impairment. Colorblindness and neurodivergent diagnoses are prevalent, and crafting figures that are as close to universally accessible is a core mission of science. It's the right thing to do!

Accessibility FAQ: Can I pick an easy-to-read font for publications?

Unfortunately, journals typically enforce their own standardized fonts for the peer-reviewed and published versions. However, if you post your paper on a pre-print server, there are normally no font rules and therefore you can use more accessible fonts in those submissions.