

Module 4: Adobe Illustrator Guide for Scientists (Video Tutorial)

Level: Introductory

Audience: Scientists who are just starting out with Adobe Illustrator or who want a refresher on the basics.

Introduction

- **Document Setup:**
 - Version: Adobe Illustrator 2020.
 - Click create new
 - For a presentation, you may choose 1080 p dimensions: 1920 X 1080
 - Landscape orientation
 - Colour mode is RGB for electronic presentations (CMYK for print applications)
 - Raster effects set to 300 dpi
 - Click create
 - Tips:
 - Use the essentials classic layout.
 - If your toolbar on the left goes missing, Window>>toolbar>>advanced
 - Ctr R shows rulers and right clicking allows you to change the units.

- **Navigation**
 - Once you have your document open, it's useful to know the keyboard shortcuts that allow you to efficiently navigate the space
 - Scrolling pans up and down on the document
 - Ctrl + scroll pans left to right
 - To zoom
 - Alt+ scroll to zoom in and out
 - OR click Z for the zoom tool and click and drag
 - I personally prefer the first technique but user's choice
 - Ctrl+0 to fit artwork to your window
 - Space + click brings up the hand tool, which allows you to 'grab' the document and pan around

Part 1:

Creating a Diagram

- **Simple Shapes**
 - Making a shape
 - Shape tool
 - Square or circle
 - Press and hold shift to scale in uniform dimensions (perfect square or circle)
 - Alt centers the object at the point of your cursor



- You can also single click to specify the precise size of the shape in document units
- Straight line
 - Shift drag for straight horizontal or vertical line
 - Add Arrow head
 - Stroke panel on top or right
 - Add arrowhead on either end
 - Can click the 'swap' button to switch the end the arrowhead falls on
 - Resize arrowhead
 - Scale up or down
- Polygon tool
 - Click to select number of vertices
 - Select 3 for triangles, etc...
- Selecting and adjusting
 - Let's say you've created your objects, and you need to resize or reposition them. Notice that when you create a shape, it stays in that shape mode. So you can quickly create several shapes in a row.
 - While the shape tool is active
 - Hold control to bring up the selection cursor
 - This enables you to move and resize the shape
 - If you are done with your shape creation, and ready to edit, need to change to selection tool (V or A) to then move or change selection
 - V to move the selection
 - A to select individual anchor points and adjust
 - Selecting multiple objects
 - Click and drag, wherever cursor crosses object, will select.
- Rotating
 - Mouse over corner
 - Rotate cursor will pop up
 - You can hold shift to ensure rotations snap to 45 deg angles
 - Rotate tool (allows rotation by precise degrees)
- Duplicating shapes
 - Select the object you wish to duplicate
 - Hold Alt and mouse over the perimeter of the shape until double triangle appear
 - Click and drag to reproduce the object
 - Release the mouse button before you release alt, otherwise, you are just dragging the original object.
 - This takes a bit of practice to get the timing right, but no worries. Just use ctr+z to step back.
 - Holding down shift as well allows you to create a duplicate in line with the original object

- Ctr + D repeats the previous transformation – use this to quickly create a grid if you don't need it to be perfect
 - Aligning objects
 - In order to create a beautiful composition, want objects to be perfectly aligned
 - Use the align panel to align objects perfectly
- **Complex shape**
 - Pen tool – P
 - ex) brain outline
 - Allows you to outline an organic shape with precision
 - Clicking creates a series of 'anchor points' with straight lines between them
 - Click and drag to create a curved line
 - This curve generates these handles, which can be adjusted by holding ctrl in the pen tool to bring up the direct selection tool
 - Drag the handles to adjust the curve
 - Pathfinder + shape builder
 - Often it is desirable to create a symmetrical shape, or one comprised of several constituent shapes
 - We can use the pathfinder to create shapes from constituent shapes.
 - Ex) receptor
 - Use merge and minus front shape modes to create receptor
 - Merge circle and rounded rectangle
 - Minus c circle for receptor site
 - Direct select (A) and use the dots to slide to curve
 - Procedural shapes – effect > distort> zig zag
 - Change size and ridges. Smooth creates a wave effect
- **Photographs**
 - Placing
 - File>>place
 - Click and drag to place and size the photograph
 - If the photo is a reference
 - Select photo
 - Ctrl+2 to lock selection
 - Ctrl + Alt+2 to unlock all
 - To unlock, click the lock icon in the layers panel
 - Resizing
 - When I re-size this, the default is not to keep proportions the same.
 - For photographs, you will want to hold shift + click to resize so that the proportions stay the same
 - Moving



- Just like with the simple shapes, mouse over the image until the cursor shows the dotted square, and you can click and drag to move
 - use arrow keys to adjust pixel by pixel
- **Colour**
 - Stroke and fill colour
 - Every object is outlined by what is called the path
 - If you stripped away all colour to an object, what's left is its path.
 - Every object in illustrator has a fill colour, and a stroke colour
 - The fill is the main interior colour of the shape
 - An easy way to edit your colours is to use this handy dandy fill and stroke swatch in the bottom of your toolbar
 - You can quickly swap your fill and stroke colour by pressing this little arrow
 - The stroke is the outline of the shape
 - You can edit the colour of the stroke here and the weight of the stroke here
 - Eyedropper tool
 - With your new object selected, select the eyedropper tool (I) and click the desired object to copy its formatting
 - You can also quickly copy one objects formatting to several by clicking that object and alt clicking the other objects
 - Picking colour from photograph
 - Select the eyedropper tool (I)
 - Click on the photograph
 - It does not select a colour, because this is a raster image
 - Shift click on the photograph to sample colours
 - Appearance
 - Let's say you need to show an overlapping shape that is partially transparent
 - You can accomplish this in the Appearance panel over here on the right
 - Opacity
- **Text**
 - Text tool T
 - Replace lorem ipsum
 - Change font and size
 - In character panel at top or right
 - Select the font and size
 - Move
 - Press ctrl to select the text and move
 - Hold ctrl and alt to duplicate
 - Align
 - Select all
 - Open alignment panel on right
 - Edit text
 - with selection tool, double click on text



- Deselect text

Drawing demo

- Cortical layers
- Bring the reference into the background
 - Ctrl+2 to lock
 - Bring to the top layer, and set opacity to 25%
 - Appearance panel
- Add cells
 - Polygon tool add triangle
 - Resize
 - Direct selection A to round the corners of the triangle
 - Add dendrites
 - Pen tool P
 - Draw a dendrite
 - Change fill to empty and stroke to black
 - In the stroke panel
 - Change the line weight to 5
 - Select tool V
 - Change line profile to desired profile
 - Taper ends
 - Add stellate
 - Polygon
 - 6 sided
 - Round the 6 sides
 - Change stroke to fill
- Add sections
 - Front
 - Draw rectangles, duplicate and re-size
 - Group
 - Reshape tool
 - Add anchor point to add slight bow in the top
- Add images
 - Draw a box
 - Shift alt click and drag
 - Place images in the boxes
- Text
 - Text tool T
 - Replace lorem ipsum
 - In character panel at top
 - Select the font and size
 - Press ctrl to select the text and move



- Hold ctrl and alt to duplicate
 - Select all and align
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- **Part 1: Post-processing your plots**

- **Importing** graphs from plotting software (MATLAB, excel)
 - How to process to improve readability of graph
 - Appearance panel
 - Change opacity
 - Change colour
 - Simplest way to import graphs is to save them as .pdf file type and open with AI
 - select the graph using the selection tool
 - copy and paste
- **Layers**
 - Separate elements of your graph into separate layers
 - Use the 'magic wand tool with 90% tolerance to select similar elements
 - Shift click selection to deselect unwanted objects
 - Shift click unselected to select
 - Select text Select>>Objects>>Text objects
 - change text to desired font
 - select axes Select>> Objects>> Similar appearance
 - Best practice is to name all layers (obsessive organization will save time)
 - How to move objects to other layers by pasting in place
 - Ctrl+c
 - Ctrl+alt+v
- Rotate several objects around their central point
 - Object > Transform > transform each
- **Iterating on graph**
 - Ensure you keep older iterations
 - Copy and paste original onto new layers

- **Part 3: Saving and Exporting**

- Exporting .jpeg or .png or .pdf
- Save As .ai or .pdf
 - .pdf
 - Compatibility: choose latest Acrobat version
 - You may find that your .pdf file is too large
 - Deselect preserve illustrator editing capabilities
 - Reduces size slightly
 - For print: Change the adobe preset to: **PDF/X-1a:2001**
 - Which reduces file size by eliminating certain pdf functions
 - This converts colour to CMYK, therefore this preset is better suited for print



- For web or print without raster: Adobe Preset: Smallest File Size (pdf 1.6)
 - This will down sample images to 100 ppi and create images suitable for the web. Because space on the web comes at a premium, a smaller file size is prioritized, while maintaining an acceptable image quality.

