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In this guide, you’ll find instructions on how to use the features and tools in EPath3D Online. We’ve included a detailed table of contents so you can quickly reference how to use a specific section or tool in EPath3D Online.

1.1 Using this Manual

As you browse these sections, you’ll notice that our screenshots of the interface highlight sections of the graphic to point out tools, menus, features and other options.

Icons used in this manual:

- 📰 - Keyboard shortcuts for several menu and other user driven actions.
-💡 - Handy hints to make life a little easier.

1.2 Introduction

EPath3D Online is easy-to-use web based software that enables biologists draw great looking pathways and biological graphics both for digital and print media.

Some of the key features of EPath3D Online are:

1. Access your projects anytime anywhere.
2. Categorized Protein, Receptor and Interaction elements for standardization of Pathways.
3. Vast collections of Vector Diagrams including Proteins, Receptors, Cells, Organelles, Organs and Accessory Items.
4. Option to link elements to Publication repository like Pub-Med or any other online databases.
5. Export to various formats like PDF, JPG, PNG, Transparent PNG, BMP etc.
6. Export high resolution PDF’s for printing.
7. Social sharing options to share your creations with your friends and colleagues.
8. Export for offline viewing or presentation.
9. No installation hassles, real time application updates.

1.3 System Requirements

OS: Windows, Linux, and Mac OS X
Browser: Internet Explorer/Firefox/Chrome/Safari/Opera
(Adobe Flash Player 10 plug-in or above installed on browser)
CPU: 2 GHz or more
RAM: 1 GB or more
2. Getting Started

2.1 Register to obtain ePath3D Online account

Open the ePath3D Online website at: http://www.epath3d.com and click on REGISTER link, fill up all required fields and create your account. After successfully registering, you can use Email id and password to login to your account.
2.2 Sign-In and run ePath3D Online

You can now Sign-in to your account using the Email id and password as shown below.

You have options to open the application in Full Screen browser window (more drawing space) or Normal Screen browser window. Click on any one of the option.
In order to run ePath3D Online correctly, Flash Player 10 or higher needs to be installed on your browser. Browser will automatically check and download the required version of flash player for you.

If you have issues in running the application, please download latest Flash Player Plug-in manually from: http://www.adobe.com/support/flashplayer/downloads.html

You will get to see ePath3D Online up and running.

3. Functional Components

Below are snapshots of main functional components of the tool you will use while creating your diagrams.
Protein Panel

Connectors Panel

Membranes & Receptors Panel

Cells & Organelles Panel

Accessories & Organs Panel

Pathway Templates Panel

Menu bar

Tool bar
4. Using Menu bar

Menu bar consists of four options like File, Edit, Insert and Help.

4.1 File Menu

4.1.1 New Project

You can select a new workspace to start a new project at any time. To start a new document you may either use the ‘New’ option from the File menu, or select the ‘New’ icon on the toolbar.

‘Create New Project’ dialogue box has input elements like:

1. **Project Name**: Enter ‘Project Name’ of your choice.
2. **Preset Sizes**: Select any size from the dropdown list (A4/A3). If you intend to create high resolution PDF for print, and then select either A3 or A4 option. You can save these sizes for web publishing too.
3. **Background Color**: Select default background color of Project Canvas using color picker. You can change the color of Canvas later using the ‘Control Panel’ color picker.
4. **Width/Height: (Pixels)**: If you need your project to have specific ‘Width’ and ‘Height’, you can type in your required size in the respective input fields.
5. **Author**: Type in Project’s Author/s name. (Optional)
6. **Functional Category**: Select functional category of your project from dropdown list. (Optional)
7. **Organism Category**: Select organism category of your project from dropdown list. (Optional)
8. **Create New Project**: Click on ‘Create New Project’ button to create new workspace with specified settings.
9. **Cancel**: Click on ‘Cancel’ button to create close the dialog box and go back to previous state.

CTRL/Command + N
4.1.2 Open Project

To open existing project you may either use the Open option from the File menu, or select the Open icon on the toolbar. This will show ‘Project List’ dialogue box.

‘Project List’ dialogue box has a list of already created projects. Select project from the list and click on ‘Open Selected Project’ button to open it. Click on ‘Cancel’ button to close the dialogue box.

- CTRL/Command + O

4.1.3 Save Project

To save currently open project you may either use the Save Project option from the File menu, or click on the ‘Save’ icon on the toolbar. This will show ‘Saving Project’ progress dialogue box while project is being save on the server.

- CTRL/Command + S
4.1.4 Save Project As

To save currently open project in a new name, you may either use the ‘Save Project As’ option from the File menu, or click on the ‘Save As’ icon on the toolbar. This will show ‘Save Project As’ dialogue box to enter new Project name. Click on ‘Save Project’ button to save the project in new name. Clicking on ‘Cancel’ button closes the dialogue box.

💡 - Use ‘Save Project As’ option if you need to create similar project with minimal changes.

4.1.5 Manage Projects

Click on Manage Projects menu to open the ‘Manage Projects’ popup window. This window shows the list of projects you have created. The ‘Edit Options’ column contains ‘Rename Project’ and ‘Delete Project’ icon buttons which can be used to rename a project and delete a project respectively.

💡 - Project once deleted can not be retrieved back. So be sure before deleting any project.
4.1.6 Export As

Export project to various image formats like: JPEG, PNG, Transparent PNG, BMP and PDF document using respective sub-menus. This will prompt for local drive location to save the file.

- Transparent PNG image is exported without any background color (transparent). Useful for composing PNG file over other existing graphics.

4.1.7 Print PDF (High Resolution)

Use this option to create High Resolution PDF for printing purpose. Clicking on the menu will show ‘Print High Resolution PDF’ dialogue box.

In this dialogue box, select Paper Size (A4/A3) and Orientation (Portrait/Landscape) as per your requirement. Clicking on ‘Generate PDF’ button will generate PDF file and will prompt for local drive location to save the file. (Application may freeze for 10-20 seconds during PDF generation, please wait till PDF generation is completed)
### 4.1.8 Download for Offline View

Use this option to generate offline viewer files for currently open project.

This will compile offline viewer Zip Package and will prompt for local drive location to save the file.

### 4.1.9 Logout & Close

Use this option to Logout from your account and close ePath3D Online.
### 4.2 Edit Menu

- **Edit** Menu:
  - Undo
  - Redo
  - Copy
  - Paste
  - Delete
  - Send & Bring

- **Insert** Menu:
  - Bring To Front
  - Bring Forward
  - Send To Back
  - Send Backward

- **Help** Menu:
  - Undo previous action
  - Redo previous action
  - Copy selected object
  - Paste copied object
  - Delete selected object
  - Bring selected object to topmost layer
  - Bring selected object one level up
  - Send selected object to bottom layer
  - Send selected object one level down

### 4.3 Insert Menu

- **Insert** Menu:
  - Insert Text
  - Insert Image

- **Help** Menu:
  - Open/Download User Manual (PDF)
  - Online Video Tutorials
  - Hotkey Reference
  - Send Feedback & Comments
  - ePath3D Online product information
5. Using Toolbar

Toolbar consists of tools like New Project, Open Project, Save Project, Undo, Redo, Copy, Paste, Delete, Insert Image, Insert Text, Send To Back, Send Backwards, Bring Forward, Bring To Front, Preview, Share, Zoom and Logout & Close.
6. Draw your first Pathway

In addition to modifying existing pathway templates, you can draw a pathway from scratch by selecting from the Protein Categories, biological membranes, Signaling Connector Categories and other accessory items from the folders on the left column.

6.1 Adding Objects

Drag an Object from left panel to the stage. It will add an instance of the dragged object to the stage as shown below.

Once object is added to the stage, it can be moved, resized and its properties can be changed using the Control Panel.
6.2 Editing Objects

Click on the Object to select it. Once an object is selected it will have a visible boundary box with tools to move, resize and rotate as shown below.

Moving mouse to the corners will show resize/rotate cursor. Click and drag to either resize or rotate selected object. Moving mouse inside the selected object will show move cursor. Click and drag to move selected object over the stage.

💡 - Press ‘Shift’ key while dragging to get constrained Move, Resize and Rotate behaviors.
💡 - Use keyboard Arrow Keys to move selected Objects (Press ‘Shift’ key to move Objects faster)
💡 - Use ‘CTRL/Command + Z’ to undo change.
6.2.1 Object Control Panel

Selected Object's properties can be modified by changing settings provided on Object's Control Panel as shown below.

- View Symbol
- Alt keys
- Edit Label
- Format Label
- Change Category
- Advanced Color
- Picker
- Change Opacity
- Change Shadow Color
- Reset Size, Rotation, Color
- Enable Rollover Pop-up
- Sub-cellular Locations
- Cellular Locations
- Anatomical Locations
- Add Description

💡 - Delete 'label text' from control panel for Object where no Label/Text is required.
6.2.2 Adding Symbols Using Alt Keys

Symbols can be added to Object Labels and Texts using the below Hotkeys. First Select Myriad Pro as Font then use any of the below key combinations to add symbols.

<table>
<thead>
<tr>
<th>Alt Code</th>
<th>Symbol</th>
<th>Description</th>
<th>Alt Code</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt 224</td>
<td>α</td>
<td>Alpha</td>
<td>Alt + s</td>
<td>β</td>
<td>Beta</td>
</tr>
<tr>
<td>Alt 225</td>
<td>β</td>
<td>Beta</td>
<td>Alt + p</td>
<td>π</td>
<td>Pi</td>
</tr>
<tr>
<td>Alt 226</td>
<td>γ</td>
<td>Gamma</td>
<td>Alt + m</td>
<td>μ</td>
<td>Mu</td>
</tr>
<tr>
<td>Alt 235</td>
<td>δ</td>
<td>Delta</td>
<td>Alt + w</td>
<td>Σ</td>
<td>Uppercase Sigma</td>
</tr>
<tr>
<td>Alt 238</td>
<td>ε</td>
<td>Epsilon</td>
<td>Alt + z</td>
<td>Ω</td>
<td>Omega</td>
</tr>
<tr>
<td>Alt 233</td>
<td>θ</td>
<td>Theta</td>
<td>Alt + g</td>
<td>®</td>
<td>Copyright</td>
</tr>
<tr>
<td>Alt 227</td>
<td>π</td>
<td>Pi</td>
<td>Alt + 2</td>
<td>™</td>
<td>Trademark</td>
</tr>
<tr>
<td>Alt 230</td>
<td>µ</td>
<td>Mu</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alt 228</td>
<td>Σ</td>
<td>Uppercase Sigma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alt 229</td>
<td>σ</td>
<td>Lowercase Sigma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>τ</td>
<td>Tau</td>
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<td>Uppercase Phi</td>
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<tr>
<td>Alt 0169</td>
<td>©</td>
<td>Copyright</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.3 Adding Connectors

Select two Objects (Hold SHIFT key for multiple object selection) between which connector is needed. This will automatically open up the Connectors Container on the left. Click on the type of signaling connector which you would like to place. A connector gets drawn between the selected objects as shown below. When objects are moved, their connectors also get redrawn depending on position changes.
Unconnected/Freeform connecters can also be added by clicking on connector icons while not selecting any objects on the stage. Unconnected connectors can be moved around the stage freely as those are not connected to any Objects.
6.4 Editing Connectors

Click on the connector to select it. Once connector is selected it will show up movable Control Points (squares) as shown below.

6.4.1 Connector Control Panel

Selected Connector’s properties can be modified by changing settings provided on Connector’s Control Panel as shown below.
6.4.2 Working with Line Types

**Straight Lines:**
This is simplest form of line connector having two movable Control Points. These can be moved and placed at the edges of the connected Object as required.

**Curved Lines:**
Curved Lines have four movable Control Points. Two of those to place the end points of the curve and the other two to make the shape/angle of the curve.

**Point Break Lines:**
Point Break Lines have three movable Control Points. Two of those to place the end points of the line and the other to place the break point location.

💡 - Use SHIFT key while dragging Control Points to move horizontal constrained. Use CTRL/Command Key while dragging Control Points to move vertical constrained.
6.5 Adding Membranes

Drag Membrane Icon (Closed/Open) from left panel to the stage. It will add an instance of the dragged membrane to the stage as shown below. Open Membranes have open end points while Closed Membranes have their end points closed.

Once membrane is added to the stage, it can be moved, reshaped using Control Points and its color property can be changed using the color picker on Control Panel.
6.6 Editing Membranes

Click on the membrane to select it. Once membrane is selected it will show up movable Control Points (squares) as shown below.

Closed membranes have four default control points while Open membrane have three default control points. Control points can be selected by clicking and turns to red dot. Shape/Path of the membrane can be changed by dragging the selected control point.

6.6.1 Adding Control Points

While membrane is selected, clicking at any point on the stage (except on membrane itself) while pressing the CTRL/Command key will add control point to it. Any number of additional control points can be added to the membrane.
6.6.2 Deleting Control Points

Control points can be removed from the membrane by clicking on the Control Point while pressing the SHIFT key.

6.7 Editing Project Settings

- Show/Hide Grid Lines
- Add Trace Image
- Change Functional Category
- Enable Autosave
- Show/Hide Tips
- Add/Edit Review Data
- Basic Color Picker
- Advanced Color Picker
- Change Grid Size
- Snap Objects to Grid
- Show/Hide Trace Image
- Trace Image Opacity
- Trace Image Fit Mode
- Change Stage Size
- Enter Author/s Name
- Change Organism Category
- Change AutoSave Frequency
6.7.1 Using Trace Image

Trace image is useful if you have any reference image to keep in the background over which you can overlay your elements. This reference image can be any scanned image or any downloaded image. Size of the trace image can be set using various ‘Fit To’ options provided. Visibility and Opacity of Trace Image can be controlled using visibility toggle and opacity slider respectively.

* Trace image will not be visible in output image or ePath3D Online Viewer

Example of using Trace Image:
6.7.2 Adding/Editing Review Content

Review content can be added/edited from the 'Add/Edit Reviews' panel. This panel can be opened by clicking on 'Add/Edit Review' button on the Project control panel. Formatting options are available above the review content entry box as shown below. Review references can also be added by entering Pubmed ids as shown below.

BDNF, like other neurotrophins, is a polypeptide factor initially regarded to be responsible for neuron proliferative retrograde transport to the cell body. BDNF is produced by neurons, particularly in the hippocampus and cortex locally in the spine. The cellular actions of BDNF are mediated through two types of receptors: a high-affinity TrkB BDNF initiates TrKB dimerization and transphosphorylation of tyrosine residues in its cytoplasmic domain. The recruiting specific cytoplasmic signaling and scaffolding proteins: Binding of cytoplasmic SHC (Src Homology 2 domain of a complex of adaptors like GRB2 (Growth Factor Receptor-Bound Protein-2) and the Ras exchange factor (Ref. 6). Ras, in turn activates PI3K, MEK1/2 (MAPK/ERK Kinase) pathway, and the c-Raf/ERK1/2 (Extracellular signal-regulated kinase; ERK; Mitogen-activated protein kinase; MAPK) pathway, which phosphorylates GRB2 and GAB1 (GRB2-Associated Binding Protein-1). Phosphorylated GRB2 provokes Ras-dependent activation of PI3K is the most important pathway through which the neurotrophins promote cell Akt. Among the targets of ERK are the RSKs (Ribosomal S6 Kinases). Both RSK and MEK phosphorylate CREB factors RSK and Akt1 also phosphorylate BAD (BCL2 Associated Death Promoter) and thereby promote its inactivation and hence activation of clathrin-coated vesicles: evidence that signaling endosomes serve as a platform for the Ras MAPK pathway.

- Retrieve multiple PubMed data at one click by entering multiple id into entry field like: 54454, 53467, 45637
6.8 Preview Pathway

Users can Preview their creations before Sharing/Presentation. Preview Panel can be opened by clicking on the icon in the toolbar. This panel is useful for checking the accuracy of content and graphics before sharing. Clicking on each element on the graphics pops up its information box.
6.9 Share Pathway

Using the sharing options, users can share their creations via email and also on various online social media like Twitter and Facebook. Sharing Panel can be opened by clicking on icon in the toolbar.

Users can do following tasks using ‘Share Pathway’ panel:
1. Copy Pathway link to clipboard.
2. Open ePath3D online viewer to view pathway.
3. Share it on Facebook, Twitter and via Email.
7. Troubleshooting

Users facing trouble running ePath3D online tool should follow the following steps.

1. Update your browser if any updates available.
2. Point your browser to ‘http://www.adobe.com/support/flashplayer/downloads.html’. This will automatically detect if your browser needs any updates on Flash Player and download it for you. ePath3D Online should run fine after these updates.

Contact support@epath3d.com if you still have issues with running ePath3D Online, we will be glad to help you with troubleshooting.