



# sylviusPRO

3D Dissector and Atlas of the Human Central Nervous System

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# SylviusPRO User's Manual

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## Overview

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### About SylviusPRO

SylviusPRO, like its predecessor Sylvius 2.0, is a unique digital atlas of the human central nervous system. As compared to Sylvius 2.0, SylviusPRO offers the user significantly more neuroanatomical content (approximately 500 structures described), greater ease of use, and allows instructors to customize the content (i.e., images and descriptions) for their students.

SylviusPRO is divided into three atlas categories:

**Surface Anatomy** provides a visual introduction to the location and names of the major external features and subdivisions of the human brain and includes the following atlases:

**Photographic Atlas:** Digitally enhanced photographic images of a human brain specimen.

**Magnetic resonance image atlas:** High resolution 3D reconstructions of a human brain specimen illustrating the major surface features.

**Brainstem Model:** 3D views of a widely used model illustrating the surface features of the brainstem as well as the location of cranial nerve nuclei.

**Sectional Anatomy** allows the user to explore the internal organization of the brain and includes the following atlases:

**Photographic Atlas:** Allows the student to “virtually dissect” a human brain specimen in the three standard planes (coronal, axial, and sagittal).

**Magnetic resonance image atlas:** High resolution *in vivo* atlas comprising coronal, axial, and sagittal sections.

**Brainstem and Spinal Cord:** A cross sectional histological atlas of the human spinal cord and brainstem allows students to examine major tracts and nuclei.

**Pathways** allows students to follow the flow of information in several long-tract pathways of the central nervous system.

SylviusPRO features are described on pages 5–9.

### System Requirements and Recommendations

#### Microsoft Windows:

XP, 2000, NT 4, Me  
128 MB RAM  
500 Mhz processor  
1024 x 768 resolution  
Sound card  
CD-ROM drive

#### Mac OS X:

OS X 10.2  
128 MB RAM  
500 Mhz G4 processor  
1024 x 768 resolution  
CD-ROM drive

#### Mac OS 9:

OS 9.2  
128 MB RAM  
500 Mhz G4 processor  
1024 x 768 resolution  
CD-ROM drive

In addition, an Internet connection is required to share notes and download product updates.

## Getting Around SylviusPRO: The Basics

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### Using the Atlas Launcher

When SylviusPRO is launched, you will first see a “site map” of SylviusPRO content - that is, a complete list of atlas filters available for viewing. Select an entry from the list to load it. Subsequent navigation is performed via the tabs in the upper left corner of the application, or you can click the Show Atlas Launcher button in the upper right corner to re-open the site map.

### Registration

The first time you run SylviusPRO, you will be prompted to register. Registration requires an Internet connection. Registering entitles you to note-sharing, product updates, and web support. You may enter your full name (e.g., S. Mark Williams) or a nickname (e.g., Maceo); what you specify will be linked to your notes and travel with them as they are shared. Your email address will serve as your login name to access protected areas of the SylviusPRO website. It will also be used to send you your password should you forget it. Your email address will not be used for commercial purposes. Registration is not required to use SylviusPRO, although it is necessary to access product updates. SylviusPRO will indicate the availability of updates regardless of whether you are registered. You can register or modify your registration information at any time by clicking the Registration button in the upper right corner of the application.

### Using Palettes

Anyone who has used Adobe Photoshop or other palette-based applications will immediately be at home interacting with SylviusPRO. Use the tabs to select an atlas class (Surface, Sectional, Pathways). Beneath the tabs, a horizontal list of available atlases appears. Selecting an atlas reveals the Library palette. The Library palette has two columns. The left column lists folders; the right, atlas filters. A filter is a mechanism for categorizing the numerous structures and images in a given atlas. A filter is a similar but more advanced version of a structure mode found in Sylvius 2.0. Initially, only a folder named Core Filters will be present; your account administrator can create additional folders and filters.

When only one folder is present, SylviusPRO will automatically select it and list the contents in the right column. The contents of the right column, as noted above, are atlas filters. Clicking on a filter will load that configuration. Additional palettes will appear and the list in the Structures palette will be populated.

Click and hold the title bar of the palette to drag it around the work area. Double-click the title bar or click the minimize icon in the upper right-hand corner to hide the palette contents and show only the title bar. Double-clicking the title bar when the palette is minimized will restore the palette (show its contents).

Most palettes can also be resized. If the palette is resizable, three short diagonal lines will be present in the lower right-hand corner of the palette. To resize, click and drag the lower right-hand corner. Note that, for some palettes, there are limits to the maximum or minimum widths or heights that the palette can be.

 **TIP:**

The Library palette can be "undocked" from the horizontal menu bar by pressing and dragging the highlighted portion of the menu bar. However, when a new atlas is selected (e.g., moving from Photographic Atlas to MR Atlas), the Library palette will automatically re-dock itself.

## Tool Tips

Throughout the application, tool tips provide a quick and convenient way to get more information about an item's properties, behaviors, or actions. A tool tip appears almost immediately when you roll over an object that has a tool tip defined. For example, rolling over the speaker icon in the Structures palette will activate a tool tip that reads "Audio pronunciation."

## Working with Atlases

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### Common Features

As noted previously, SylviusPRO is arranged into atlas classes. Each atlas class has one or more atlases. Each atlas has one or more filters (configurations) for how to view its content.

All atlases use the Structures palette, which lists the structures present in the structure mode. Since not all images in the atlas contain all the structures listed, some structures will appear grayed-out and will not be selectable when the image palette containing that image has the focus (is in the foreground).

Most atlases also use a Navigator palette. In its simplest form, this is just a scrollable field of thumbnails of the images defined in the filter. Clicking on a thumbnail will load that image into an image palette. Clicking and holding a thumbnail image will reveal an options menu. For example, the option Open Image in New Window will load the selected image into a new image palette instead of into the currently focused image palette.

#### **TIP:**

Selecting a thumbnail of an image that has already been loaded into an image palette will merely set the focus to the palette that contains that image. To override this, press and hold until the thumbnail image options appear and select Open Image in New Window.

When multiple image palettes are open, toggling between them updates the Navigator and Structures palettes – the title of the Structures palette changes, its list of active structures gets updated, and the selected thumbnail in the Navigator changes.

Selecting a structure in an image palette or in the list of structures in the Structures palette highlights all instances of that structure in all image palettes and thumbnails in the Navigator, for quick and easy identification.

### Interactive features

#### **Audio pronunciation:**

Hear the name of the currently selected structure pronounced (currently in English only).

#### **Notes:**

The Notes palette allows the user to save any comments about an atlas filter. Registered users can share their notes with other registered users. Notes are stored locally on the user's computer. See *A Notes Primer* on the next page for more information.

#### **Palette interface:**

Open multiple image palettes; view multiple images at the same time.

#### **Orientation:**

View an image showing the orientation of the selected brain image relative to the cranial cavity and the body.

#### **Quiz mode:**

When rolling over a structure, tool tips read "Press 'A' key for answer." Pressing the "A" key will reveal the name of the structure.

#### **Structure visibility toggle:**

Hide or show the structure highlighting on the images.

**Hierarchical structure grouping:**

Structures in SylviusPRO are hierarchically grouped to illustrate, for example, the full extent of a pathway. When a structure is part of a group, the Toggle Grouping button in the Structures palette becomes enabled. Use this button to jump between viewing the entire grouping and structures that comprise the group.

**Fit-to-Width:**

If enabled, the image will automatically scale to fit the width of the palette as the palette is resized.

**Zoom to...:**

Scales the selected image to 100%, 150%, or 200%.

**Image mark-up tools:**

Draw tools allow you to annotate an image using a pencil/freehand tool and a line/arrow tool.

**Customize:**

Create/rename/delete folders and filters; select images and structures to enable; rename structures; rewrite structure descriptions. See *For Course Adoptions: Customizing SylviusPRO*.

**TIP:**

SylviusPRO uses multistate icon buttons to provide quick reminders of what features are enabled or in use. This means that when a button is clicked the icon will change to provide a visual representation of the state of that feature.

## A Notes Primer

Notes are a powerful feature that you can use to annotate atlas filters. You can also share your notes with other students or colleagues via the Sylvius website. For example, if you are a course instructor, you can export your SylviusPRO notes and email them to your students who can import them. Notes are stored locally on your computer. Note that content saved locally is not dependent on the location of the SylviusPRO application. Launch the Notes palette by clicking the Notes button in the upper right corner of the application. To add a note, click the Add Note button in the palette. The notes interface will enter edit mode. After typing the note, click off of the notes area to quit edit mode. To modify a note, click on its entry to enter edit mode and make any updates. If you would like to remove a note, clear its contents while in edit mode.

If you are a registered user, you can share your notes provided that you have an Internet connection and Macromedia Flash Player 7 or newer. Clicking the Share Notes button to launch your web browser automatically opens the SylviusPRO website. You can then choose to import or export notes. After choosing, the web browser will communicate with SylviusPRO to perform the requested action. If exporting, the exported file will be downloaded to your computer. The exported file can be imported at a later time by anyone using SylviusPRO, or stored for safekeeping. If importing, the imported content will merge with existing notes.

## Features by Atlas

### Surface Anatomy Atlas

**MR Atlas**

The surface MR atlas contains a 3D reconstruction of the surface of a human brain specimen derived from T1-weighted magnetic resonance images. The dots serve to mark

the location of a structure. The user can examine the specimen from multiple viewpoints by selecting thumbnails in the Navigator palette. Selecting Interactive MR rotation in Atlas Extras button in the Navigator palette allows the user to view the specimen from over 125 unique angles.

### **Photographic Atlas**

The surface photographic atlas contains photographs of the surface of the brain from different perspectives. Lightly colored areas mark the location, shape, and size of structures.

### **Brainstem Model**

This module comprises images of dorsal and ventral views of a rubber brainstem model illustrating the topography of surface features of the brainstem and the locations of cranial nerves and cranial nerve nuclei. Lightly colored areas mark the location, shape, and size of structures.

## **Sectional Anatomy Atlas**

### **MR Atlas**

The sectional MR atlas contains T1-weighted magnetic resonance images (coronal, axial, and sagittal) of a single human subject. The dots serve to mark the location of prominent structures.

The Navigator palette for this atlas uses a 3D selector tool, allowing the user to choose images for detailed viewing while providing a convenient way to view the orientation of the images. Switching the focus among open image windows updates both the thumbnails and the 3D selector.

### **Photographic Atlas**

The sectional photographic atlas comprises images of a single human brain specimen that was sectioned and photographed in the three standard planes (coronal, axial, and sagittal).

The Navigator palette for this atlas uses a 3D selector tool allowing the user to choose images for detailed viewing while providing a convenient way to view the orientation of the images. Switching the focus among open image windows updates both the thumbnails and the 3D selector.

Selecting 3D reconstruction in the Atlas Extras button in the Navigator palette allows the user to view virtual dissections of this specimen. Also, users can toggle between the *en face* and 3/4 views of a section by selected the Show orientation button in the Navigator palette.

### **Brainstem and Spinal Cord Sectional Atlas**

This atlas contains transverse sections of the brainstem and spinal cord. The images were acquired and processed to simulate myelin staining; thus, white matter appears darker, and gray matter lighter. Lightly colored areas mark the location, shape, and size of structures.

In addition to the thumbnails, the Navigator palette for this atlas uses two images to view the location of the sections at a glance. Use the sliders alongside these orientation images to quickly select sections to examine in detail. Switching the focus among open image windows updates both the thumbnails and the sliders.

## Pathways Atlas

### **Animated Pathways**

The animated pathways atlas allows you to view the flow of information between the structures comprising the major long tract pathways of the central nervous system. Use the Play/Pause and Rewind buttons to control the neural impulse traveling along the pathway. Click on a structure name to show its description.

## Using Index/Reference

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The Index/Reference module provides a quick way to find and get information about a structure in the central nervous system. The Index/Reference module runs concurrently with any loaded atlas, allowing you to keep your place in any loaded atlas.

Clicking the letter tabs will list all structures whose names begin with that letter in the adjacent listbox. Selecting a structure from that list will load its description and an image. Audio pronunciation is also available.

To search the index, enter your query into the search field at the top of the palette. Any match (regardless of location within the structure name) will be displayed in the listbox. For example, searching for "med" will return, among other terms, "medulla" and "stria medullaris." As you type, the search results list will be updated. To further refine your results, continue typing.

## Updates

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When the Updates button in the upper right corner is highlighted, this means that updates to SylviusPRO are available. Clicking this button will open your web browser and take you to the SylviusPRO website, where you will be able to get more information about nature of the update. Although only registered users have access to updates, all users will be notified of their availability.

SylviusPRO automatically checks for updates at most every 2 days. To check manually, open the Preferences palette and select Software Update.

## For Course Adoptions: Customizing SylviusPRO

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### **NOTE:**

Customization is only available for SylviusPRO course adoptions. Account administrators can customize SylviusPRO online. Further customization instructions are available at <http://www.sylvius.com/PRO/web/>. Please contact [support@sinauer.com](mailto:support@sinauer.com) if you would like more information on course adoptions.

Account administrators can specify which images and structures to use in a structure mode, and edit structure names and descriptions, using the core structure modes as templates.

Administrators will see a button in the upper left corner to open the administrator control panel. The control panel has three options: edit an atlas filter, create a new atlas filter, and remove an atlas filter. Opening the control panel also enables “edit” mode, where structure names and descriptions can be edited, and non-core atlas filters can be modified.

### Working with Atlas Filters

In the administrator control panel, choose edit, create, or delete to launch the Filter Wizard. The Filter Wizard will guide you through the steps necessary to complete your action. Note that since core atlas filters cannot be altered in any way, they cannot be renamed or deleted. *A filter cannot be deleted when it is currently loaded, nor can a folder that contains the currently loaded atlas filter.* The changes are saved immediately and automatically at the end of the Filter Wizard.

### Editing Images and Structures in Filters

When customization is enabled, checkboxes appear next to structure terms in the Structures palette. To disable the structure so that it does not appear in the structure mode, uncheck the box. The entry will be grayed-out. In the Navigator palette, each thumbnail image will also be accompanied by a checkbox. Uncheck the box for each image that you do not wish to include in your custom filter. Until you load a different filter, you can re-enable any images and structures whose checkboxes are unchecked. Once you load a different structure and then return to the filter you just edited, only the images and structures you selected will appear.

Unlike other customizable features, image and structure content changes are not auto-updated immediately. Therefore, please allow a few seconds for the system to update the content on the server before unloading the filter – otherwise the changes may not be saved<sup>1</sup>.

Note that since the core filters cannot be altered, checkboxes will not appear in the Structures and Navigator palettes when viewing these modes with customization enabled. Also, at present, structures and images cannot be added; you can only remove structures and images from the templates to create your own filters.

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<sup>1</sup> Why isn't the content updated immediately? Much more information needs to be sent to the server when structure or section content is updated. Instead of updating immediately whenever a change is made, a timer is set. When that timer expires, SylviusPRO updates the server. However, the timer is reset when another change is made. When no more changes are made within the timer's interval period (~4 seconds), the timer expires and the content is updated. This serves to reduce bandwidth requirements and server load, allowing the system to be more responsive to other types of SylviusPRO requests.

## **Editing Structure Names and Descriptions**

When customization is enabled, the text fields containing the name and description of the currently selected structure in the Structures palette become editable. Changes made to the name and description fields are saved immediately and automatically. If the structure is renamed, the change will not be reflected in the list of structures until another filter is loaded or the current one is reloaded.

Note that changes to structure names and descriptions are global – that is, all filters that reference that structure will now show the new name and description.

## Frequently Asked Questions

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Q: Can I copy the contents of the SylviusPRO CD to my hard drive?

A: Yes. For best performance this is recommended. Drag the folder named SylviusPRO to your hard drive. You can then run SylviusPRO from this new location and the CD is no longer required. Notes (and other content saved locally) will not be affected by moving the location of the SylviusPRO application.

Q: Can I keep my notes when I update SylviusPRO?

A: Yes. Notes are stored in a separate location on your hard drive, independent of the location of your SylviusPRO application.

Q: Do I need an Internet connection to run SylviusPRO?

A: No. However, one is required in order to register, share notes, and get product updates.

## Troubleshooting

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 **TIP:**

When all else fails, close SylviusPRO and re-launch the application. If the issue persists, contact [support@sinauer.com](mailto:support@sinauer.com) or visit <http://www.sylvius.com/>.

Issue: I cannot import or export my notes.

Solution: A few situations could be to blame. First, check to make sure your Internet connection is working. Next, try restarting SylviusPRO. If that doesn't solve the problem, check to be sure that the sylvius.com website is online. If importing, the file may be corrupted; try exporting again. If the problem persists, contact [support@sinauer.com](mailto:support@sinauer.com) and include the name and version of your web browser, your version of SylviusPRO (found by clicking the About SylviusPRO button), and, if importing, the file to be imported.