Anatomage TABLE

Anatomage Table EDU 6.0 User's Manual

Anatomage, Inc.
303 Almaden Blvd. Suite 700
San Jose, CA – 95110 – USA
408-885-1474
info@anatomage.com

Warranty Statement
There are no warranties, expressed or implied, with respect to the contents of this document, and all information provided herein is provided "as is." Anatomage reserves the right to periodically change the information that is contained in this document; however, Anatomage makes no commitment to provide any such changes in a timely manner or at all.

Limitation of Liability
In no event shall Anatomage or its affiliates be liable to any party for any direct, indirect, special, or consequential damages in connection with your use of this document, including, without limitation, loss of business revenue or earnings, lost data, damages caused by delays, lost profits, or a failure to realize expected savings, even if Anatomage was expressly advised of the possibility of such damages.

Trademarks
Anatomage and related marks, images, and symbols are the exclusive properties of, and trademarks of, Anatomage Inc. All other brands and marks are the properties of their respective owners.

Copyright

About Anatomage and Software
The Anatomage Table Application software (Table EDU 6.0) was released in 2018 as an update to the Table Application software from Anatomage, Inc. In this document, the Anatomage Table Application software refers to the latest version of the Anatomage Table Application software and is synonymous with the terms "Table application", "Table EDU 6.0", and "Anatomage Table application". To learn more about Anatomage, visit our website at www.Anatomage.com.

Note: Table EDU 6.0 is intended for educational purposes only, and is not to be used for clinical or diagnostic purposes.

End of Life Statement
Table EDU 6.0 software is dependent on its hardware requirements. The life-cycle is limited only by the availability of the required hardware.

Language
The original language of this manual and the Table EDU 6.0 software is English.

Image Credit
The following image sets were provided by Dr. Jin Seo Park, Department of Anatomy, Dongguk University College of Medicine and Dr. Min Suk Chung, Department of Anatomy, Ajou University School of Medicine.

Full Body Male (Asian): The original slice data is from the Visible Korean data set.
Full Body Female (Asian): The original slice data is from the Visible Korean data set.
Full Body Male (Caucasian): The original slice data is from the Visible Human data set.
Full Dog and Cat slice data: This work (2012R1A2A2A01012808) was supported by Mid-career Researcher Program through the National Research Foundation of Korea (NRF) grant funded by the Ministry of Education, Science and Technology (MEST).
Full Head slice data: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (MEST) (2010-0023360).

The following image set was provided by Brad Smith from the University of Michigan (brdsmith@umich.edu, NIH award N01-HD-6-3257 P/G F003637).

Embryo slice data set (Cases 2013 – 2023) Imaging was performed at the Center for In-Vivo Microscopy, Duke University.

The following image set was provided by David R. Hunt, PhD. (Physical / Forensic Anthropologist, D-ABFA) from the Smithsonian Institute.

Skull collection (Cases 3008 – 3054)

Table of Contents

System Requirements

The Table software is a graphically intense application for use on a PC workstation running a Windows operating system. It has not been designed for use on Linux, OSX, Android or iOS platforms such as iPads or other tablets.

Summary		
	Minimum	**Recommended**
CPU	Intel Core i5 2500 series (compatible multi-core processor)	Intel Core i7 3000 series (comparable multi-core processor)
RAM	8GB	16GB
GPU (Graphics Card)	ATI Radeon HD 6670 *or* Nvidia GT 640	Nvidia GeForce GTX 1070
Hard Disk	500GB	1TB
OS	Windows7 64bit	Windows7 64bit

Touchscreen Requirements

Summary	
Hardware	**Minimum Requirement**
Screen Size (Diagonal)	19 inches
Resolution	1280x720
Touch Points	3 or more

Installation Instructions

The Anatomage Table application is available from Anatomage. The software is distributed by downloading an installer and requires a license USB to operate. The installer contains both the application files and demonstration content (Full Body Male (Caucasian), Full Body Female (Asian), Full Body Male (Asian), Full Body Female (Caucasian), High Resolution Regional Anatomy, Case Library, Histology Library, Curriculum, and Prosection Library). Be sure you have the license USB and your Table meets the minimum system requirements.

1. Insert license USB into PC workstation and run Anatomage Table EDU 6.0 installer. Workstation should be connected to a network with internet connectivity.
2. Open Anatomage Table EDU 6.0 Upgrade installer, double click “autorun” and follow on screen instructions to complete installation.
3. Launch Table application and enter Authorization Code to activate software license.

Controls

The following section discusses controls for the Table software. For touchscreen devices, please refer to your specific touchscreen hardware manufacture's calibration instructions and verification procedures before using with Table EDU 6.0.

Touch Commands	
Right click	Touch and hold.
Selecting icons	Tap icon to select. If compatible multi-icons are shown, use a second tap to select desired multi-icon. A double tap on the same icon will open the icon.
On screen keyboard	Tap the far left edge of the table screen. The edge of a keyboard will appear. Touch, hold, and drag keyboard away from edge.

Keyboard-Only Commands	
Exiting Full-Screen and viewing application on single display monitor	**Step 1:** Press **F11** on keyboard or FN + F11 on on-screen keyboard. **Step 2:** Press the Windows key and the left/right arrow to snap application window to left/right display monitor.

WARNING: Resizing the application window from full-screen to a single monitor will cause the user interface and scan to be rescaled based on the new application window size.

Controlling the Volume Rendering

The following section discusses use of the touchscreen for controlling the volume rendering. Table application supports keyboard, mouse, and touch controls when navigating the application. Some functions are keyboard specific and do not have a designated icon in the user interface.

Touch Control

Within the Rendering Window, the Table application accepts single- and multi-touch inputs.

Number of Touches	Movement	Result	Description
Volume Viewing:			
Single	Drag	Rotate	Rendering will rotate about the scanning region's geometric center point.
Two	Drag	Pan	Rendering will pan in the dragged direction.
	Pinch	Zoom in/out	Rendering will become larger or smaller.
	Rotate	Spin	Rendering will rotate about the axis perpendicular to Table surface and through the scanning region's geometric center point. (Settings → **Spin** Enabled)
Three	Drag up/down	Adjust Clipping Plane	Can adjust clipping plane by scrolling through volume rendering in parallel with initial cutting plane.
Slice Mode Viewing:			
Single	DISABLED	N/A	N/A
Two	Drag	Pan	Slice image will pan in the dragged direction.
	Pinch	Zoom in /out	Slice image will become larger or smaller.
Three	Drag up/down	Scroll through slices	Can scroll through cross-sectional slices of selected data.

Keyboard and Mouse Control

Number of Touches	Movement	Result	Description
Volume Viewing:			
Left Click	Drag	Rotate	Rendering will rotate about the scanning region's geometric center point.
Shift + Left Click	Drag	Pan	Rendering will pan in the dragged direction.
Ctrl + Left Click	Drag up/down	Zoom in/out	Rendering will become larger or smaller.
Space + Left Click	Drag up/down	Spin clockwise/ counterclockwise	Rendering will spin clockwise or counterclockwise about its geometric center point.
Scroll Wheel	Roll up/down	Adjust Clipping Plane	Can adjust clipping plane by scrolling through volume rendering in parallel with initial cutting plane.
Slice Mode Viewing:			
Shift + Left Click	Drag	Pan	Rendering will pan in the dragged direction.
Ctrl + Left Click	Drag	Zoom in/out	Rendering will become larger or smaller.
Scroll Wheel	Roll up/down	Scroll through slices	Can scroll through cross-sectional slices of selected data.

Introduction to the Anatomage Table Application

Launching Table EDU 6.0 Application

From the desktop, double-tap (double-click) the Table icon to launch the Anatomage Table application. Users will be shown the Application Toolbar below.

Open File	Opens multi-dicom (DCM) scan files or Invivo (INV) scan files.
Import PACS	Opens user interface for establishing PACS connection and downloading files.
Gross Anatomy	Opens user interface for selecting full body Gross Anatomy data.
High Res Regional Anatomy	Opens user interface for selecting higher resolution regional scans from male and female real tissue data.
Case Library	Opens user interface for selecting educational clinical case data sets.
Histology	Opens user interface for selecting histology slides.
Curriculum	Opens user interface for selecting curriculum views. Curriculum views, provided by Anatomage, are single scans with pre-made annotations and view sequences for teaching purposes.
Prosection	Opens user interface for selecting prosection data.
Minimize	Minimizes the Table application. Available only when case is currently open.
Exit Application	Closes the Table application.
Cancel	Closes the Application toolbar. Available only when case is currently open.

Opening DCM/INV Scans

Step 1: Select **Open File** from the Application toolbar.

Step 2: Use the Windows Explorer interface to navigate to directory of INV file or DCM file series.

INV file	Select file and press **Open**.
DCM series	Select single DCM file and press **Open**. Software will scan through folder and check each DCM file's metadata prior to loading all DCM files in the same series.

Step 3: Table application will automatically construct image volume based on INV or DCM file. For INV files, any additional content created and saved with the patient data using Invivo6 software (surface models, models, etc.) will be loaded as well.

WARNING: Table application and Invivo6 software will load in DCM files contained within the same folder and of the same imaging series when reconstructing the volume. It is the responsibility of the user to confirm that all slice information is available and in the same folder when loading onto Table6.0 or saving from Invivo6.

WARNING: If Table application detects that some DCM files are missing, corrupt, or otherwise determined inaccurate, an error message will appear about possible inaccurate reconstruction. The user may continue with volume reconstruction and should exercise caution when reviewing any data with possible inaccuracies.

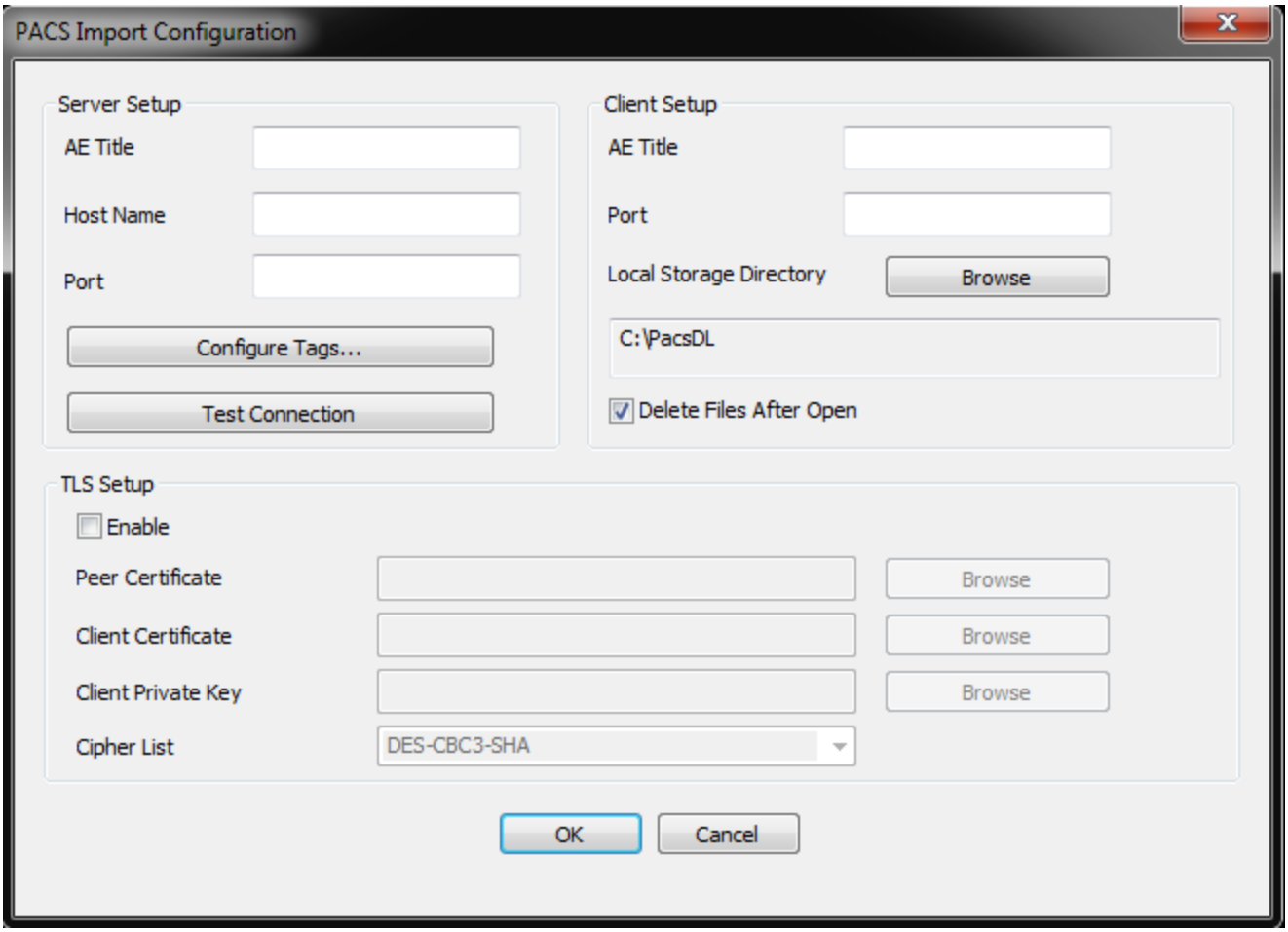
WARNING: When loading additional content created (surface models, comments, etc.), content is created by another user and is not part of the original patient image data.

PACS Integration

The Anatomage Table can import scans directly from PACS server. Tap on “Import PACS” and tap on “Configure”. Under Server Setup, type in the PACS server AE Title, Host Name and Port. Under Client Setup, type in the AE Title and Port.

Tap Test Connection to confirm that the connection is successful.

Please contact Anatomage with any questions regarding this process.

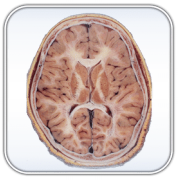
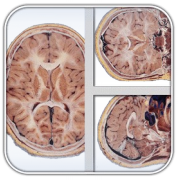
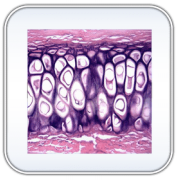


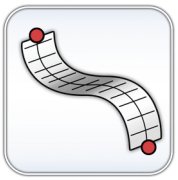
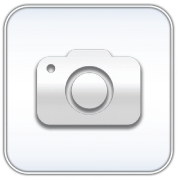
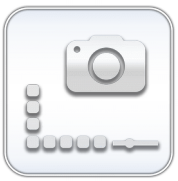
WARNING: Anatomage is not responsible for verifying the accuracy of patient information from a PACS system. Anatomage also assumes no responsibility in relation to privacy requirements for viewing and sharing patient scan information.

User Interface and Layout

Red box outlines Rendering Window. Image rendering, surface models, and annotations will appear in this region. Region accepts keyboard, mouse, single-touch, and multi-touch controls.

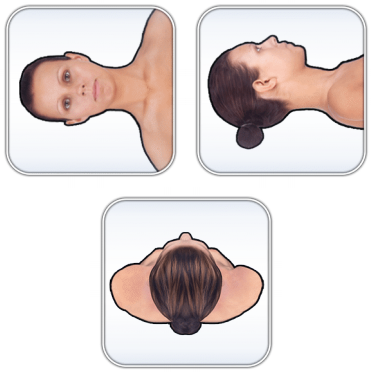
Icon	Description
	**Application Toolbar** Opens the Application toolbar. (Open File, Import PACS, Gross Anatomy, High Res Regional Anatomy, Case Library, Histology, Curriculum, Prosection, Minimize, Exit Application, and Cancel).
	**Layout** Tap the Layout icon to display all Layout options. 3D Layout is selected by default.
	**3D Layout** Tap to view a volume rendering of the data.

	**3D-2D Layout** Tap to view a split-screen view of a volume rendering of the data and a cross-section in the axial, coronal, or sagittal plane.
  	**2D Layout** Tap to view one cross-section at a time. Users can view cross-sections in the axial, coronal, or sagittal plane. The user can switch between a single 2D view and two different 2D layouts that contain three 2D slices each. The default slices for these split-screen layouts is Axial, Coronal, and Sagittal. The layouts can be customized to contain slices in Axial, Coronal, Sagittal, and Parallel planes.
	**3D-Histology Layout** Tap to view a split-screen view of a volume rendering of the data and a histology slide. Any histology slides associated with a structure will be shown when the structure is selected from the volume rendering using a single tap.
	**Flythrough** Tap to view split-screen view of a volume rendering of the data and a flythrough data set. The user can load in default flythrough data sets when available or create custom flythroughs if desired.

	**Curved Planar Reformation** Tap to view split-screen view of a volume rendering of the data and a curved planar reformation. Curved planar reformations can be exported.
	***Spline*** Tap to create a spline on the volume rendering of the data. The user can choose the points of the spline by tapping on a structure.
	***Curved Spline*** Tap to create a curved spline.
	***Straight Spline*** Tap to create a linear spline.
	**Screen Capture** Tap the camera icon to save a screen shot (.jpg, .png, or .bmp) of the application using three different options.
	***Screen Capture with Icons*** Tap the camera with icons to save a screenshot (.jpg, .png, or .bmp) of the application that includes the Table icons.

Screen Capture without Icons
Tap the camera without icons to save a screenshot (.jpg, .png, or .bmp) of the application that does not include the Table icons.

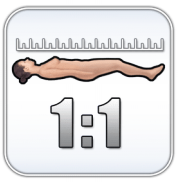
Cropped Screen Capture
Tap the scissor icon and drag across screen to select an area and save a screenshot (.jpg, .png, or .bmp) of the application within the selected area.



Volume Orientation
Tap to select a particular orientation. From top left going clockwise: Coronal View, Sagittal View, Axial View.

If an orientation icon is tapped a second time, the view will be flipped.

WARNING: Image orientation is based on scanner/DCM definitions or redefined orientations from Invivo6 software.

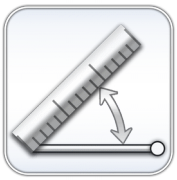


1:1 Life Size Scaling
Tap icon to rescale image to life size.

WARNING: Exact scaling depends on scan size, scan resolution, and hardware specifications.

Pin Tool
Used for placing 3D pin models in volume viewing.

To place a pin, select the pin style of choice and then select a place on the volume. The pin may be moved by first tapping on the pin to display a red box and again to display a yellow sphere. Holding and dragging the red box moves the pin's XYZ location while holding and dragging the yellow sphere rotates the angle of the pin.

	**Measurement Tool** Tap the icon to show the associated measurement icons. The font size and color of the measurement value may be adjusted in the Adjust Text window under the Image Control Settings icon (p. 26). Measurements can be made in both volume and slice mode viewing. ***WARNING: The default measurement unit will be milllimeters (mm). Any measurement that is less than 1 mm will be displayed in micrometers (um).***
	**Distance Measurement Tool** **Step 1:** Select distance measurement tool. **Step 2:** Tap on two locations on the volume. Red dots will indicate the selected spots, and a line will appear between them with a distance measurement. To adjust a measurement spot, select and drag the landmark red dot.
	**Angle Measurement Tool** **Step 1:** Select angle measurement tool. **Step 2:** Tap on three locations on the volume. Red dots will indicate the selected spots, and an angle will appear between them with an angle measurement. Distance measurements of the angle's sides will also appear. To adjust a measurement spot, select and drag the landmark red dot.
	**Delete Measurement** **Step 1:** Select measurement. Specified measurement will turn red and become bold. **Step 2:** Select icon to remove specified measurement.
	**Clear All Measurements** Select icon to clear all measurements from the volume.

WARNING: Identification of anatomical landmarks and structures are limited in part to image resolution and subject to user error. To ensure correct identification of landmarks and other fine measurements, it is recommended that users plug-in and use a USB computer mouse and keyboard for the most accurate possible placement of measurement landmarks (red dots). All measurement landmarks, including those placed using the touchscreen interface, can be adjusted by selecting and dragging the landmark. It is the responsibility of the user to place or adjust the measurement landmark locations as needed for analysis.

Dissection Tool *(for segmented cadaver data)*

The Dissection Tool allows the user to create custom cuts and remove structures, or parts of structures, within the sculpt area. After tapping the tool, the icon becomes highlighted signifying it is enabled and the Dissection Tool dialog appears. Either a linear cut or curved sculpt can be selected.

To make a custom sculpt:

Step 1: Hold and drag the custom sculpt anywhere on the volume. A red line will appear outlining the sculpt area.

Step 2: Tap inside or outside the area to select dissection boundaries. All structures in selected boundary can be removed.

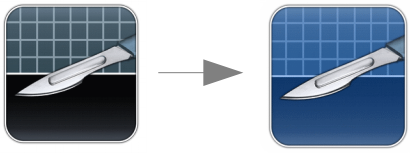
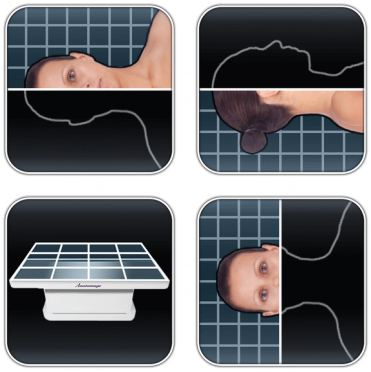
A loading screen followed by a dialog (“Select structure to remove layer by layer!”) appears. Tap “Ok.”

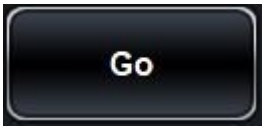
Step 3: Remove structures within the sculpt area by tapping on them.

Freehand Dissection Tool *(for segmented cadaver and DICOM data)*

The Freehand Dissection Tool allows the user to create custom

	cuts on the segmented cadaver or scan volume. After tapping the tool, the icon becomes highlighted signifying it is enabled. To make a custom sculpt: **Step 1:** Hold and drag the custom sculpt anywhere on the volume. A green line will appear outlining the sculpt area. **Step 2:** Tap inside or outside the area to remove the visible volume on either the inside or outside of the sculpt outline, respectively. To enable another freehand sculpt, tap the Freehand Dissection Tool icon again. Once the icon is highlighted, repeat steps 1 and 2 to make another freehand sculpt.
	***Restore Tool*** Selecting this icon will restore the volume to its original state, removing all operations.
	***Undo:*** Will undo the last structure removal action. ***Redo:*** Will redo the last structure removal action. Note: The undo and redo icons do not work for the Freehand Dissection Tool.
	**Craniotomy Tool (***For DICOM data***)** **Step 1:** Select craniotomy tool. **Step 2:** Hold and draw custom sculpt across any cranial portion of the CT or MRI Scan. **Step 3:** Release touch and software will automatically close the custom sculpt and perform craniotomy.  ***WARNING: The Craniotomy Tool is meant to be used as a Demonstration Tool only. The amount of volume removed from a scan is dependent on the scalar range used to view DICOM data.***

	**Clipping Plane Control** Tap icon to display Clipping Plane Control all Clipping Plane icons as well as the Flip and Reset icons. Custom Clipping Plane is activated by default.
	**Custom Clipping Plane** **Step 1:** Tap scalpel icon with the straight line to activate custom clipping plane. The custom clipping plane is activate by default (indicated by a blue highlight.) **Step 2:** Using one touch, drag anywhere acrros the volume to generate the custom clipping plane, defined by a blue line. The line will update to show the current clipping definition. **Step 3:** Release touch to finish defining plane. **Step 4:** Select a side of the plane to remove by tapping the volume on that side. Repeat the above steps to create up to six (6) Custom Clipping Planes. After the sixth plane, the seventh plane will replace the first defined Custom Clipping Plane. The eighth will replace the second and so forth.
	**Predefined Clipping Planes** Select a predefined clipping plane by tapping on the icon. The volume will automatically be clipped in the designated direction. From top left going clockwise: Sagittal Plane, Coronal Plane, Axial Plane, Parallel Plane. *Parallel defines the Table surface as the clipping plane.* *Only one predefined clipping plane may be applied at a time.*

	**Flip Clipping Plane** Tap icon to flip visibility between sides of the clipping plane. This affects all predefined clipping planes and the most recently defined custom clipping plane.
	**Reset Clipping Plane** Tap icon to remove all applied clipping planes (custom and predefined).
	**Clipping Plane Slider Bar** When a clipping plane, either a predefined or a custom plane, is active, the slider bar can be used to adjust the location of the plane. The slider bar can be used to adjust only the most recently defined clipping plane.
	**Quiz Mode** Select the quiz name (Custom Quiz, Ready Made, History) from the first dropdown menu to select which structures will make up the quiz. Select the quiz type (Pick Me, Flashcards, Multiple Choice, Game, Highlight) from the second dropdown menu. *If a student list has been imported, select the name of the student to be quizzed from the third dropdown menu.*
	Tap the Customize button to create a customized quiz. Within this dialog, the user can determine which structures to be tested on. The user can also import or export annotated presets to create a quiz. See “How to Make a Customized Quiz 6.0” for more information on how to create a customized quiz.
	Tap the Go button when the user is ready to begin the quiz.

Presets
Tap to show presets numbered 1-10. Use a second tap on one of the numbered icons to select a particular preset, or open the Presets Menu by tapping on the cogwheel icon.

Users can create an unlimited number of presets using the Preset Menu. Presets will automatically switch the image in rendering window based on saved definitions. See "How to Make a Preset 6.0" for more information on how to create and export presets.

Explore Tool
Used for identifying segmentation and user created content.

To use the tool in the Female Full Body with Models and user created INV files with models:
Step 1: Tap the icon to enable the tool (icon will brighten).
Step 2: Tap anywhere on the volume. The model closest to the touch will be annotated.

To use the tool with segmented cadaver data:

Step 1:
Tap the icon to open up the Explore Tool Dialog. Next, select a particular icon with a second tap. The icon will become highlighted to indicate it is enabled.

Step 2:
Remove Tool
Tap anywhere on volume. Structure closest to touch location will be removed from view.

Blood Flow Tool
Tap on a vein or artery. Blood flow will be simulated to or from the Heart. A second tap will apply a flat color to the vein or artery. A third tap will add annotations to all branches of the vein or artery.

Isolate Tool
Tap anywhere on volume. Structure closest to touch location will be annotated and all other volume elements will be made transparent. Tap on the same structure again to remove all transparent structures. Tap a third time to add structures back in again. Tap on name to enable more detailed annotations.

Step 3: To exit out of any explore tool mode, tap the enabled tool to disable (the icon will no longer be highlighted).

Undo & Redo:
After using the Removal or Isolate Tool, tap Undo to undo the last action or Redo to redo the last action.

The font size and color of the explore text may be adjusted in the Adjust Text window under the Image Control Settings icon (p. 26).

Visibility Control
Structures
Tap icon to open Volume Visibility dialog to adjust rendering window images. User can add/remove structures in data sets or adjust volume rendering view presets for any DCM file data sets. See p. 31 for more information on using the Volume Visibility dialog.

Annotations
Tap "A" icon next to any entry to turn on all annotations under that entry.

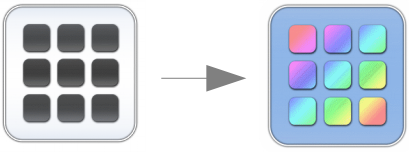
Brightness/Contrast Slider Bars

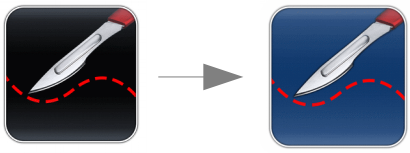
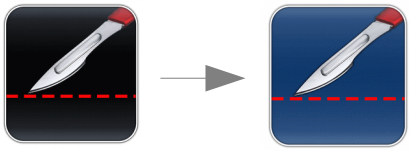
When viewing segmented cadaver data:

Drag the upper slider bar right/left to add/remove large systems or structures from the volume rendering. Drag the lower slider bar left/right to add/remove the cardiovascular, nervous, and lymphatic systems from the volume rendering.

When viewing DICOM data:

Drag the upper slider bar right/left to increase/decrease the *Brightness* (density) of the volume in the Rendering Window.

	Shift the lower slider bar right/left to increase/decrease the *Contrast* of the volume in the Rendering Window. ***WARNING: Brightness and Contrast settings are dependent upon the volume rendering range defined in the Image Control Settings (p. 25).***
	**Action Menu** Tap structure and then action menu or double tap a structure to view action menu for selected structure. The functions of each tool within the Action Menu are outlined below.
	***Structure On/Off*** Tap to toggle a structure on or off. A white check mark indicates that the structure is toggled on. A dashed check mark indicates that the structure is toggled off.
	***Transparency*** Tap to auto adjust surface and volume transparencies (50% surface opacity, 0% volume opacity) for selected structure. A blue background indicates that a transparency is applied.
	***Color Select*** Tap downward arrow to choose a color from the drop down color menu. Tap the color button to highlight selected structure in chosen color.
	***Annotations*** Tap to enable all annotations for selected structure. A blue background indicates that annotations are applied.
	***Origin and Insertion*** Tap to display origin and insertion points for a selected bone. A blue background indicates that origin and insertion points are turned on. A grayed out icon indicates no origin/insertion for a structure.

	***Blood Flow Tool*** Tap to display blood flow for selected vein or artery. A blue background indicates that the blood flow tool is activated. A grayed out icon indicates no bloodflow for a structure.
	***Curved Dissection*** Tap to activate the curved dissection tool, as indicated by a blue background. **Step 1:** Hold and drag the curved dissection anywhere on the selected structure. A red line will appear outlining the sculpt area. **Step 2:** Tap inside or outside the area to select dissection boundaries. The cut will be made only on the selected structure.
	***Linear Dissection*** Tap to activate the linear dissection tool, as indicated by a blue background. **Step 1:** Hold and drag anywhere on the selected structure. A red line will appear. **Step 2:** Tap on either side of the line to select which side will be dissected. The linear cut will be made only on the selected structure.
	***Reset Dissection*** Tap to remove any dissections performed on the structure, returning the structure to its natural state.
	**Pen Tool** Tap to open the Pen Tool Dialog. Using second tap, select a particular Pen Tool. Draw by dragging in rendering window.

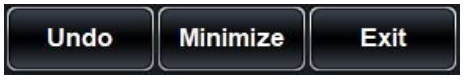
	**Predefined Draw Colors** Tap to select a predefined Pen Tool color. From top left going clockwise: Red, White, Yellow, Blue. Default width of Draw Stroke for all colors is 2.
	**Custom Pen Tool** The Custom Pen Tool allows the user to customize the color and width of a pen. **Step 1:** Tap to select a particular pen preset. **Step 2:** Tap the Custom Pen Tool Settings icon to adjust color and stroke width. *The Pen Tool will save the latest setting used for each preset.*
	**Eraser**: Tap to enable. Drag on display window to remove pen, text, or arrow marks.
	**Text Tool:** Tap to activate and then tap on display window to place text. Use on-screen or external keyboard to enter text.
	**Arrow Tool:** Tap to activate and then tap on display window to draw arrow tail. Tap again to draw arrow head.
	**Undo**: Tap icon to undo last drawing action. **Minimize:** Tap icon to minimize Draw Tool dialog. **Exit:** Tap icon to erase all drawings in the Rendering Window.

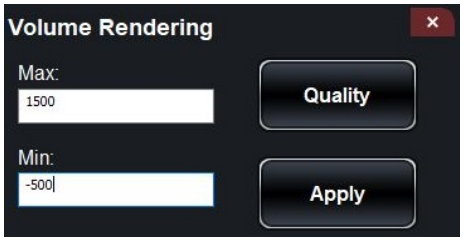
Image Control Settings
Tap the icon to open the Image Control Settings dialog to adjust the multi-touch and rotation controls, volume rendering range (DICOM data only), camera projection, UI settings, and to import student lists and enable Feature Lock.

Tap the Layout button to make adjustments to the Layout Options and to enable Vertical Viewing Mode.

Adjust Layout: Toggle the application icons between the four quadrants of the Anatomage Table. Icons are rotated to accommodate users in different areas of the Anatomage Table.

Enable Vertical: Toggle between Vertical Viewing Mode and Horizontal Viewing Mode. In Vertical Viewing Mode, icons are rotated and condensed into categories, as shown in the image below. Table application has slightly limited functionality.

WARNING: If Table application detects that some DCM files are missing, corrupt, or otherwise determined inaccurate, an error message will appear about possible inaccurate reconstruction. The user may continue with volume reconstruction and should exercise caution when reviewing any data with possible inaccuracies. An inaccurate volume reconstruction created in Horizontal Viewing Mode will still contain inaccuracies when viewed in Vertical Viewing Mode.



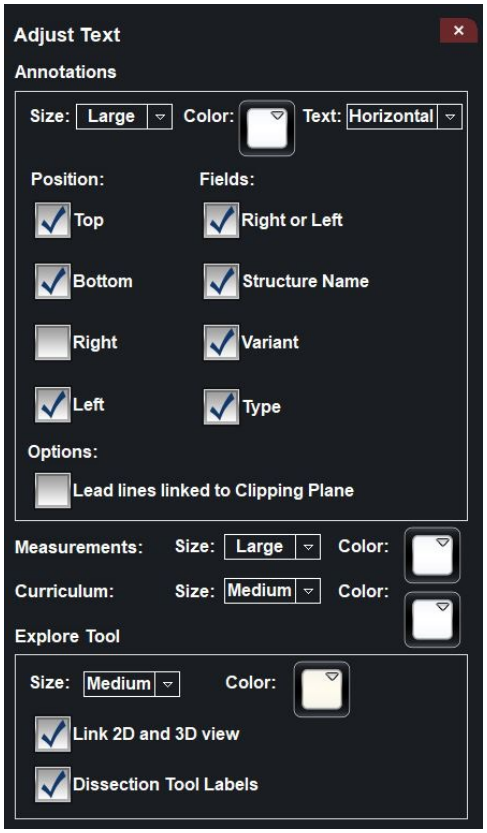
Volume Rendering Preference (for DICOM Data Only):
Min/Max: Define the minimum and maximum limits of the scalar values for reconstructing volume from slice image data.

Anatomage recommends -500 to 1500 for CT data and 0 to 3000 for MRI data. Table 6.0 will automatically set this value upon loading a scan.

WARNING: The values set in this Volume Rendering Preference field will have a direct effect on how the image data is reconstructed and displayed within the rendering window. The rendering range should be adjusted appropriately depending upon the modality (CT, MR, etc.) and scanning parameters.

Quality: When icon is selected, quality rendering is on. When icon is not selected, performance rendering is turned on.

Apply: Enable any changes made to the rendering range or rendering performance adjustments.



Adjust Text: Tapping the Adjust Text icon brings up the Adjust UI Dialog. In the dialog, the user can customize the behavior of annotations, and size and color of annotations, measurements, and explorer text with the corresponding pull down menus.

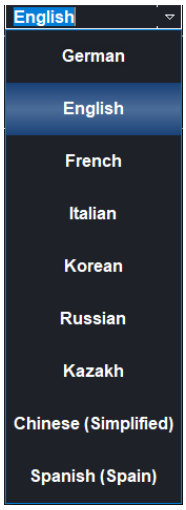
Link 2D and 3D view: Determines whether or not 2D cross-sectional image will snap to structure chosen using Explorer Tools (must be in 3D + 2D viewing mode).

Dissection Tool Labels: Determines whether annotations will appear when removing structures via Dissection Tool.

Lead lines linked to Clipping Plane: The annotations are by default linked to the clipping plane. If a clipping plane is applied, any annotations turned on will only have their lead lines appear if they are mapped to a location within a few mm of the clipping plane. To turn this option off, tap to uncheck the white box.

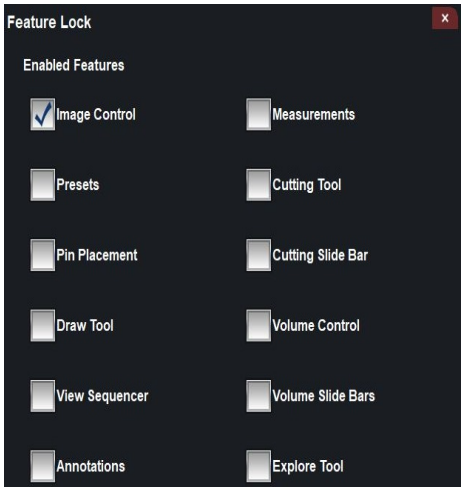
Adjust Colors: The user can apply a flat color to veins (blue), arteries (red), nerves (yellow), and lymphs (green).

The user can also change the background color of the Volume Rendering Window to black, white, or gray using the quick access buttons, or to other colors using the drop down menu.



Language Menu: The user can toggle between languages. Currently supported languages include Chinese (Simplified), English, French, German, Italian, Kazakh, Korean, Russian, Spanish (Spain).

After the language has been changed, the user must adjust the system locale.



Feature Lock: Lock specific features. The features that are checked will be unlocked.

Define locked features using **Options.** Create a password for managing use of the Feature Lock and enable it using **Enable.** Password must be used for disabling Feature Lock as well. In the event that the password is forgotten, the master password can be used to disable Feature Lock.

Master password – AnatoTest0

Spin: Enable/Disable spin gesture. Highlighted when enabled.

Ruler: Displays a ruler along the length of the Rendering Window. Highlighted when enabled. Scales to life-size when 1:1 life size is activated.

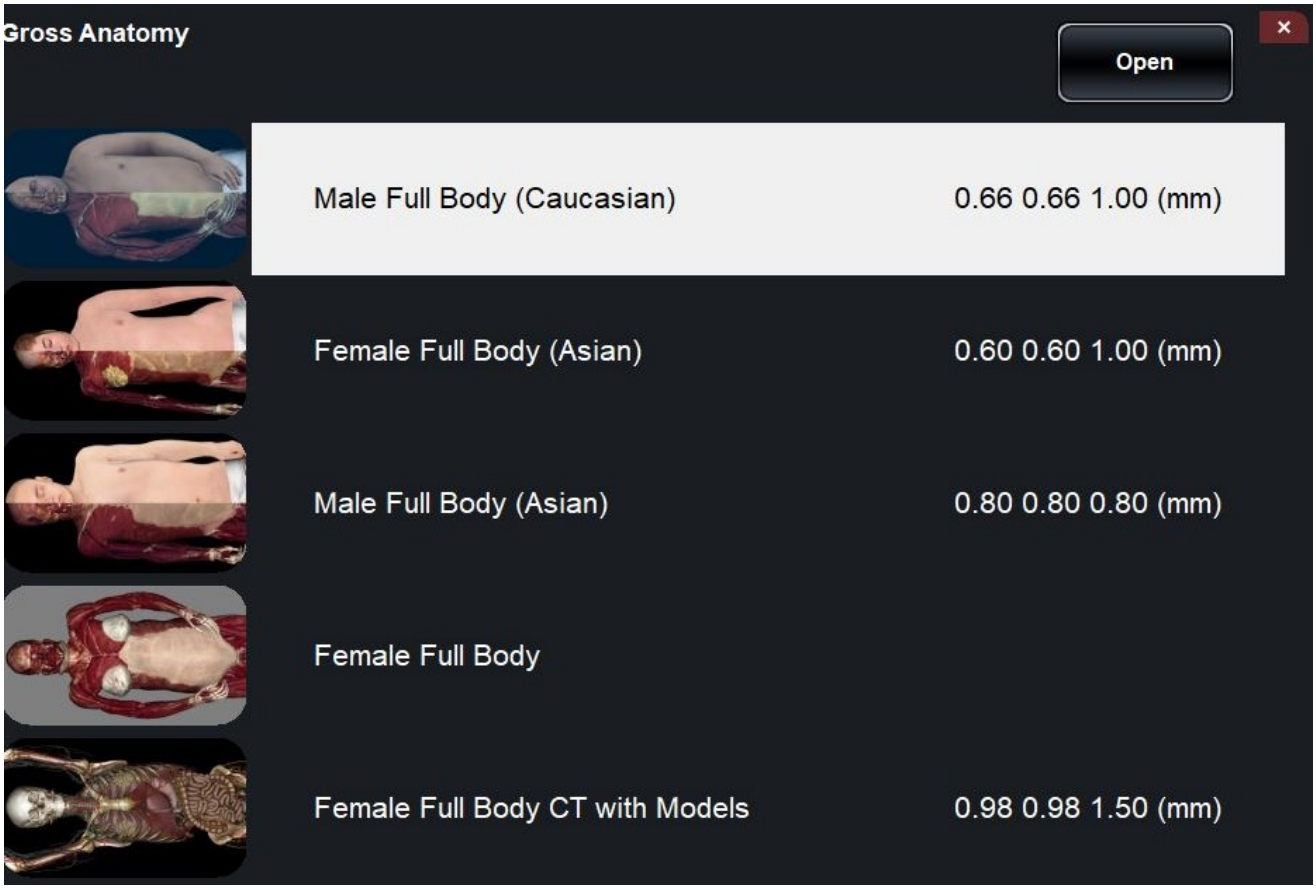
WARNING: Exact scaling depends on scan size, scan resolution, and hardware specifications.

	Import Student List: Opens a dialog that allows the user to import a Student List File (.txt). **About:** Displays the Table's software and hardware information.
	**Annotation Controls (*for DICOM data*)** Opens Annotation dialog for enabling/disabling comment visibility. • Tap On/Off icon at the top left of the dialog to show or hide all enabled annotations. • Tap On/Off icon next to each entry to turn categories or individual annotations On/Off. • Tap a system or category to show associated subsystems. Selected entry will be highlighted blue. • User can adjust where annotation texts will appear: *Top*, *Bottom*, *Right*, *Left*. • Search bar in lower right of dialog allows user to search for a particular structure. Tap **Clear** to clear all search terms. • Annotations saved with Invivo files will appear with *Comment* and *Marker* as System and Category, respectively. • User can adjust coordinates of annotations by dragging text to a new location. Tap the circle to the right of the associated structure in the Annotation Dialog to save the new annotation coordinates.
	**View Sequencer** Tap icon to import and playback View Sequences (*.vseq* files) created from Invivo6 software. Use this icon to also play the 4D cases in the Case Library. This icon can also be used to view Curriculum slides in the Curriculum data sets.  ***WARNING: View Sequencer behavior is best when using the same particular image data set that was used when initially creating the View Sequence in Invivo6.***

Gross Anatomy

(*This section contains images featuring educational content and should not be used as clinical reference or for diagnostic purposes).*

Tap **Gross Anatomy** on Application toolbar to open the Full Body Anatomy menu.

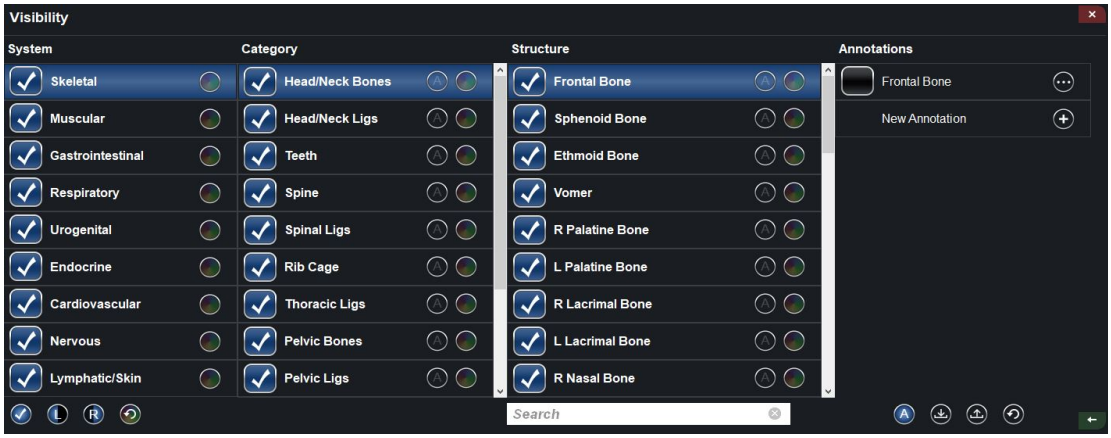


- Dialog lists all available Gross Anatomy scans with resolution.
- Tap entry name, then tap **Open** or double tap entry name.
- Tap **Close** to close dialog.

Image Adjustment

Segmented Cadaver Data

Selecting the Volume Visibility Control Icon will open the following dialog.



- Structures are organized into systems and categories.
- Tap Checkbox icon at the bottom of the system list to turn **all structures** On/Off.
- Tap Checkbox icon next to each entry to turn systems, categories, or individual structures On/Off.
- Tap a system or category to show associated subsystems. Selected entry name will be highlighted blue.
- Tap grayed color wheel icon next to entry names to adjust **Opacity, No Clip,** and **Color** settings for volumes and to toggle **Origin/Insertion** for bones. If adjusted, gray color wheel icon becomes colored.

No Clip: If enabled, structures cannot be sliced through.

Transparent: Auto adjust surface and volume transparencies (50% surface opacity, 0% volume opacity)

Opacity: Adjust slider bars to adjust surface and volume transparencies.

Flat Color: Choose a color from quick access or the drop down color menu. Tap button to highlight structure in chosen color.

Origin and Insertion: Toggles On/Off Origin and Insertion for selected bone structure.

- L and R buttons in lower left hand corner allow the user to toggle On/Off the left and right structures for select systems and categories.
- The counter-clockwise, curved arrow color wheel button restores the cadaver to its default view by

removing any Opacity, No Clip, Color settings, and Origin/Insertion.

- The A button in the lower right corner expands the Volume Visibility dialog to include Annotations. When the dialog is expanded: the circled A button toggles On/Off Annotation Visibility, the downward and upward arrow buttons allows the user to import and export custom annotations, and the counter-clockwise, curved arrow allows the user to restore to default annotations. See p. 34 for additional details on Annotations.
- Search bar in lower right corner allows user to search for a particular structure. Tap **X** to clear all search terms.

Annotations

Annotations can be activated in the Volume Visibility Dialog. Annotations are linked with clipping planes. Chosen annotations will be displayed, but lead lines will only appear when associated volume is close to the clipping plane. If no clipping plane is defined, lead lines will always appear.

- Tap the "A" button at the bottom right of the Volume Visibility Dialog to expand the dialog to include Annotations.
  - Tap the circled "A" button at the lower right of the dialog to show/hide all enabled annotations.
  - Tap the "A" icon next to each entry to enable all annotations under that entry.
  - Tap "New Annotation" to create your own annotation. Type out the desired annotation text and tap anywhere on the volume to select annotation coordinate.
- Tap on the settings tab and tap "Adjust Text" to adjust where annotation texts will appear (*Top, Bottom, Right, Left)* and how annotation text will appear (Size, Color).
- Annotations saved with Invivo will appear with *Comment* and *Marker* as System and Category, respectively.
- User can adjust coordinates of annotations by tapping the Ellipsis Button to the right of the annotation and then "Edit Location". A dialog will appear prompting "Edit Location" and the user can tap anywhere on the structure to change its location. When the Annotation (.csv) file is exported, the new location(s) will be updated.

WARNING: Saving the new coordinates for an annotation will overwrite the associated information on the currently loaded .csv annotation spreadsheet. A back up annotation spreadsheet is available on the Table desktop.

Load Default Annotations — Load in default annotations (.csv file) from the Presets, Annotations folder on the Table desktop.

Load Annotation File — Load in custom annotations (*.csv* file with character set "UTF-8", separated by tab, and set to "quoted field as text") created using Invivo6 software (or other software).

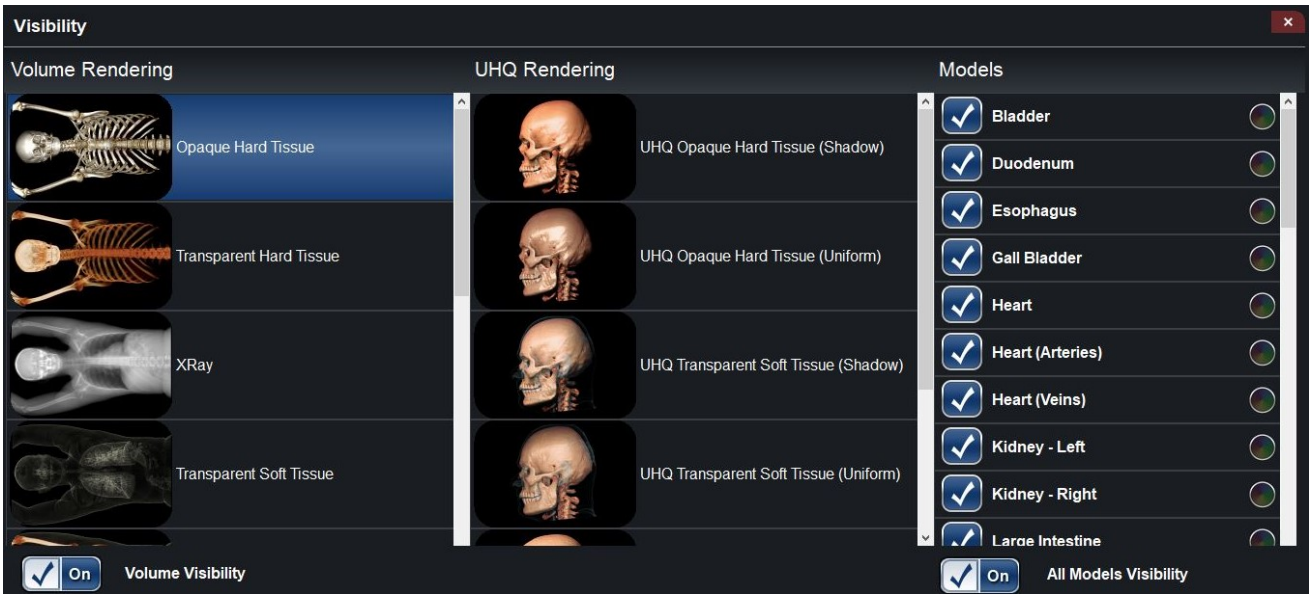
Customizing Annotations *(for DICOM Data)* — Annotations can be added, removed, or edited by opening the annotation file linked to the desired data set (*.csv* file with character set "UTF-8", separated by tab and set to "quoted field as text") in OpenOffice. Separate annotation files can be found for the Male Full Body (Caucasian) scan, Female Full Body Scan, Male Full Body (Asian) scan, Female Full Body with models scan, as well as each of the High Res Regional scans. For more instruction on customizing annotations, consult the "How to Make and Import Custom Annotations 6.0" PDF file.

WARNING: Open same data set that was used to create annotation file in order to preserve correct coordinate system.

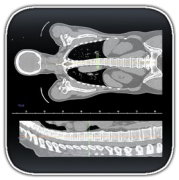
Female Full Body with Models and DCM/INV Files

(This section contains images featuring educational content and should not be used as clinical reference or for diagnostic purposes).

Selecting the Volume Visibility Control Icon will open the following dialog.



Volume Visibility	Turn On/Off volume rendering.
All Models Visibility	Turn On/Off model visibility.
Volume Renderings *(Gray Scale, X-Ray, Transparent Soft Tissue, Transparent Hard Tissue, Transparent Soft + Hard, etc.)*	Collection of different volume rendering presets (filters.) Each can be adjusted using the *Brightness* and *Contrast* slider bars on the main Table user interface. Users can create their own custom volume rendering presets using the Invivo6 software. This setting can be exported as a volume configure file (*.vcf*). **Custom** loads in a *.vcf* file.
	***WARNING: Ultra High Quality Rendering (UHQ) requires an NVIDIA graphics card to function. If Table application detects that some DCM files are missing, corrupt, or otherwise determined inaccurate, an error message will appear about possible inaccurate reconstruction. The user may continue with volume reconstruction and should exercise caution when reviewing any data with possible inaccuracies.***



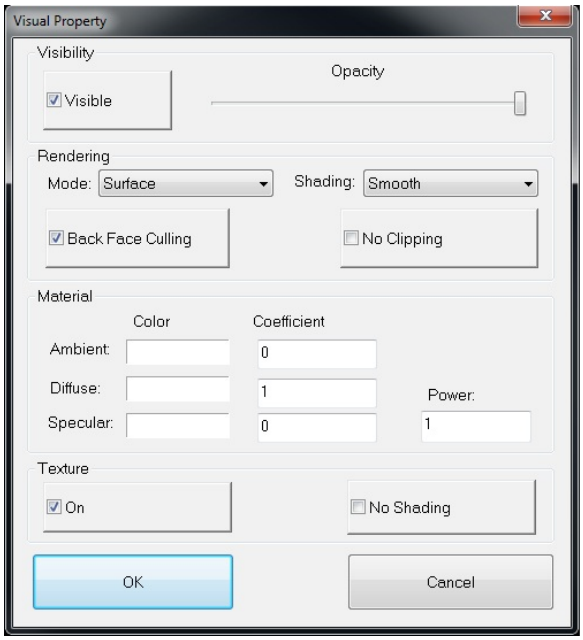
CT Settings (Only available in slice mode for DCM image sets)
Tap to show all available radiology presets. Using a second tap, select a particular radiology preset. The brightness and contrast can be adjusted using the slider bars to the right.

Available CT presets: Brain, Abdomen, Mediastinum, Bone, Lung, Liver

WARNING: CT presets are dependent upon original scanner/DCM HU definitions. User is responsible for adjusting rendering range and settings to ensure all structures are visible in the scan.

WARNING: MRI scans will automatically have their volume rendering range adjusted for optimal viewing. The user can specify a specific rendering range by manually entering the minimum and maximum values in the settings menu.

Model Settings



Open Visual Property Dialog for currently selected digital surface model.

Visibility

- Turn On/Off model visibility
- Adjust the *Opacity* of a particular model

Rendering

- Adjust *Mode*: Surface, Wireframe, or Points
- Adjust shading: Smooth or Flat
- Turn On/Off **Back Face Culling**
- Enable **No Clipping** (clipping planes do not affect model)

Material

- Adjust surface model appearance by changing color and light settings

Texture

- Turn On/Off texture applied to model
- Turn On/Off shading applied to model

Tapping **OK** will close the *Visual Property* window and save the changed settings.

Preset Dialog

Save Preset	Create an unlimited number of presets: saves volume orientation, clipping planes, freehand dissection cuts, model visibility, volume visibility, annotations, and pins.
Select All	Selects all Presets, as indicated by a blue number to the left of the dialog.
Remove Selected Presets	Delete the currently selected preset(s).
Import VPF	Load in preset file (.vpf).
Export VPF	Export all selected presets as a visibility preset file (*.vpf*).

WARNING: Preset behavior is best when using the same particular image data set and volume rendering range that was used when initially creating the presets.

High Resolution Regional Anatomy

(This section contains images featuring educational content and should not be used as clinical reference or for diagnostic purposes).

Tap **High Res Regional Anatomy** on Application Toolbar to open the *Regional* Dialog.

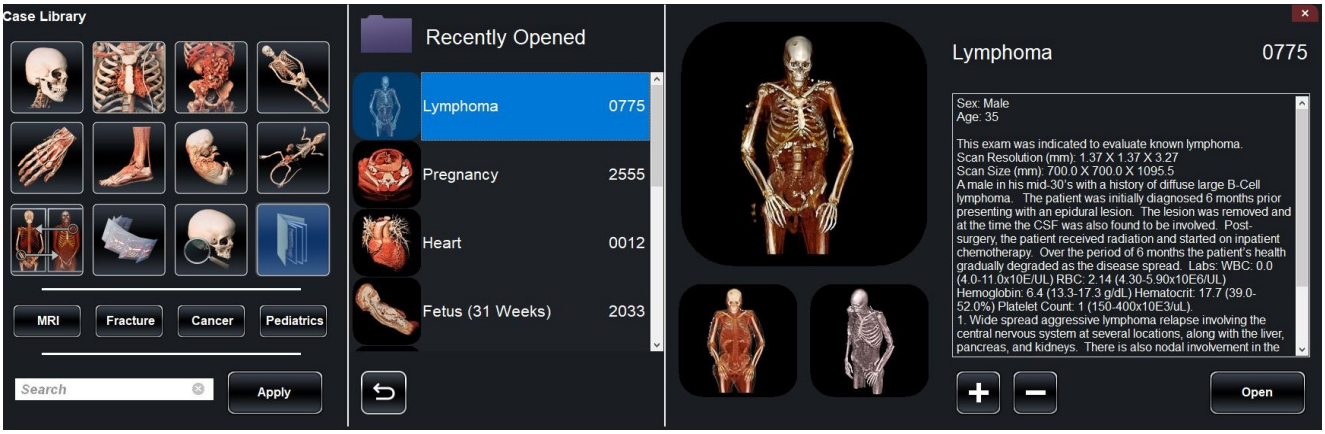
- Dialog lists all available regional scans with *Region*, *Resolution*, *Size*, and *Gender* of original scan.
- Tap entry name, then tap **Open** or double tap entry name.
- Tap **Close** to close dialog.

Case Library

(This section contains images featuring educational content and should not be used as clinical reference or for diagnostic purposes).

The Case Library is a collection of scans showing various clinical case examples. Through the use of contrast media and other imaging techniques, real patient anatomical features are highlighted. Each scan comes with scan information, if available.

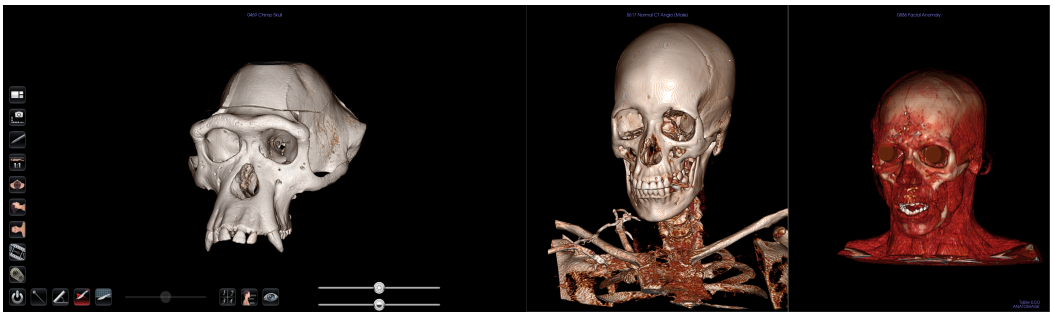
Select **Case Library** from Application toolbar to open the *Case Library* dialog.



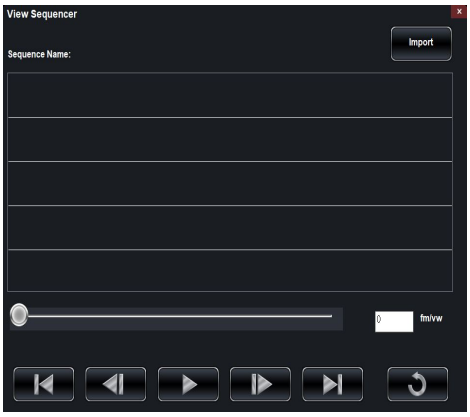
- Scans are sorted by region (*Head & Neck, Thorax, etc.*) and type (*4D, Comparison, etc.*)
- Tap on a divisional icon to view all associated scans.
- Select scan name to display additional clinical information (*Info, History, Findings, Impression, Other*) along with scan resolution and size.
- Tap MRI, Fracture, Cancer, or Pediatrics to see scans organized by tag.
- To search the Case Library, type text into the bottom left search bar, then tap Apply.
- Tap on the  icon to access **Folders** category. Anatomage preinstalls three default folders including Recently Opened, Anatomage Favorites, and Recently Added.
- To create your own folder, tap the  button and enter in the desired Folder name.
- To remove your own folder, tap the  button.
- To add a case to a folder, tap the  button and choose the desired folder.
- To remove a case to a folder, tap the  button.

- To export a custom folder (.txt file), open the custom folder and tap the  button. A dialog will appear allowing the user to choose the name and location of the .txt file.
- To import a custom folder (.txt file), tap the  button under the folder's category and locate the .txt file for the desired custom folder.
- Recently opened scans are saved under the **Recently Opened** folder.

Comparison Displays three related scans linked in movement, clipping plane, brightness/contrast, and volume rendering mode for comparison. Note: Comparison Cases are not compatible with Vertical Viewing Mode.



4D scans Scans showing movement



To Play 4D scan:

Step 1: Tap the View Sequencer icon  .

Step 2: Tap  to start/pause movement. Tap  to loop playback.

Step 3: Tap  to move forward one frame. Tap  to move backward one frame.

Step 4: Tap  to cut to the last frame. Tap  to return to the first frame in the sequence.

Step 5: Tap the red X in the upper right to close dialog.

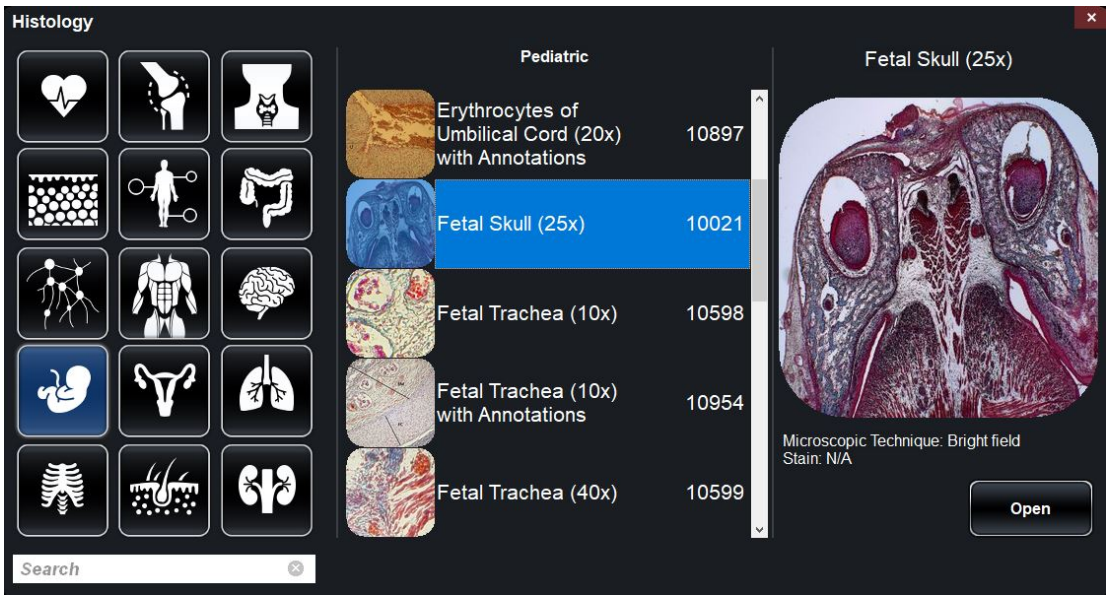
User can rotate or clip volume while video loop is playing. Video playback will pause when user is rotating volume. Pause playback when not viewing scan to conserve computer memory.

Histology Library

(This section contains images featuring educational content and should not be used as clinical reference or for diagnostic purposes).

The Histology Library is a collection of slides showing various physiological and pathological examples with the use of various microscopic and staining techniques. Each slide comes with information, if available.

Select **Histology** from Application toolbar to open the *Histology Library* dialog.



- Slides are sorted by region (*Cardiovascular, Connective Tissue, Reproductive, etc.*) and type (*Pediatric*).
- Tap on a divisional icon to view all associated slides.
- Select scan name to display additional information, including a larger preview image, and microscopic technique/stain when available.
- To search the Histology Library, type text into the bottom left search bar.

Curriculum

The Curriculum consists of a set of single scans with pre-made annotations and view sequences, provided by Anatomage. Scans are sorted by region (*Thorax, Upper Limb,* etc) and system (*skeletal, muscular,* etc). The curriculum is intended for teaching purposes.

(This section contains images featuring educational content and should not be used as clinical reference or for diagnostic purposes).

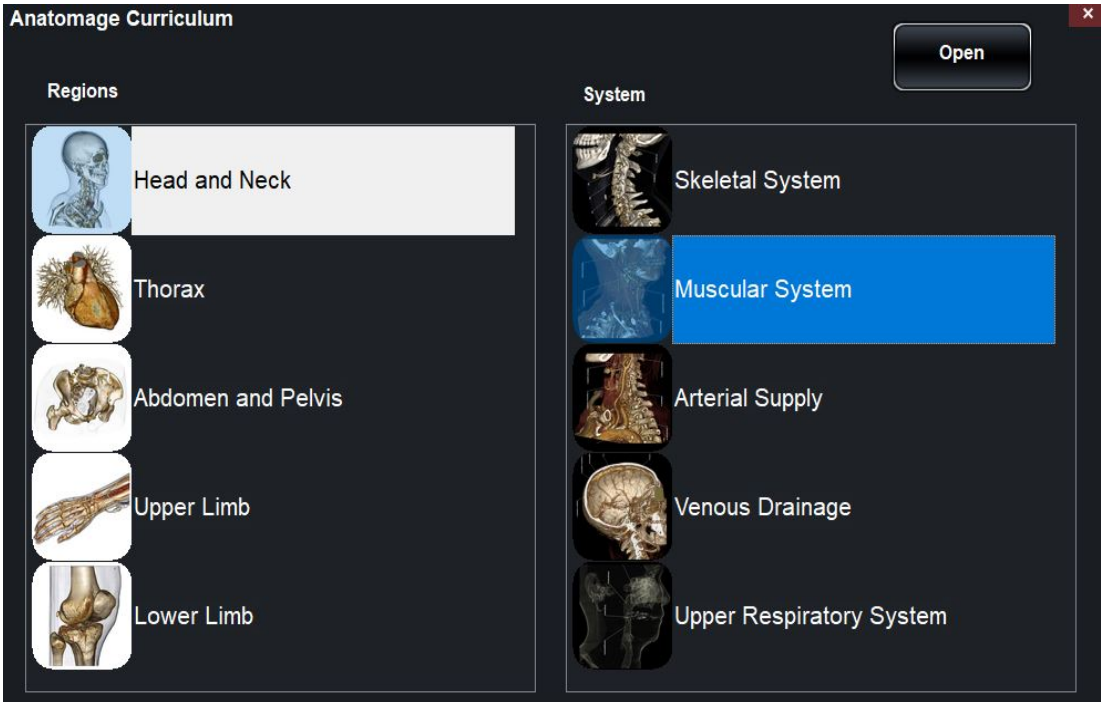


Table Application Troubleshooting

This section discusses common software troubleshooting issues.

For all troubleshooting, be sure to follow the safety guidelines outlined in the **Safety Instructions and Warnings** section of the hardware manual.

Issue With	Problem	Action
Installation	Error Message: *Server is not responding*	Check Internet connection. If Internet is connected, try again later.
	Error Message: *Please run as administrator to activate software*	Run the application as administrator.
	Error Message: *Invalid Authorization code*	Check license code and try again.
File Operations	Error Message: *Error: Cannot read this file*	Check if this file is supported by Table6.0.
	Error Message: *Failed to read DICOM file!*	Check if this file is supported by Table6.0.
Image Rendering	Error Message: *Can't detect hardware acceleration for OpenGL support!*	Check if graphics card meets system requirements. Check if latest driver is installed for graphics card.
	Image is distorted	Switch to another view and switch back.
	Grayscale image shows up for all rendering presets	Check if graphics card meets system requirements. Check if latest driver is installed for graphics card.
	Warning message: *3D reconstruction may not work!*	Check if the DICOM files are exported correctly.
	Slow performance	Keep a maximum of five applications open at any given time. Pause loop playback for 4D scans when not viewing.
Computer	Blue screen	Restart system and see if problem persists.
		Note the error code given and learn more at *support.microsoft.com*
		Use Windows install disc/USB drive to reformat the computer. Contact Anatomage for new Table Application authorization code(s).

Contact Anatomage at (408) 885-1474 for additional support.