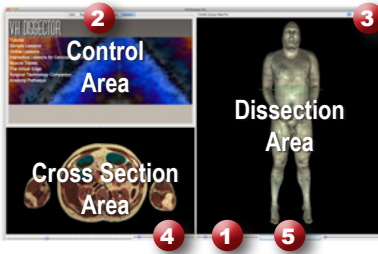# Introduction to the Abdomen

Control Area

Dissection Area

Cross Section Area

Learning Objective

After completing this exercise, you will be able to name the muscles of the abdominal wall as well as identify major abdominal organs and their blood supply

Use the reference on the left to locate controls and areas referred to in the text below.

1 **Start by setting the cross section through the area we want to explore:**

- Drag the reference plane in the dissection area by its green border to the middle of the abdomen
  (*the cross sections are numbered in the lower left corner, you should be close to 1700*)
- Explore the anatomy of the abdomen by moving your mouse over the cross section
  (*structures are identified in the upper left corner of the cross section area*)

**2** **Now skin the cadaver to reveal more anatomy:**

- Click on the skin in the dissection area to highlight it
  (*structures change colors when highlighted*)
- Click on the highlighted skin again to dissect it
  (*now you see the fat and other subcutaneous tissue*)
- Dissect the fat just like the skin

> *Click on a structure to highlight, click again to dissect*

3 **Take a closer look by magnifying the abdomen in the dissection area:**

- Zoom in using the magnification slider **1**
- Drag the dissection with your mouse to reposition it if necessary
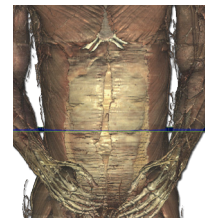
4 **Identify the external oblique muscle by highlighting it:**

- Select the "Index" tab **2**
- Enter "external oblique" into the search box
- Select the "External Oblique - Left" from the list
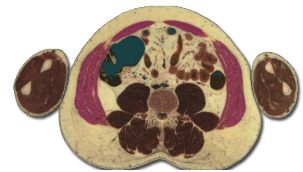- Click the "Add & Highlight" button
  (*the cross sections are in standard radiologic orientation so the left oblique is highlighted on the right side*)

> *Locate specific structures with the index*
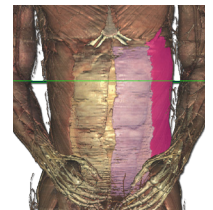
**Which other three muscles form the anterior abdominal wall?**

1. _____   2. _____

3. _____

---

5 **Isolate the arteries that feed the pancreas by simplifying the dissection:**

- Click the "Clear" button **3** to clear the dissection area
- Select the "Systems" tab **2**
- Select "Skeletal system" and click the "Add" button
- From the "Regions" tab **2**, expand the "Abdomen and Pelvis" using the icon to the left
- Expand "Arteries" followed by the "Abdominal aorta"
- Select the "Celiac trunk" and click "Add & Highlight"
- Search the index to add and highlight the pancreas
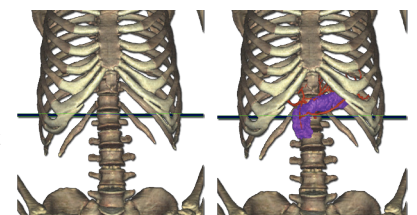
> *Add, remove and highlight groups of structures with systems, regions and tissues*

6 **Follow the celiac trunk as it branches:**

- Locate the celiac trunk in the dissection
  (it is just inferior to the pancreas, in the mid-line)
- Right-click on the artery and select "Cross Section"
- Zoom in on the cross section by using the magnification slider **4** and dragging
- Follow the artery by holding down the command (Mac) or ctrl (PC) key while pressing the up and down arrow keys to move 1mm at a time through the cross sections
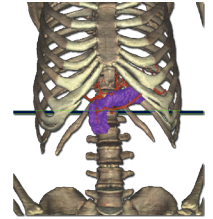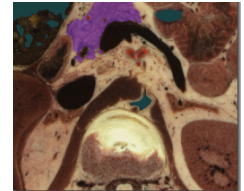
> *Move the cross section 1mm at a time by holding the command (Mac) or ctrl (PC) key while pressing the up or down arrow keys*

**Name the three branches of the Celiac trunk?**

(Hint: follow the artery superiorly until it branches)

1. _____   2. _____

3. _____

---

7 **Visualize a more advanced anatomical concept, Nutcracker syndrome:**

- Click the "Clear" button to clear the dissection **3**
- In the "Systems" tab, expand the "Skeletal system" and add the "Vertebral column"
- Add and highlight the Abdominal aorta *(hint: use the index tab)*
- Go to the "Action" menu, select "Fit Dissection to Window" and choose "Highlighted"
- Turn the dissection to 45° using the rotation wheel **5** or the command (Mac) or ctrl (PC) key while pressing the left and right arrow keys to move 5° at a time
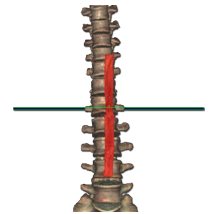
> *Rotate the dissection using the left or right arrow keys while holding the command (Mac) or ctrl (PC) key*

- Set the cross section through the L1 vertebra *(cross section 1600)*
- Locate the Superior mesenteric artery on the cross section
- Hold down the shift key and click to add and highlight this artery
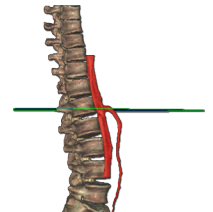
> *Highlight multiple structures or un-highlight a single structure by holding the shift key when clicking*

- Locate the Inferior vena cava and the left kidney in the cross section
- Again, hold shift, and click to add and highlight these structures
- Follow the Mesenteric artery down in the cross section
  (The angle between the Abdominal aorta and the Superior mesenteric artery is where the condition known as "Nutcracker Syndrome" takes place, when the Superior mesenteric artery is pulled inferiorly, compressing the structures passing through the angle between the two arteries)
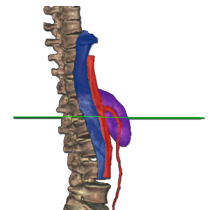
Which major structure passes under the Superior mesenteric artery?

(Hint: This structure courses from the left kidney to the inferior vena cava, and is compressed in Nutcracker Syndrome, leading to kidney failure)
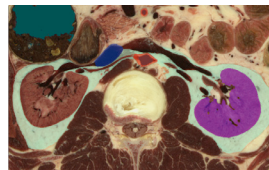
1. _____
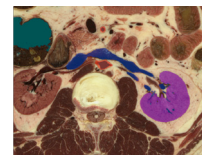
Bonus: What structure normally separates the Superior mesenteric artery from the underlying structures?

(Loss of this can lead to Nutcracker Syndrome)

1. _____