

VISIBLE  BODY®

## **Blood Vessels Part III: Veins**

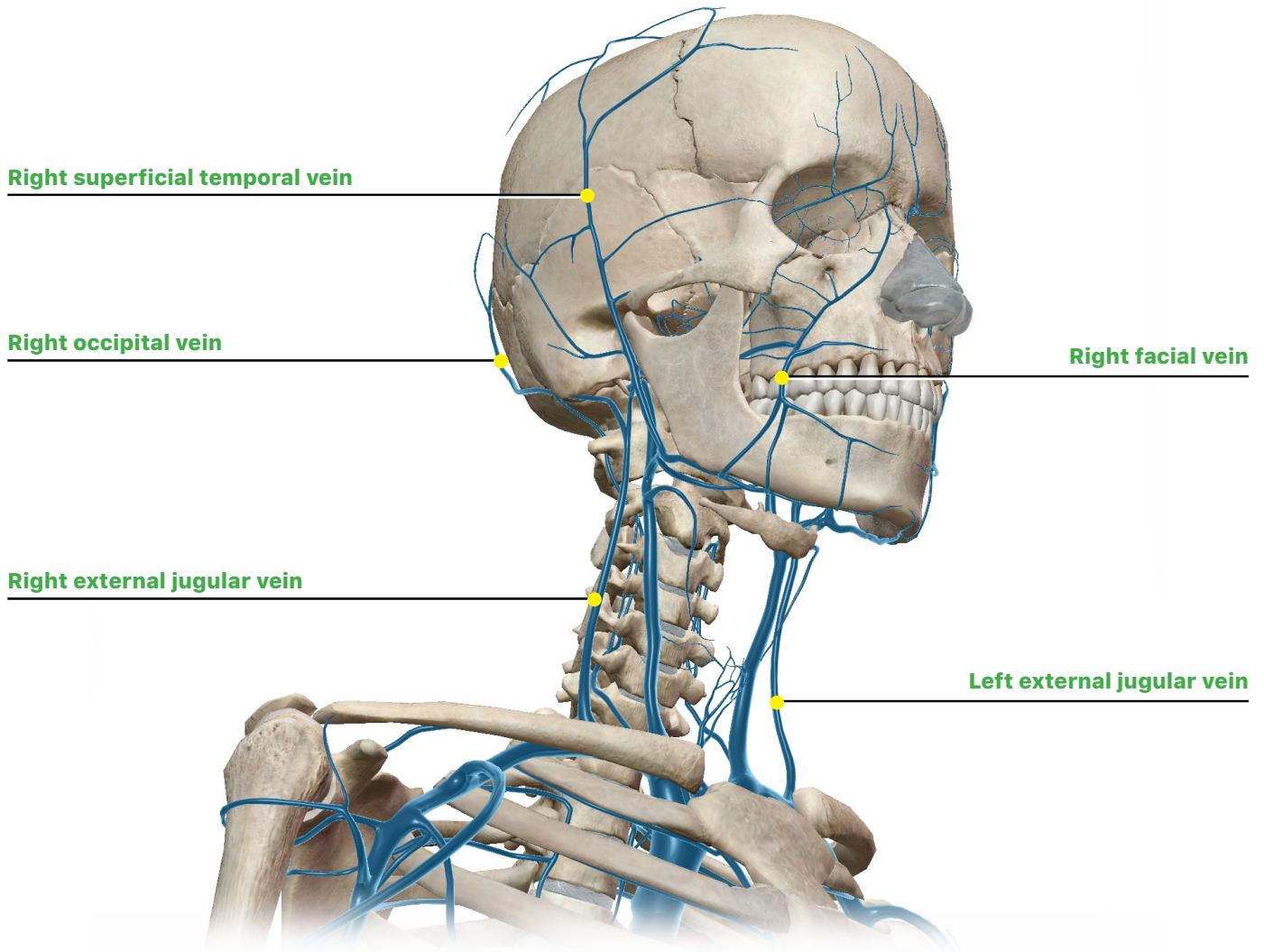
A circulatory system lab activity using Visible Body Suite

**Blythe Nilson, Associate Professor of Biology,  
University of British Columbia Okanagan**

## **IN-LAB EXERCISES**

### **I. Veins of the Head and Neck**

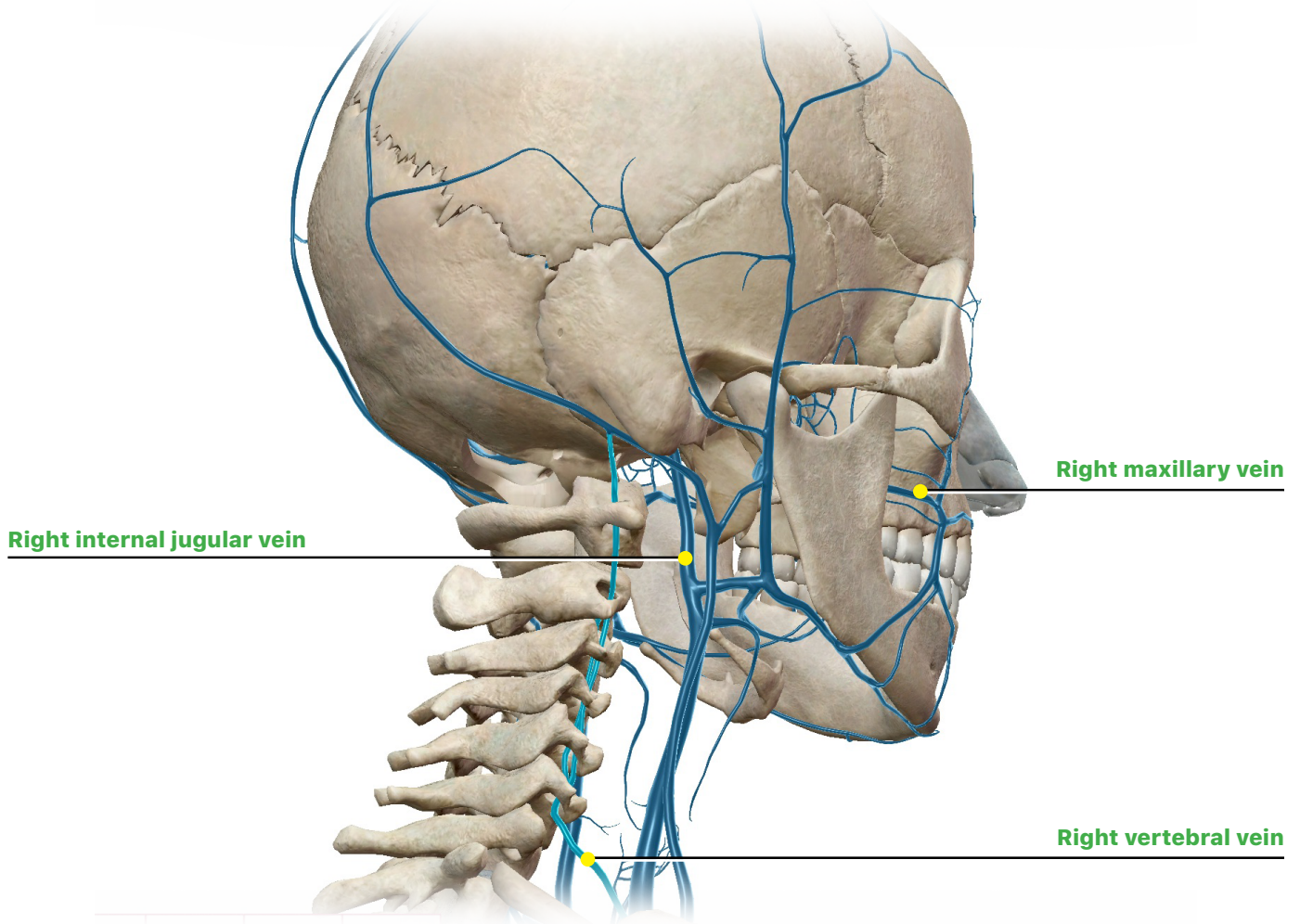
1. Explore the 3D anatomical view in Module 30.41 Superficial Veins of the Head and Neck and answer the following question.



a. The **external jugular veins** drain the regions \_\_\_\_\_. They empty into the \_\_\_\_\_.



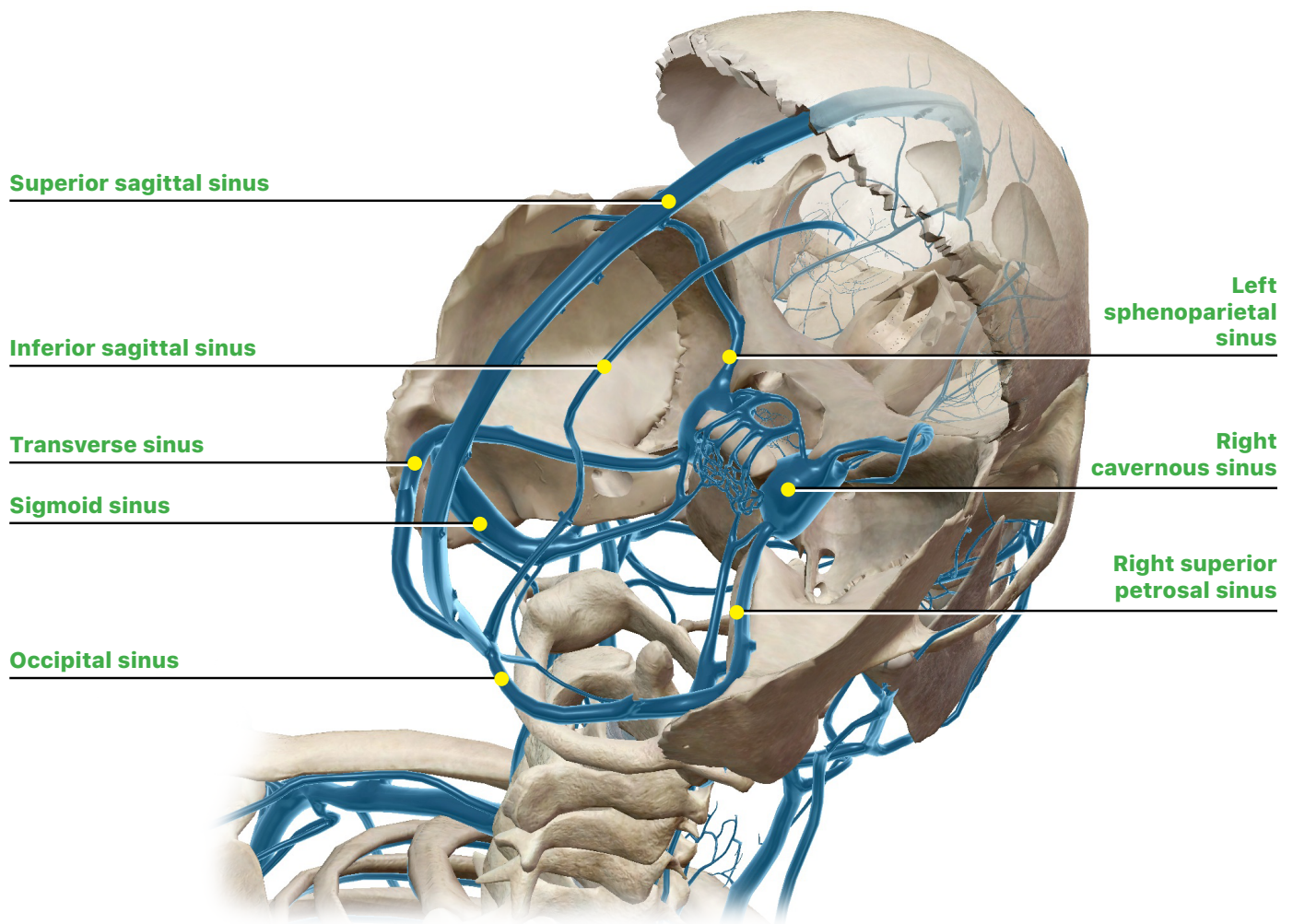
2. Explore the 3D anatomical view in Module 30.42 Deep Veins of the Head and Neck and answer the following questions.



- The internal jugular veins drain regions of the head and join the \_\_\_\_\_ to form the \_\_\_\_\_.
- Which veins are larger, the internal or external jugular veins?
- Describe the route of the **vertebral veins** through the neck.



3. Explore the 3D anatomical views in Module 30.43 Venous Sinuses I and 30.44 Venous Sinuses II and answer the following questions.



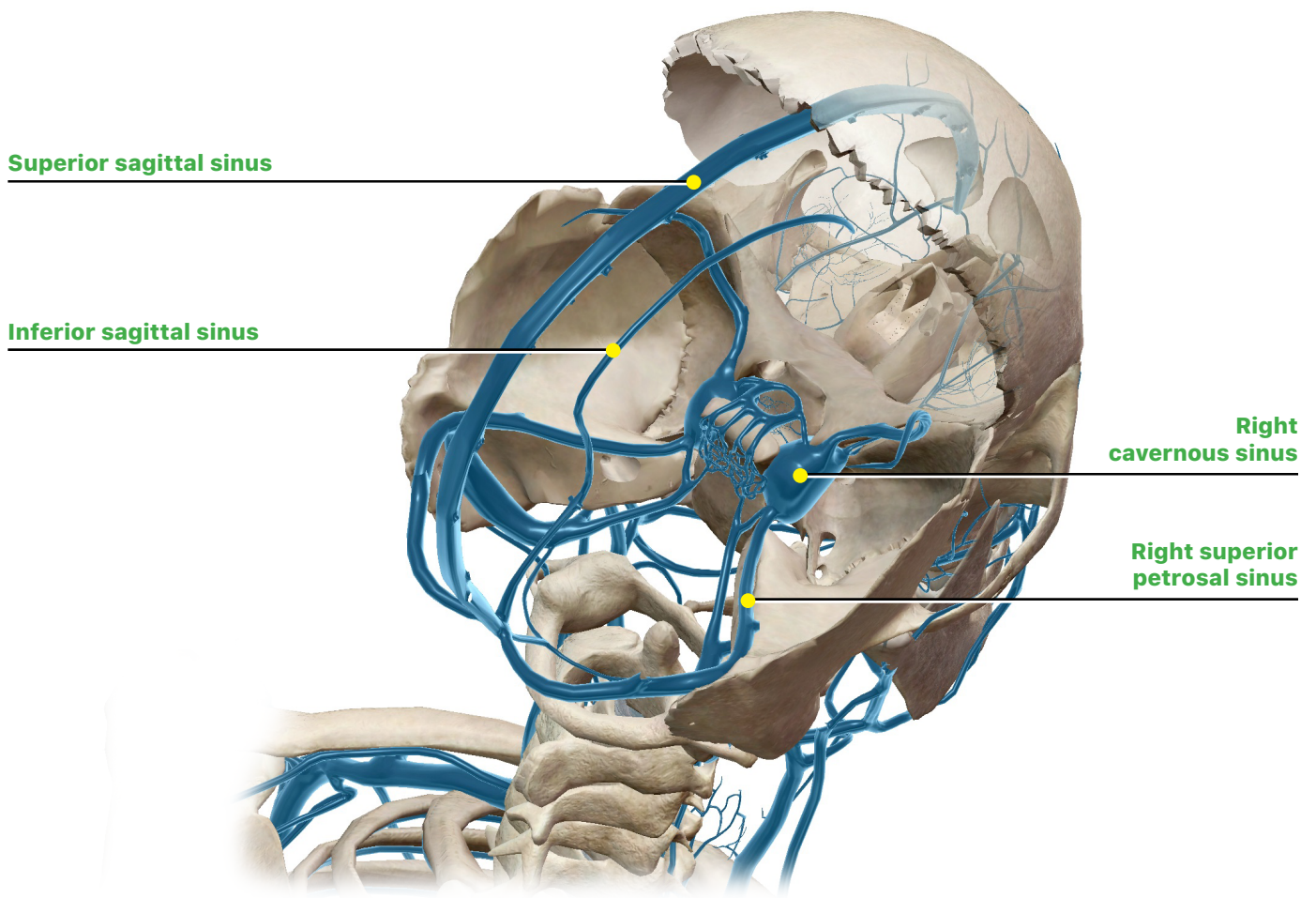
a. **Dural venous sinuses** are specialized venous channels that run between the two layers of dura. They drain blood and cerebrospinal fluid from the brain. How do the dural venous sinuses differ from veins?

- i.
- ii.
- iii.
- iv.

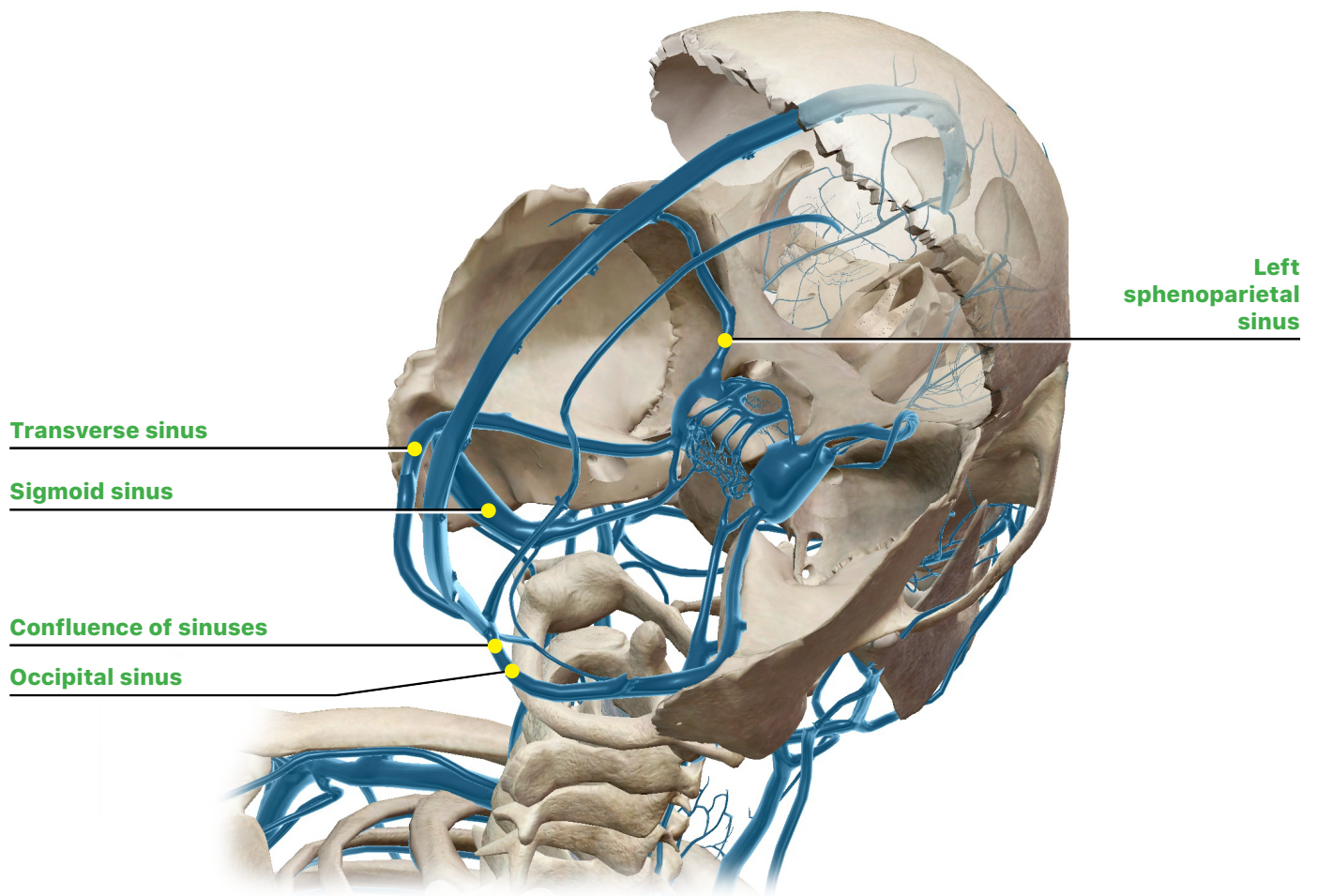




b. Label the four sinuses on the diagram below:



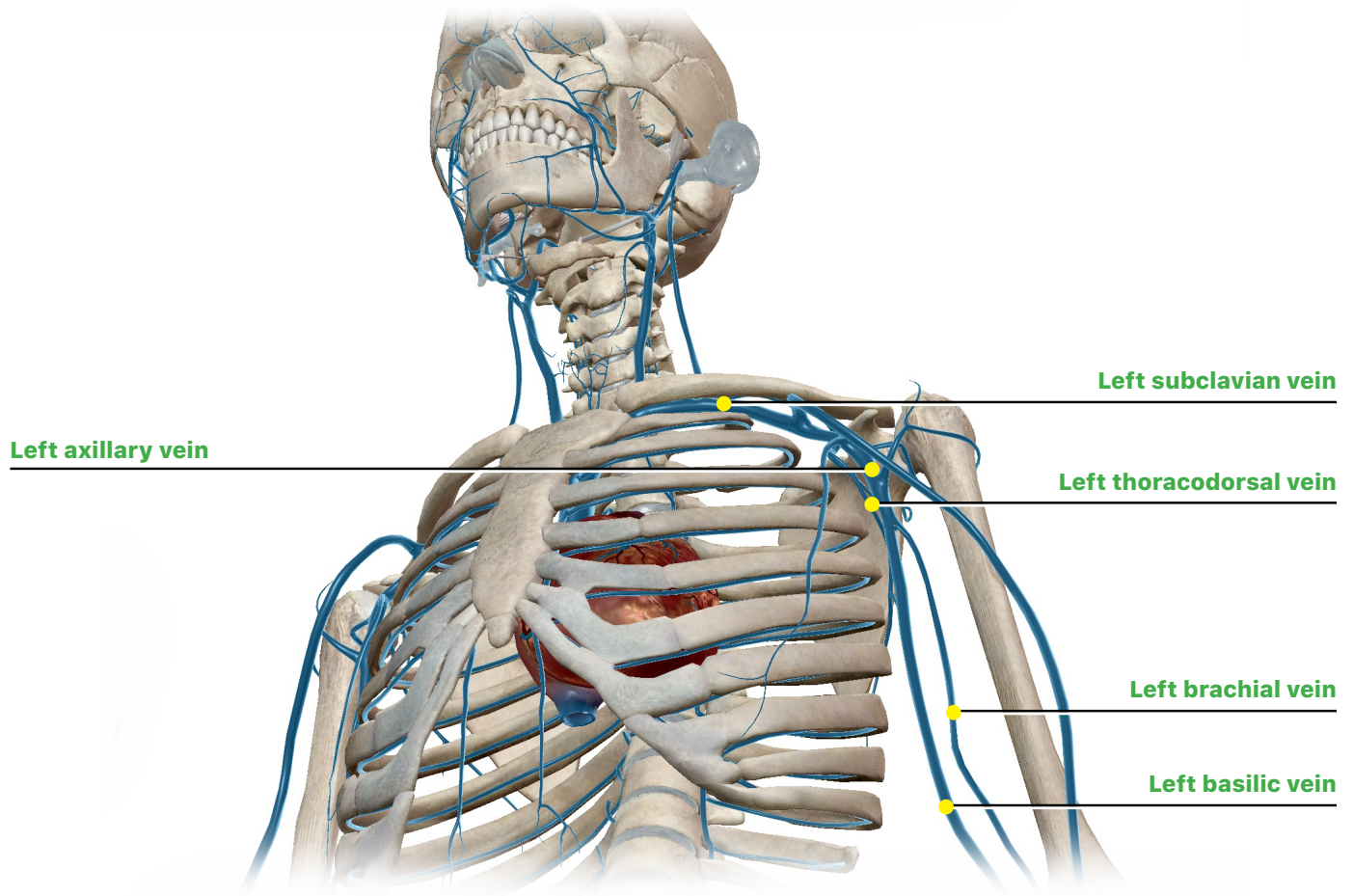
c. Label the five sinuses on the diagram below:



d. All the dural venous sinuses empty into the \_\_\_\_\_.

## **J. Veins of the Upper Limb and Hand**

1. Explore the 3D anatomical view In Module 30.45 Veins of the Upper Limb I and complete the following table.

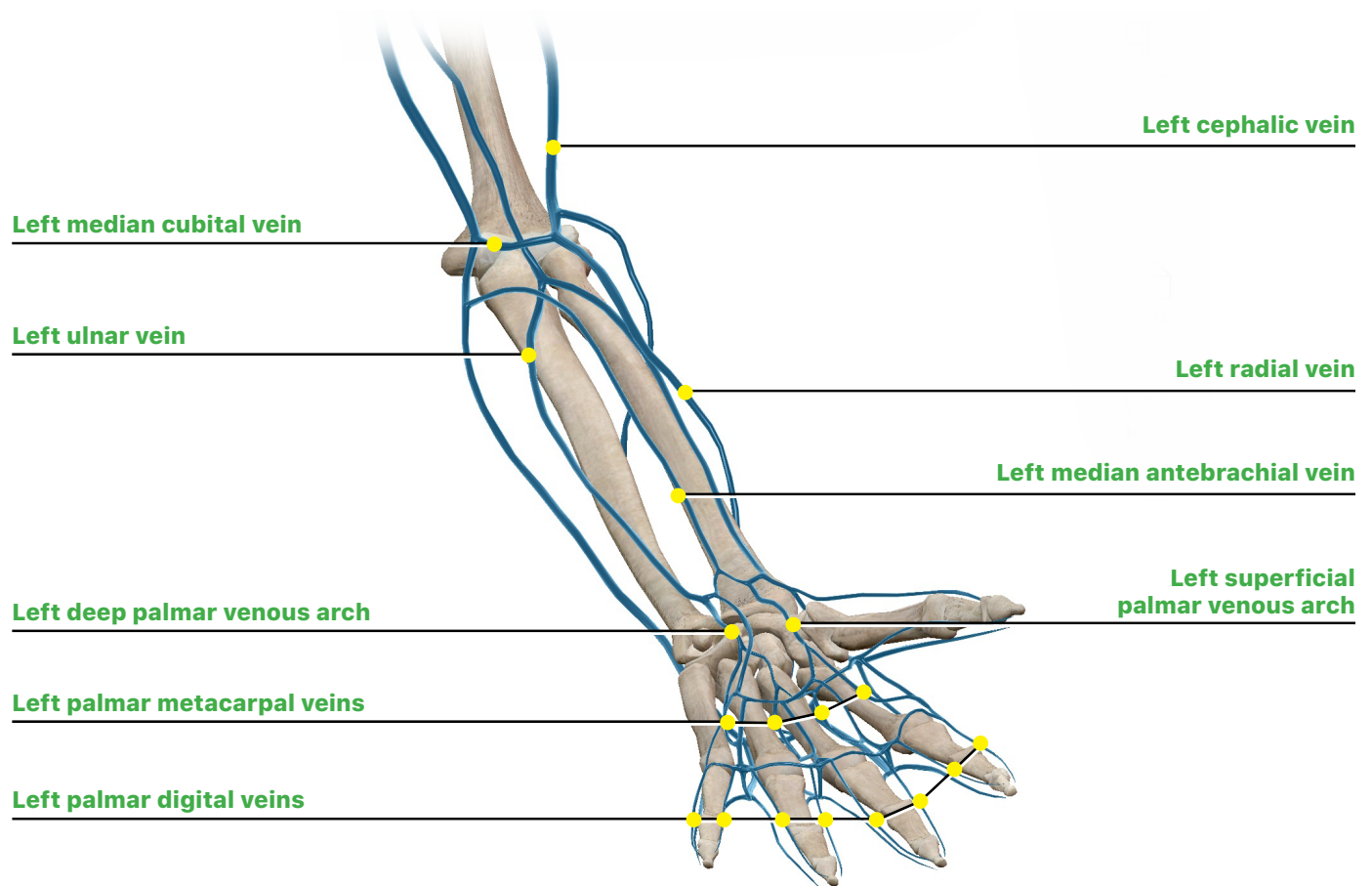


| Vein       | Continuation of the/begins at: | Empties into/becomes the: |
|------------|--------------------------------|---------------------------|
| Subclavian |                                |                           |
| Axillary   |                                |                           |
| Brachial   |                                |                           |
| Basilic    |                                |                           |



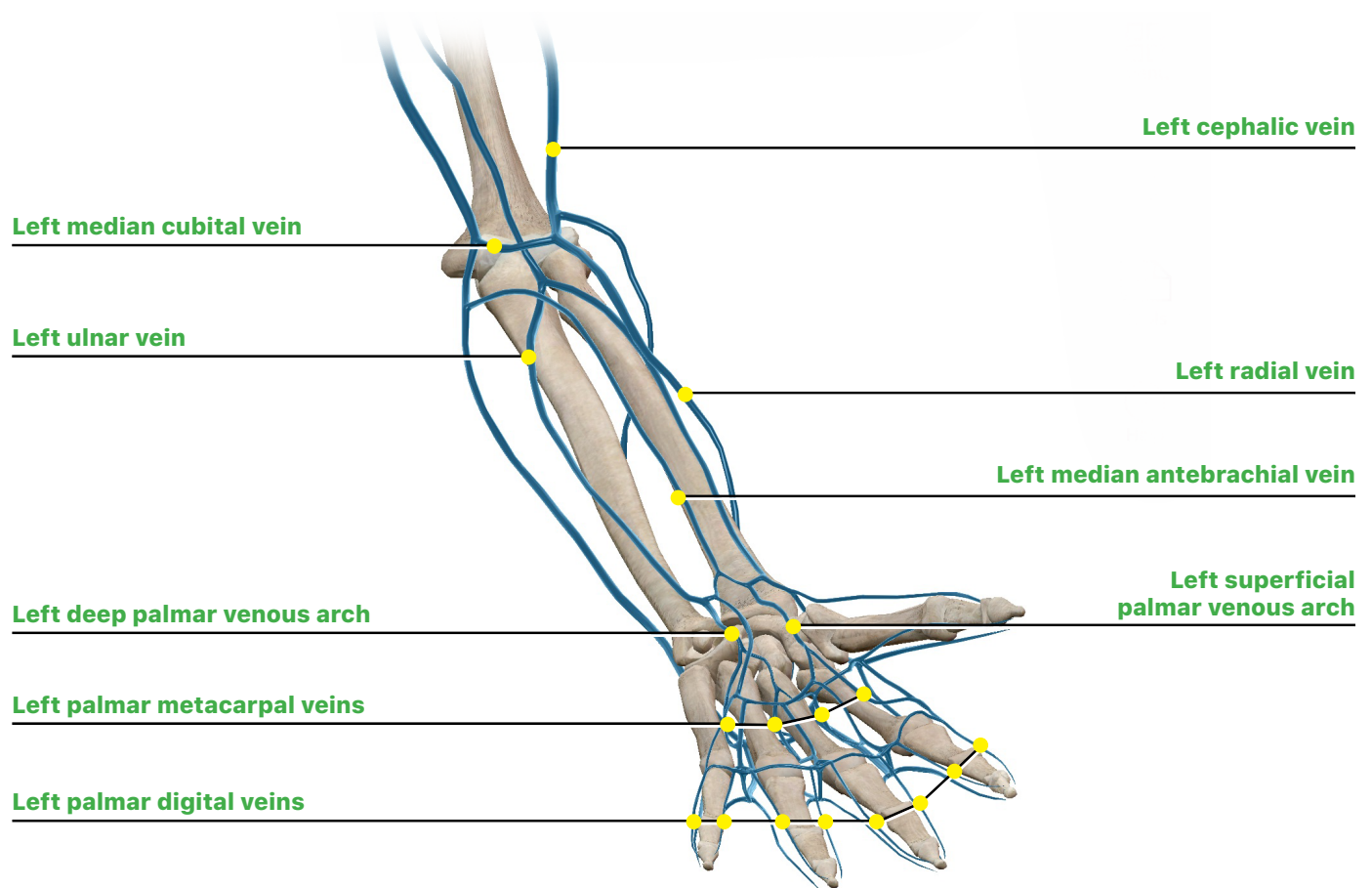


2. Explore the 3D anatomical view in Module 30.46 Veins of the Upper Limb II and complete the following table.



| Vein                  | Continuation of the/begins at: | Empties into/becomes the: |
|-----------------------|--------------------------------|---------------------------|
| <b>Cephalic</b>       |                                |                           |
| <b>Median cubital</b> |                                |                           |
| <b>Ulnar</b>          |                                |                           |
| <b>Radial</b>         |                                |                           |

3. Explore the 3D anatomical view in Module 30.46 Veins of the Upper Limb II and answer the following questions.

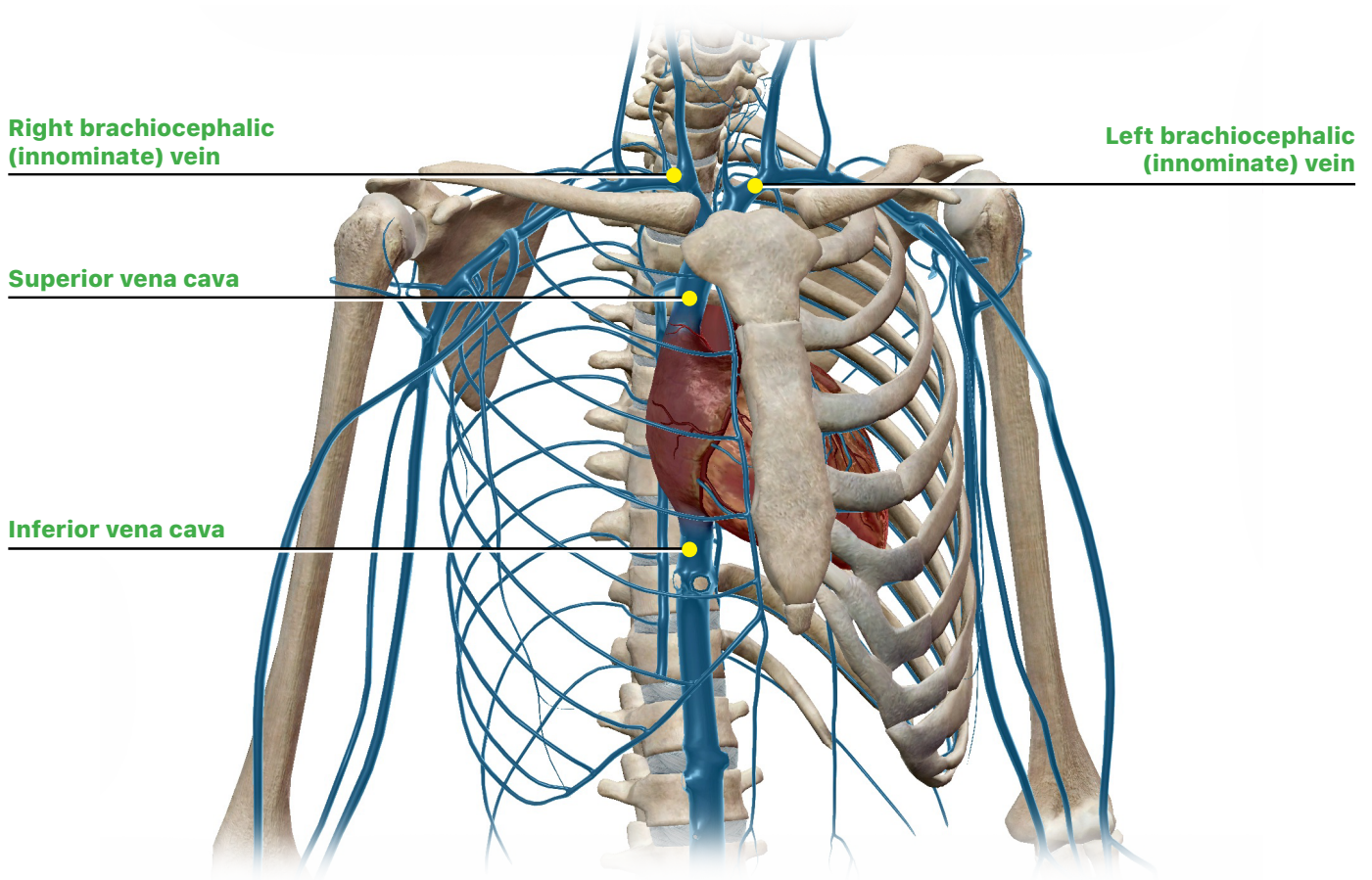


- Which veins from the left-side menu are found, at least in part, in the wrist?
- Which of these veins travels through the fingers?
- Which of these veins is found only in the palm?

## **K. Veins of the Thorax and Abdomen**

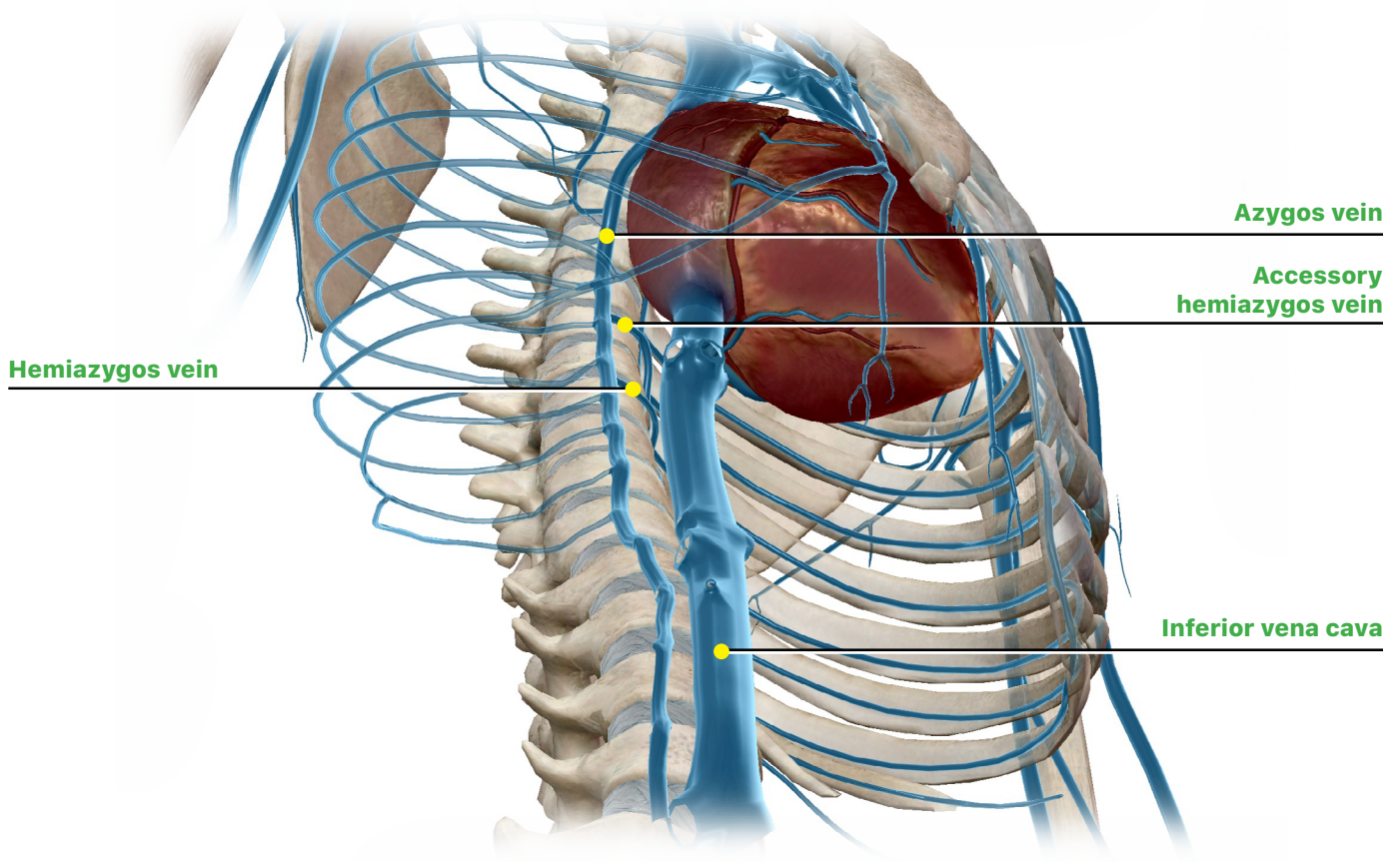
1. Explore the 3D anatomical view in Module 30.49 Veins of the Thorax II. Compare the veins in the module to the arteries in Module 30.28 Arteries of the Thorax II. These are example of **paired veins and arteries**. What is the difference between paired vessels and unpaired vessels?

**Paired arteries and veins are found together, whereas unpaired vessels do not have a counterpart.**





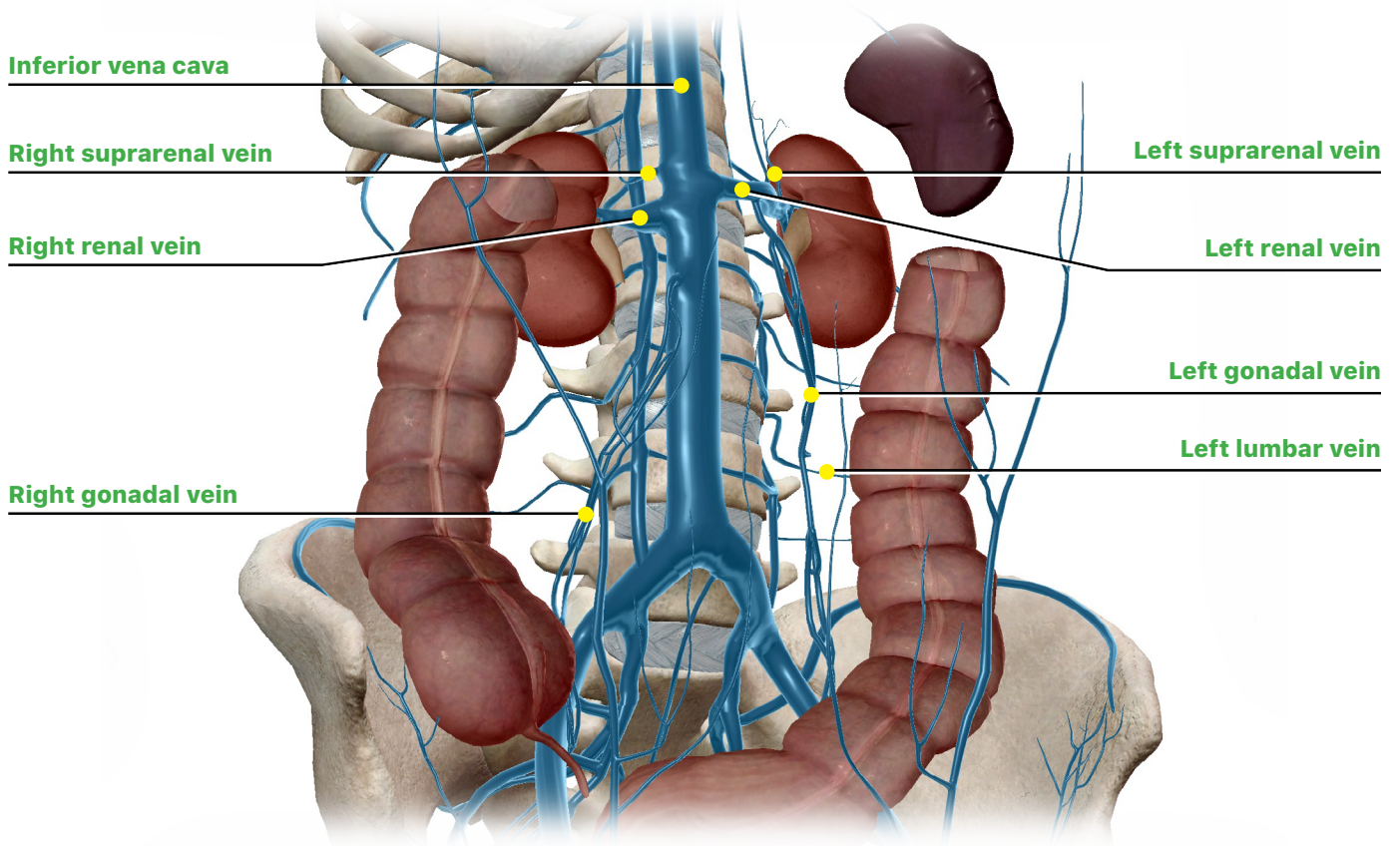
2. Explore the 3D anatomical view in Module 30.50 Azygos System and answer the following questions.



- a. The azygos system drains the \_\_\_\_\_.
- b. The **azygos vein** originates from the \_\_\_\_\_. This \_\_\_\_\_ vein empties into the \_\_\_\_\_.
- c. The **hemiazygos vein** originates in the \_\_\_\_\_ and empties into the \_\_\_\_\_.
- d. The **accessory hemiazygos vein** drains the \_\_\_\_\_ thorax and empties into the \_\_\_\_\_.



3. Explore the 3D anatomical view in Module 30.51 Veins of the Abdomen and complete the following table.

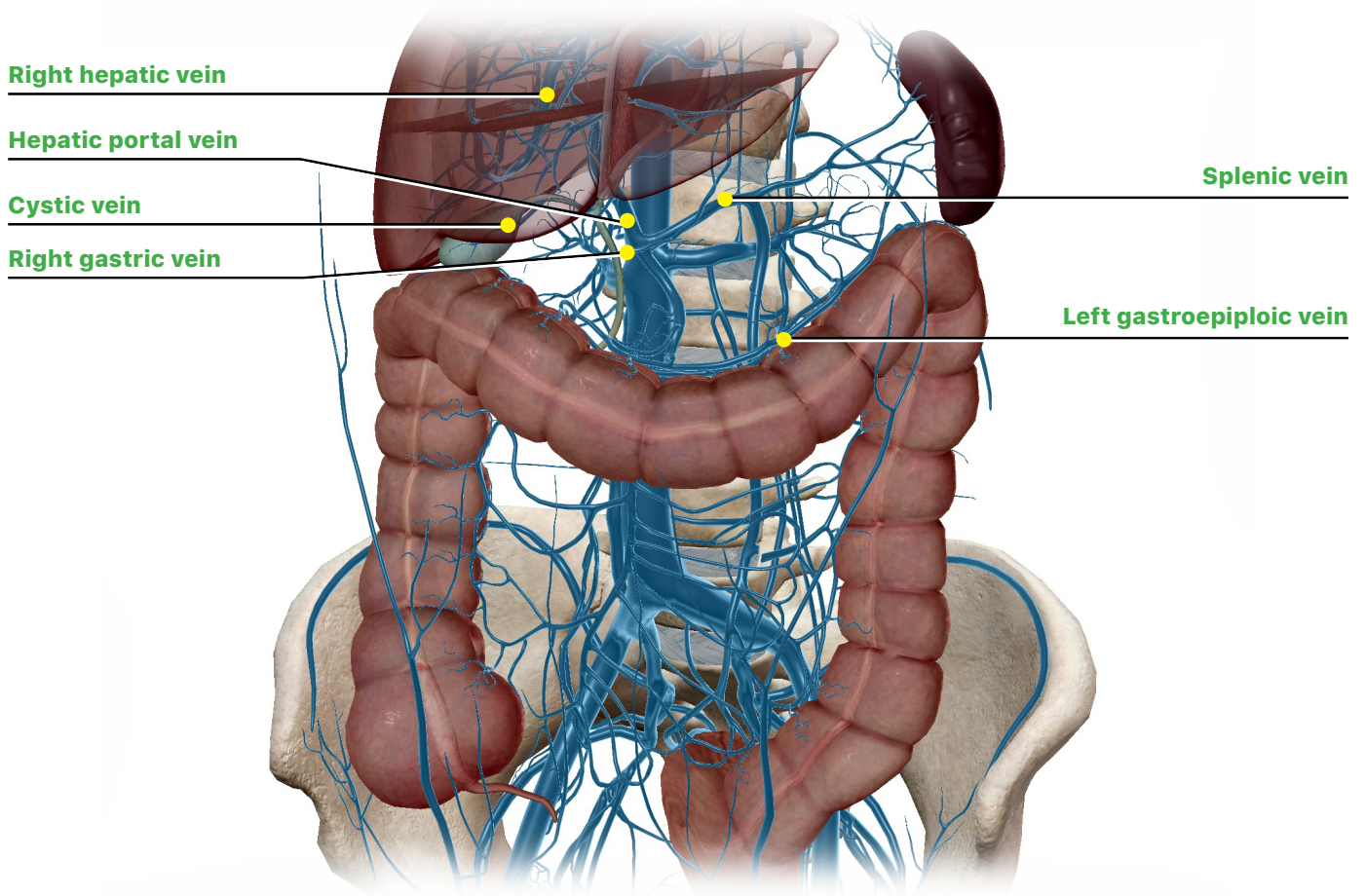


| <b>Vein</b>                   | <b>Originates from/drains:</b> | <b>Empties into the:</b>   |
|-------------------------------|--------------------------------|----------------------------|
| <b>Inferior vena cava</b>     |                                |                            |
| <b>Renal</b>                  |                                |                            |
| <b>Right gonadal</b>          |                                |                            |
| <b>Left gonadal</b>           |                                |                            |
| <b>Right inferior phrenic</b> |                                |                            |
| <b>Left inferior phrenic</b>  |                                | Various, depends on branch |
| <b>Right suprarenal</b>       |                                |                            |
| <b>Left suprarenal</b>        |                                |                            |
| <b>Lumbar</b>                 |                                |                            |





4. Explore the 3D anatomical view in Module 30.52 Hepatic Portal System and answer the following questions.



a. A **portal system** is a system of vessels that takes blood from one set of capillary beds to another without passing through the heart. The **hepatic portal system** takes blood from the digestive system directly to the capillary beds in the liver without going to the heart first. Why do you think that blood from the intestines should go directly to the liver?

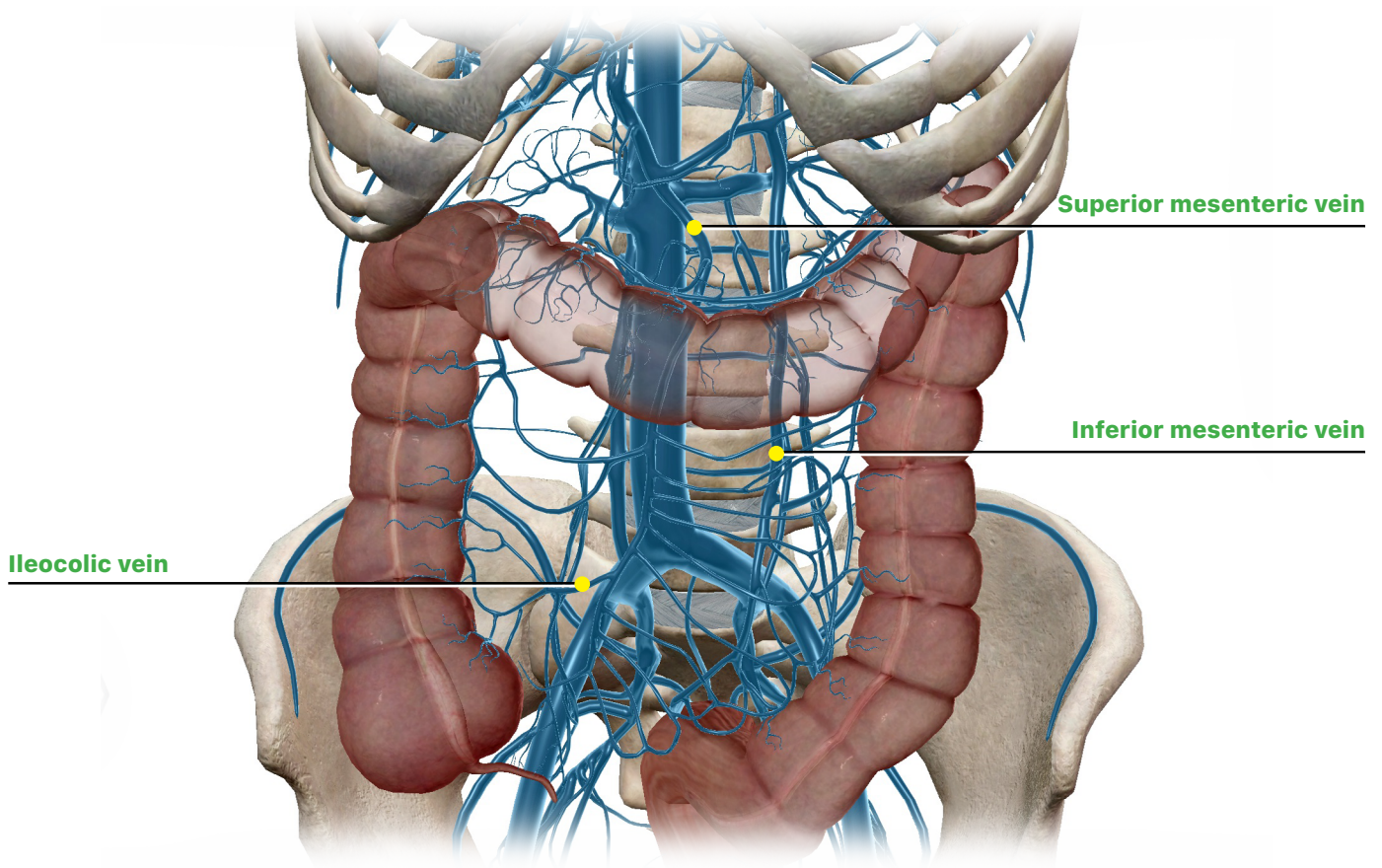
b. Most of the blood entering the hepatic portal system comes from the intestines, but there are other branches as well. Which organs are drained by each of the following vessels of the hepatic portal system?

- i.
- ii.
- iii.

c. Find the **spleen** in this module, select it, and use the book icon to read the definition. Why do you think blood draining from the spleen is sent directly to the liver?



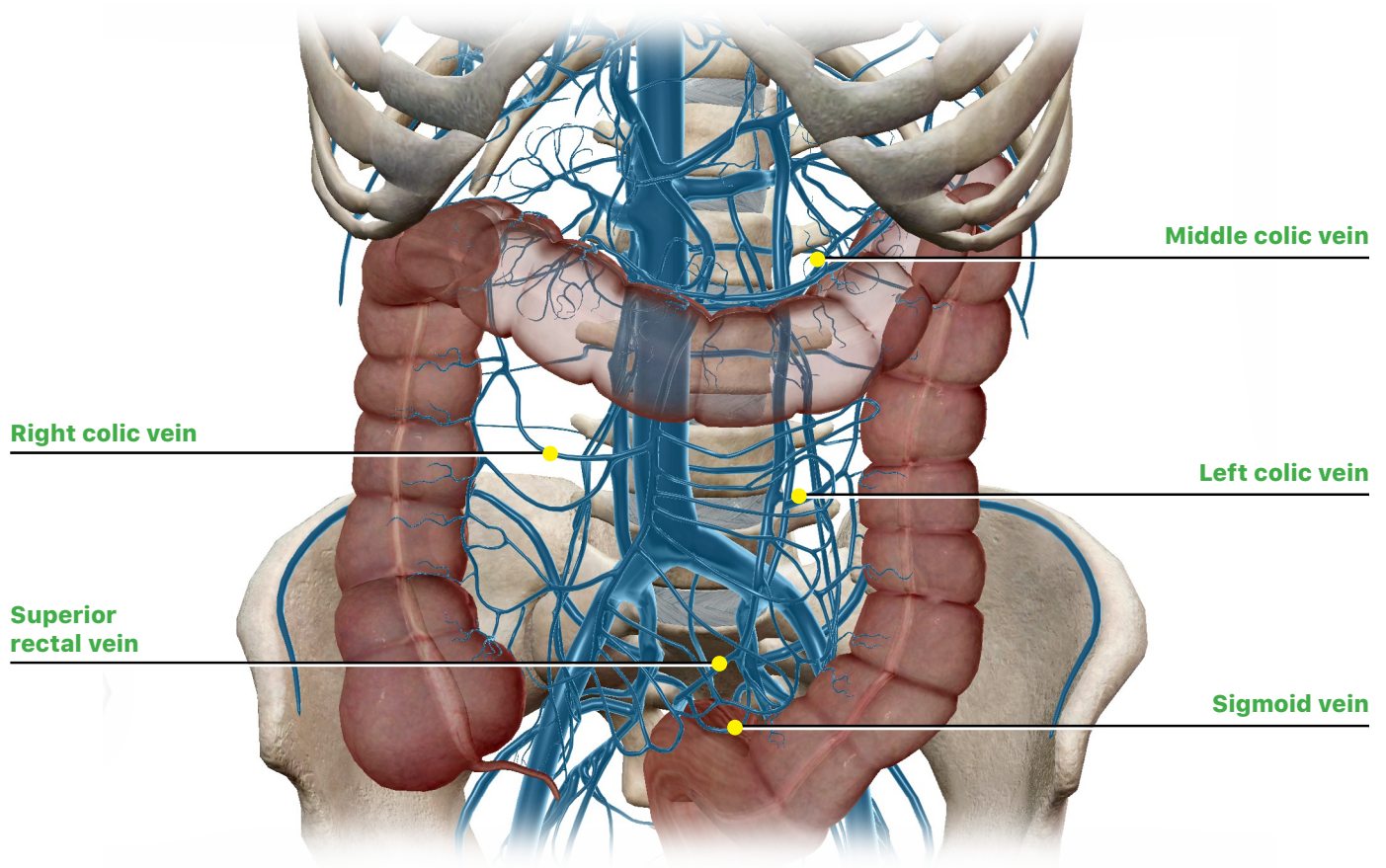
5. Explore the 3D anatomical view in Module 30.53 Veins of the Intestines I and answer the following question.



- a. The veins draining the intestines carry absorbed food and other products that are sent to the liver for processing. What parts of the intestines are drained by each of the following veins?
- -



6. Explore the 3D anatomical view in Module 30.54 Veins of the Intestines II and answer the following question.

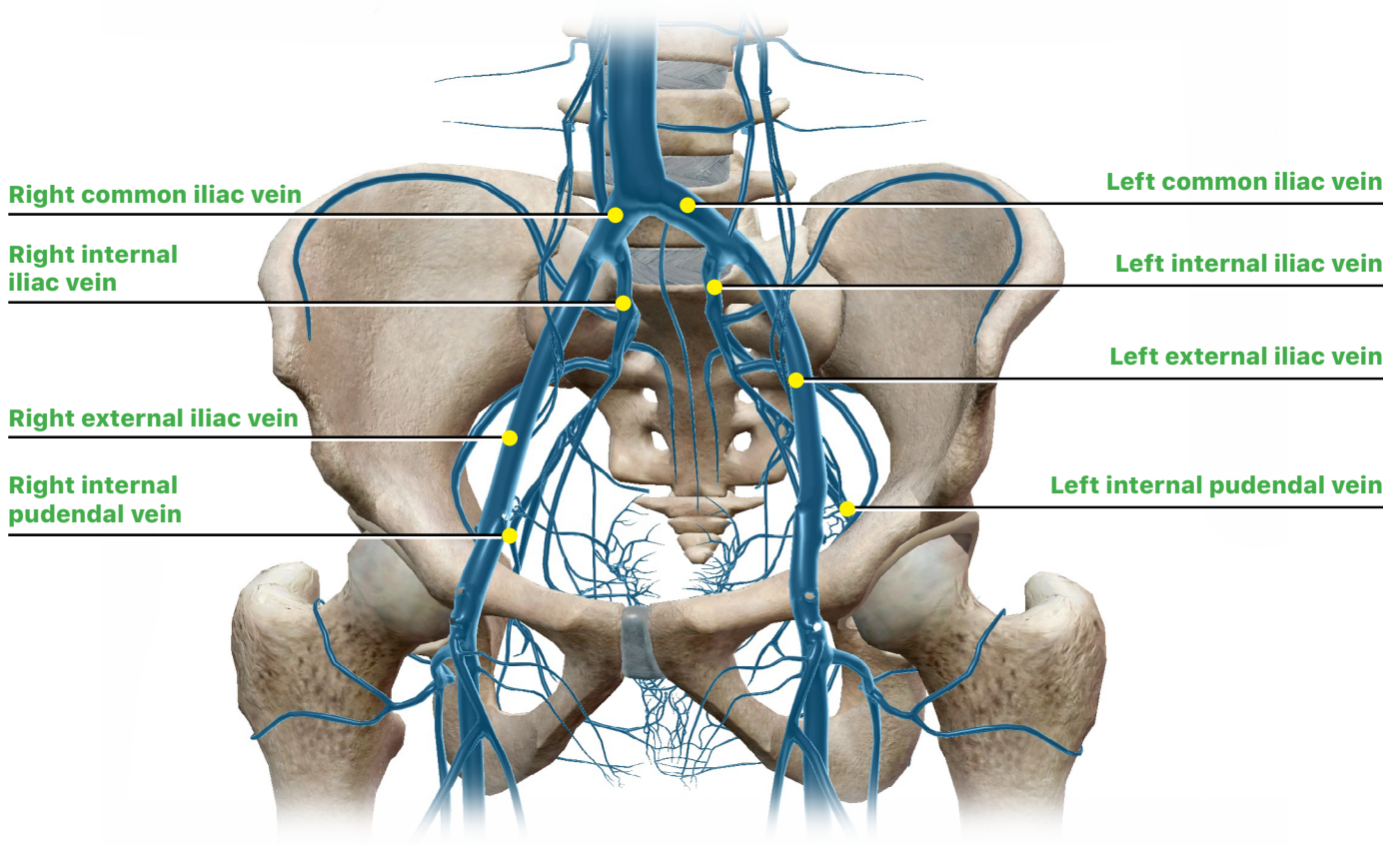


- a. What parts of the intestines are drained by each of the following veins?
- i.
  - ii.
  - iii.
  - iv.
  - v.



## **L. Veins of the Pelvis and Lower Limb**

1. Explore the 3D anatomical view in Module 30.55 Veins of the Pelvis I and answer the following questions.



a. Which regions are drained by each of the following veins?

i.

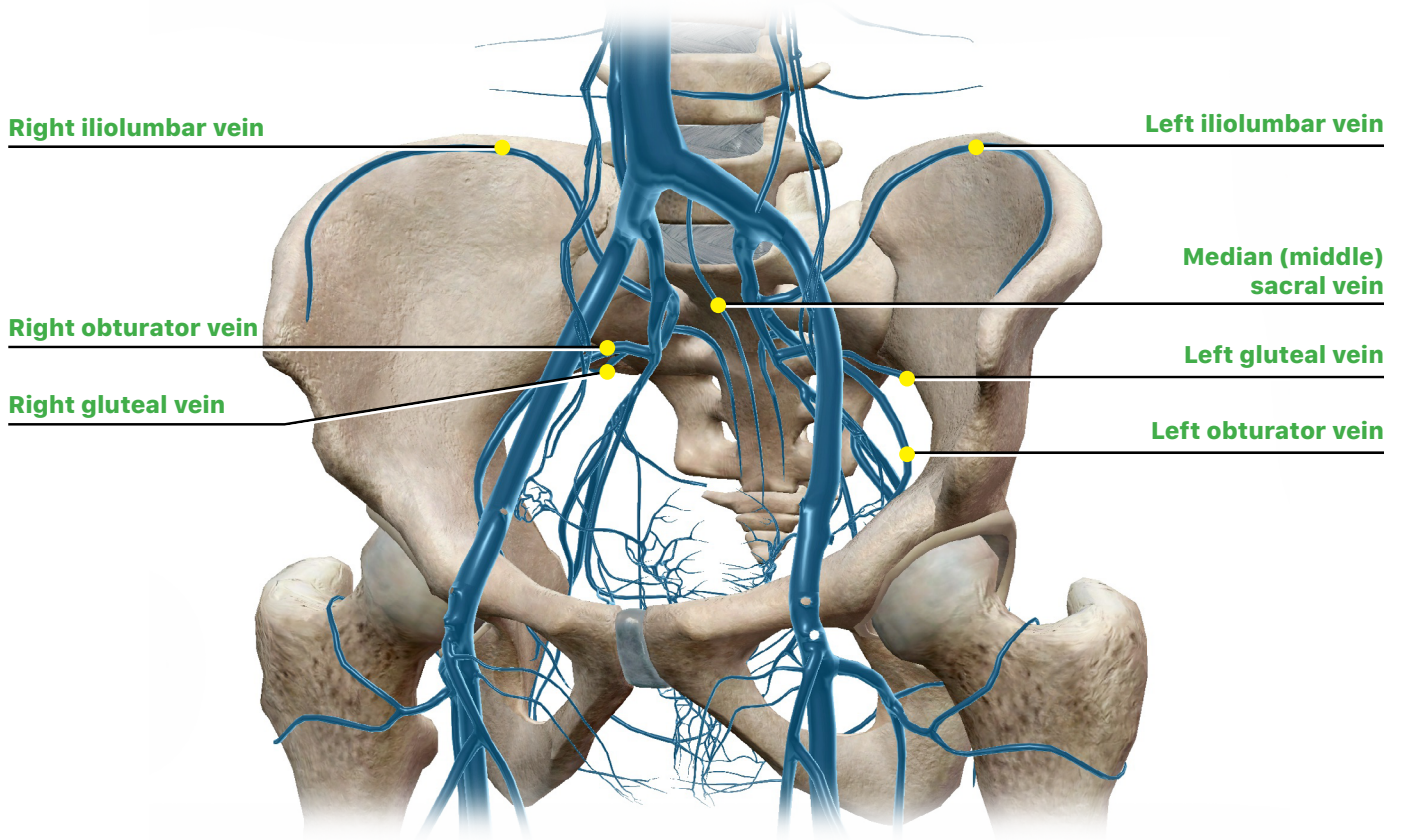
ii.

iii.

b. The left and right \_\_\_\_\_ join to form the inferior vena cava.



2. Explore the 3D anatomical view in Module 30.56 Veins of the Pelvis II and answer the following question.

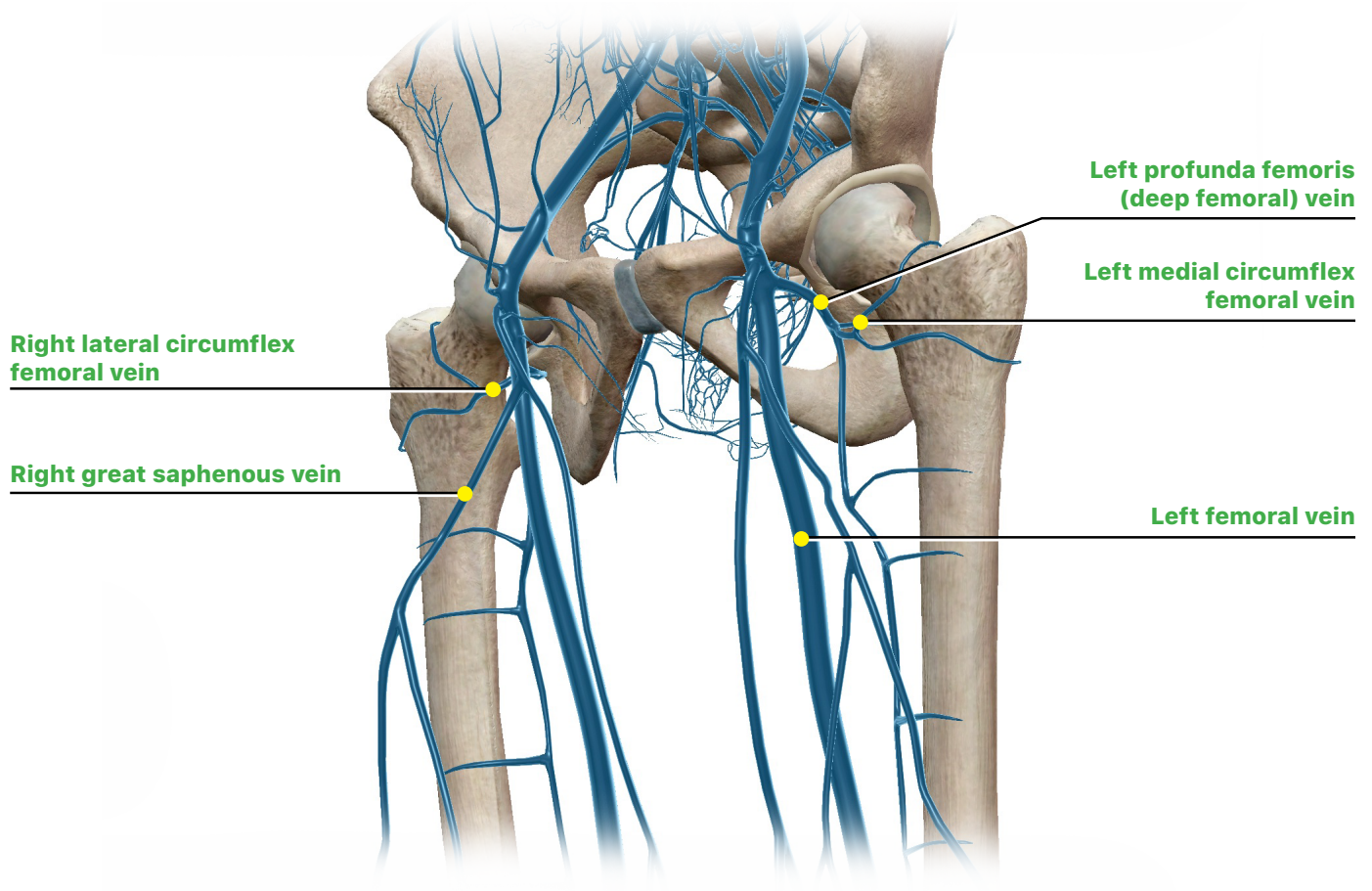


a. View the four veins in this module and compare them with the arteries in Module 30.36 Arteries of the Pelvis II (formerly 30.35). Which arteries are paired with each of the following veins?

- i.
- ii.
- iii.



3. Explore the 3D anatomical view in Module 30.57 Veins of the Upper Leg and answer the following questions.

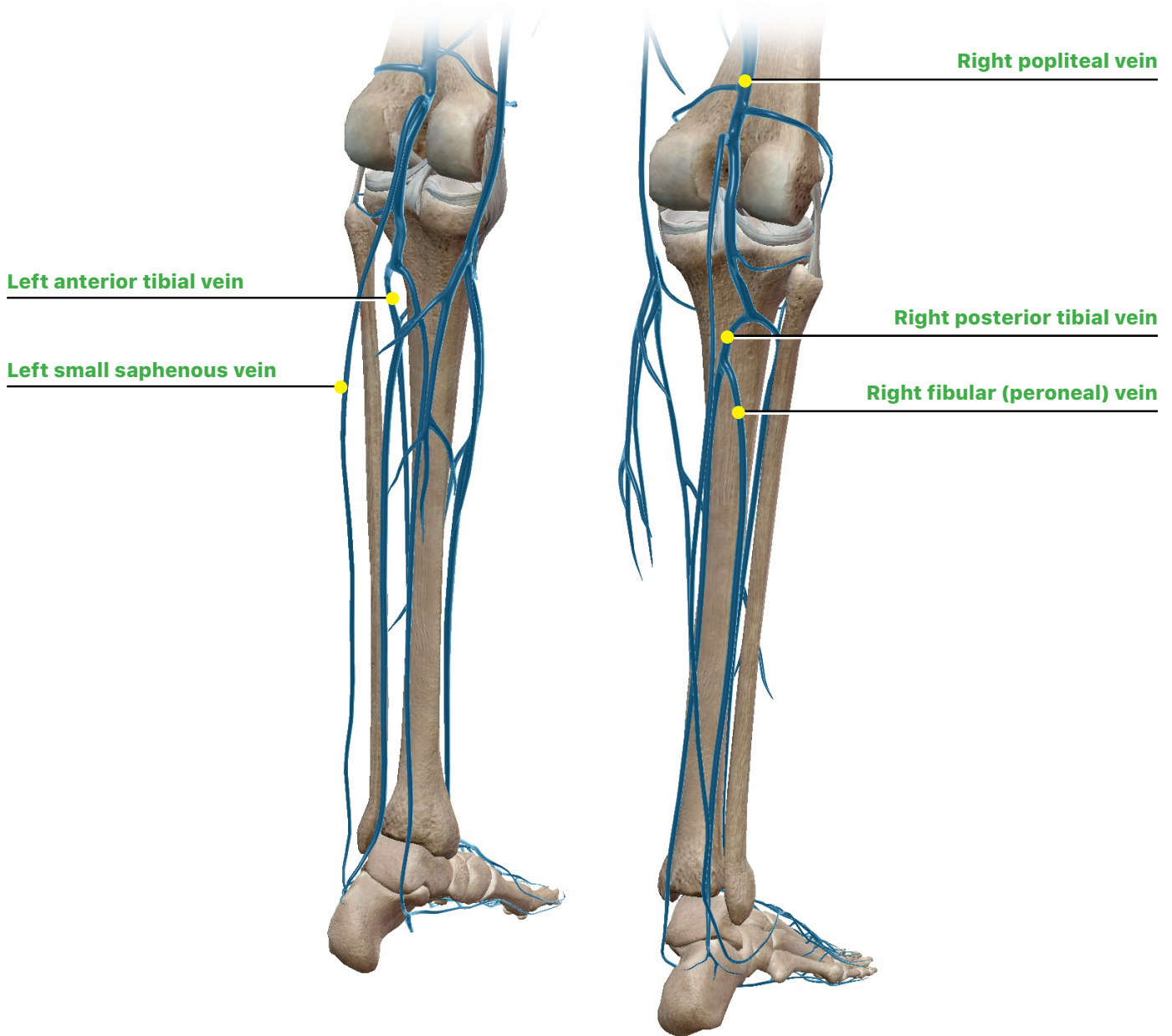


- Which is the largest vein in the upper leg?
- Which veins drain the head of the femur?
- Which vein drains the calf region of the lower leg?



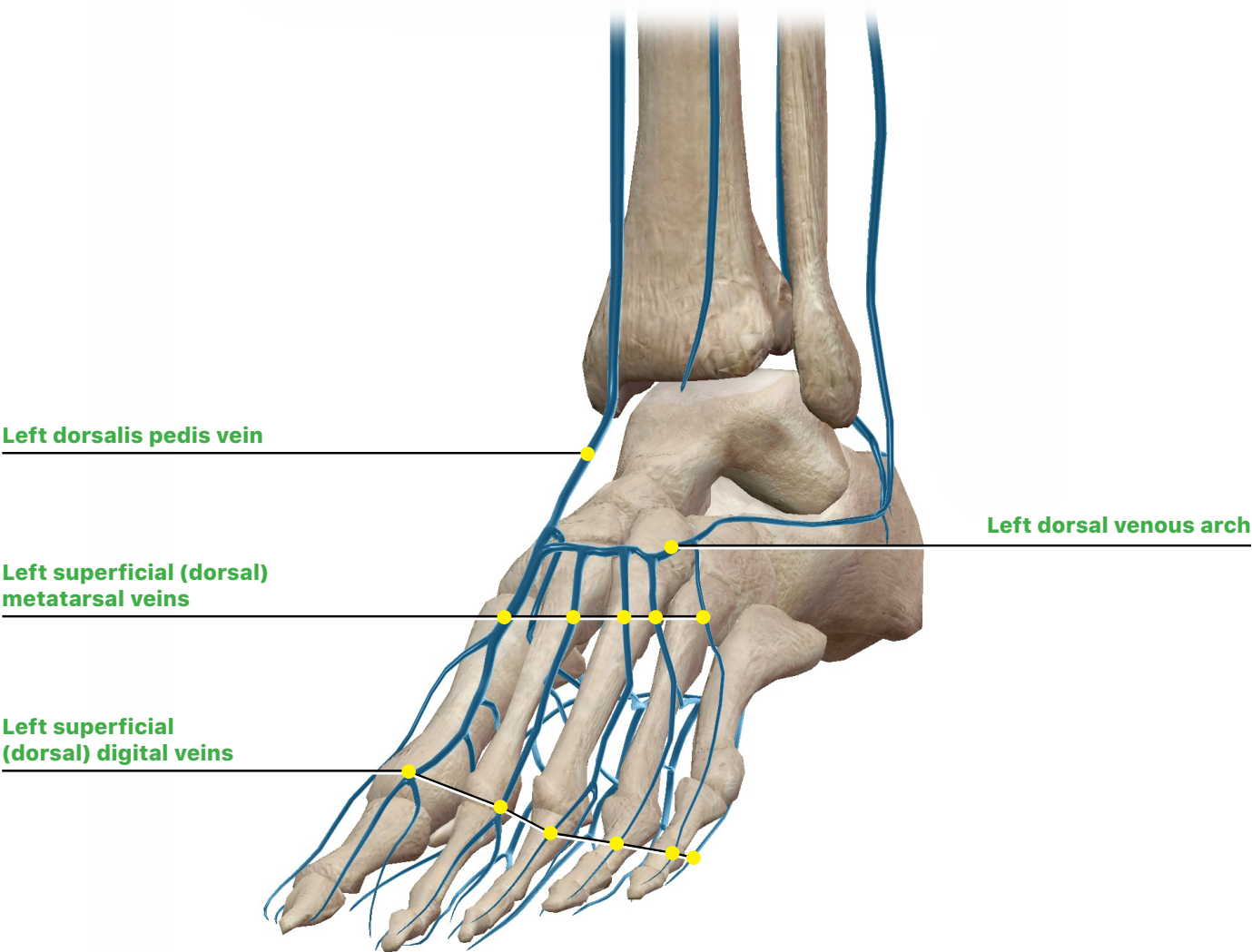


4. Explore the 3D anatomical view in Module 30.58 Veins of the Lower Leg and answer the following questions.



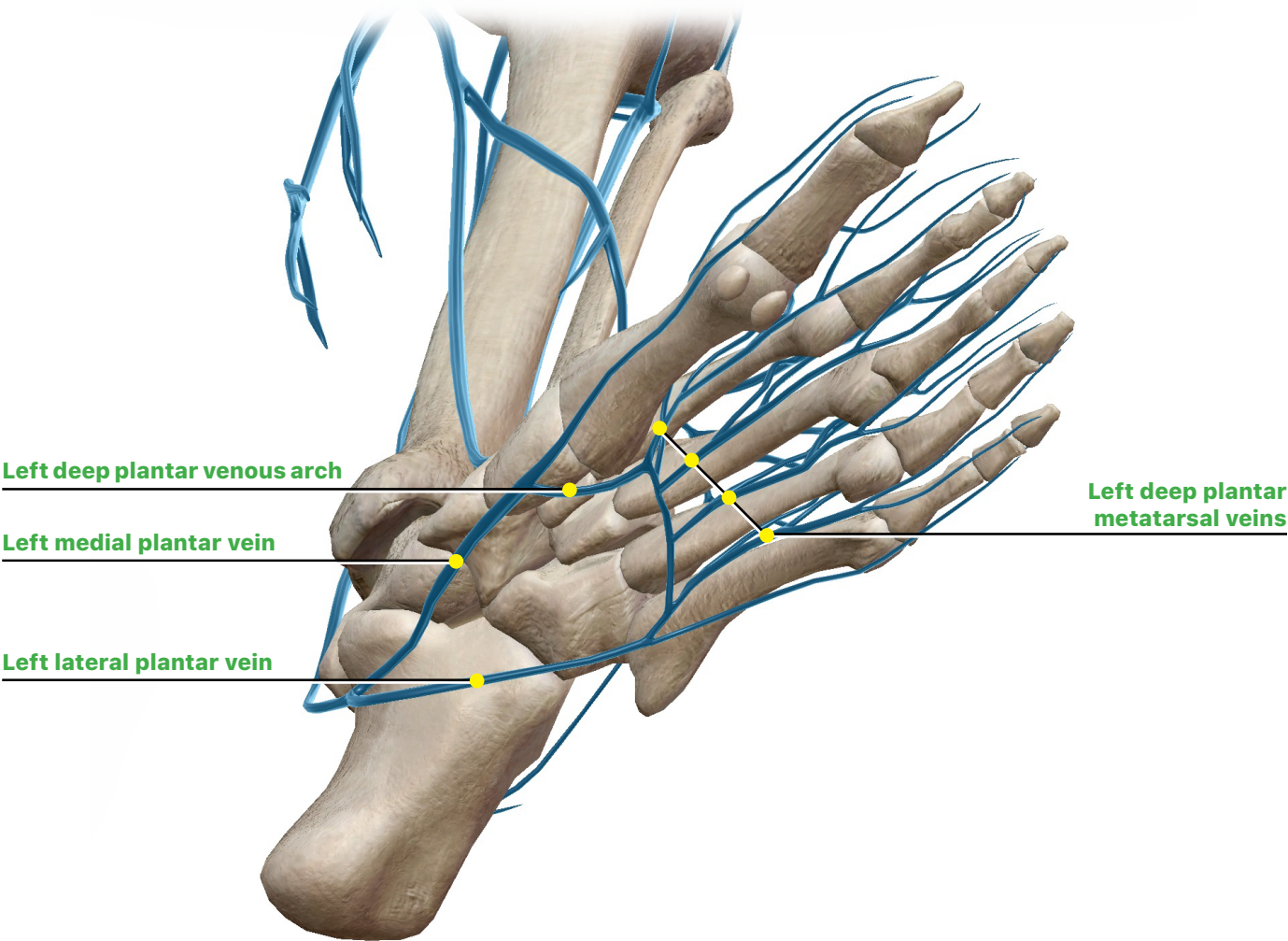
- Which vein travels through the popliteal fossa, in the back of the knee?
- What is the longest vein in the body?
- Which vein drains the calcaneus?
- Which two veins join to form the popliteal vein?

5. Explore the 3D anatomical view in Module 30.59 Dorsal Veins of the Foot and match the veins to their regions in the following table.



| Veins | Region                             |
|-------|------------------------------------|
|       | Dorsal talus                       |
|       | Lateral cuneiform and cuboid bones |
|       | Dorsal foot—metatarsals            |
|       | Toes                               |

6. Explore the 3D anatomical view in Module 30.60 Plantar Veins of the Foot and match the veins to their regions in the following table.



| Veins | Region                                  |
|-------|---|
|       | Transverse arch of the foot             |
|       | Ventral foot—metatarsals                |
|       | Navicular, talus, and calcaneus         |
|       | Calcaneus, cuboid, and fifth metatarsal |

### **PUTTING IT ALL TOGETHER**

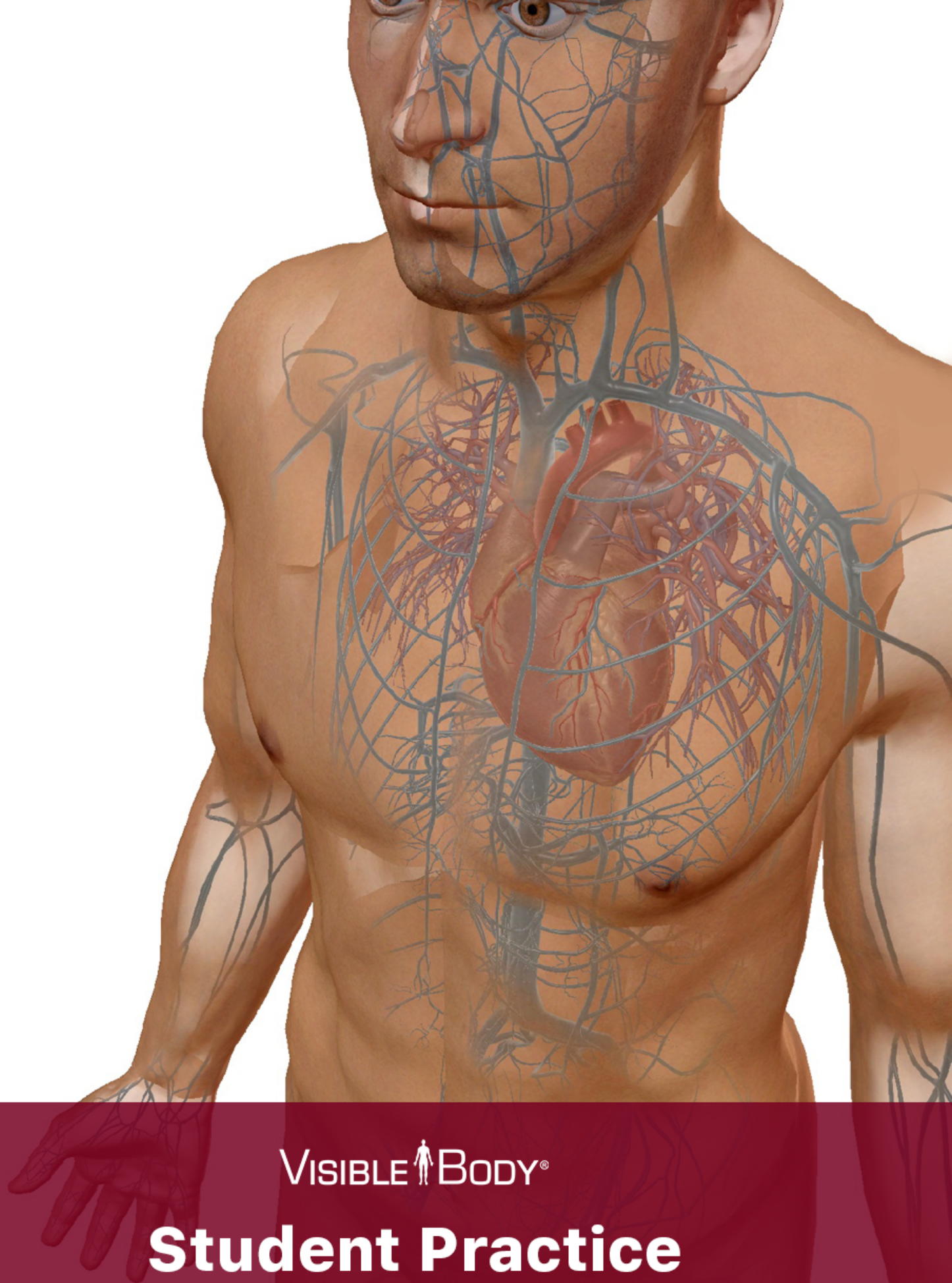
1. Compare the walls of arteries and veins, listing and describing each layer.
2. Explain why veins may distend to become varicose veins. Why doesn't this happen in arteries?
3. Which organs are mainly responsible for the maintenance of blood (chemical) homeostasis?

### **TIME TO PRACTICE!**

**[GO TO THE QUIZZES MENU AND COMPLETE CIRCULATORY SYSTEM QUIZ 30.B](#)**





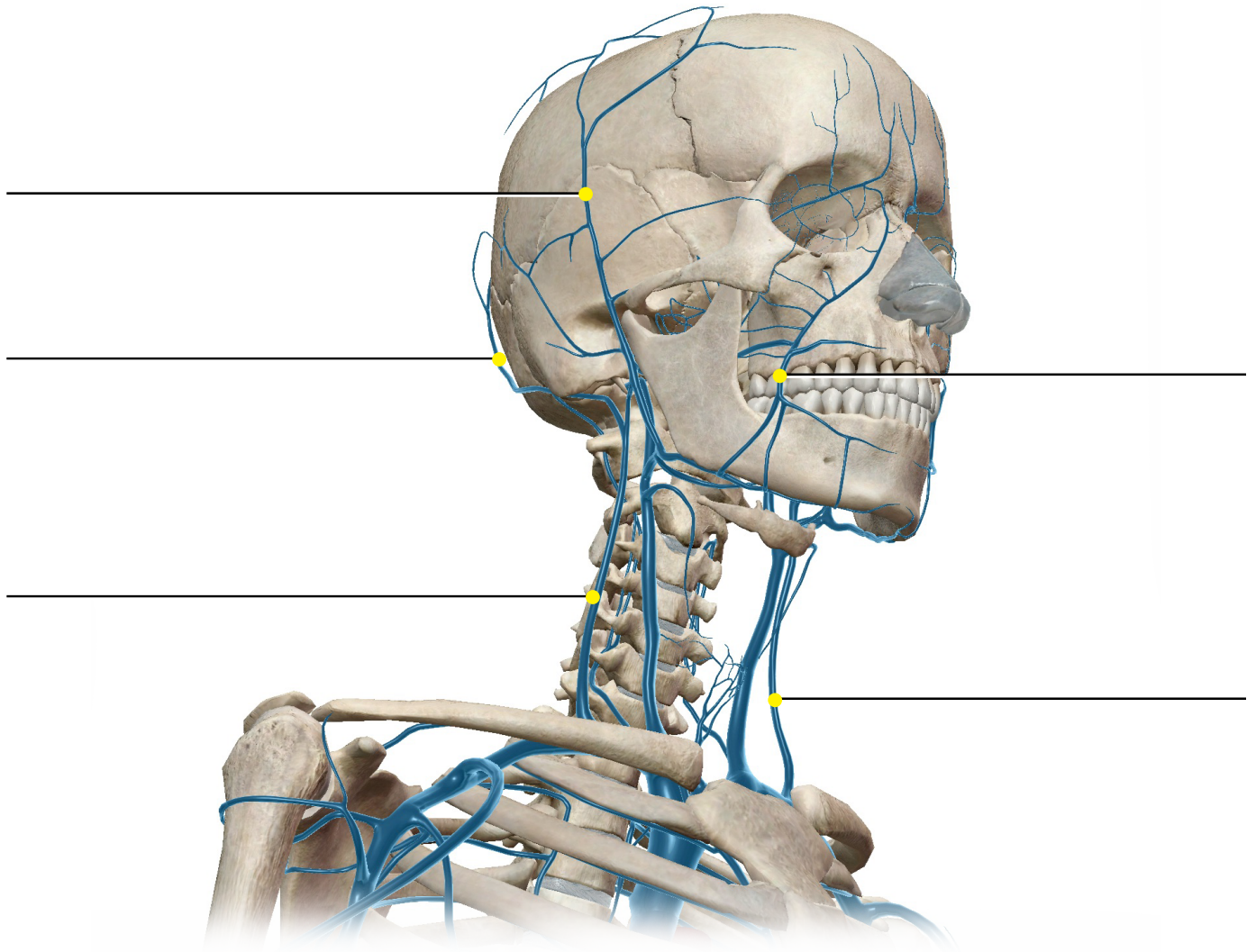


VISIBLE  BODY®

# Student Practice

Label the structures in the following figures.

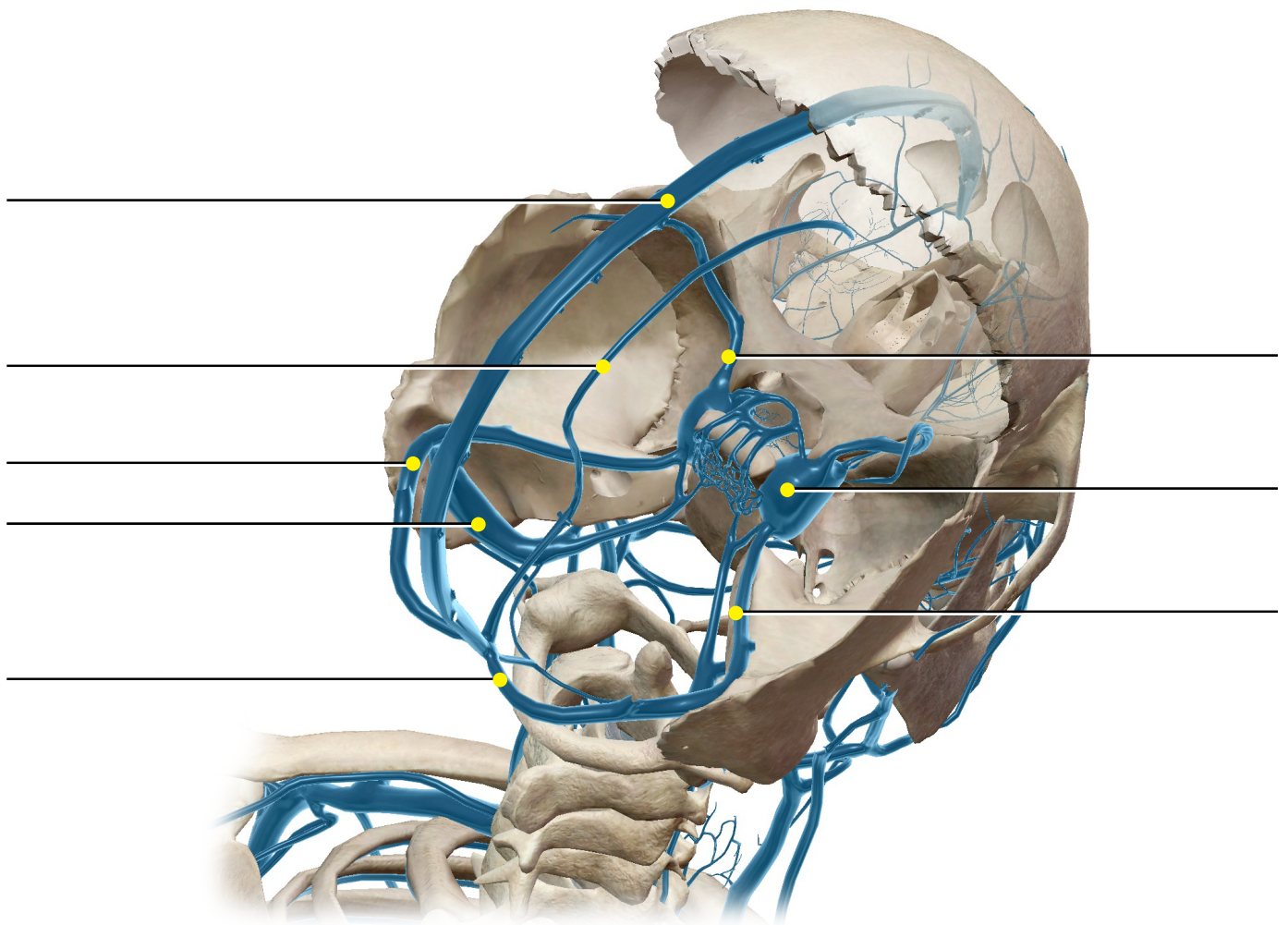
## **Module 30.41 Superficial Veins of the Head and Neck**





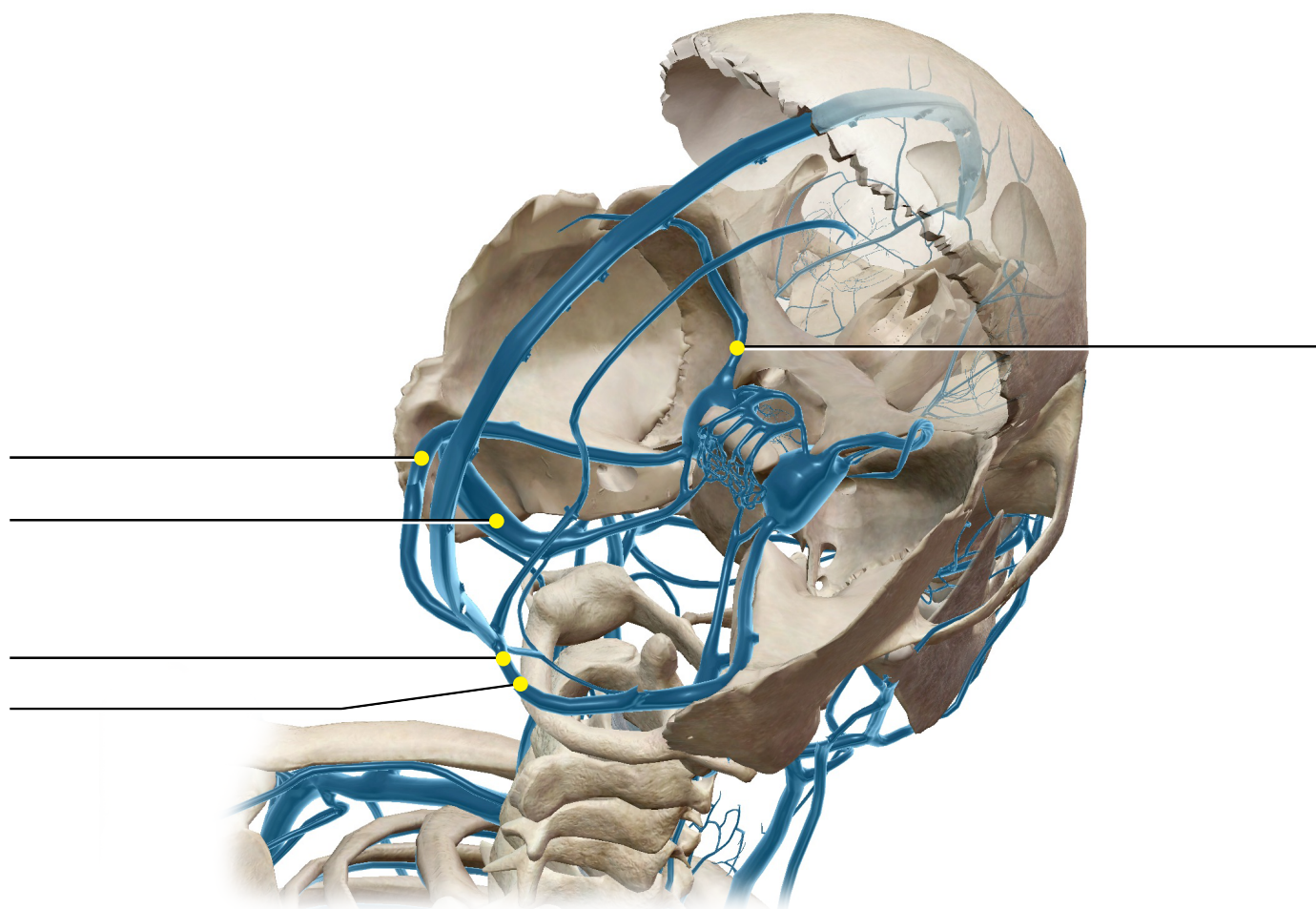


## **Module 30.43 Venous Sinuses I**

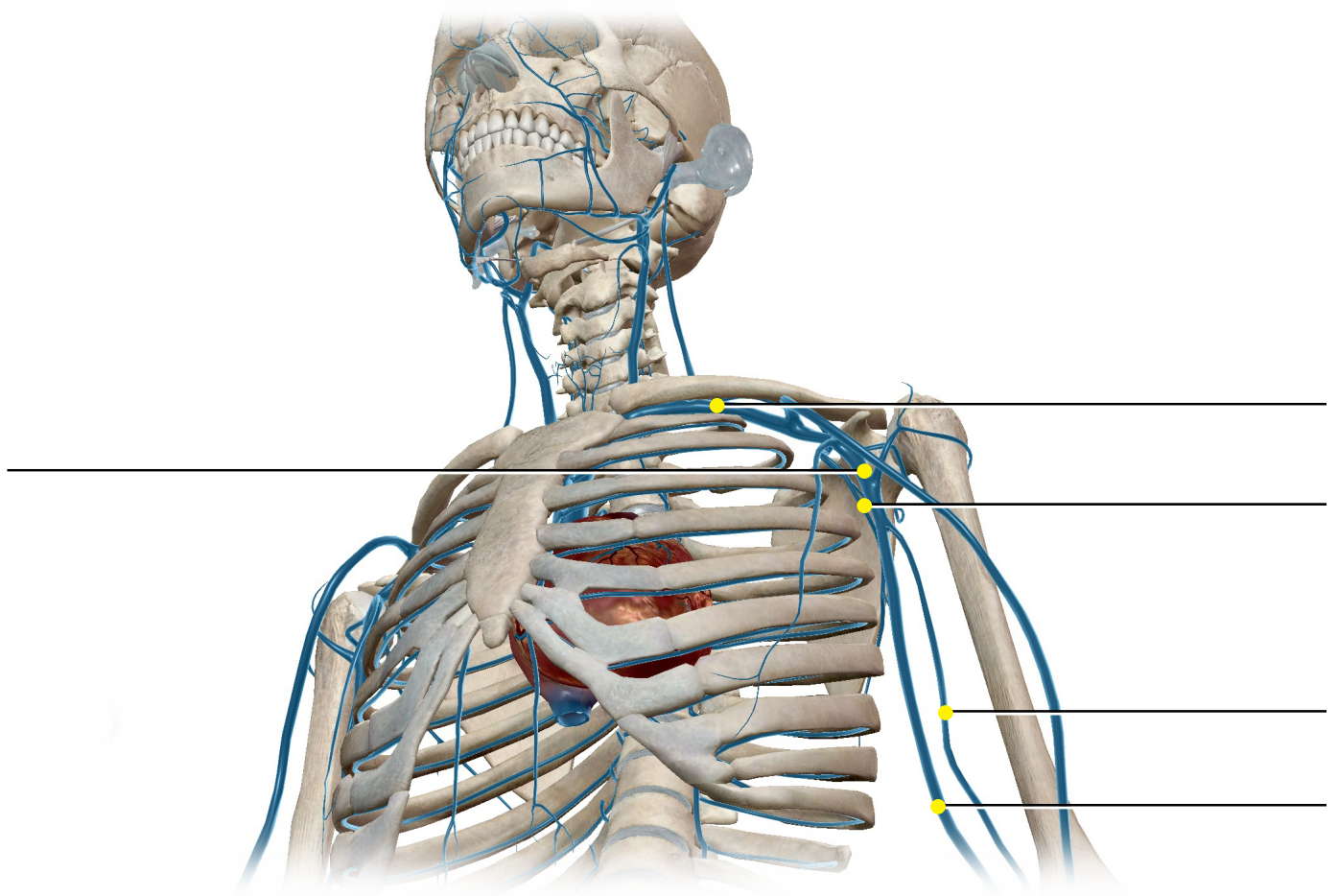




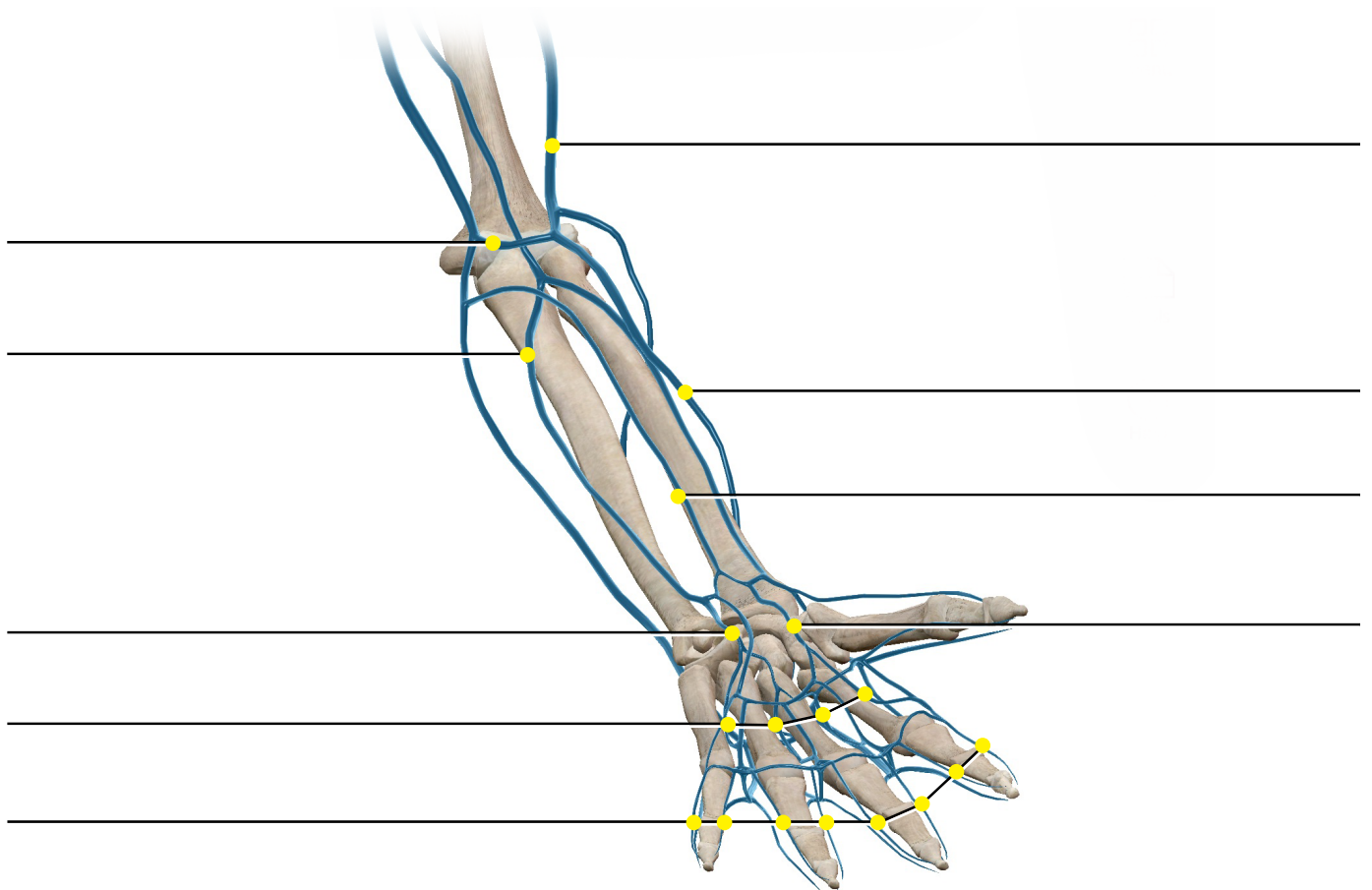
## **Module 30.44 Venous Sinuses II**



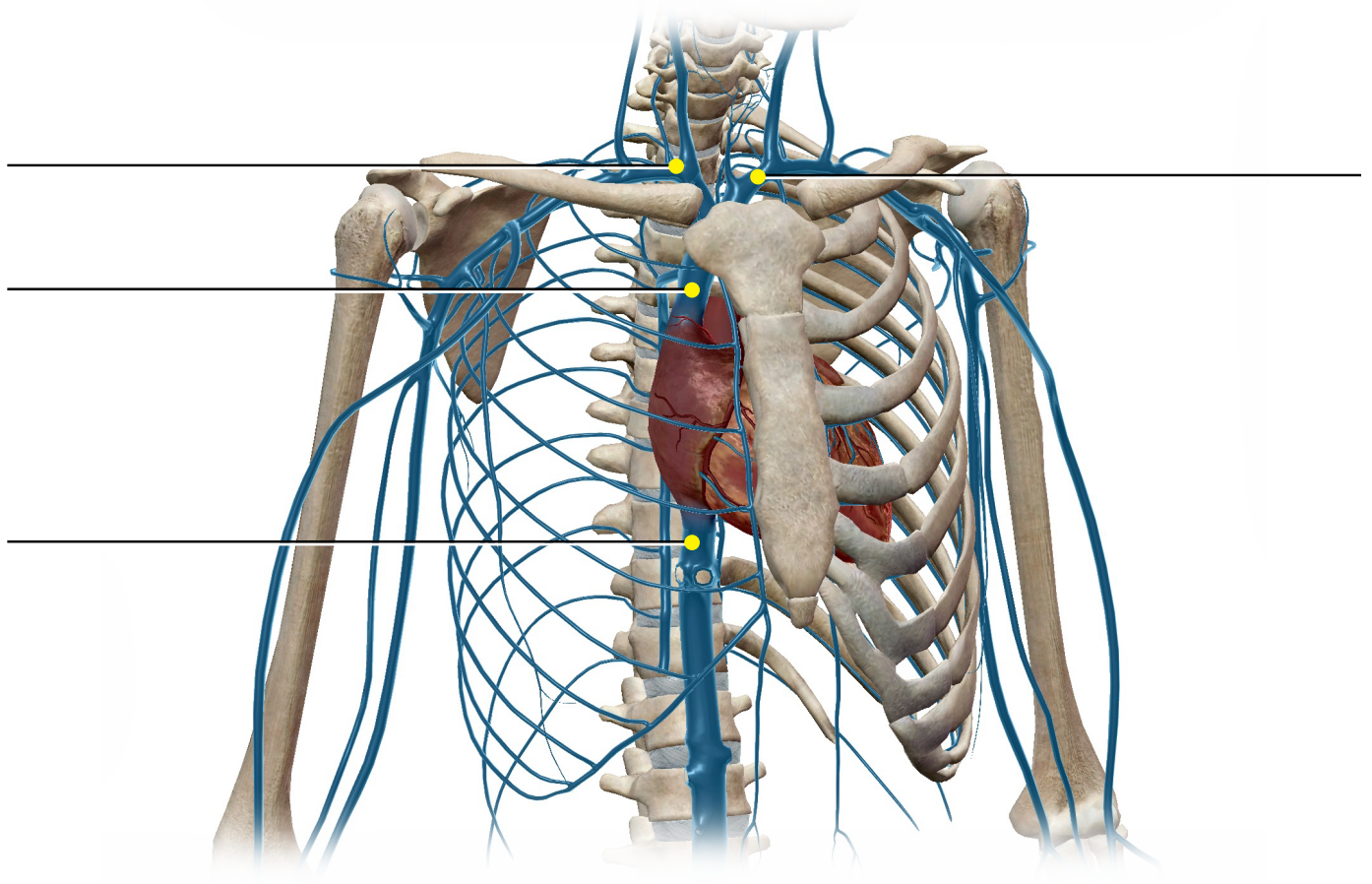
## **Module 30.45 Veins of the Upper Limb I**



## **Module 30.46 Veins of the Upper Limb II**

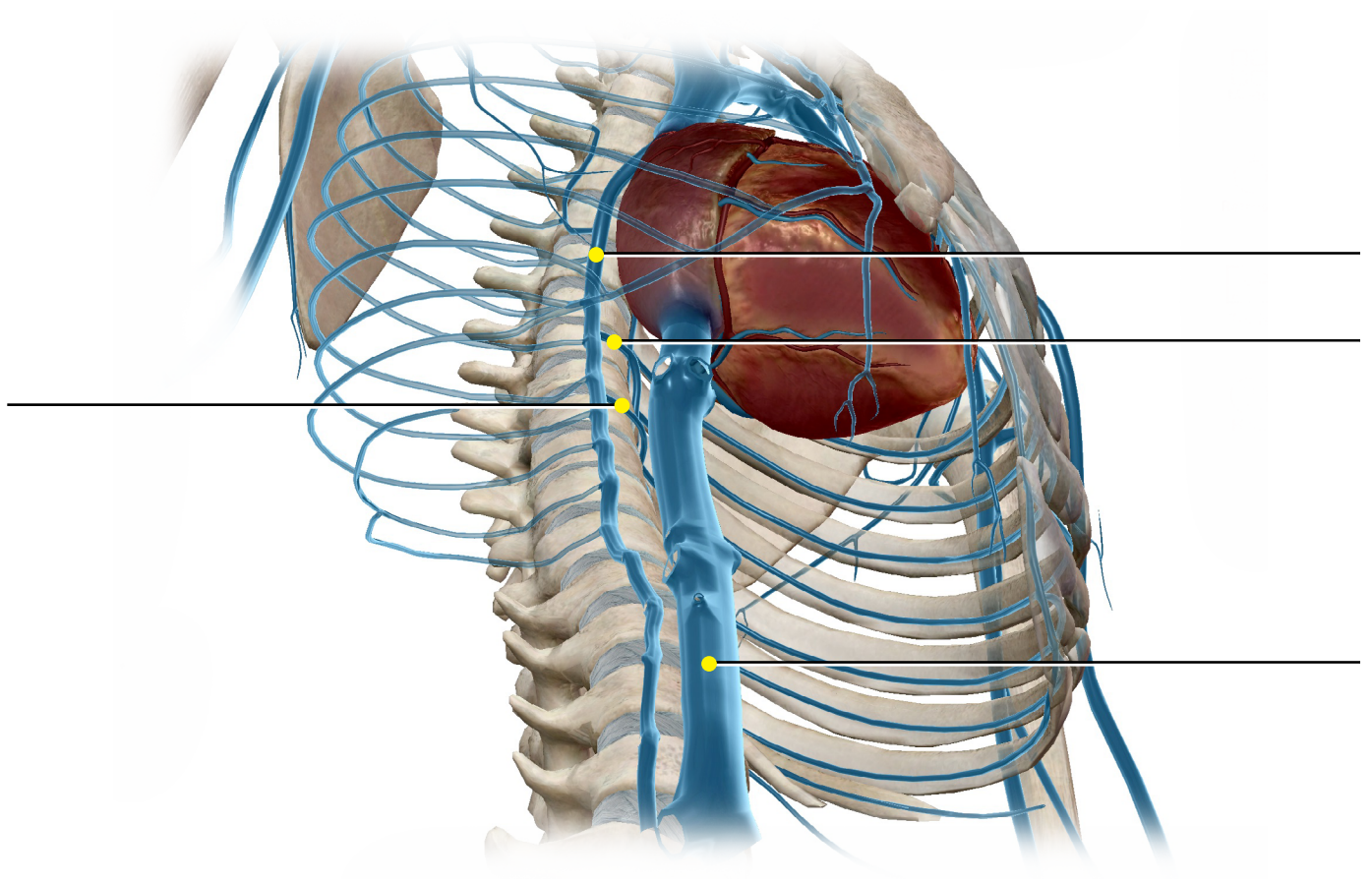


## **Module 30.48 Veins of the Thorax I**



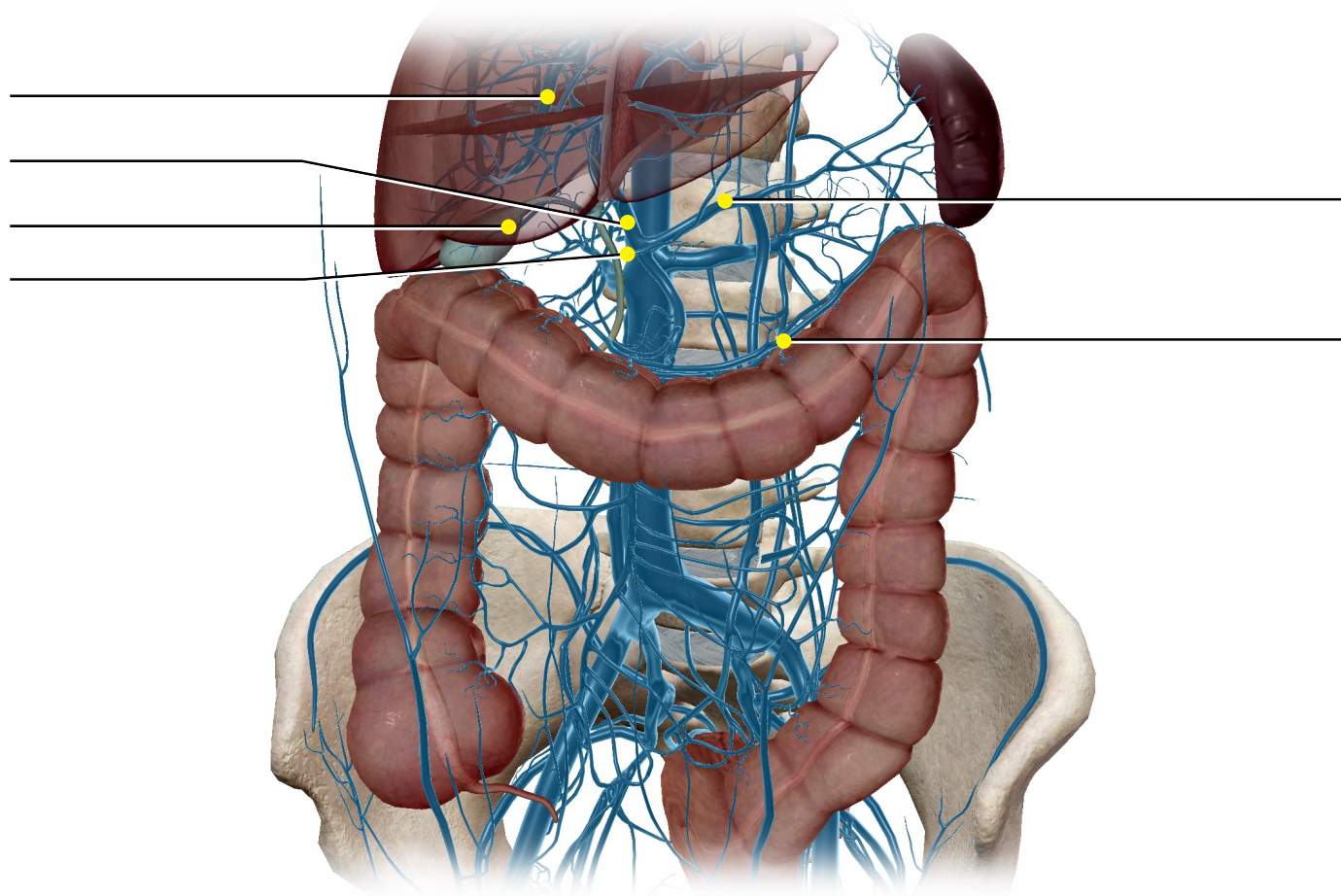


## **Module 30.50 Azygos System**



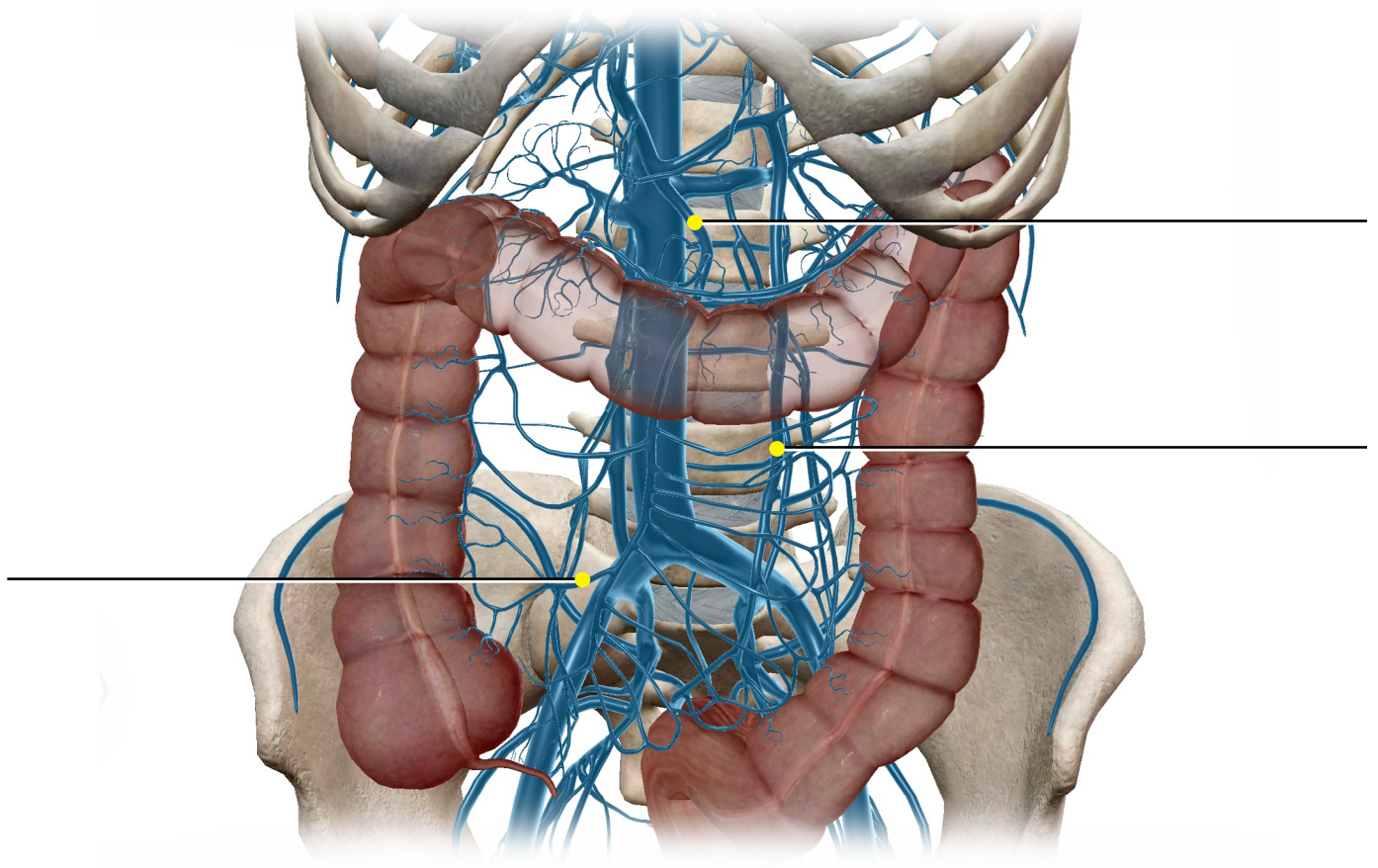


## **Module 30.52 Hepatic Portal System**



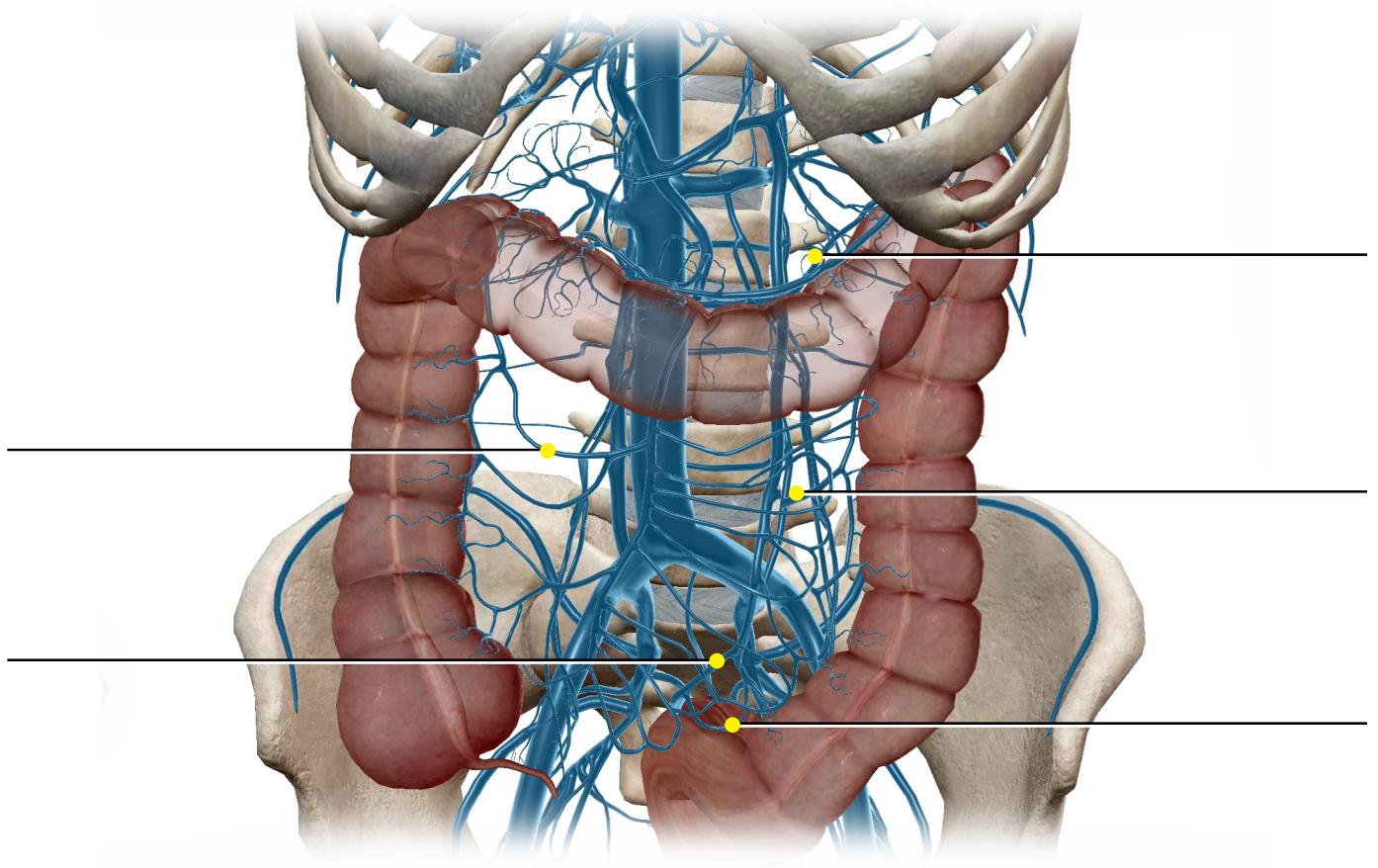


### **Module 30.53 Veins of the Intestines I**

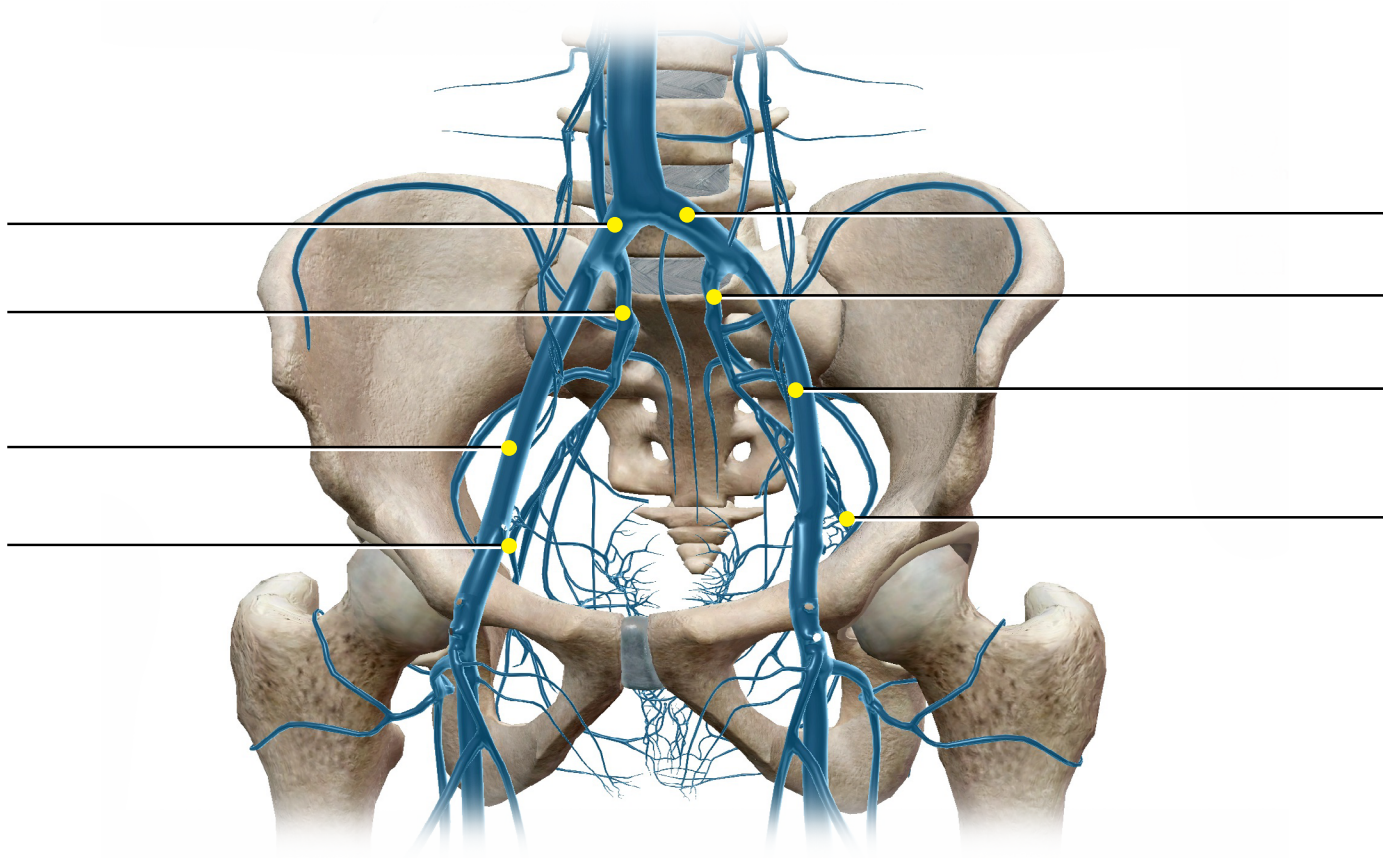




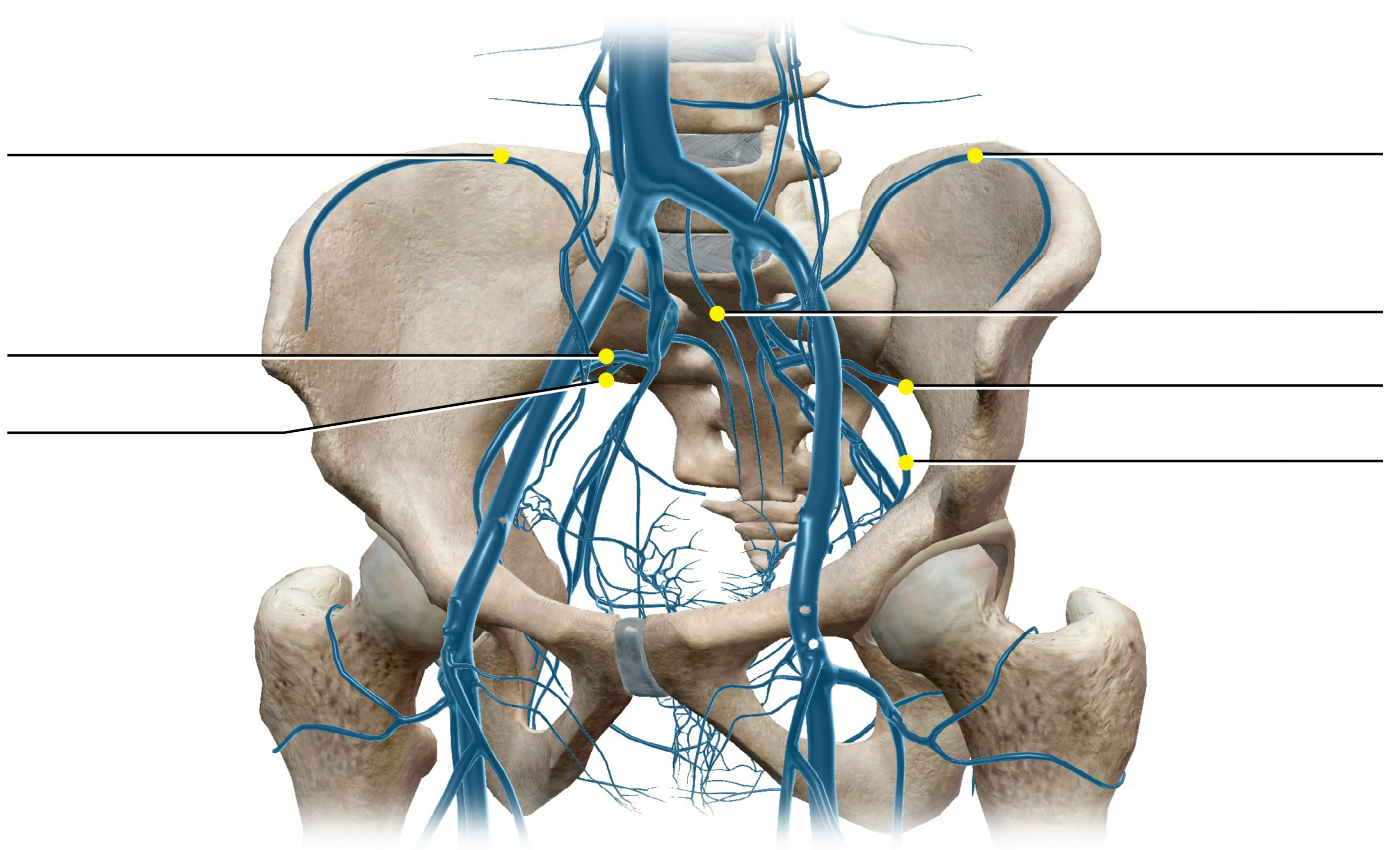
## **Module 30.54 Veins of the Intestines II**



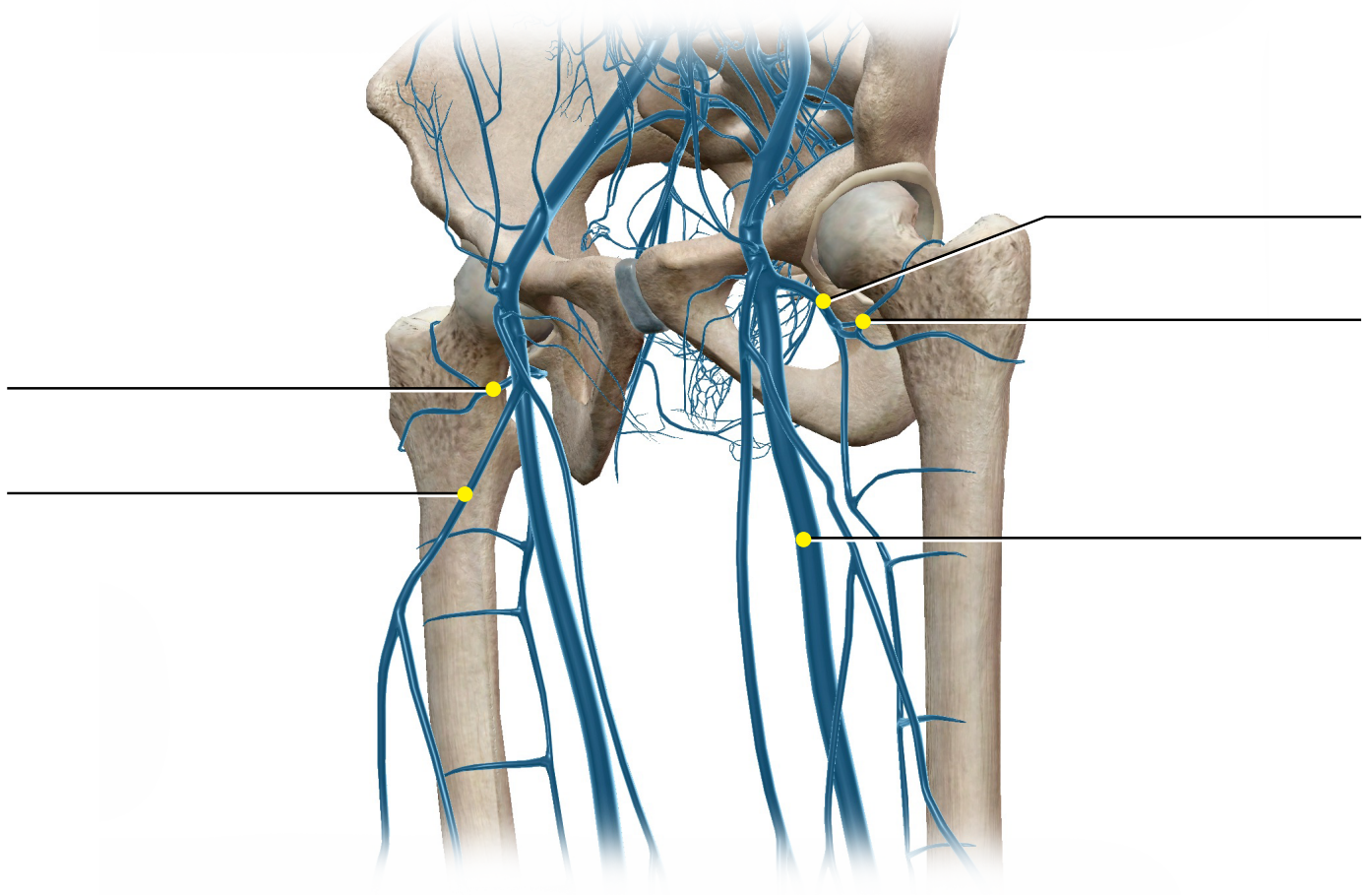
## **Module 30.55 Veins of the Pelvis I**



## **Module 30.56 Veins of the Pelvis II**

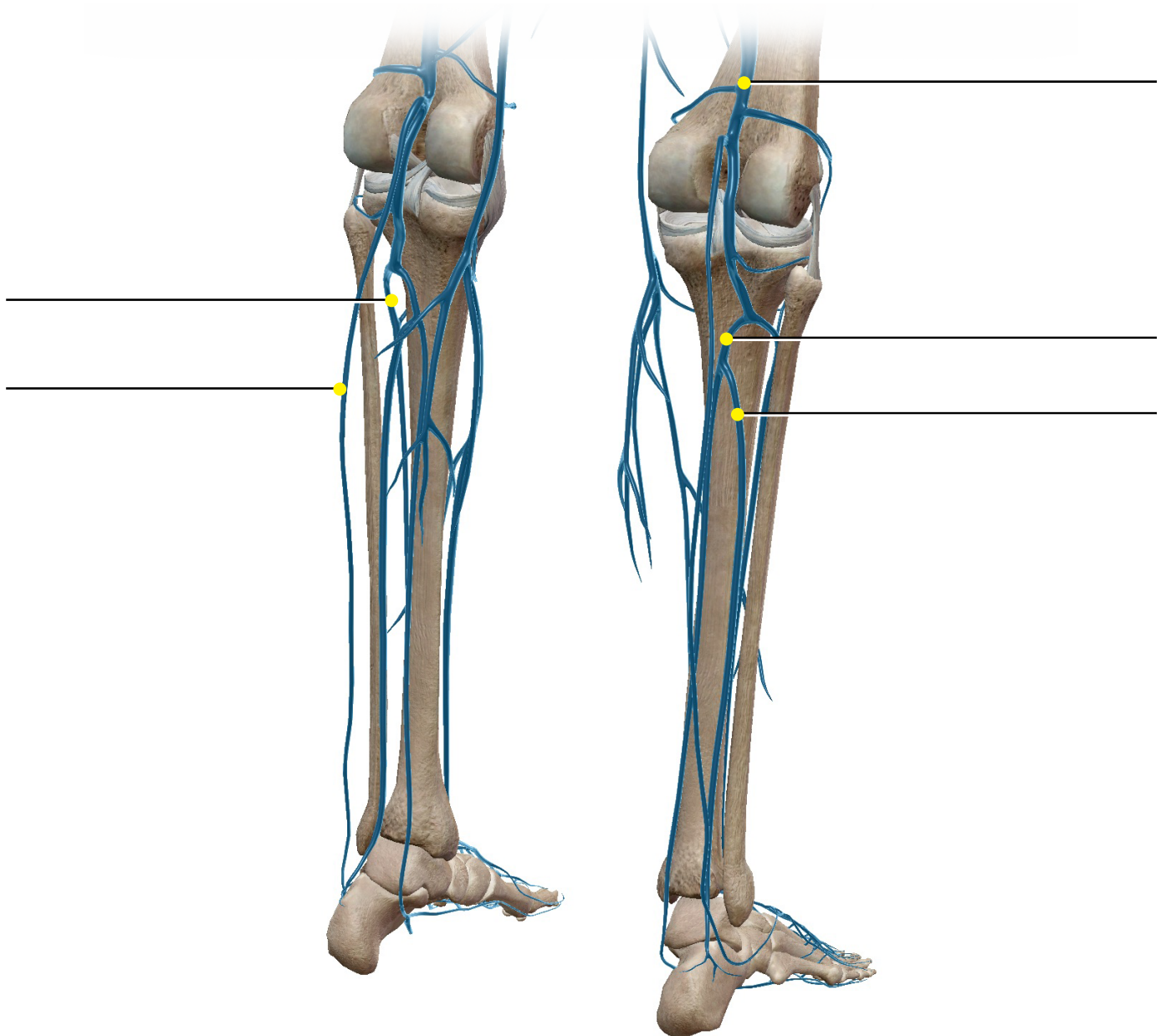


## **Modules 30.57 Veins of the Upper Leg**

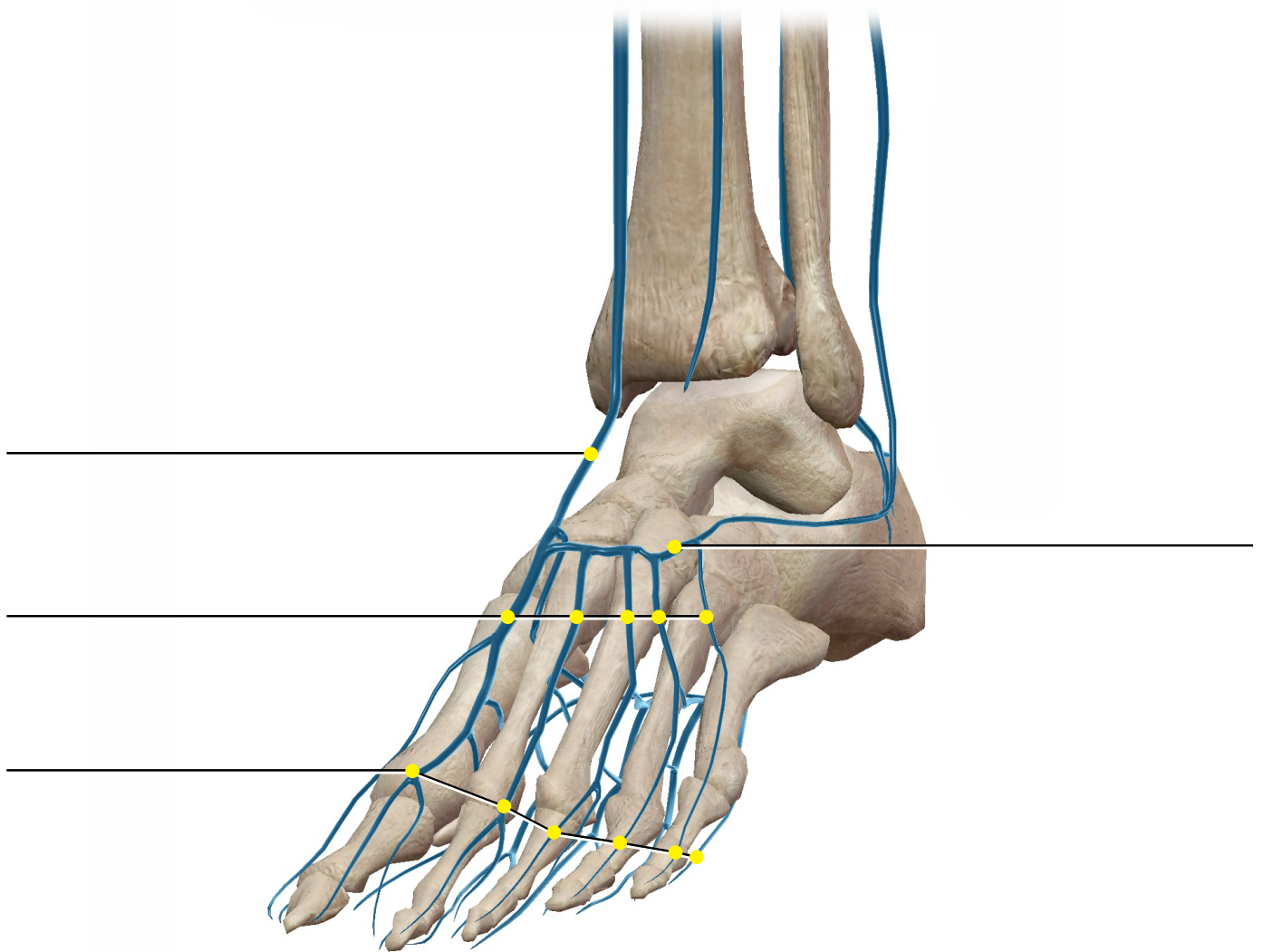




## Module 30.58 Veins of the Lower Leg



## **Module 30.59 Dorsal Veins of the Foot**



## **Module 30.60 Plantar Veins of the Foot**

