

January 9, 2024 - Dr. Doroudi ([majid.doroudi@ubc.ca](mailto:majid.doroudi@ubc.ca))

### Objectives:

- Identify and name branches of the superior mesenteric artery
- Identify and name branches of the inferior mesenteric artery
- Identify the portal vein and its tributaries
- Identify different parts of midgut and hindgut derivatives
- Describe the innervation of the organs derived from the midgut and hindgut

**NOTE:**  
DO NOT REMOVE VISCERA  
FROM ABDOMINAL CAVITY

These are the relevant videos covering the lab objectives:

(requires CWL login)

Volume 5 - The Internal Organs

The Abdominal Organs

- 5.2.9 Jejunum-ileum
- 5.2.10 Cecum and appendix
- 5.2.11 Wall of the colon
- 5.2.12 Colon
- 5.2.24 Arteries of the abdominal organs
- 5.2.25 Veins of the abdominal organs

Watch this dissection guide video:

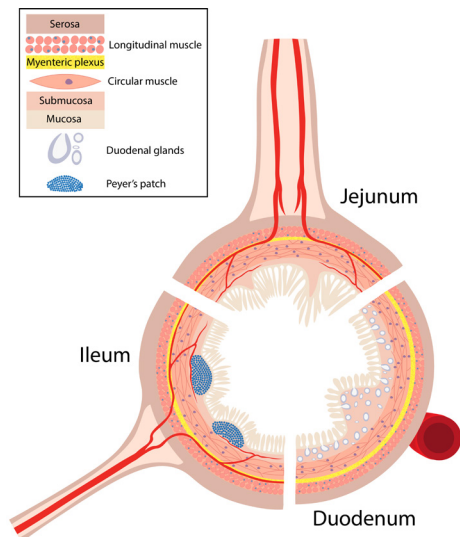
Identify checklist structures on the interactive photo and 3D specimens:

View the interactive modules:

### Viscera:

Small intestine

- Jejunum
- Ileum
- Ileocecal junction and valve
- Identify jejunum versus ileum



Schematic cross-section of small intestine

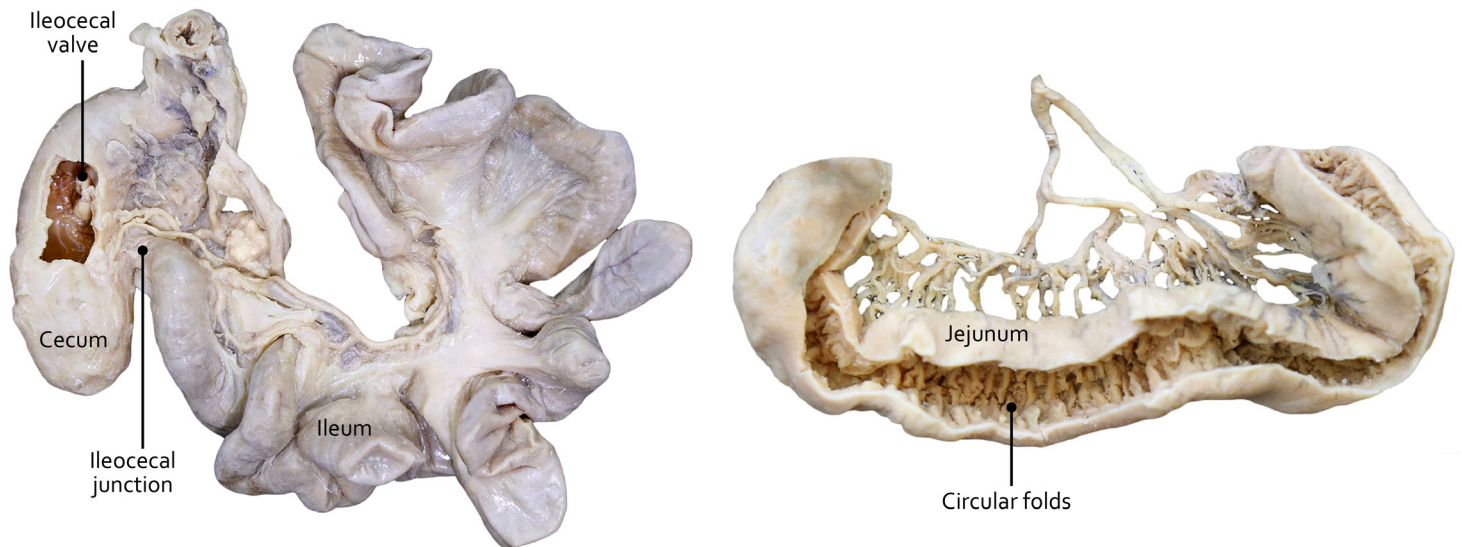


Small Intestine in Situ

(B. Kathleen Alsup & Glenn M. Fox, University of Michigan Medical School, [BlueLink](#))



*Comparison of ileum and jejunum dissections*



**Main features of ileum:** short vasa recta, thinner wall, more fatty mesentery, no circular folds, many Peyer's patches

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## *Viscera:*

Large intestine

Appendix

Ascending, transverse,  
descending, sigmoid  
portions of colon

Rectum and anal canal

Taeniae coli, haustra coli,  
epiploic (omental) appendices

### *Large Intestine in Situ*

(B. Kathleen Alsup & Glenn M. Fox, University  
of Michigan Medical School, [BlueLink](#))

### *Components of Colon*

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## Arteries:

Superior mesenteric

Jejunal

Ileal

Right colic

Middle colic

Ileocolic

Appendicular

Inferior mesenteric

Left colic

Sigmoidal

Superior rectal

Marginal

Anastomoses of middle, right  
& left colic arteries

Vasa recta

- No anastomoses or communication with each other
- Therefore with obstruction, only that segment gets necrotic

*Superior mesenteric artery  
supplies the midgut*

*Superior Mesenteric Artery*  
(B. Kathleen Alsup & Glenn M. Fox, University  
of Michigan Medical School, [BlueLink](#))

*Inferior mesenteric artery supplies the hindgut*

*Inferior Mesenteric Artery*

(B. Kathleen Alsup & Glenn M. Fox, University of Michigan Medical School, [BlueLink](#))

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## Veins:

Superior mesenteric

Inferior mesenteric

Splenic

Hepatic portal

- formed by union of superior mesenteric and splenic veins
- splenic vein receives inferior mesenteric vein
- porto-caval (porto-systemic) communication (anastomosis) → if increase pressure in portal system → push blood into caval system → enlarger venous plexus → bleed into terminal part of esophagus (e.g.) → hematemesis from portal hypertension
- *Portocaval anastomoses*:
  - Esophageal
  - Paraumbilical → caput medusa (from cirrhosis of liver)
  - Rectum → rectal varices
  - Retroperitoneal, such as bare area of liver

*Venous drainage of the midgut and hindgut*

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## **Midgut Innervation:**

- Superior mesenteric ganglion near root of superior mesenteric artery
- **Sympathetic** nervous system: **T5-T12** (mostly via least & lesser splanchnic nerves)
- **Parasympathetic** nervous system: **vagus nerve**

- ♦ Distribution of postganglionic (sympathetic) or preganglionic (parasympathetic) nerve fibers is via arteries
- ♦ **Sympathetics:** inhibitory to gut muscles and transmit pain
- ♦ **Parasympathetics:** motor to gut muscles

## **Hindgut Innervation:**

- Inferior mesenteric ganglion near root of inferior mesenteric artery
- **Sympathetic** nervous system: **L1 & L2**
- **Parasympathetic** nervous system: **S2 - S4**

## **Be able to describe:**

*The significance of the left colic flexure with respect to parasympathetic innervation:*

*Referred pain of the midgut organs to the anterior abdominal wall:*

*Organs derived from midgut and hindgut:*

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## RESOURCES

### Websites:

Clinical Anatomy | Entrada

### Recommended Textbooks:

#### Gray's Anatomy for Students

By: Drake, Vogl, Mitchell

Elsevier Inc. Churchill Livingstone

ISBN 978-0-7020-5131-9

\*\* OR \*\*

#### Essential Clinical Anatomy

By: Moore and Agur

Lippincott Williams & Wilkins

ISBN 0-7817-6274-X

### One of the Following Atlases:

#### Gray's Atlas of Anatomy

By: Drake, Vogl, Tibbits, Richardson, Mitchell

Elsevier

ISBN 978-1-4557-4802-0

#### Atlas of Anatomy

By: Gilroy, MacPherson, Ross

Thieme

ISBN 978-1-60406-062-1

#### Atlas of Human Anatomy

By: Frank Netter

Icon Learning Systems

ISBN 1-929007-11-6

#### Before We Are Born

By: Moore and Persaud

Saunders

ISBN 978-1-4160-3705-7

## ACKNOWLEDGEMENTS

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