

# GI Tract Exercises

## **Study Exercises.** Review of the Elements of the Alimentary Tube.

On the following two pages is a chart or matrix of blank spaces. Each space is the intersection of a horizontal row and a vertical column. The items listed to the left of the rows and at the top of the columns are different regions of the gastro-intestinal tract. You are to fill in each blank space with some item or items (i.e., cell type, tissue type) which is present in the region listed as the *row* title (to the left), but *not* present (or less obvious) in the *column* title. To get you started, one element of the matrix has been filled in (aside from the diagonals which are, of course, blank): this entry says that one way of telling the lower esophagus from the cardiac stomach is that the esophagus has stratified squamous epithelium. Obviously, many elements of the matrix can be filled with numerous items; others may be difficult for you to fill out. The more you can add to the table, the better you understand the gut tube - especially if you retain this knowledge and integrate it into a logical framework.

*One possible set* (there are many) of appropriate entries is included for comparison with your answers.

CHART: DISTINCTIVE FEATURES OF VARIOUS-

	UPPER ESOPHAGUS	MIDDLE ESOPHAGUS	LOWER ESOPHAGUS	CARDIAC STOMACH	FUNDIC-CORPIC STOMACH	PYLORIC STOMACH
UPPER ESOPHAGUS	---					
MIDDLE ESOPHAGUS		---				
LOWER ESOPHAGUS			---	Stratified squamous epithelium		
CARDIAC STOMACH				---		
FUNDIC- CORPIC STOMACH					---	
PYLORIC STOMACH						---
DUODENUM						
JEJUNUM						
ILEUM						
COLON						
RECTUM						
ANAL CANAL						

REGIONS OF THE ALIMENTARY TUBE

DUODENUM	JEJUNUM	ILEUM	COLON	RECTUM	ANAL CANAL	
						UPPER ESOPHAGUS
						MIDDLE ESOPHAGUS
						LOWER ESOPHAGUS
						CARDIAC STOMACH
						FUNDIC-CORPIC STOMACH
						PYLORIC STOMACH
---						DUODENUM
	---					JEJUNUM
		---				ILEUM
			---			COLON
				---		RECTUM
					---	ANAL CANAL

CHART: DISTINCTIVE FEATURES OF VARIOUS

	UPPER ESOPHAGUS	MIDDLE ESOPHAGUS	LOWER ESOPHAGUS	CARDIAC STOMACH	FUNDIC-CORPIC STOMACH	PYLORIC STOMACH
UPPER ESOPHAGUS	---	esophageal glands	striated muscle	stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium
MIDDLE ESOPHAGUS	mixture of striated and	--- smooth muscle	mixture of striated and	" "	" "	" "
LOWER ESOPHAGUS	smooth muscle in mus. ext. some mucosal mucous glands	esophageal glands; some mucosal mucous glands	---	stratified squamous epithelium	" "	" "
CARDIAC STOMACH	mucous surface cells; pits	mucous surface cells and pits	mucous surface cells and pits	---	glands convoluted, mostly mucous cells	pits shallow, glands more sparse
FUNDIC- CORPIC STOMACH	" "	" "	" "	glands straight; parietal & chief cells	---	glands straight; parietal & chief cells
PYLORIC STOMACH	" "	" "	" "	pits deep; pyloric sphincter?	pits deep; gland cells mostly mucous	---
DUODENUM	villi, columnar epithelium	villi, columnar epithelium	villi, columnar epithelium	microvilli; goblet cells	microvilli; goblet cells	microvilli; goblet cells
JEJUNUM	" "	" "	" "	" "	" "	" "
ILEUM	" "	" "	" "	" "	" "	" "
COLON	columnar epithelium; crypts	columnar epithelium; crypts	columnar epithelium; crypts	straight crypts, goblet cells	crypts; goblet cells	crypts; goblet cells
RECTUM	columnar epithelium;	columnar epithelium;	columnar epithelium; columns	crypts; goblet cells, rectal columns	crypts; goblet cells, rectal columns	crypts; goblet cells, rectal
ANAL CANAL	keratinizing stratified squamous epithelium	keratinizing stratified squamous epithelium	keratinizing stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium

REGIONS OF THE ALIMENTARY TUBE

DUODENUM	JEJUNUM	ILEUM	COLON	RECTUM	ANAL CANAL	
stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium	striated muscle in muscularis externa; muscularis muc.	UPPER ESOPHAGUS
" "	" "	" "	" "	" "	muscularis muc.; striated muscle in muscularis externa	MIDDLE ESOPHAGUS
" "	" "	" "	" "	" "	muscularis mucosa; esophageal glands	LOWER ESOPHAGUS
epithelium has only mucous surface cells	epithelium has only mucous surface cells	epithelium has only mucous surface cells	pits and glands, mucous surface cells	pits and glands, mucous surface cells	pits and glands, mucous surface cells	CARDIAC STOMACH
" "	" "	" "	" "	" "	" "	FUNDIC-CORPIC STOMACH
" "	" "	" "	" "	" "	" "	PYLORIC STOMACH
---	Brunner's glands	Brunner's glands	villi; Brunner's glands	villi; Brunner's glands	villi; Brunner's glands	DUODENUM
tall plicae and villi	---	tall plicae and villi	villi; plicae	villi; plicae	villi; plicae	JEJUNUM
Peyer's patches	Peyer's patches	---	villi	villi	villi	ILEUM
taenia coli	taenia coli	taenia coli	---	taenia coli; deep crypts	columnar epithelium	COLON
rectal columns	rectal columns	rectal columns	rectal columns	---	columnar epithelium; crypts	RECTUM
stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium	stratified squamous epithelium	---	ANAL CANAL

PLEASE NOTE: THIS IS ONLY ONE OF MANY POSSIBLE SETS OF ANSWERS!