More nutrition fun!!

BI 199 Discussion 4

I. ***Announcements*** **Personal shopping analysis tonight. Next M 26th Diet analyses: DA+ &** ***https://www.supertracker.usda.gov/*** **Record diet for ≥ 1-day! Bring DA+ card. Computer? Q? U of O website!*** ***http://housing.uoregon.edu/nutrition-dietary-needs***

II. ***Group Work: Market of Choice Label Investigation***
Group summary comments, then editorial overview!

III. ***Group Work: Mini-Overhead Summary Presentations***
Group summary overheads from food shopping analyses

IV. ***What Does Organic Mean on a Label?*** **NAHL Oct 2012**

V. ***Environmental Working Group on Pesticides + Videos***

VI. ***Body Systems*** **GI Focus S&W pp 74-97**

- **A. We're wired for survival!**
- **B. Bagel/Doughnut/ (!) hole analogy**
- **C. GI tract organ-by-organ overview?**
- **D. Ulcers?**
- **E. Letter from GI tract!**

...Please read! Good stuff!!

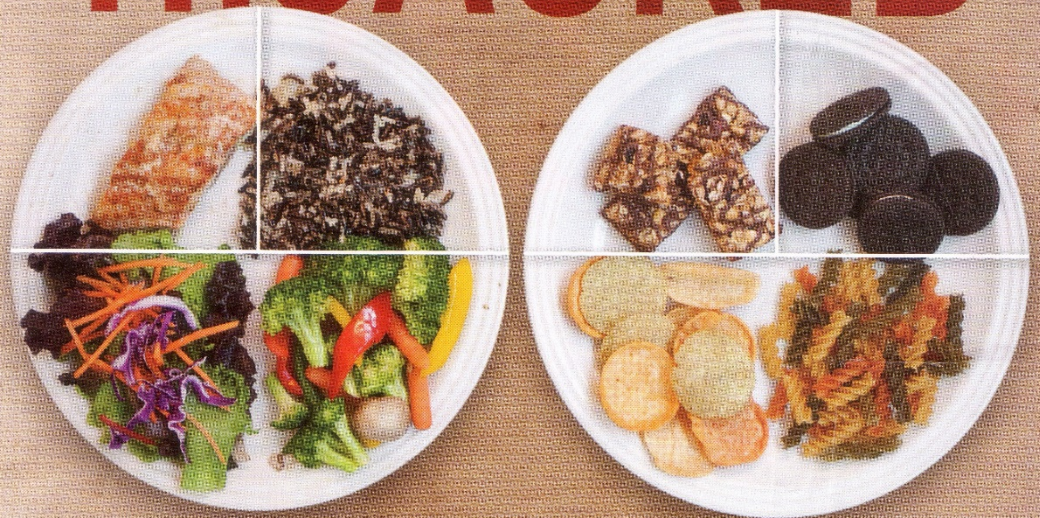
VII. ***Quiz Bowl*** **S&W ch 3**

VIII. ***Controversy 3*** **Alcohol & nutrition: Benefits *vs.* risks? S&W pp 100-110**

Sugar substitutes, p. 9 | Full-meal salads, p. 12 | The best lunch meats, p. 13

Nutrition Action HEALTHLETTER®
OCTOBER 2014 $2.50
CENTER FOR SCIENCE IN THE PUBLIC INTEREST

HIJACKED



Photos: Stephen Schmidt/CSPI.

HOW THE FOOD INDUSTRY CONVERTS DIET ADVICE INTO PROFITS

BY BONNIE LIEBMAN

Make half your plate fruits and vegetables. Make at least half your grains whole. Eat fish at least twice a week and nuts four times a week. Eat more fiber.

It doesn't matter what health experts recommend. Companies appear eager to meet those needs.

But instead of pushing healthier foods, they use new buzzwords ("1 full serving of vegetables!" "Made with whole grains!" "Omega-3") to keep the same cheap ingredients (mostly white flour, sugar, and oil) flying off the shelf.

Goodbye veggies. Hello cookies, chips, and chewy bars.

Continued on page 3.

Nutrition Action Healthletter 40 1974-2014


WESTERN FAMILY®
Excellent Source of Fiber
Bite Size
Shredded Wheat
Made from 100% Natural Whole Grain Wheat
SERVING SUGGESTION
ENLARGED TO SHOW TEXTURE
NET WT 16.4 OZ (1 LB 0.4 OZ) 465g
PAREVE

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

INGREDIENTS: 100% WHOLE GRAIN WHEAT.
BHT ADDED TO PACKAGING MATERIAL TO HELP PRESERVE FRESHNESS.
CONTAINS WHEAT

Proudly Distributed by
Western Family Foods, Inc.,
P.O. Box 4057
Portland, OR 97208 U.S.A.
Copyright 2007
Marca Registrada

SATISFACTION QUALITY GUARANTEED

MADE IN THE USA

?

BHT **is butylated hydroxytoluene, a preservative added to many foods to prevent spoilage.**

a fat-soluble, anti-oxidant

In butter, meats, cereals, gum, baked goods, snack foods, dehydrated potatoes, beer, animal feed, packaging, cosmetics, rubber & petroleum products; to prevent oxidative rancidity of fats; maintains food odor, color & flavor.

Nutrition Facts

Serving Size 1¼ cup (50g)
Servings Per Container about 9

Amount Per Serving	Cereal	Cereal with ½ cup Skim Milk
Calories	170	220
Calories from Fat	10	10
	% Daily Value**	
Total Fat 1g*	**2%**	**2%**
Saturated Fat 0g	**0%**	**2%**
Trans Fat 0g		
Polyunsaturated Fat 0.5g		
Monounsaturated Fat 0g		
Cholesterol 0mg	**0%**	**1%**
Sodium 0mg	**0%**	**3%**
Potassium 170mg	**5%**	**11%**
Total Carbohydrate 40g	**14%**	**16%**
Dietary Fiber 6g	**24%**	**24%**
Soluble Fiber less than 1g		
Insoluble Fiber 5g		
Sugars 0g		
Other Carbohydrate 33g		
Protein 6g		

Vitamin A	0%	4%
Vitamin C	0%	2%
Calcium	2%	15%
Iron	8%	8%
Vitamin D	0%	15%
Thiamin	10%	10%
Riboflavin	0%	10%
Niacin	15%	15%
Vitamin B_6	0%	0%
Folate	0%	0%
Vitamin B_{12}	0%	0%
Phosphorus	20%	30%
Magnesium	15%	20%
Zinc	8%	10%
Copper	8%	8%

*Amount in cereal. One half cup skim milk contributes an additional 40 calories, less than 5mg cholesterol, 65mg sodium, 6g total carbohydrate (6g sugars) and 4g protein.

**Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

Excellent Source of FIBER & Made from 100% WHOLE GRAIN

190 CALORIES	0g SAT FAT 0% DV	0mg SODIUM 0% DV	11g SUGARS

PER 21 BISCUIT SERVING

Kellogg's FROSTED Mini-Wheats Bite Size

ENLARGED TO SHOW TEXTURE

Original

LIGHTLY SWEETENED WHOLE GRAIN CEREAL

COLLECT SPIDEY CODES
GET MOVIE TICKETS
SEE BACK FOR DETAILS

SEE THE AMAZING SPIDER-MAN IN 3D
ONLY IN THEATERS

CEREAL

NET WT 18 OZ (1 LB 2 OZ) (510g)

Ingredients: Whole grain wheat, sugar, contains 2% or less of brown rice syrup, gelatin, BHT for freshness.

Vitamins and Minerals: Reduced iron, niacinamide, vitamin B_6 (pyridoxine hydrochloride), vitamin B_2 (riboflavin), vitamin B_1 (thiamin hydrochloride), zinc oxide, folic acid, vitamin B_{12}.

CONTAINS WHEAT INGREDIENTS.

Distributed by Kellogg Sales Co.
Battle Creek, MI 49016 USA

Nutrition Facts

Serving Size 21 Biscuits (54g)
Servings Per Container About 9

Amount Per Serving	Cereal	with 1/2 cup skim milk
Calories	190	230
Calories from Fat	10	10
	% Daily Value**	
Total Fat 1g*	**2%**	**2%**
Saturated Fat 0g	**0%**	**0%**
Trans Fat 0g		
Polyunsaturated Fat 0.5g		
Monounsaturated Fat 0g		
Cholesterol 0mg	**0%**	**0%**
Sodium 0mg	**0%**	**3%**
Potassium 200mg	**6%**	**11%**
Total Carbohydrate 46g	**15%**	**17%**
Dietary Fiber 6g	**23%**	**23%**
Sugars 11g		
Protein 5g		

Vitamin A	0%	4%
Vitamin C	0%	0%
Calcium	0%	15%
Iron	90%	90%
Thiamin	25%	30%
Riboflavin	25%	35%
Niacin	25%	25%
Vitamin B_6	25%	25%
Folic Acid	25%	25%
Vitamin B_{12}	25%	35%
Phosphorus	20%	30%
Magnesium	10%	15%
Zinc	10%	15%
Copper	10%	10%

* Amount in cereal. One half cup of skim milk contributes an additional 40 calories, 65mg sodium, 6g total carbohydrates (6g sugars), and 4g protein.

** Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat. Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

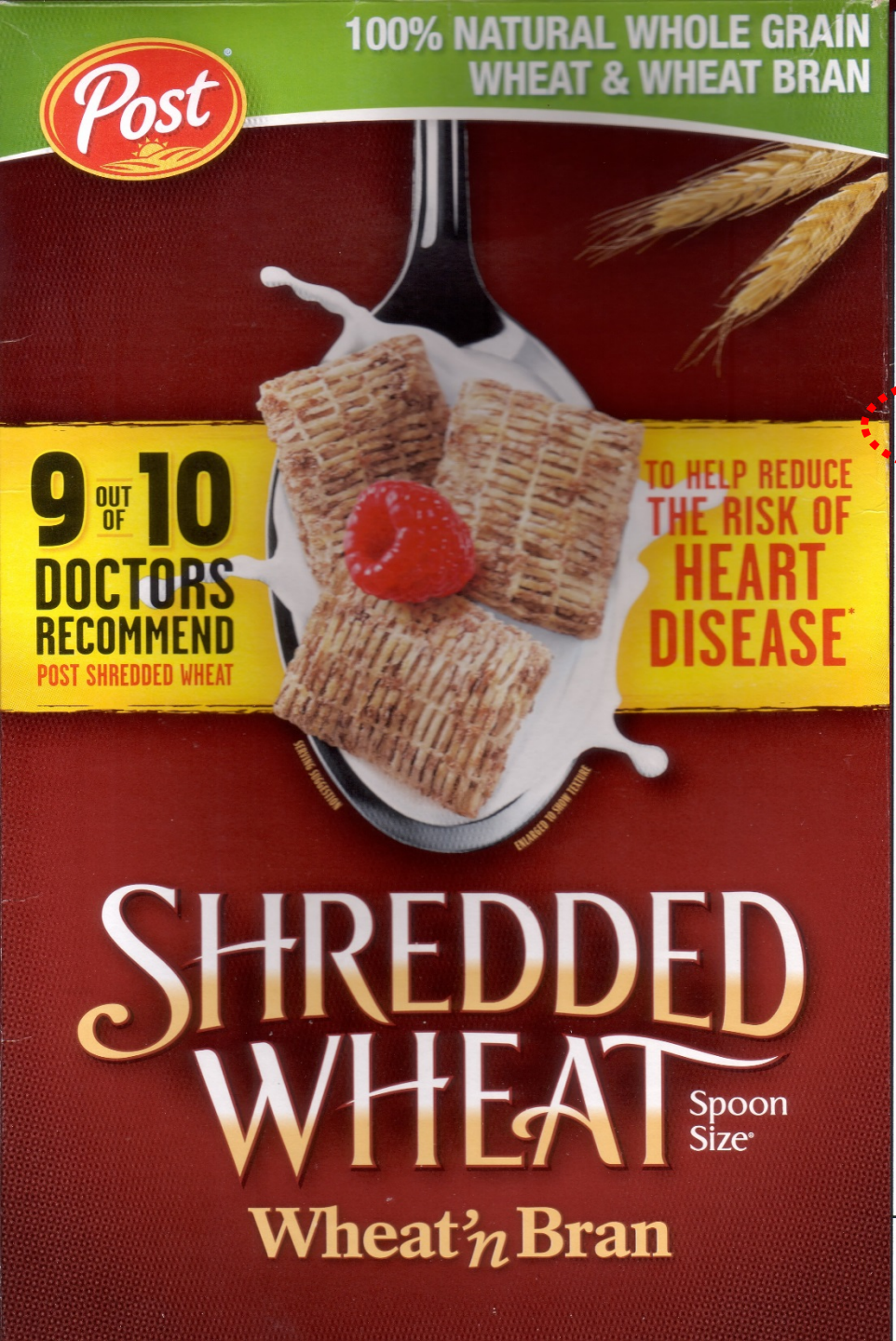
Plain Generic

vs.

Frosted National

	Plain Generic		Frosted National
Vitamin A	0%		0%
Vitamin C	0%		0%
Calcium	2%	?	0%
Iron	8%		90%
Vitamin D	0%		0%
Thiamin	10%		25%
Riboflavin	0%		25%
Niacin	15%		25%
Vitamin B_6	0%		25%
Folate	0%		25%
Vitamin B_{12}	0%		25%
Phophorus	20%		20%
Magnesium	15%	?	10%
Zinc	8%	?	10%
Copper	8%	?	10%

Fortified or ingredients added!



Nutrition Facts

Serving Size 1 1/4 cup (59g)
Servings Per Container about 9

Amount Per Serving	Cereal	Cereal with 1/2 cup Fat Free Milk
Calories	200	240
Calories from Fat	10	10
		% Daily Value**
Total Fat 1g*	2%	2%
Saturated Fat 0g	0%	0%
Trans Fat 0g		
Polyunsaturated Fat 0.5g		
Monounsaturated Fat 0g		
Cholesterol 0mg	0%	0%
Sodium 0mg	0%	3%
Potassium 230mg	7%	12%
Total Carbohydrate 48g	16%	18%
Dietary Fiber 9g	36%	36%
Soluble Fiber 2g		
Insoluble Fiber 7g		
Sugars 0g		
Other Carbohydrate 39g		
Protein 6g		
Vitamin A	0%	4%
Vitamin C	0%	0%
Calcium	2%	15%
Iron	15%	15%
Thiamin	8%	10%
Riboflavin	2%	10%
Niacin	15%	15%
Vitamin B_6	2%	4%
Folic Acid	4%	4%
Phosphorus	20%	30%
Magnesium	20%	25%
Zinc	10%	15%
Copper	10%	10%

* Amount in Cereal. One half cup fat free milk contributes an additional 40 calories, 65mg sodium, 200mg potassium, 6g total carbohydrate (6g sugars), and 4g protein.

** Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

INGREDIENTS: WHOLE GRAIN WHEAT AND WHEAT BRAN. TO PRESERVE THE NATURAL WHEAT FLAVOR, BHT IS ADDED TO THE PACKAGING MATERIAL.

CONTAINS: WHEAT.

POST FOODS, LLC
1 UPPER POND ROAD
PARSIPPANY, NJ 07054 USA

Beautiful
K+/Na+! Why?
Close to the earth!

Exceptional,
Low Fat,
Low Sodium,
High Fiber Choice!

PER SERVING

210 CALORIES | 0g SAT FAT 2% DV | 35mg SODIUM 1% DV | 11g SUGARS | 6g FIBER | 7g PROTEIN

PEACE CEREAL

Fruit & Nut Muesli

Low Fat Muesli

Whole Grain Rolled Oats, Raisins, Apples, Almonds and a Hint of Cinnamon

NON GMO Project VERIFIED nongmoproject.org

Ⓤ

Net Wt. 16 oz (454g)

Serving Suggestion
Enlarged to Show Detail

Giving Back

A contribution will be made to non-profit causes for every Peace Cereal product sold.

See back for details

PEACE CEREAL

Fruit & Nut Muesli

Low Fat Muesli

Nutrition Facts

Serving Size 1/2 cup (55g)
Servings Per Container: About 8

Amount Per Serving	
Calories	210
Calories From Fat	25
	% Daily Value*
Total Fat 3g	**4%**
Saturated Fat 0g	**2%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 35mg	**1%**
Total Carbohydrate 42g	**14%**
Dietary Fiber 6g	**25%**
Sugars 11g	
Protein 7g	
Vitamin A	0%
Vitamin C	2%
Calcium	4%
Iron	10%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrates 4 • Protein 4

Ingredients: Whole Rolled Oats, Raisins (Raisins, Vegetable Glycerin, Vegetable Oil [Canola and/or Sunflower Oil]), Rolled Rye, Apple Powder (Apples, Calcium Stearate), Apples, Date Powder, Corn Flour, Almonds, Rice Flour, Milled Cane Sugar, Cinnamon Bark, Barley Malt Syrup, Salt, Annatto (for color), Turmeric (for color), Purple Carrot Juice (for color).

Contains Almonds. May contain other Tree Nuts, Wheat, and Soy.

Peace Cereal®
Attune Foods, LLC
2545 Prairie Road, Eugene, OR 97402
Product of the U.S.A.
1-888-720-4367
www.peacecereal.com

WHOLE GRAIN
36g or more per serving
WholeGrainsCouncil.org
EAT 48g OR MORE OF WHOLE GRAINS DAILY

Truly local cereal!
Made in Eugene, OR!
Look at Labels!
Stay close to the earth & close to home!

Remember Whole Grain Hot Cereals for No/Low Sodium + Low Calorie Breakfast!

Does depend on what you add!!

GROUND TURKEY BREAST
95% LEAN / 5% FAT

Nutrition Facts

Serving Size 4 oz (112g)
Serving Per Container varied

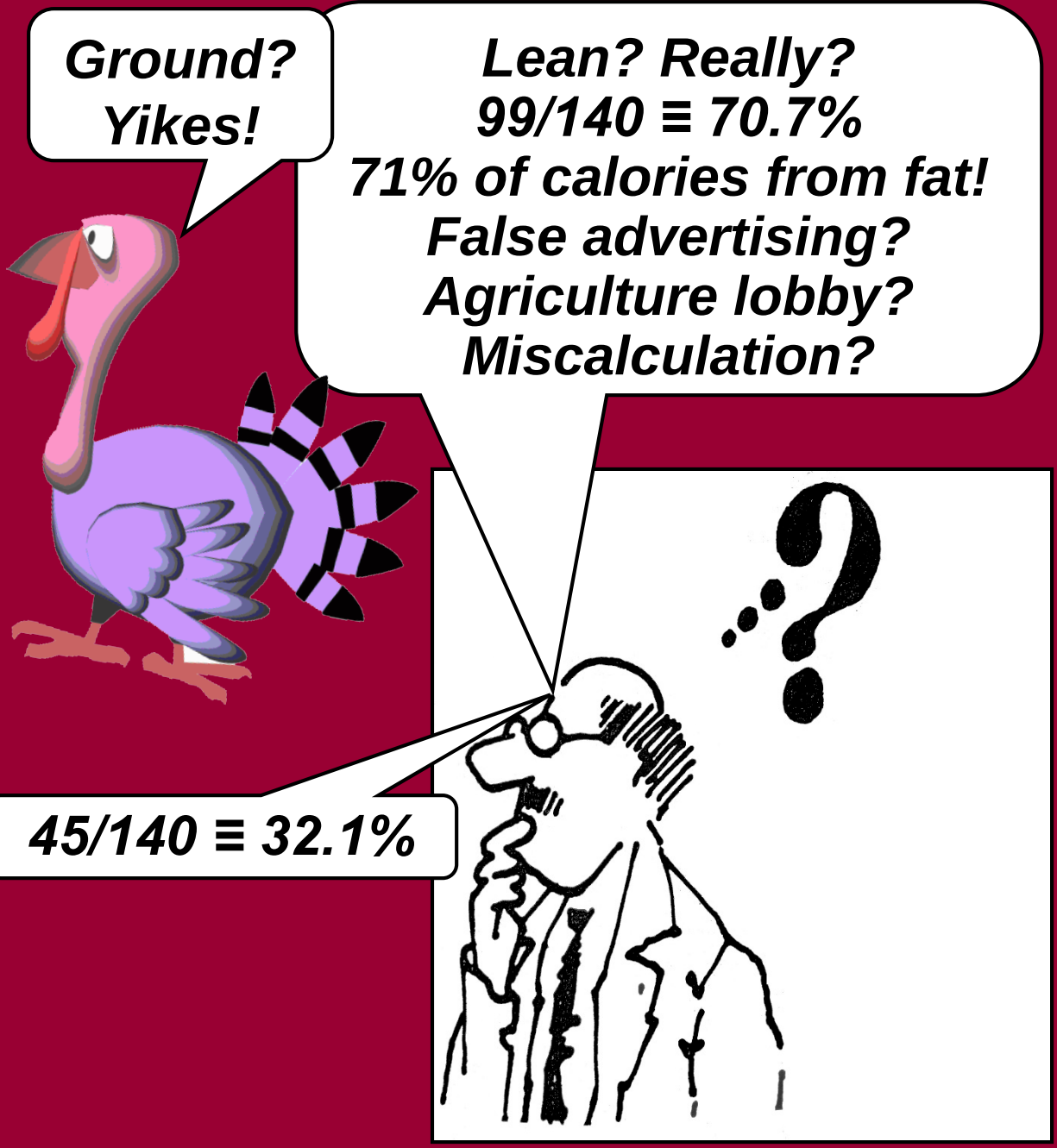
Amount Per Serving

Calories	140	Calories From Fat	99
			% Daily Value*
Total Fat	5g x 9 kcal/g		8%
Saturated Fat	1g		5%
Trans Fat	0g		
Cholesterol	65mg		22%
Sodium	270mg		12%
Total Carbohydrate	0g		0%
Protein	24g		

Calcium 2% • Iron 4%

Not a significant source of Dietary Fiber, Sugars, Vitamin A or Vitamin C.

* Percent Daily Values are tested on a 2,000 calorie diet.




NUTRITION SCORECARD (PER SERVING)
SODIUM 70mg
FAT 2.5g
FIBER 8g
ANTIOXIDANT 30% RDI*
*VITAMIN C
Health Valley Organic®
New
VEGETARIAN CHILI
NO SALT ADDED
Tame Tomato
USDA ORGANIC
Serving Suggestion
NET WT 15 OZ (425g)

Beans can be a great, low-fat, high-nutrient density substitute!

QUESTIONS/COMMENTS: 1-800-434-4246, or visit **www.healthvalley.com**.

Nutrition Facts

Serv. Size 1 Cup (245g)
Servings about 2
Calories 210
Fat Cal. 25

*Percent Daily Values (DV) are based on a 2,000 calorie diet

Amount/serving	% DV*	Amount/serving	% DV*
Total Fat 2.5g	**5%**	**Total Carb.** 41g	**14%**
Sat. Fat 0g	**0%**	Dietary Fiber 8g	**32%**
Trans Fat 0g		Sugars 11g	
Cholest. 0mg	**0%**	**Protein** 10g	**17%**
Sodium 70mg	**3%**		

Vitamin A 10% • Vitamin C 30% • Calcium 10% • Iron 15%

This Health Valley Chili contains 70 milligrams sodium per serving. Other leading brands contain 780 milligrams sodium or more per serving.

Exchanges:
1 Protein, 1½ Starch

MADE WITH NO GENETICALLY ENGINEERED INGREDIENTS.

INGREDIENTS: FILTERED WATER, ORGANIC TOMATOES, ORGANIC PINTO BEANS, ORGANIC ONIONS, ORGANIC TOMATO PASTE, ORGANIC BROWN RICE FLOUR, ORGANIC SOY PROTEIN, ORGANIC EVAPORATED CANE JUICE, ORGANIC GARLIC POWDER, ORGANIC ONION POWDER, NATURAL FLAVORS, ORGANIC SPICES, ORGANIC EXPELLER PRESSED CANOLA OIL, ASCORBIC ACID. **CONTAINS: SOY.**

X2103-005

Group work for

mini-overhead presentations

Why people overeat, p. 9 | Supermarket lighting & vitamins, p. 10 | Rating vegetables, p. 13

Nutrition Action HEALTH LETTER®
OCTOBER 2012 $2.50
CENTER FOR SCIENCE IN THE PUBLIC INTEREST

GOING ORGANIC

What's the payoff?

Sales of organic foods are growing by 10 to 20 percent each year in the United States. More than 10 percent of fruits and vegetables sold are now organic. By any measure, organic foods are starting to enter the mainstream American diet.

And with good reason. Organic produce often has higher levels of potentially healthy compounds. And organic farms may fare better in droughts, don't use synthetic fertilizers that contaminate groundwater, and are more hospitable to critical pollinators like bees and butterflies.

What's more, "the data show that you reduce your exposure to pesticide residues when you buy organic foods," says organics expert Charles Benbrook.

Continued on page 3.

WHAT DOES ORGANIC MEAN?

ORGANIC FRUITS, NUTS, VEGETABLES, & GRAINS

- no synthetic pesticides
- not irradiated
- no synthetic fertilizers
- not genetically engineered
- no sewage sludge

ORGANIC MEAT & POULTRY

- access to outdoors
- not irradiated
- no growth hormones, antibiotics, other drugs
- raised on 100% organic feed
- not fed animal byproducts

ORGANIC EGGS

- hens fed 100% organic feed
- no growth hormones, antibiotics, other drugs
- not necessarily cage-free or free-range

ORGANIC MILK

- cows have access to outdoors
- no growth hormones, antibiotics, other drugs
- all cows' feed for past 12 months 100% organic
- at least 30% of cows' diet from pasture during primary growing season

ORGANIC SEAFOOD

- no current official U.S. standards
- USDA working on a standard for farm-raised seafood

PACKAGED FOODS

- **"100% ORGANIC"** all ingredients are organic
- **"ORGANIC"** at least 95% of ingredients are organic
- **"MADE WITH ORGANIC INGREDIENTS"** at least 70% of ingredients are organic

WHAT DO LABELS MEAN?

"Organic" claims are always independently verified. Other label claims only are if they're part of a certification program. So a "natural" breast of chicken may have been injected with (salty) broth and may have come from an animal raised on a factory farm.

NO ANTIBIOTICS ADDED

If beef, pork, lamb, or poultry, documentation required. No procedure for verifying claim on eggs, milk, or fish.

CAGE-FREE

Poultry not confined to cages. May or may not have access to outdoors.

HORMONE-FREE

Illegal claim. All animals produce hormones.

NATURAL

Contains no artificial ingredients or added colors, and is no more than "minimally processed." Does not mean organic or raised in any particular way. Official definition applies only to meat, chicken, and eggs, not other fresh or packaged foods.

NO HORMONES ADMINISTERED

If on beef, documentation required. Meaningless on pork and chicken since hormone use is never permitted. No procedure for verifying claim on milk, fish, or eggs.

CERTIFIED HUMANE RAISED AND HANDLED

Animals have ample space and shelter and are able to perform natural behaviors like dust bathing (chickens) or rooting (pigs). No cages or crates used. Feed contains no added antibiotics or hormones. Humanely slaughtered. Other certifications with high standards: Animal Welfare Approved and American Humane Certified.

FREE-RANGE

FREE-ROAMING

Poultry has access to the outdoors, but for no minimum time. No official definition for beef.

GRASS-FED

Animals get most of their nutrients from grass throughout their lives. Unless also labeled organic, may be given antibiotics, hormones, and insecticides.

VEGETARIAN-FED

Feed does not contain animal byproducts like feather meal, chicken litter, dried blood, or ground up meat, poultry, or fish.

PASTURE-RAISED

No official meaning.

Scoring Pesticides

Charles Benbrook's Dietary Risk Index (DRI) compares the average pesticide levels found on a food to the maximum levels that the U.S. Environmental Protection Agency regards as safe. (When those levels are equal, the DRI is 100.) The DRI takes into account average pesticide residue levels in an edible portion of a food, the toxicity of each pesticide, and how frequently residues are present.

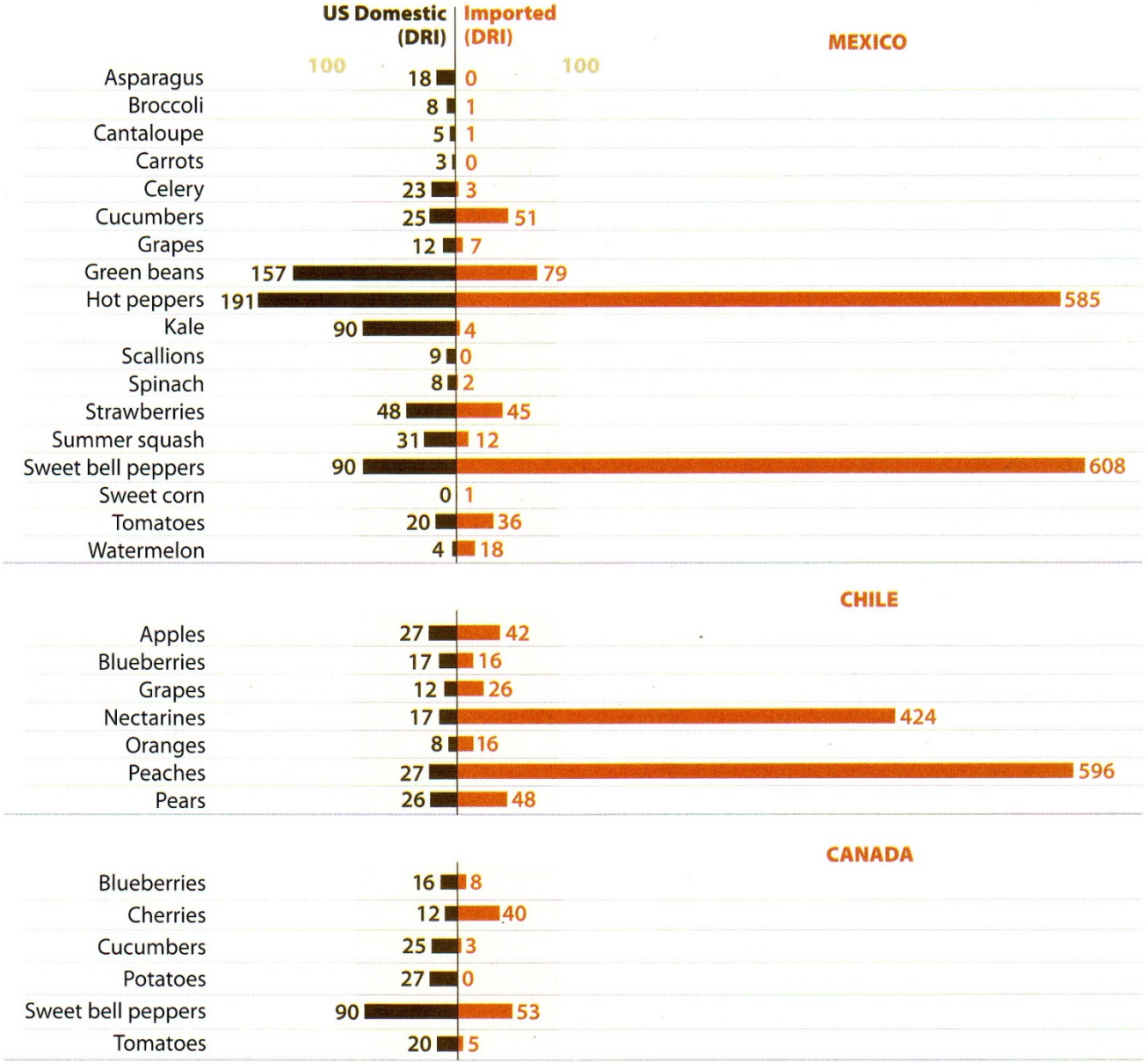
Most DRIs are well below 100, as you can see from this list of conventionally grown domestic and imported produce for which at least 10 samples have been analyzed. But don't panic if your favorite fruit or vegetable is over 100. The EPA builds in a 100-fold or 1,000-fold margin of safety.

Fruit	DRI
Peaches (Chile)	596
Nectarines (Chile)	424
Maximum level considered safe	100
Pears (Chile)	48
Strawberries	48
Strawberries (Mexico)	45
Apples (Chile)	42
Cherries (Canada)	40
Oranges (Australia)	27
Apples	27
Peaches	27
Pears	26
Grapes (Chile)	26
Grapes (Peru)	24
Watermelon (Mexico)	18
Nectarines	17
Blueberries	16
Oranges (Chile)	16
Blueberries (Chile)	16
Grapes	12

Vegetable	DRI
Sweet bell peppers (Mexico)	608
Cucumbers (Honduras)	172
Green beans	157
Asparagus (Peru)	105
Maximum level considered safe	100
Sweet bell peppers	90
Kale	90
Green beans (Mexico)	79
Sweet bell peppers (Canada)	53
Summer squash	51
Cucumbers (Mexico)	51
Collards	41
Sweet potatoes	41
Tomatoes (Mexico)	36
Potatoes	27
Cucumbers	25
Celery	23
Tomatoes	20
Summer squash (Mexico)	19
Asparagus	18

Imported vs. Domestic

Roughly 80 percent of the average American's pesticide risk now comes from imported produce. But some imports are cleaner than others. Foods from Canada, for example, tend to have a lower Dietary Risk Index (DRI) than the same foods grown in the United States, while foods from Chile are more likely to have a higher DRI.



Environmental Working Group Suggestions
http://www.foodnews.org/reportcard.php

12 Most Contaminated
Buy These Organic

- Apples
- Bell Peppers

- Celery

- Cherries

- Imported Grapes
- Nectarines

- Peaches

- Pears

- Potatoes

- Red Raspberries

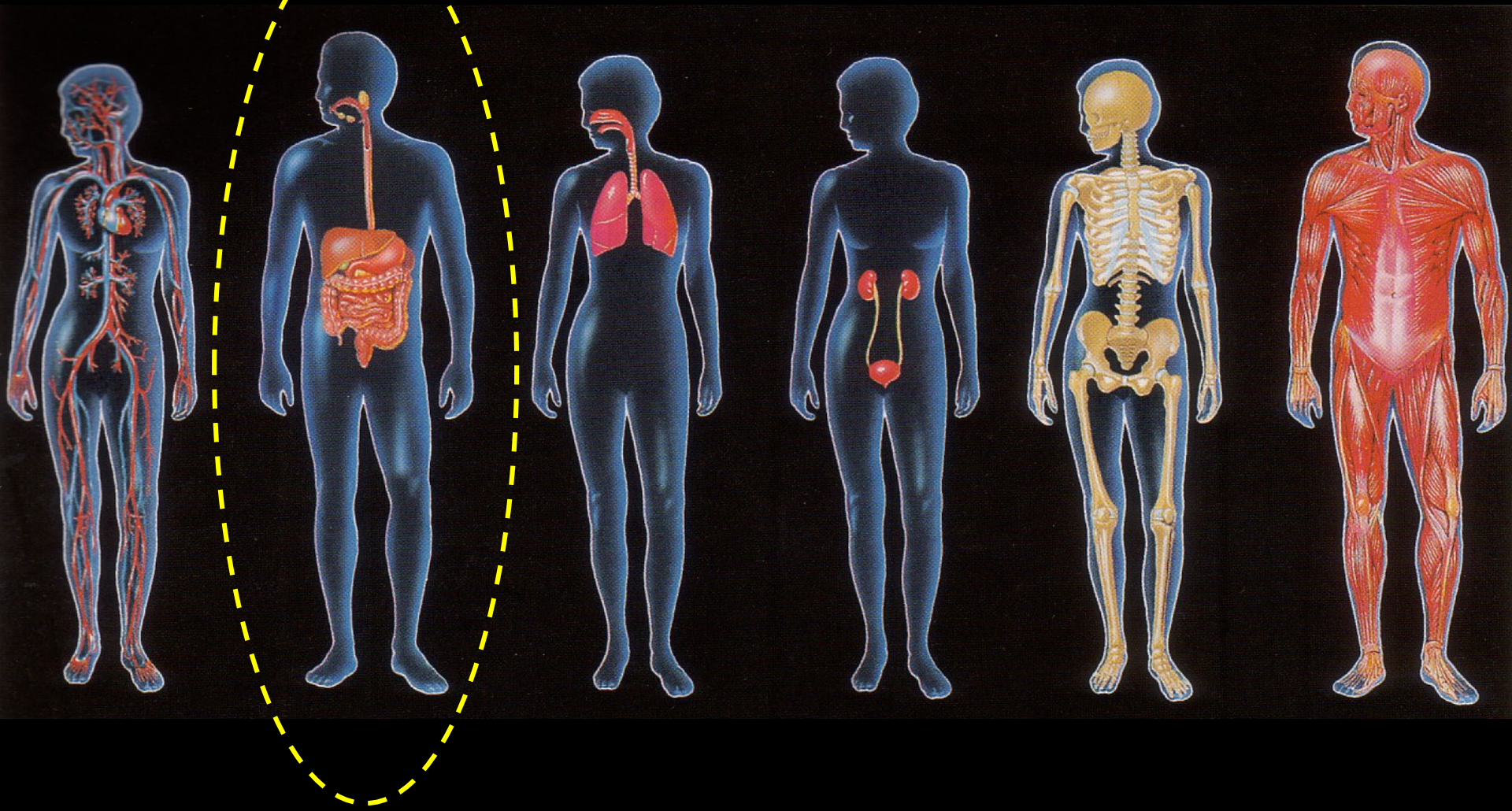
- Spinach

- Strawberries

12 Least Contaminated

- Asparagus
- Avocados
- Bananas
- Broccoli
- Cauliflower
- Corn (sweet)
- Kiwi
- Mangos
- Onions
- Papaya
- Pineapples
- Peas (sweet)

Which body systems?



LS 2012 fig 1-4 p 6

1. Mouth

Ingestion entry way
salivary gland secretion
mucus + enzymes
enzymatic digestion: carbohydrate
mastication = chewing
deglutition = swallowing

2. Esophagus

Rapid transit
peristalsis
secretion mucus

3. Stomach

Mixing peristalsis
secretion mucus + HCl
+ enzymes
enzymatic digestion:
protein + butter fat!

4. Liver-Gall Bladder

Emulsification =
detergent action of bile
+ secretion

5. Pancreas

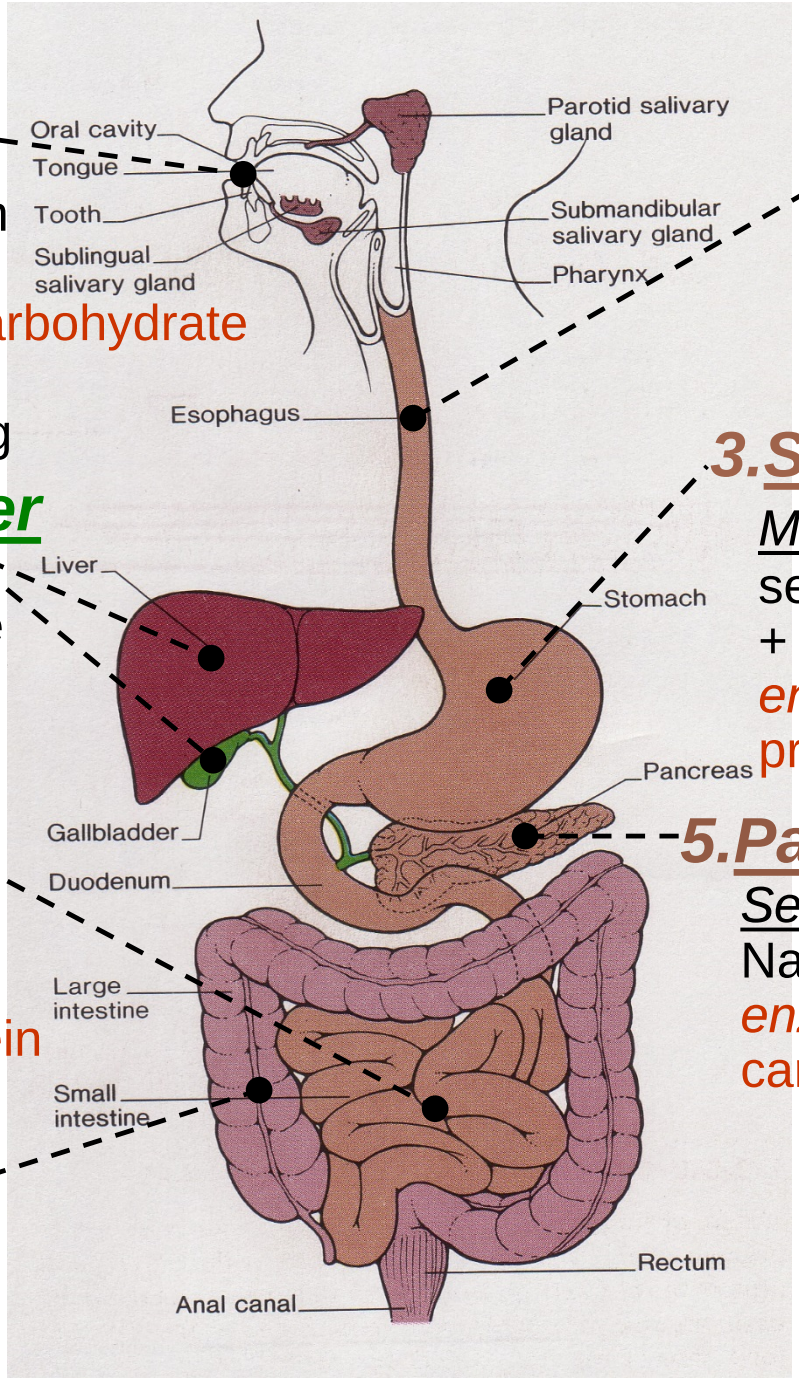
Secretion mucus +
$NaHCO_3$ + enzymes
enzymatic digestion:
carbohydrate, fat, protein

6. Small Intestine

Absorption
Secretion mucus
+ enzymes
enzymatic digestion:
carbohydrate, fat, protein
Peristalsis

7. Large Intestine

Dehydration
secretion + absorption
storage + peristalsis



Taste hard-wired for survival!

@ rest

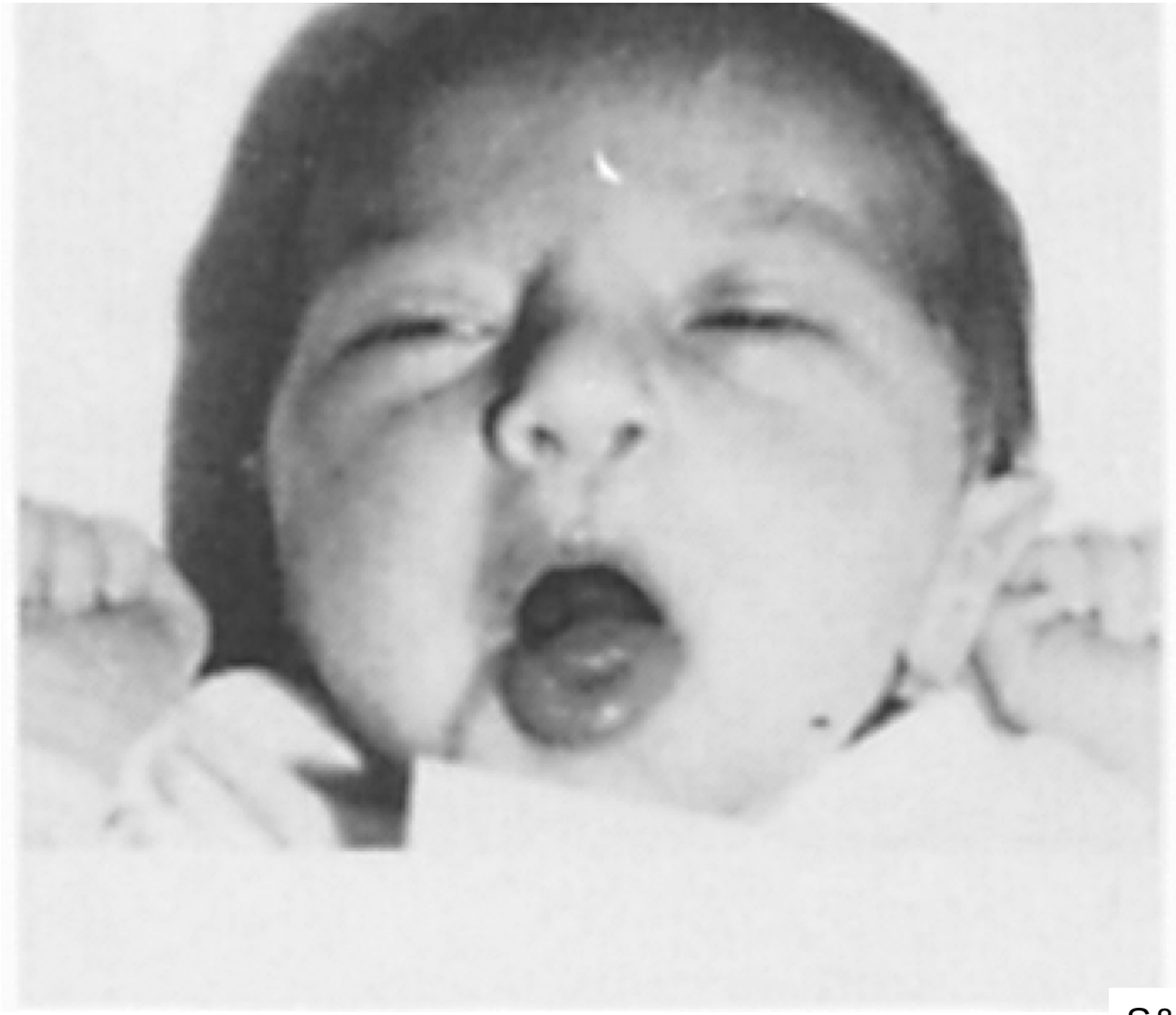
distilled H_2O

sugar

sour

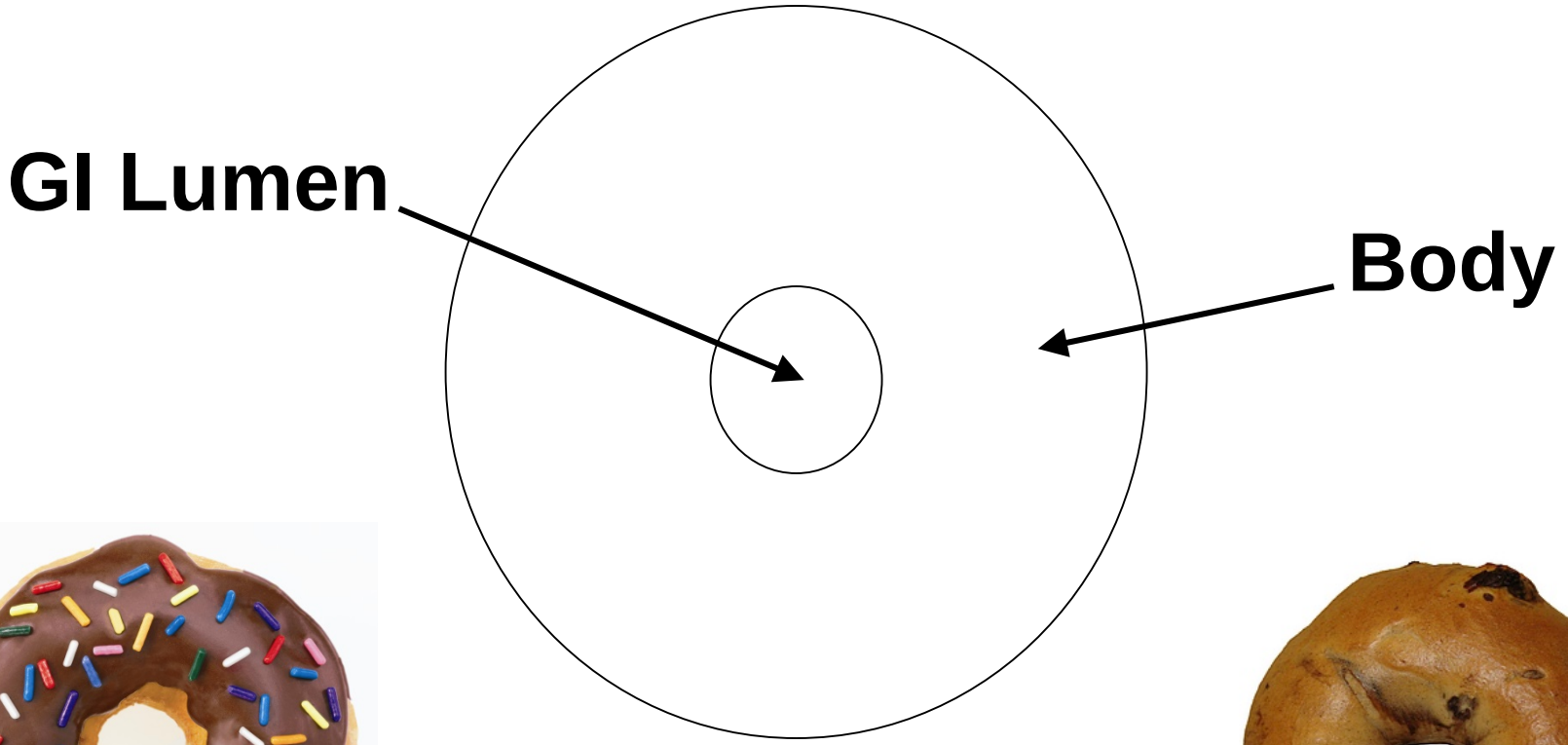
S&W fig 3-8 p 82

Bitter is yucky!!



S&W fig 3-8 p 82

GI-Doughnut/Bagel (!) Analogy



Gut Secretions

Secretion	***Release Site***
1. Mucus	**into GI Lumen**
2. Enzymes	**into GI Lumen**
3. H_2O, acids, bases+	**into GI Lumen**
4. Hormones	**into Blood**

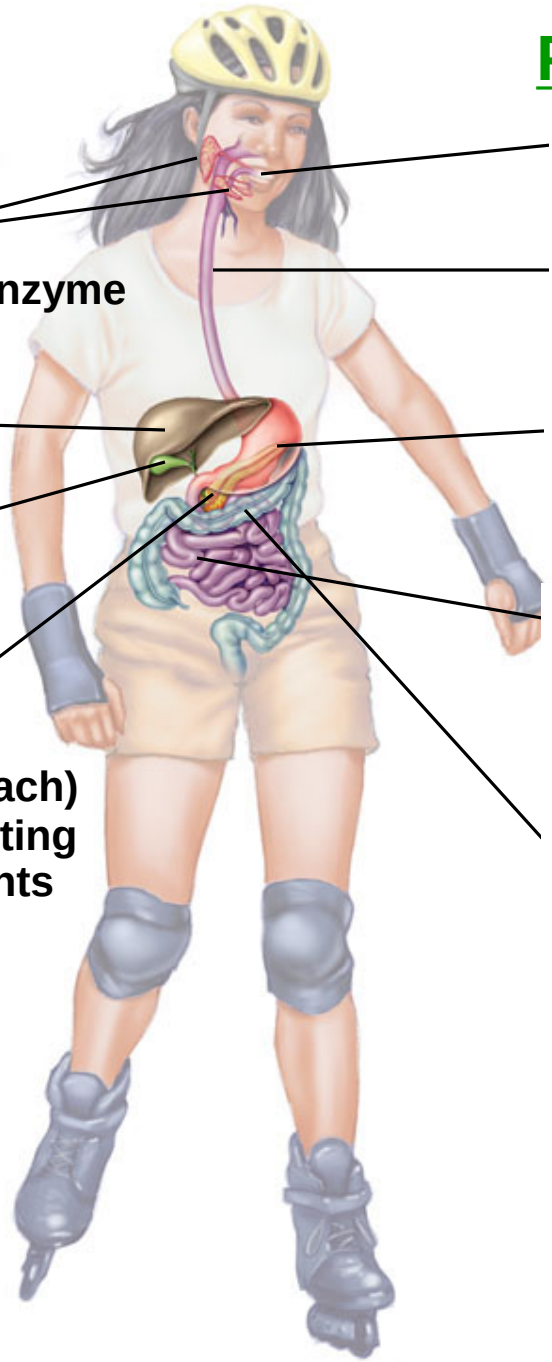
Accessory Organs

Salivary Glands
Donate starch-digesting enzyme

Liver
Makes bile, a detergent
for emulsifying fats

Gallbladder
Stores & secretes bile

Pancreas (beneath stomach)
Makes enzymes for digesting
all energy-yielding nutrients
Releases bicarbonate to
neutralize stomach acid



Primary Organs

Mouth
Chews & mixes food w/saliva

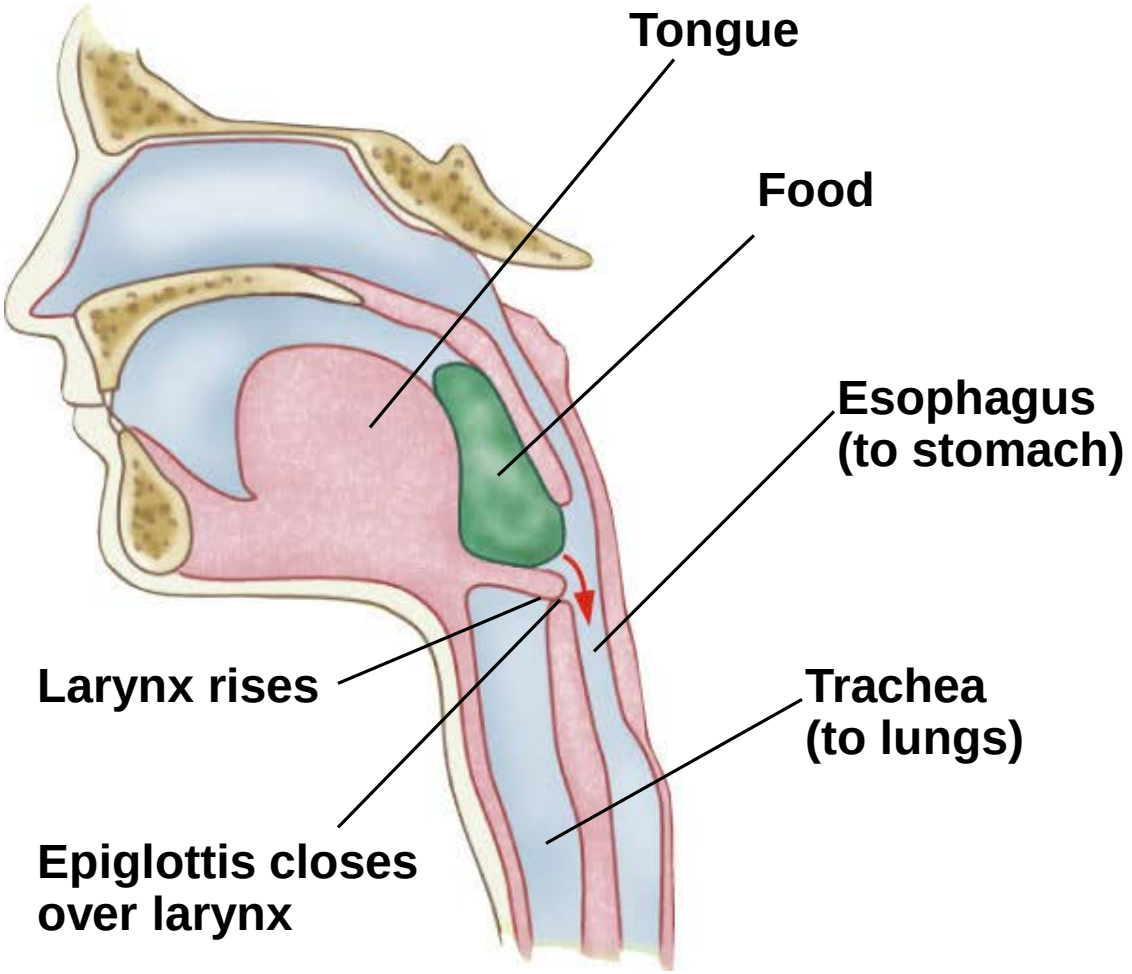
Esophagus
Passes food to stomach

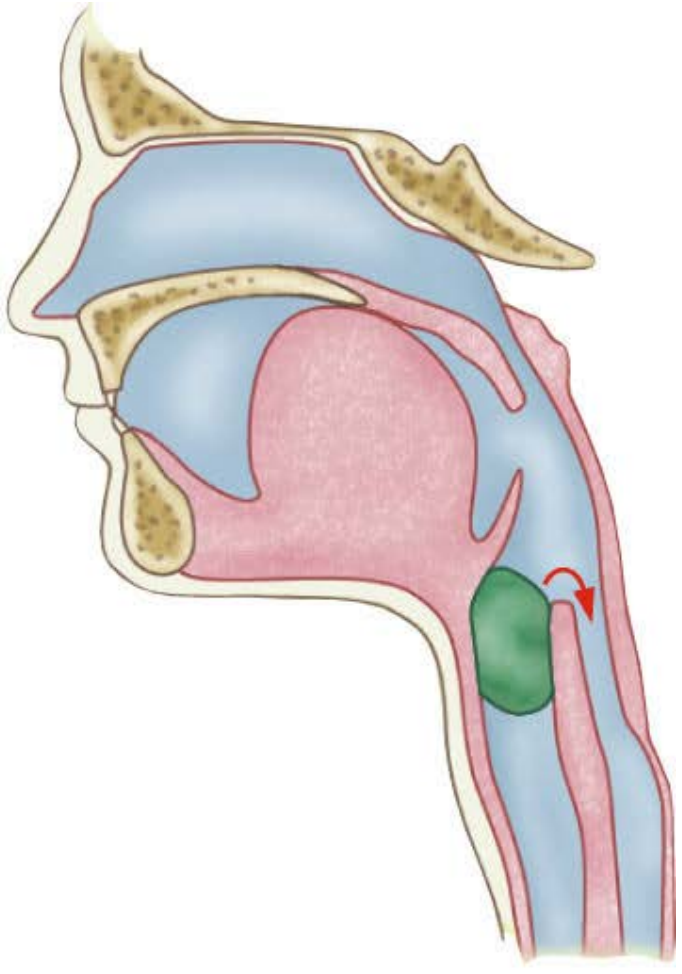
Stomach
Adds acid, enzyme for protein
Churns, mixes food to chyme

Small Intestine
Adds enzymes for digesting
carbohydrates, fats & protein
Cell lining absorb nutrients
into blood & lymph

Large Intestine
Reabsorbs water & electrolytes
Storage chamber for feces

S&W 2014 fig 3-9 p 83

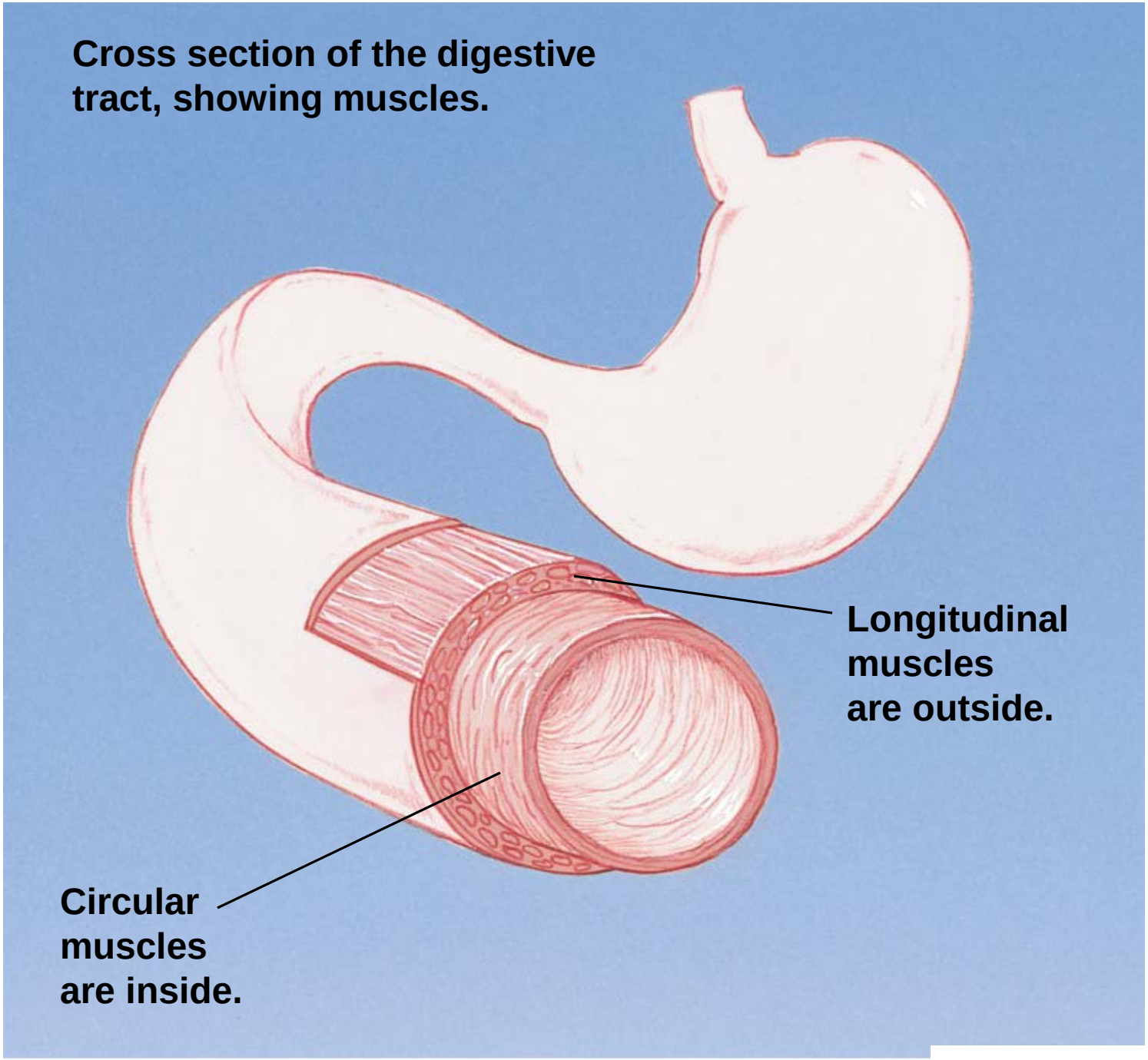




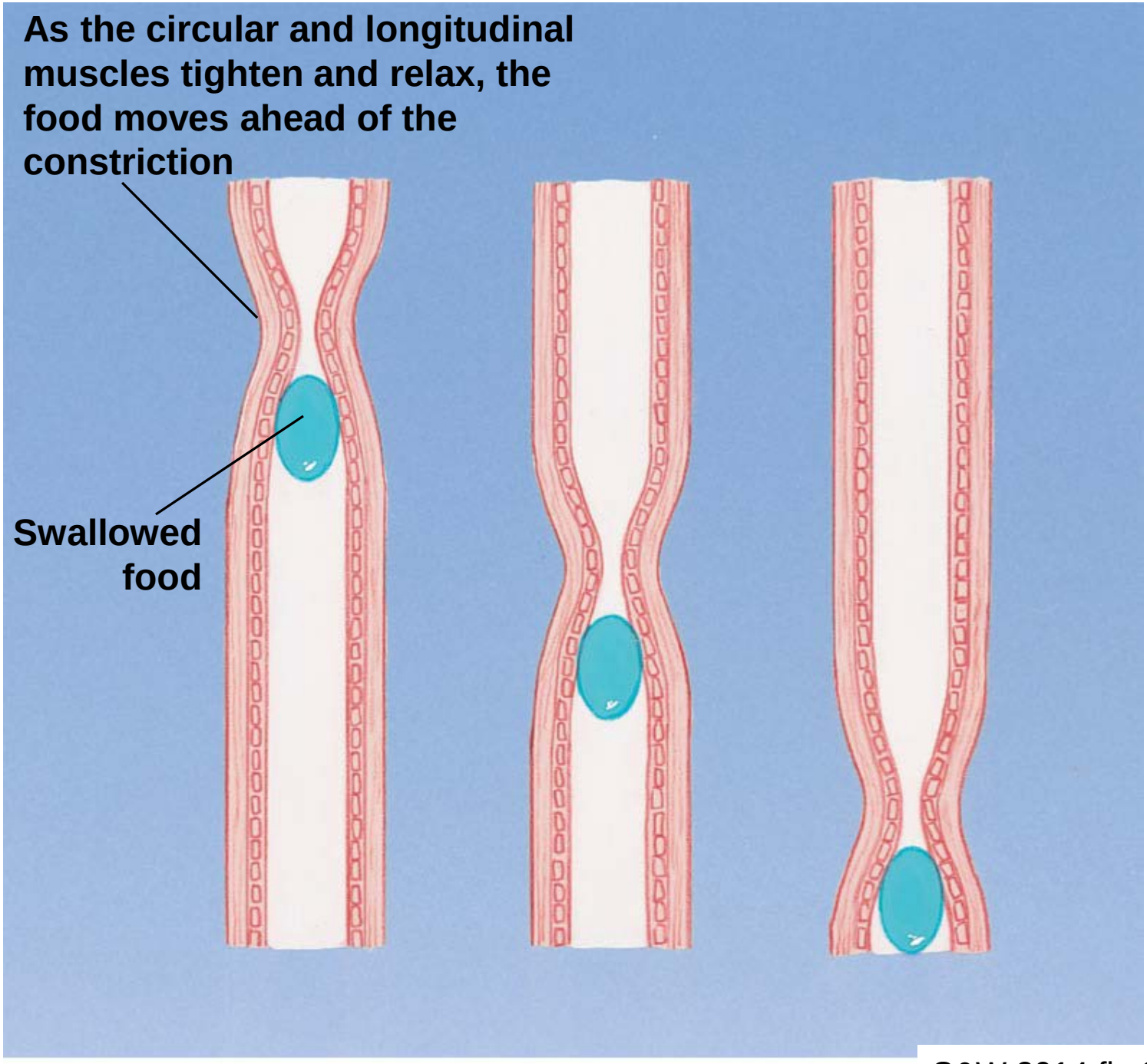
Normal swallowing

Choking!

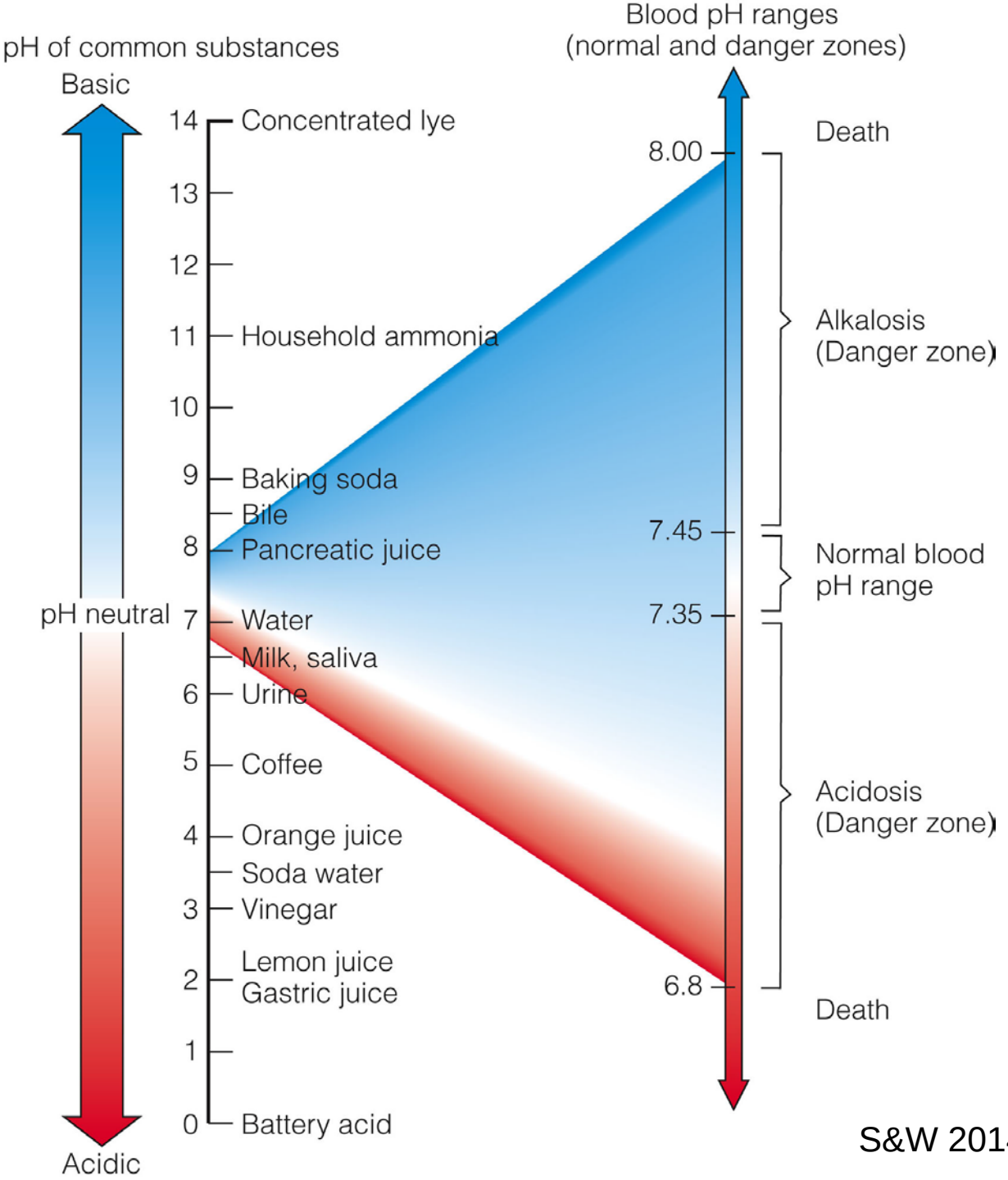
S&W 2014 fig 3-15 p 94



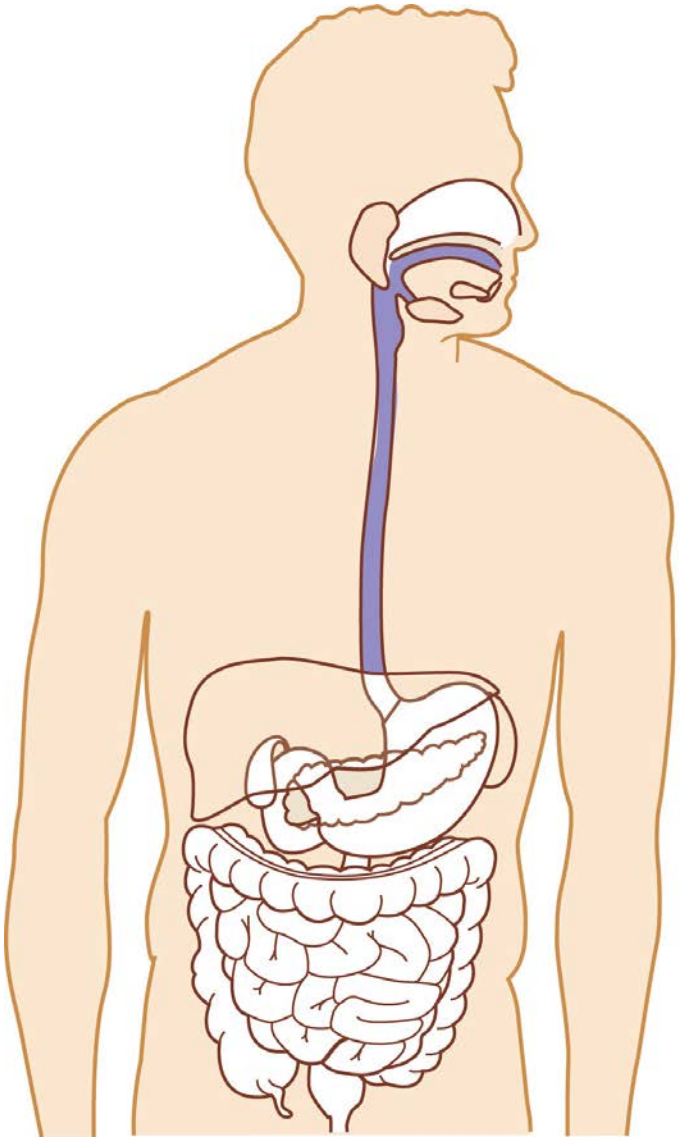
S&W 2014 fig 3-10 p 84



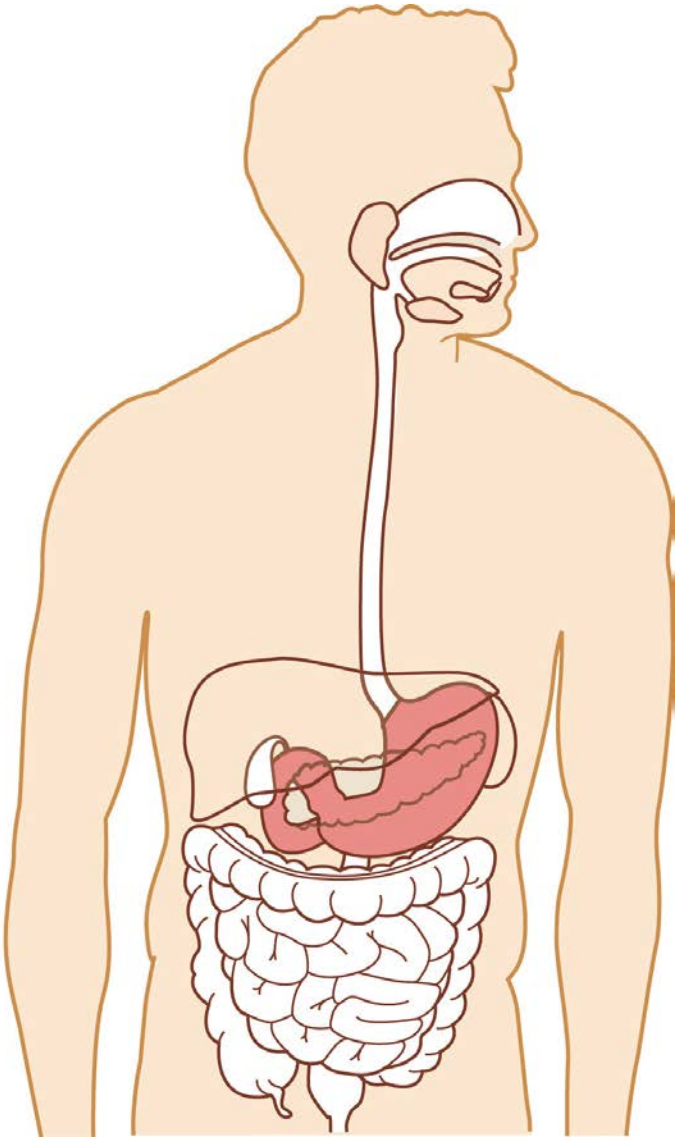
S&W 2014 fig 3-10 p 84



S&W 2014 fig 3-12 p 87

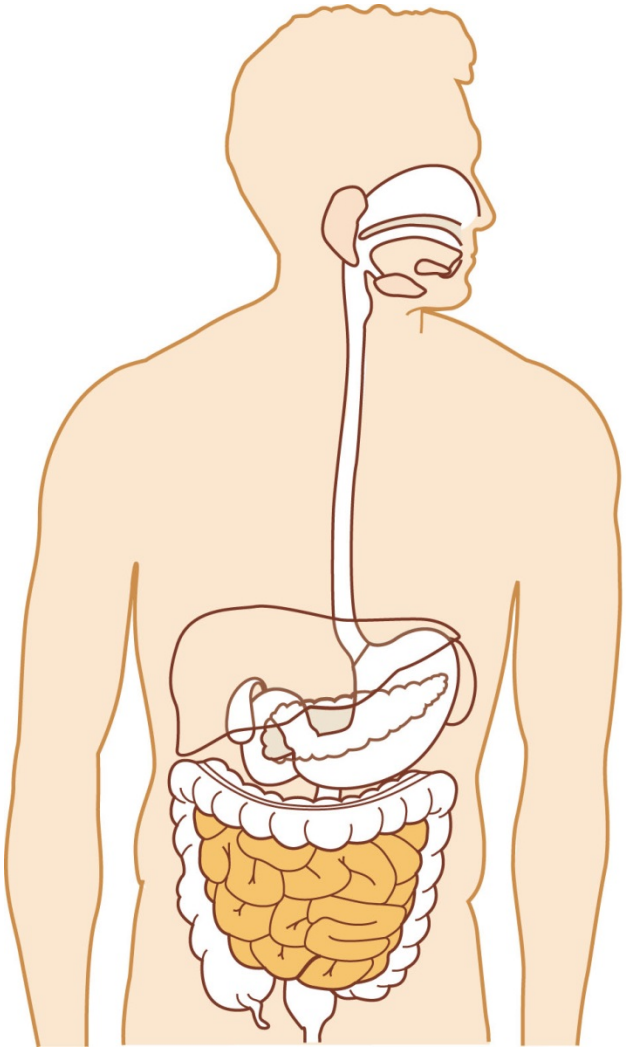


Time in mouth < 1 min

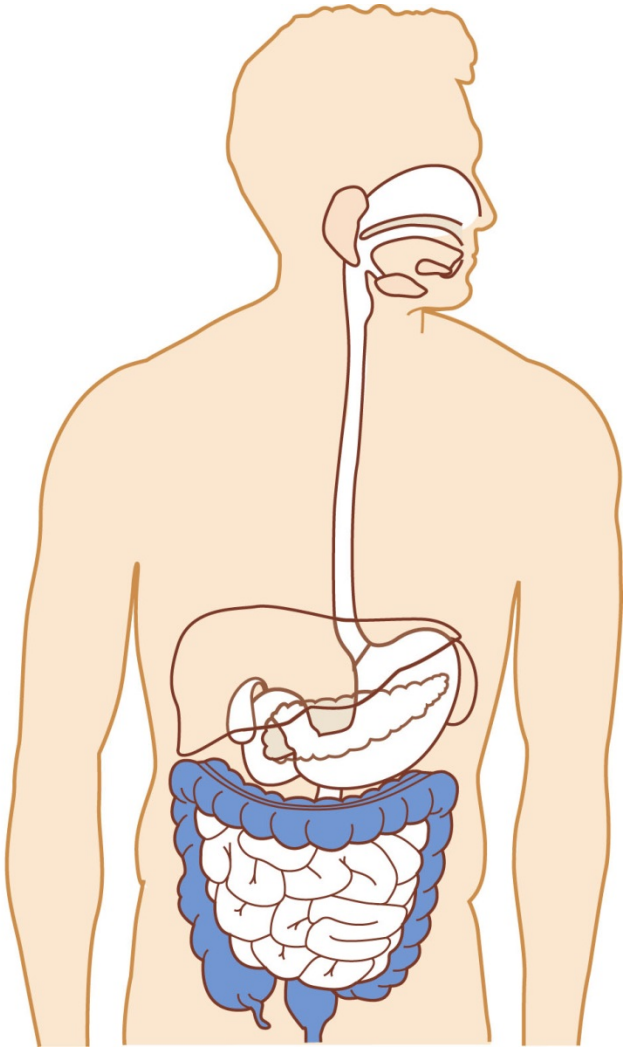


Time in stomach ~1–2 hr

S&W 2014 fig 3-13 p 89



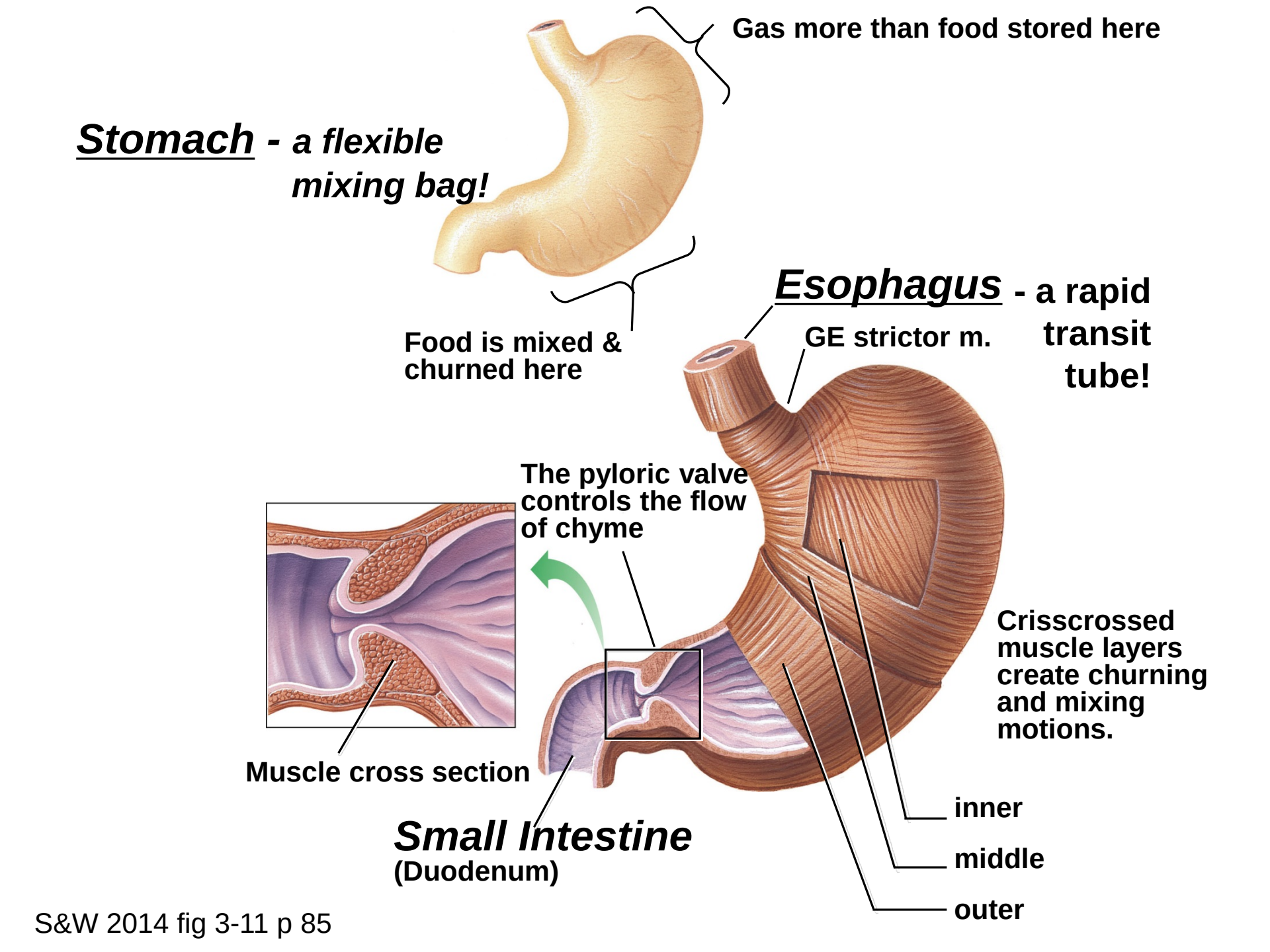
Time in small intestine
~7–8 hr*



Time in large intestine
~12–14 hr*

***Based on a 24-hour transit time. Actual times vary widely.**

S&W 2014 fig 3-13 p 89



S&W 2014 fig 3-11 p 85

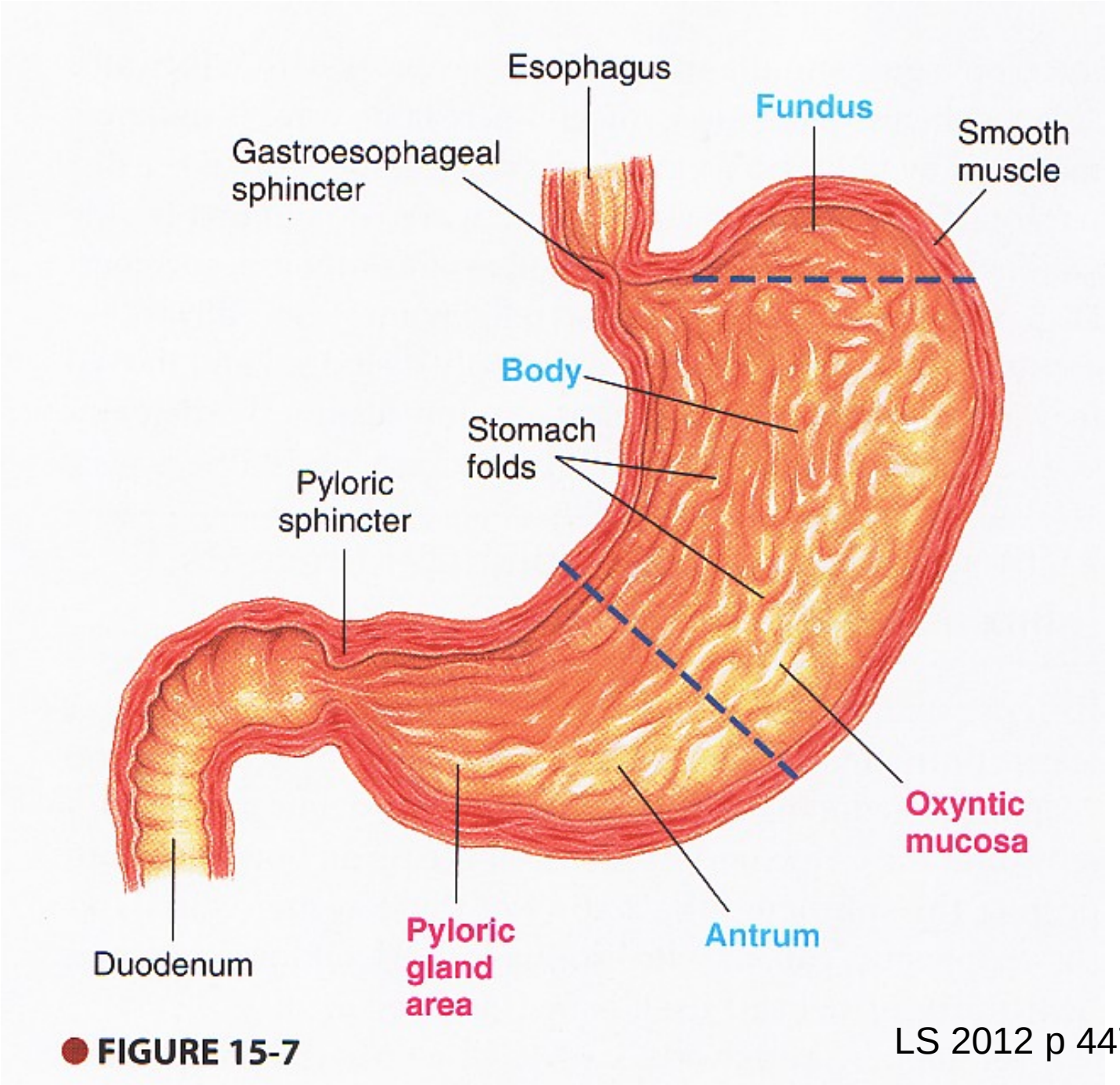
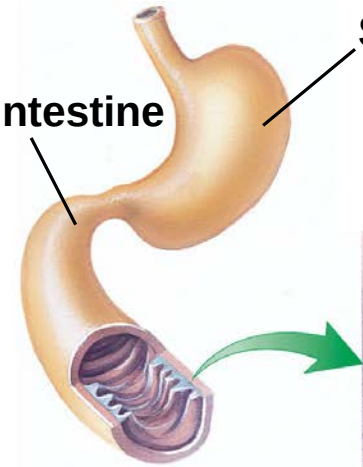


FIGURE 15-7

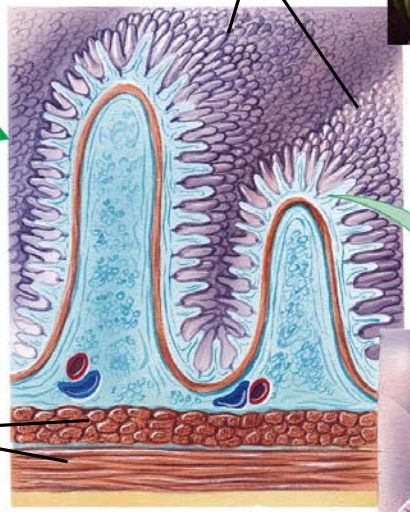
LS 2012 p 447

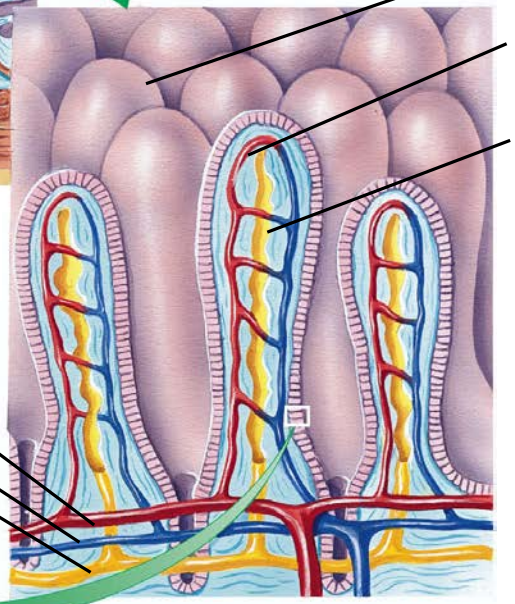


Folds with villi on them

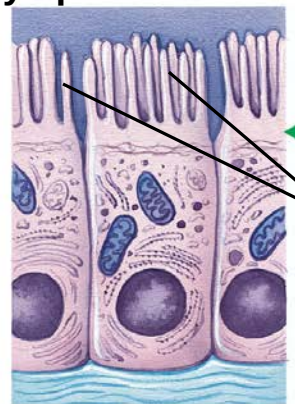
Intestinal villi move like a sea anemone with constant motion

Small intestine wall has 1000s of folds & is carpeted with villi



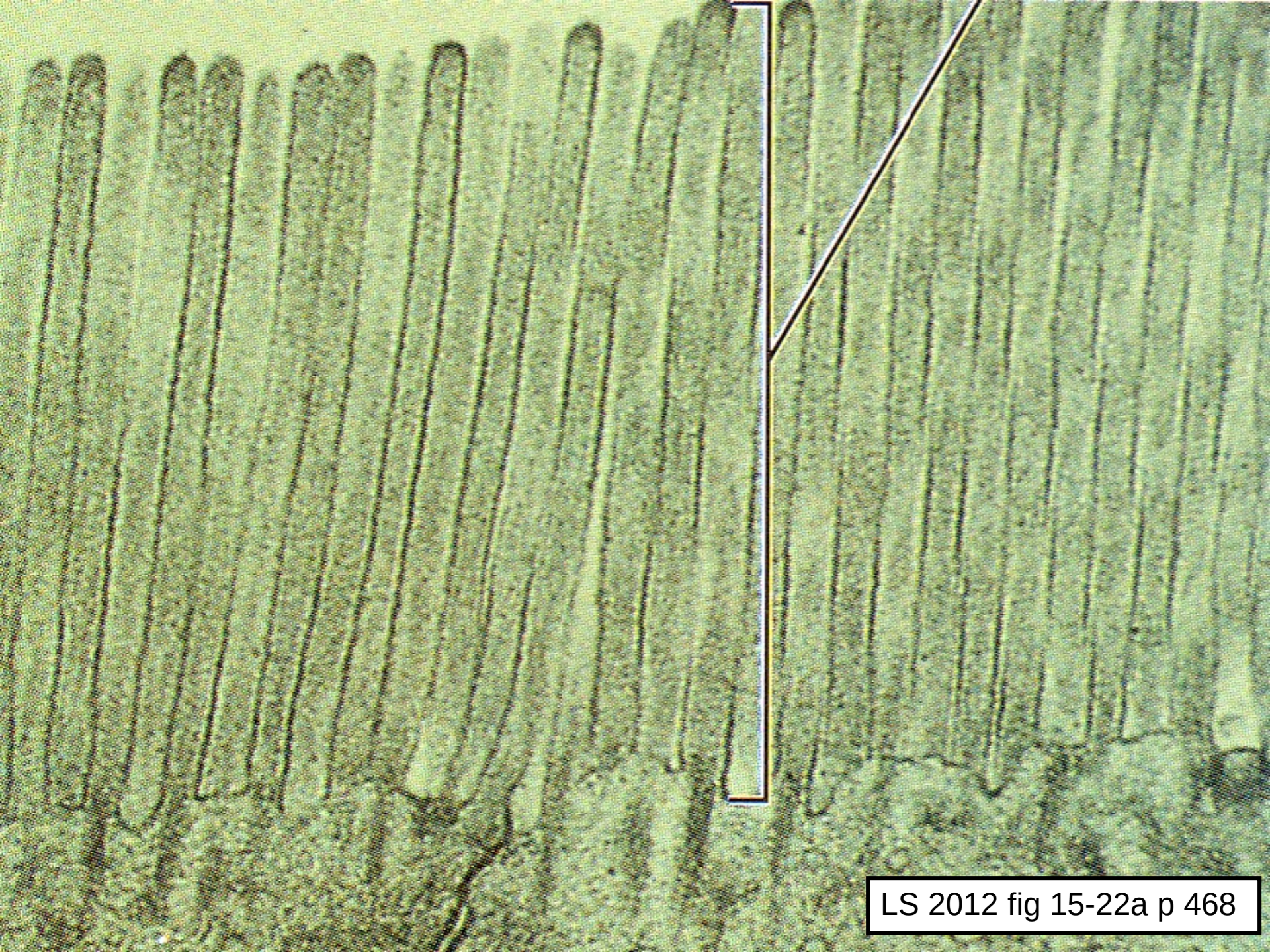


EM photo of human intestinal cell w/microvilli



Each villus is covered with many microvilli to Increase SA further!

S&W 2014
fig 3-14 p 91

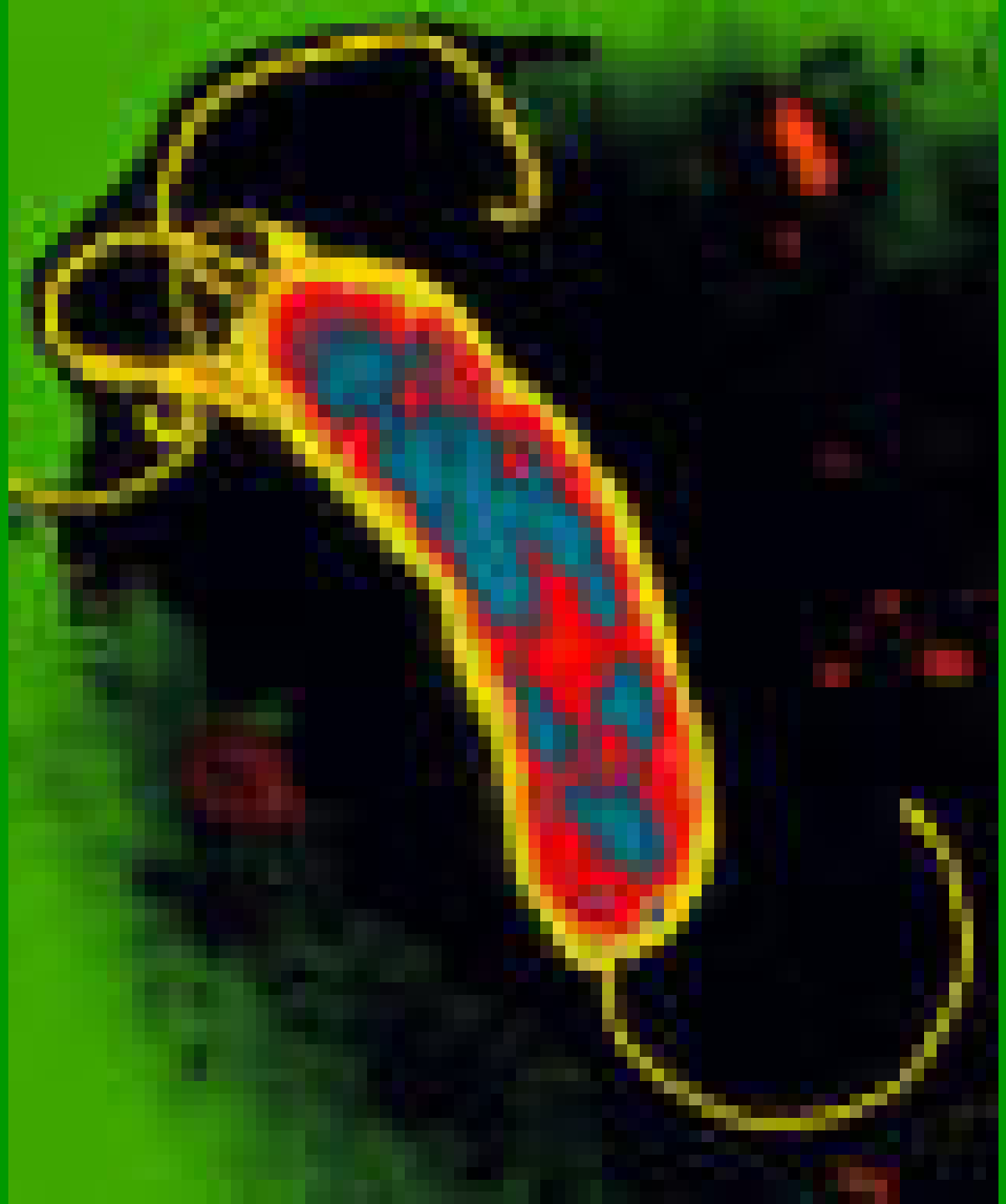


LS 2012 fig 15-22a p 468

What is the major function of the small intestine?

Absorption!!

http://www.cdc.gov/ulcer/



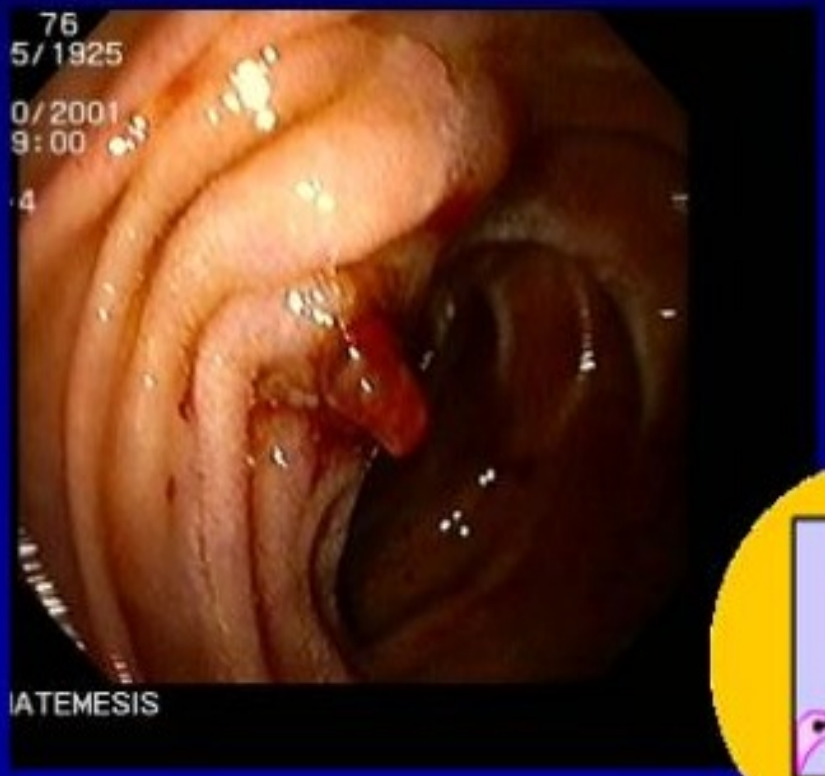
Ulcer Facts

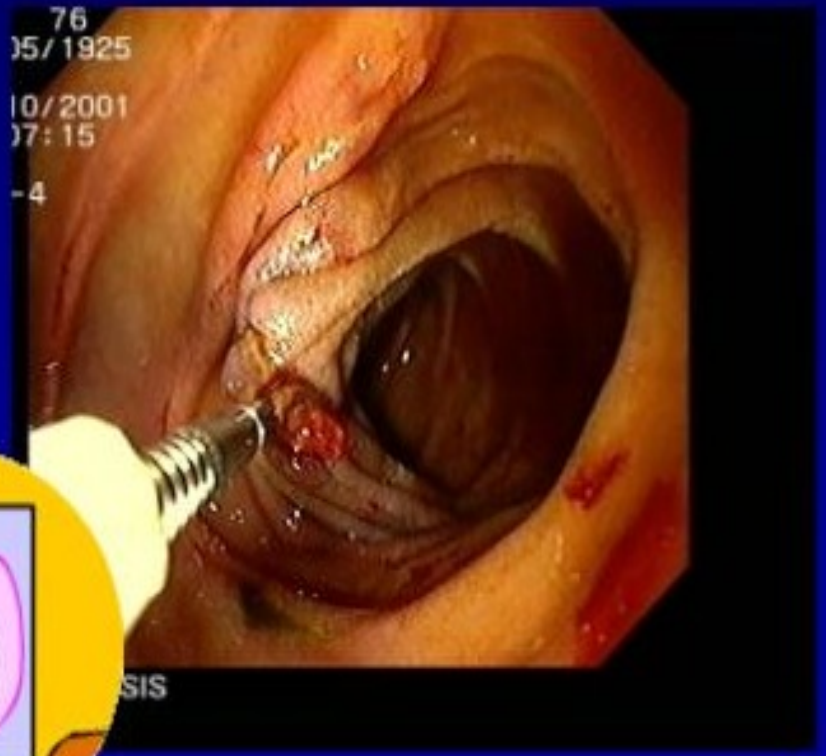
- Most ulcers are caused by an infection, not spicy food, acid or stress.
- The most common ulcer symptom is burning pain in the stomach.
- Your doctor can test you for *H. pylori* infection.
- Antibiotics are the new cure for ulcers.
- Eliminating *H. pylori* infections with antibiotics means that your ulcer can be cured for good.

Clipping a Duodenal Ulcer

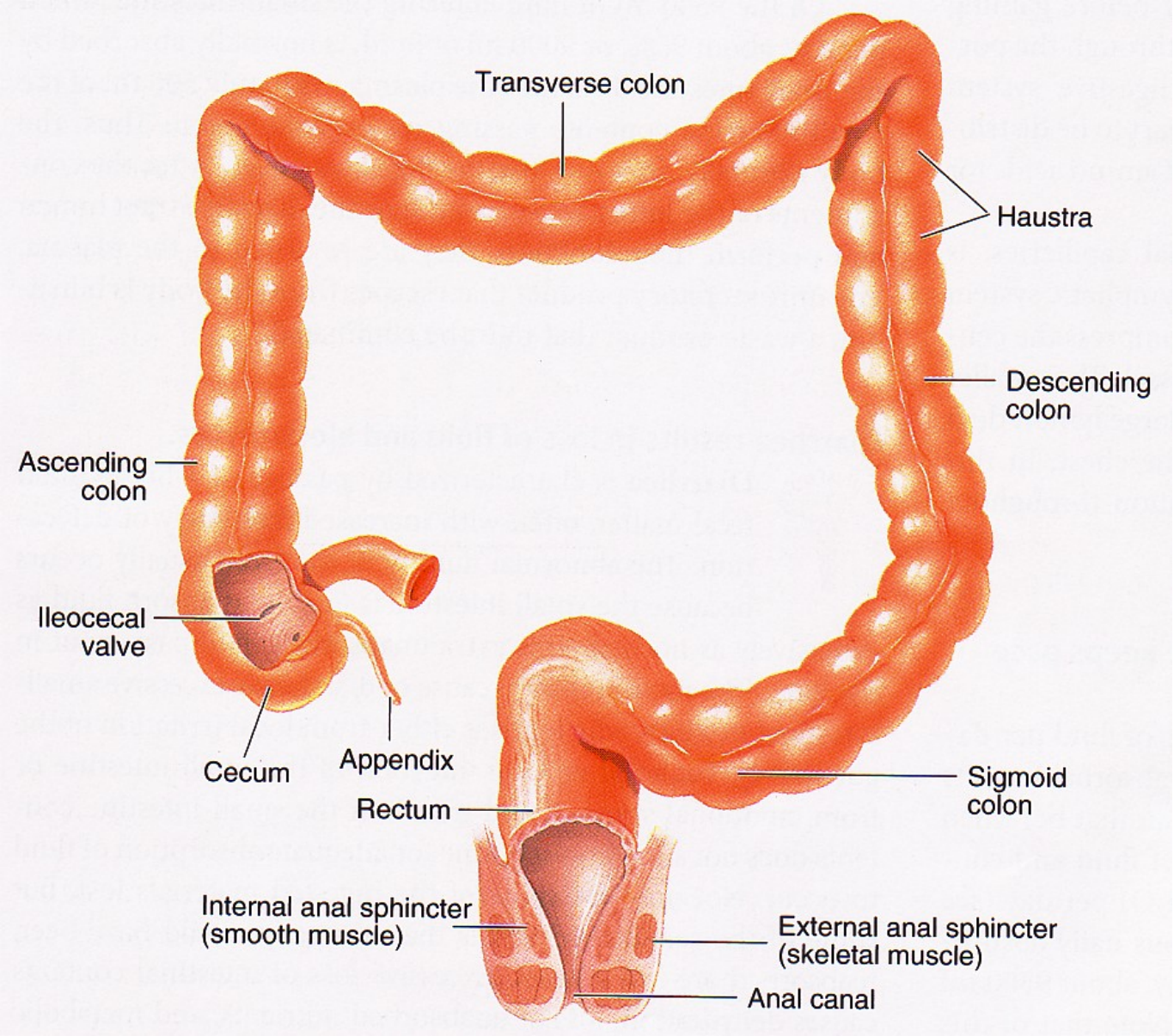
Peering through the pylorus into the duodenum, we see some blood and a vessel sticking out of the wall, just at the front edge of a small but deep ulcer.

In the second photograph, a disposable metal clip is applied to the ulcer. The patient remained well and left hospital three days later.





Large Intestine ≡ Dehydration Chamber



LS 2012 fig 15-24 p 472

Quiz Bowl, Chapter 3: Group Competition

1. All of the following are *correct* concerning *ulcers* *except*:
   a. they usually occur in the large intestine
   b. many are caused by a bacterium
   c. if not treated correctly, they can lead to stomach cancer
   d. their symptoms can be masked by using antacids regularly

2. Which of the following *increases* the production of *intestinal gas*?
   a. chewing gum
   b. drinking carbonated beverages
   c. eating certain vegetables
   d. all of the above

3. *Chemical digestion* of all nutrients mainly occurs in which *organ*?
   a. mouth b. stomach c. small intestine d. large intestine

4. Which *chemical* released by the *pancreas* *neutralizes stomach acid* entering the small intestine?
   a. mucus b. enzymes c. bicarbonate d. bile

5. Which passes through the *large intestine* mostly *unabsorbed*?
   a. starch b. vitamins c. minerals d. fiber

Quiz Bowl, Chapter 3: Group Competition

6. *T-cells* are immune cells that *ingest and destroy antigens* in a process known as *phagocytosis*.
   T F

7. *Bile* starts the process of *protein digestion* in the stomach.
   T F

8. *To digest* foods *efficiently*, people should not combine certain foods, such as meat and fruit, at the same meal.
   T F

9. The *gall bladder* stores *bile* until it is needed to *emulsify fat*.
   T F

10. *Absorption of the majority of nutrients* takes place across the mucus-coated lining of the *stomach*.
    T F

Alcohol Facts

1. **33% of US college students are binge drinkers (≥ 4 drinks in a short time span) yet > 90% deny it.**
2. **Alcohol is involved in 20% of all boating fatalities...**
3. **...23% of all suicides...**
4. **...39% of all traffic fatalities...**
5. **...40% of all residential fire fatalities...**
6. **...47% of all homocides...**
7. **...65% of all domestic violence incidents.**

TABLE C3-6 Myths and Truths Concerning Alcohol

Myth:	A shot of alcohol warms you up.
Truth:	Alcohol diverts blood flow to the skin making you feel warmer, but it actually cools the body.
Myth:	Wine and beer are mild; they do not lead to addiction.
Truth:	Wine and beer drinkers worldwide have high rates of death from alcohol-related illnesses. It's not what you drink but how much that makes the difference.
Myth:	Mixing drinks is what gives you a hangover.
Truth:	Too much alcohol in any form produces a hangover.
Myth:	Alcohol is a stimulant.
Truth:	Alcohol depresses the brain's activity.
Myth:	Alcohol is legal; therefore, it is not a drug.
Truth:	Alcohol is legal, but it alters body functions and is medically defined as a depressant drug.

What's a drink? ≡ ½ oz of pure ethanol (ETOH)

S&W 2014 fig C3-1 p 102

Women & Blood Alcohol [BAC]

Drinks[a]	Body Weight in Pounds—Women									
	90	100	120	140	160	180	200	220	240	
	00	00	00	00	00	00	00	00	00	ONLY SAFE DRIVING LIMIT
1	.05	.05	.04	.03	.03	.03	.02	.02	.02	IMPAIRMENT BEGINS
2	.10	.09	.08	.07	.06	.05	.05	.04	.04	DRIVING SKILLS SIGNIFICANTLY AFFECTED
3	.15	.14	.11	.10	.09	.08	.07	.06	.06	
4	.20	.18	.15	.13	.11	.10	.09	.08	.08	
5	.25	.23	.19	.16	.14	.13	.11	.10	.09	
6	.30	.27	.23	.19	.17	.15	.14	.12	.11	LEGALLY INTOXICATED
7	.35	.32	.27	.23	.20	.18	.16	.14	.13	
8	.40	.36	.30	.26	.23	.20	.18	.17	.15	
9	.45	.41	.34	.29	.26	.23	.20	.19	.17	
10	.51	.45	.38	.32	.28	.25	.23	.21	.19	

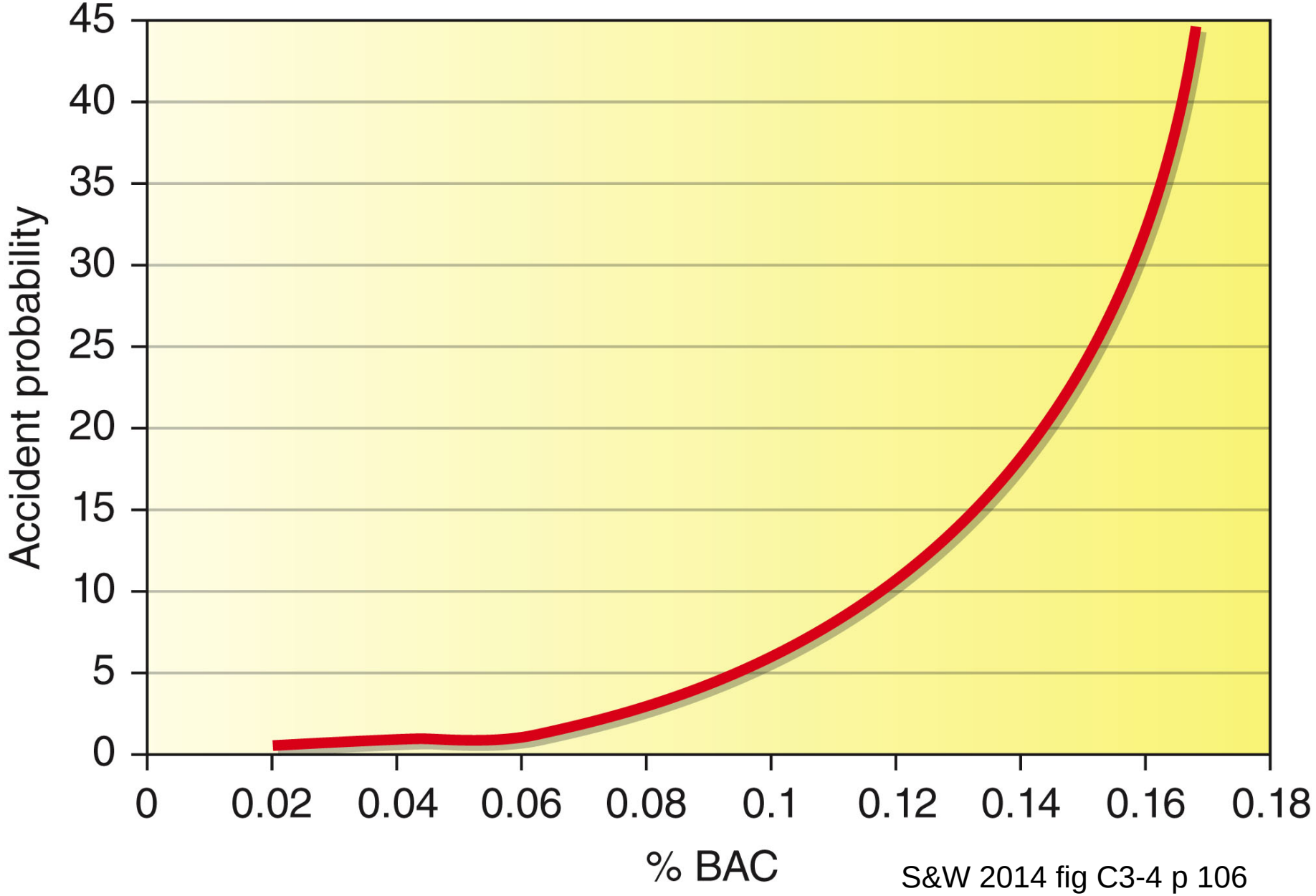
S&W 2014 fig C3-3 p 105

Men & Blood Alcohol [BAC]

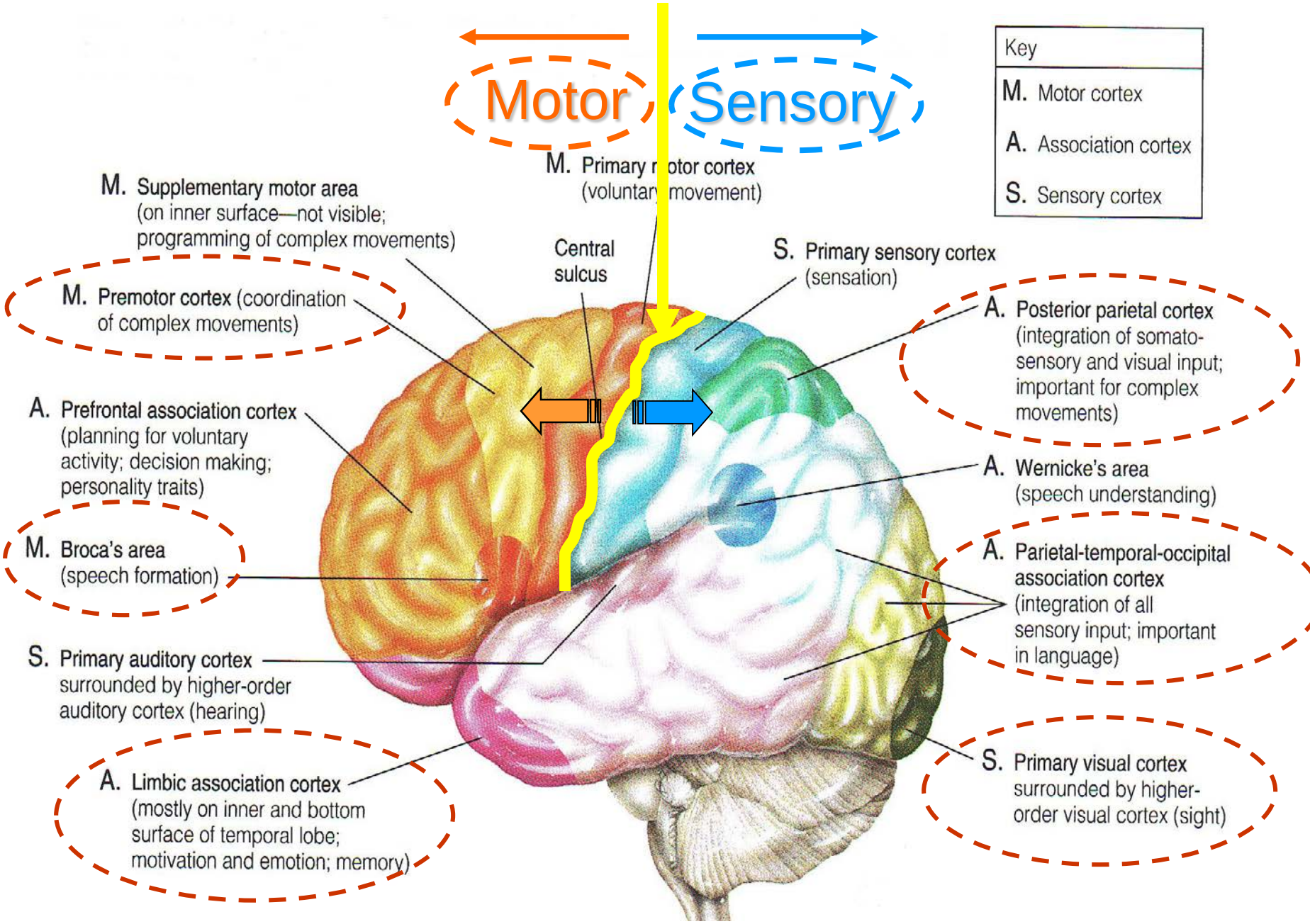
Drinks[a]	Body Weight in Pounds—Men								
	100	120	140	160	180	200	220	240	
	00	00	00	00	00	00	00	00	ONLY SAFE DRIVING LIMIT
1	.04	.03	.03	.02	.02	.02	.02	.02	IMPAIRMENT BEGINS
2	.08	.06	.05	.05	.04	.04	.03	.03	
3	.11	.09	.08	.07	.06	.06	.05	.05	DRIVING SKILLS SIGNIFICANTLY AFFECTED
4	.15	.12	.11	.09	.08	.08	.07	.06	
5	.19	.16	.13	.12	.11	.09	.09	.08	
6	.23	.19	.16	.14	.13	.11	.10	.09	
7	.26	.22	.19	.16	.15	.13	.12	.11	LEGALLY INTOXICATED
8	.30	.25	.21	.19	.17	.15	.14	.13	
9	.34	.28	.24	.21	.19	.17	.15	.14	
10	.38	.31	.27	.23	.21	.19	.17	.16	

S&W 2014 fig C3-3 p 105

Blood Alcohol [ ] (BAC) & Accident Probability

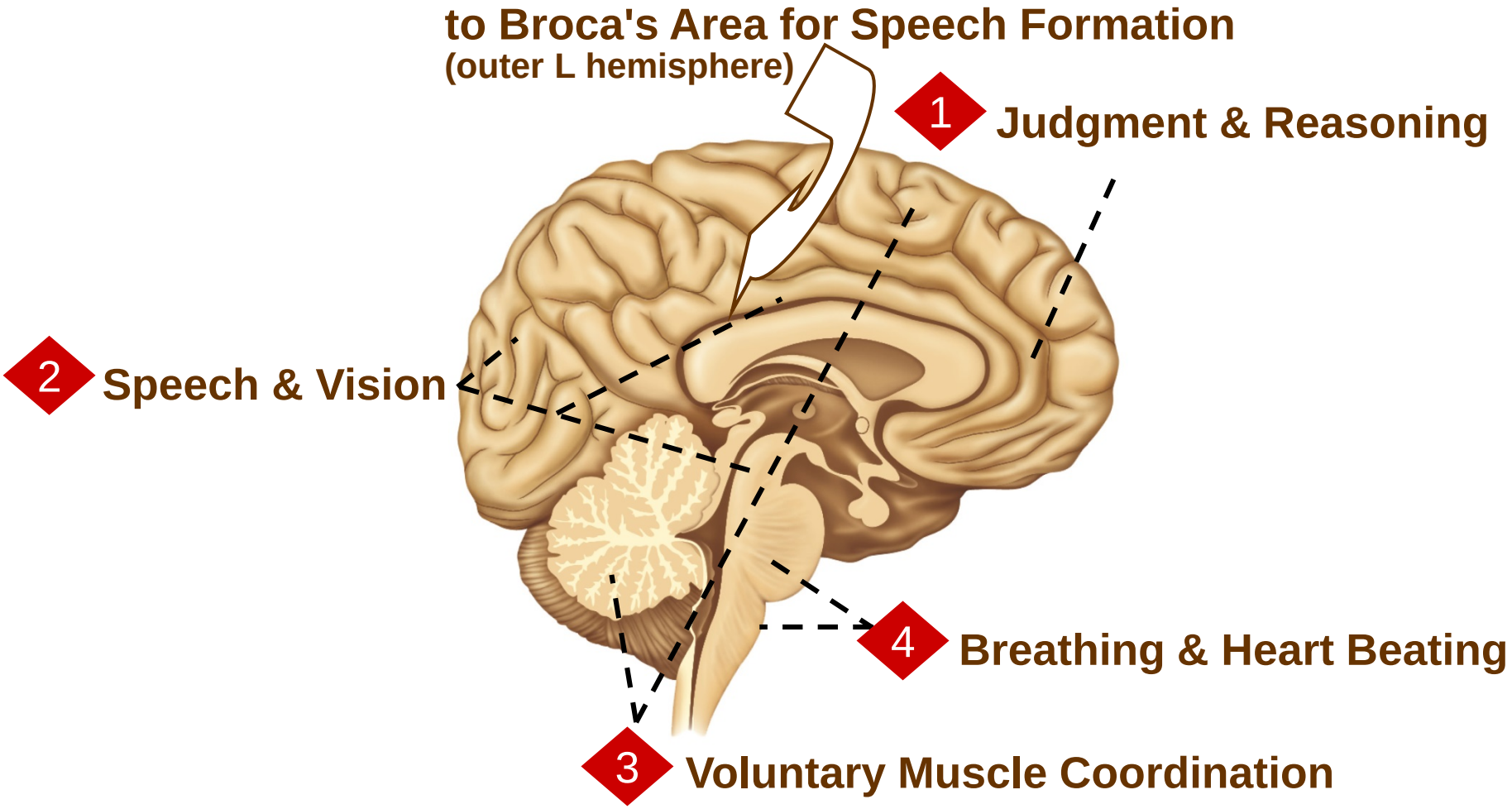


S&W 2014 fig C3-4 p 106



LS 2006, cf: LS 2012 fig 5-8a

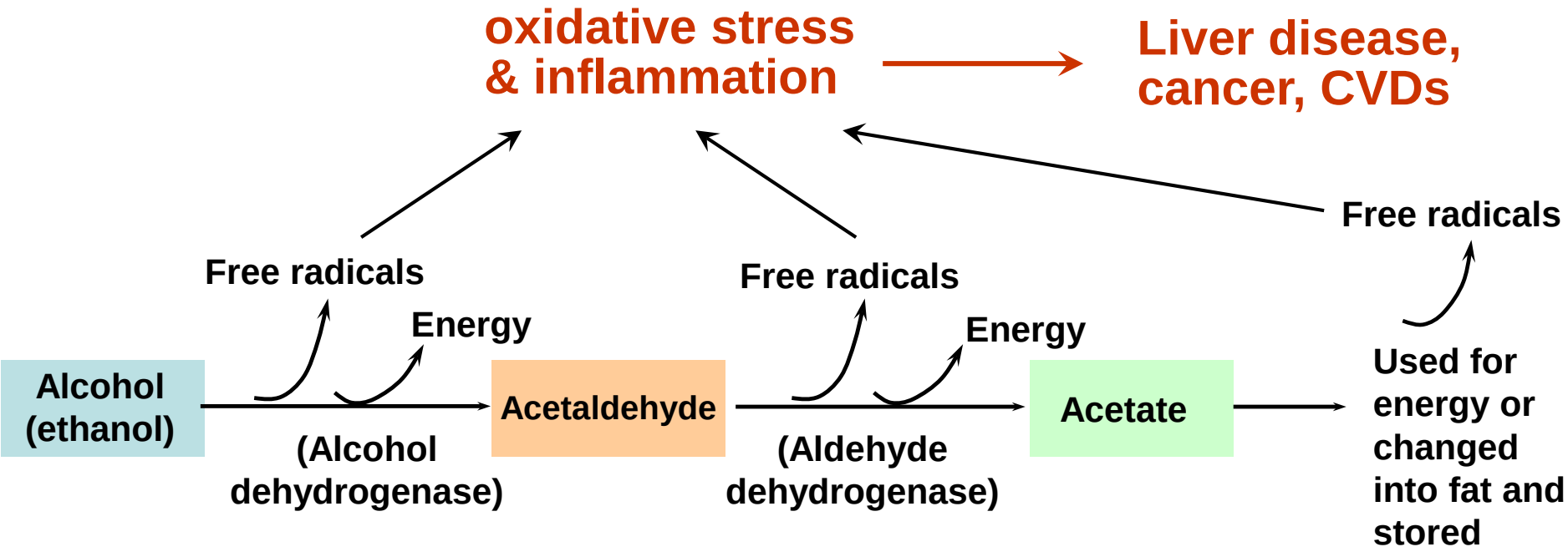
Alcohol's Progressive Effects on the Brain



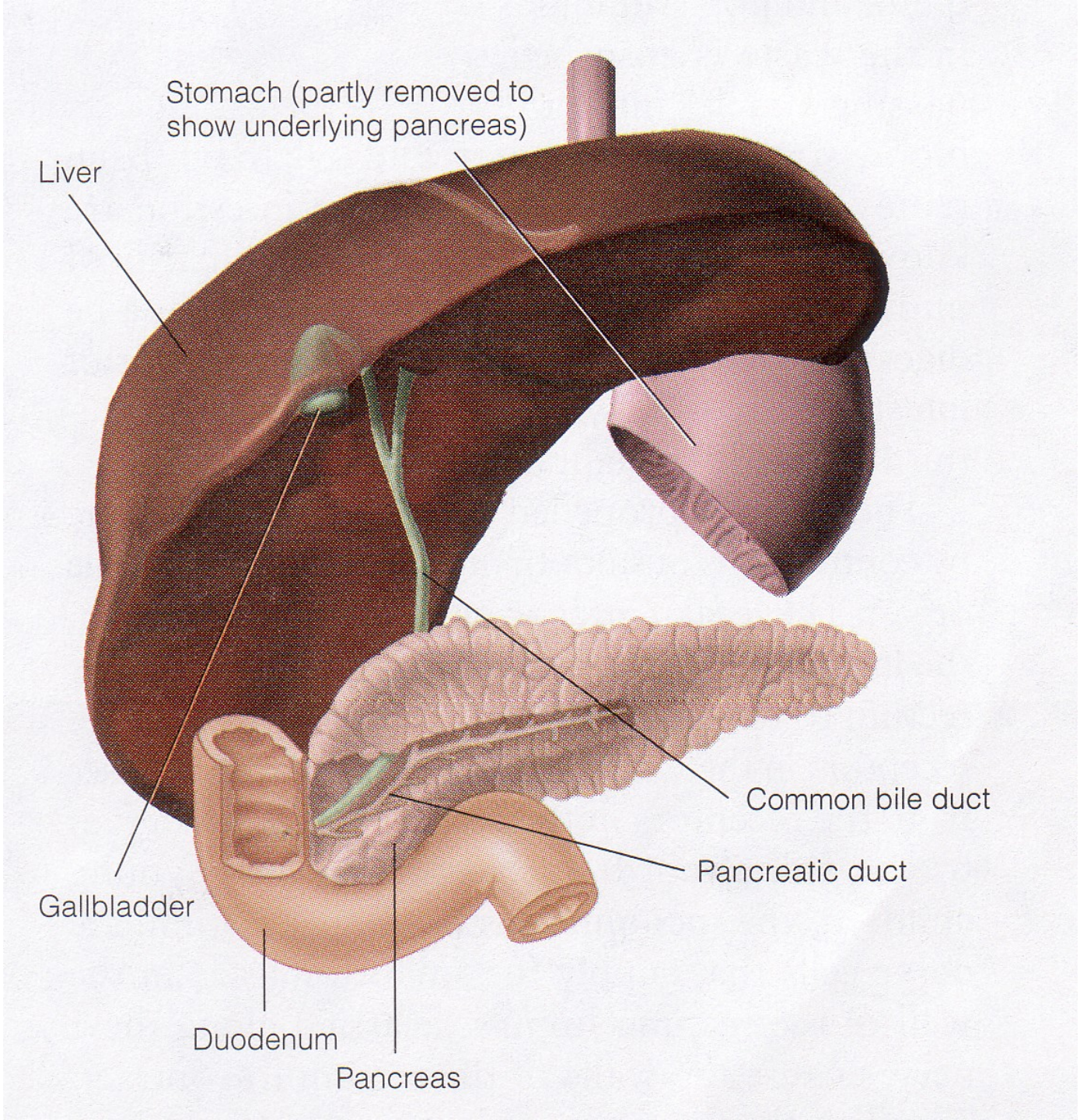
http://learn.genetics.utah.edu/content/addiction/mouse/

Modified > S&W 2014 fig C3-2 p 105

Alcohol Metabolism & Disease Progression



S&W 2014 fig C3-5 p 107

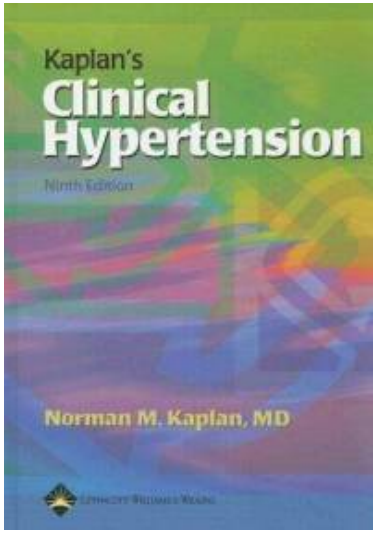

Stomach (partly removed to show underlying pancreas)
Liver
Common bile duct
Pancreatic duct
Gallbladder
Duodenum
Pancreas

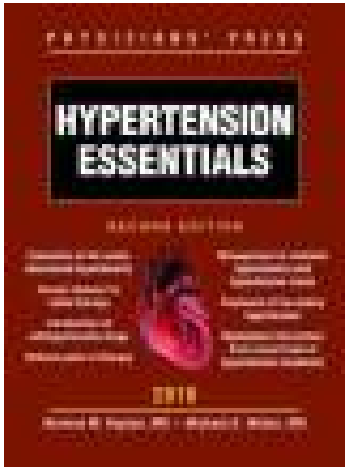
DC 2003

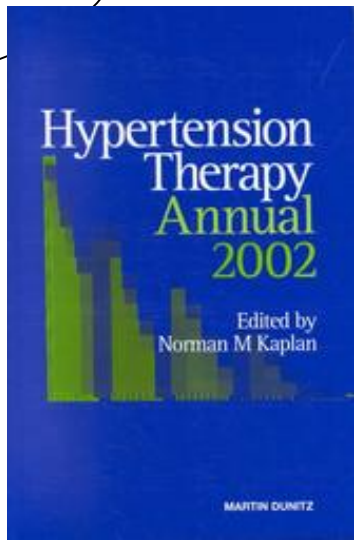
Normal → Fatty → Cirrhosis

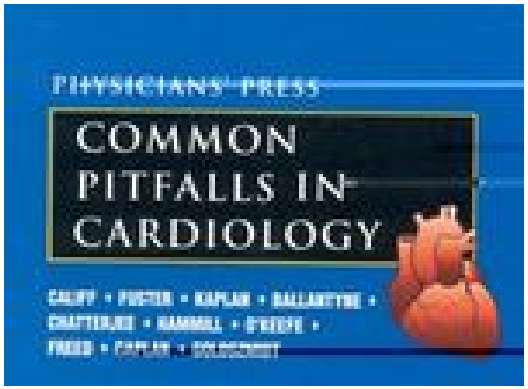
cf:

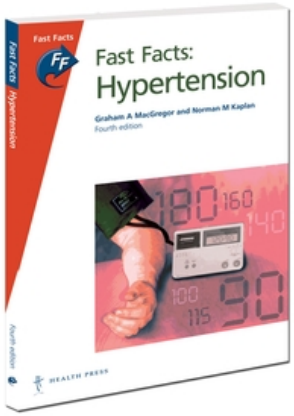
Finally, we can tell our patients something they want to hear – a little bit of drinking is good for you – it will keep you alive!











Dr. Norman Kaplan, SW Medical Center, Dallas TX