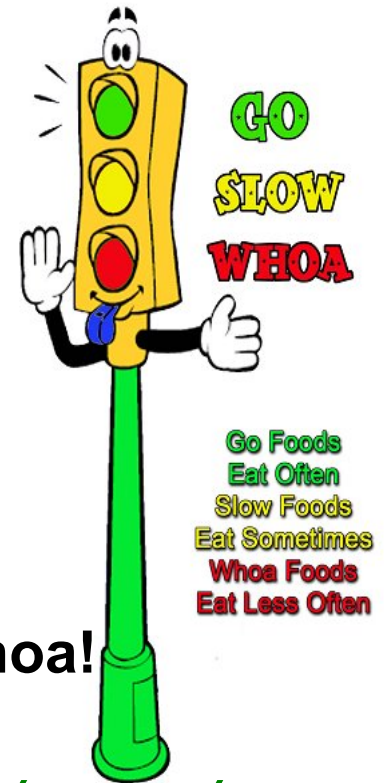


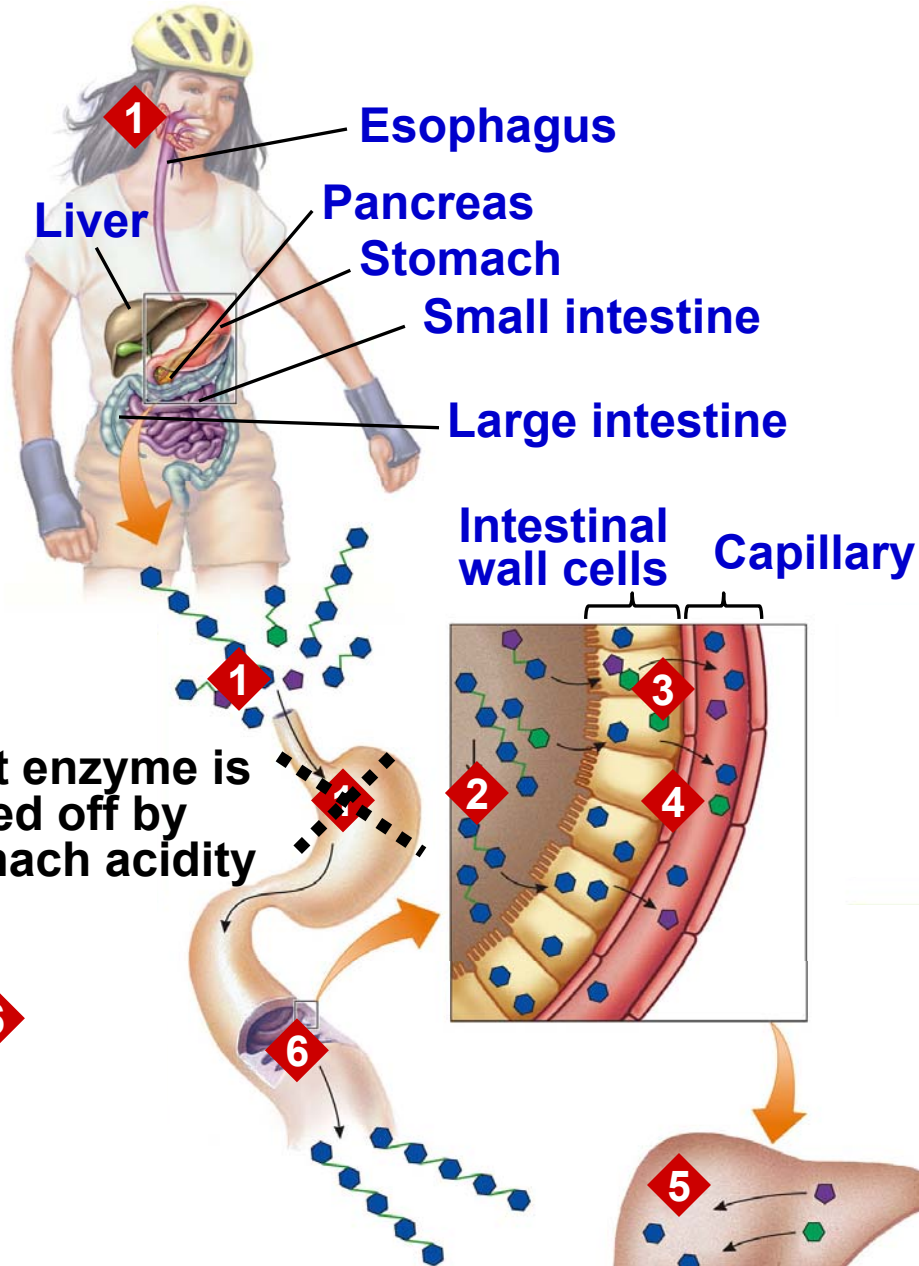
BI 199 Discussion 6

Go, Slow, and Whoa!
**A Quick Guide to
Healthy Eating**



- I. Announcements** Outline comment status?
Nutrition reports w/answers to questions submitted by e-mail by Wednesday. lombardi@uoregon.edu
Please use requested format. Q?
- II. National Heart, Lung & Blood Institute** Go, Slow, Whoa!
Identifying Go, Slow, Whoa Foods! Partner contest!
<http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan/eat-right/choosing-foods.htm>
- III. Carbohydrate Digestion & Glucose Regulation** ch 4 pp131-7
- IV. Glycemic Index & Diabetes Mellitus** pp 137-50
- V. Are Added Sugars Bad for You?** pp 151-5
- VI. Quiz Bowl** Ch 4 Group Competition
- VII. The Lipids: Fats, Oils, Phospholipids & Sterols** Lipoid?
S&W ch 5 pp 156-64 Importance of Fats + a Close Look!

1 Carbohydrate digestion begins in the mouth



Carbohydrate Digestion

2 ...enzyme from pancreas resumes enzymatic digestion

3 Small intestine enzymes split dimers into monomers

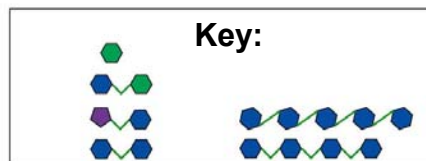
4 Monomers enter capillaries & are delivered to liver

5 Liver converts galactose & fructose to glucose

...but enzyme is turned off by stomach acidity

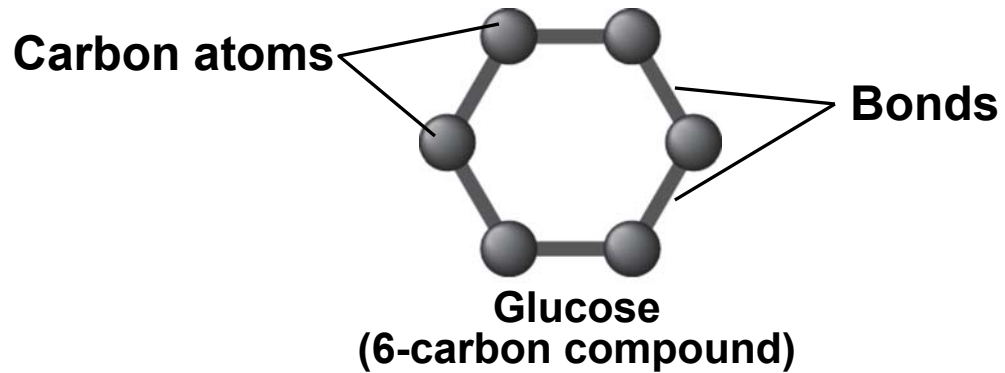
6 Fibers travel unchanged to large intestine

Galactose
Lactose
Sucrose
Maltose

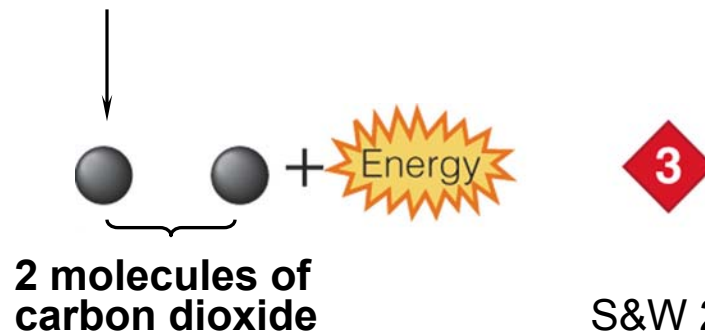
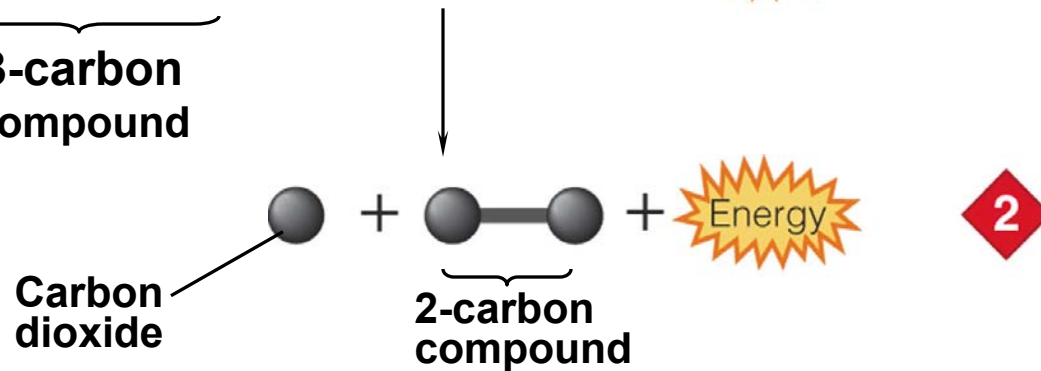
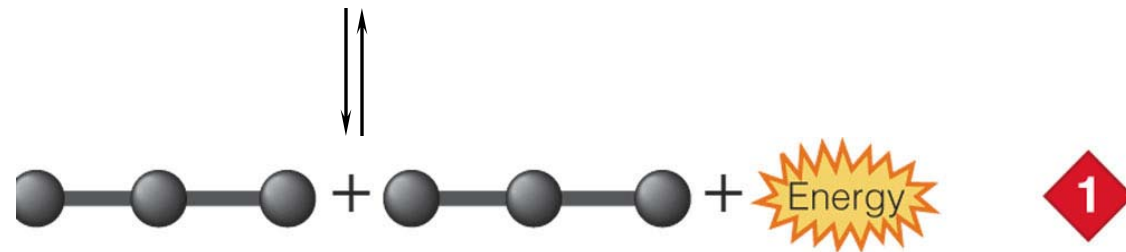


fiber
starch

Glucose



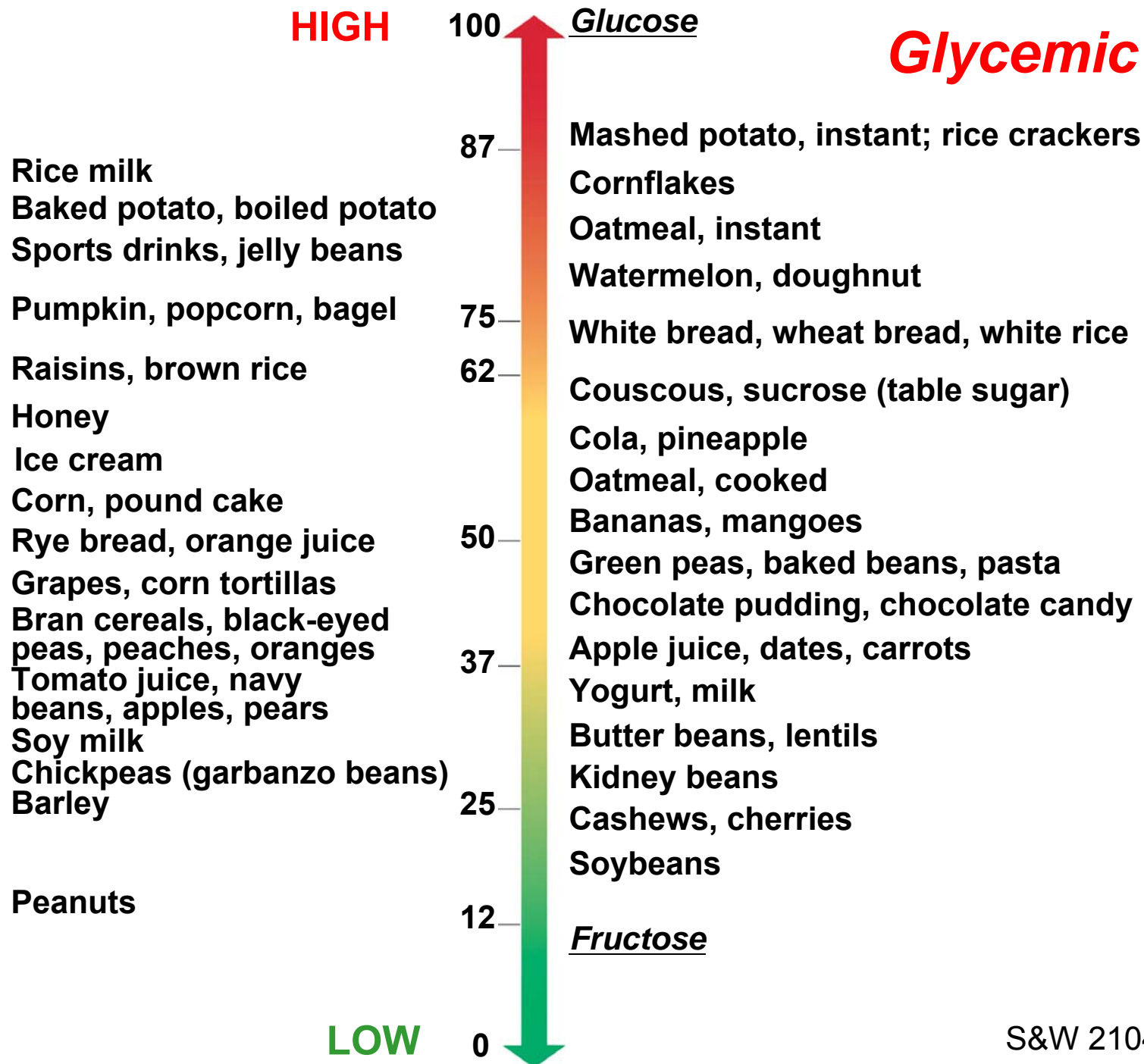
**Glucose breakdown
yields energy + CO₂**



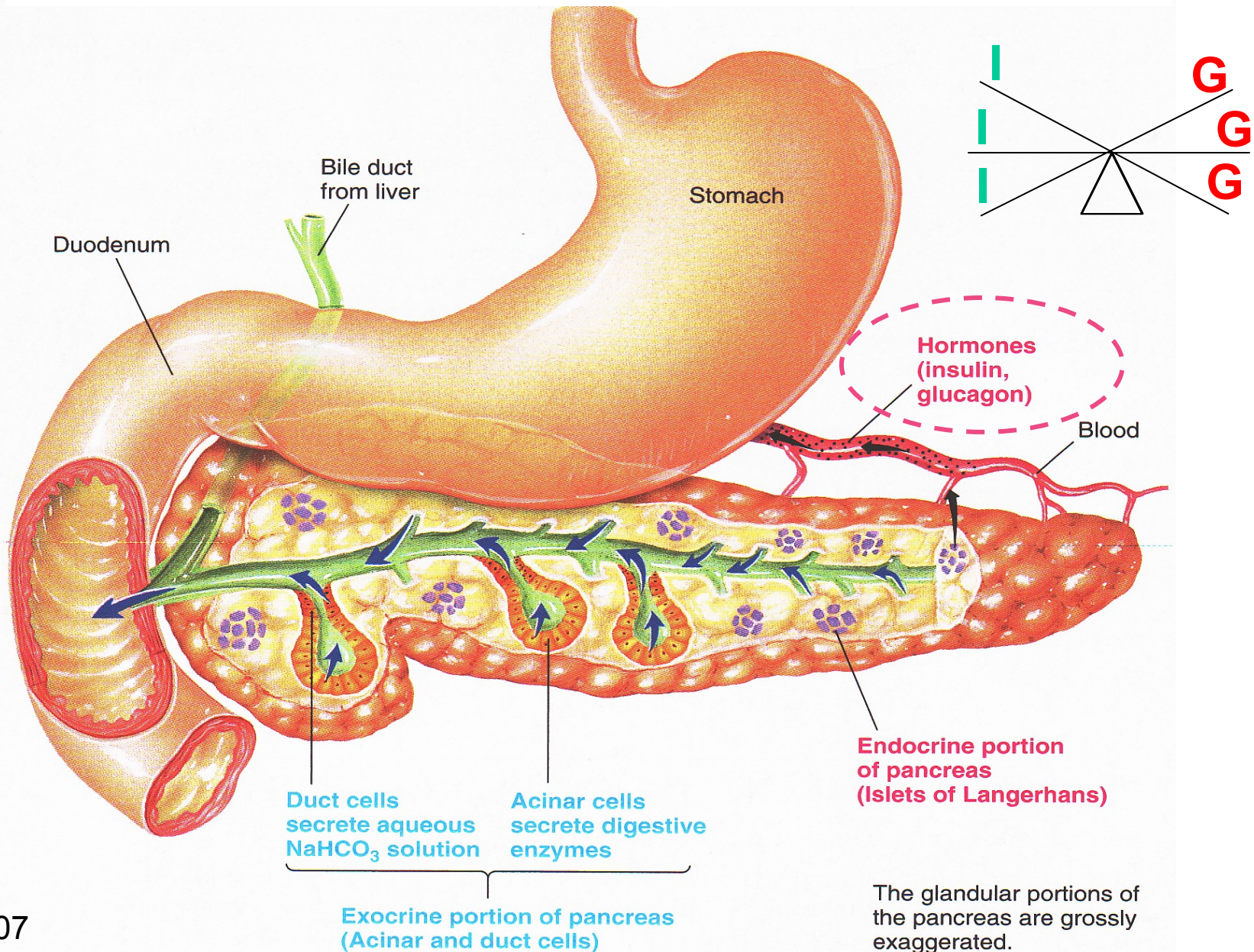
If you're gonna eat the food, you'd better play the game!



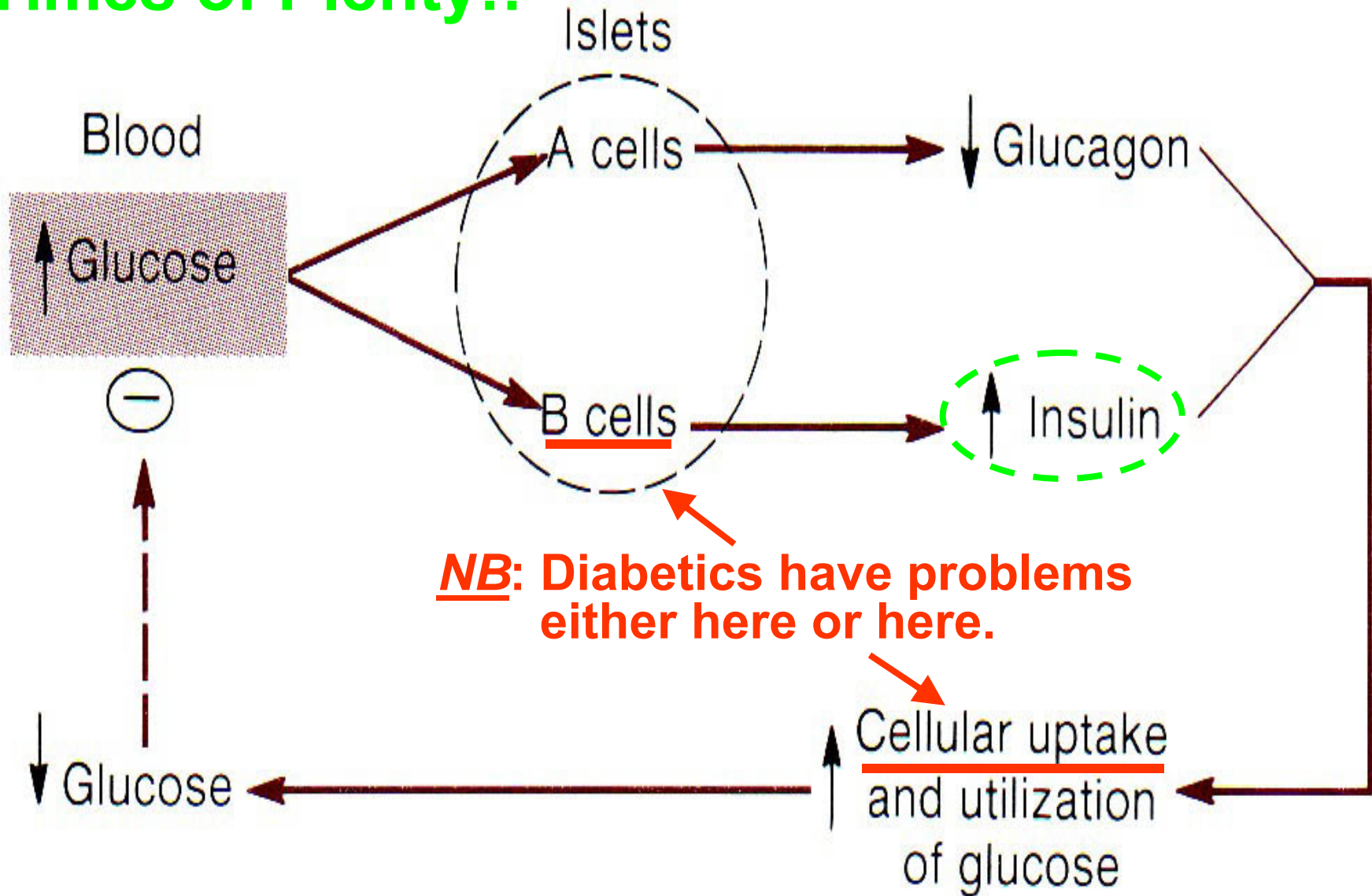
Glycemic Index?



Endocrine Pancreas: Insulin (I) & Glucagon (G) See-Saw Hormones in Regulating Blood Glucose

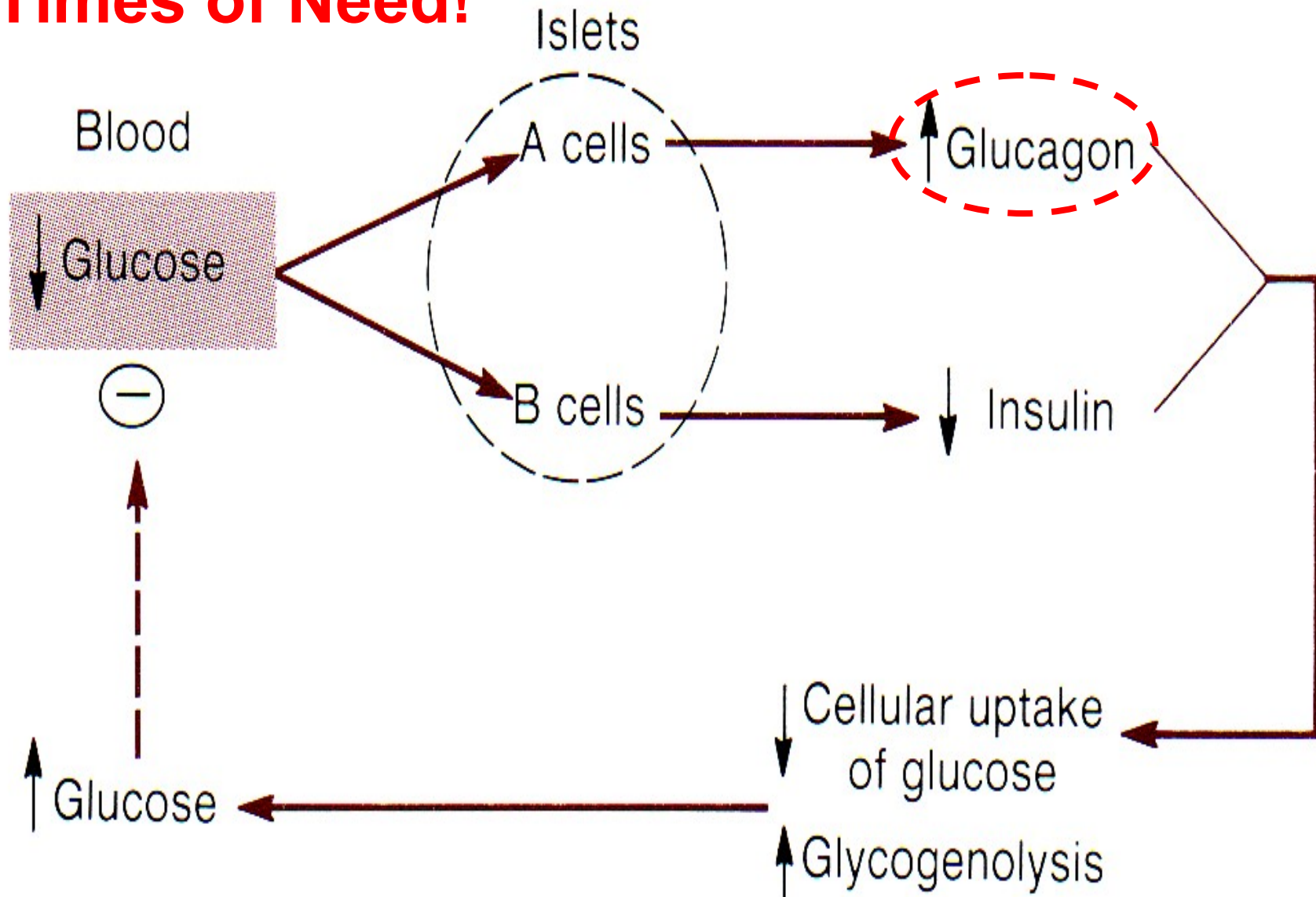


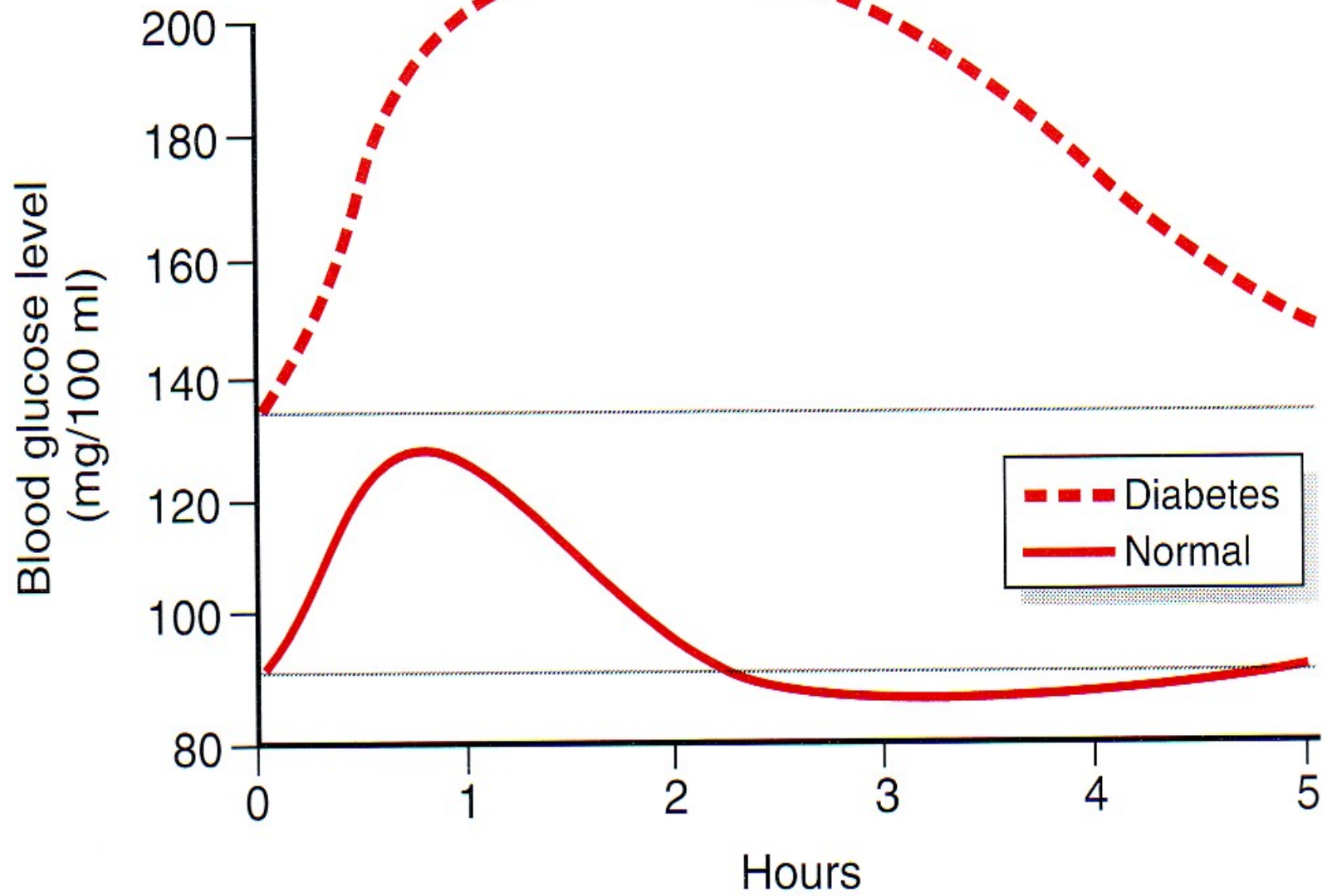
Times of Plenty!!



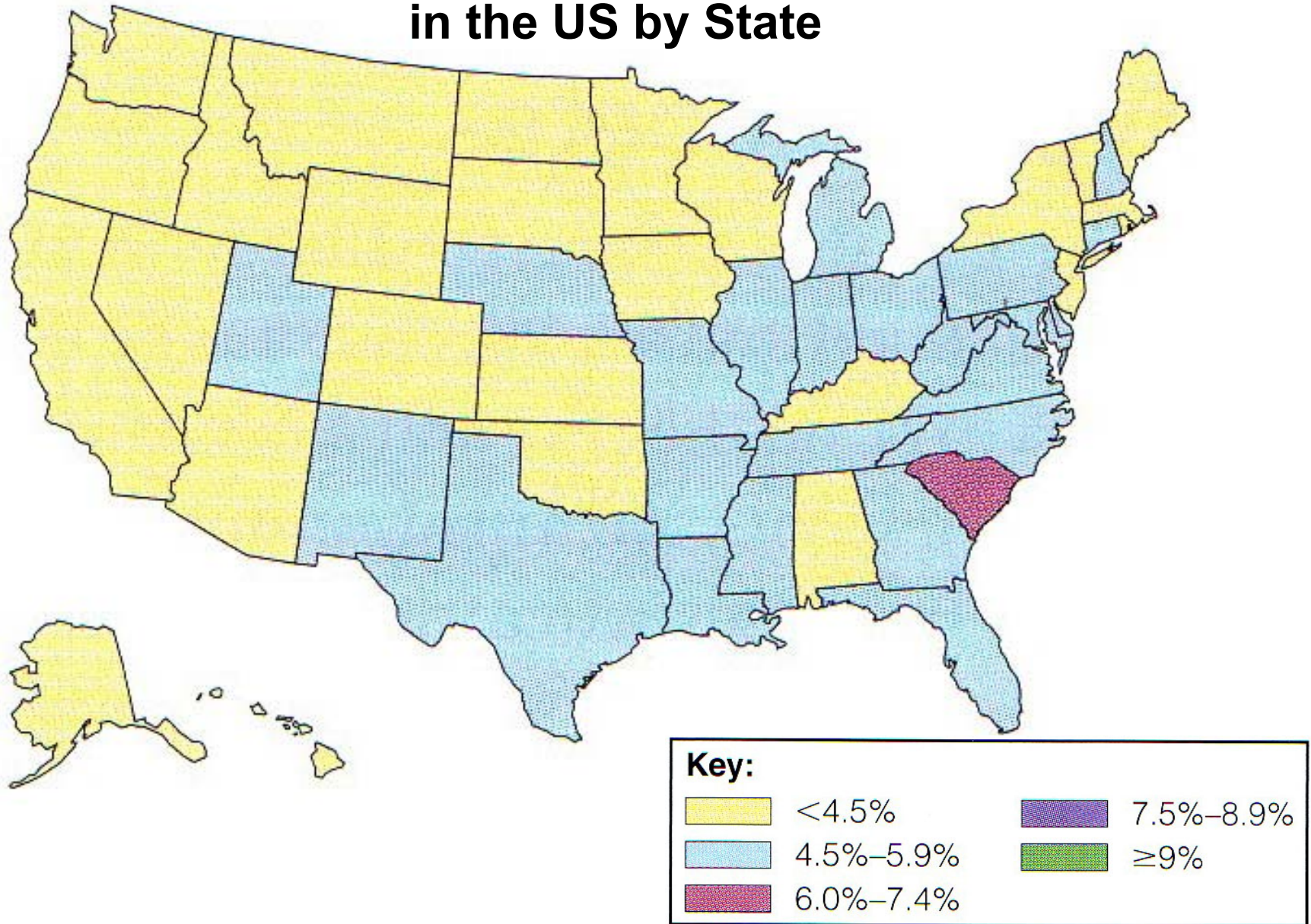
Store!

Times of Need!



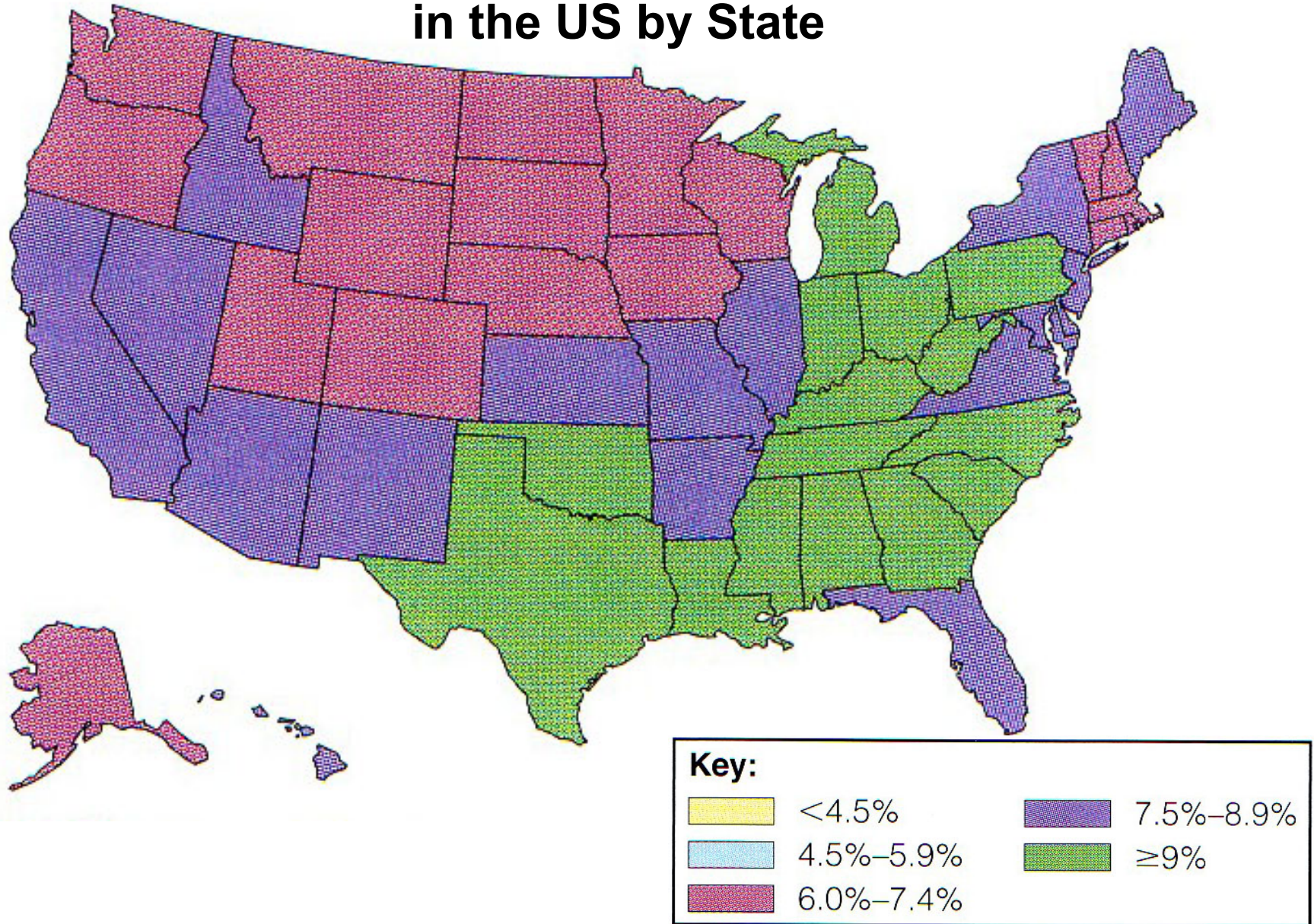


1994 Diabetes Prevalence in the US by State



Source: Centers for Disease Control, Division of Diabetes Translation,
<http://www.cdc.gov/diabetes/statistics>, S&W 2014 fig 4-15 p139A.

2010 Diabetes Prevalence in the US by State



Source: Centers for Disease Control, Division of Diabetes Translation,
<http://www.cdc.gov/diabetes/statistics>, S&W 2014 fig 4-15 p139B.

Table 4–8

Type 1 and Type 2 Diabetes Compared

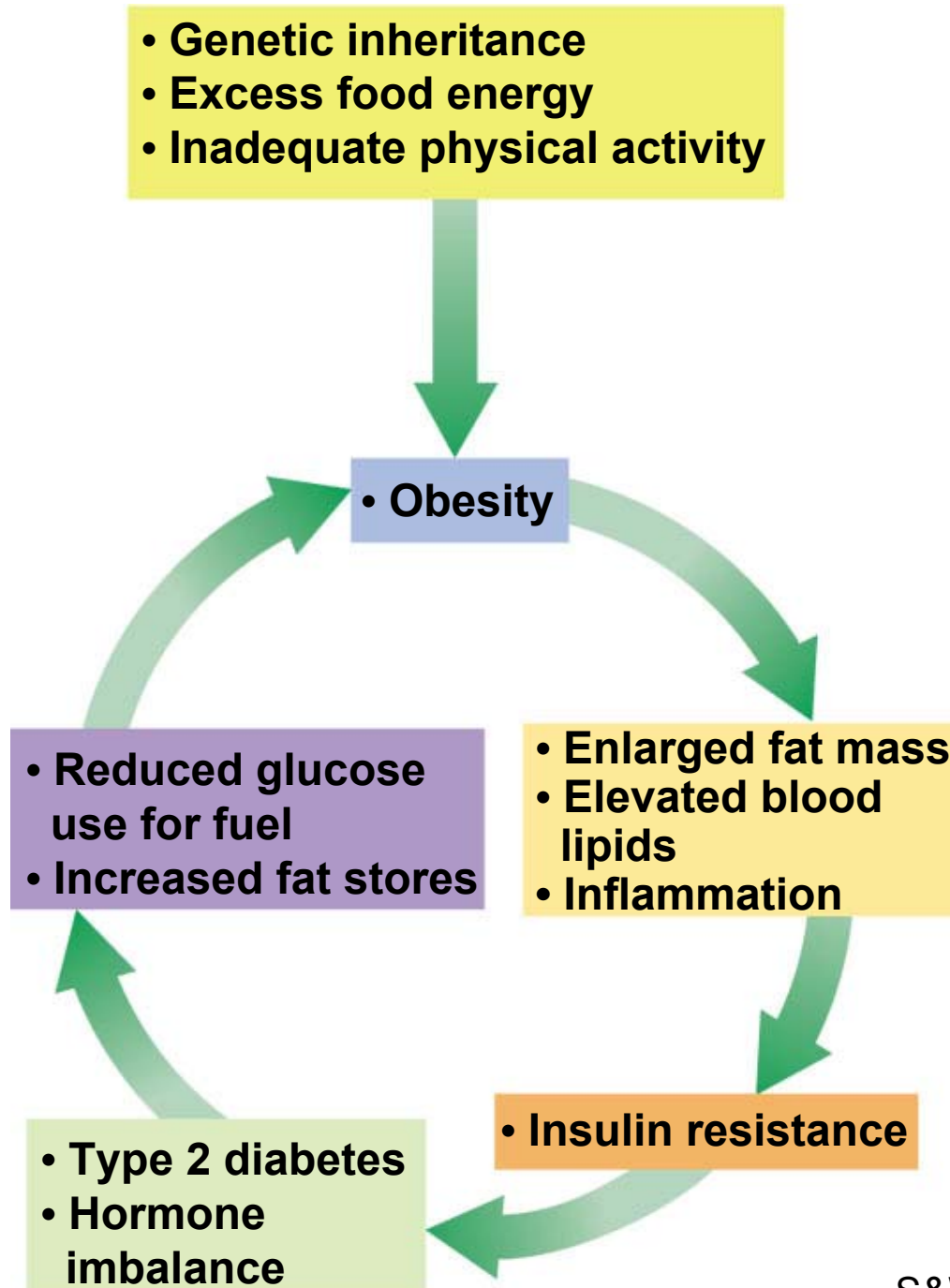
	Type 1	Type 2
Percentage of cases	5–10%	90–95%
Age of onset	<30 years	>40 years ^a
Associated characteristics	Autoimmune diseases, viral infections, inherited factors	Obesity, aging, inherited factors
Primary problems	Destruction of pancreatic beta cells; insulin deficiency	Insulin resistance, insulin deficiency (relative to needs)
Insulin secretion	Little or none	Varies; may be normal, increased, or decreased
Requires insulin	Always	Sometimes
Older names	Juvenile-onset diabetes Insulin-dependent diabetes mellitus (IDDM)	Adult-onset diabetes Noninsulin-dependent diabetes mellitus (NIDDM)

Table 4–9

Warning Signs of Diabetes

These signs appear reliably in type 1 diabetes and, often, in the later stages of type 2 diabetes.

- Excessive urination and thirst
- Glucose in the urine
- Weight loss with nausea, easy tiring, weakness, or irritability
- Cravings for food, especially for sweets
- Frequent infections of the skin, gums, vagina, or urinary tract
- Vision disturbances; blurred vision
- Pain in the legs, feet, or fingers
- Slow healing of cuts and bruises
- Itching
- Drowsiness
- Abnormally high glucose in the blood



Two talk about living with diabetes



<http://login.cengage.com/sso/>

S&W 2014 p 141

Diabetics must constantly juggle diet, exercise & medication to control blood glucose!



Medication

Diet

Exercise

Monitoring blood glucose is a critical step in learning to manage diabetes



Glucose:
Sugar in Blood



Normal: 70-99

Pre-Diabetes: 100-125

Diabetes: ≥ 126 mg/dL

Like others, diabetics benefit from whole grains, vegetables, fruits, legumes & non-/low-fat milk products!



Sugar alcohols like xylitol, mannitol & sorbitol can protect teeth against tooth decay



***Exercise is a must based on
its insulin-like effect!***



Just look for these groups to find the carbohydrates in foods!



Sugar in processed foods?

**1 Tbs creamer =
2 tsp sugar**

**12 oz cola \geq
10 tsp sugar**

**8 oz sweetened
yogurt = 8 tsp
sugar**

**1 Tbs ketchup =
1 tsp sugar**

**$\frac{1}{2}$ cup canned corn
= 1 tsp sugar**

**2 oz chocolate =
8 tsp sugar**

S&W 2011 fig 4-17 p 139



Figure C4-1

Increases in Adult Body Weight over Time

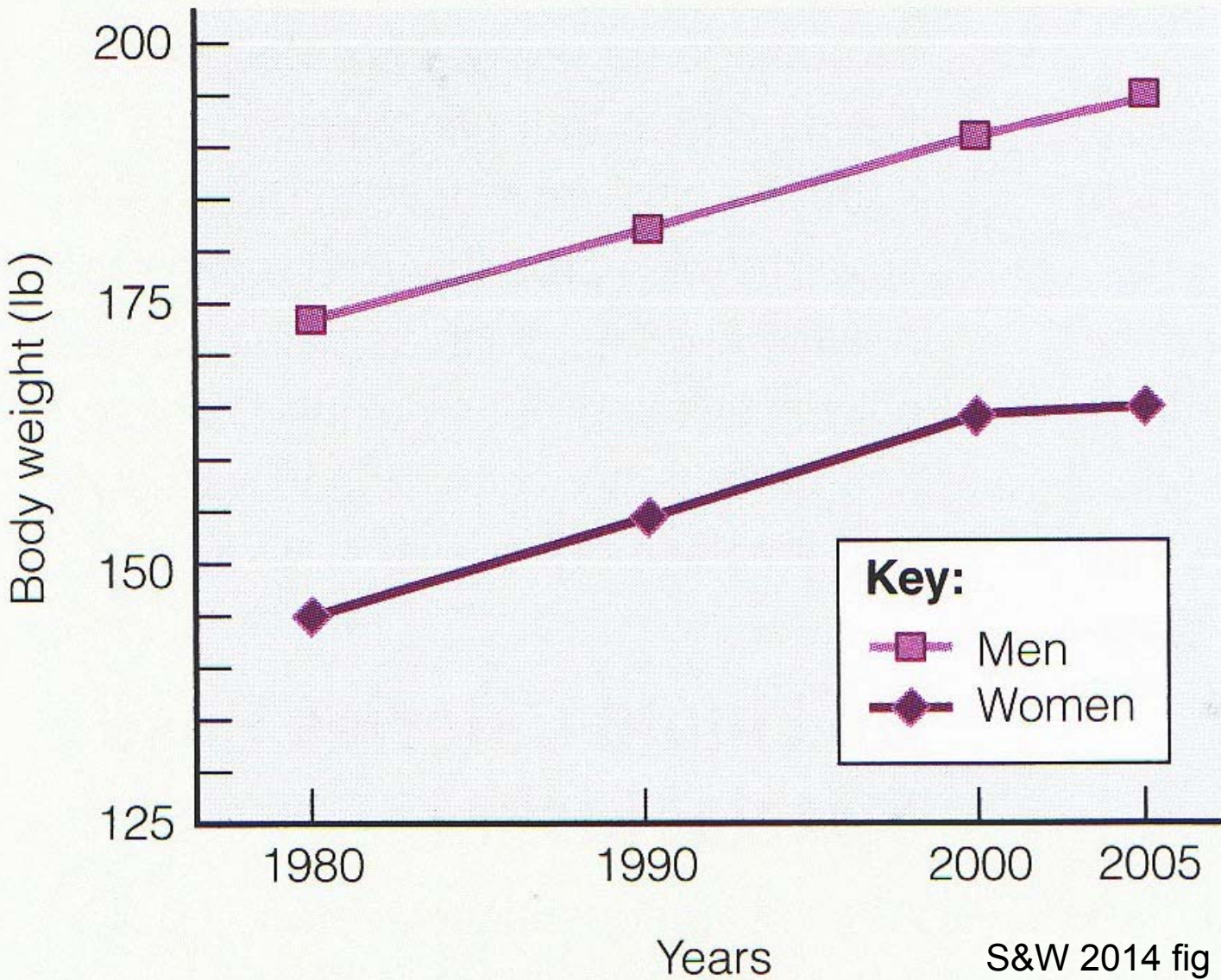
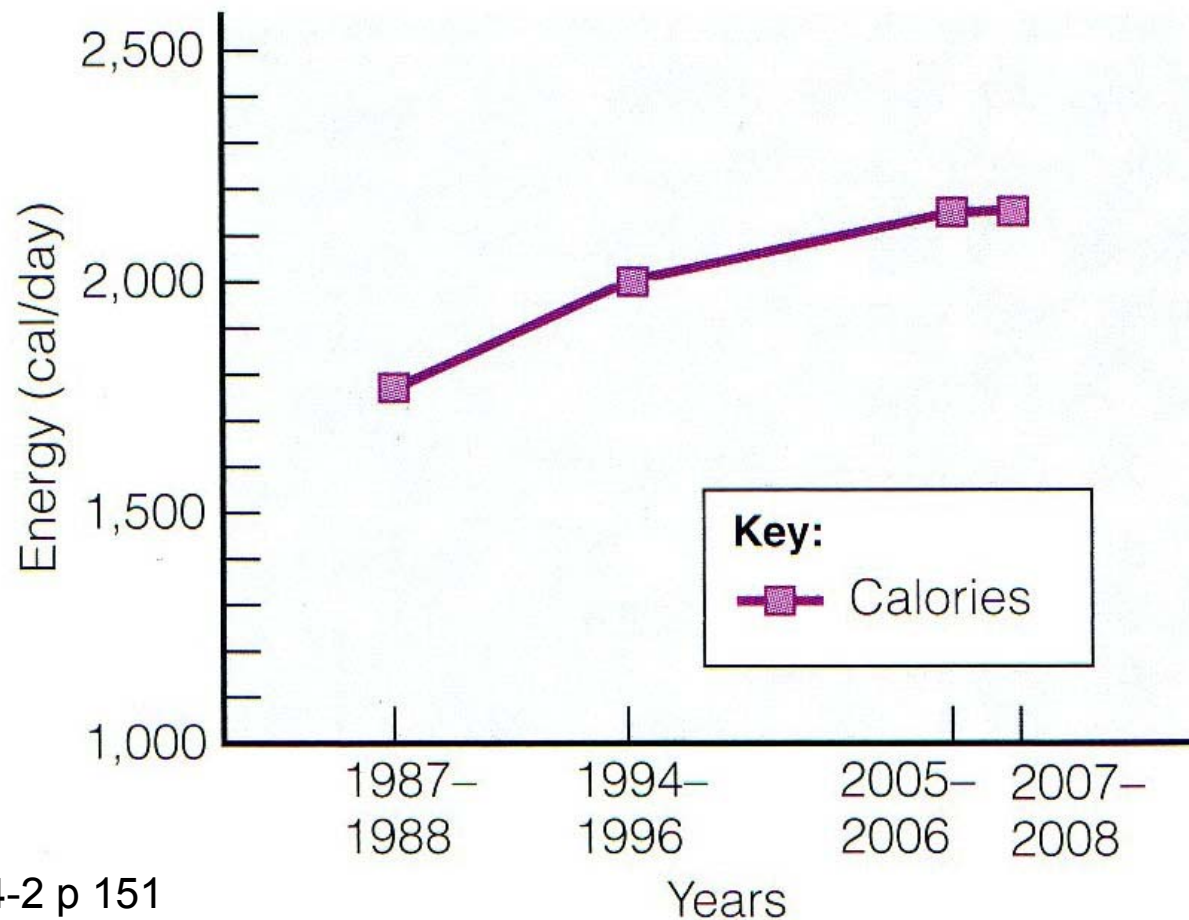


Figure C4-2

Daily Energy Intake over Time

Carbohydrates, and mostly added sugars, account for almost all of the increase in energy intakes during this period.



Sugary Desserts: # 1 calorie source for those 2 yr & older!
Sugar-sweetened Soft Drinks: # 2 for adolescents & young adults!





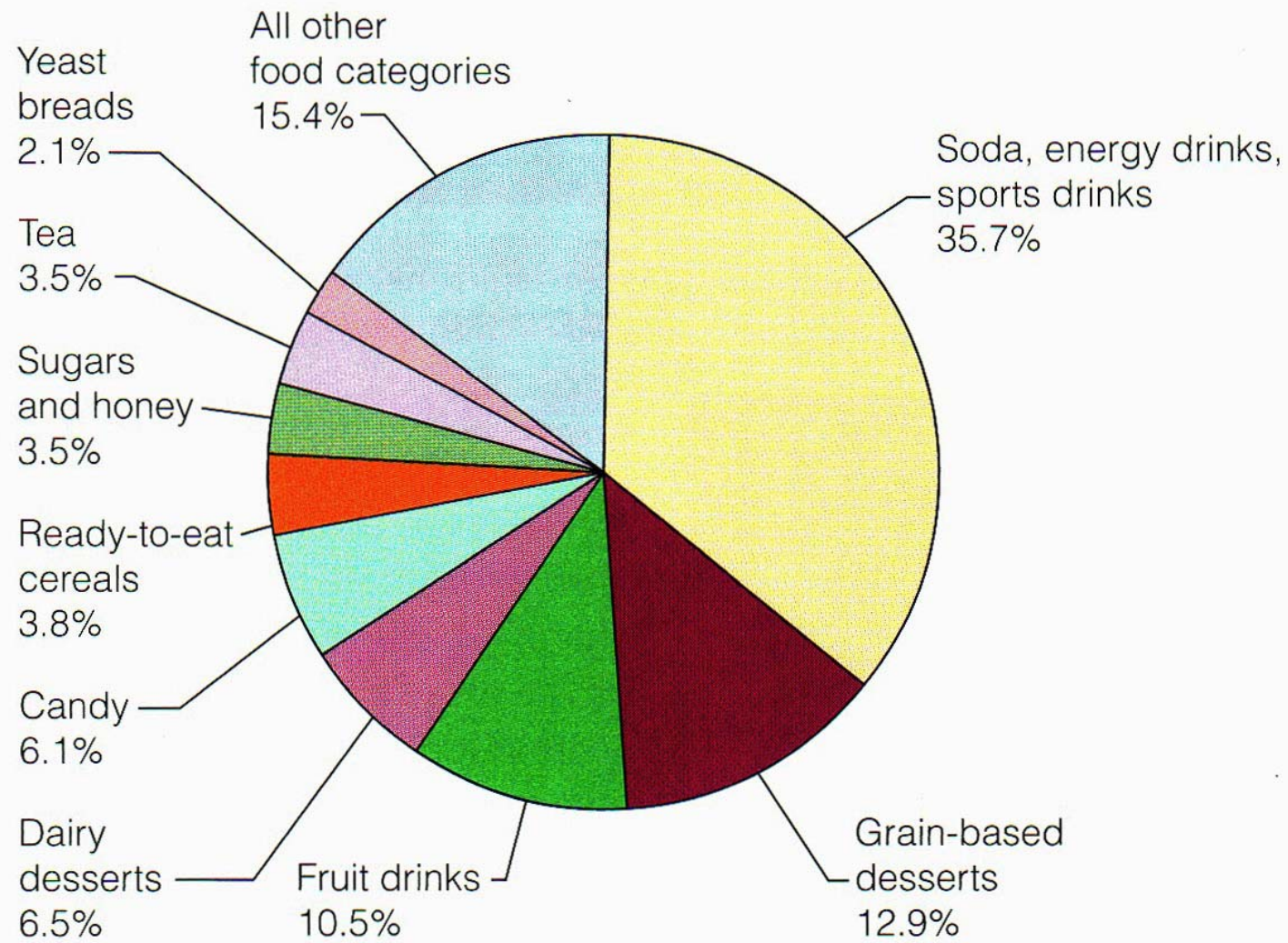
Knock-out punch # 1 & # 2!!



Lynch

Figure C4-3

Sources of Added Sugars in the U.S. Diet

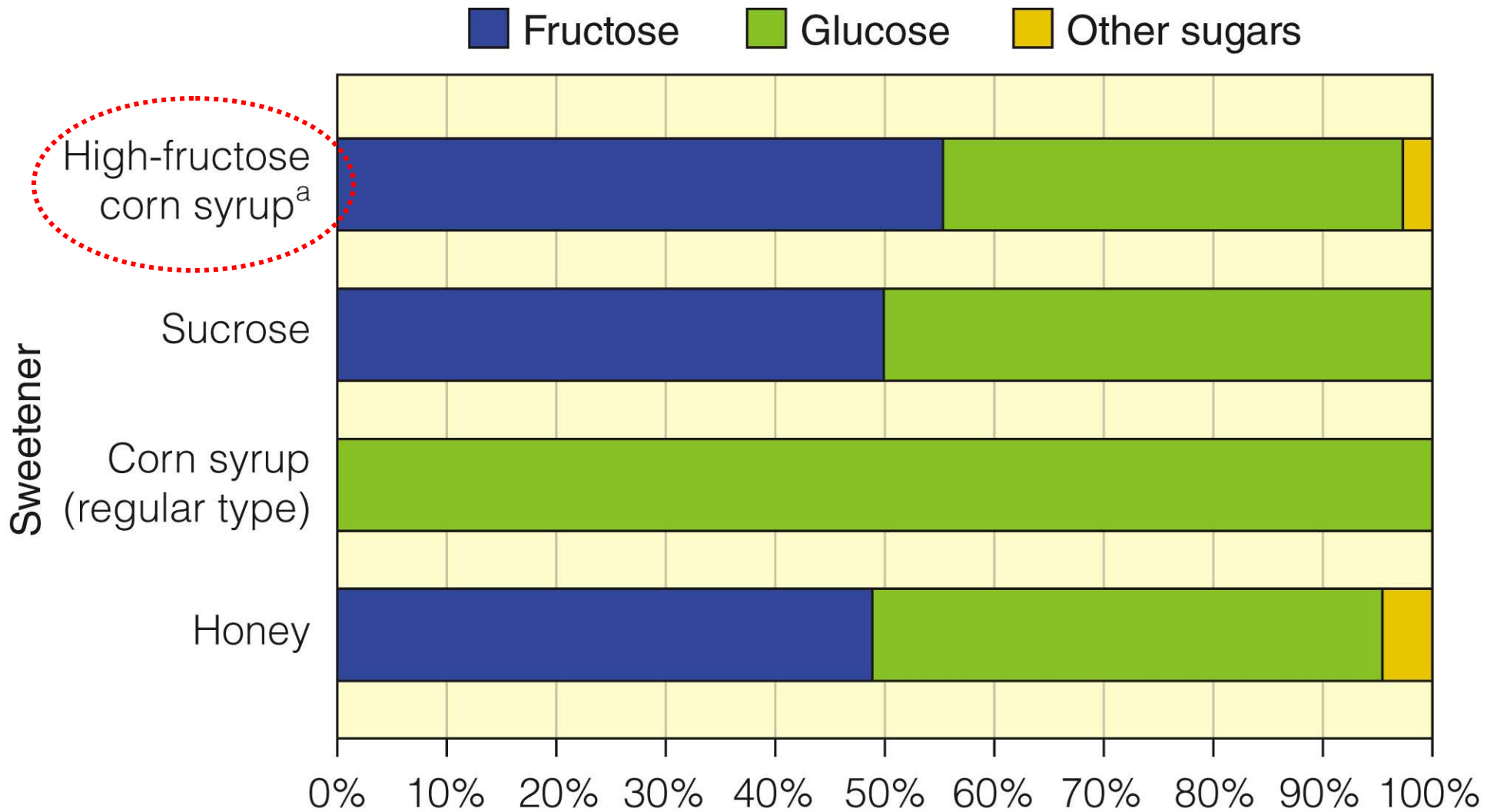


Source: NHANES data, 2005–2006; U.S. Department of Agriculture and U.S. Department of Health and Human Services, Dietary Guidelines for Americans 2010, available at www.dietaryguidelines.gov, p. 29.



***Each person in the US
ingests ~ $\frac{3}{4}$ cup or 31
tsp of refined sugars
added to foods &
beverages each day
~132 lb per year!***

Glucose & Fructose in Common Added Sugars



NB: HFCS alters lipid metabolism & promotes fatty deposition in the liver, abdominal obesity & prediabetes!



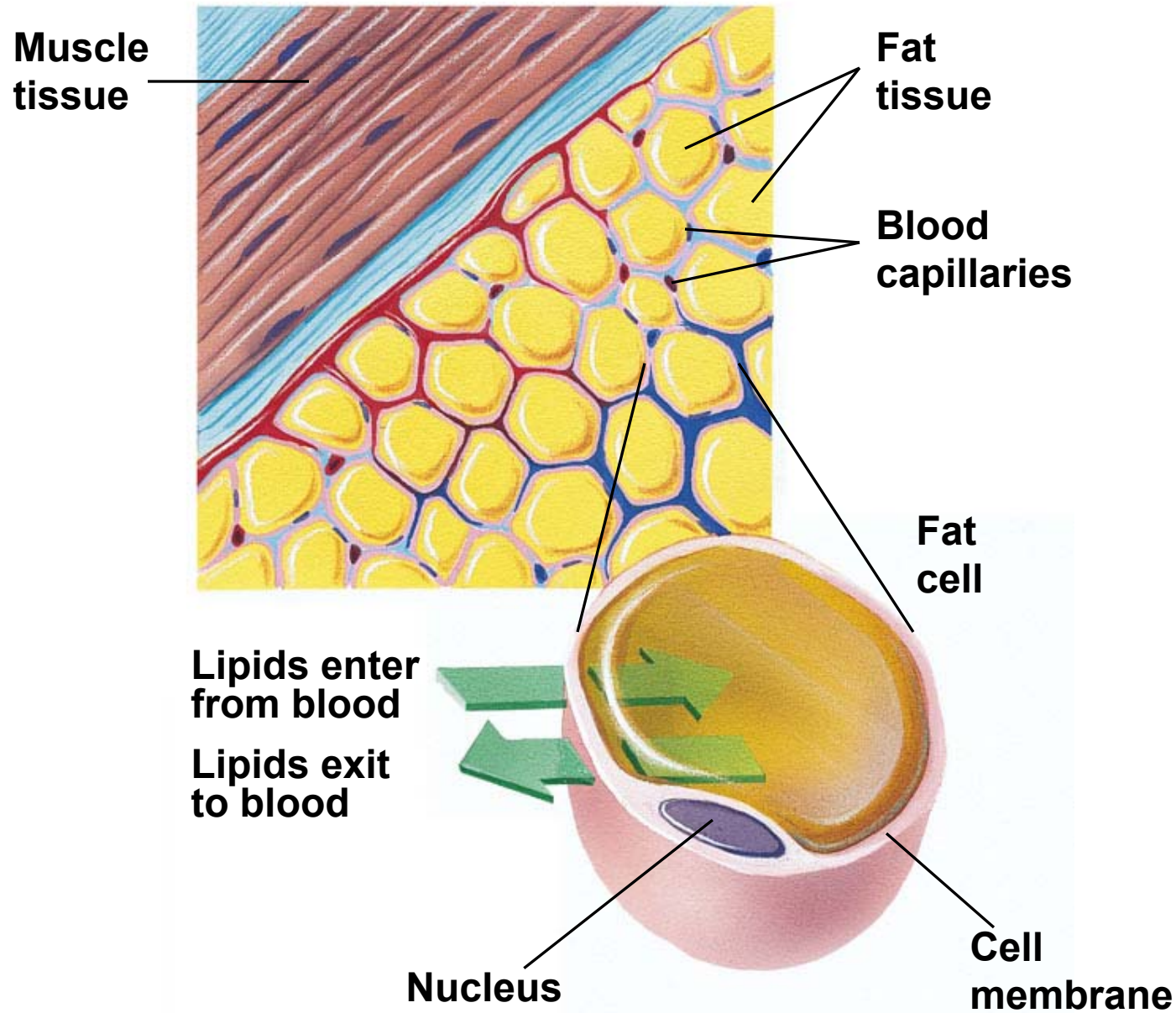
...Boo!

Quiz Bowl, Chapter 4: Group Competition

1. The dietary monosaccharides (monomers) include:
 - a. sucrose, glucose & lactose
 - b. fructose, glucose & galactose
 - c. galactose, maltose & glucose
 - d. glycogen, starch & fiber
2. The polysaccharide that helps form the supporting structures of plants is:
 - a. cellulose
 - b. maltose
 - c. glycogen
 - d. sucrose
3. Enzymatic digestion of carbohydrate begins in the:
a. mouth b. stomach c. small intestine d. large intestine
4. When blood glucose rises, the pancreas secretes _____ & when blood glucose falls, the pancreas secretes _____.
 - a. glycogen, insulin
 - b. insulin, glucagon
 - c. glucagon, glycogen
 - d. insulin, fructose

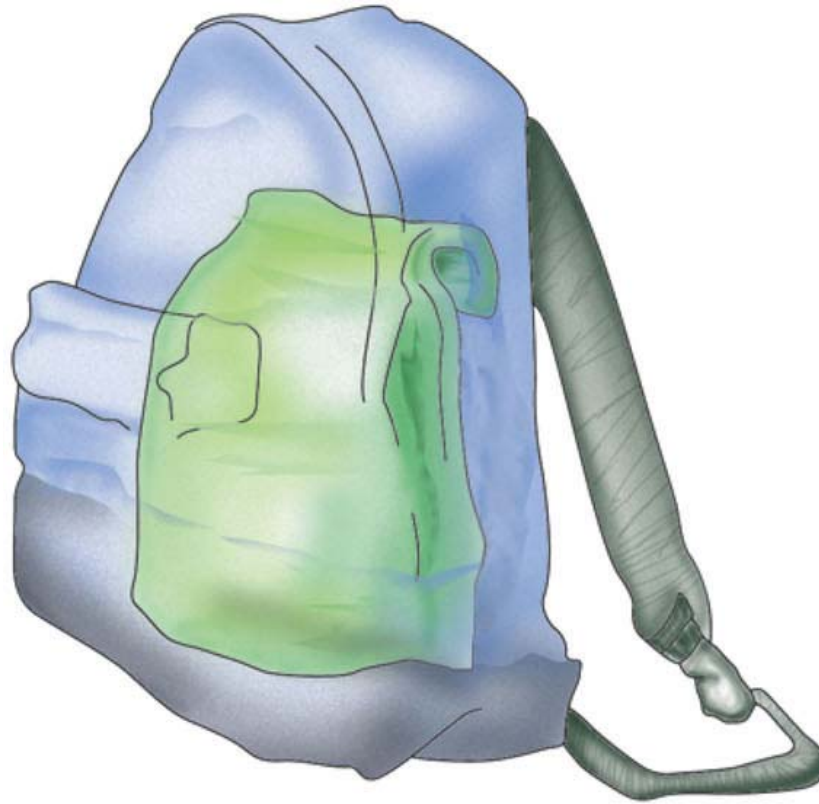
Quiz Bowl, Chapter 4: Group Competition

5. When the body uses fat for fuel without the help of carbohydrate, this results in the production of:
a. ketone bodies b. glucose c. starch d. galactose
6. Foods rich in soluble fiber lower blood cholesterol? T F
7. Type I diabetes is most often controlled by successful weight loss management. T F
8. Around the world, most people are lactose intolerant? T F
9. By law, enriched white bread must equal whole grain bread in nutrient content? T F
10. The fiber-rich portion of the wheat kernel is the bran layer.
T F



Fat helps cushion joints & protect internal organs!





Carbohydrate-rich lunch

- 1 low-fat muffin
- 1 banana
- 2 oz carrot sticks
- 8 oz fruit yogurt

calories = 550

weight (g) = 500

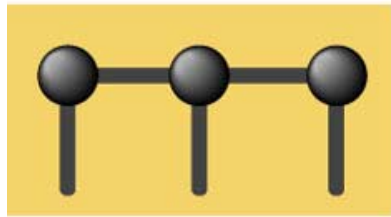


Fat-rich lunch

6 butter-style crackers
1½ oz American cheese
2 oz trail mix with candy

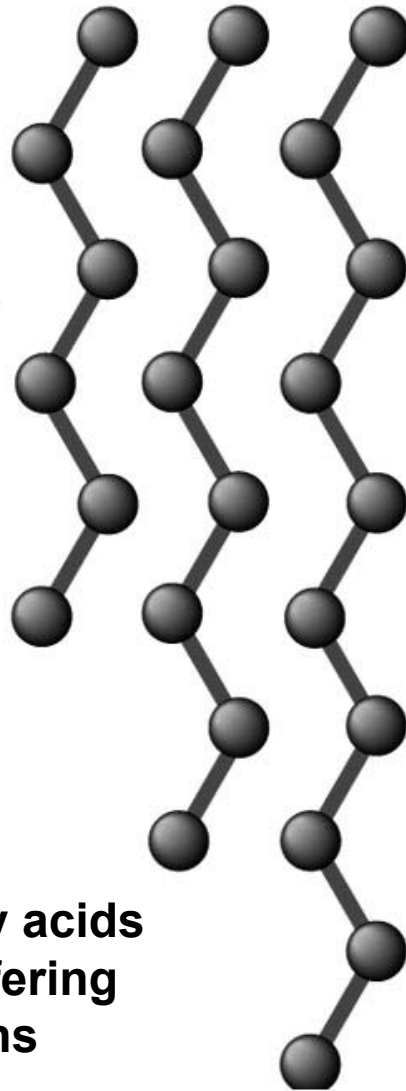
calories = 550

weight (g) = 115

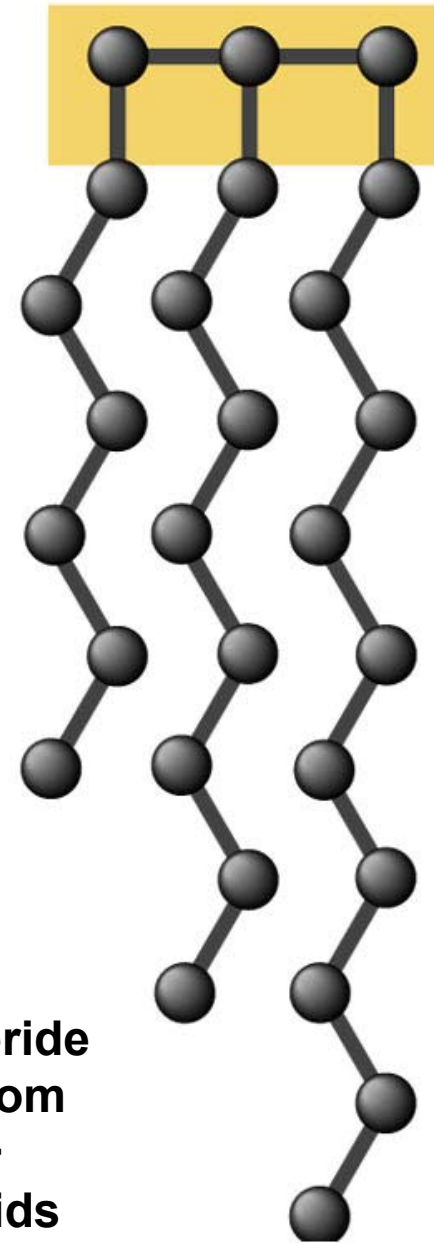


Glycerol

+



**3 fatty acids
of differing
lengths**



**A triglyceride
formed from
1 glycol +
3 fatty acids**

***Small
amounts of
fat offers
pleasure &
essential
nutrients!***



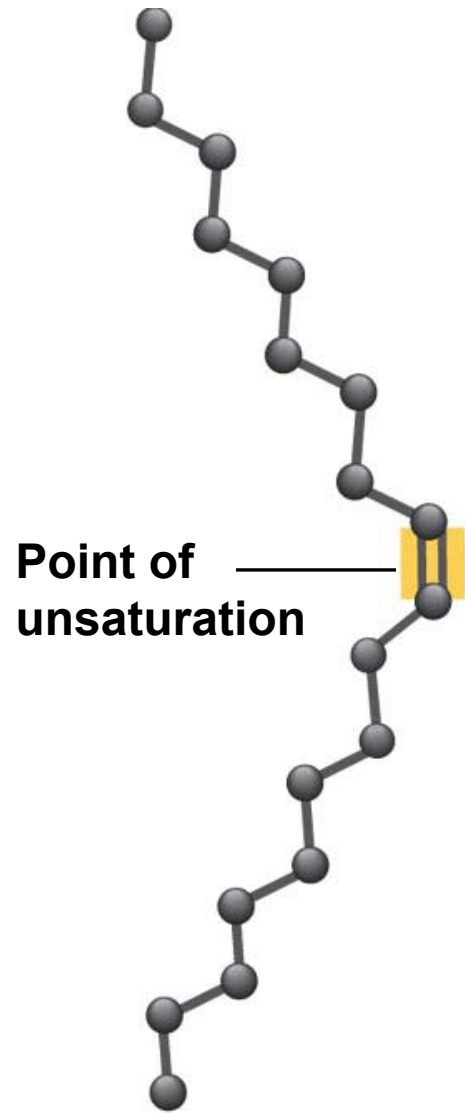
***The more unsaturated the fat, the more liquid it is at room T°C.
The more saturated the fat, the higher the T°C at which it melts.***



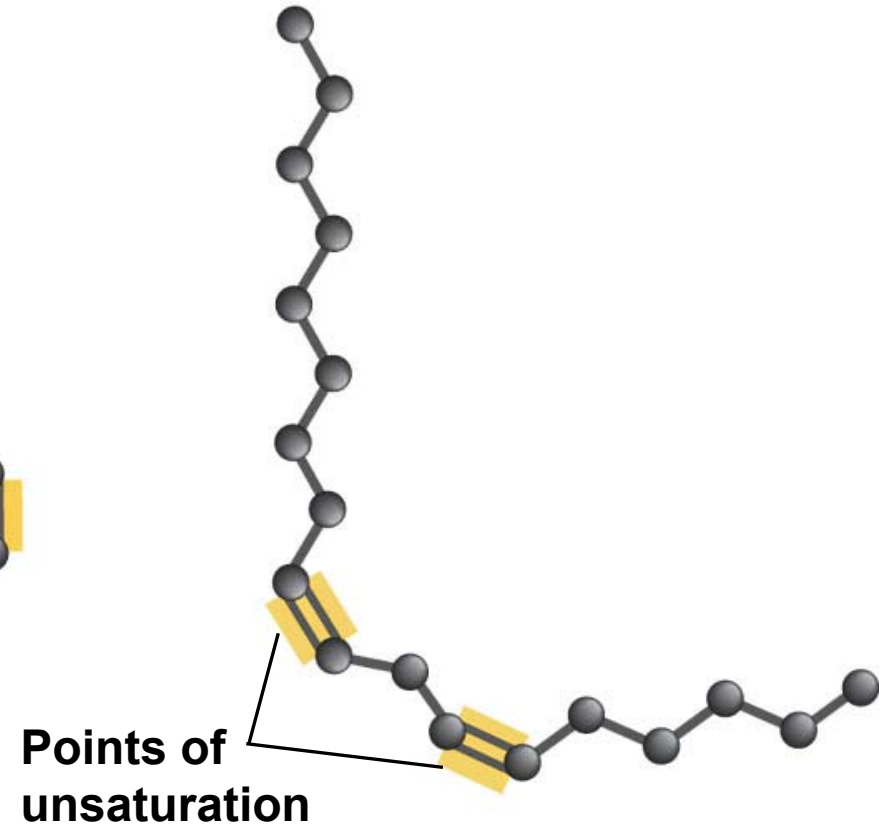
Saturated

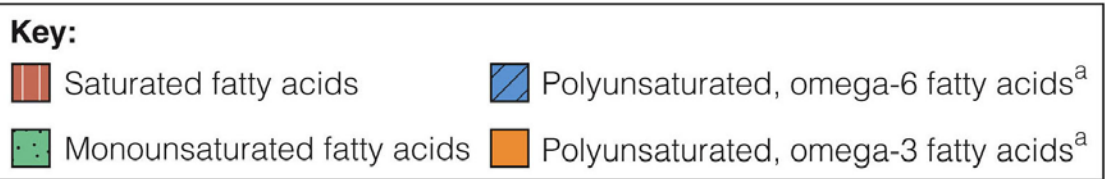


Monounsaturated

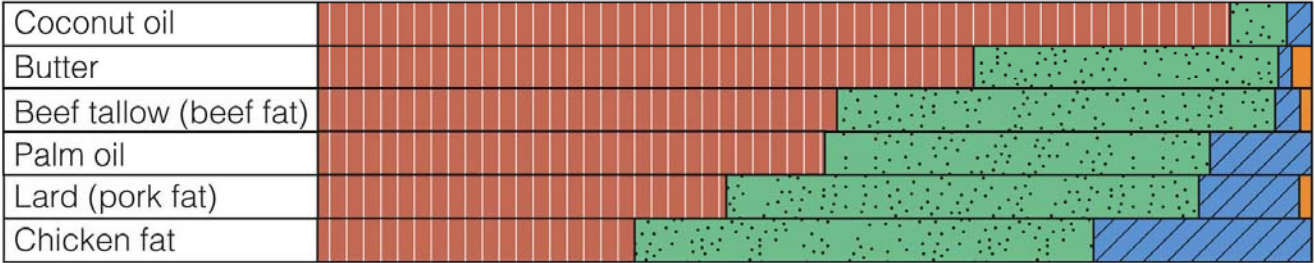


Polyunsaturated

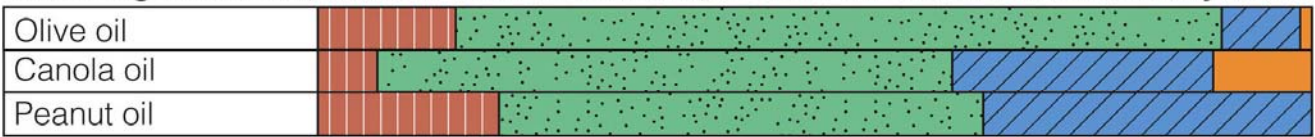




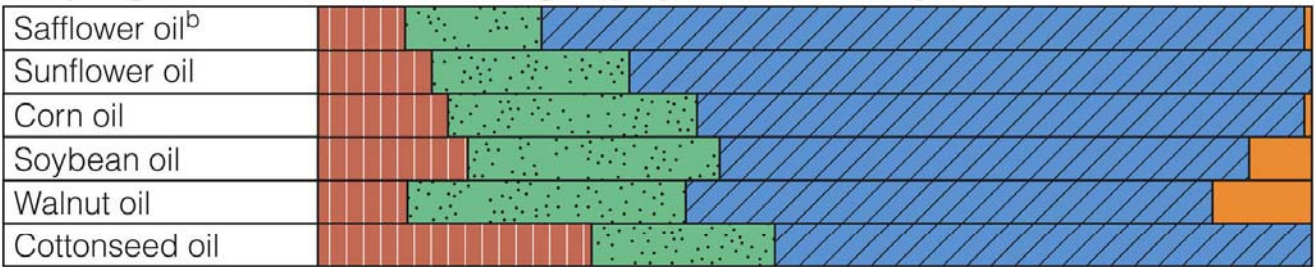
Animal fats and the tropical oils of coconut and palm contain mostly saturated fatty acids.



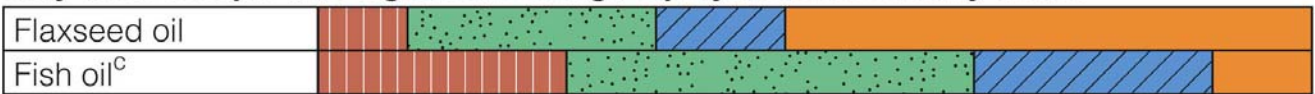
Some vegetable oils, such as olive and canola, are rich in monounsaturated fatty acids.



Many vegetable oils are rich in omega-6 polyunsaturated fatty acids.^a



Only a few oils provide significant omega-3 polyunsaturated fatty acids.^a



^aThese families of polyunsaturated fatty acids are explained in a later section.

^bSalad or cooking type over 70% linoleic acid.

^cFish oil average values derived from USDA data for salmon, sardine, and herring oils.

Emphasize good fats from plant sources like avocados!

