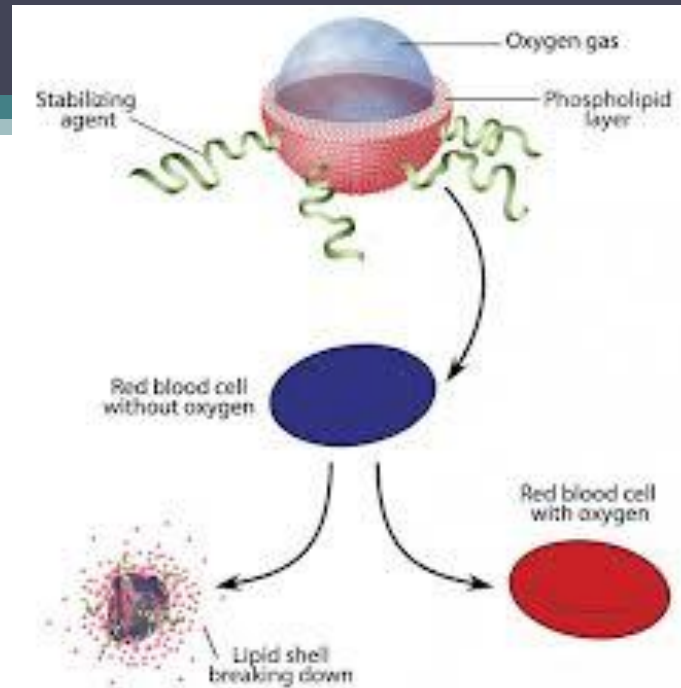


# LIPIDS

## The Effects of Lipids on the Body



# Review: 3 general types

## 1. Triglycerides

- Major type of fat found in food and in bodies

## 2. Phospholipids

- In body: Carry food back and forth across cell membranes
- In food: Help fats stay in water-based solution (Ex. Mayo)

## 3. Sterols (cholesterol)

- Molecules derived or made from lipids
- Cholesterol (found in every cell in the body)
- Vit D, steroid hormones, sex hormones

# Fatty Acids (review)

- Organic molecules that consist of a carbon chain with a **carboxyl group** (C atom + 2 O atoms + 1 H atom)
- Depending on the bonds, nutritional value is altered
- **Saturated fatty acids** – Do not contain double bonds
- **Unsaturated fatty acids**- Some double bonds between carbon atoms in this molecule.
- **Monounsaturated fatty acids**- only 1 double bond in this molecule between 2 carbon atoms.

# Lipids & Your Body

Your own  
personal  
balancing act

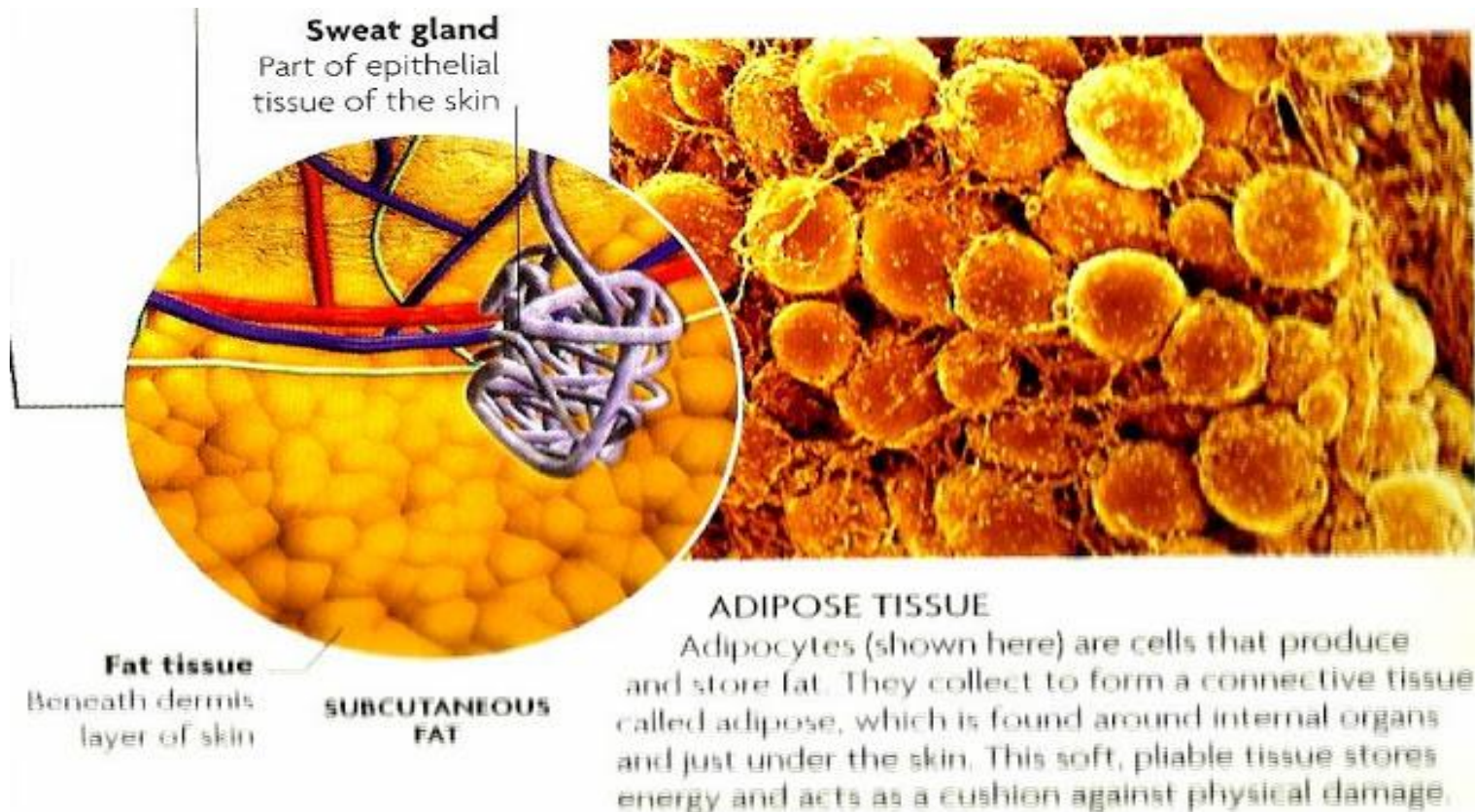


# Functions of Lipids for the Body

1. Help supply **ENERGY** between meals
  - Take longer to digest than carbohydrates and gives a longer feeling of fullness
  - 9 calories per gram
  - Twice the energy provided by a gram of starch or sugar

# Adipose Tissue

- Tissue which the body stores lipids for future needs
- (2.) **Maintains body temperature** by holding in body warmth & (3.) **providing insulation**



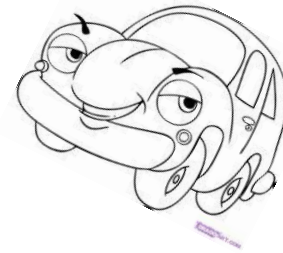
# Functions cont.

## 4. Cushions organs





# Functions cont.



## 5. Transport vitamins A, D, E, K

- Fat soluble vitamins so they **MUST** combine with fat to be transported through the body

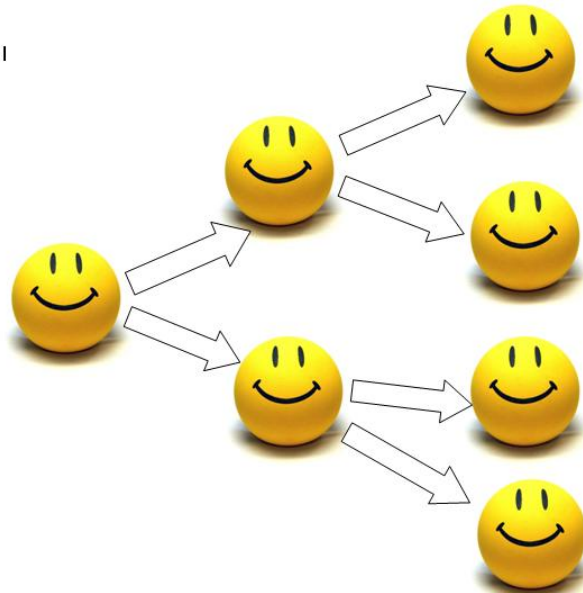
Vitamin	RDA/ AI		Best Sources	Functions
	Men	Women		
Vitamin A (carotene)	900ug	700ug	Yellow or orange fruits and vegetables, green leafy vegetables, fortified oatmeal, liver, dairy products	Formation and maintenance of skin, hair, and mucous membranes; helps people see in dim light; bone and tooth growth
Vitamin D	5ug	5ug	Fortified milk, sunlight, fish, eggs, butter, fortified margarine	Aids in bone and tooth formation; helps maintain heart action and nervous system function
Vitamin E	15mg	15mg	Fortified and multigrain cereals, nuts, wheat germ, vegetable oils, green leafy vegetables	Protects blood cells, body tissue, and essential fatty acids from harmful destruction in the body
Vitamin K	120ug	90ug	Green leafy vegetables, fruit, dairy, grain products	Essential for blood-clotting functions



# Functions cont.

## 6. Cell production

- All cell walls made of lipids and protein
- Diets 100% fat free for extended periods are dangerous and should be avoided



# Functions cont.

- **Essential Fatty Acids (EFA)**

- Cannot be produced by the body and must come from food

## 7. Essential for **growth and development**

- **ONLY TWO:**

- \*\* Both are polyunsaturated and found in most plant and fish oils

- **Linoleic Acid (an omega-6 fatty acid)**

- Corn, cottonseed, and soybean oils; chicken

- **Linolenic Acid (an omega-3 fatty acid)**

- Canola oil, soybean oil, walnuts, fish



# Omega-3 Fatty Acids

## 8. Studies show possible connection to reduction of heart disease

- **Greenlanders and Inuits**
  - Low rates of heart disease despite high fat diets
  - Most of this culture's fat comes from fish
- Research indicates these fatty acids:
  - Help lower triglyceride levels in the blood
  - Slow growth of plaque in the arteries
- More research continues to be done



# Sources & Functions of Omega-3

- Fatty Fish (salmon, mackerel & herring)
- Flaxseed and Flaxseed Oil
- Walnuts
  - Strengthen brain-cell membranes improving cell-to-cell communication
  - Reduce joint inflammation
  - Prevent heartbeat irregularities
  - Reduce mental decline



# Dietary Guidelines for Americans Recommendation

- **8 oz or more per week** of various **fish & seafood**
- Fish that have **pink or red flesh** are higher in omega-3 fatty acids
  - **Albacore tuna, salmon, lake trout, & sardines**
- **Canola oil, flaxseed, & walnuts** become omega-3 fatty acid in the body; make part of your diet

Using the iPads, laptops, or mobile devices, research foods in your current diet.

- Do you believe you are getting enough essential fatty acids in your diet?
- Be prepared to discuss in class ways you are reaching optimal amounts and/or how you could improve.

More information on fat sources

Once prepared for tomorrow's discussion, begin...

*Lipids Crossword*