Introduction

- Cardiovascular disease (CVD)
  - Disease of the heart and blood vessels
  - Disease of the arteries of the heart is called *coronary heart disease (CHD)*
Usefulness of Fats in the Body

• Fat
  – Body’s chief storage form for the energy from food eaten in excess of need
    • Valuable survival mechanism for people who live a feast-or-famine existence
  – Provide most of the energy needed to perform much of the body’s work
    • Especially muscular work
Usefulness of Fats in the Body

• Most body cells can store only limited fat
  – Some cells are specialized for fat storage
  • These fat cells seem to expand indefinitely
    – The more fat they store, the larger they grow
• Adipose (fat) tissue secretes hormones and produces enzymes that influence food intake and affect the body’s use of nutrients
Usefulness of Fats in the Body

- Glucose, in the form of glycogen, is not the body's major form of energy storage
  - Glycogen stores a large amount of water
    - Therefore it is heavy and bulky
    - Thus, the body cannot store enough to provide energy for very long
Usefulness of Fats in the Body

• Other functions of fat
  – Shock absorbers
    • Pads of fat surround vital internal organs
  – Thermoregulation
    • Fat pads under the skin insulate the body from extremes of temperature
  – Cell membranes
    • Lipids are a component of cell membranes
**Carbohydrate-rich lunch**
1 low-fat muffin
1 banana
2 oz carrot sticks
8 oz fruit yogurt

**Fat-rich lunch**
6 butter-style crackers
1 1/2 oz American cheese
2 oz trail mix with candy

calories = 550
weight (g) = 500

calories = 550
weight (g) = 115
Saturated versus Unsaturated Fatty Acids

• Olive oil
  – Rich in monounsaturated fatty acids
  – Evidence from Mediterranean regions suggests that olive oil confers a degree of protection against heart disease when it is used in place of other fats
  – Dark-colored olive oils also deliver valuable phytochemicals
Digestion and Absorption of Fats

- Stomach
  - Fat separates from the watery components and floats as a layer on the top
Digestion and Absorption of Fats

– The digestive tract absorbs triglycerides from a meal with up to 98% efficiency
  • i.e. little fat is excreted by a healthy system

– The process of fat digestion takes time
  • The more fat taken with a meal, the slower the digestive system becomes
Transport of Fats

• Shorter products of lipid digestion
  – Glycerol and short-chain fatty acids pass directly though the cells of the intestinal lining into the bloodstream
  – Travel unassisted to the liver