Why Do We Care About Fat?

I.   **Why do we care about fat?**

   a. Health concerns
   b. Attractivenss concerns

II. **Statistics on obesity in American society**

III. **If fat is bad, why does it appear so easy for us to gain weight?**

   a. Through most of human history and even today for much of the world's population, starvation is a problem, not fat.

   b. Body fat as a positive adaptation
      i.   energy storage
      ii. vitamin storage
      iii. insulation for thermoregulation

   c. Modern American diet makes fat constantly available and (let's face it) fat tastes good!!!
      i.   dietary fat easily converted into stored fat
      ii. function of parts of the digestive system
      iii. role of fat in cellular respiration metabolism

IV. **How do we get rid of extra stored fat?**

   a. Negative caloric balance, controlled by diet and exercise

   b. This is much easier for some people than for others - WHY?
      i.   Genes
      ii. Hormones
      iii. Nervous system
      iv. Metabolism
      v.   Interactions among these systems

   c. A Complex Research Story - Obese mice and Leptin

      i.   Mutant obese mice deficient in leptin
      ii. Leptin as a hormone
         1. Hypothalamus, leptin receptors, appetite supression, and feedback loops
      iii. Leptin increases metabolic rate
         1. Thermogenesis, brown adipose tissue, and uncoupler proteins
         2. Digestion, absorption, and metabolism of fats

V.   Why do we care about fat? - Its Role in Sexual Selection

a. Concern about fat as it affects attractiveness - a component of reproductive fitness

b. Mating Systems
    i.   Monogamy
    ii. Polygamy
    iii. Polyandry
    iv. Some species-specific, some change according to environmental conditions

c. Breeding Strategies
    i.   Size and age
    ii. Territory
    iii. "Sneakiness"

d. Mate Selection
    i.   Usually females are "choosier" about mates, if they make the greater parental investment (as they usually do).

    ii. What to look for:
        1. Resources
        2. Good genes hypothesis - male quality, which may be judged by healthy and attractive appearance; i.e. size, vigor, lack of parasites, symmetry
        3. Handicap hypothesis - distinctive ornamentation which might make males more vulnerable to predation or risk-taking behaviors (thus the successful survivors that show such ornament or behaviors would be attractive to females, having demonstrated their ability to survive under adverse conditions)

e. Some speculations about human behavior and sexual selection