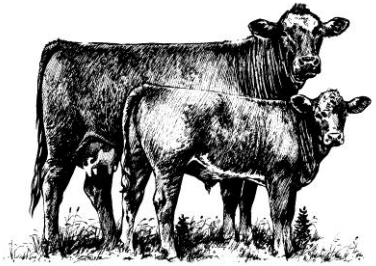

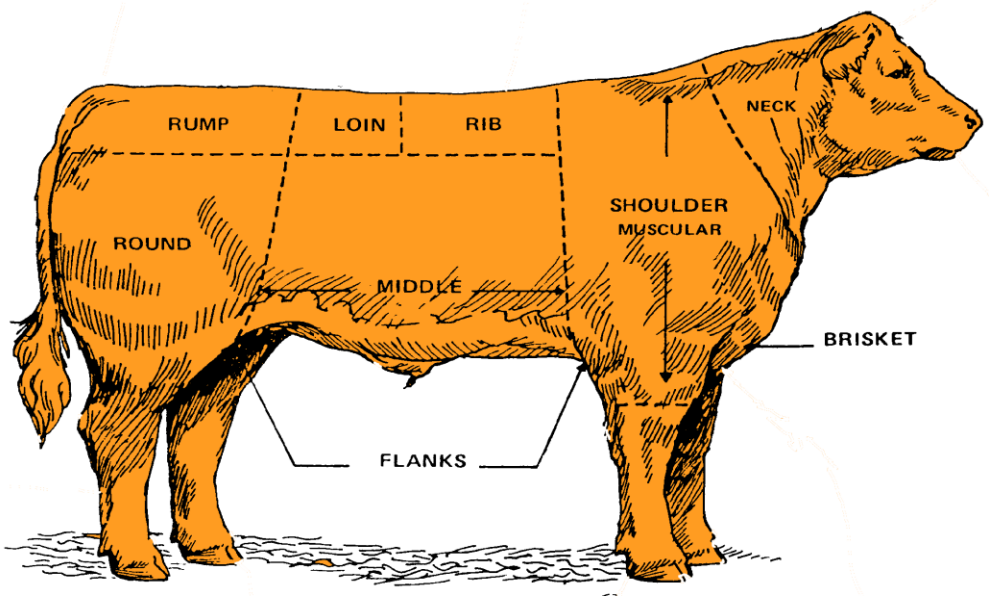

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Meat Quality Attributes

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Factors in Consumer Satisfaction

- Appearance
- Price
- Aroma during cooking
- Ease of preparation
- Flavor
- Tenderness
- Juiciness

} "Palatability"

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Appearance

Must look “good” or consumers won’t buy it (grocery store & restaurants):

1. Color
2. Texture

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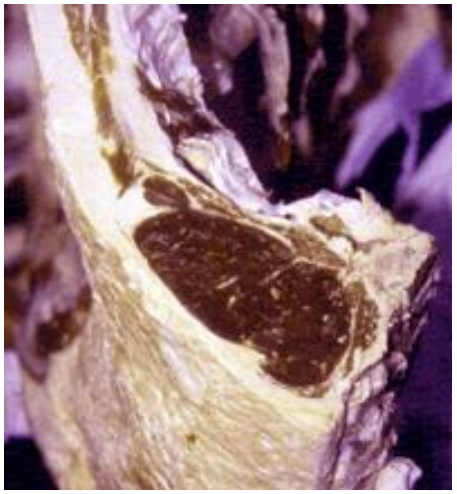
Color

- Pigments in meat consist of two proteins:
  1. Hemoglobin: pigment of blood
  2. Myoglobin: pigment of muscle
- Quantity varies with species, age, sex, muscle, and physical activity
  - beef vs. pork
  - old vs. young
  - dark cutter (glycogen depletion)
- Chemical state: oxidized vs. reduced (meat exposed to light and air)

Color Comparison

Dark Cutting Beef

- Normal beef color: Bright cherry red
- What does a dark color mean?
  - Old animal?
  - Stressed animal?



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Texture

- Firmness
- State of rigor
- Water-holding capacity
- Intramuscular fat content
- Connective tissue content
- Bundle size

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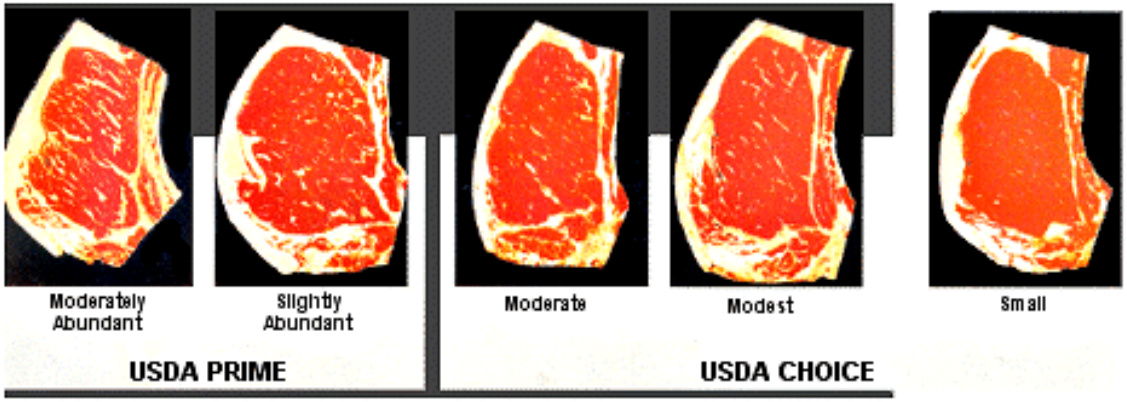
How do we Predict Palatability?

Carcass Quality Grades:

- Estimate of eating quality:
  - Tenderness
  - Juiciness
  - Flavor
- Based on:
  - Maturity
  - Marbling



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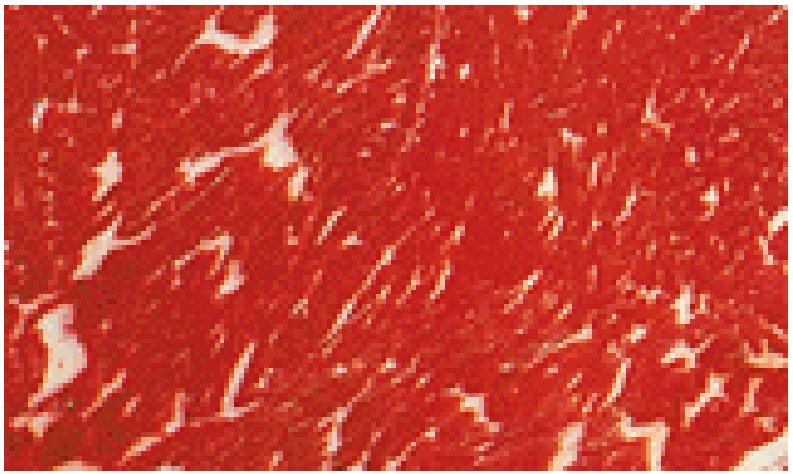
1. Flavor



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Importance of Fat!

- Fat and bone are generally considered waste
  - HOWEVER:
    - Fat is a component of all cells
    - Fat is necessary in animal metabolism
    - Fat acts as a carcass shield
    - Fat influences eating quality

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4 Types of Fat

1. **KPH** – deposited early
   - Kidney, pelvic, heart fat
2. **Intermuscular** (seam) – deposited second
   - Between the muscles
3. **Subcutaneous** (external)– deposited same as inter
   - Outside of carcass
4. **Intramuscular** (marbling) – deposited last

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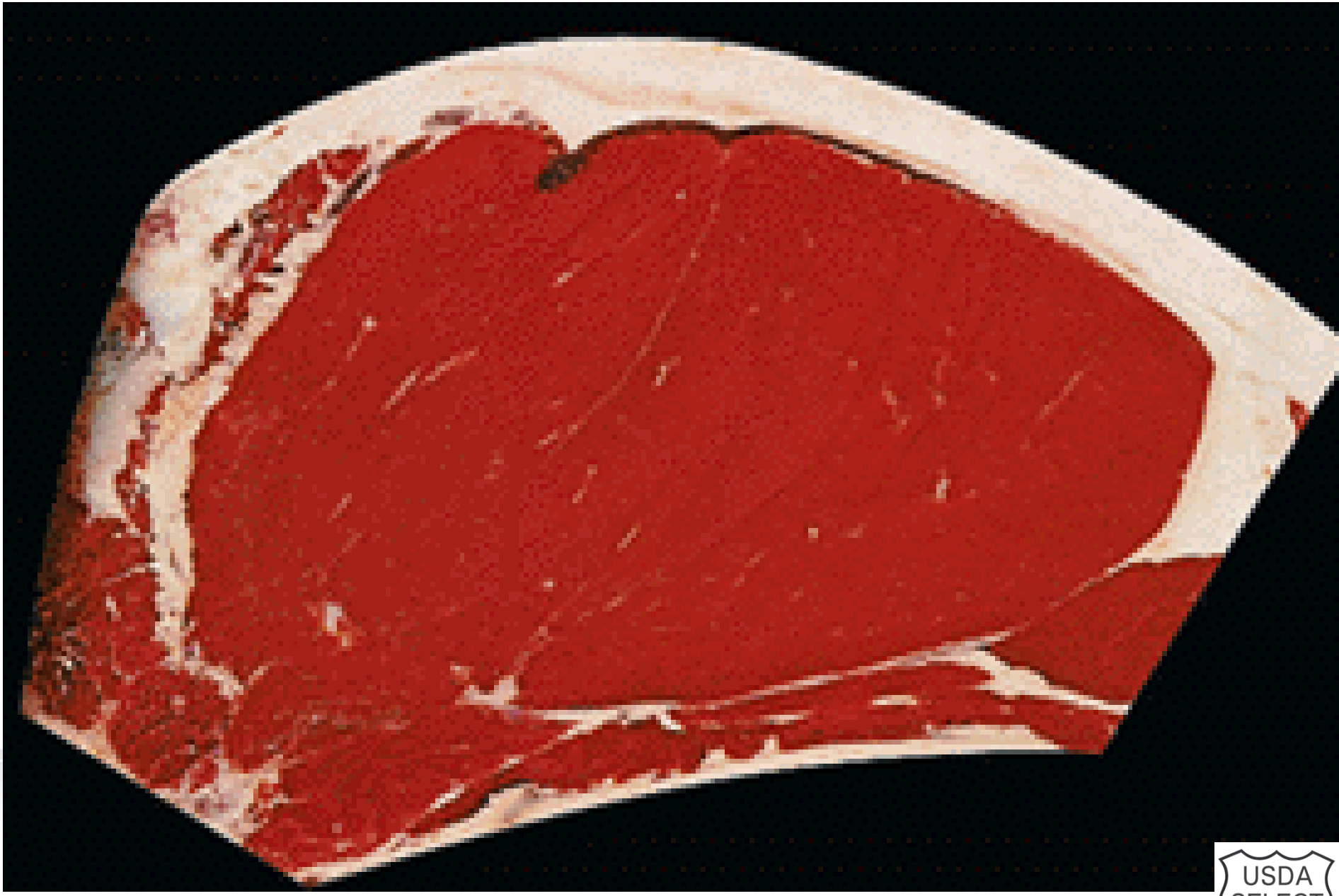
USDA
SELECT


USDA
PRIME

Wagyu Beef

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Sample A vs. Sample B

1. Personal preference?
2. Which is more tender?
3. Which is juicier?
4. Which has better flavor?

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2. Tenderness

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Time vs. Tenderness

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Tenderness Components

Major components that contribute to tenderness:

- Connective tissue
- Muscle fibers
- Adipose tissue
- Muscle fiber anatomy:
  - contractile state
  - rigor state
  - cross bridge formation

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It's in the Aging

- Aging increases flavor and tenderness
- Postmortem aging allows natural enzymes in beef to break down specific proteins in the muscle fibers
- Typically occurs from slaughter plant to retail
- Types:
  - Wet aging
  - Dry aging

Alternatives to Aging

Tenderizers

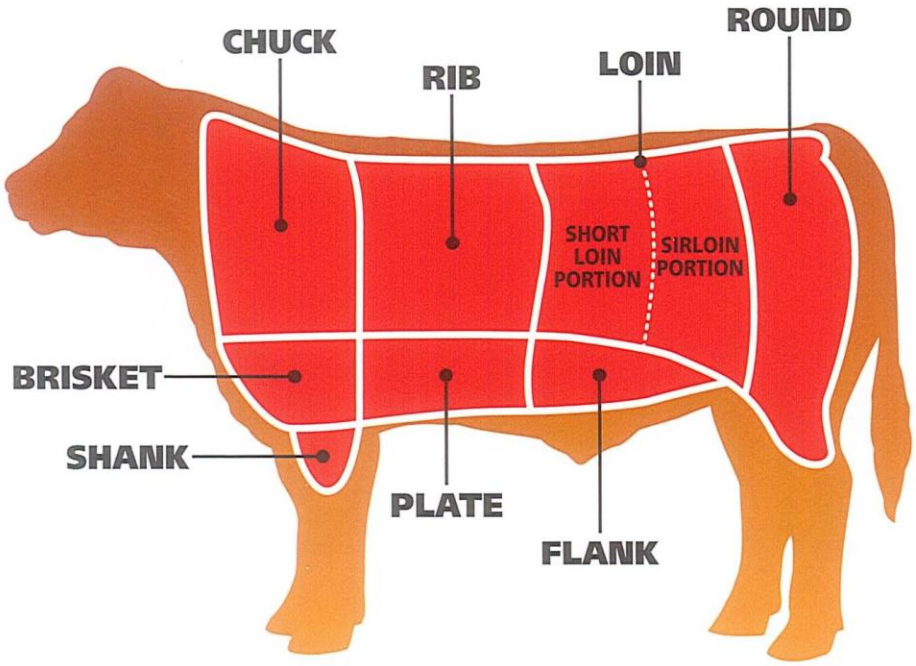
- Weak acids
- Marinades
- Mechanical (pounding, cubing, blades)

Genetic Selection

- GeneStar tenderness test (measured by Bovigen)
- 2 genes involved in postmortem tenderization process: Calpain and calpastatin

Location of Cut

- Locomotion Muscles vs. Suspension Muscles
- Tough vs. Tender
- Depends on the Location!



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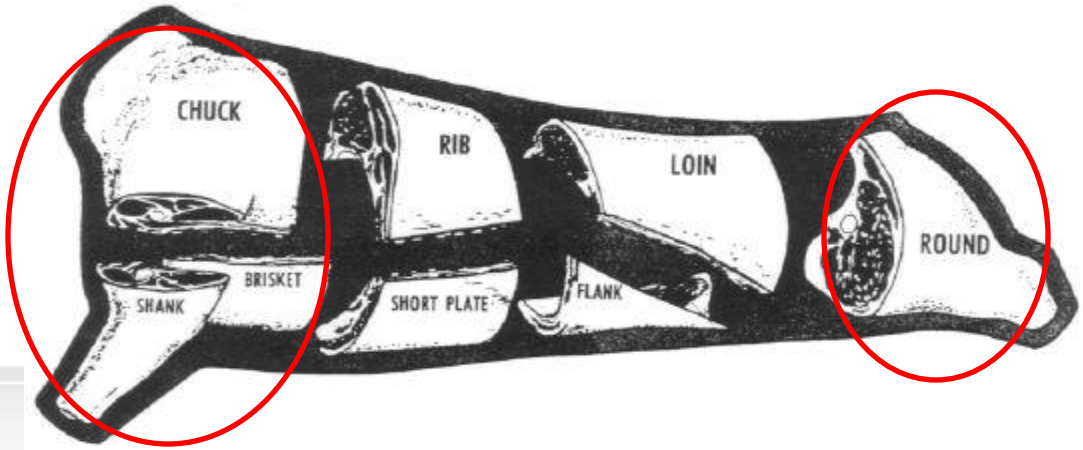
Locomotion Muscles

- Used in movement
- Have more connective tissue
- Moist heat cooking methods
- Cuts from the chuck and the round



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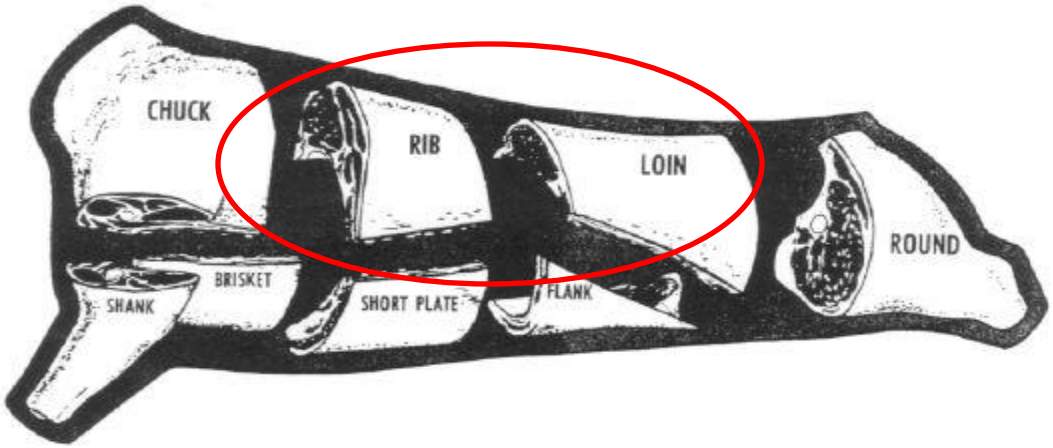
Suspension Muscles

- Used to support animal's skeletal system
- Have less connective tissue
- Dry heat cooking methods
- Cuts from the loin and the rib



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Most Tender Cuts

1. Psoas Major	Tenderloin
2. Infraspinatus	Flat iron
3. Spinalis Dorsi	Top part of ribeye
4. Serratus ventralis	Boneless rib
5. Tensor facae latae	Tri-tip
6. Teres Major	Petite tender
7. Ractus femoris	Round sirloin tip center
8. Complexus	Chuck eye roll
9. Triceps brachii	Ranch steak
10. Gluteus medius	Top sirloin
11. Longissimus dorsi	Ribeye/strip loin

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Juiciness

Juiciness

- Contributes to overall impression of palatability
- Juices help fragment and soften meat when chewing
- Contains flavor components
- Absence of juice destroys palatability
- Sources of juice:
  1. Intramuscular fat
  2. Water

Doneness Color Guide

Very Rare; 130 F, 55C

Rare; 140 F, 63C

Med. Rare; 145 F, 63C

Medium; 160 F, 71C

Well done; 170 F, 77C

V. Well Done; 180 F, 82C

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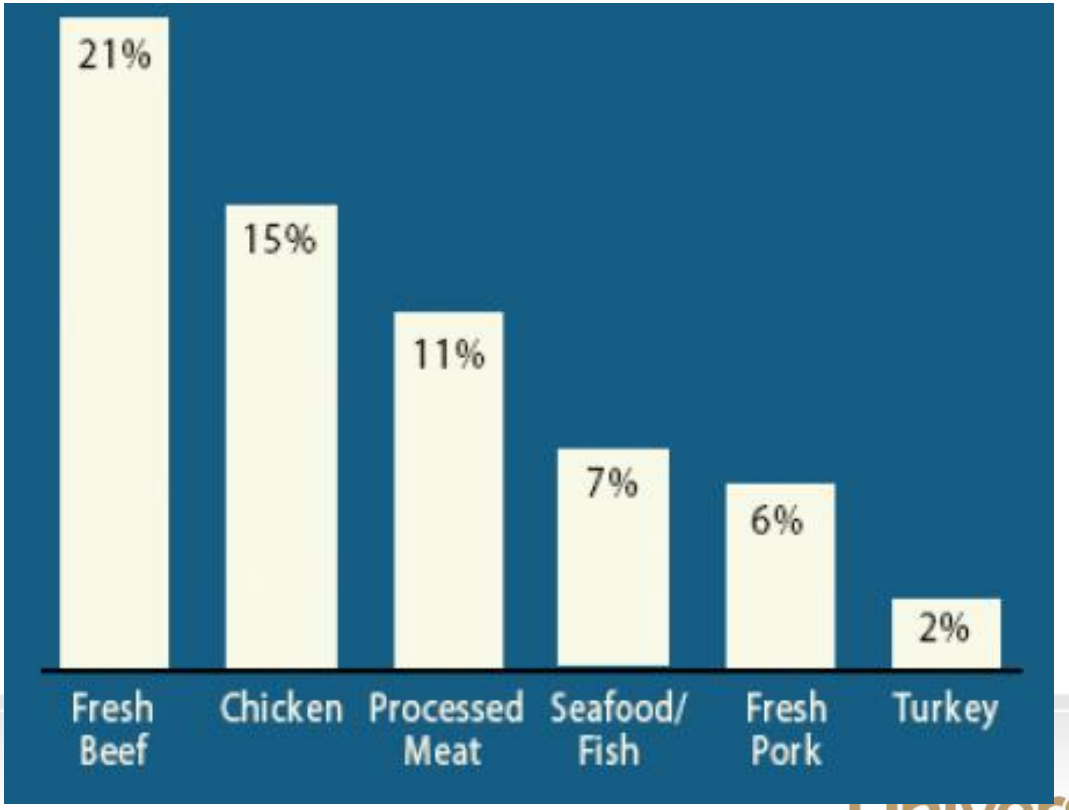
Sample A vs. Sample B

1. Personal preference?
2. Which is more tender?
3. Which is juicier?
4. Which has better color?

American Choices for Dinner



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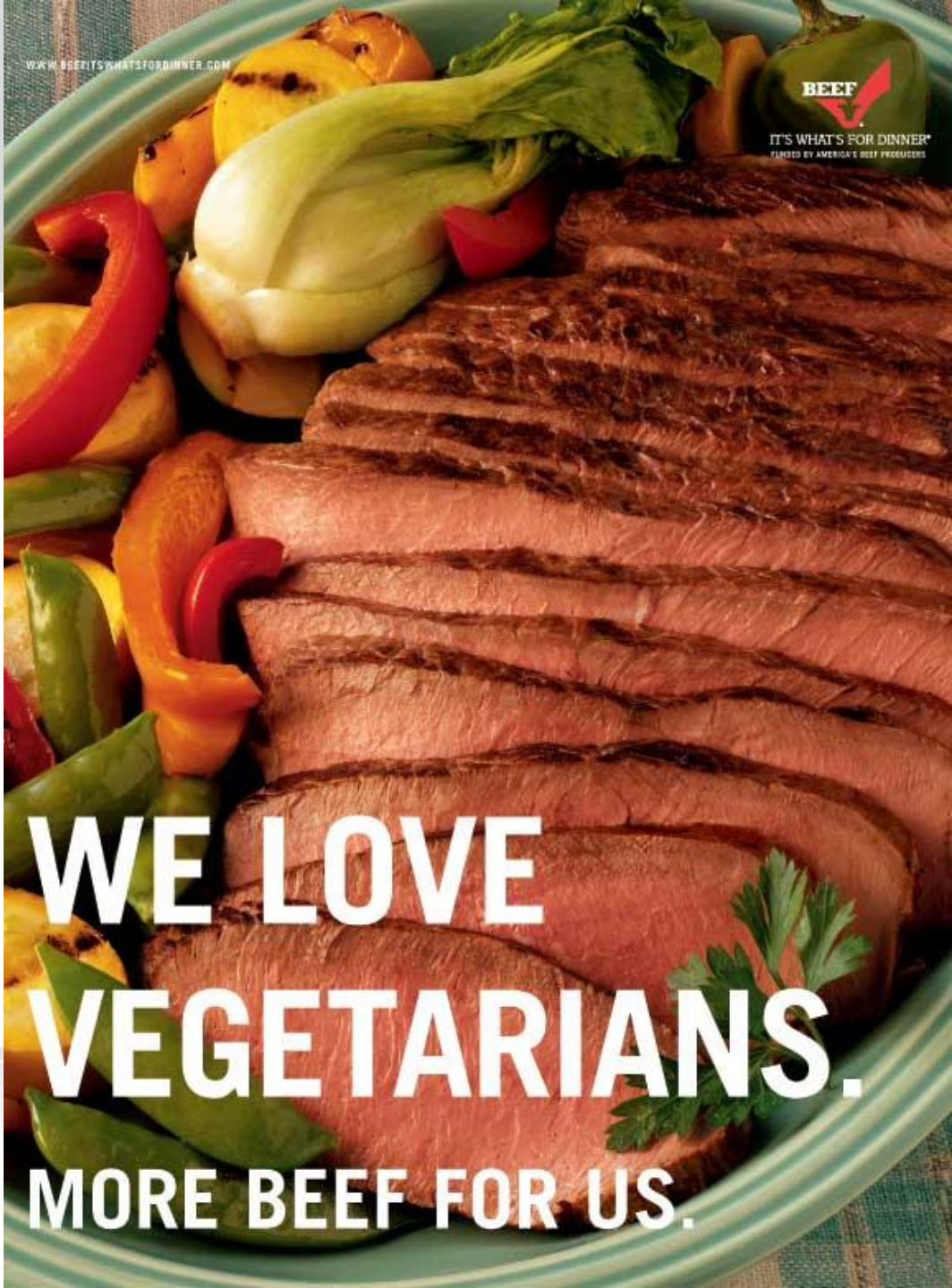
Questions?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