Veterinary Science
Preparatory Training for the Veterinary Assistant
Floron C. Faries, Jr., DVM, MS

FAZD CENTER
National Center for Foreign Animal and Zoonotic Disease Defense
 fazd.tamu.edu
Collecting & Handling Semen

Floron C. Faries, Jr., DVM, MS
Objectives

- Describe methods for semen collection
- List the steps for handling semen for freezing
Purposes

- Evaluate semen quality
- Store semen
- Evaluate breeding soundness of sires
- Breed dams artificially
- Increase pregnant animals
- Reduce disease transmission
Safety measures in semen collection
  - Proper restraint

Sanitary measures

Proper equipment
  - Poor conditions kill sperm

Timely manner
Semen Collection

Types

- Artificial vagina (AV)
- Electroejaculator
- Massage accessory sex glands

Keep warm
Avoid light
AV

- Rigid tubular structure
- Jacket
  - Filled with water
- Tube on end
- Ideal
  - Good sperm quality
Electroejaculator

- Sends electrical impulses
- Inserted rectally
- Lower sperm quality
- Poor libido males
Massage accessory sex glands
- Epididymis
- Ampullae
- Seminal vesicular glands
- Prostate gland
- Cowper’s glands
Bull and Ram

- Collect with
  - Electroejaculator
  - AV
    - Mount
      - Steer/wether
      - Cow/ewe
      - Dummy
- Massage accessory sex glands
Stallions

- Collect with
  - AV
    - Mount
      - Mare
      - Dummy (most common)
Boar

- Collect with
  - AV (modified)
  - Gloved hand technique (most common)
  - Electroejaculation (sedate)
Dogs and Cats

- Dogs
  - Manual collection
- Cats
  - AV collection
Semen Evaluation

- **Macroscopically**
  - Grossly – semen
    - Color
      - Creamy, white or gray
    - Volume
      - Depends on age and species
    - Consistency
      - Concentration

- **Microscopically**
  - Magnified – sperm
    - Sperm motility
      - Forward motion
    - Concentration
    - Morphology
Abnormalities of Sperm

- Swim in circles
- Primary defects
  - Originate in testicles more serious
- Secondary defects
  - Sperm passing through the tubules and ducts
  - Poor handling after collection
- Large numbers of either type may result in decreased fertility
Semen Processing

- Semen-poor fraction and semen-rich fraction separated
  - Semen-rich evaluated both macroscopically and microscopically
- Extending of semen
- Storing of semen
- Thawing of semen
Semen Extending

- Diluted for insemination or for storage
- Extenders increase the number of females to be bred with single ejaculate
- Extenders provide energy source and protection
- Extenders include egg yolk phosphates, egg yolk-citrate, tris buffer, homogenized milk, or cream and glycerol (if frozen for long term)
- Sometimes antibiotics are included to prevent contamination of sperm
Semen Storing

- Cool slowly
  - Prevent cold shock
  - Preserve viability
- Divided in 0.5 or 1.0 ml fractions in straws
  - 20 million sperm cells per straw
- Labeled and placed into canes in numbered canisters in liquid nitrogen tank
  - Stored at -130°C prevents crystal formation
    - Cryostorage – liquid nitrogen
    - Semen straws
    - Stallion semen does not freeze well!
bovine semen straw

slide by R. G. Elmore

Cane with basket for straws. (R. G. Elmore)
Semen Thawing

- Quickly
- Warm water
  - 10-30 seconds
- Ice water
  - Few minutes

Warm water bath used for thawing semen. (R. G. Elmore)
New Technology

- Semen sexing
- 2 million cells