

How do I Analyze Motility

Morphology:

The assessment and categorization of individual sperm using a 100XR microscope or greater. A morphological study is performed by identifying a particular defect(s) and then assessing a percentage of that defect determined in a particular ejaculate.

1. Severe Morphological Deficits:
 - a. Abnormal acrosomes
 - b. Bent or coiled tails
 - c. Split head – Cells with two heads
 - d. Detached head
 - e. Misshapen head
 - f. Elongated head
2. Moderate Morphological and/or Post Ejaculate Deficits:
 - a. Abnormal midpieces
 - b. Distal Droplets – A small bump mid-way down the tail
 - i. Usually defines pre-mature sperm
 - c. Proximal Droplet – Small bumps at the base of the head where the tail joins
 - i. Usually defines pre-mature sperm
 - d. Clumping
 - i. Semen is in shock
 - ii. Osmolarity of the extender is not acceptable to the survivability of the semen
3. Dead Sperm:
 - a. When a collection is completely dead it is very important to back track up to the previous 180 days.
 - i. Change of location
 - ii. Change of feed
 - iii. Change of water
 - iv. High temperature or sickness
 - v. Exposure to any abnormal stress

Acrosome

In spermatozoa of many animals, the acrosome is an organelle that develops over the anterior half of the spermatozoon's head. It is a cap-like structure derived from the Golgi apparatus. Acrosome formation is completed during testicular maturation.

Acrosome reaction

As the sperm approaches the egg, the membrane surrounding the acrosome fuses with the plasma membrane of the sperm, exposing the contents of the acrosome and rendering the sperm capable of fusing with the egg. There are considerable species variations in the morphology and consequences of the acrosome reaction. In several species the trigger for the acrosome reaction has been identified in a layer that surrounds the egg. In mammals the acrosome reaction releases hyaluronidase and acrosin; their role in fertilization is not yet clear. It also alters a patch of pre-existing sperm plasma membrane so that it can fuse with the egg plasma membrane.

Breaking Down & Utilizing the Information

Motility: The *physical movement of an individual sperm cell*.

There are many aspects to analyzing semen motility, sperm cells may move in a circular pattern (Spinners), backwards, or in a progressive forward motion. The most accurate method of assessing your stallions progressive motility, is simple as 1 2 3;

1. Close your eyes for 10 seconds:

A. Open your eyes and assess the percent of sperm that are dead, spinning, and/or sluggish in movement.

B. This will be considered – ***Passively Motile***.

2. Close your eyes for 10 seconds:

A. Open your eyes and assess the percent of the sperm moving in a circular and/or a relative forward motion.

B. This will be considered – ***Slightly Motile***.

3. Close your eyes for 10 seconds:

A. Open your eyes and then assess the percent of the sperm cells which are aggressively moving in a straight linear motion across the microscope slide.

B. This will be considered – ***Progressively Motile***.