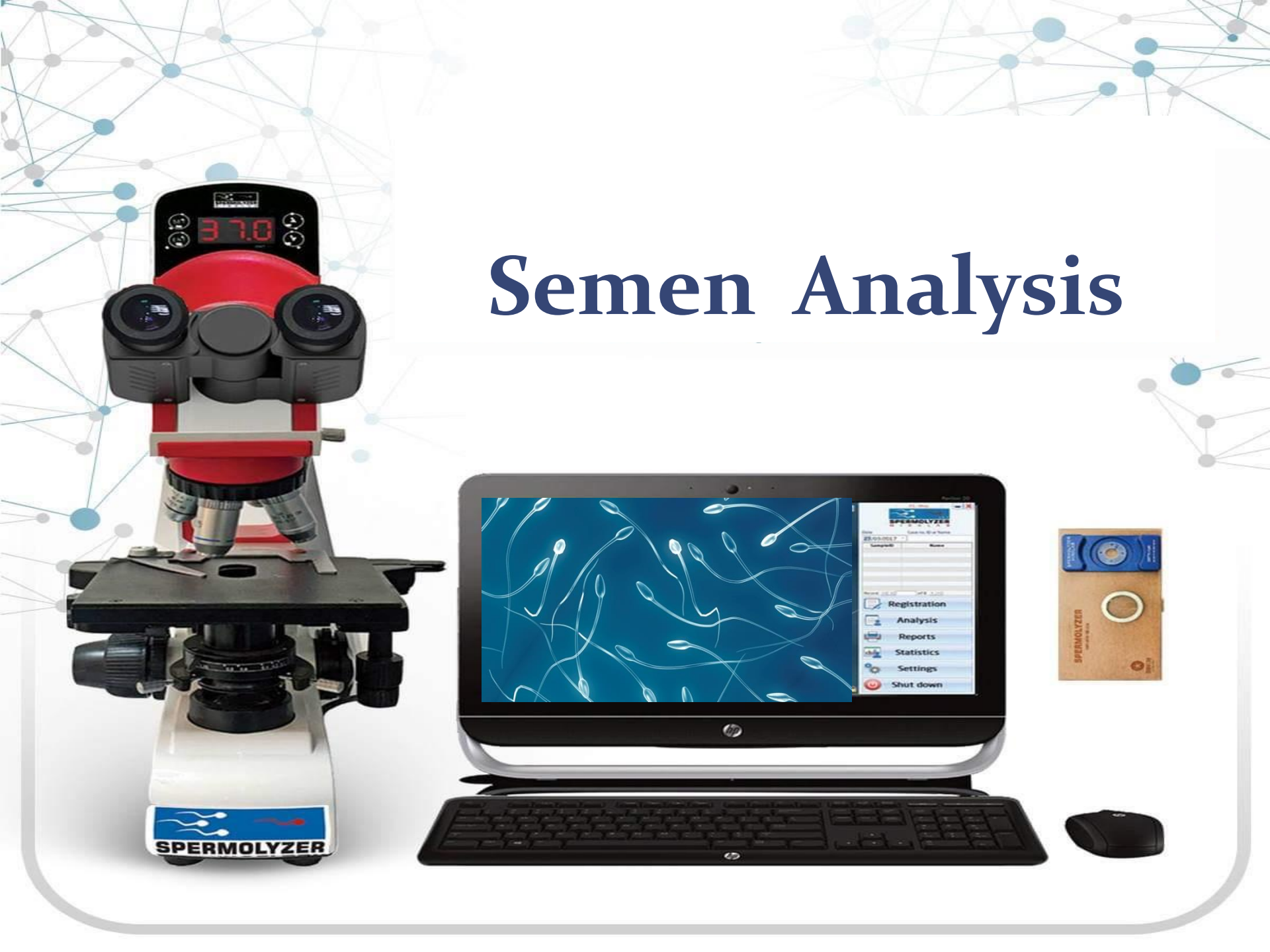
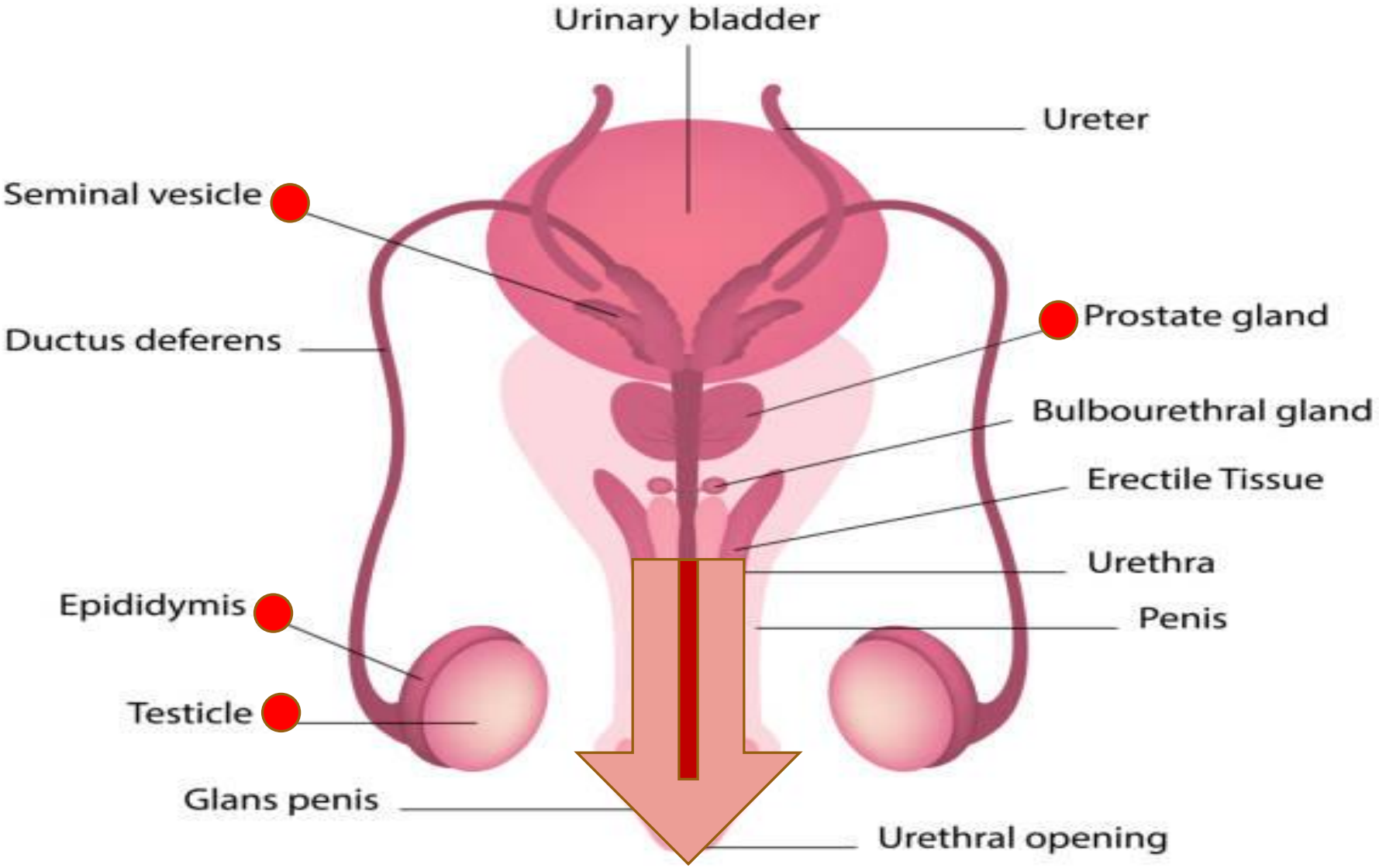
Semen Analysis





Male reproductive system

Source of Secretions

Prostatic Secretion

35%

- -pH
- -Vesiculase Enzyme

Seminal Vesicle Secretion

60%

- -Fructose
- -Prostaglandin

Control movement & penetrate cervical mucus

Precautions Before Analysis

Precautions Before Analysis

- **Insure that the first Drops of the Ejaculate are included in the given sample& must collected in Sterilized Cup.**
- **from (2 – 7 days) without meeting & Masterbation Before Sampling**
- **Semen Samples Contaminated with Urine is Refused**
- **Samples Provided at Home & must be in the Lab 20 min.**
- **-Sample Should be Protected from any Detergen (Hand Soap , Lubricants , Oils)**

Safe handling of specimen

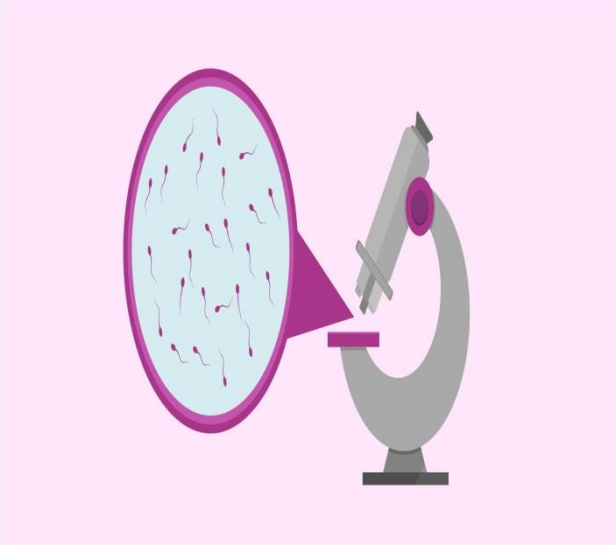
- Semen samples may contain dangerous infectious agents and should be handles as bio - hazard
  - *human immunodeficiency virus (HIV),*
  - *hepatitis viruses*
  - *herpes simplex virus*

- What are the safety precautions????

Test Principle

Physical

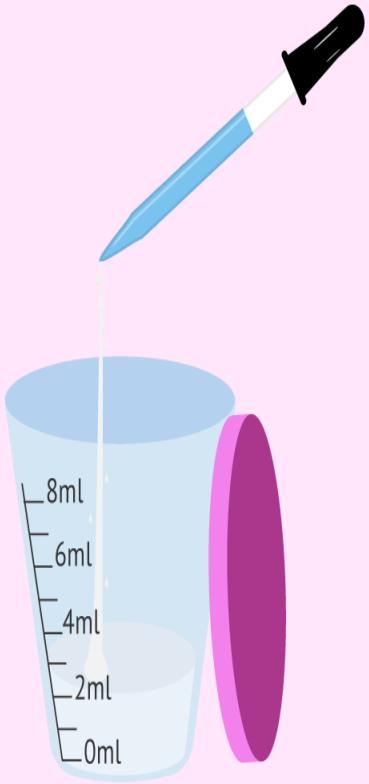
Microscop



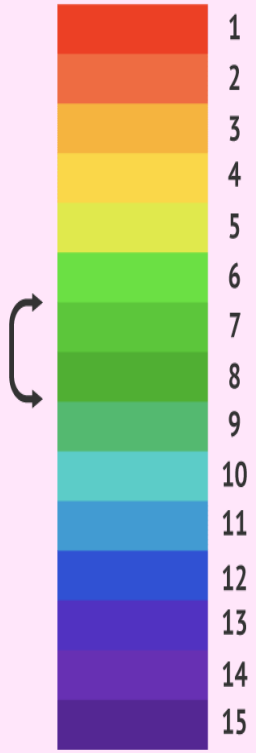
Physical Analysis

Volume & Colour

Liquefaction



Viscosity



pH

Color

Grayish white

Abnormal

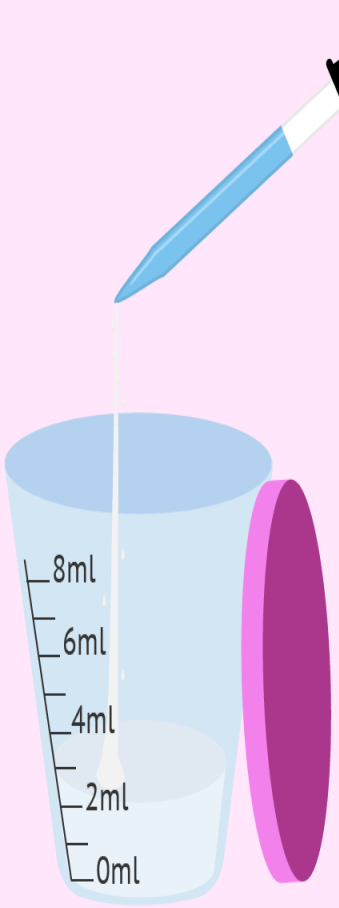
Red : RBCs

Yellowish : pus cells

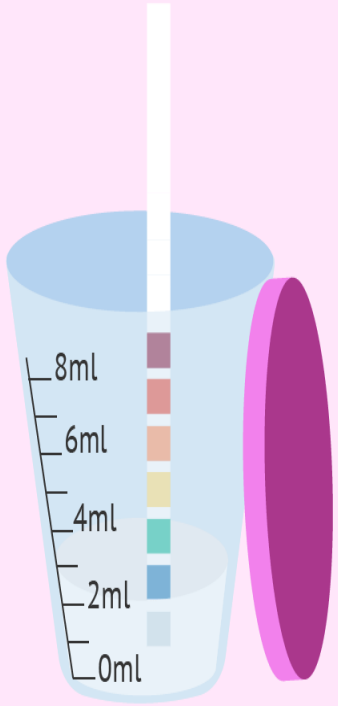
Incubate Sample at 37c for 20 min.

Physical Analysis

Volume



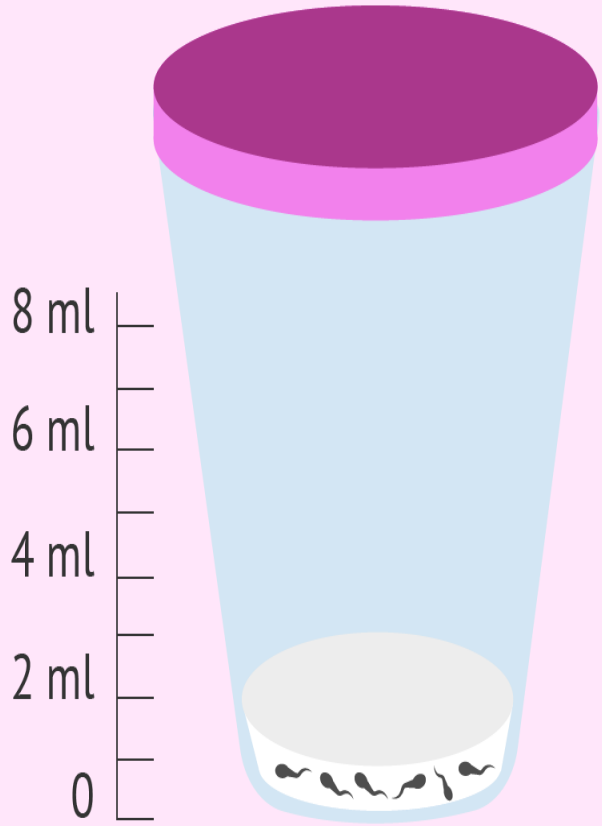
Viscosity



pH

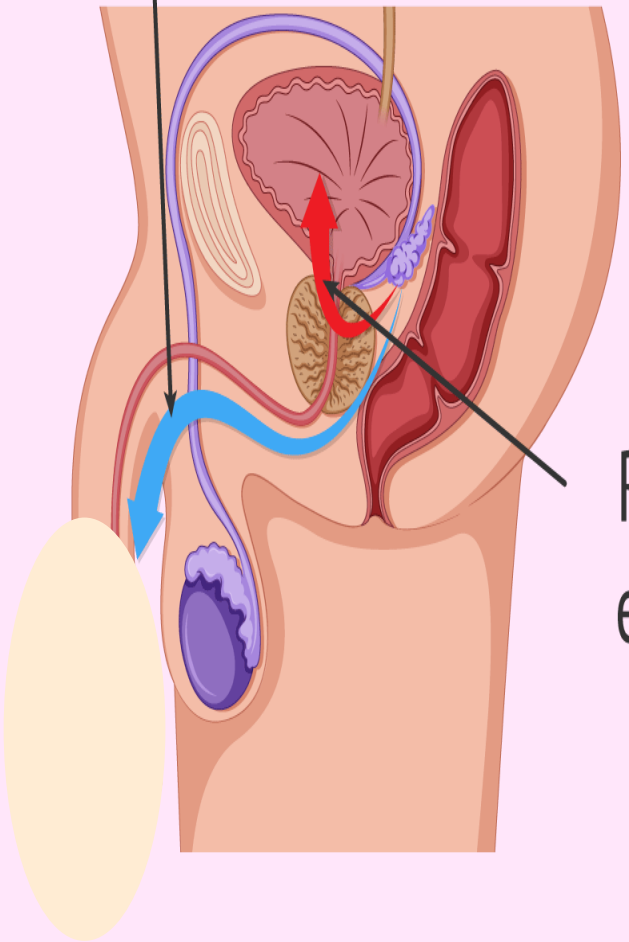
Normal Volume :

Normal sample



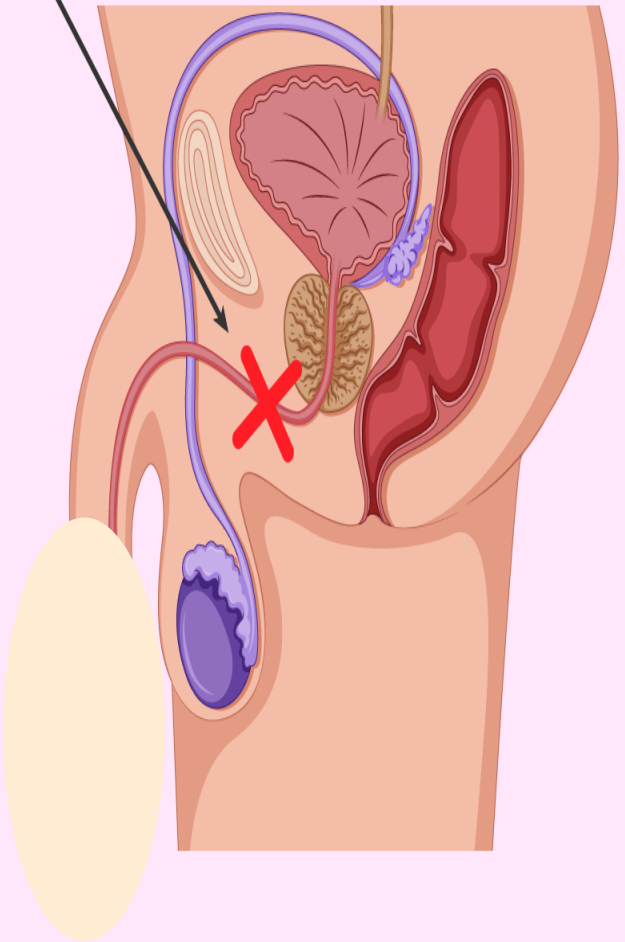
Sample with hypospermia

Normal pathway of sperm



Retrograde ejaculation

Obstruction of ejaculatory ducts



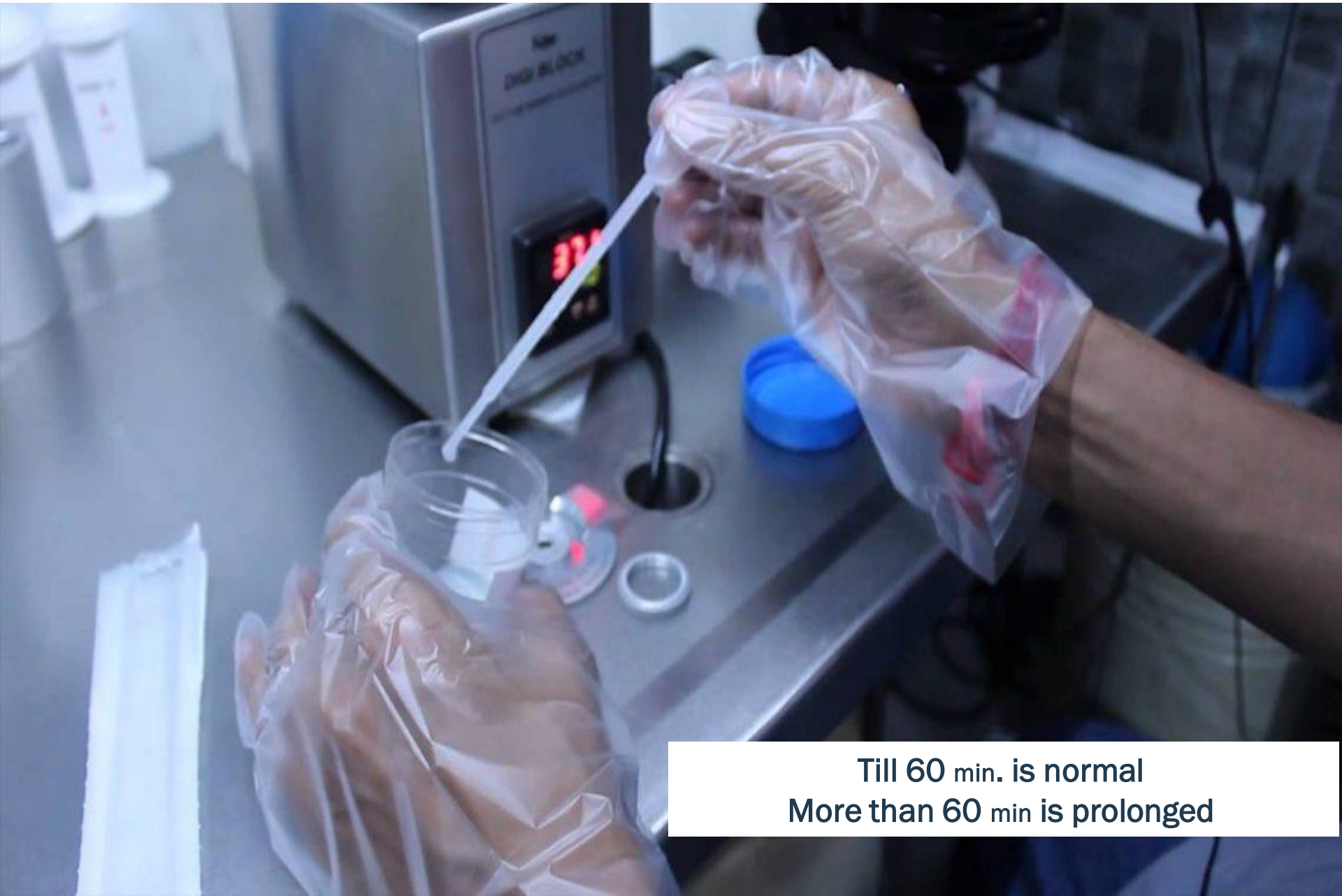
Increase semen volume:

Avoid alcohol and tobacco

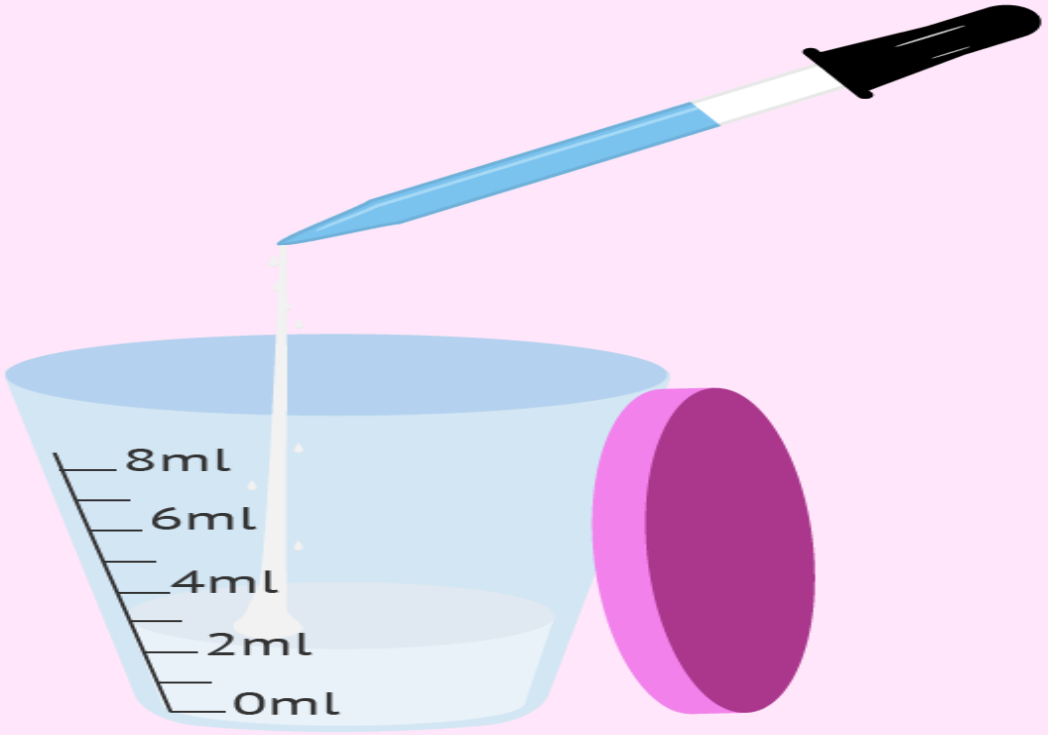
Foods rich in vitamin C and antioxidants

Foods rich in zinc

Liquefaction Time :



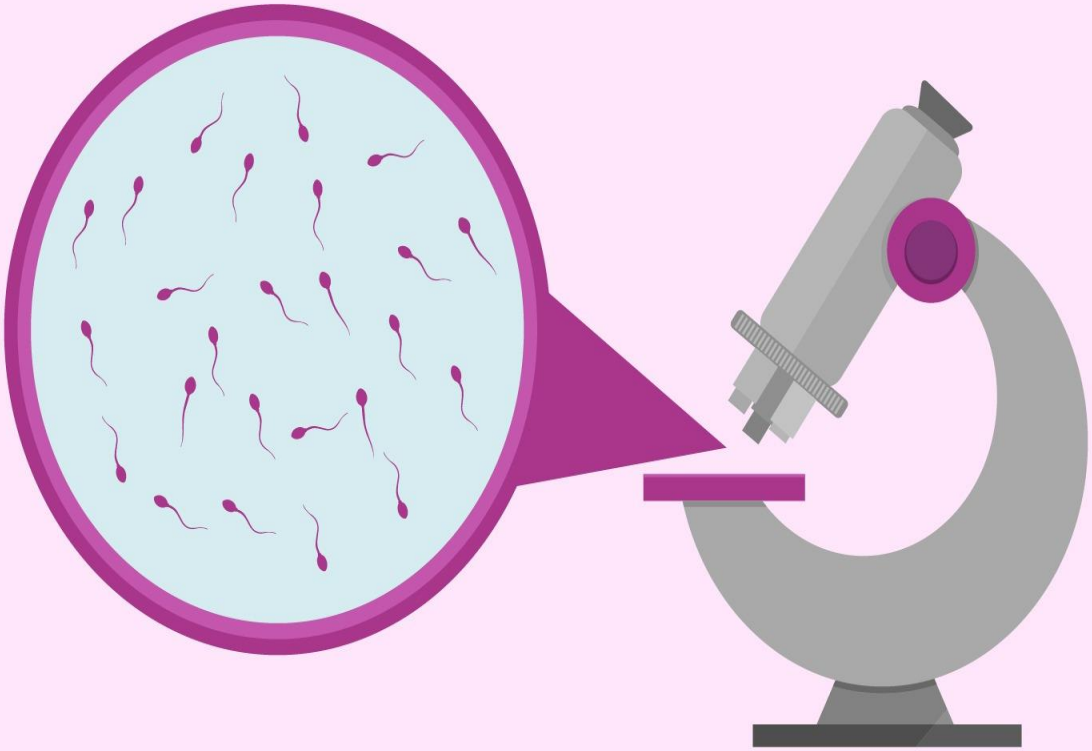
Till 60 min. is normal
More than 60 min is prolonged



Viscosity

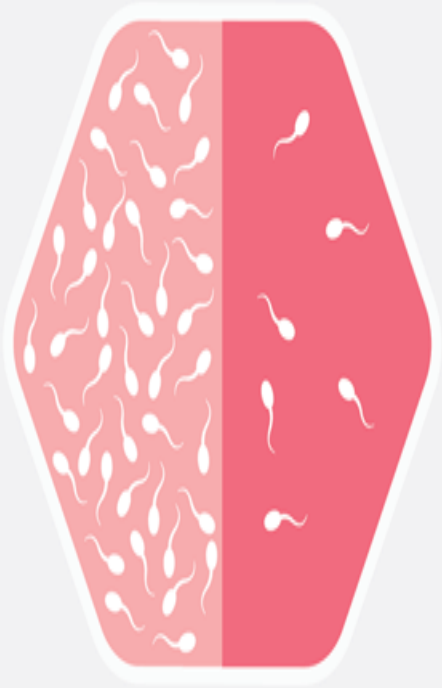
3) Viscosity (consistency)

- Semen viscosity refers to the fluid nature
- ↑ Viscosity = ↓ sperm motility
- Normal: ≤ 2 cm thread



Microscopical Examination

Sperm Count



Normal Sperm Count

Low Sperm Count

Sperm Morphology

Normal Sperm

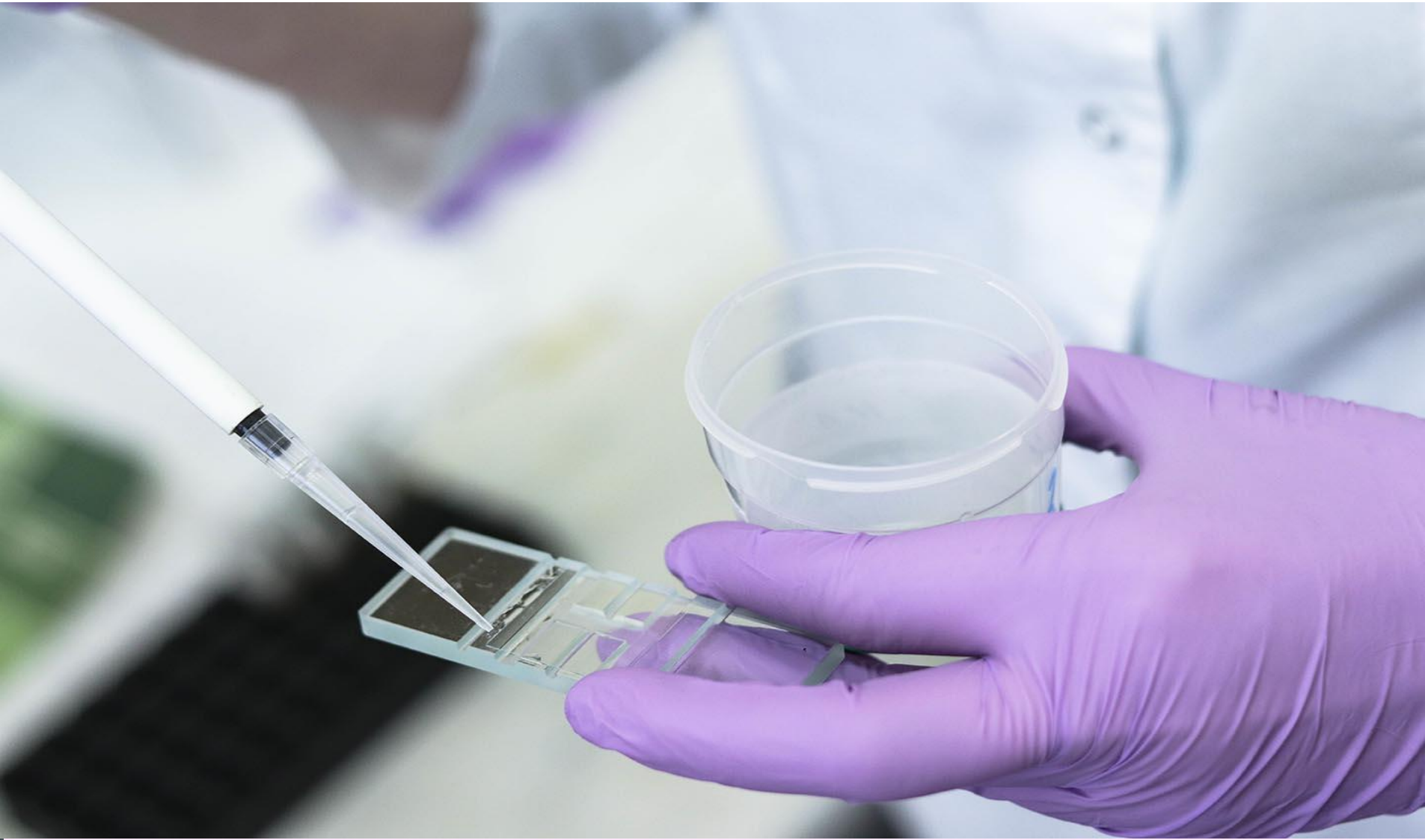
Abnormal Sperm

Sperm Motility

Normal Forward Progression

Abnormal Motility

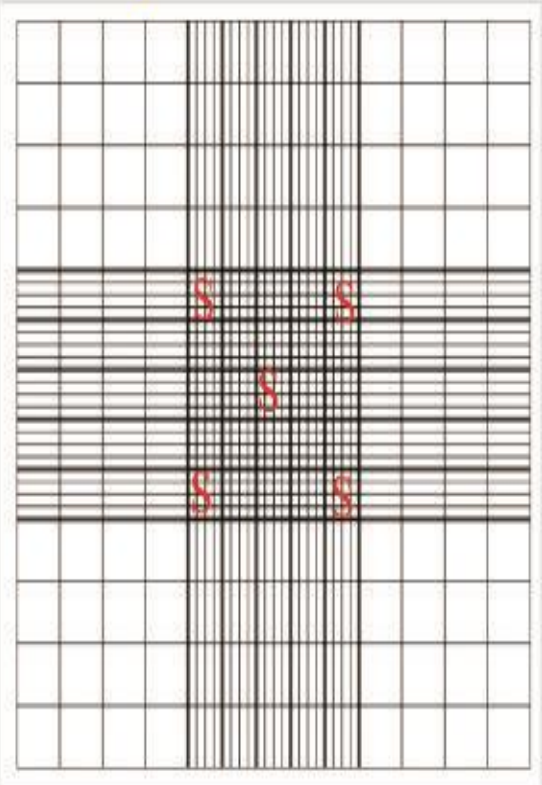
Determine Sperm Count



Semen 1:20 dilution (well-mixed) with water or Sodium bicarbonate solution

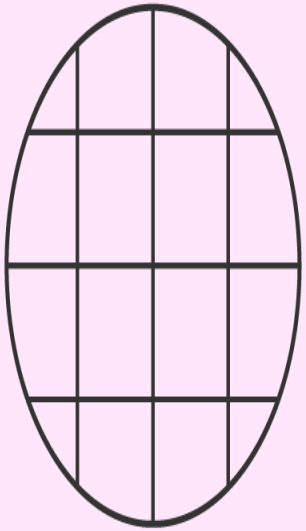
Mix well

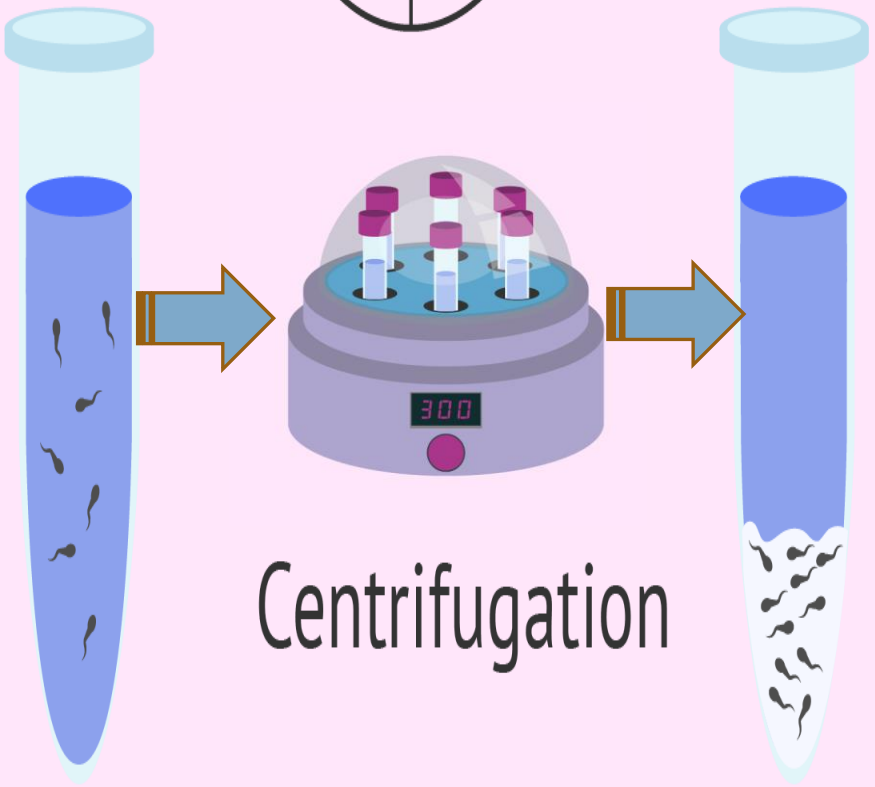
Load Neubauer chamber
Count RBC 5 squares



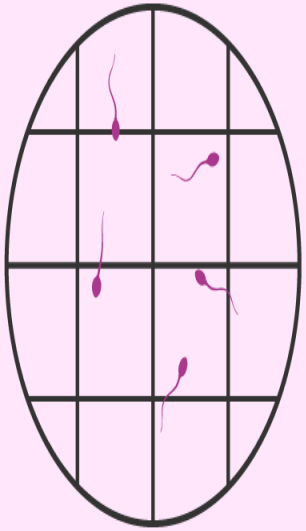
Formula = No of sperms x 1,000,000 = X x 1,000,000/mL
Million / mL

No Sperms Detected



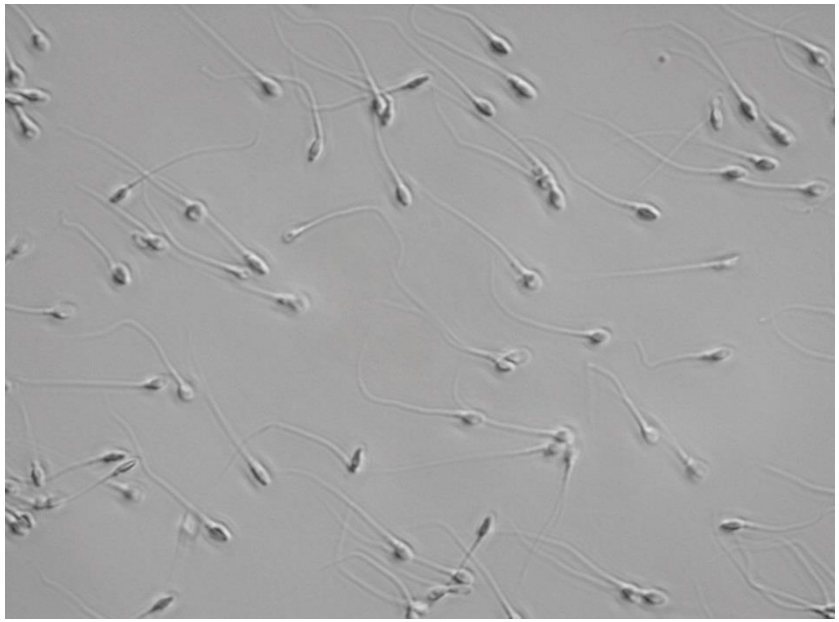


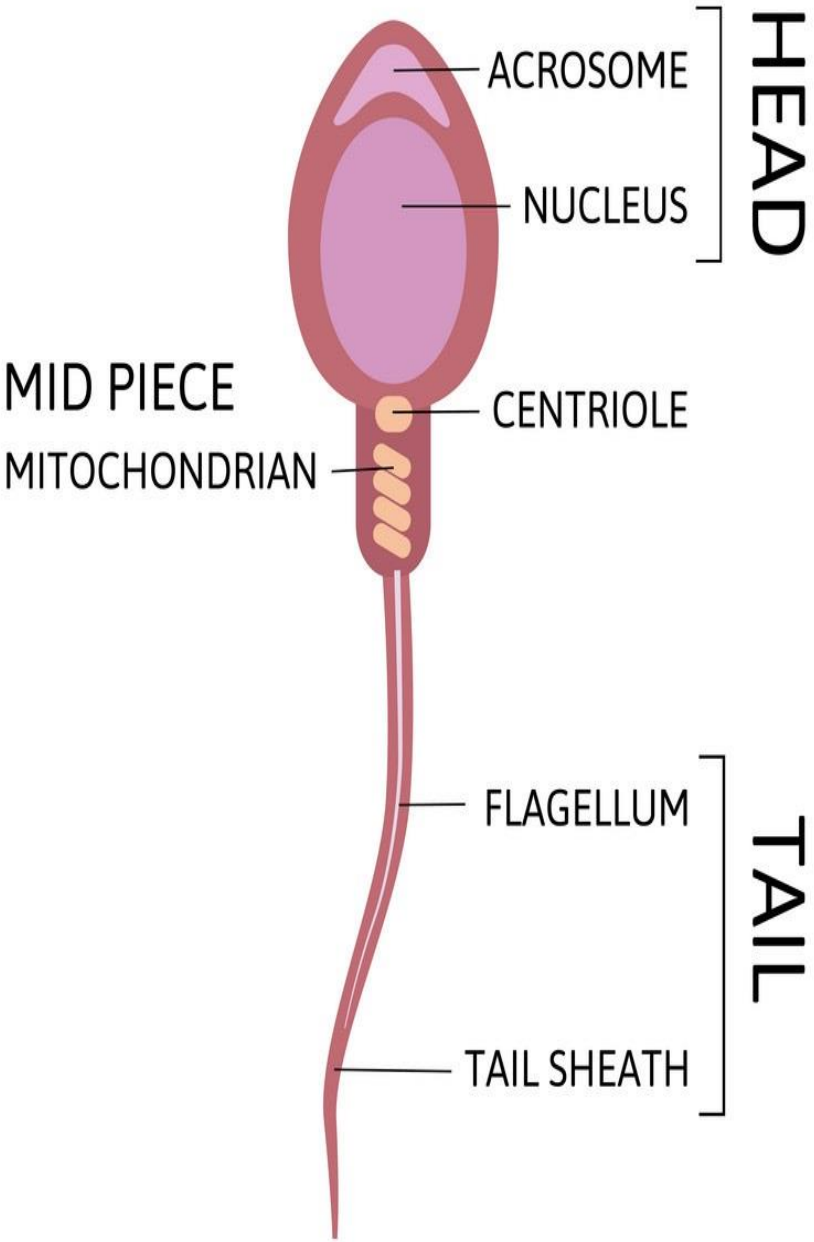
Centrifugation



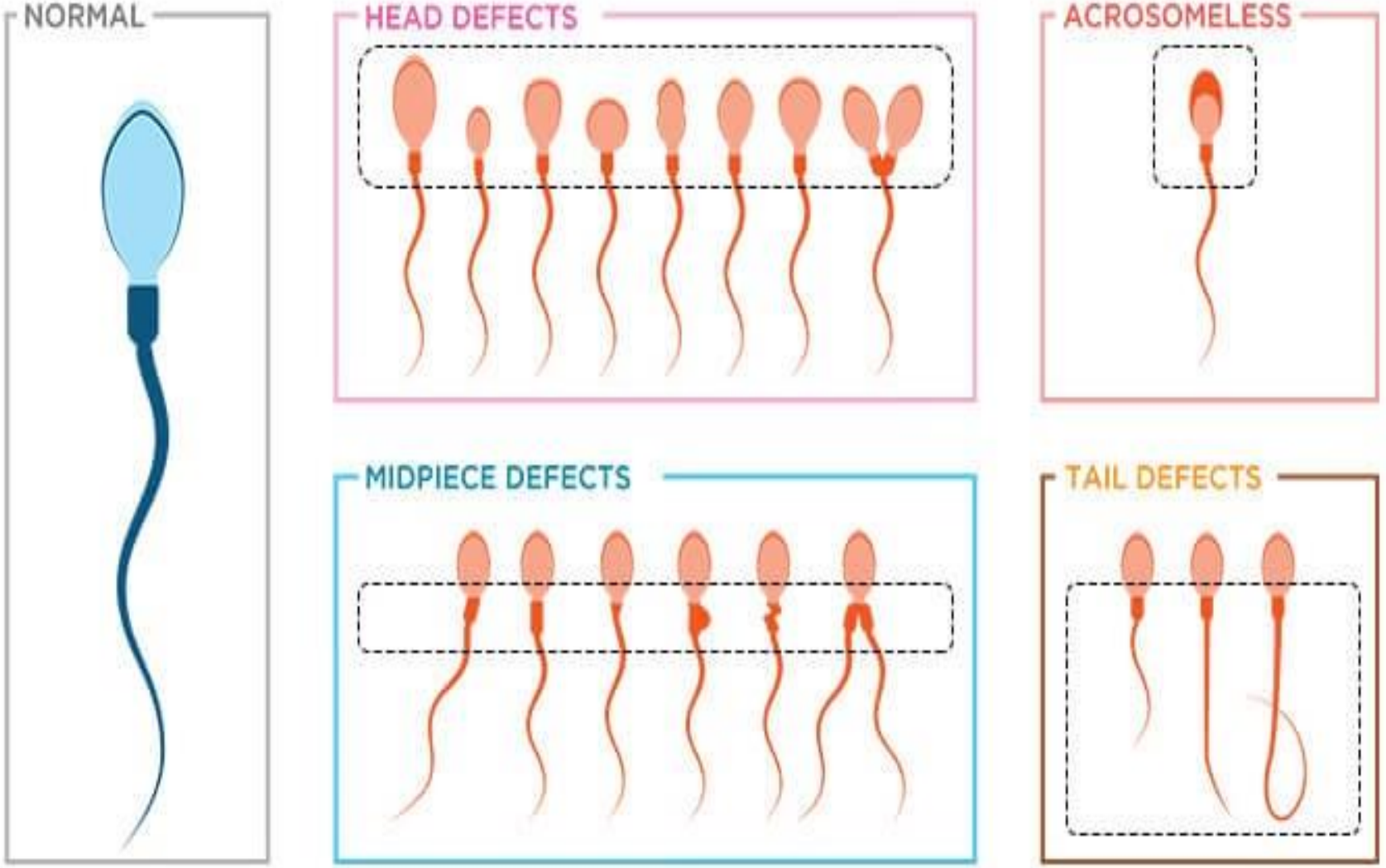
Every sperm seen is counted 10,000

Sperm Morphology

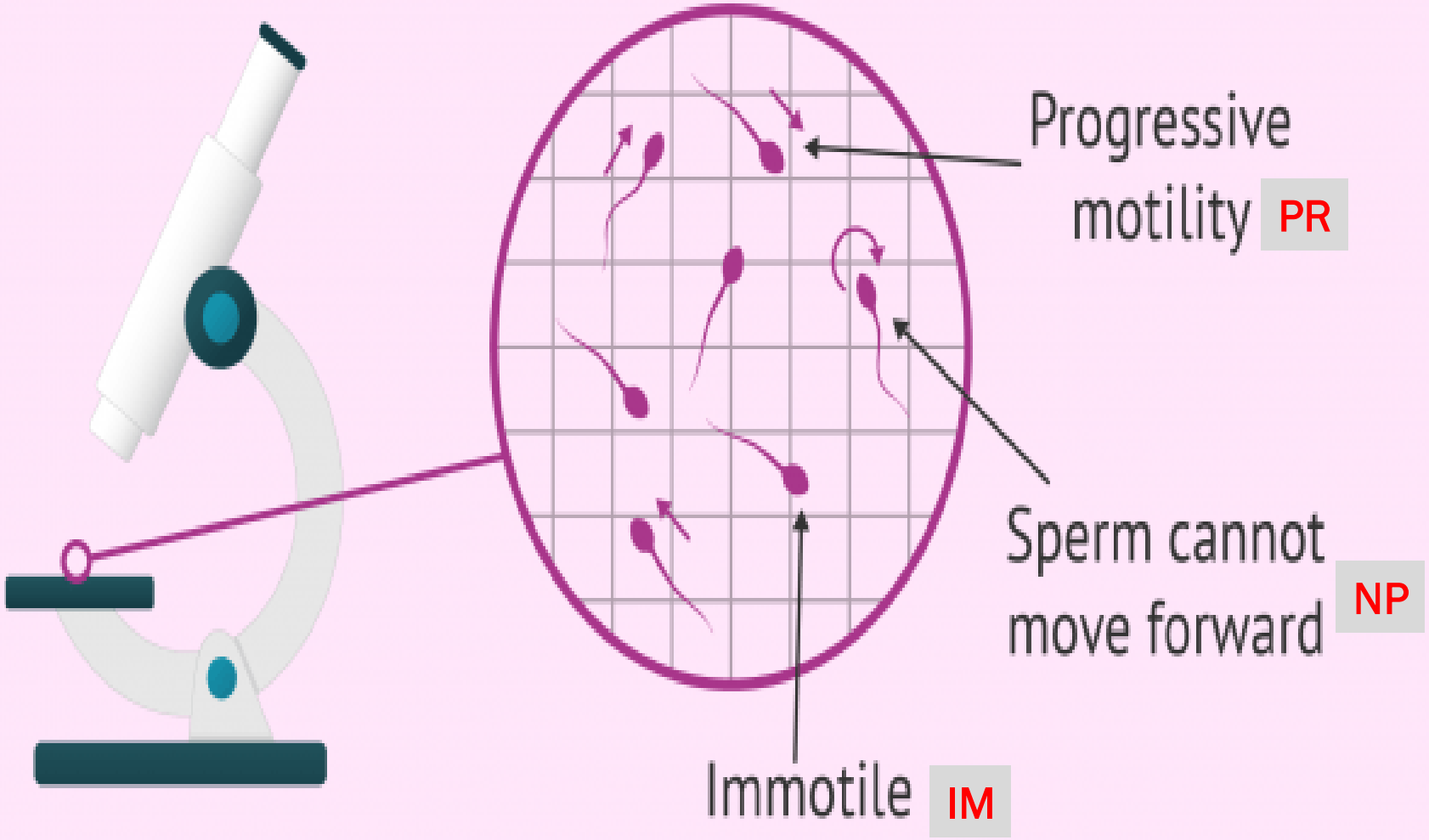




SPERM MORPHOLOGY



Determine Sperm Motility



Determine Sperm Motility

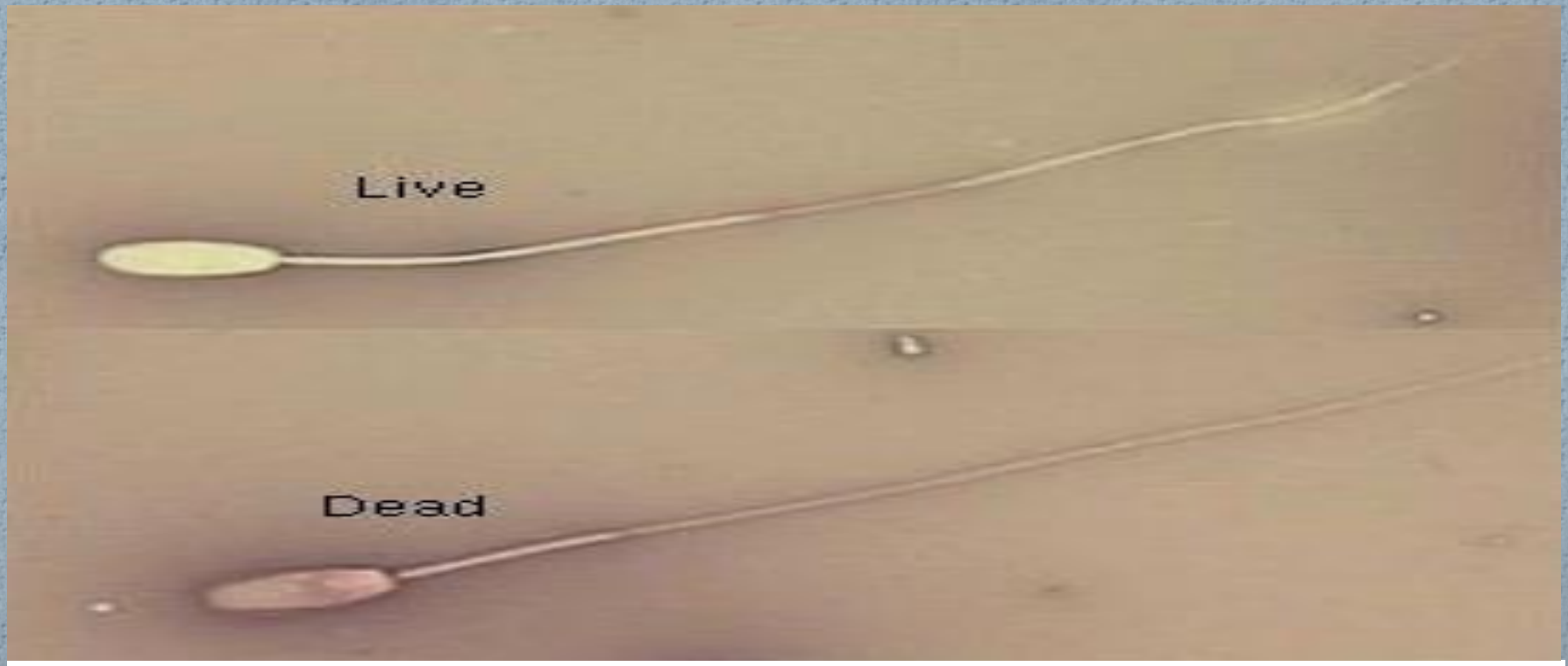
- Mix semen sample well then take 10µl& cover by squared cover & microscopically examine motility

- 1-Assess % of motile (PR + NP%) & immotile sperms (IM%)
- After 30 min
- After 1 hour
- After 2 hour

What is the grading of sperm motility?

Grade	Sperm motility
0	No motility
1	Sluggish; no progressive movement
2	Slow, meandering forward progression
3	Moving in a straight line with moderate speed
4	Moving in a straight line at high speed

Vitality Test



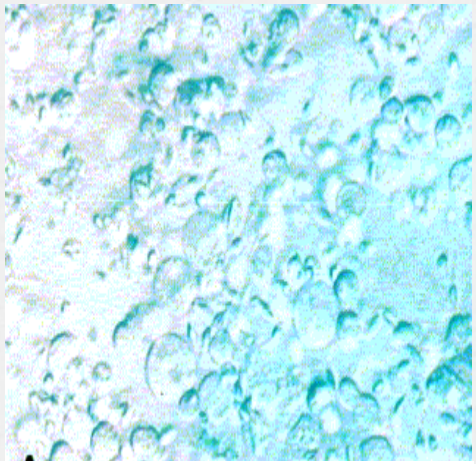
Living sperms: do not take the stain

Dead sperms :take the stain

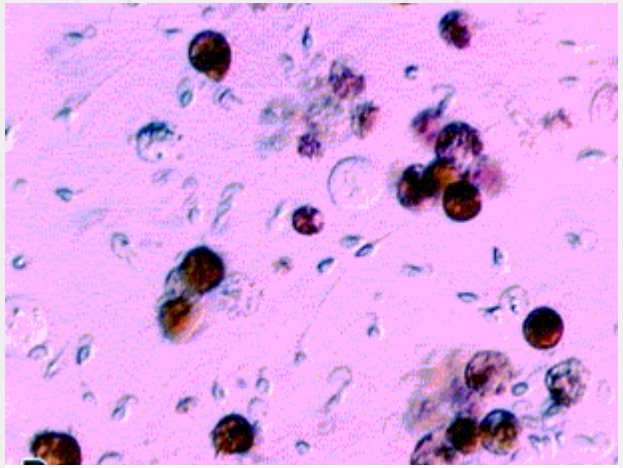
Differentiate By Peroxidase

- Round cells detected in semen sample :

  are either Spermatogenic cells, Pus cells.



spermatogenic cells

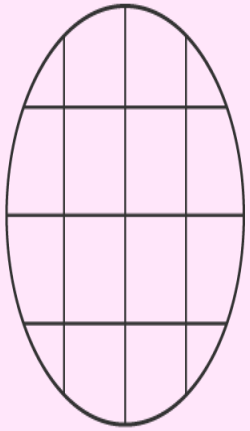


Pus Cells

Sperm/Semen Analysis - Abnormal Results

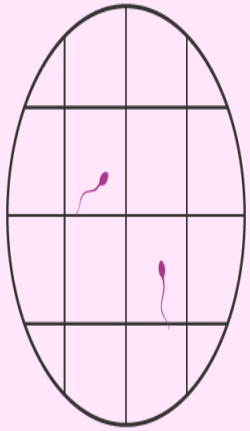
ABNORMALITIES	DEFINITION
Aspermia	Absence of semen
Azoospermia	Absence of sperm in the semen
Hypospermia	Low semen volume — Less than 1 .5 ml
Hyperspermia	High semen volume
Oligozoospermia	Very low sperm count — Less than 15 mill/ ml
Polyzoospermia	Abnormally high sperm count in the ejaculate
Asthenozoospermia	Poor sperm motility — Motility < 40%
Teratozoospermia	Sperms that have morphological defects
Necrozoospermia	All the sperms in the ejaculate are dead
Leucospermia	A high level of White blood cells present in the semen
Hematospermia	Presence of red blood cells in the ejaculate

Azoospermia



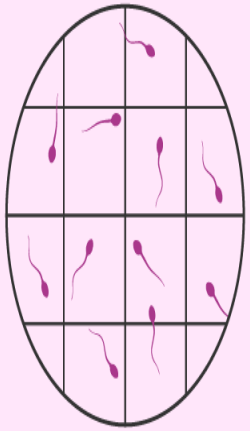
Zero sperm count

Cryptozoospermia



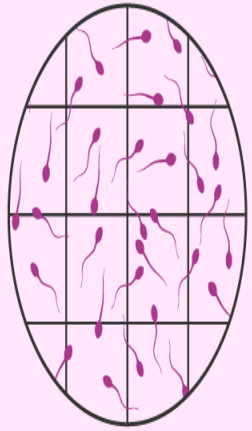
<100,000/ml

Oligospermia



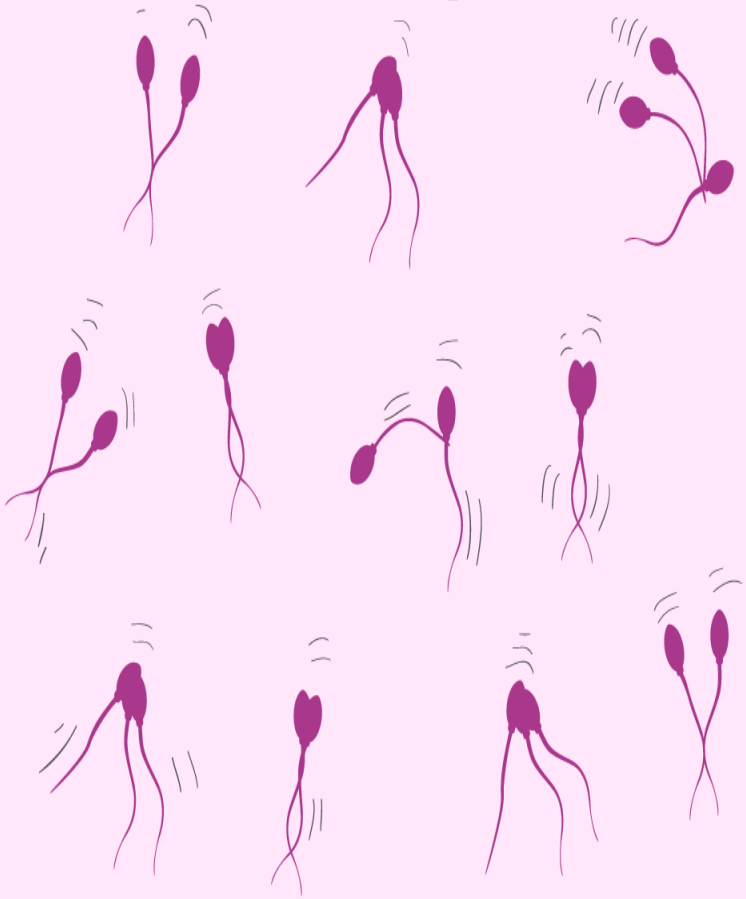
<15 M/ml

Normozoospermia



Normal sample

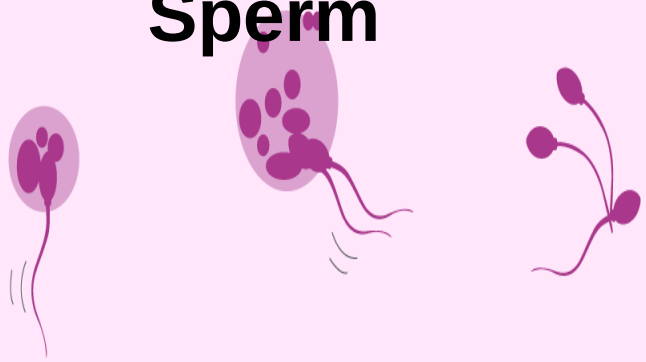
Union of Motile Sperm



Agglutination

Anti-Sperm Antibodies

Union of Immotile Sperm



Motile Sperms with Mucous or Cells

Aggregation

Less Clinical Relevance

SEMEN ANALYSIS TEST - NORMAL VALUES

PARAMETER	DEFINITION	REFERENCE RANGE
Semen Volume	Total amount of fluid ejaculated	>= 1.5 mL
Sperm Count	The total number of sperm in the measured volume of ejaculate	>= 15 million per mL
Total Sperm Number	Total number of sperm in the ejaculate	>= 39 million
Sperm Motility	Number of motile sperm compared to non-motile sperms percentage	Total motility >= 40% motile sperms within 60 minutes of ejaculation. Progressive motility >= 32%
Sperm Viability	The number of sperms in the sample that are alive as a percentage of the total number of sperms	>= 58%
Sperm Morphology	Number of ideally shaped sperms as compared to imperfectly shaped sperms and reported as percentage of the total number of sperms.	>= 4%
White Blood Cells	Large number of WBC can be a sign of infection in the reproductive tract.	< 1 million per mL
Semen pH	Measured to test if the semen is acidic or alkaline.	>= 7.2
Sperm Antibodies	Normally done in specialised laboratories using methods approved by WHO	<= 50% motile sperm showing antibody activity

Recommendations After analysis

1- To Avoid Writing the Term Azospermia write:

A-no sperms could be detected in the whole sediment material after centrifugation of this sample.

B-Examination of 3 successive semen samples are recommended.

2- In presence of sperms agglutination write:

Sperm agglutination is detected in this sample.

Anti –Sperm Antibody .

3- In case of acidic pH and no sperms recommend:

fructose Test in *Semen*.


THANK
YOU