

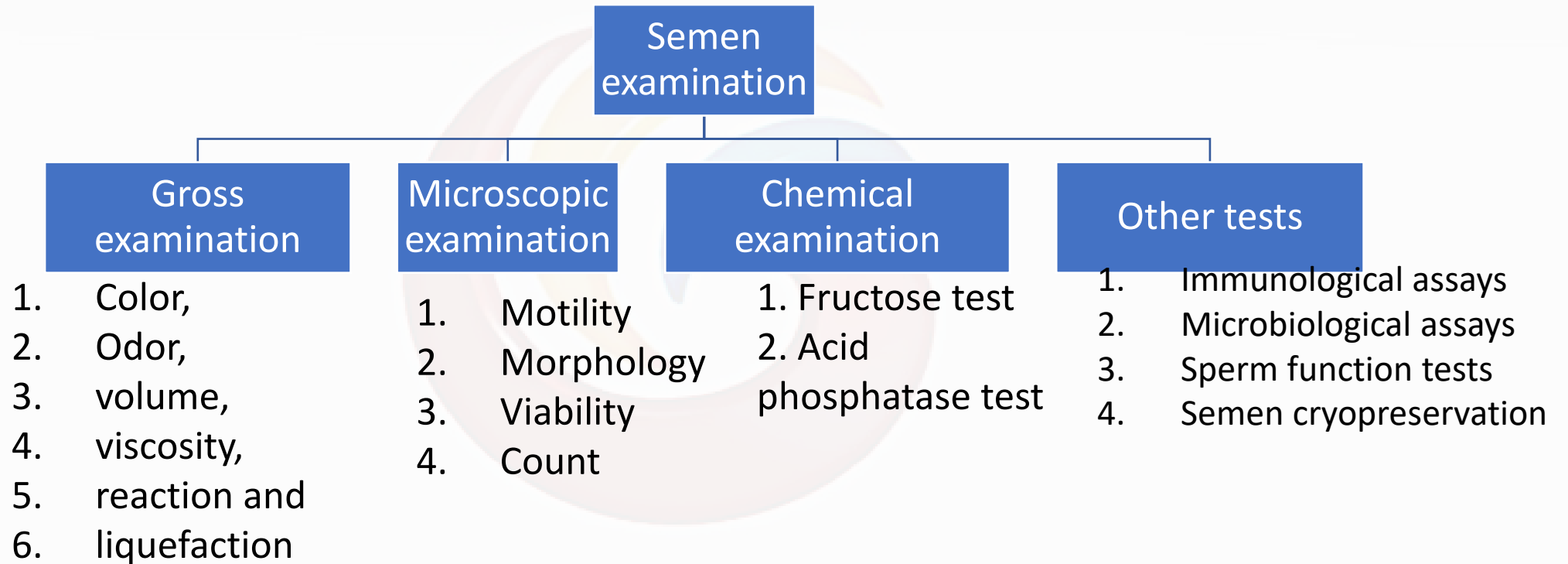


Semen examination

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Classification

Physical examination
Or
Macroscopic examination



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Physical examination

1. **Colour.** Normally it is whitish, grey-white or slightly yellowish.
2. **Volume.** Normally, volume of semen is between 2.5 and 5 ml. The volume is slightly more in patients of infertility. The volume does not vary with the period of abstinence.
3. **Viscosity.** When ejaculated, semen is fairly viscid and it falls drop by drop.
4. **Reaction.** Normally, it is slightly alkaline with pH between 7 and 8.
5. **Liquefaction.** Liquefaction occurs because of presence of fibrinolysin. Normally liquefaction occurs at room temperature within 10-30 minutes (average 20 minutes).

Physical examination
Or
Macroscopic examination

Semen examination



1. Color,
2. Odor,
3. volume,
4. viscosity,
5. reaction and
6. liquefaction

1. Motility
2. Morphology
3. Viability
4. Count

1. Fructose test
2. Acid phosphatase test

1. Immunological assays
2. Microbiological assays
3. Sperm function tests
4. Semen cryopreservation

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2. Microscopic Examination

1. Motility
2. Morphology
3. Viability
4. Count

The logo of Galgotias University is a stylized, circular emblem. It features a central white 'G' shape formed by three overlapping, curved bands. The top band is yellow, the middle is light blue, and the bottom is light pink. The background of the emblem is a light, warm tone.

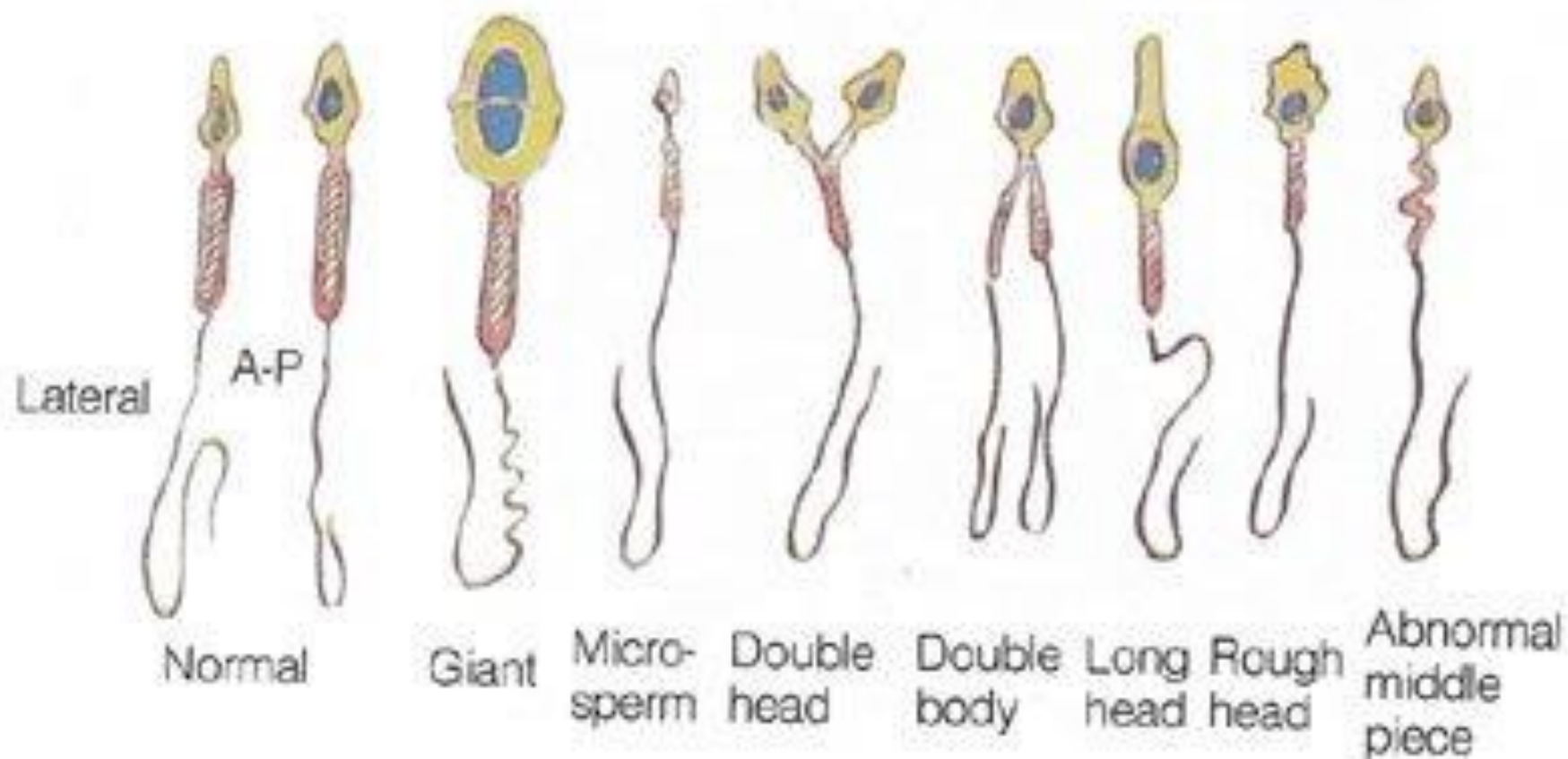
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a. Motility test

1. Place a drop of liquefied semen on a clean glass slide.
2. Put a coverslip over it and examine it under the microscope, first under low power and then under high power.
3. Normally within 2 hours of ejaculation, more than 60% of spermatozoa are vigorously motile, and in 6-8 hours 25-40% are still motile.
4. If motility is less than 50%, a stain for viability such as eosin Y with nigrosin as counterstain can be done. Heads of non-motile sperms show red dye.

b. MORPHOLOGY

1. Prepare a thin smear from liquefied semen on a glass slide.
2. Stain it with any of the Romanowsky stains, Pap or H & Estain.
3. Observe at least 200 spermatozoa for any abnormality in their morphology.
4. Normally 80% of spermatozoa are normal.
5. The abnormal forms of spermatozoa are with double head, swollen and pointed head, double tail and rudimentary forms.
6. Also look for the presence of RBCs or WBCs, if any.
7. Computer-assisted morphologic screening is particularly useful in samples with very low numbers of normal sperm count which may otherwise remain undetected.



c. Sperm Vitality (viability) test

Dictionary

Search for a word



vitality

/vɪtəlɪti/

noun

noun: **vitality**

the state of being strong and active; energy.

"changes that will give renewed vitality to our democracy"

synonyms: liveliness, life, energy, animation, spirit, spiritedness, high-spiritedness, vivacity, exuberance, buoyancy, bounce, vibrancy, verve, vim, pep, brio, zest, zestfulness, sparkle, spark, effervescence, dynamism, passion, fire, vigour, forcefulness, ardour, zeal, relish, gusto, push, drive, punch, elan; [More](#)

- the power giving continuance of life, present in all living things.
"the vitality of seeds"

Sperm Viability

- **Sperm Viability**
- Decreased sperm viability may be suspected when a specimen has a normal sperm concentration with markedly decreased motility.
- Viability is evaluated by mixing the specimen with an **eosin-nigrosin stain**, preparing a smear, and counting the live sperms.



←

Eosin — nigrosin staining method:

The dead spermatozoa are stained red or dark pink, while the live spermatozoa white or light pink.

←

Semen examination

Physical examination
Or
Macroscopic examination

Gross examination

1. Color,
2. Odor,
3. volume,
4. viscosity,
5. reaction and
6. liquefaction

Microscopic examination

1. Motility
2. Morphology
3. Viability
4. Count

Chemical examination

1. Fructose test
2. Acid phosphatase test

Other tests

1. Immunological assays
2. Microbiological assays
3. Sperm function tests
4. Semen cryopreservation

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3. Chemical Examination

- 1. Fructose test
- 2. Acid phosphatase test

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FRUCTOSE TEST

- This test determines androgen deficiency or ejaculatory obstruction to semen; the level of seminal fructose is low in both these conditions.
- Normal seminal fructose level is
- **150-600 mg/dl.**
- Fructose is measured qualitatively by **Resorcinol test.**
- *Procedure*
- ☐ Take 5 ml of dilute HCl in a test tube.
- ☐ Add 1 ml of semen.
- ☐ Add 5 mg of resorcinol.
- ☐ Boil.
- *Interpretation.* Appearance of red colour indicates
- presence of fructose which can be measured by spectrophotometer.

Seliwanoff's test



- Aldoses and Ketoses are detected by Seliwanoff's Test

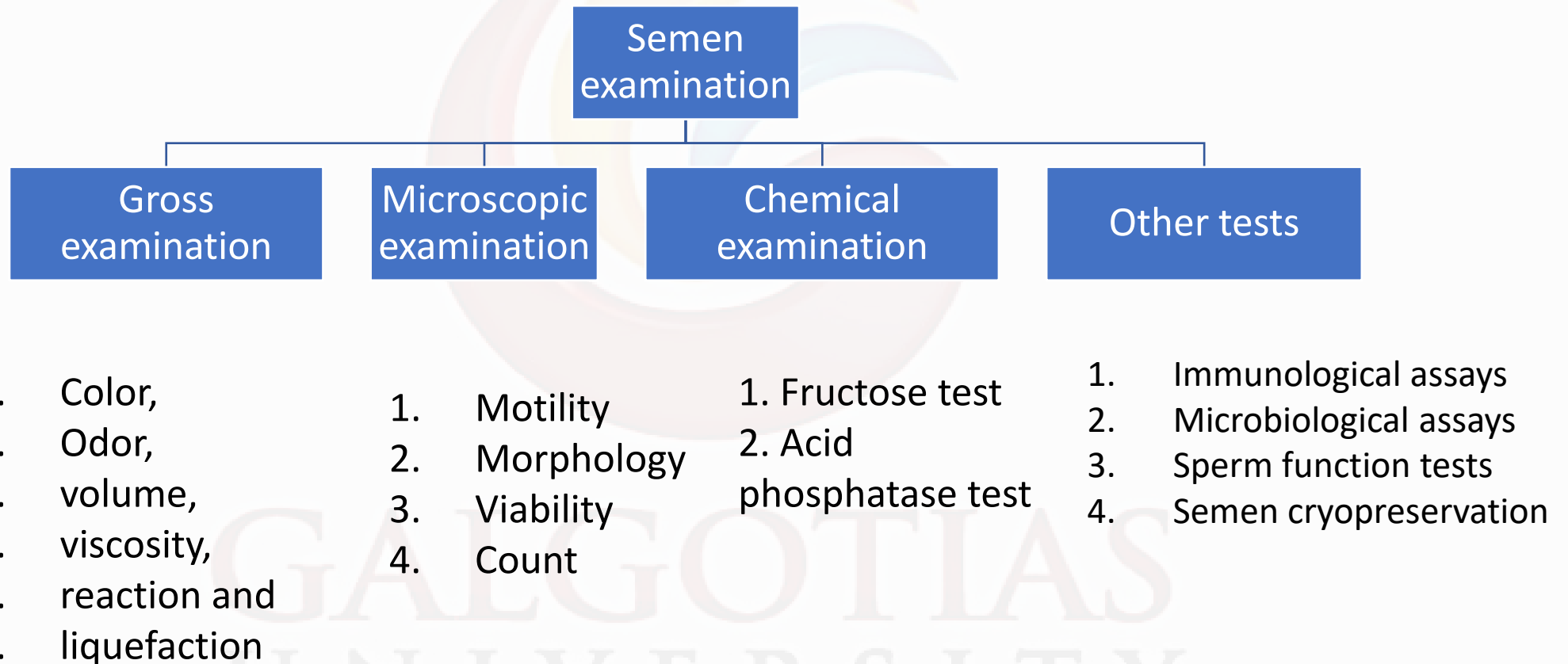
ACID PHOSPHATASE TEST

- This test is used for seminal stain and on vaginal aspirate in medicolegal cases.
- Normally semen has **2500 KA units/ml** of acid phosphatase.

Acid Phosphatase Test

- Acid Phosphatase – enzyme that is secreted by the prostate gland into seminal fluid.
- This enzyme will react with an acidic solution of sodium alpha naphthylphosphate and Fast Blue B dye.
- 4-methyl umbelliferyl phosphate (MUP) will fluoresce under UV light when in contact with the enzyme.

Physical examination
Or
Macroscopic examination



Reference:

- https://www.who.int/docs/default-source/srhr-documents/infertility/examination-and-processing-of-human-semen-5ed-eng.pdf?sfvrsn=5227886e_2
- https://www.amboss.com/us/knowledge/Semen_analysis