



# Cytopathology

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Lab #3

## Pap smear



### •Introduction

Definition

Sampling

Slide preparation, fixation and staining

Abnormal Pap smear findings

### •Practical part

screening normal pap smear

## **PAP smear**

**Is a method of Cervical screening used to detect pre-cancerous and cancerous lesions in the cervix.**

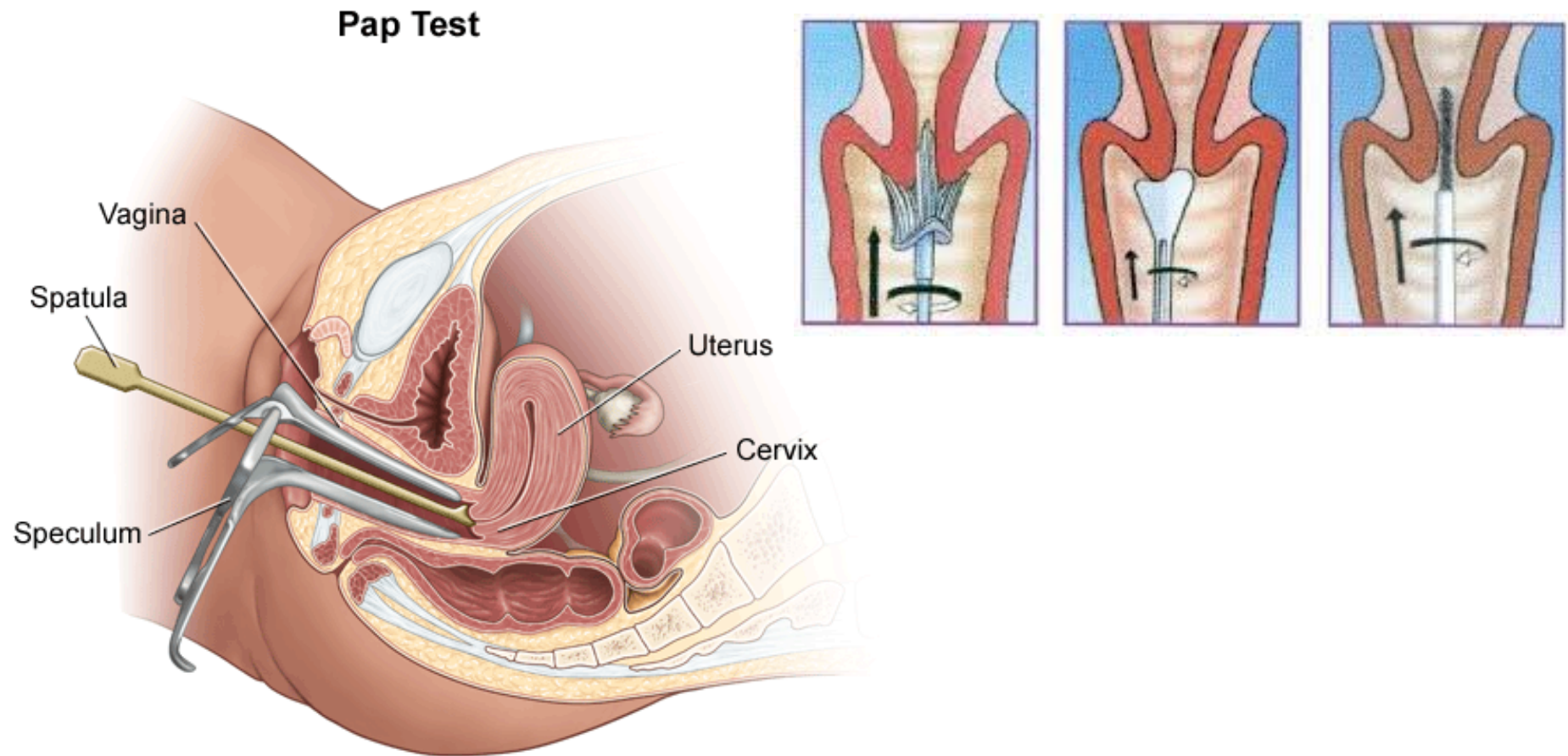
**The test was created by the Greek Dr. Papanikolaou**





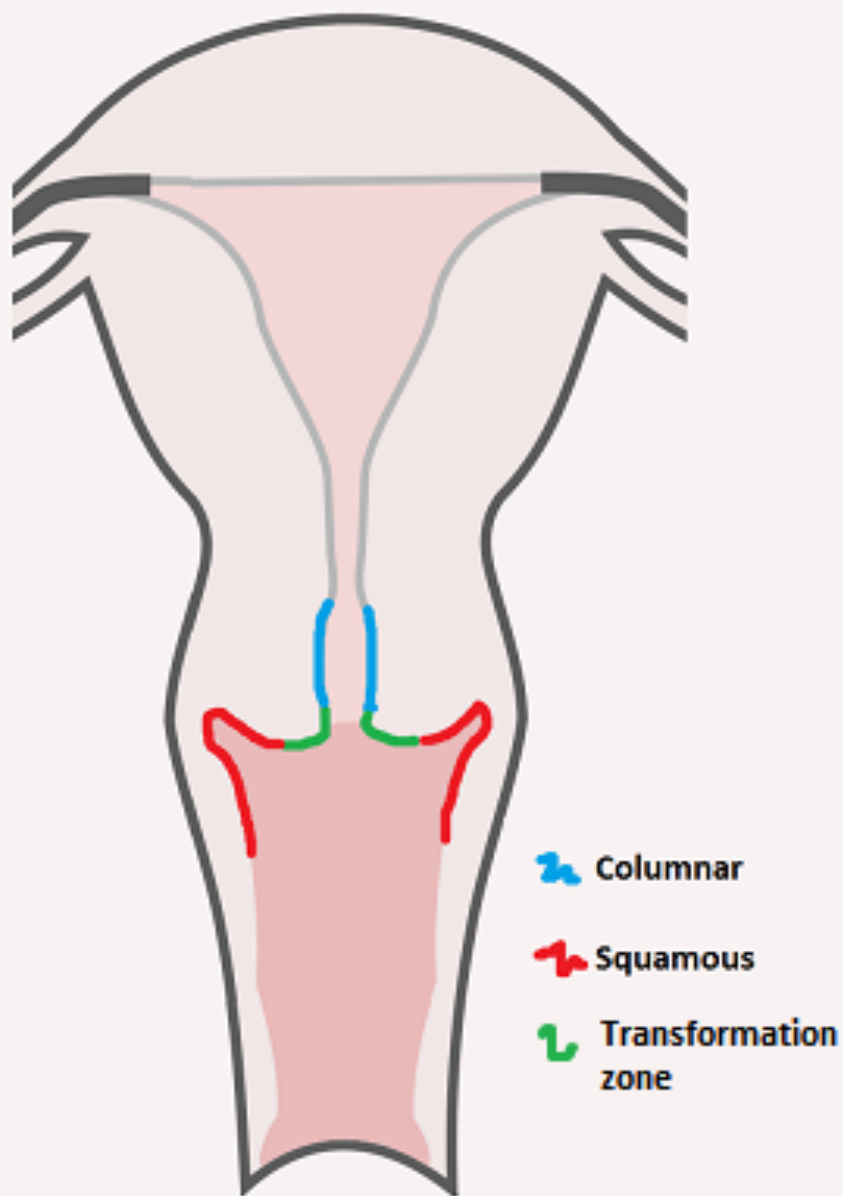
# Obtaining the sample

- In the clinic:

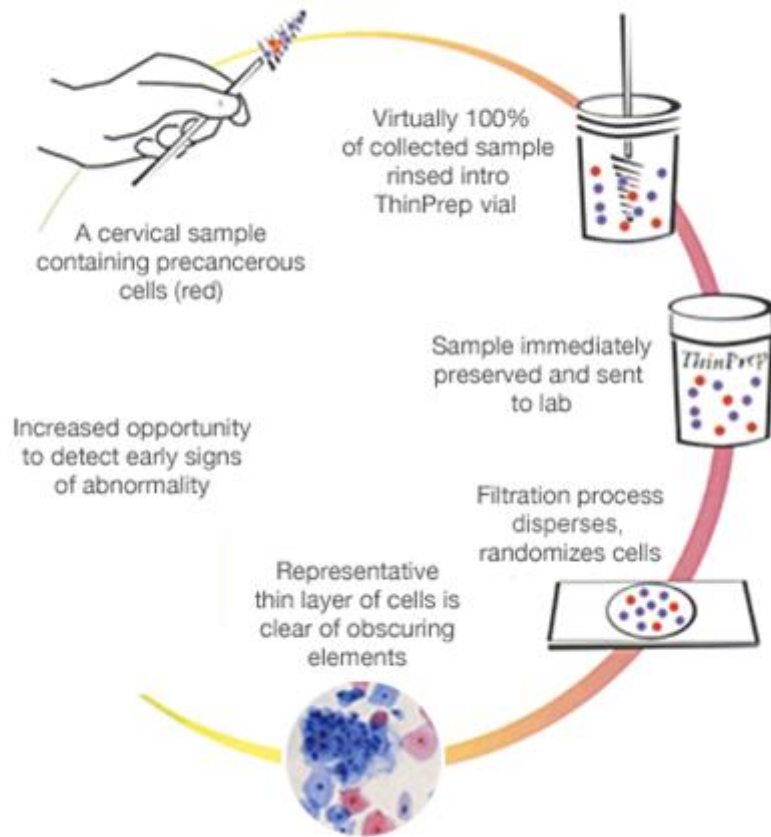




## Transformation zone

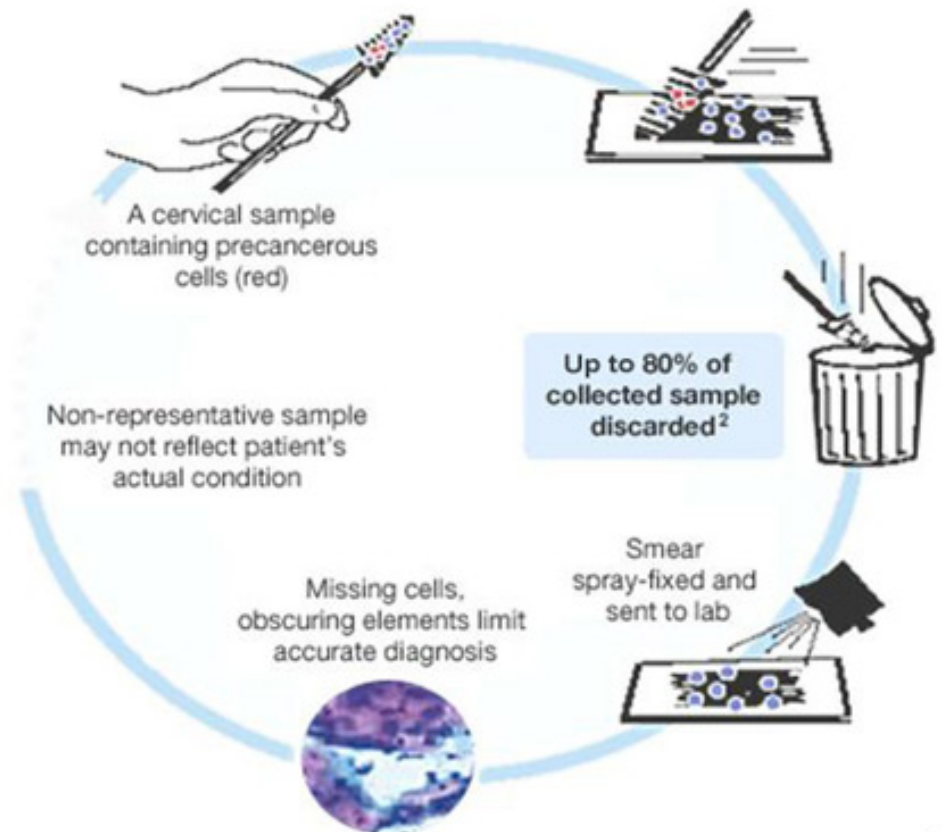


## ThinPrep Pap Test slide preparation



## Slide preparation, fixation, and staining

### The conventional "pap smear" slide preparation



## **Abnormal Pap smear findings:**

- **Pre-cancerous cell changes.**
- **Cervical cancer.**

**(Which are usually caused by sexually transmitted human papilloma virus HPV.)**

- **Inflammation, infection.**



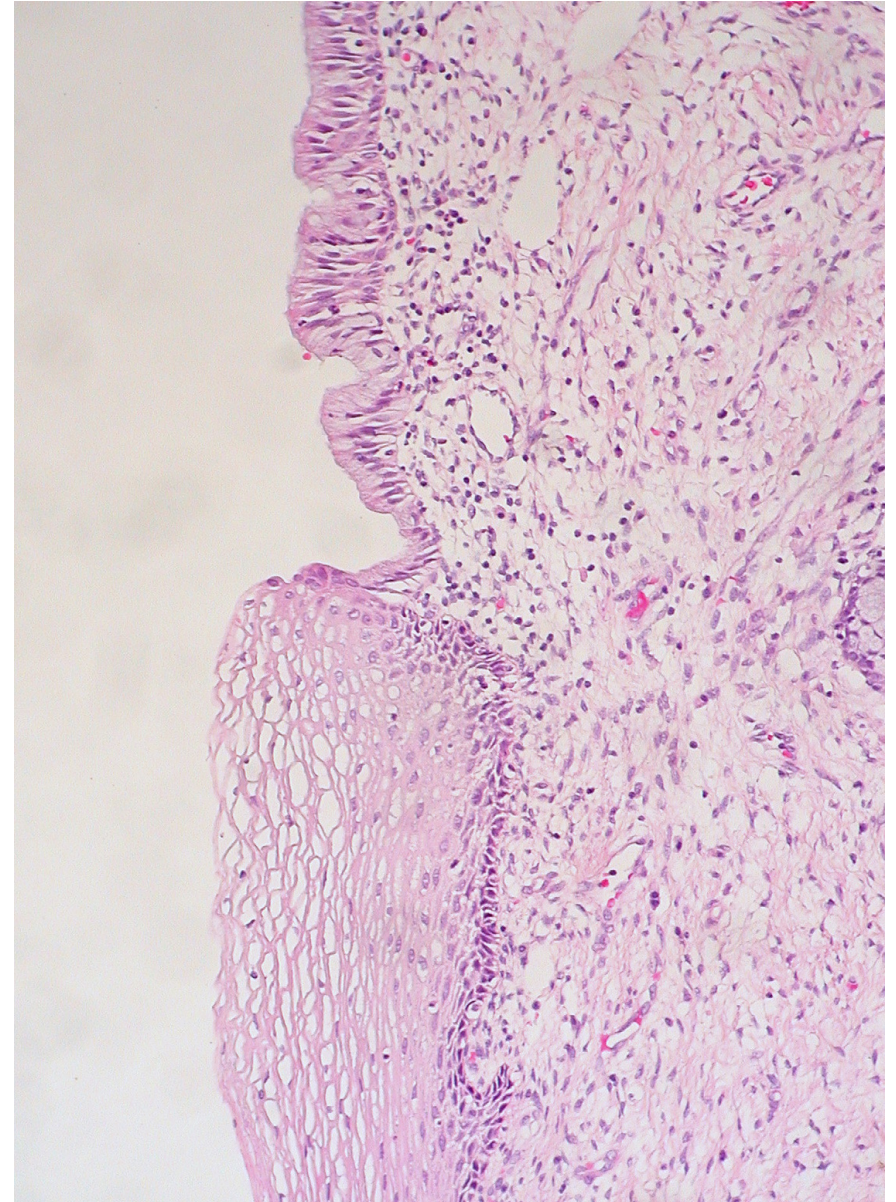
## **Helpful Information - Please Note:**

- **The Pap Smear test is the only screening test for cancer, which has caused a decrease in occurrences and deaths from cervical cancer.**
- **A Pap Smear is a screening tool, not a diagnostic test; further evaluation is required when abnormal changes are detected.**
- **A normal Pap Smear does not detect cancers of the uterus, fallopian tubes, or ovaries.**
- **Pap Smears can be safely performed during pregnancy.**

# Screening normal pap smear

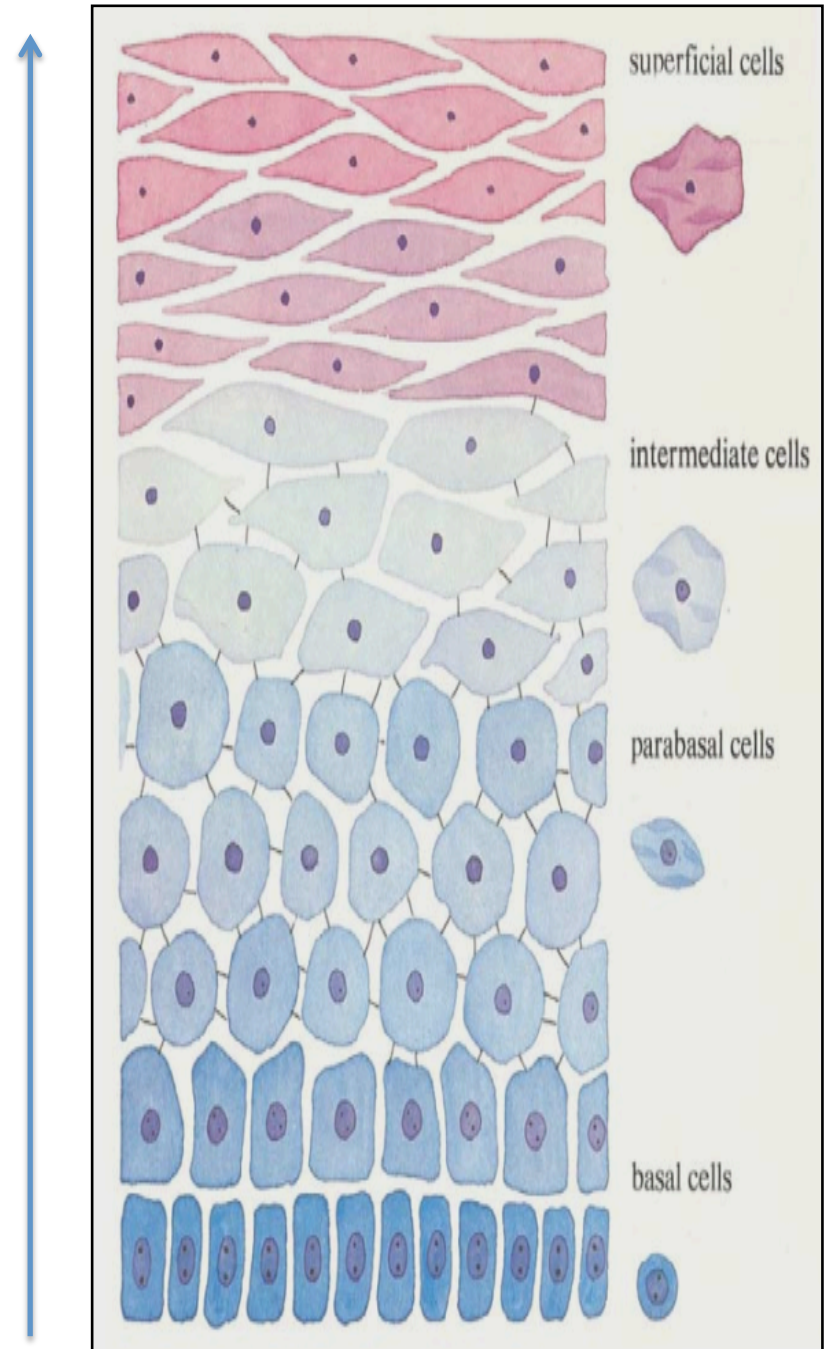
## Cervical epithelium??

- Endocervix: Epithelium is mucus secreting, simple columnar
- Ectocervix: epithelium is nonkeratinized stratified squamous epithelium as it enters the vagina.



# 1) Stratified Squamous Epithelium of women in reproductive age:

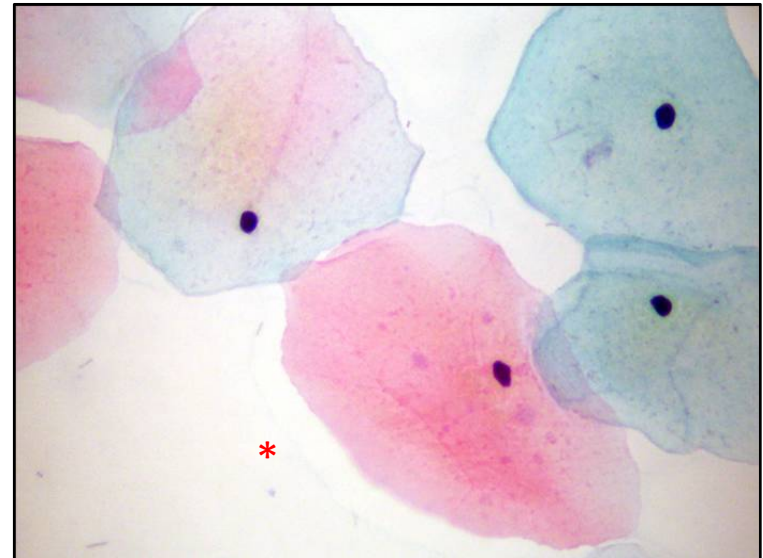
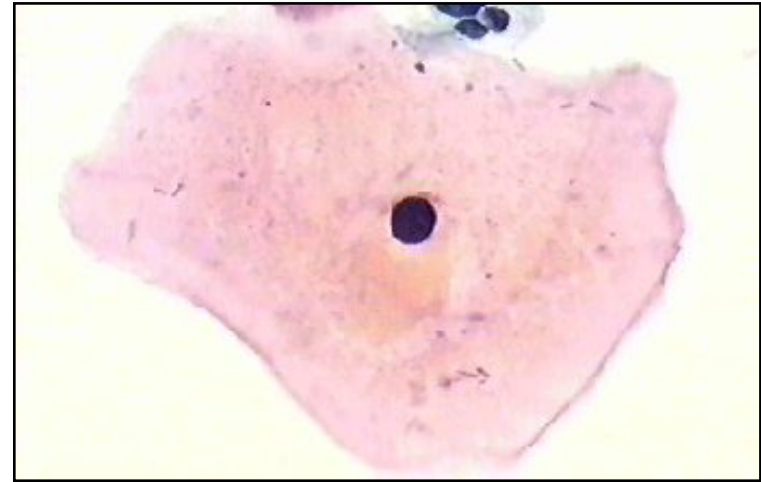
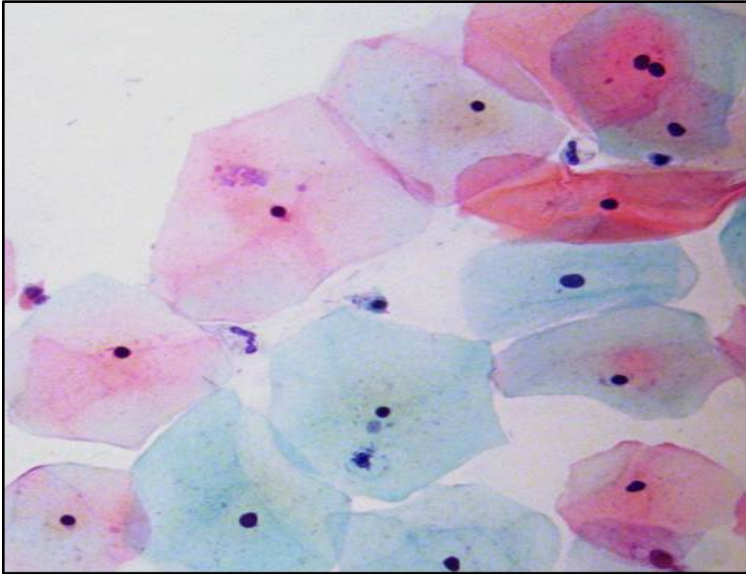
- Superficial layer-the upper most layer of the epithelium.
- Intermediate layer-
- Parabasal layer-
- Basal layer -





	Maturity	Cell size & shape	cytoplasm	nucleus	chromatin	Presence in normal PAP smear
Superficial	Most mature	The largest, polygonal	Clear, Generally Eosinophilic	Pyknotic	Condense	Most commonly seen
Intermediate	Mature	Large, polygonal	Clear, Generally Basophilic	Vesicular	Finely granulated	Commonly seen
Parabasal	Immature	Smaller, Rounded or oval, smooth borders	Cyanophilic	Round or oval, centrally placed	Powder like, Finely granulated	fewer
Basal	Immature					Not seen

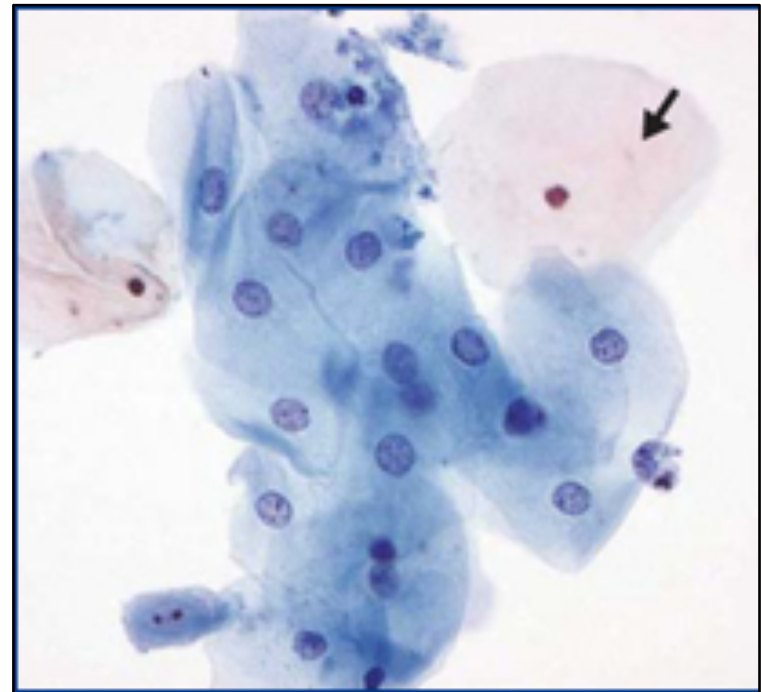
## Superficial cells



Pyknotic Nucleus in mature cells gives excellent morphologic *evidence of peak **estrogenic activity***.

# Intermediate cells

- Single cells or sheets of cells

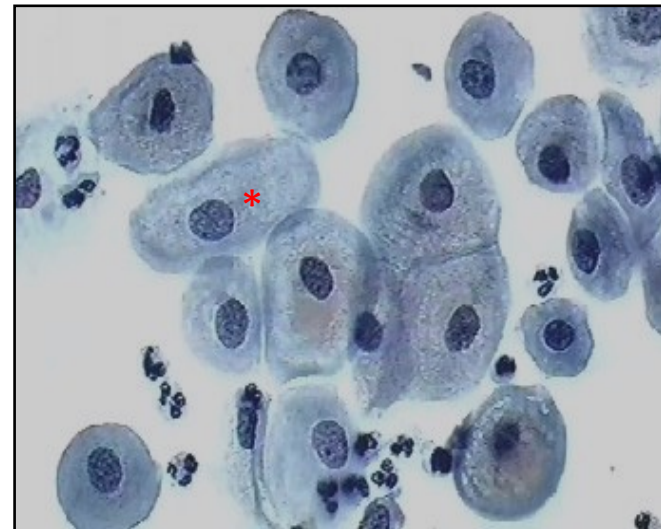
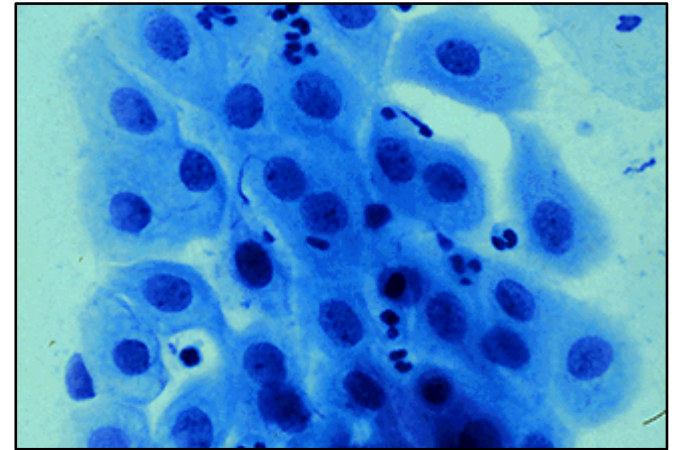




## Parabasal cells:

Shed singly or in small groups.

powdery chromatin (finely granular chromatin).



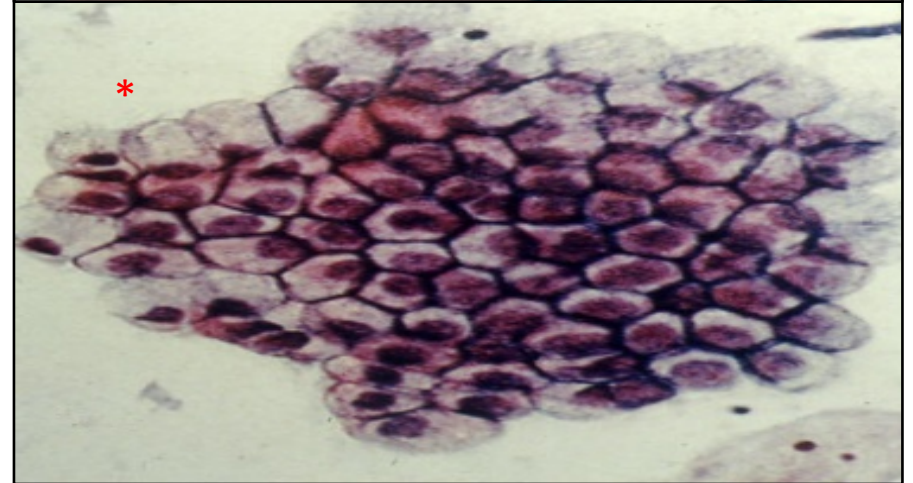
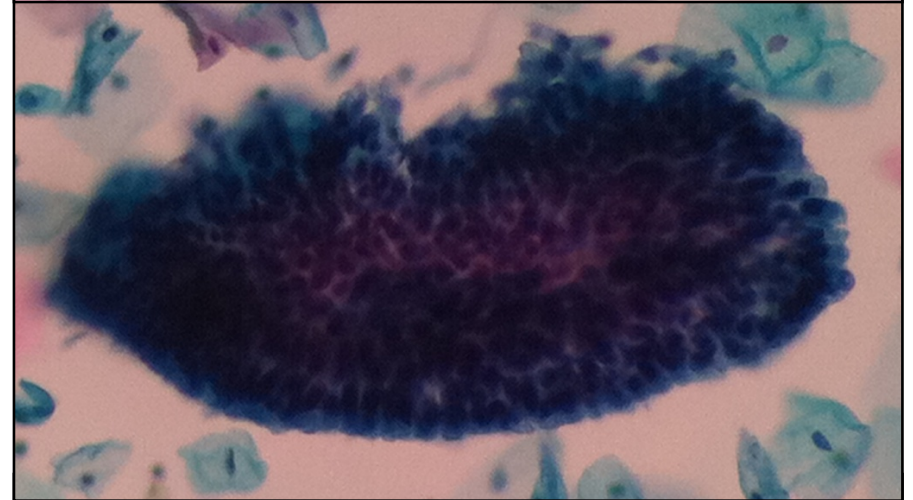
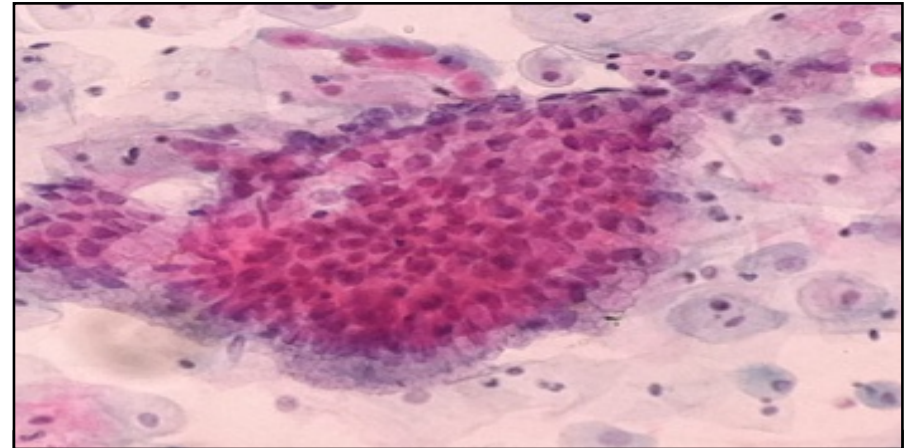
## **2) Glandular epithelium:**

### **A) Endocervical epithelium (simple columnar epith)**

- Columnar or tall cells that produces mucus.
- oval basal nuclei.
- Very finely vacuolated cytoplasm, but occasionally filled with clear mucus.
- Fine chromatin.
- Single Endocervical cells is present but it is more likely to be seen in a Honey comb or picket fence arrangement.

## (Honey comb arrangement)

Cells appear in tight cluster  
resembling a honey comb

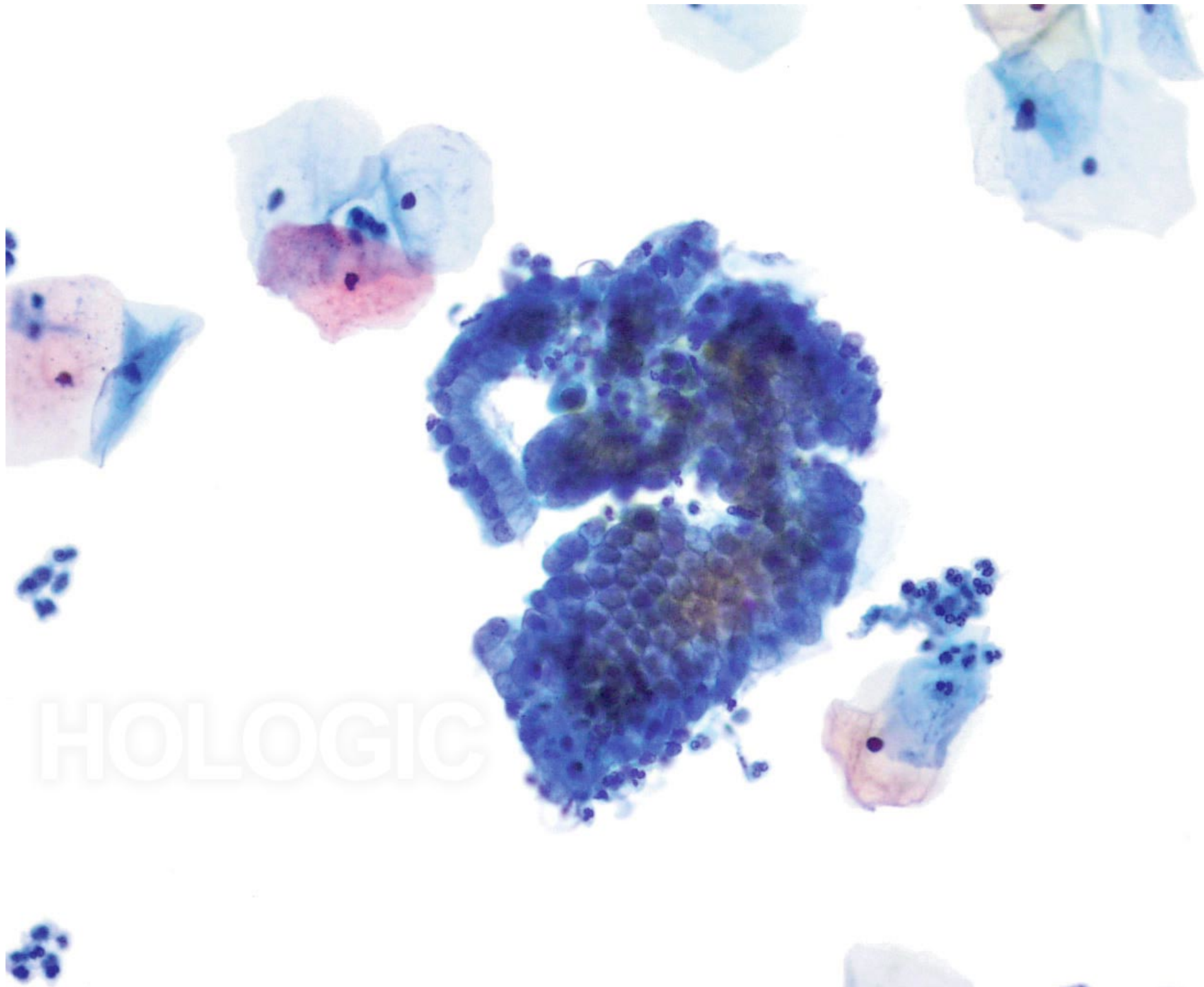




## (Picket fence arrangement)

- Cylindrical in shape, with flattened upper pole bearing cilia.



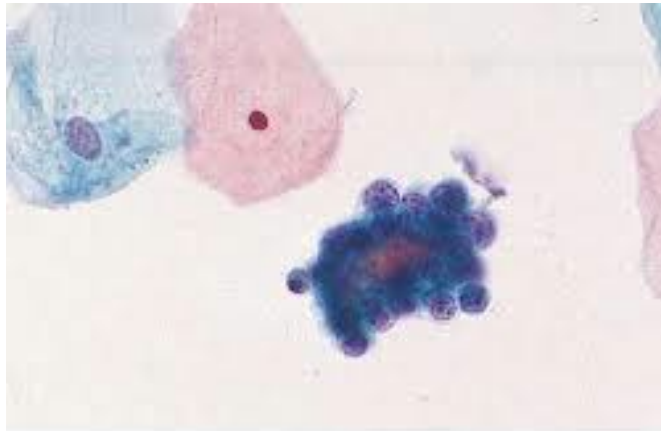


## B) Endometrial epithelium:

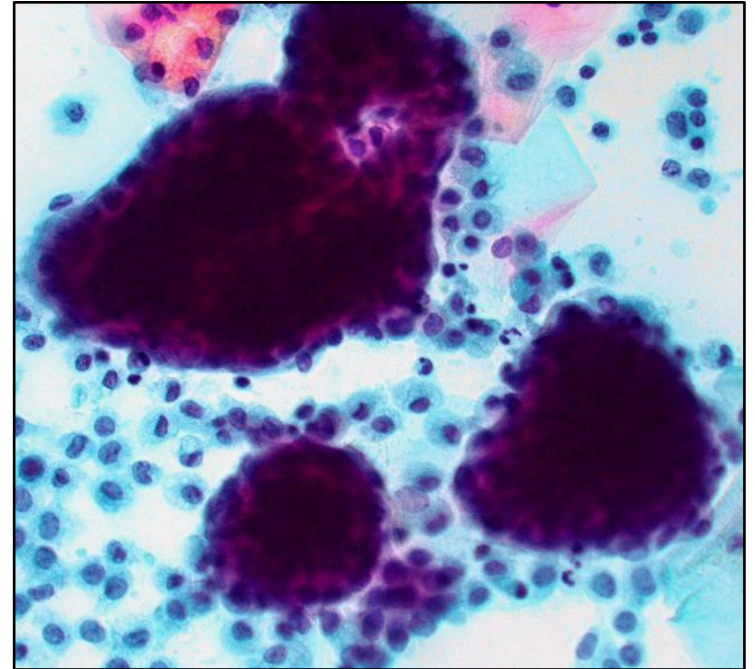
Seen just before or during menstruation.

Small round cells arranged in balls

Cytoplasm is scant



Bubblegum or soap bubble appearance

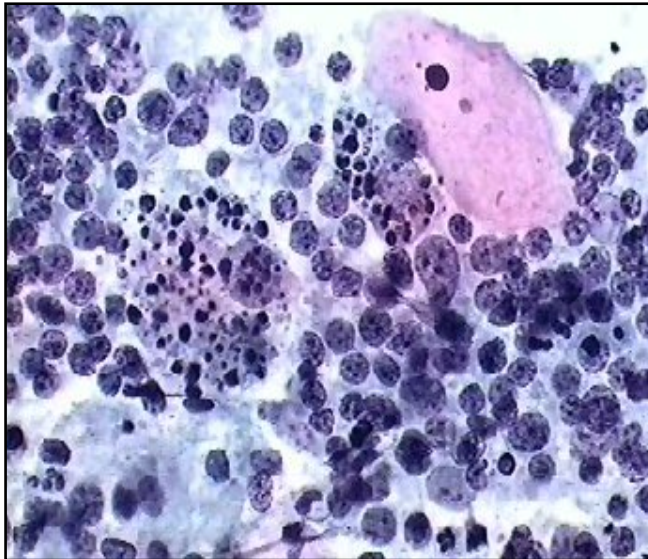




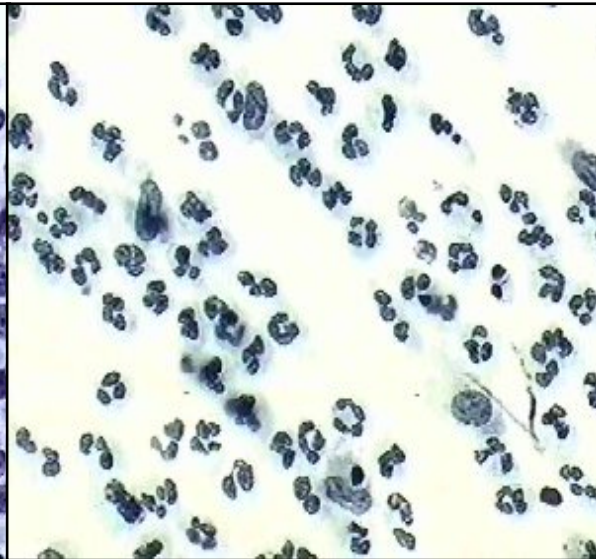
### 3) Non- Epithelial cells

- cells derived from non epithelial origin.

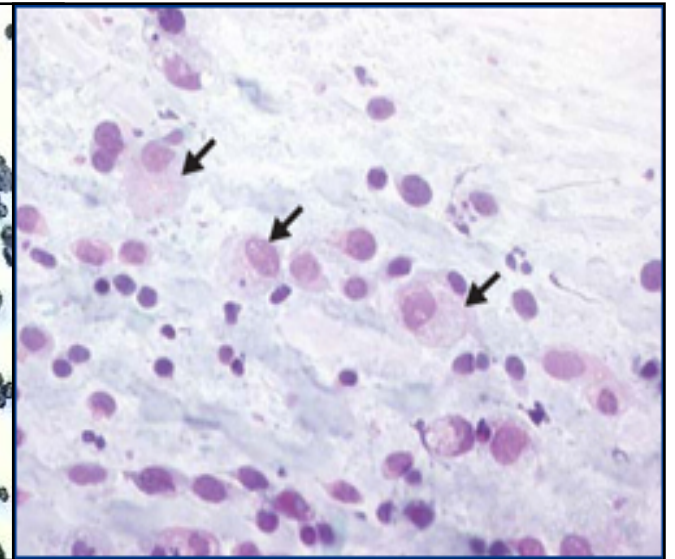
Lymphocytes



Polymorphs

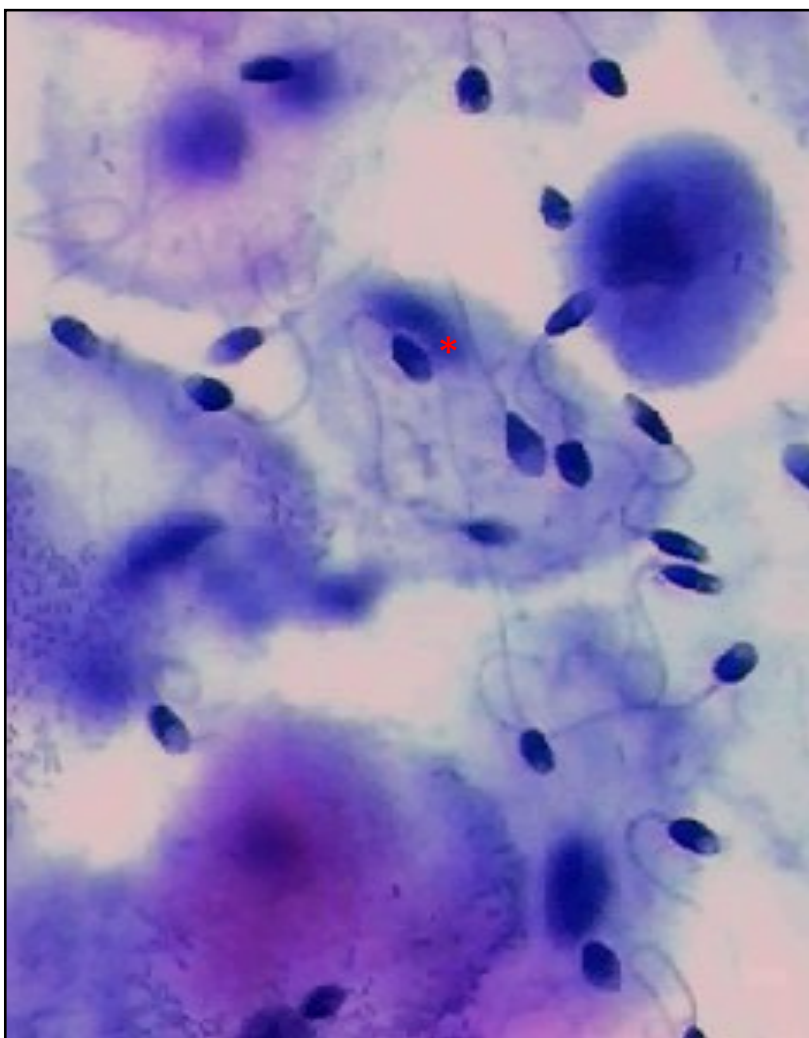


Histiocytes

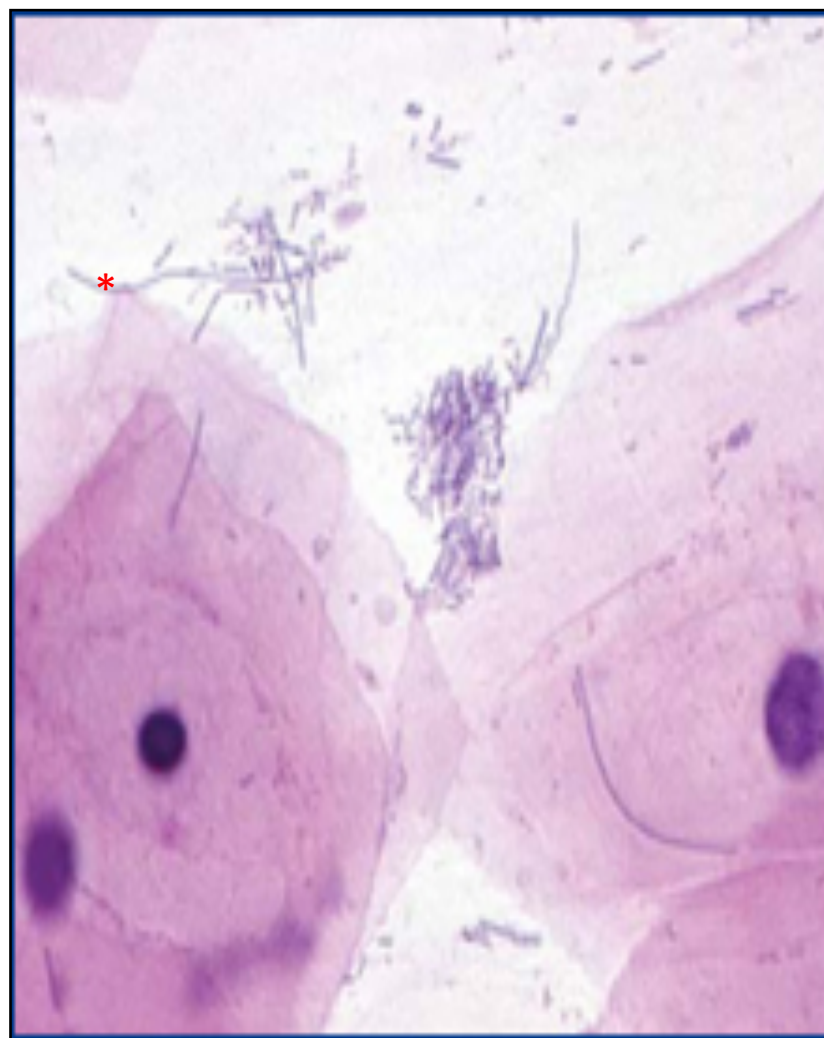




**Sperms**



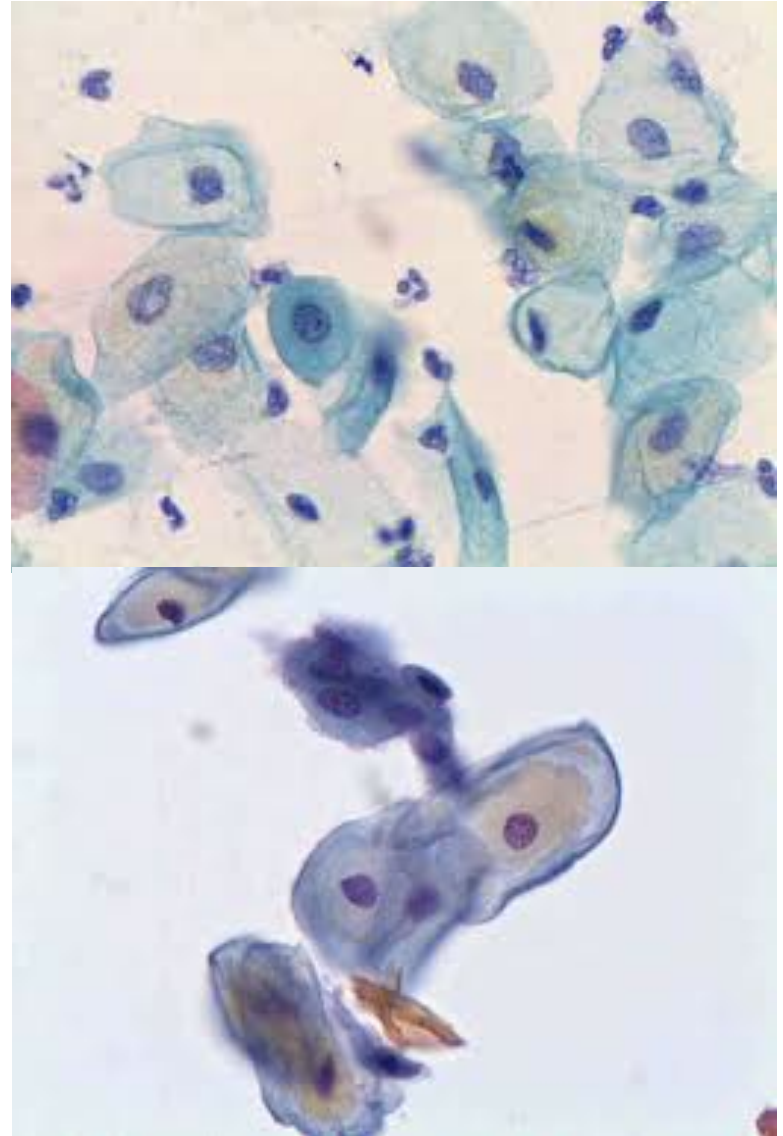
**Lactobacilli**



# Other Normal Variation

## Pregnancy

- Intermediate Cells are referred to as **Navicular cells**:
- Cell rich in glycogen that stains yellow.
- Elongated cigar shaped nucleus.



# **\*MICROSCOPICAL EXAMINATION IN GYN – Pap Smear THE PRESENCE OF:**

