

Parasitological examination of stool

Dr. Bhavin Prajapati
Assistant Professor
Department of Microbiology

- Caprology or Scatology ?

Introduction

- While isolation of the infecting agent and detection of specific antibodies are the major methods in bacteriology and virology, they are of much less importance in parasitology than **morphological identification** of the parasite by microscopy.
- • Due to complex antigenic structure and extensive cross-reactions, serological diagnosis is of limited value in parasitic infections.

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- Morphological diagnosis of parasites consists of *two steps*:
 - (1) detection of the parasite or its parts in clinical samples (2) its identification.
 - I. ***Detection*** depends on collection of the appropriate samples and their examination by suitable techniques.
 - 2. ***Identification*** requires adequate skill and expertise in recognizing the parasite in its various stages and its differentiation from morphologically similar artefacts.

Collection of Fresh Stool Specimen

- collected in a suitable, clean, wide mouthed container like a plastic container with a light-fitting lid, waxed cardboard box, or match box.
- The specimen should not be contaminated with water, urine, or disinfectants.

Liquid stools :examined or preserved within
30 minutes of passage

Soft stools:within **1 hour of passage**

Formed stool:with in **24 hours** of passage.

- Normally passed stools are preferable, although samples obtained after purgative (sodium sulfate) or high saline enema may also be used.
- • Examination of fresh specimens is necessary for observing motility of protozoan parasites.

Gross Examination:

- consistency
- color,
- Odor
- pH
- presence of blood, pus, Mucus.
- Parasites: tapeworm proglottids, roundworm, pinworm.

Microscopic Examination

- microscope should be equipped with a *micrometereyepiece*, as it is often essential to measure the size of parasites.
- For example, the differentiation between cysts of the pathogenic *Entamoeba histolytica* and thenonpathogenic *E. hartmanni* is based entirely on their sizes.

Microscopy should also include contributory findings

- *Charcot-Leyden crystals*
- Pus cells(WBCs)
- Red blood cells (RBCs)
- Macrophages.

Methods: 1 *Wet Mounts*

- ***Wet saline mounts:*** Trophozoites of *E. histolytica*, *Balantidium coli* and *Giardia lamblia*.
- Eggs of helminths
- Rhabditiform larvae of *Strongyloides stercoralis*
- ***Iodine staining (Lugol's iodine):*** cysts, as it prominently stains the glycogen vacuoles and nuclei. Protozoan cyst stained with iodine show yellow gold cytoplasm, brown glycogen material and pale retractile nuclei.

Wet Preparation

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MANHATTAN— New duplex, 2 BR, 1 1/2 ba. fully equipped, dishwasher, disposal, washer-dryer, full attic, \$275 month. Farris McElreath, 252-6393 weekdays, after 5:30, weekends, 472-0111	Mablet Villag
Unfurn. Apts., Duplexes 635	1- AND 2 BR. — A.A. shag carpet, total elec. Adjacent to Hawthorn Center. 948-6459
What Makes Quail Creek Quail Creek?	MT. LEON APTS. — 1 Rd. N.E., 2-BR. carpet

2:Permanent Stained Smears

- ***Iron-hematoxylin stain:***
- ***Trichrome stain***
- ***Modified Ziehl-Neelsen (acid-fast) stain***

Concentration Methods

They can be classified as

- **Floatation** :feces are suspended in a solution of high specific gravity, so that parasitic eggs and cysts float up and get concentrated at the surface
- **Sedimentation**: feces are suspended in a solution with low specific gravity, so that the eggs and cysts get sedimented at the bottom, either spontaneously or by centrifugation.

Floatation Methods

Saturated salt solution technique

Zinc sulfate centrifugal floatation

- Applicable for Fertilised egg of roundworm, hookworms and whipworm,
- Not applicable for eggs of tapeworms, unfertilized egg of *Ascaris lumbricoides*, eggs of trematodes and protozoan cysts

- ***Sugar floatation technique:***

- Sheather's sugar floatation technique is recommended

- for the detection of cryptosporidia infection

Sedimentation Methods

- ***Formal-ether sedimentation technique***
- ***Baermann concentration method***
- The method is useful for all helminth eggs and protozoan cysts.

STOOL EXAMINATION

MACROSCOPIC

- Consistency
- Colour
- Composition

MICROSCOPIC

Permanent

Tempory

OTHERS

- Culture
- Cellophane tape
- Baeremann tech.
- Ova quantitaion (Stoll & Kato)

Diect saline smear

Iodine smear

Concentration techniques

Sedimentation

Floatation

Saline

Formol ether

Sat saline

Zinc sulphate

Sheather's sugar

Exercise

Identify?



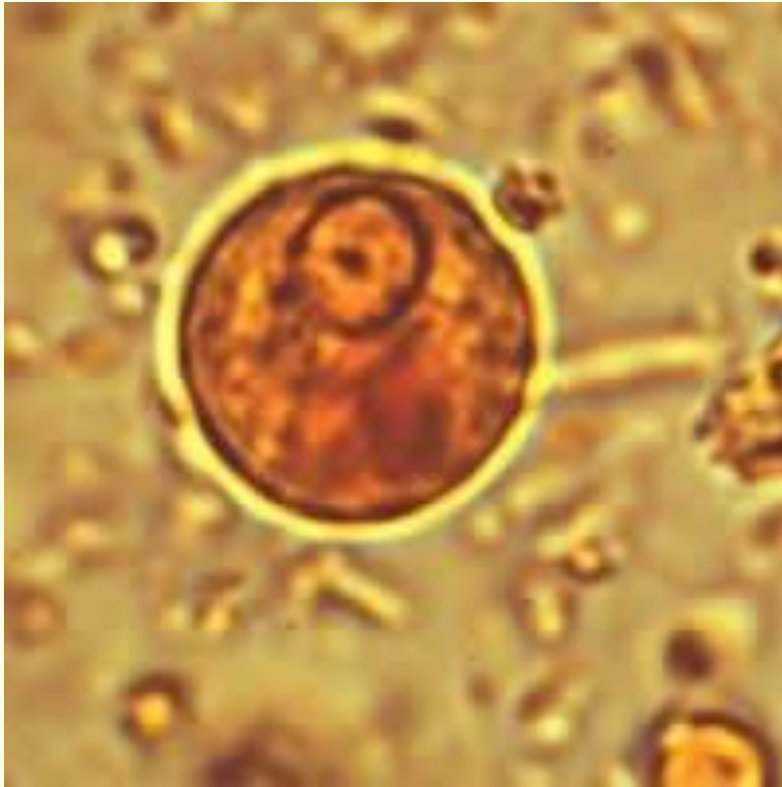
Identify?



Identify?



Identify: Iodine Preparation



Identify: Saline preparation



Identify?

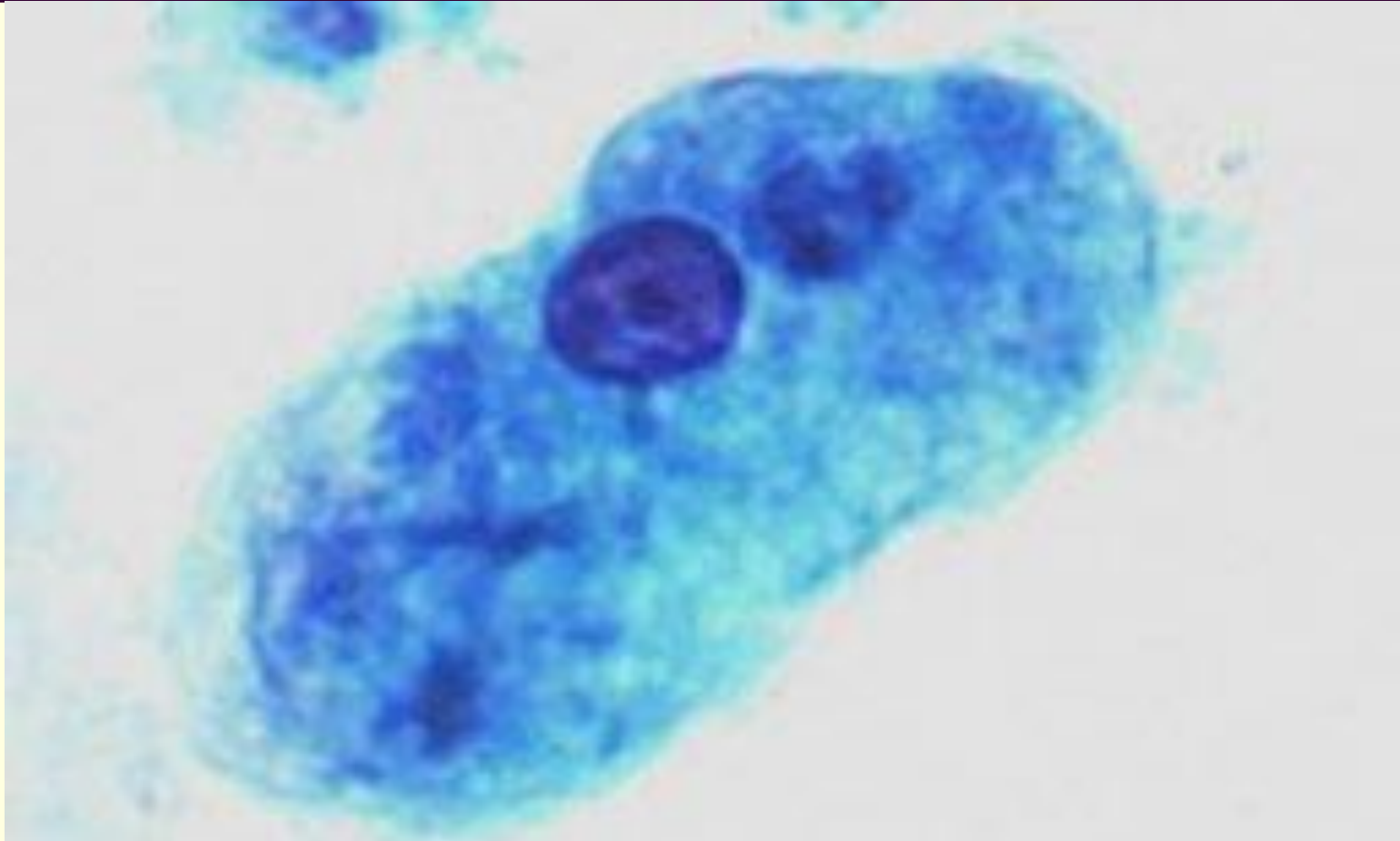


Image from DPDx, the CDC Parasitology Website

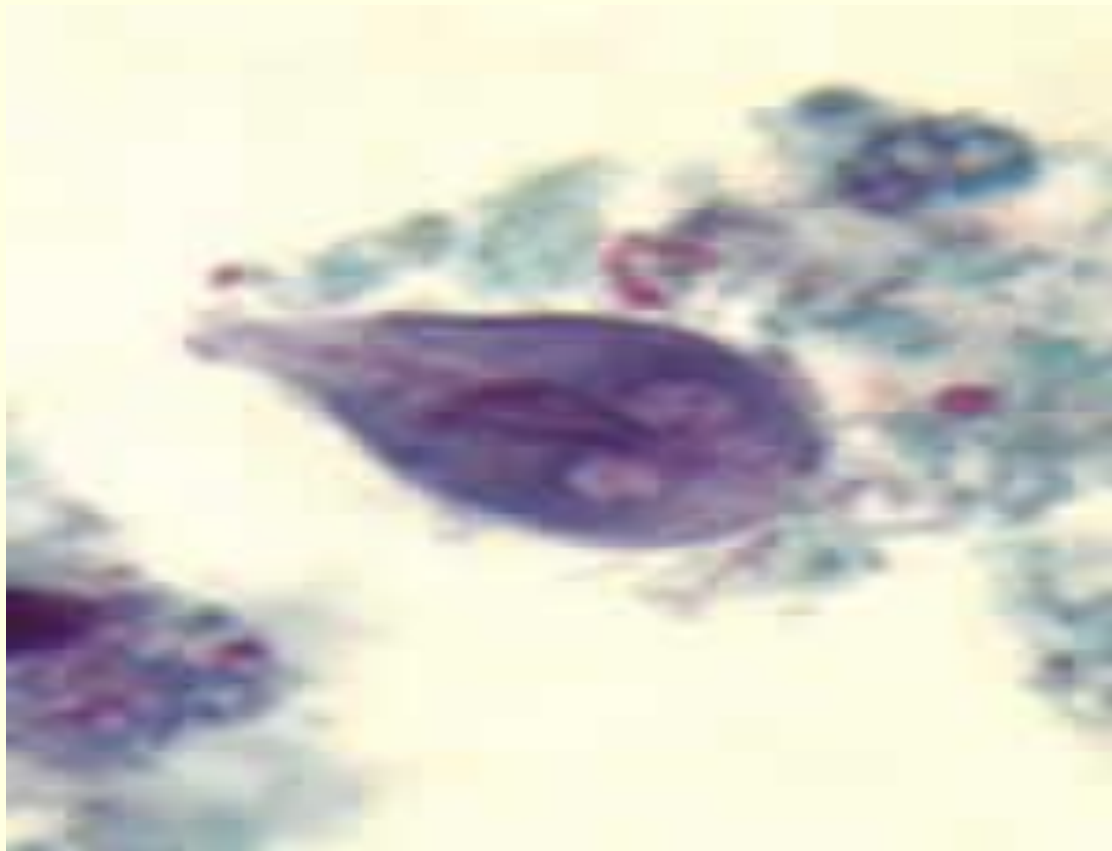
Identify?



Identify?

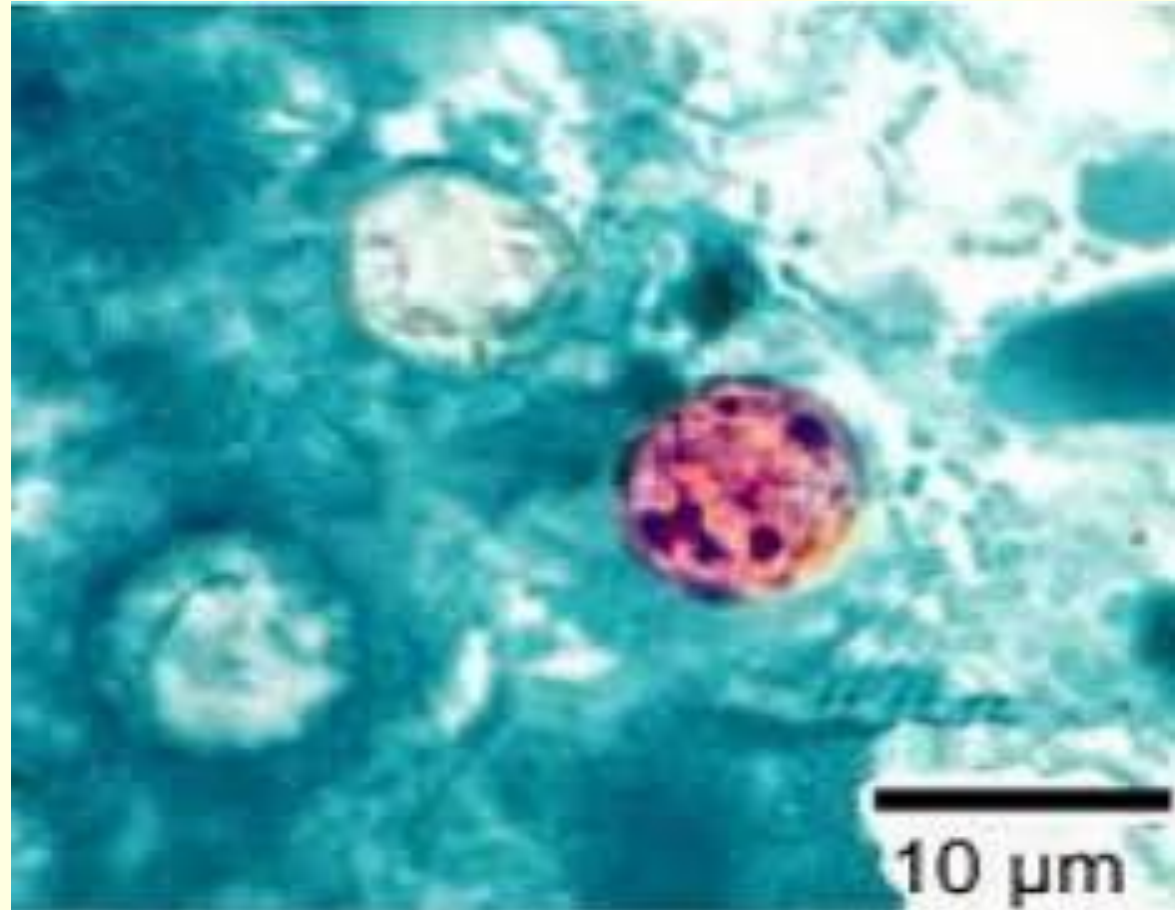


Trichrome stain



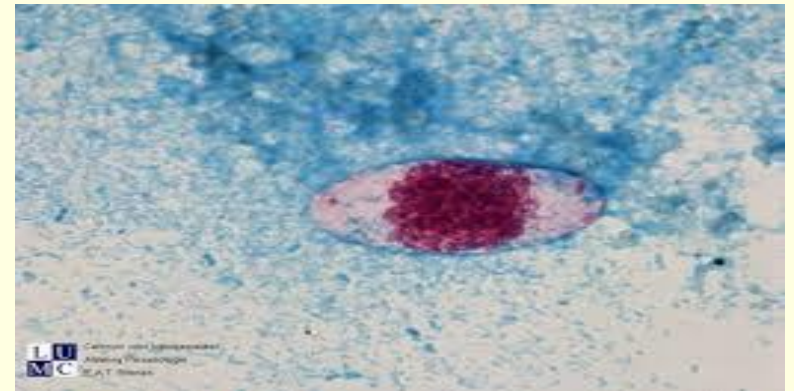
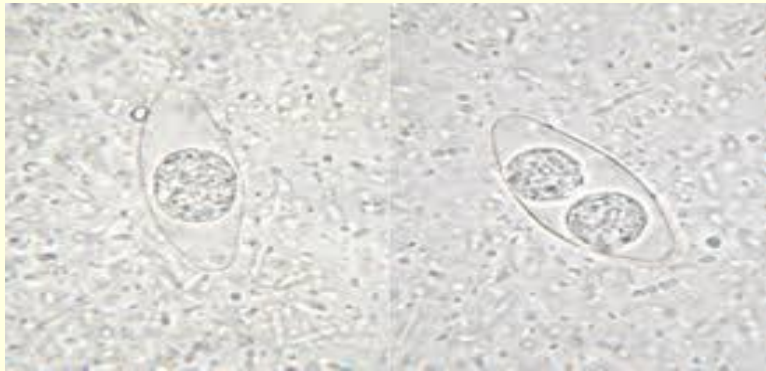
Modified ZN Stain

Identify?



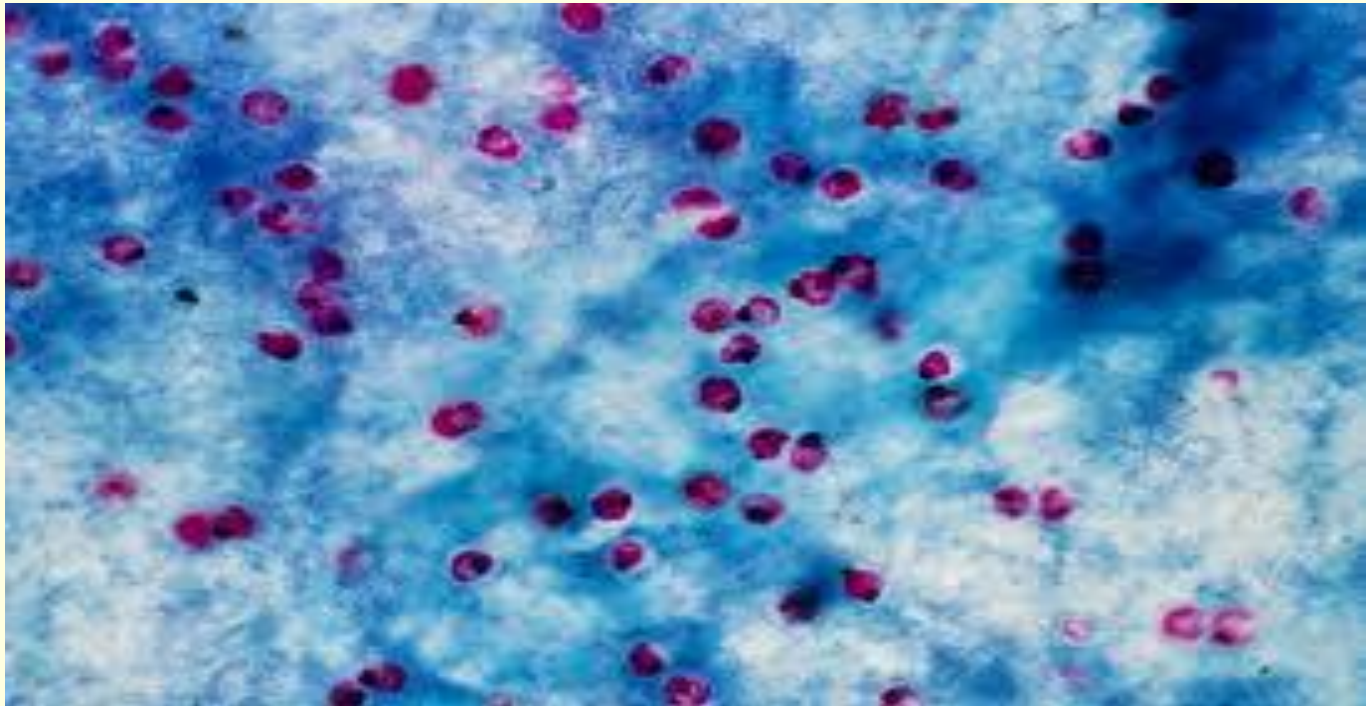
Modified ZN Stain

Identify?

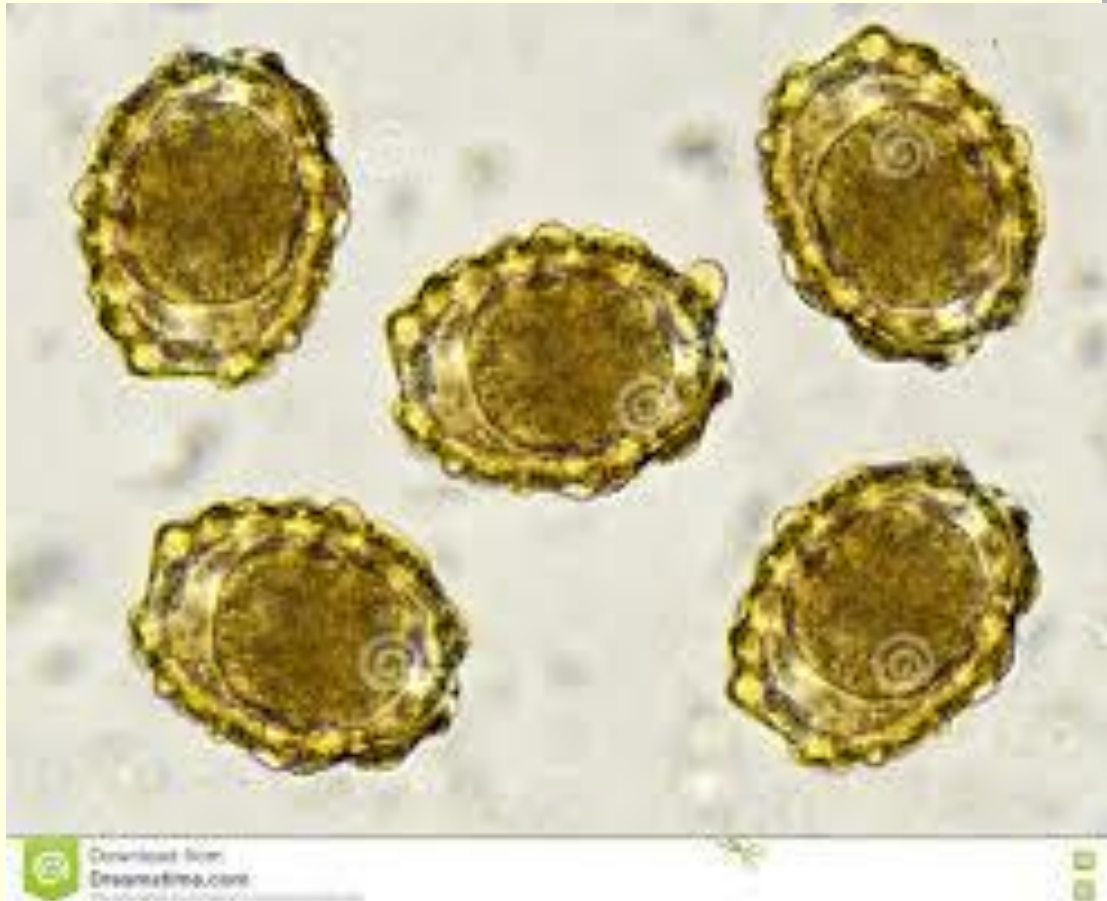


Modified ZN Stain

- Identify?



Identify?



Identify?



Identify?



Identify?



Identify?



Identify?



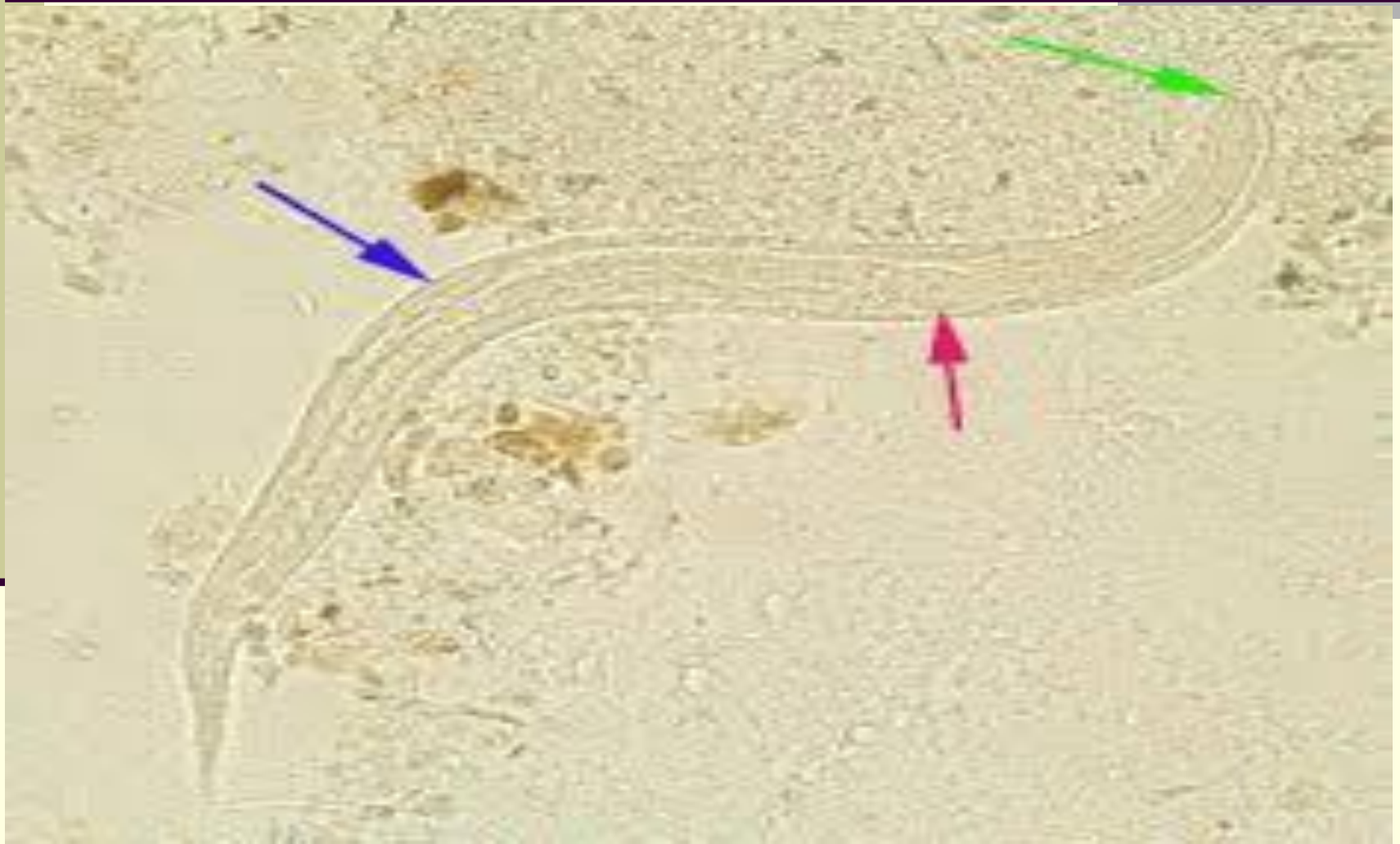
Identify?



Identify?



Identify?



Question ?

- Example of Bile stain Eggs & Non Bile stain Eggs
- Eggs float in sss
- Eggs Sink in sss



Thank You