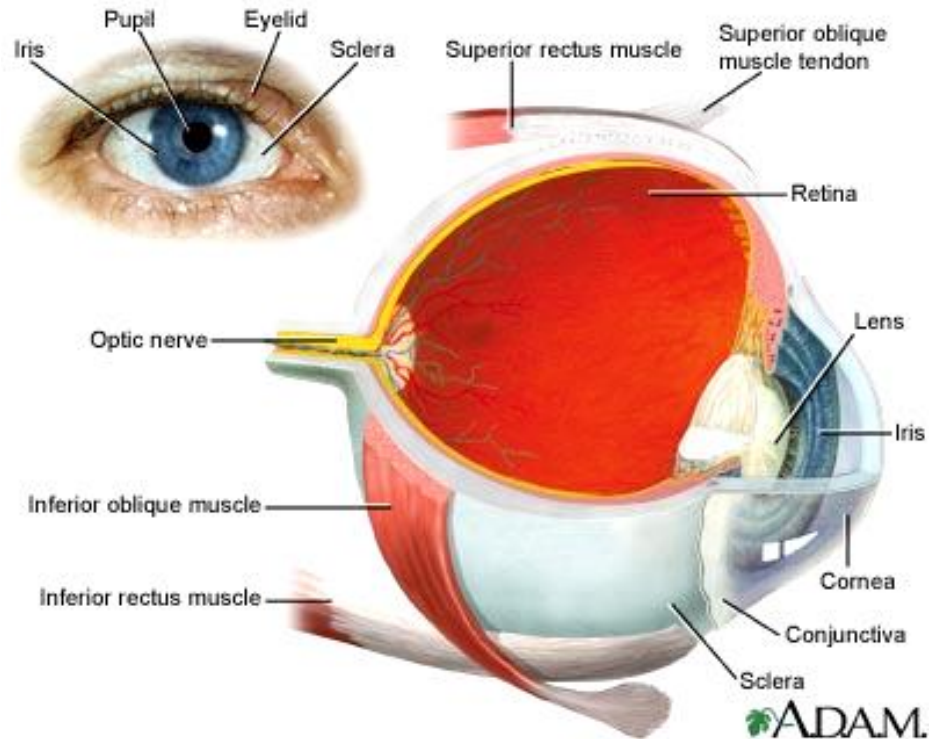


(Mycotic keratitis)

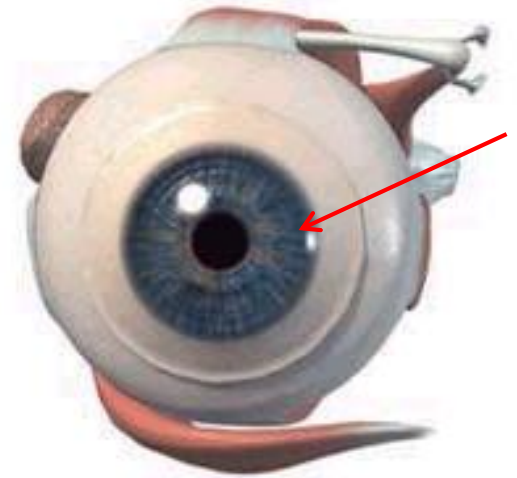


Eye infections

- Fungal retinitis and endophthalmitis
- Dacryocystitis and canaliculitis
- Fungal keratitis



Definition



ADAM.

- **Fungal infection of the cornea**
- **Follows traumatic implantation of spores**

Mycotic Keratitis

- The mycosis has emerged into prominence since the advent of antibacterial antibiotics and the use of steroid ointments.
- Corneal trauma, corneal disease and glaucoma predispose to mycotic keratitis.

Etiology

- Many fungi can cause mycotic keratitis.
- **Fusarium solani** is the most frequent etiologic agent.
- *Fusarium solani* grow rapidly at 37°C, produce extracellular protease which has elastase activity, and this may account for its pathogenicity.
- Other etiologic agents: *Fusarium* spp., *A.fumigatus*, *Aspergillus* sp., *candida albicans*, *Curvularia lunata*, *Penicillium citrinum*,...

Clinical manifestations

- Manifestations similar regardless of fungus, although fusarium sp. can produce toxins.
- Pain, ocular redness, photophobia, hypopyon(55%)
- Corneal ulcer with white border(at the peripheral edge of the ulcer's hyphate margin giving white or grayish-white lesion) Feathery borders or hyphate edges(70%).
- deep infiltrates, satellite lesions(10%), immune ring.

Geographical distribution

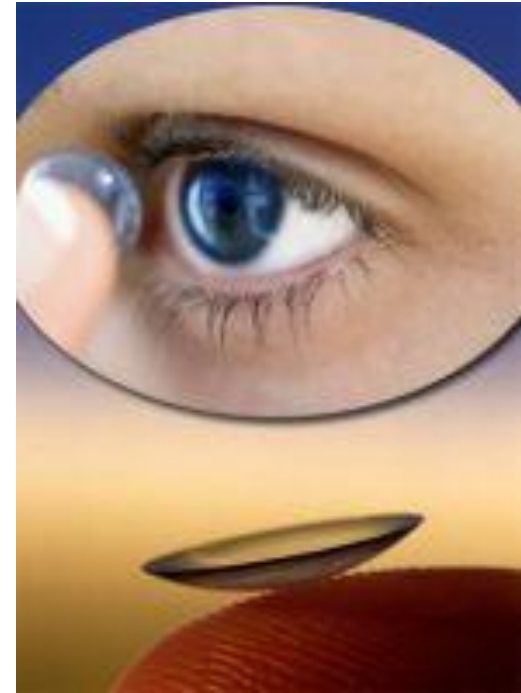
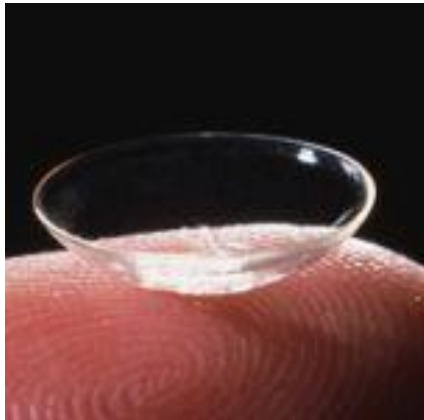
- World-wide
- It is more common in the tropics

Causal organisms

- Saprophytic moulds (more than 60 species)
- Most common : *Fusarium sp.* (*Fusarium solani*) ,
Aspergillus sp. (*Aspergillus fumigatus*) , *Curvularia*
sp. *Penicillium sp.* – *Candida sp.* -
- - *Acremonium sp.* , *Alternaria sp.* ,
Scedosporium apiospermum , *Engyodontium*
album , *Nocardia asteroides* , *Colletotrichum*
dematium

Predisposing factors

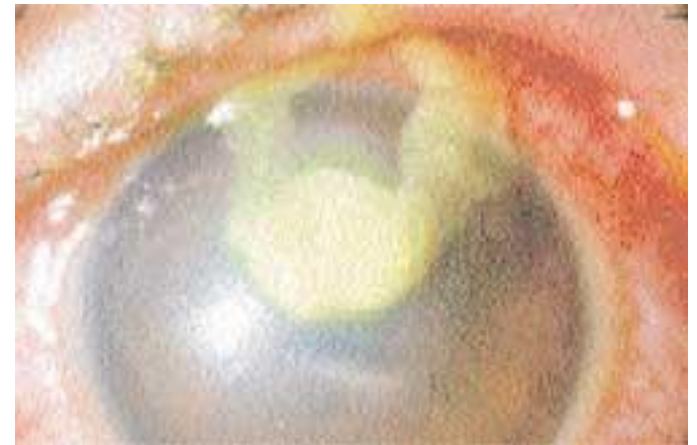
- Traumatic injury
- Topical antibiotics or steroids
- Contact lenses



Corneal ulcer due to *Pseudomonas*.
Central ulcer with corneal abscess.



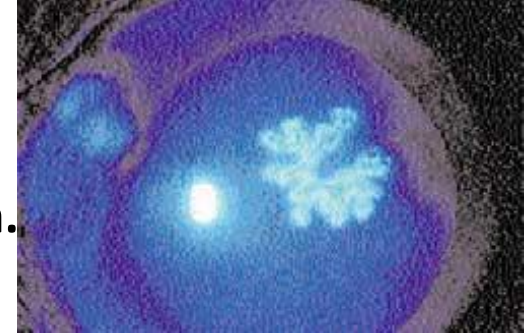
Corneal ulcer due to *Pseudomonas*.
Central ulcer with abundant suppuration.



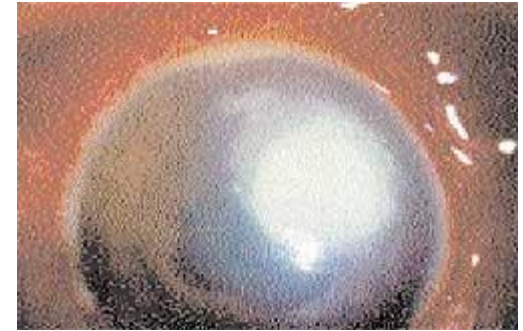
Central corneal ulcer due to
Streptococcus pneumoniae



Dendritic ulcer. Typical aspect of a dendritic ulcer due to **herpes simplex** dyed with fluorescein.



Fungal keratitis. Destruction of the superficial layers of the cornea. The ulcer is associated with satellite lesions

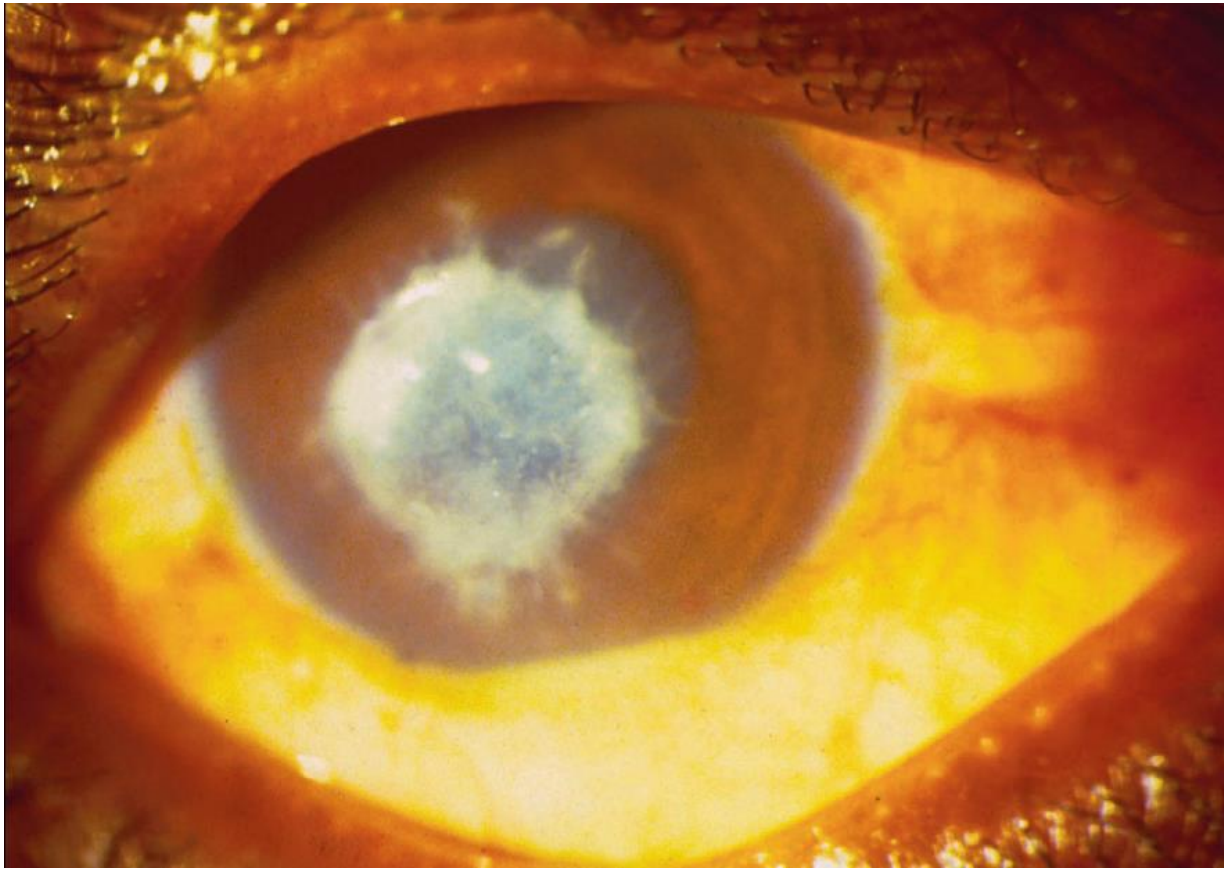


Fungal keratitis with hypopyon.





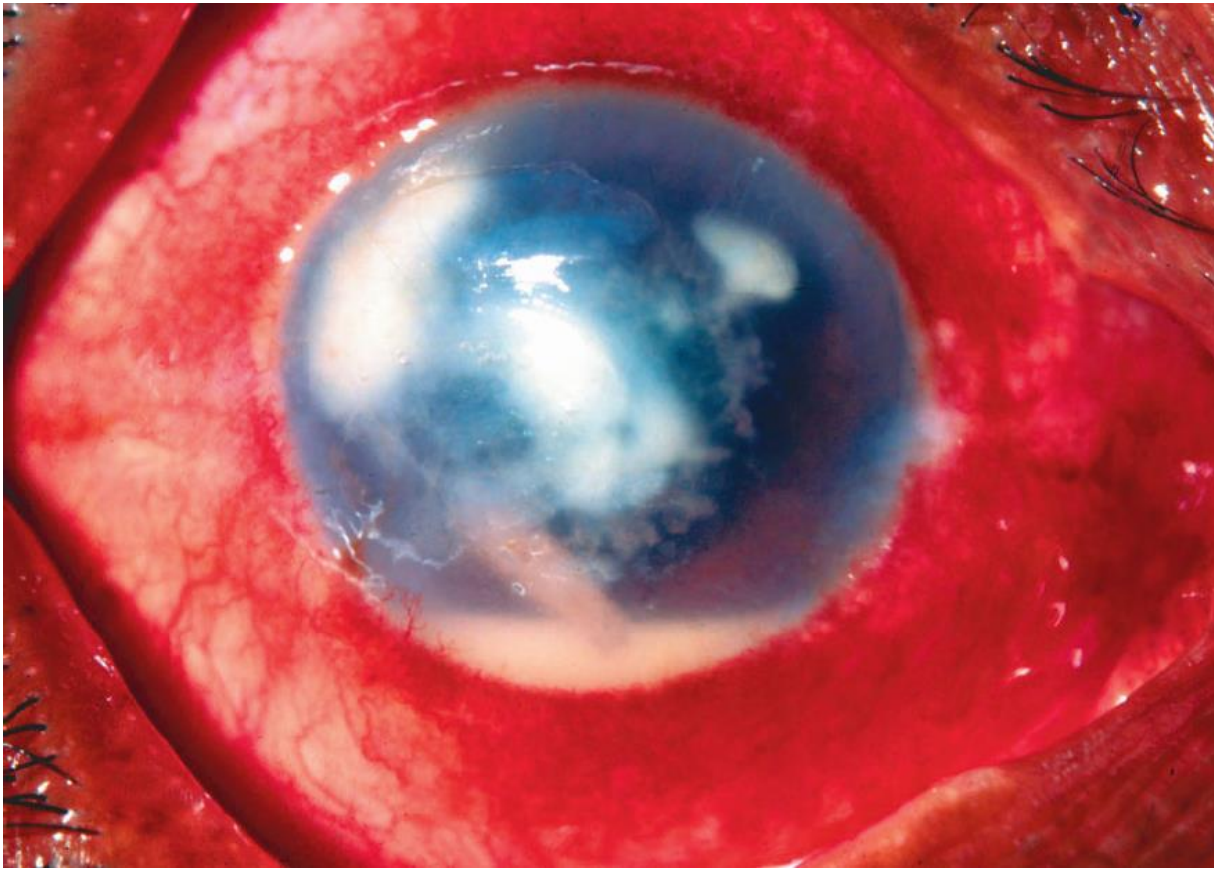
***Very early fungal keratitis resembling
dendritic ulcer***



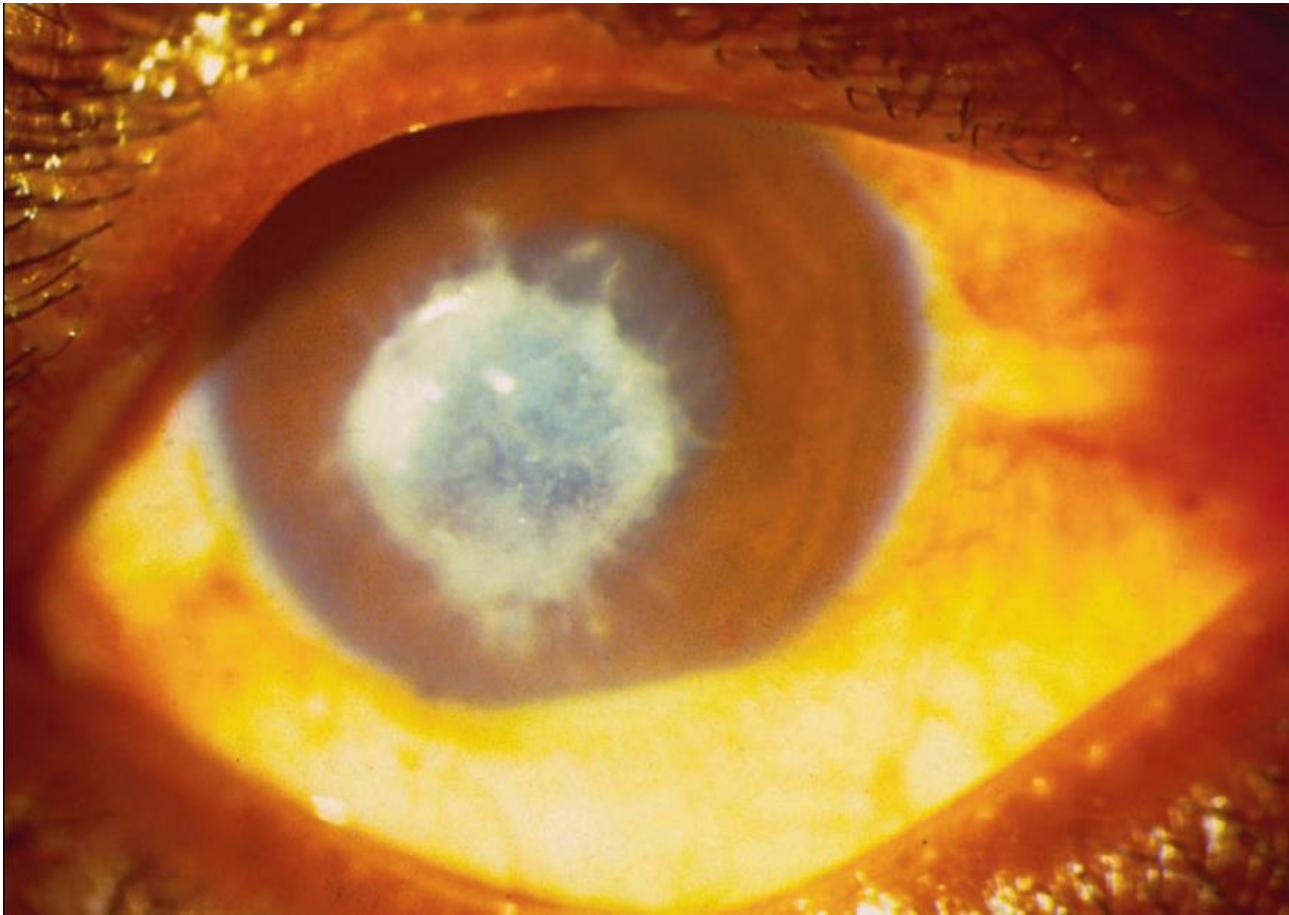
***Fungal keratitis showing yellowish-white base with
typical feathery borders***



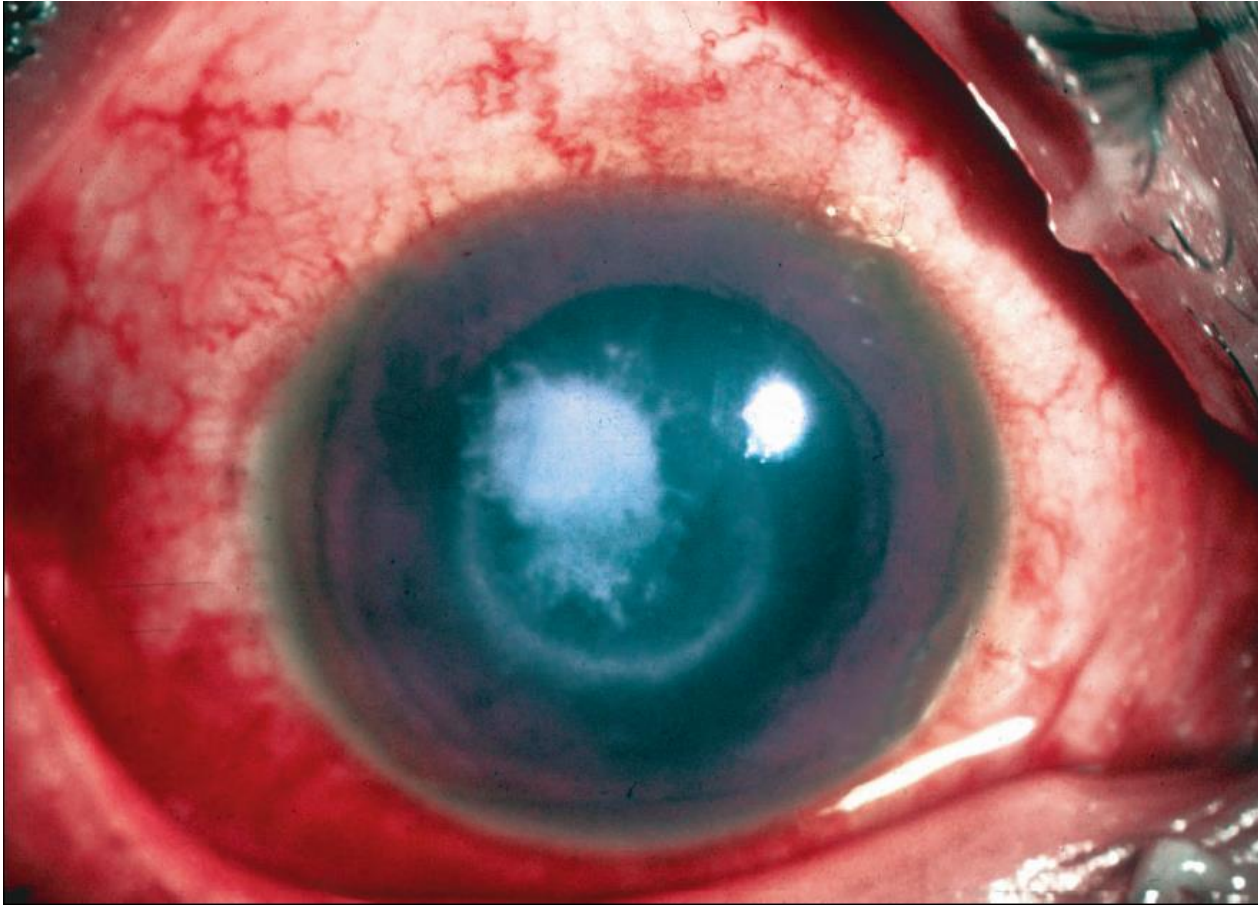
Pigmented fungal keratitis of more than 2 weeks



Satellite lesions and posterior corneal abscess in a case of fungal keratitis



**Fungal keratitis showing yellowish-white base with
typical feathery borders**



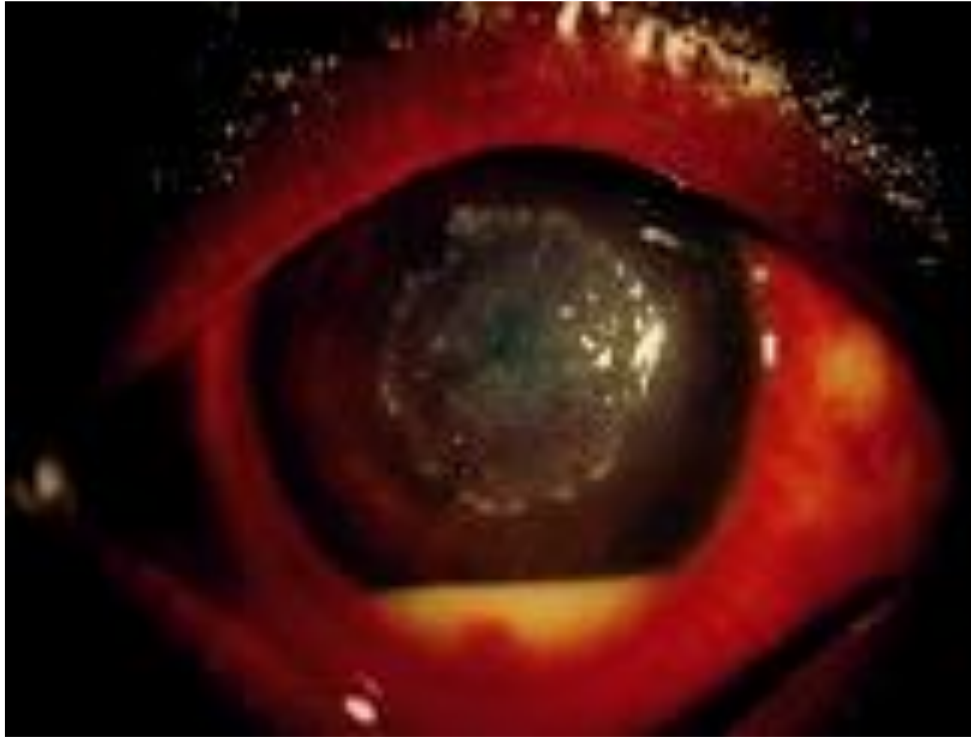
**Immune ring, with raised surface and
hyphate edge,
in a case of fungal keratitis**



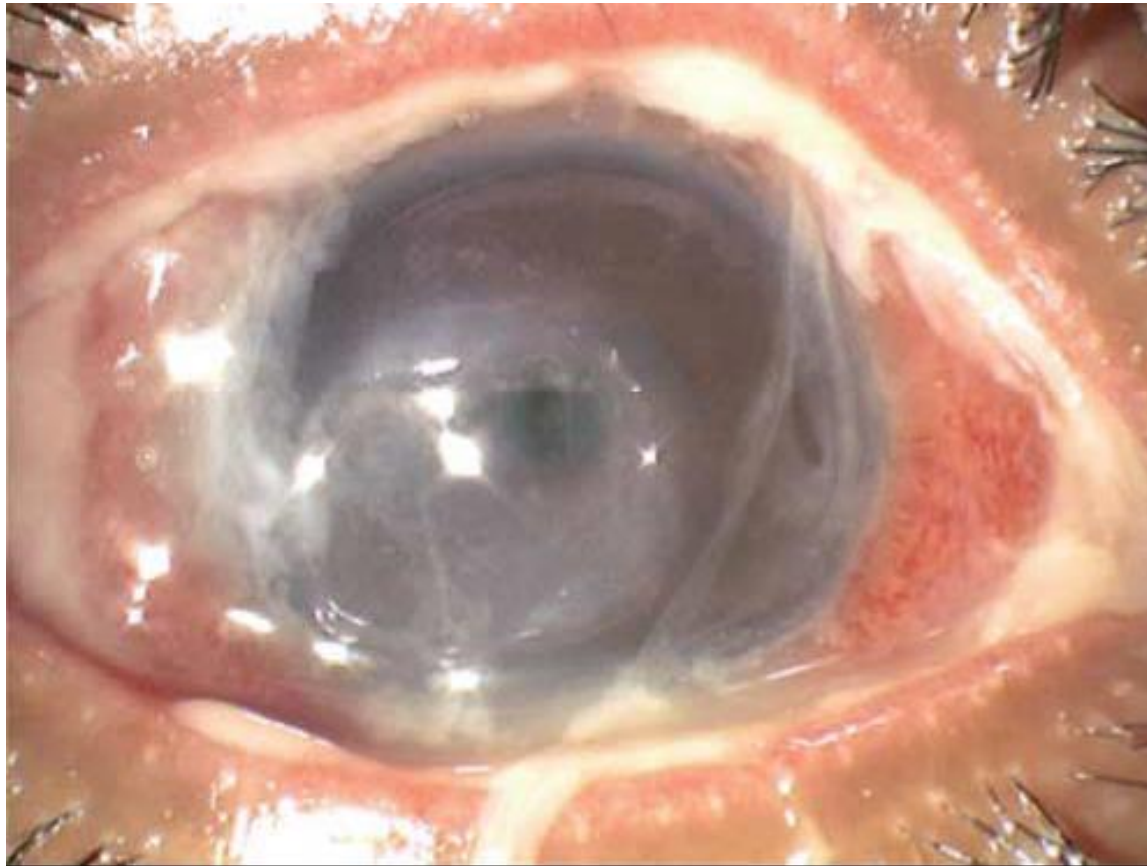




Ring infiltrate in fungal keratitis



Nocardia keratitis with multiple pinhead infiltrates and hypopyon (wreath pattern)



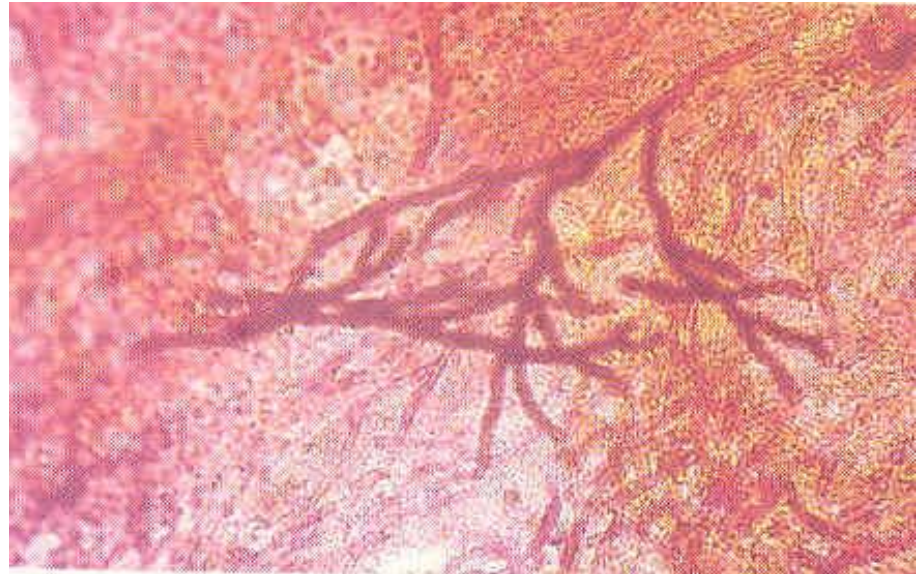
severe fungal keratitis that eventually required an urgent therapeutic penetrating keratoplasty.

Laboratory diagnosis

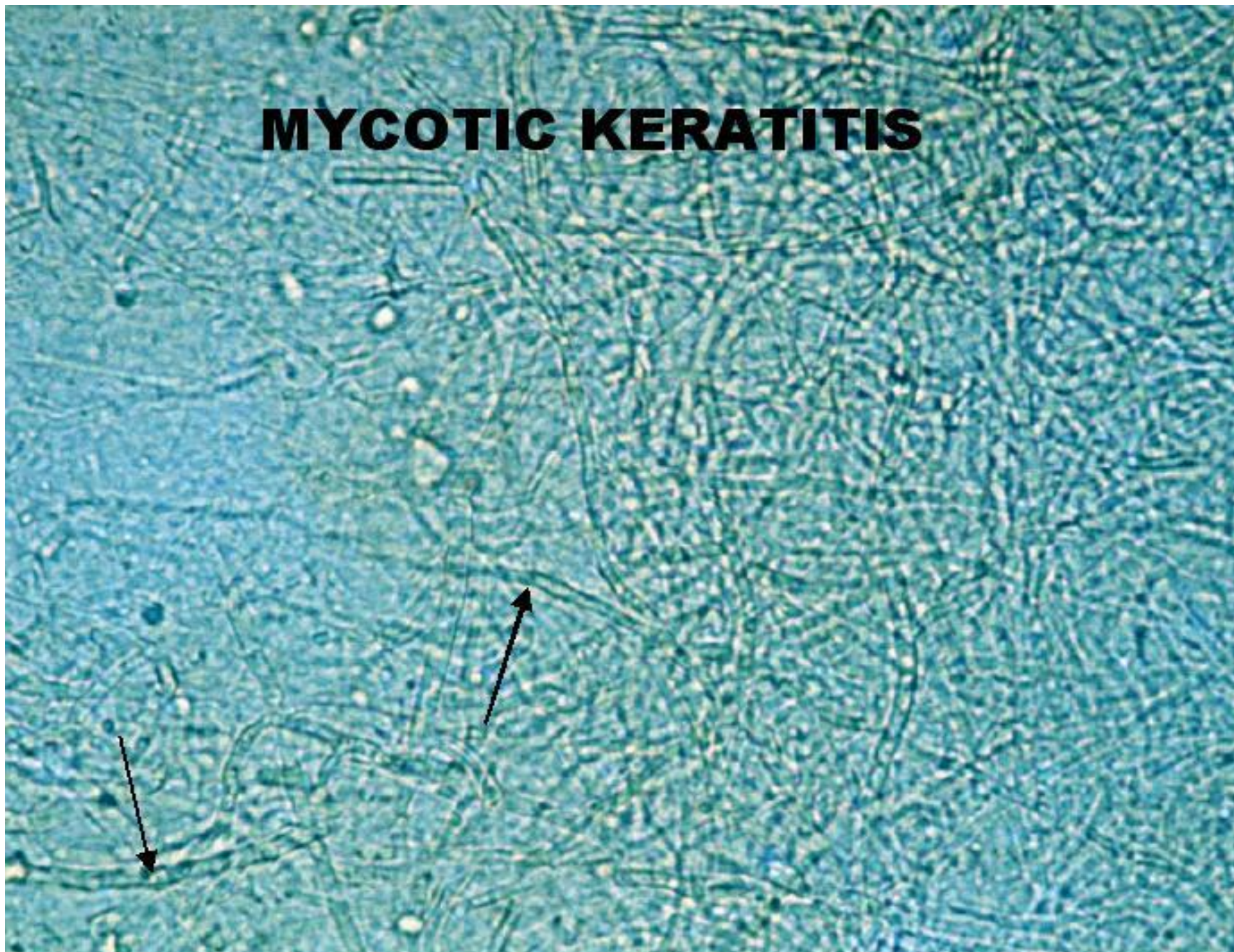
- Corneal scrapings are obtained by ophthalmologist
- Microscopy of corneal scrapings in 10% KOH reveals fungal elements
- Gram, giemsa staining

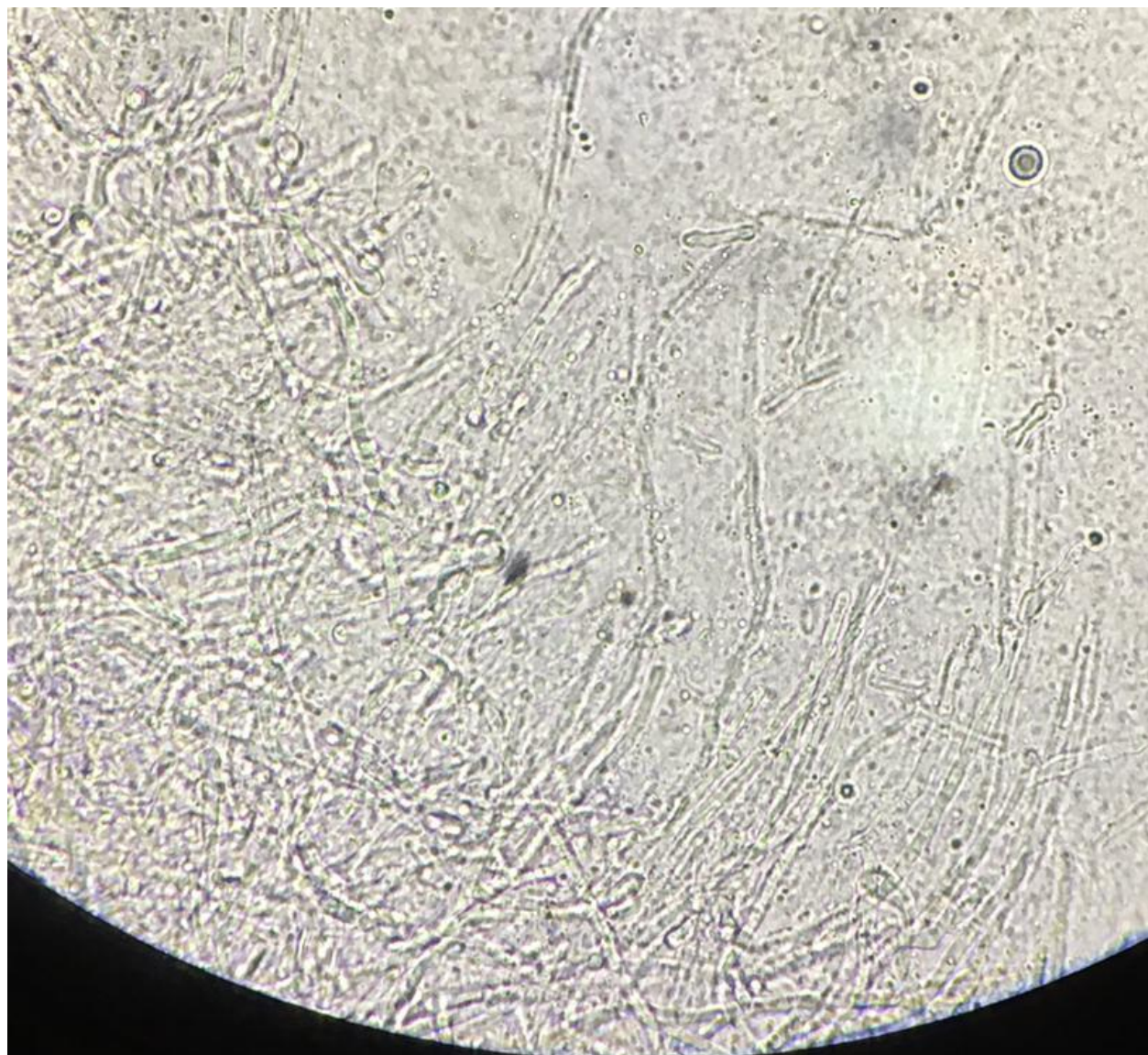
culture on SDA at 25°C, BA, BHIA

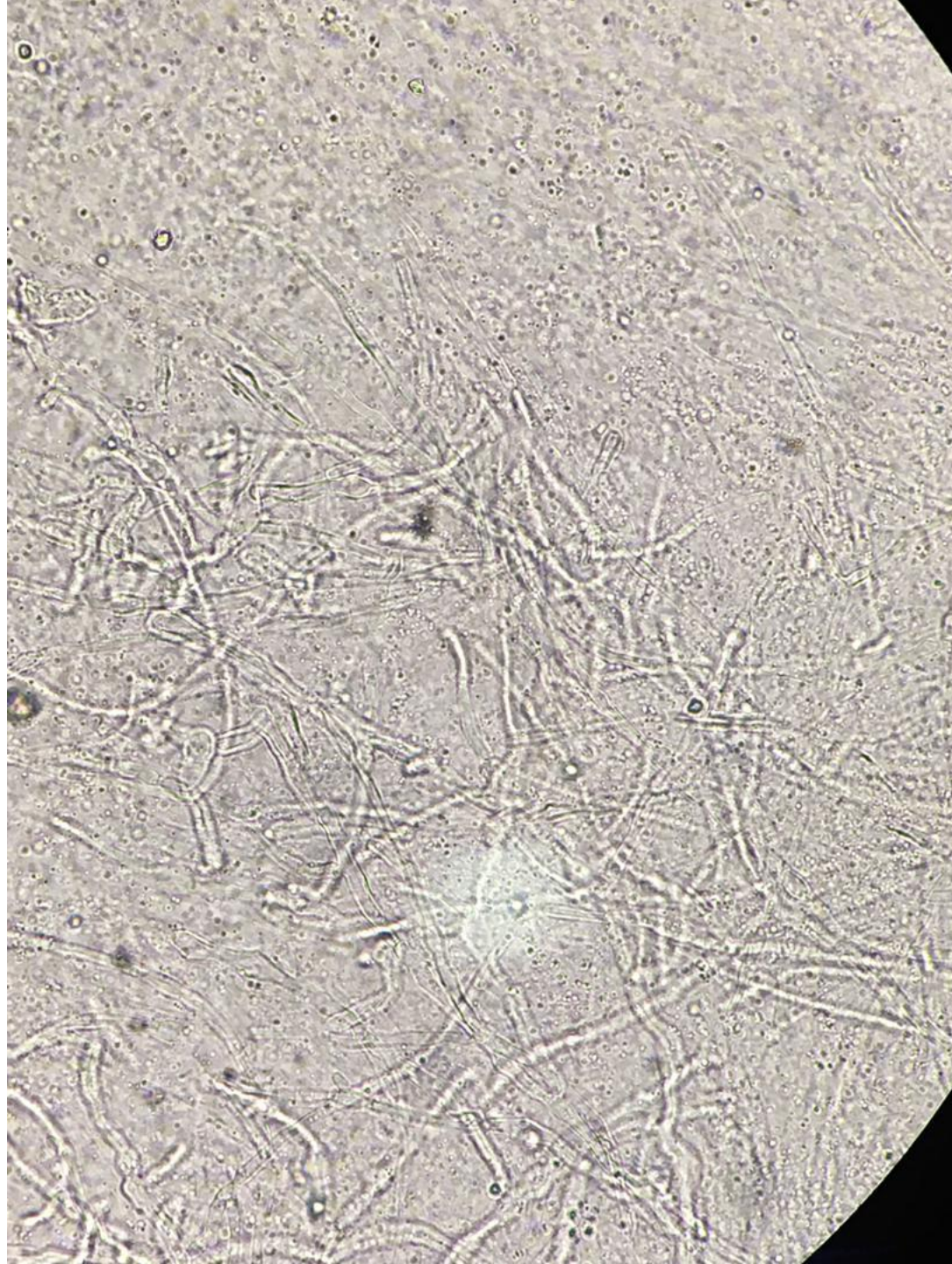
Histopathology, PCR

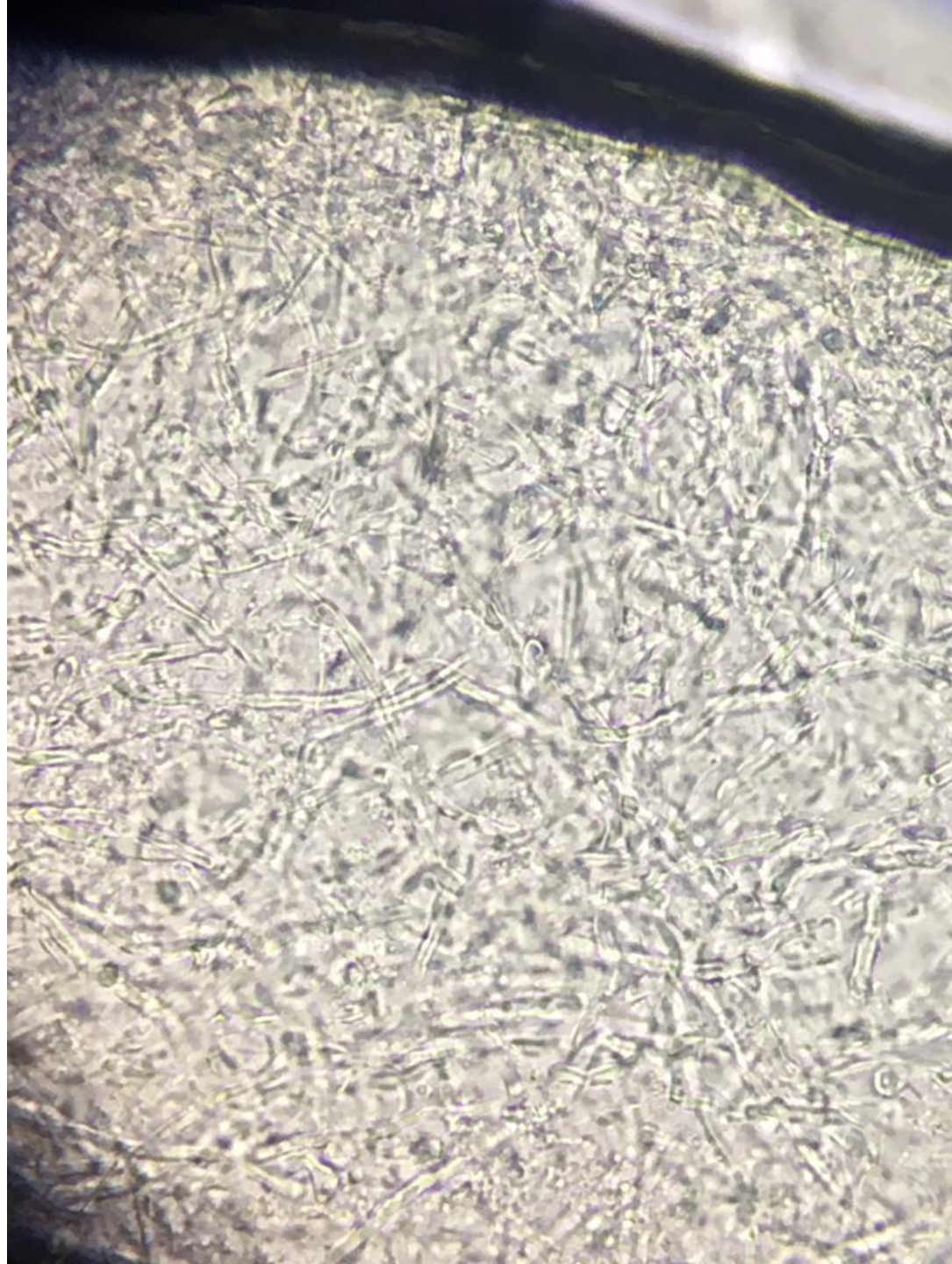


MYCOTIC KERATITIS

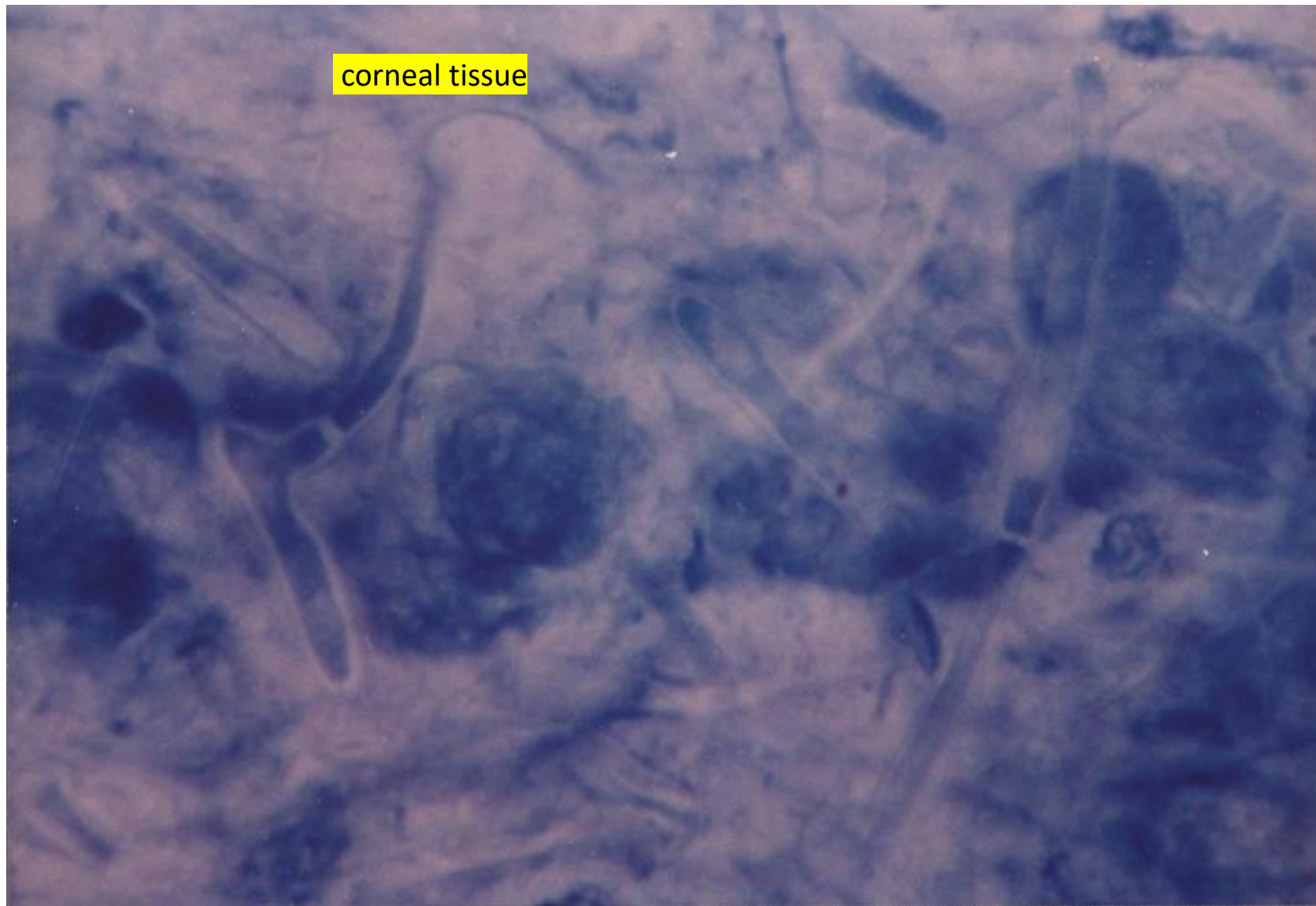






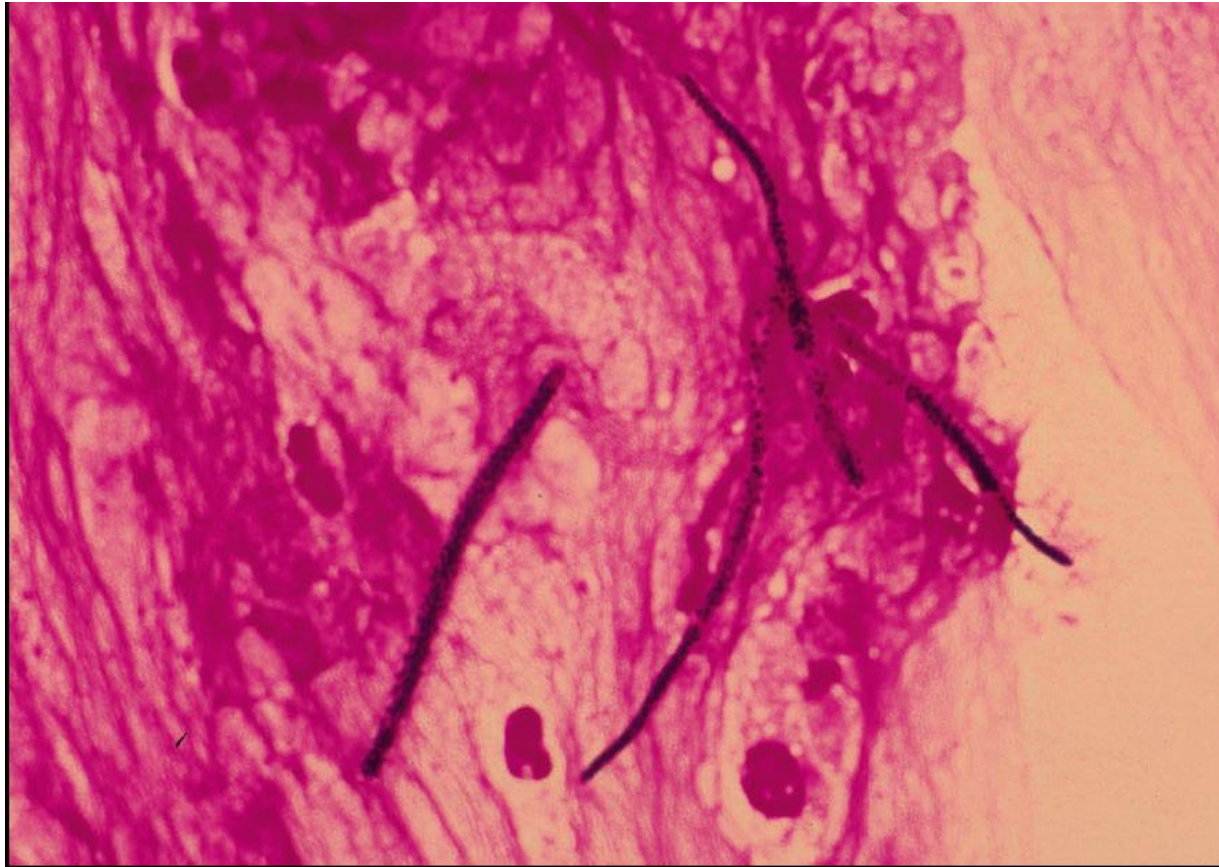


corneal tissue



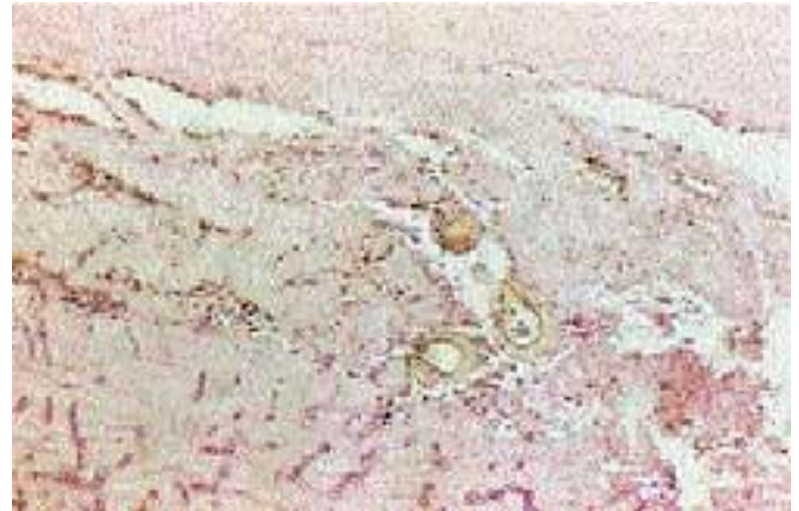


10% potassium hydroxide, direct smear (×450 magnification).

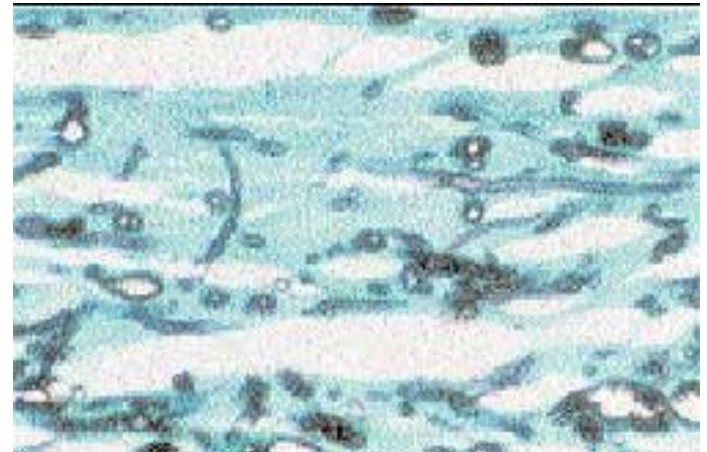


*Gram stain cytoplasm stained with crystal violet,
($\times 450$ magnification)*

- Fungal ulcer due to *Aspergillus*
Characteristic microscopic image.



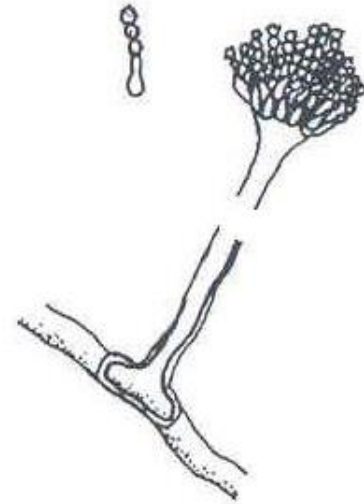
- Fungal ulcer due to *Curvularia spp.*
Diagnosis is made by culture and smear



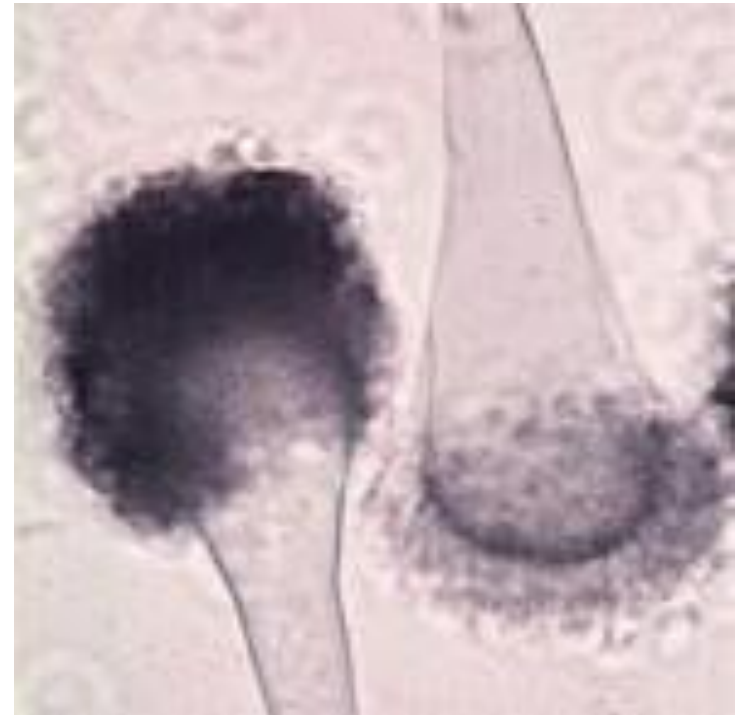
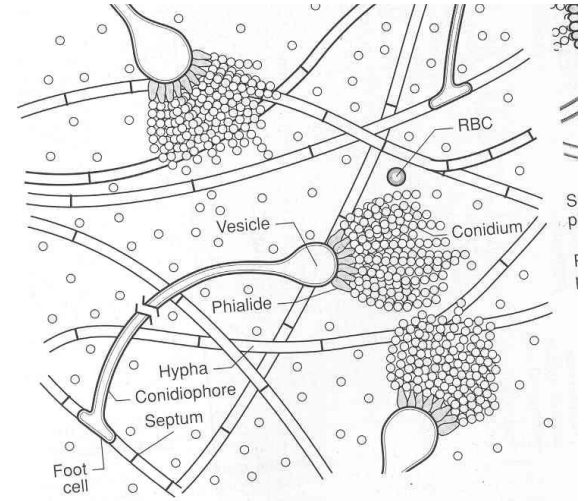
Aspergillus fumigatus



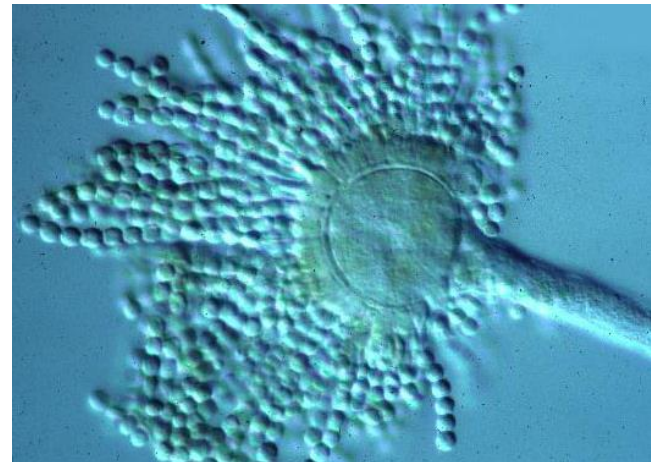
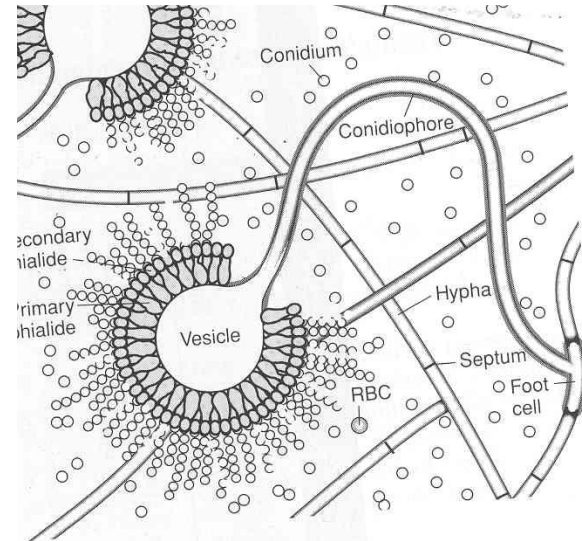
Colonies are flat,
granular and blue-green,
green-gray



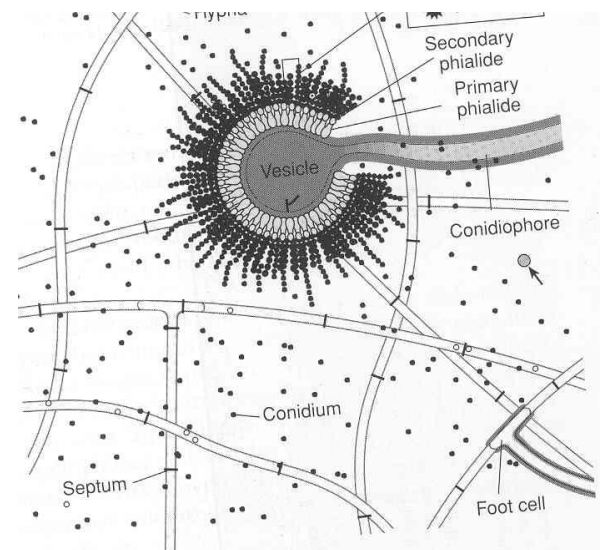
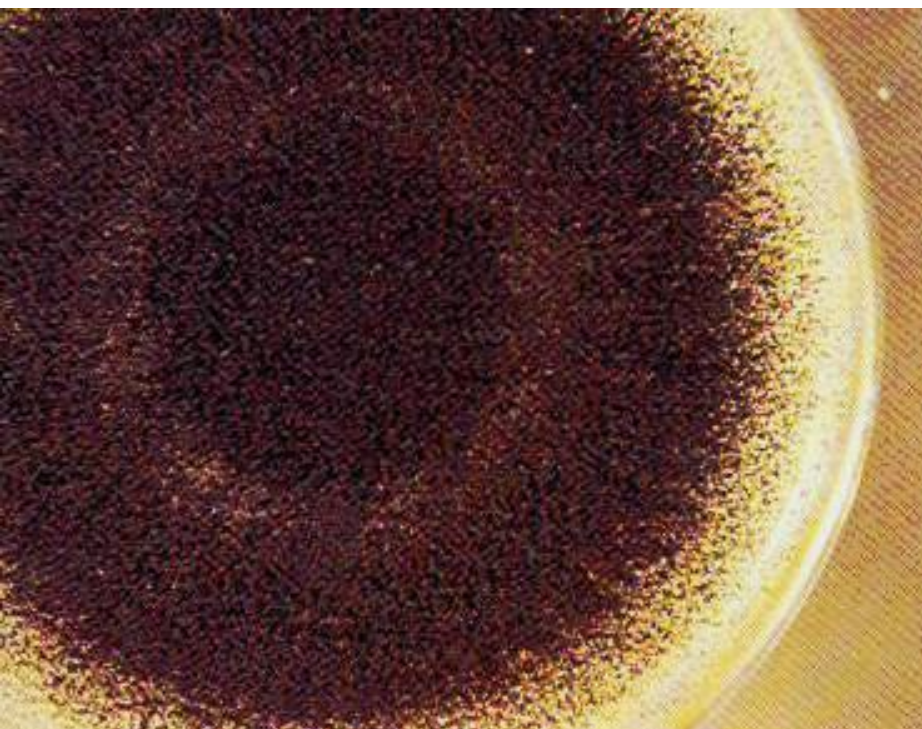
Aspergillus fumigatus



Aspergillus flavus



Aspergillus niger



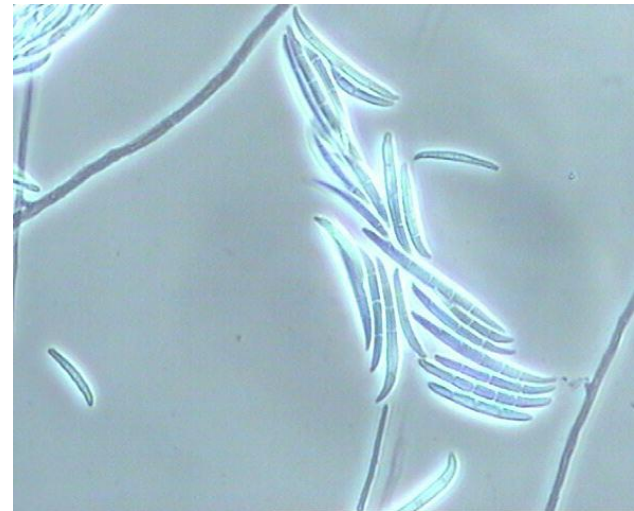
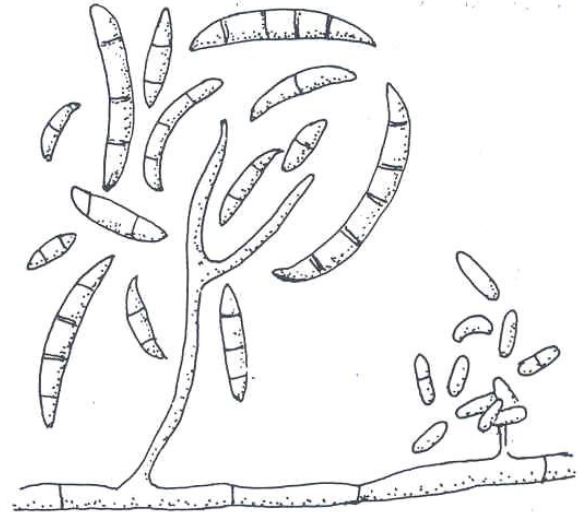
Penicillium citrinum



Fusarium



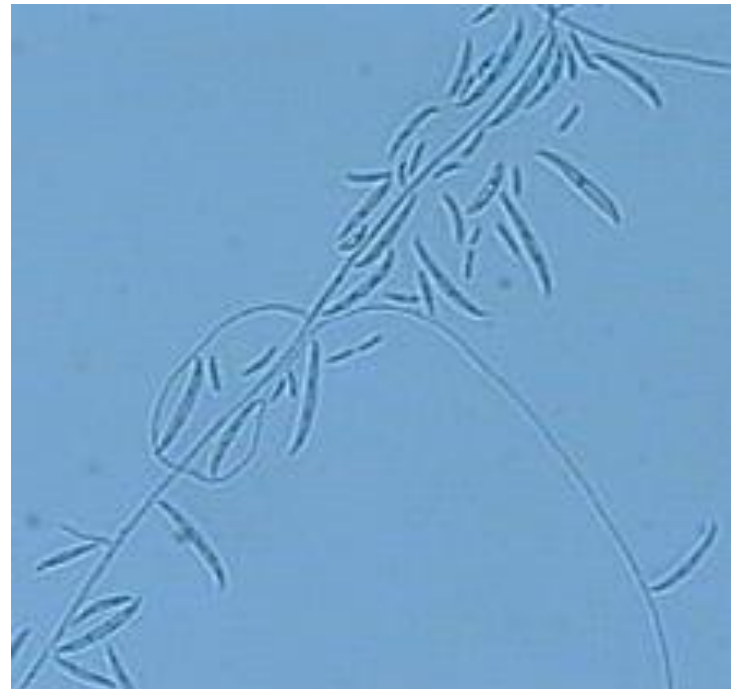
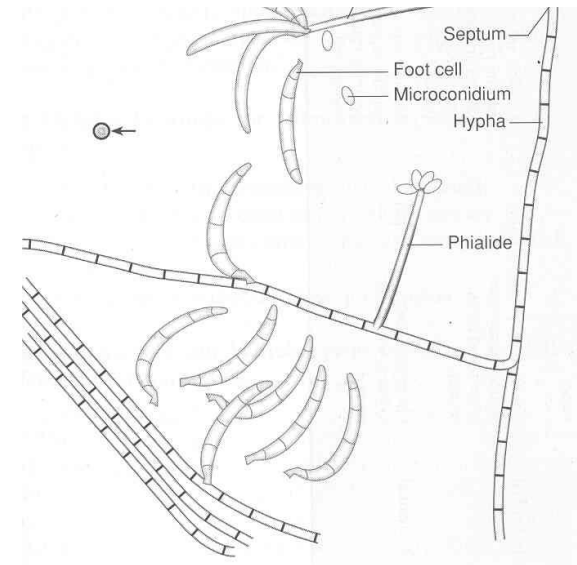
Fast growing, color varies from whitish to yellow, brown, pink



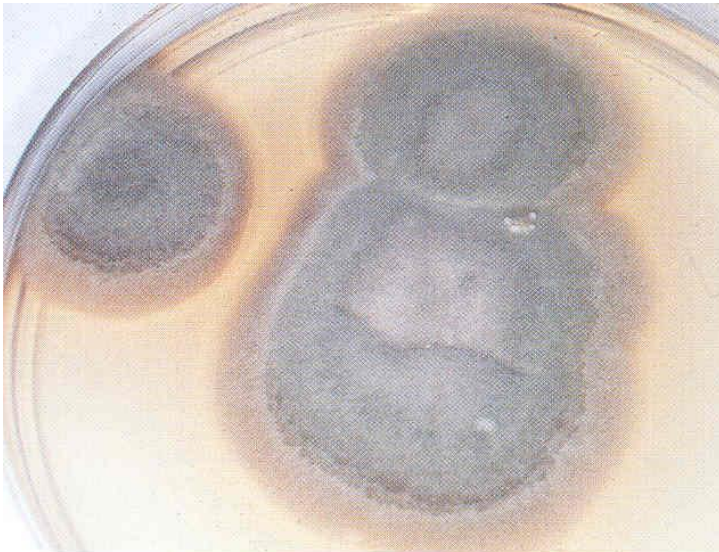
Fusarium



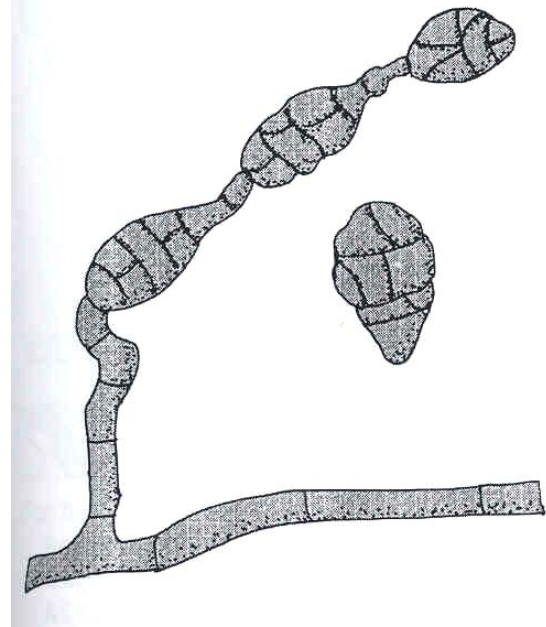
Fusarium sp.



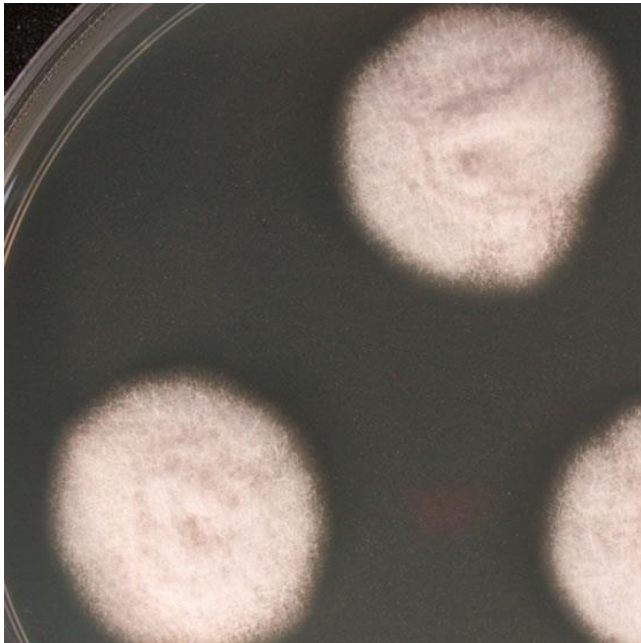
Alternaria *sn*



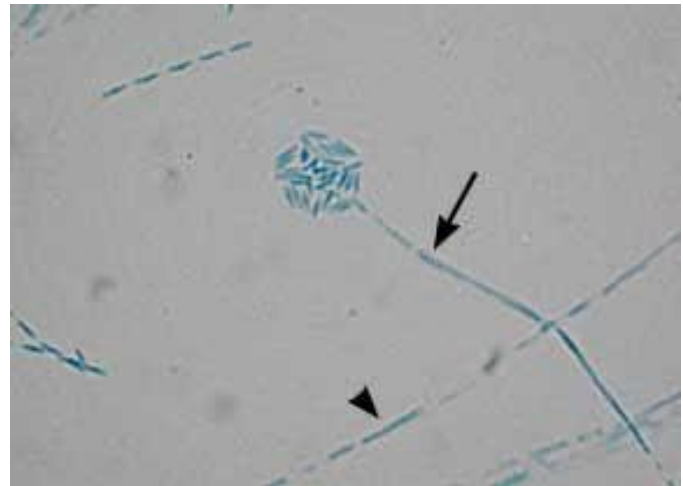
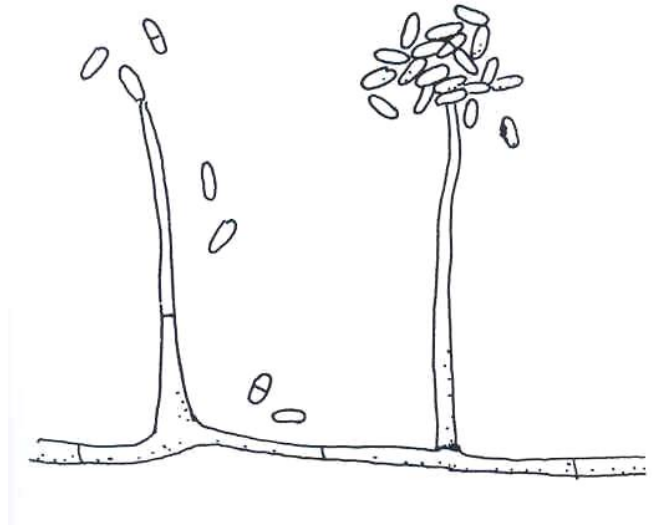
Fast growing, black to
olivaceous-black, and
downy to woolly



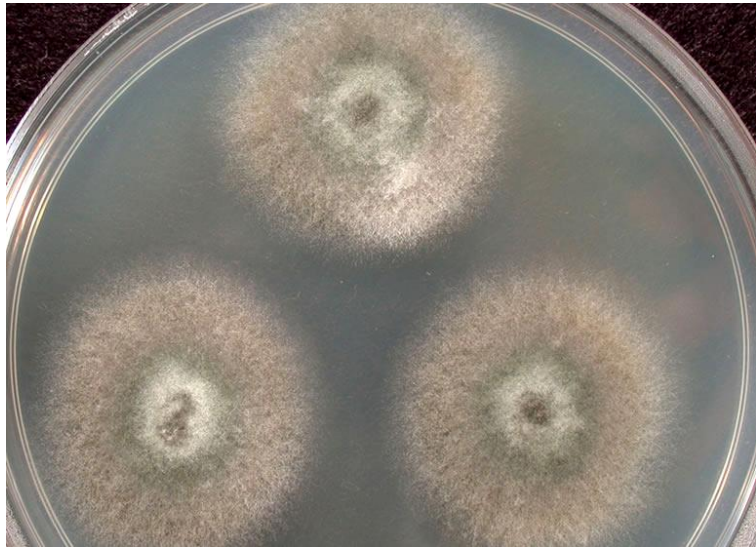
Acremonium *sp.*



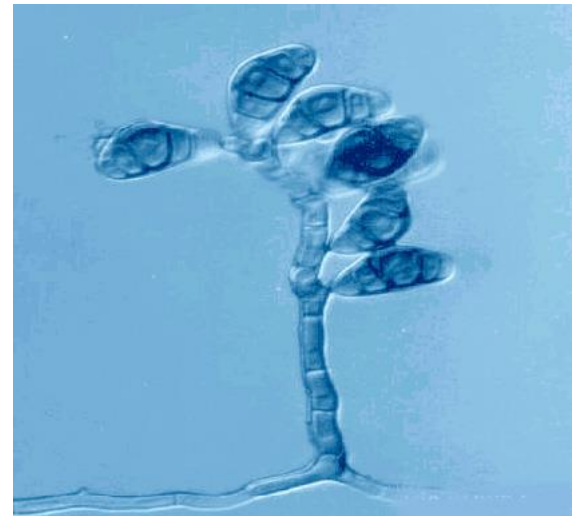
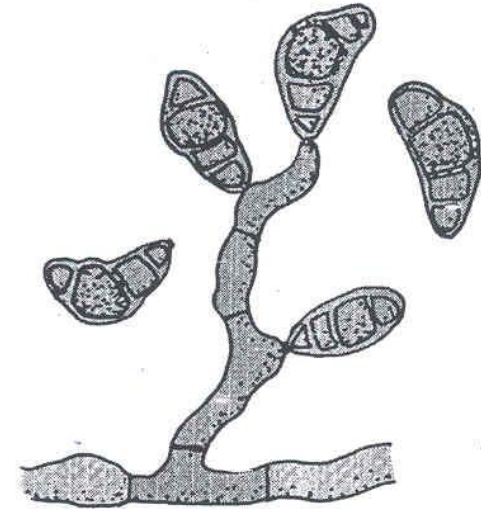
Slow growing, suede-like or floccose, and white, gray, pink in color



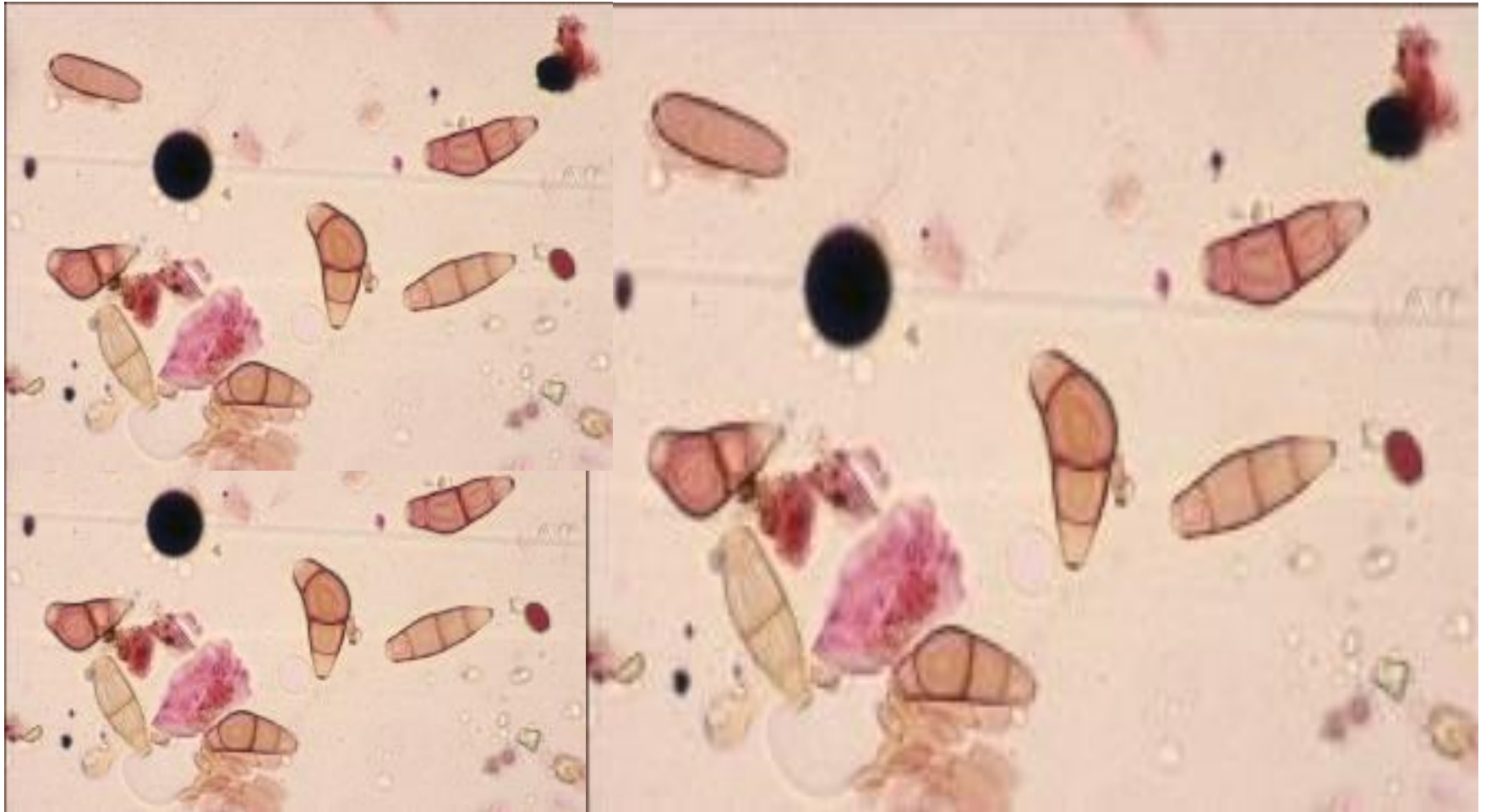
Curvularia *sp.*



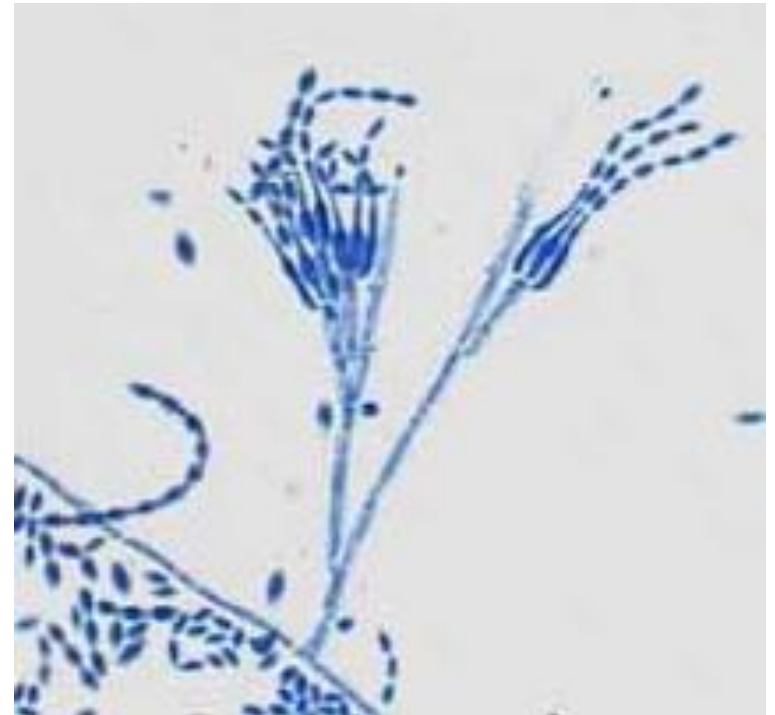
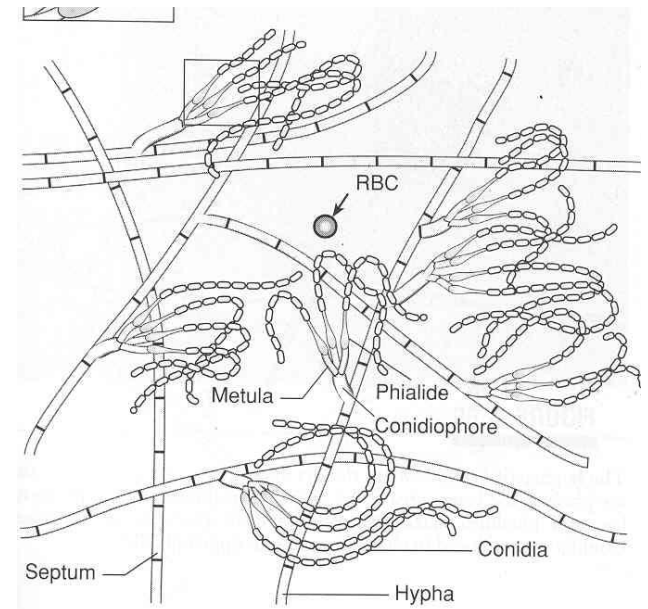
Fast growing, downy to woolly,
brown to blackish brown with a
black reverse



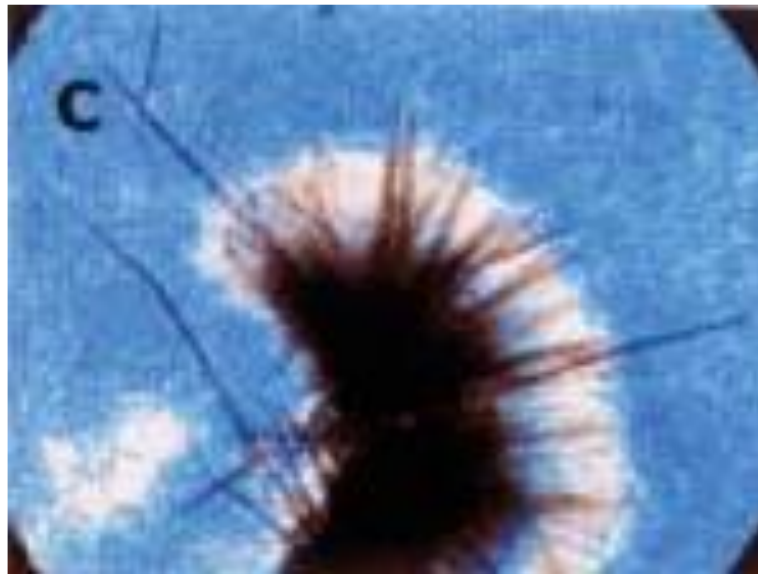
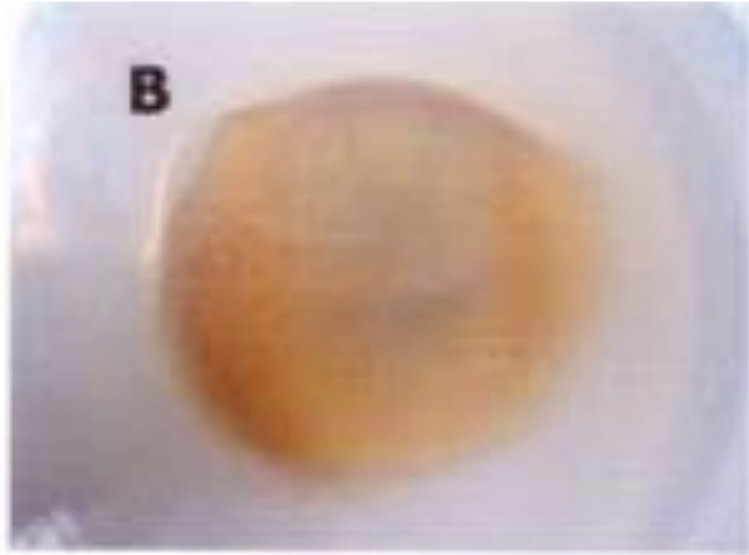
Curvularia



Paecilomyces sp.



Colletotrichum dematium,



Treatment

- Removal of infected tissue
- Discontinuation of steroids and topical or oral antifungal agent
- Topical solution such as : natamycin 5% , 0.15% amphotericin B , azole 1%
- Oral : fluconazole for yeasts , itraconazole for moulds





After 4 days treatment with
Amp B



After 4 wks treatment with
Amp B