A. Mycosis

A disease caused by infection with a fungus, such as ringworm or thrush. Mycosis is the disease caused by fungi, they are divided into 3 group

1. Superficial mycosis
2. Subcutaneous mycosis
3. Deep mycosis

1. Superficial mycosis

Dermatophyotsis/Dermatomycosis:

This is also known as "Ring worm" infection, a cutaneous infection caused by varietyof different genera of fungi called as Dermatophytes.

Species/Pathogens	Animals affected
Trichophyton mentagrophytes	All domestic animals
Trichophyton verrucosum	Cattle and sheep
Trichophyton equinum	Horses
Microsporum gallinae	Fowl (Favus)
Microsporum gypseum	Horse, dog, rhodent
Microsporum canis	predominately dogs and cat's primates and horses also
Microsporum nanum	Swine and humans
Epidermophyton	

Habitat

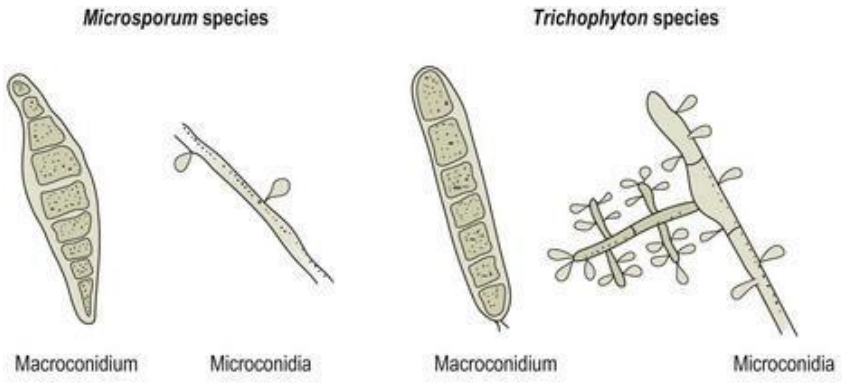
- Dermatophytes grouped according to host preference or habitat.
  - Anthropophilic - Affect human being
  - Zoophilic - Affect animals
  - Geophilic - Free living in soil and cause infection in man andanimal

- Anthropophilic and zoophilic dermatophytes are obligate pathogen which are unable to replicate in soil, whereas, geophilic dermatophytes inhabit and replicate in soil in association with decomposing keratinous materials like hair or feather.
- Soil is rich with dermatophytes
- Obligate parasites of animals
- *M. gypseum* - natural soil inhabitant that is a common cause of dermatophytosis, while most of the other common animal pathogens are normally found only on animals.

Morphology

- In their nonparasitic phase, including culture, dermatophytes produce septate, branching hyphae collectively called *mycelium*
- Conidia - aerial mycelium either macroconidia or microconidia
- Shape, size, structure, arrangement and abundance of conidia are diagnostic criteriaMacroconidia produce by different species of fungi

Species	Shape	Macroconidia	Microconidia
Microsporum	Elongated, multiseptate spindle shape	Numerous	Few or absent
Trichophyton	Long thin, multiseptate Cigar shape	Few or absent	Numerous
Epidermophyton	Oval or pear shape	Numerous	absent



Microsporum **Trichophyton** **Epidermophyton**

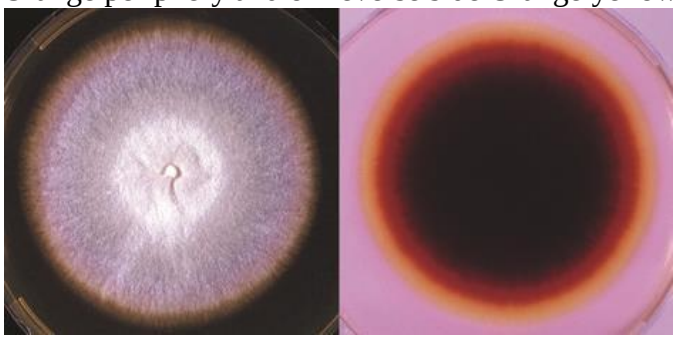
Cultural characteristics

- Dermatophyte test medium (DTM) used for the differentiation of dermatophytes with other contaminating fungi
- Sabouraud's dextrose agar with antibiotics incubate at room temperature

  - Acidity (pH 5.6) renders it mildly bacteriostatic.
  - Cycloheximide (500µg/ml), which inhibits other fungi
  - Gentamicin and tetracycline (100 µg/ml of each), or chloramphenicol(50 µg/ml) antibacterial activities

Staining: Lactophenol cotton blue reveal hyphae and macro and microconidia
The colony colour SDA medium

Microsporum: Orange periphery and on reverse side Orange yellowish brown



Trichophyton: Orange to lemon yellowish colouration of the plate behind whitecottony mycelium growth

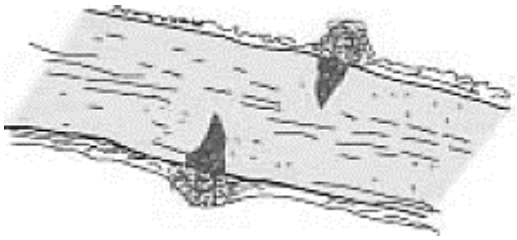
Trichophyton: Brown colour behind white cottony growth

Diagnosis

- Based on Direct Examination
- Fluorescence of hairs is useful for identification of hairs that may be infected withdermatophytes
- Dermatophytes in skin and hair (but not in culture) produce a green fluorescence due to a tryptophan metabolite that is visible under a **Wood's light and only *Microsporum canis* produces this reaction**

Based on Microscopic examination

- Skin scrapings and hair - presence of hyphae and arthroconidia
- Scraping - Material from the margins of any lesion and full thickness of thekeratinized epidermis
- Hair is plucked, so as to include the intra follicular portion
- Sample is placed on a slide, flooded with 10% to 20% KOH or NaOH, with a cover slip, and heated gently and observe arthrospores



-Endothrix

- **Ectothrix**
- **Macro and microconidia**

The *in vitro hair perforation test.*

- Wedge-shaped areas along a hair shaft stain darkly with lactophenol cotton blue.
- Some dermatophytes such as *M. canis and T. mentagrophytes produce* this hair perforation pattern.

- **Based on culture**
  - DTM medium will turn red as the dermatophyte is growing, and the fungus itself will usually be hyaline and fluffy
  - Identification - confirmed by microscopy
  - Very long, narrow hyphae with distinctive shapes and micro ormacroconidia - dermatophyte infection

2. Subcutaneous mycosis

Disease: Rhinosporidiosis

Species: *Rhinosporidium seeberi*

Host: Horse, mule, dogs, cattle, goat and waterfowl

Rhinosporidiosis is a chronic, non-contagious, localized granulomatous condition that presents with polyp-like or wart like lesions. The most common site of rhinosporidiosis is the nose (70% of cases), with vascular and pedunculated polyps affecting the nostrils. Lesions canaffect the conjunctiva and, rarely, the larynx, genitals, and skin.

R. seeberi is fungus like organism which has not been cultured on inert media but hasbeen grown in monolayer of human rectal tumour cell.

Habitat:

- Stagnated water and possibly soil are the natural habitat

Clinical findings:

- Infection occurs though minor trauma in skin or mucous membrane
- The reddish-brown polyps or wart like growth observe in nares and canocclude nasal passages
- Noisy breathing
- Nasal discharge and/or epistaxis may observe

Diagnosis:

- Based on history and clinical sign
- It can be made based on finding of sporangia in wet mount and plain tissue section of polyps and sometime observe spores in nasal discharge.

Treatment:

- Surgical excision of pedunculated mass either with cryosurgery or electrocauterization
- Antifungal treatment with ketoconazole