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# **RINGWORM?? IT'S A FUNGAL DISEASE!**

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- 100,000 + species of fungi
- More than 300 species are animal pathogens
- **Mycosis.** A disease caused by a fungus causing superficial, subcutaneous or systemic infection
- **Dermatophytosis.** A superficial infection of keratinised tissues-claws, hair and stratum corneum caused by a species of *Microsporum*, *Trichophyton* or *Epidermophyton* (Dermatophytes)

# Disease causing fungi



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- ***Microsporum* and *Trichophyton* species account for virtually all cases of dermatophytosis seen in UK practice**
- **DOGS *M. canis* (65%), *T. mentagrophytes*, (*T. erinacei*, *T. verrucosum*, *T. terrestre*, *M. gypseum*, *M. persicolor*)**
- **CATS 95%+ *M. canis***



**Depend on species of fungus and host response**

- **Asymptomatic carrier**
- **Focal/multifocal alopecia**
- **Diffuse alopecia**
- **Scale and crust - 'cigarette ash' type lesions**
- **Inflammatory lesions**
- **Nodules - dermatophytic mycetoma**

# EPIDERMAL COLLARETTE



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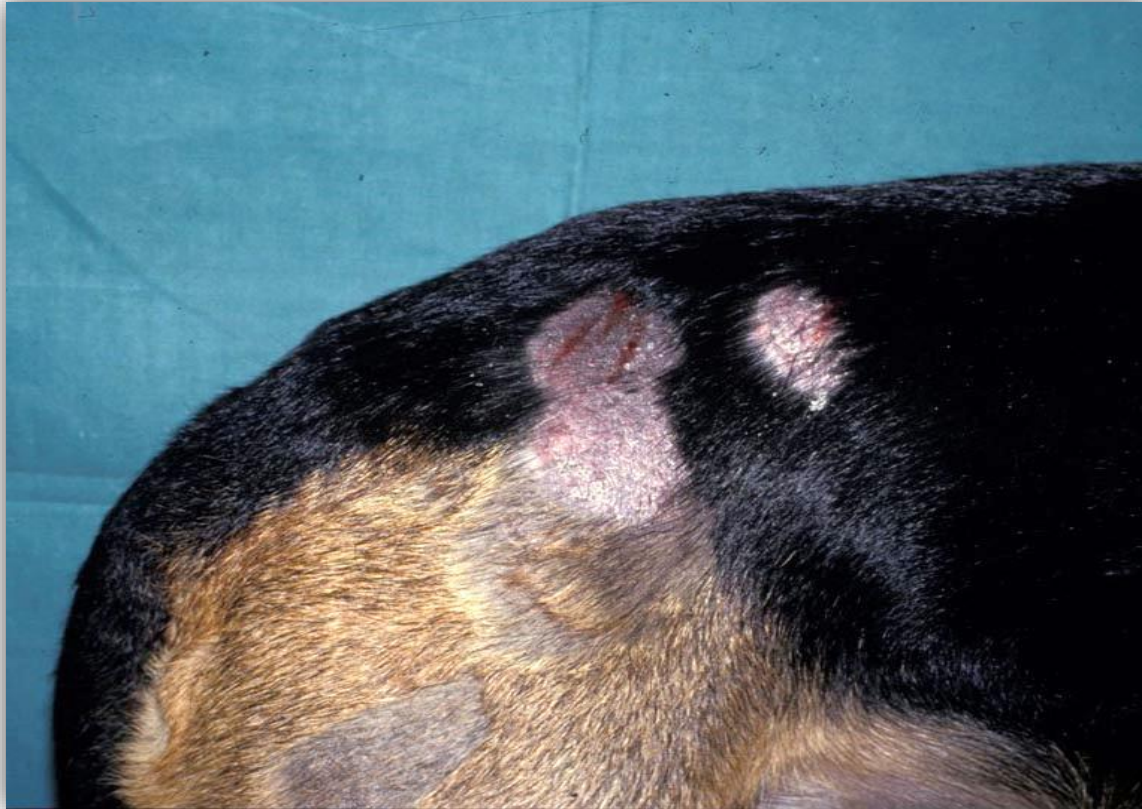
## *Staphylococcus pseudintermedius*



# DERMATOPHYTOSIS-focal



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# Multiple lesions *M.canis*



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# DERMATOPHYTOSIS



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# *Trichophyton spp*



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# Trichophyton generalised



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# DERMATOPHYTOSIS FROM A HEDGEHOG- TRICHOPHYTON ERINACEI



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# DERMATOPHYTOSIS KERION



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*(Microsporum canis)*



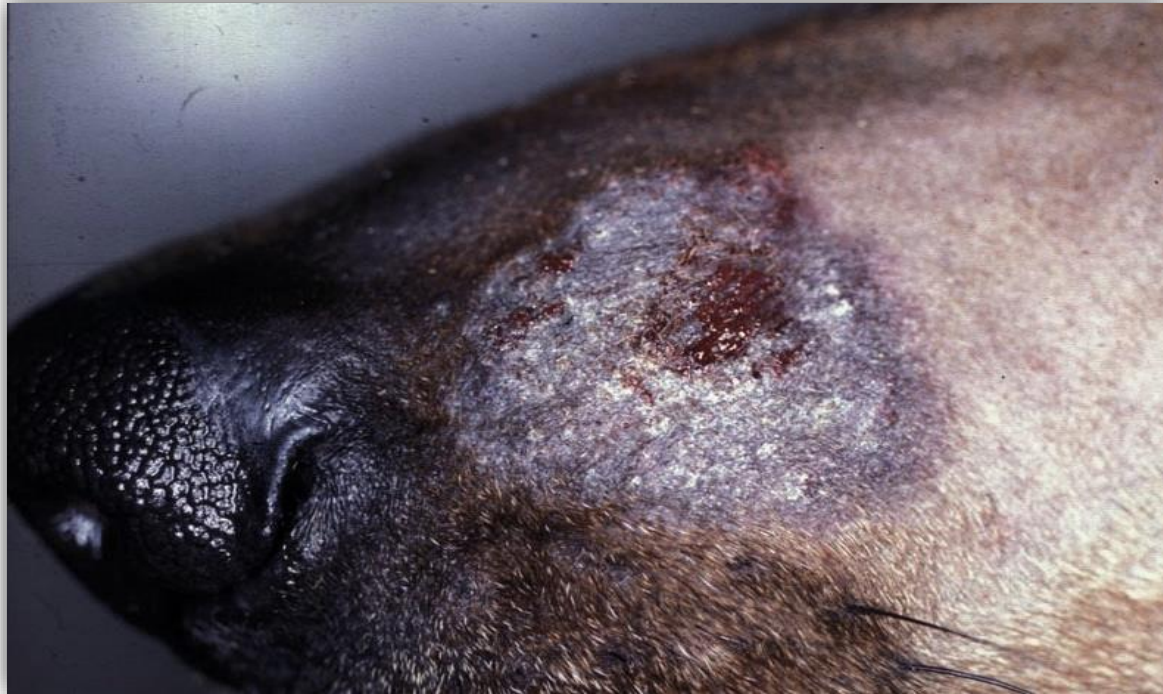


# DERMATOPHYTOSIS

## SECONDARY INFECTION



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**TINEA IS THE TERM FOR RINGWORM USED BY HUMAN PHYSICIANS-CLASSIFIED TO SITE ON BODY**



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- **TINEA FROM THE LATIN- A GNAWING WORM**
- **TINEA PEDIS-ATHLETE'S FOOT (*TRICHOPHYTON RUBRUM*)**
- **TINEA CORPORIS**
- **TINEA CAPITIS**
- **TINEA CRURIS and others**

# HUMAN LESIONS CAUSED BY AN INFECTED DOG OR CAT



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- **MOST LESIONS IN OWNERS OF DOGS AND PARTICULARLY CATS ARE CAUSED BY *MICROSPORUM CANIS***

# HUMAN LESION-M.CANIS



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# HUMAN LESION – M.CANIS



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- **WOOD'S LAMP**
- **TRICHOSCOPY**
- **FUNGAL CULTURE Dermatophyte Test Medium -  
diagnose by colour change within 10 days**
- **FUNGAL CULTURE Sabouraud's agar - for identification  
of species**
- **POLYMERASE CHAIN REACTION (PCR) IDEXX Reference  
Laboratories**

# WOOD'S LAMP EXAMINATION



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- Produces ultraviolet/blue light (wavelength 365 nanometres)
- Hairs infected with *Microsporum canis* will fluoresce apple green - to maximise success follow guidelines below

- Warm up for 5 minutes
- Completely darkened room is essential
- Use lens to look for green fluorescence – only hairs fluoresce, sometimes just part of hair!
- NB ONLY MICROSPORUM CANIS!!



# WOODS LAMP POSITIVE

(Courtesy Rares Capitan)



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# DERMATOPHYTE HAIRS



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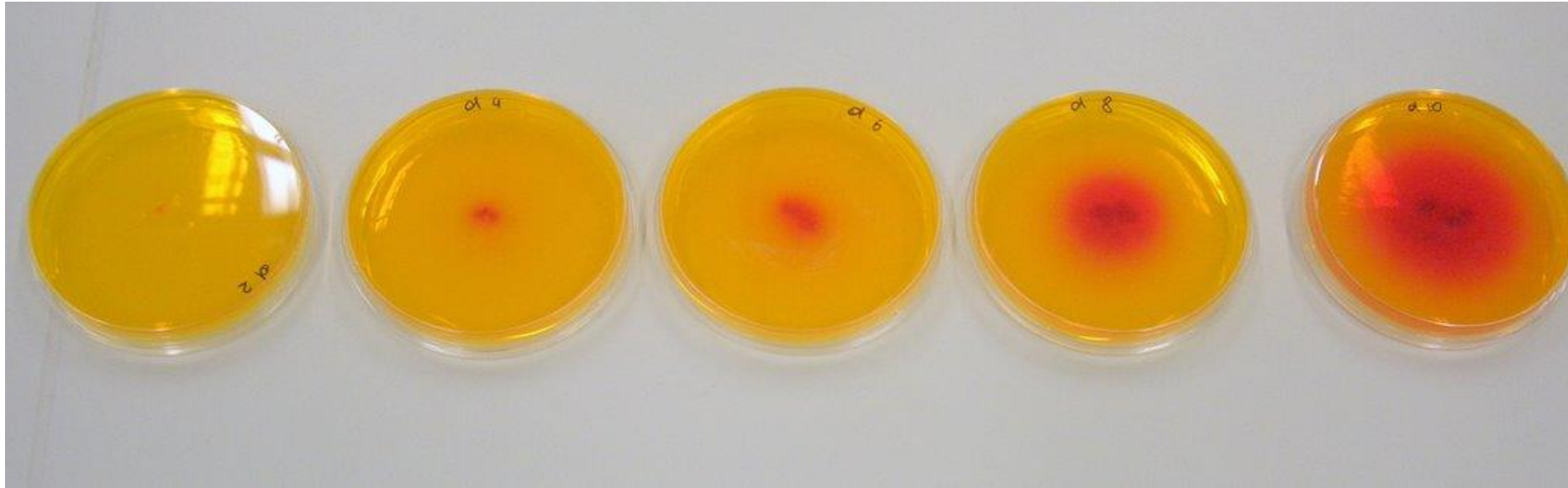


# DERMATOPHYTE HAIR



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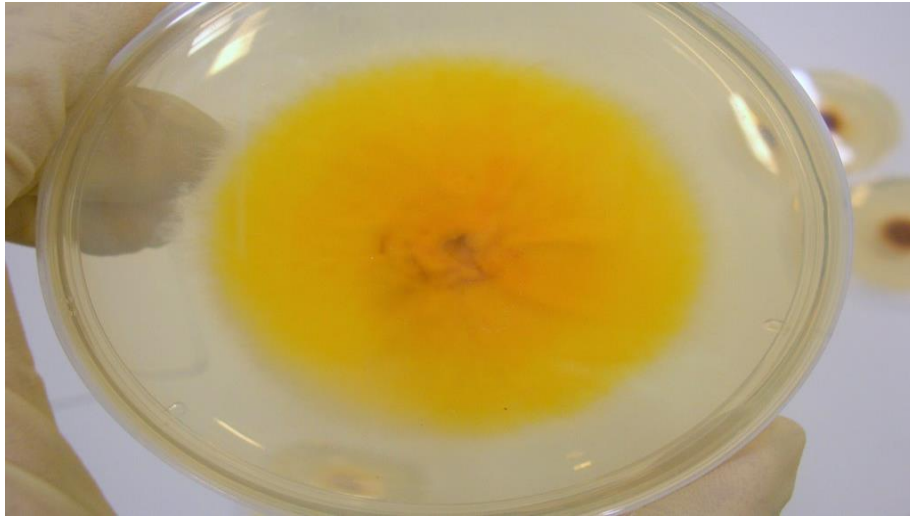
# COLONY MORPHOLOGY

## *MICROSPORUM CANIS*



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Lower



Upper





# DIAGNOSIS BY PCR



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- **IN THE UK PCR TESTING IS INCREASINGLY FAVOURED**
- **IT HAS THE ADVANTAGE OF IDENTIFYING FUNGI IN A FEW DAYS COMPARED TO A FEW WEEKS**
- **MANY VETERINARY DERMATOLOGISTS STILL PREFER CULTURE AS THE BEST WAY TO IDENTIFY A CURE BECAUSE PCR TESTING CAN PRODUCE FALSE POSITIVES**

# TOPICAL TREATMENT



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- **ENILCONAZOLE** (Imaverol) 100 mg/ml rinse
  - Apply every 3 days for 4 applications
- **MICONAZOLE** (Malaseb) 2% shampoo.
  - Also contains chlorhexidine.
  - Shampoo twice weekly
- **LIME SULPHUR** 2% rinse
  - Apply every 5-7 days



- **KETOCONAZOLE**
- **ITRACONAZOLE**
- **(GRISEOFULVIN)**

# ITRACONAZOLE-BEFORE



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# ITRACONAZOLE AFTER



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# TINEA – NOT FROM A DOG



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# THREE WEEKS LATER



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- **Spores on hairs are the source of infection**
- **Subject the environment to a triple cleaning process**
- **Mechanical removal of debris - vacuum cleaning**
- **Aggressive washing of area with soap and water**
- **Application of a disinfectant with label for fungal infections**
- **Pet laundry can be easily decontaminated using a long laundry cycle and not overloading the washing machine**



# WHICH DISINFECTANT?



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- Efficacy of eight commercial disinfectants against *Microsporum canis* and *Trichophyton species* infective spores on an experimentally contaminated textile surface

Karen A Moriello, Darcie Kunder and Hanna Hondzo.  
*Veterinary Dermatology* 24 621-623 December 2013

# CONCLUSION FROM PREVIOUS REFERENCE



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**‘Aggressive removal of contaminated material followed by thorough application of commercial ready to use disinfectants labeled as fungicidal against *Trichophyton mentagrophytes* are alternatives to dilute sodium hypochlorite’**

# SUMMARY



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- **Dermatophytosis is easily missed/over diagnosed**
- **In the UK it is relatively rare compared to other countries**
- **Variable clinical appearance that can mimic many other skin diseases**
- **Diagnosis by clinical signs alone is unreliable**
- **Sampling is essential to guide treatment and species identification is ideal**
- **Owner education is important due to zoonotic potential**
- **Emphasise general hygiene**



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**Thank you**

