Updates
Laboratory diagnosis
Dermatophytosis

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Superficial mycoses

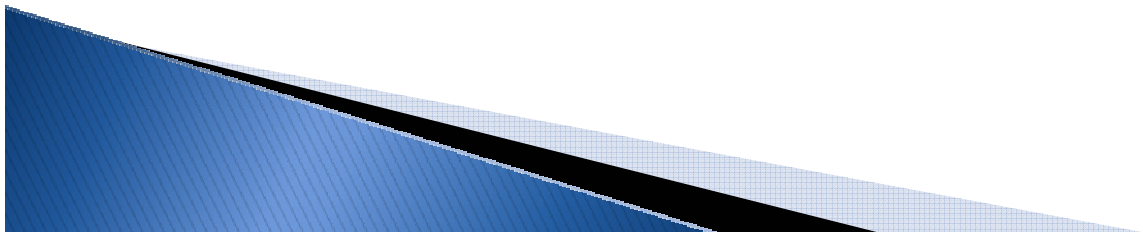
- Common worldwide.
- Predominatly caused by dermatophytes.
- The causative species vary with geographic region.
  - *Trichophyton rubrum* (worldwide)

Epidemiology

- Changing pattern of dermatophyte infection:
  - Migration
  - Tourism
  - Changes in socioeconomical condition
  - International sport activiy
  - Changing pattern of dermatophytosis
    - Tinae capitis ↓
    - Tinea pedis ↑

Tinea pedis and onychomycosis

- Very common infections
  - Changes in lifestyle
  - Urbanization
  - Use of communal bath facilities
  - Occlusive footwear
- Associated with several different fungi
  - Yeast
  - Dermatophytes
  - Non-dermatophytes mould



Trichophyton rubrum

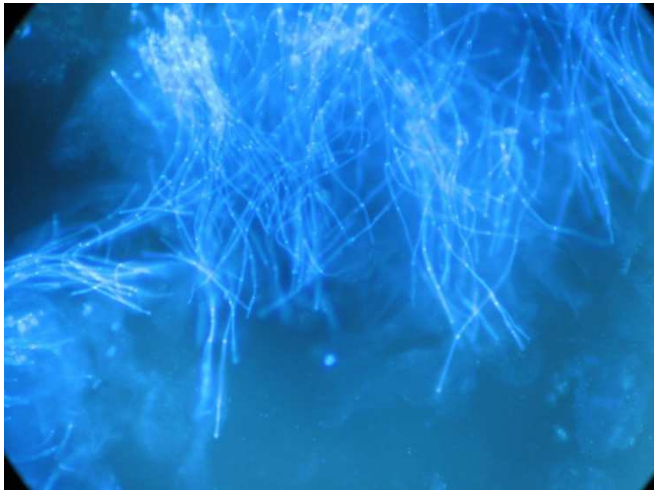
- Important dermatophytes in Europe.
- Common dermatophyes in onychomycosis
- Frequently isolated from all culture positive superficial mycoses.

Risk factors -onychomycosis

- Age
  - 1% (10-18y)
  - 3% (19-30 y)
  - 30% (>60 y)
- Genetic factors
- Immundificiency
- Diabetes
- Psoriasis
- Sport activity
- Other

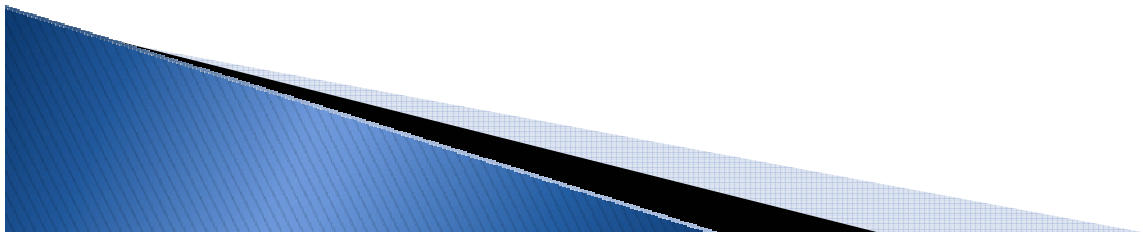
Laboratory diagnosis

- Microscopy
  - Rapid
  - Early start of treatment
  - False negative results
    - Quality of sampling
    - Skill of observer
  - Staining
    - Mycetecolor
    - Mycetefluo
    - Bankophor



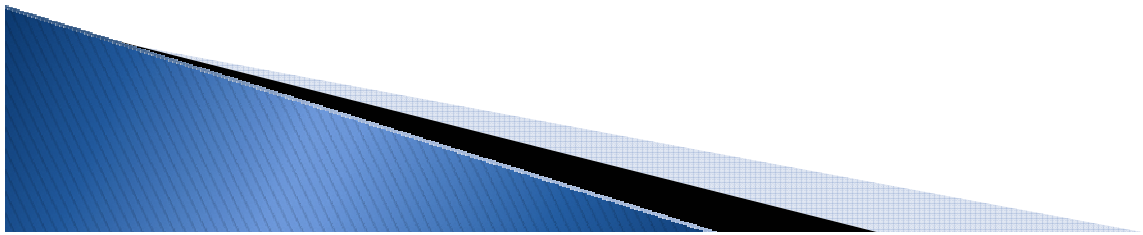
Laboratory diagnosis

- Culture
  - Isolation and identification
  - Long incubation
  - False negative
    - Insufficient amount of material
    - Short incubation time
    - Non- suitable temperature
    - Presence of contamination



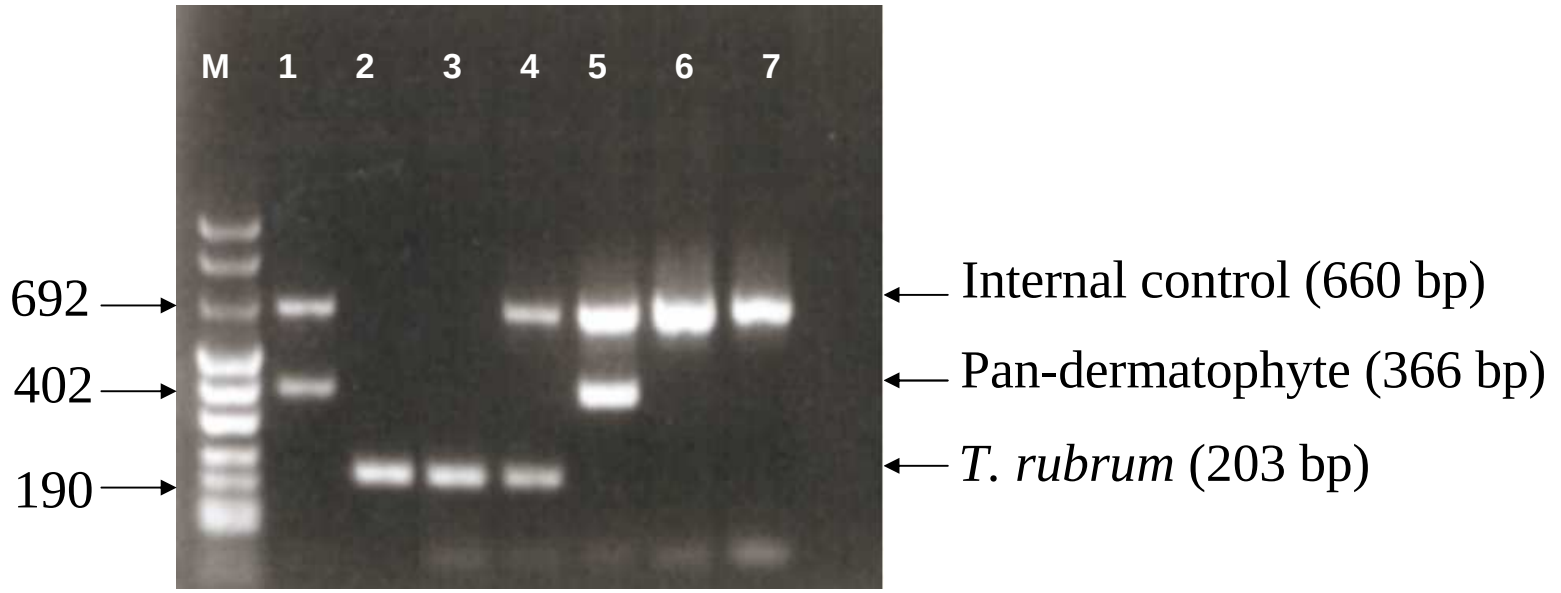
Laboratory diagnosis

- Molecular base method
  - Commercial available Dermatophyte PCR kit
    - Duplex PCR Dermatophytes
      T. rubrum
    - Results in less than 5h



Dermatophyte PCR kit

- Primers:
  - chitin syntase (ch1)
  - ITS2 (internal transcribed spacer 2)



Dermatophyte PCR

Microscopy, culture and PCR results from nail specimens with suspected onychomycosis (n=177).

	Positive PCR		Negative PCR %	Total %
	T. rubrum %	Dermatophyte %		
Microscopy				
positive	37%	1.7%	7%	46%
negative	5%	0.6%	49%	54%
Culture				
positive	31%	1%	1.7%	34%
negative	11%	0.6%	54%	66%

Dermatophyte PCR kit

Organism obtained by culturing, n=191 (%)	
Trichophyton rubrum	(57)
T. violaceum	(17)
T. tonsurans	(5)
Microsporum canis	(6)
Microsporum audouinii	(3)
T. Megninii	(1.5)
T. interdigitale	(1.5)
T. mentagrophytes	(1.5)
Trichosporon spp	(3)
Candida albicans	(1.5)
Saccharomyceas cerevisiae	(1.5)
Total	63

Dermatophyte PCR kit

	Culture			Microscopy		Total
	Pos*.		Neg†.	Pos.	Neg.	%
	Derm -atophyte %	Non-dermatophyte %	%	%	%	
PCR (skin and hair)						
Positive	**26**	**0.5**	**10**	**28**	**9**	**37**
Negative	**5**	**2**	**56**	**11**	**52**	**63**
Total	**31**	**3**	**66**	**39**	**61**	

Dermatophyte PCR kit

	Culture			Microscopy		Total
	Pos*.		Neg†. n(%)	Pos. n (%)	Neg. n (%)	%
	Dermatophyte n (%)	Non-dermatophyte n (%)				
PCR (hair)						
Positive	21	0	9	15	15	30
Negative	12	3	64	18	60	70
Total	36	3	72	33	75	

Dermatophyte PCR kit

	Culture			Microscopy		Total
	Pos*.		Neg†.	Pos.	Neg.	%
	Dermatophyte %	Non-dermatophyte %	%	%	%	
PCR (skin)						**38**
Positive	**27**	**0.6**	**11**	**30**	**8**	
Negative	**0.6**	**0.6**	**54**	**9**	**51**	**62**
Total	**30**	**3**	**65**	**40**	**58**	

Dermatophyte PCR kit

	Specificity	Sensitivity	PPV	NPV
PCR				
Hair	86%	58%	70%	78%
Skin	84%	88%	71%	94%

Conclusion

The use of the PCR

Increased detection rate of dermatophytosis.

Diagnosis within 1-2 days.

Inability to detect non-dermatophyte.

Inability to distinguish between anthropophilic and zoophilic fungal species.

Thank you