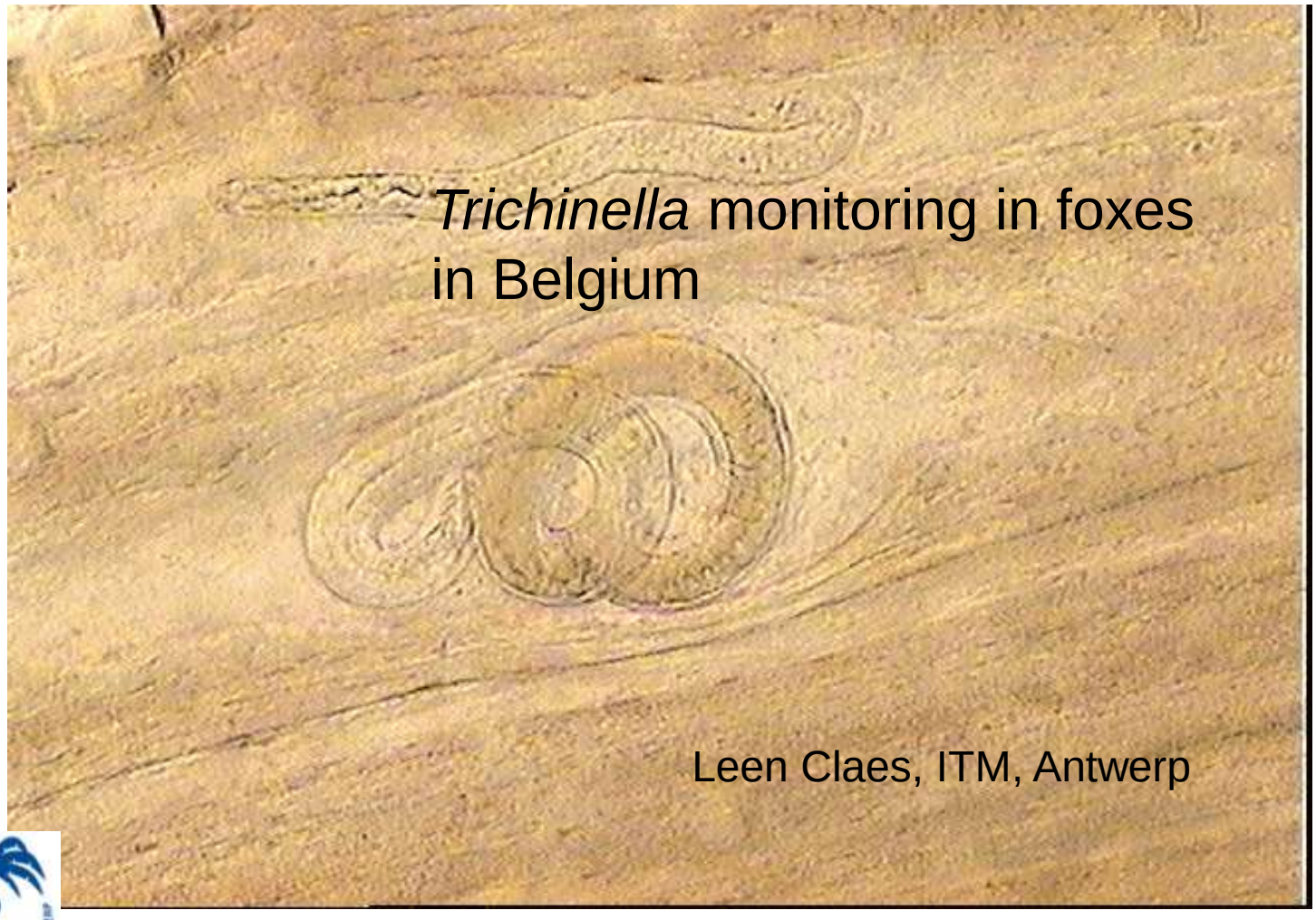
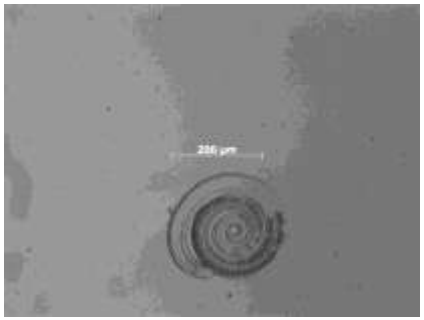


Trichinella monitoring in foxes in Belgium

Leen Claes, ITM, Antwerp

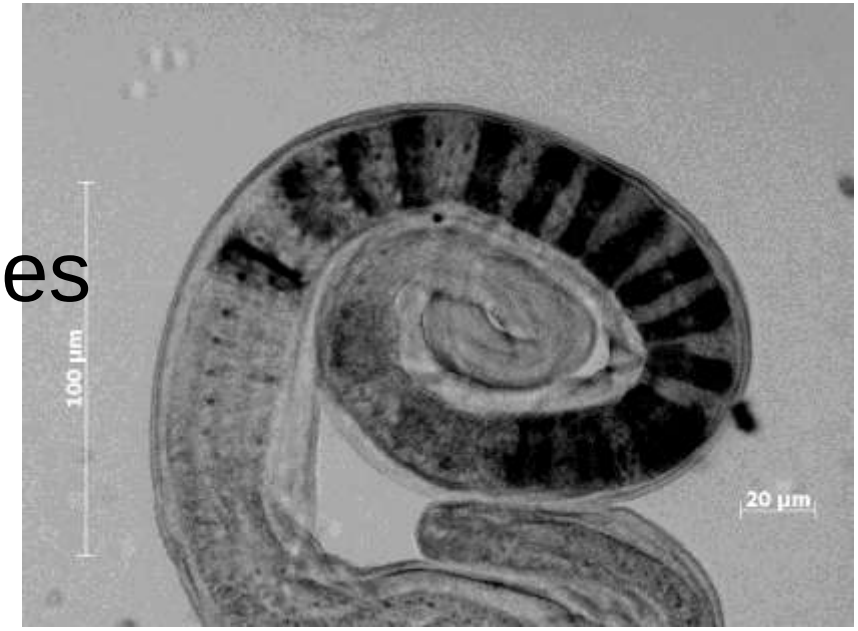
Outline

- Introduction: *Trichinella* ???
- Disease, Control and Prevention
- Tests available
- Region with negligible risk
- Monitoring

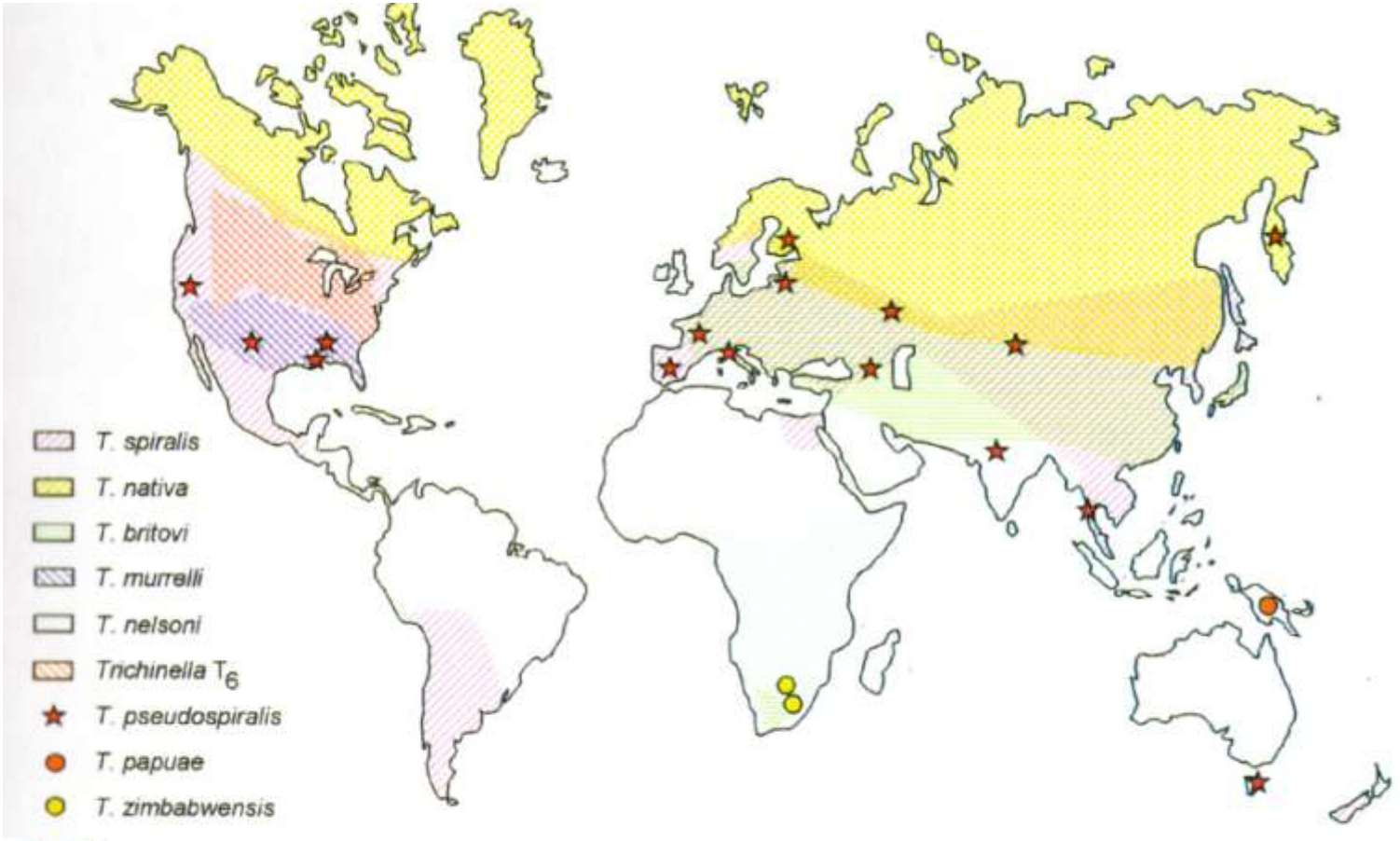


What is *Trichinella*?

- Parasite, transmitted by the consumtion of raw/undercooked meat
- Trichinellosis is a zoonosis, causes only symptoms in humans
- Worldwide distribution
- 8 species + 6 genotypes



Distribution: Trichinella spp. in the world



Distribution of *Trichinella* (C. Kapel)

Animals affected?

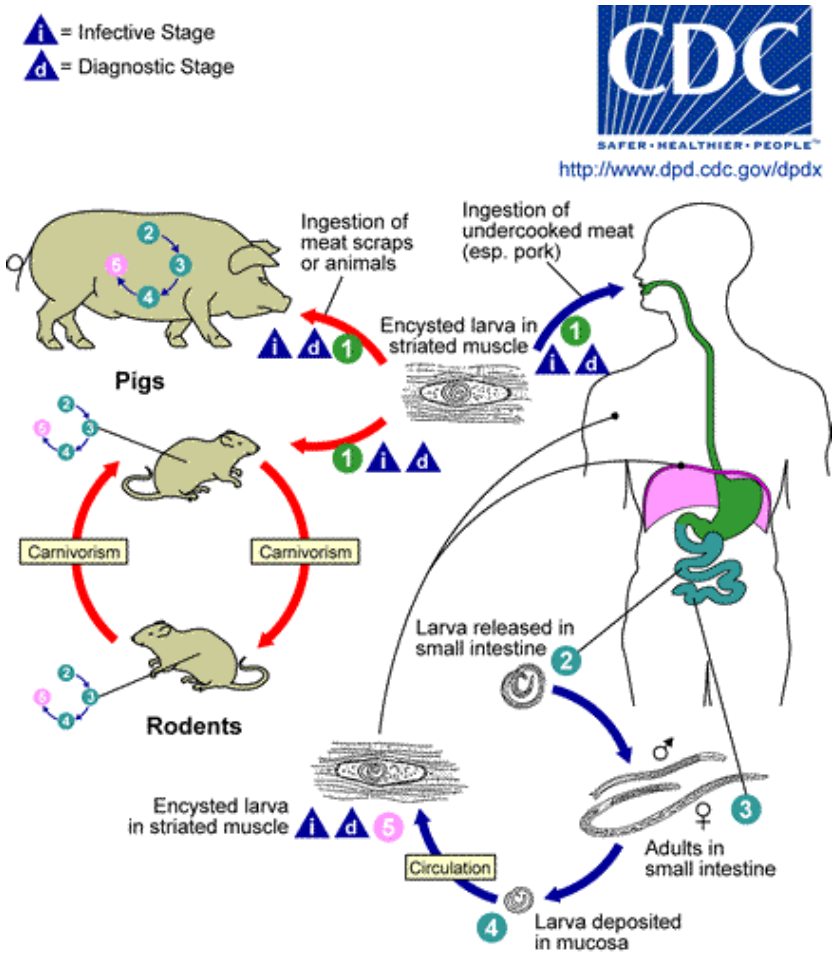
According to the climatic regions, different animals are sources of human trichinellosis.

In temperate regions : pig, wild boar, horse, dog, bear, fox

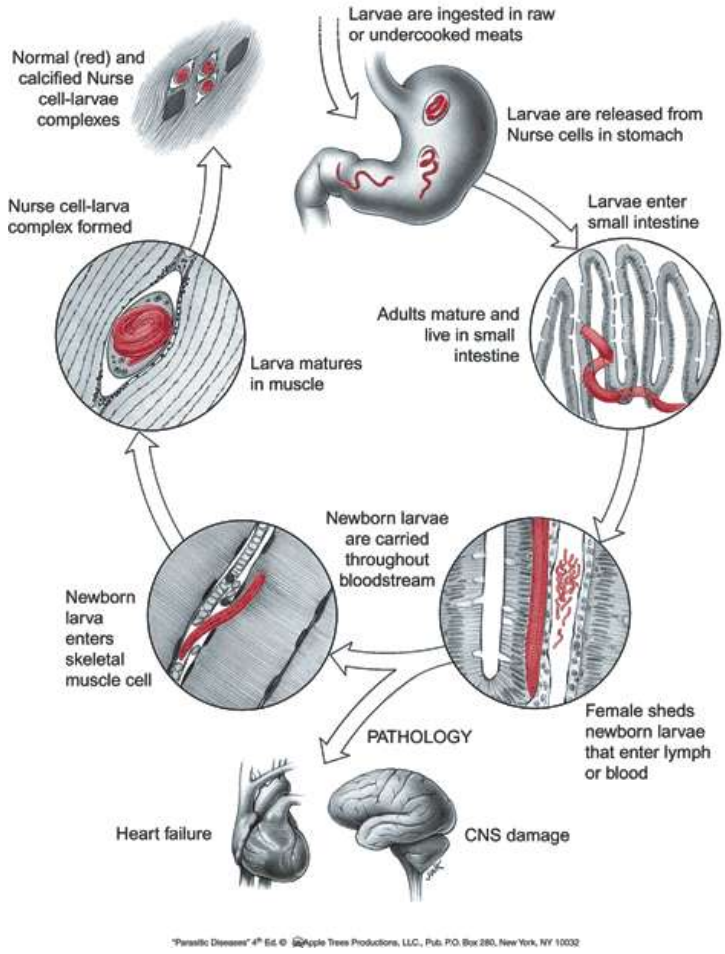
In tropical & sub-tropical regions : whart hog, hyena, jackal

In arctic regions : polar bear, walrus, wolf, fox

Trichinella spp. Cycle (1)



Trichinella spp. Cycle (2)



http://www.stanford.edu/class/humbio103/ParaSites2005/Trichinella/trich.html

Trichinella spp. Cycle (3)

- Final + intermediate host: adult worms and larvae in muscles
- Transmission: cannibalism/carnivorism

Symptoms

Gastrointestinal (after 1-2 weeks): nausea, diarrhea, vomiting , abdominal pain

Further symptoms (second phase; after 2 weeks, up to 8 weeks):

headaches, fevers, fatigue, chills, cough, eye swelling, aching joints, muscle pains, itchy skin, diarrhea, constipation (from very mild to severe).

Heavy infection: trouble coordinating movements, heart and breathing problems. In severe cases death.

http://www.stanford.edu/class/humbio103/ParaSites2005/Trichinella/trich.html

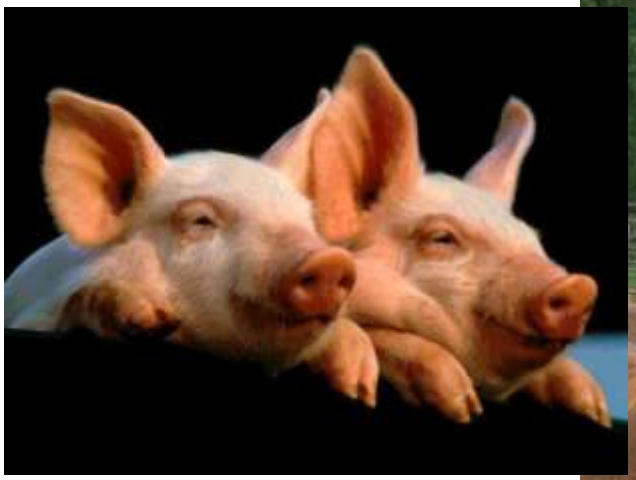
Control and prevention (1)

- No contact with wild reservoir: industrial housing

- Rodent control

Control and prevention (2)

- Freezing and cooking meat
- EU-legislation 2075/2005



Importance of ‘Trichinella’

- Worldwide:± 10 000 infections with trichinellosis/year
- Europe and Belgium
- Number of tests done: economy!
- Last Belgian human case dates back to 1979

Belgian Yearly Slaughter figures

- **Domestic Pigs** 11.5 million (mandatory testing since 1979)

  of which 11.3 million fattening pigs raised under controlled housing conditions
- **Horses**: 10 000 carcasses per year (mandatory testing since 1993)
- **Wild boars:** 11 000 (mandatory testing since 1980)

Tests available

Direct: - Digestion

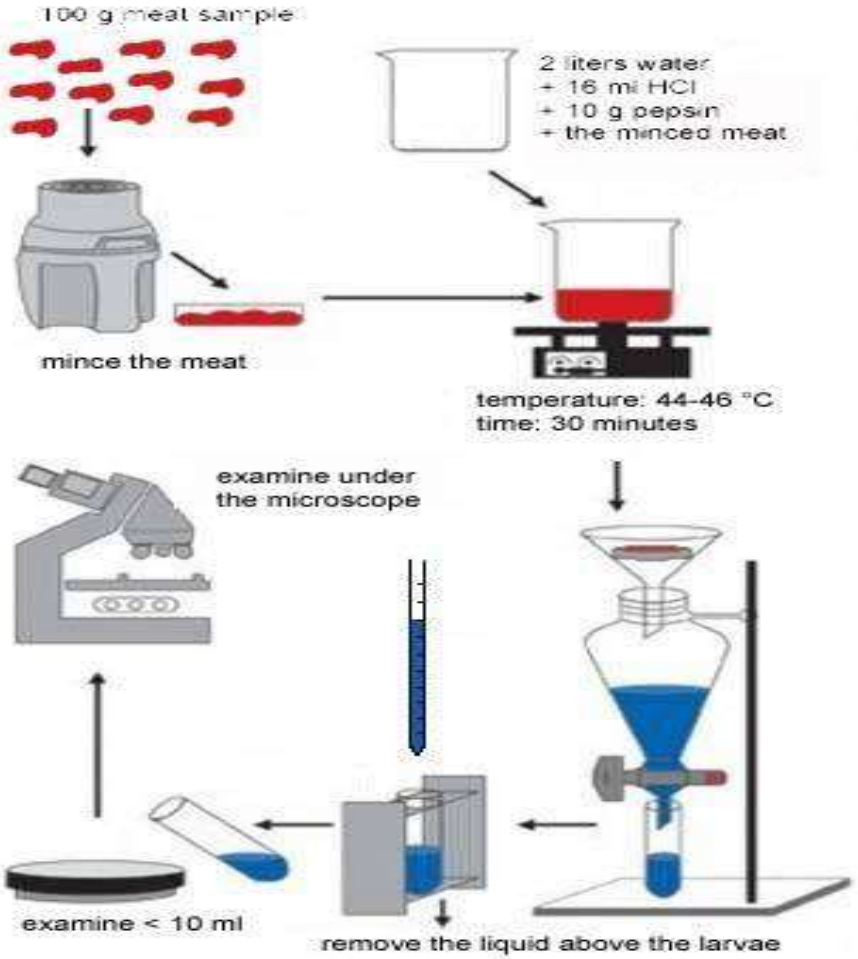
(- Trichinoscopy with compressorium)

(consumer protection)

Indirect: Elisa and WB

PCR: on isolated larvae: confirmation+ species identification

EU Regulation 2075/2005



Region with Negligible risk

- Belgium is officially recognised by the European Union (2010), implies that testing of finisher pigs bred and fattened under controlled circumstances are exempt from testing for intra European trade, but extra wildlife monitoring is imposed.
- Testing of all breeder pigs, outdoor pigs, horses and wild boar remains compulsory

Monitoring (1)

- Animal species

Wild boar

- Wild boar tested as for safety of the consumer

- one positive digestion in 2004 (*Trichinella britovi*) (Schynts *et al*., 2006)
- one positive digestion in 2007 (larvae not molecularly identified)
- Other surveys over the last years:

Wild boar

Year of sampling	Prevalence	Size of the sample	Method	Source
1979 to 1982	7.7%	52	Digestion	Famerée *et al.* , 1982
1991 to 1992	3.2%	219	ELISA	Protz *et al.*, 1993
1992	0%	58	Digestion	Temmerman, 1994
1993	0%	88	Digestion and ELISA	Geerts *et al.*, 1995
1993 to 1994	0% 4.9%	224	Trichinoscopy or digestion ELISA	Losson *et al.*, 1995
2006	2.9%	836	ELISA	FASFC
2007	4.5%	182	ELISA	FASFC

Fox

Year of sampling	Prevalence	Size of the sample	Method	Source
1979 to 1981	3.2%	63	Digestion	Famerée *et al.*, 1982
1991 to 1994	0%	62	Trichinoscopy	Geerts *et al.*, 1995
1996 to 2000	0%	179	Trichinoscopy	Vercammen *et al.*, 2002
	0%	639	Digestion	
2003 to 2004	1.1%	207	Digestion	Dorny *et al.*, 2005 Coulibaly, 2005
2005 to 2009	0%	356	Digestion	FASFC

Rat

Year of sampling	Prevalence	Size of the sample	Method	Source
1977 to 1981	6.4%	108 brown rat of sewer rat, (*Rattus norvegicus)*	Digestion	Famerée *et al.*,1982
	11.11%	18 black rat (*Rattus rattus*)		
	0%	21 ground vole (*Arvicola terrestris*)		
	2.23%	403 musk rats		
1992 to 1993	1.2%	164 musk rats	Digestion	Temmerman, 1994
2000 to 2004	0%	166 brown rats	Digestion	FASFC

Other wildlife species: Badgers, martens, falcons, polecats, wild cats

Sampling in 2003-2007	Badger	Marten	Falcon	Polecat	Wild cat	Method	Prevalence	Source
Sample size	106	88	6	52	1	Digestion	0%	FASFC

Monitoring - yearly

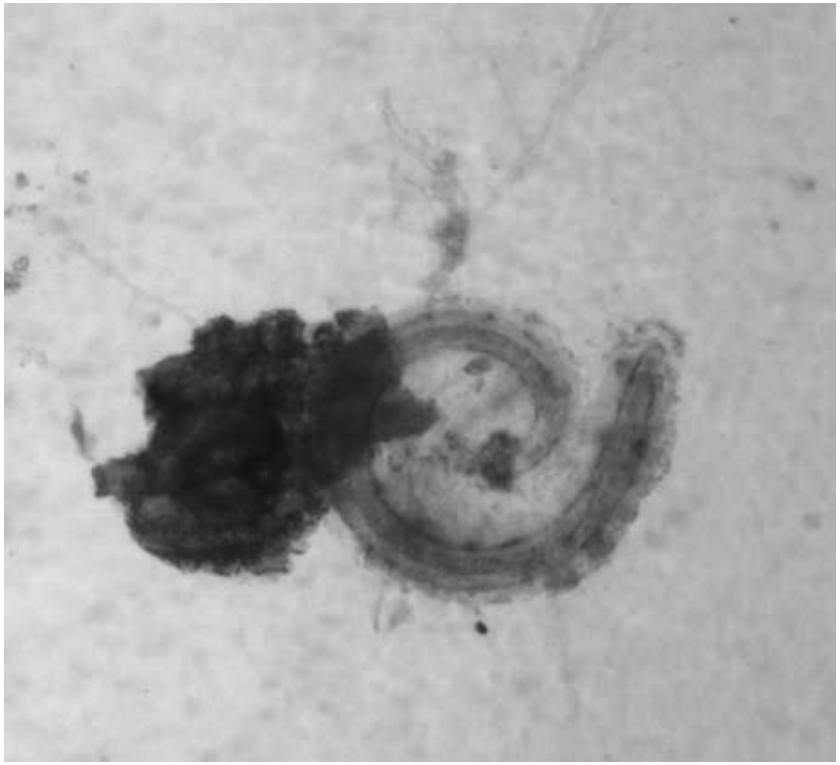
- **Winter 2010-2011**: 318 foxes examined with a modified digestion test, all negative for *Trichinella spp*. larvae

- **Winter 2011-2012**: 524 animals (507 foxes, 11 badgers, 1 cat, 1 wild cat, 1 raccoon and 3 stone marten): one pool positive (one larva)

Pool of 20 animals: 18 foxes, 2 badgers

No molecular identification was possible

DNA destroyed?

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- Thank you for your attention!