

loismato

crv

паразитические черви

Parazitik kurtcuklar

पराश्रयी कीड़ा

Ba nyama

Swiss TPH Winter Symposium 2017

Helminth Infection – from Transmission to Control

7-8 December 2017, Parterre Rialto, Basel, Switzerland

ແມ່ຫ້ອງ

Minyoo

ليفطي دود

回虫

ελμινθ

Црв

vermis

Helminths

Vers parasitaires

lombriz

ដង្កូវព្រូន

Worms

Worms, History and Swiss TPH

Hanspeter Marti, Swiss TPH

போலி புழு

Ludzkie robaki

WÜRMER

Helminth species reported from human hosts

Acanthocephala	7 species
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Nematoda	138 species
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Nematomorpha	24 species
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Platyhelminthes	173 species
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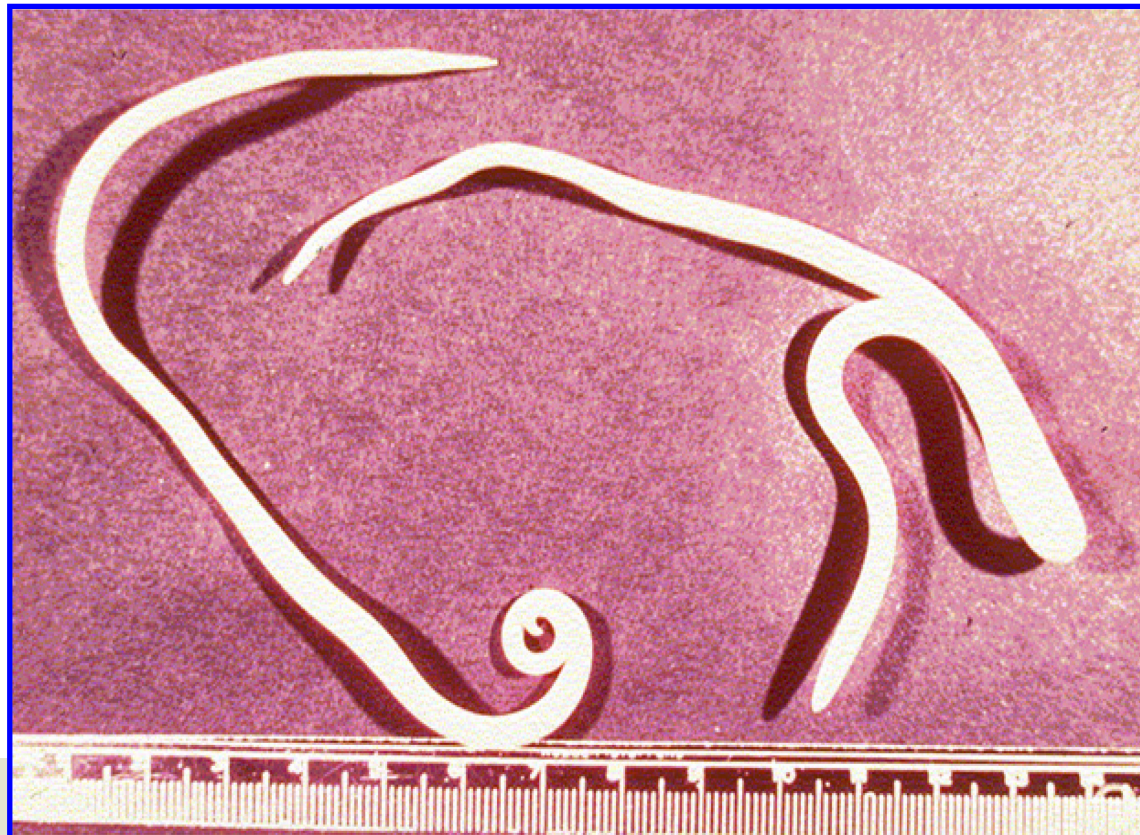
TOTAL	342 species
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Source: *Journal of Parasitology* **85**:379-403 (1999)

Crompton, D.W.T. : How much human helminthiasis is there in the world?

The large parasitic nematodes were the first ones to be recognized.

Where did they come from?





The belief in spontaneous generation out of carrion or mud can be traced back to antiquity (Babylonians, Hippokrates, Galen, Paracelsus), but....

was opposed to the Genesis as described in the bible



„Es lässt sich mit einem paradiesisch glücklichen Leben schwerlich reimen, dass Adam und Eva dreyerlei Bandwürmer sowie Spul- und Nadelwürmer zugleich in sich gehabt haben müssen, womit ihre Nachkommen beschweret sind.“ [12]

Peter Simon Pallas 1741-1811

It is difficult to imagine a paradisiacal happy life, knowing that Adam and Eve must have harboured three species of tapeworms, roundworms and «needleworms» and passed them on to their offspring

The sperm cells were considered to be parasitic worms until 1819!

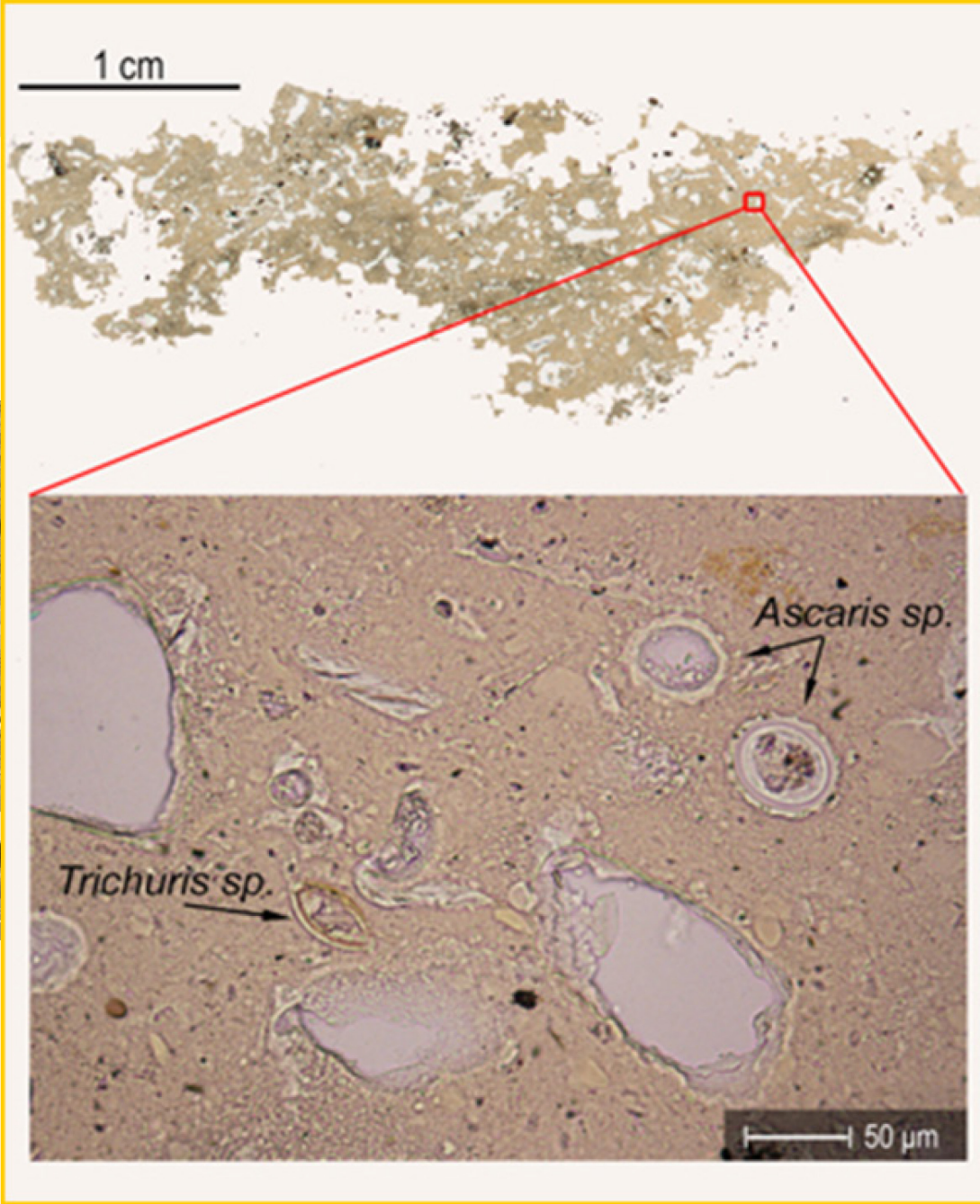
The human ovum was discovered only in 1827

Historic Perspective

Worms have been faithful companions of humans since eons



Parasite eggs in micromorphological thin sections from the Basel-Gasfabrik Late Iron Age celtic settlement, ~ 150 B.C.





Detection of Life Cycles

- Cysticerci, known from cows, dogs and humans were considered animals in their own rights, or as deformed cestodes gone astray.
- In 1830 **Steenstrup**, a Danish zoologist, realised that parasites have different stages and generations when linking bladder worms (cysticerci) to tapeworms
- He was blamed to be a heretic, as his claim was opposed to the religious beliefs of the time

Detection of Life Cycles: Friedrich Küchenmeister

First to detect a life cycle in 1851

- Bladder worms in rabbits or mice lead to tapeworms in foxes and cats, respectively
- Recognised host specificity, as cysticerci from pigs were not infectious for dogs

Proved his theory by feeding convicted murderers infective soup and blood sausage and recovering the flukes after the execution.

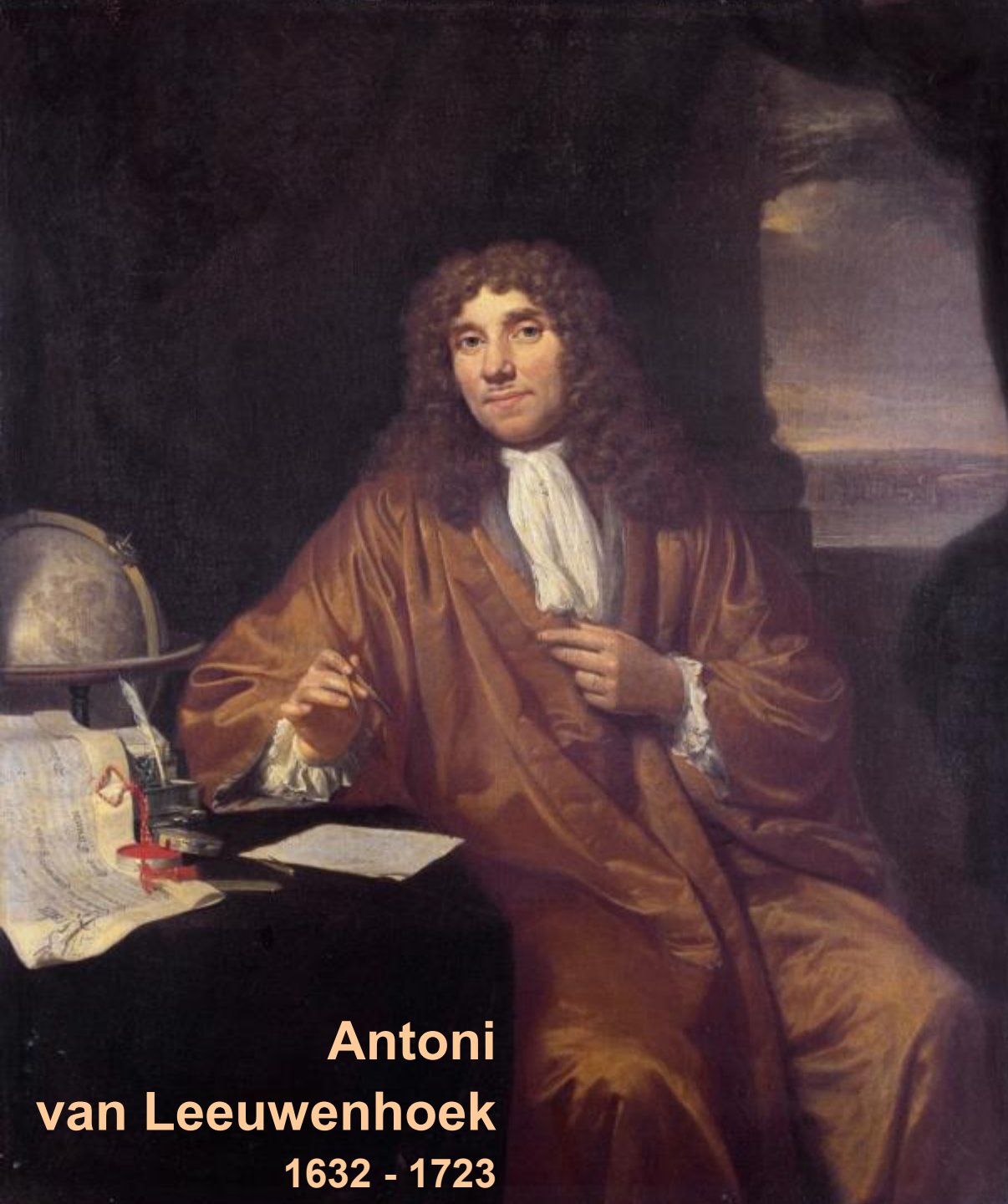


Detection of Life Cycles

sogleich zur Hand war, nahm Blutwurst und schälte einige Fettwürfel der Wurst aus, an deren Stelle er die Finnen einlegte, und Alles gut von den Seiten her verstrichen werden konnte. So erhielt der Delinquent 72 Stunden vor seinem Tode 12 Stück *Cysticerc. cellulos.*, 60 Stunden vor dem Tode in einer Reissuppe 18, 36 Stunden vor dem Tode in Nudelsuppe 15, 24 Stunden vor dem Tode in Wurst 12 und 12 Stunden vor dem Tode in Suppe noch einmal 18 Stück *Cysticerci cellulosae*, also in Summe 75 Stück von letzteren, die beiläufig 72, 84, 108, 120 und 132 Stunden nach dem Schlachten des Thieres an freier Luft sich befunden hatten.

Die Hinrichtung erfolgte demnach etwa 120 Stunden nach der Beibringung von *Cytsicercus tenuicollis* und 72 Stunden nach der ersten, 60 Stunden nach der zweiten Beibringung von *Cysticerci cellulosae*. Dem Delinquenten selbst hatten Wurst und Suppen so gut gemundet, dass er noch am Abende vor seinem Tode dem betreffenden Arzte seinen warmen Dank dafür aussprechen zu müssen glaubte.

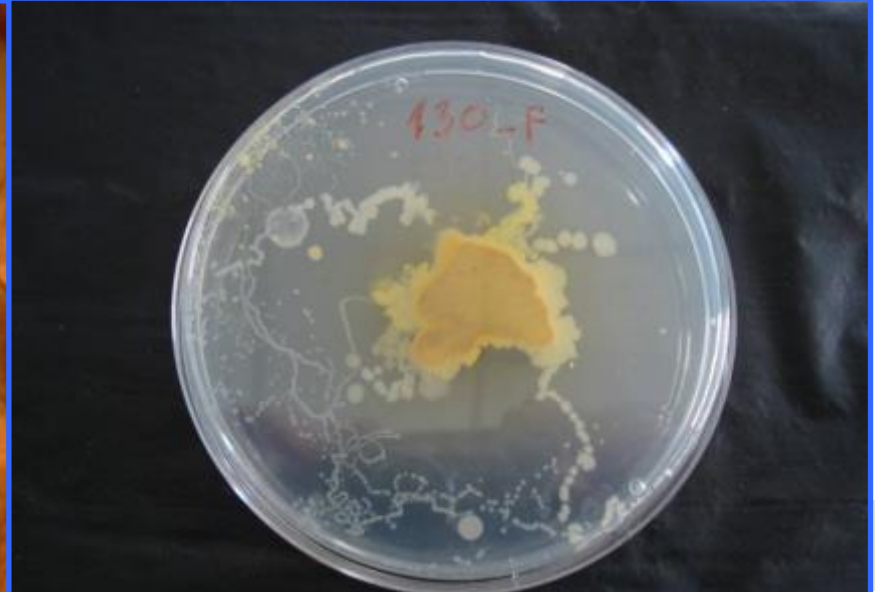
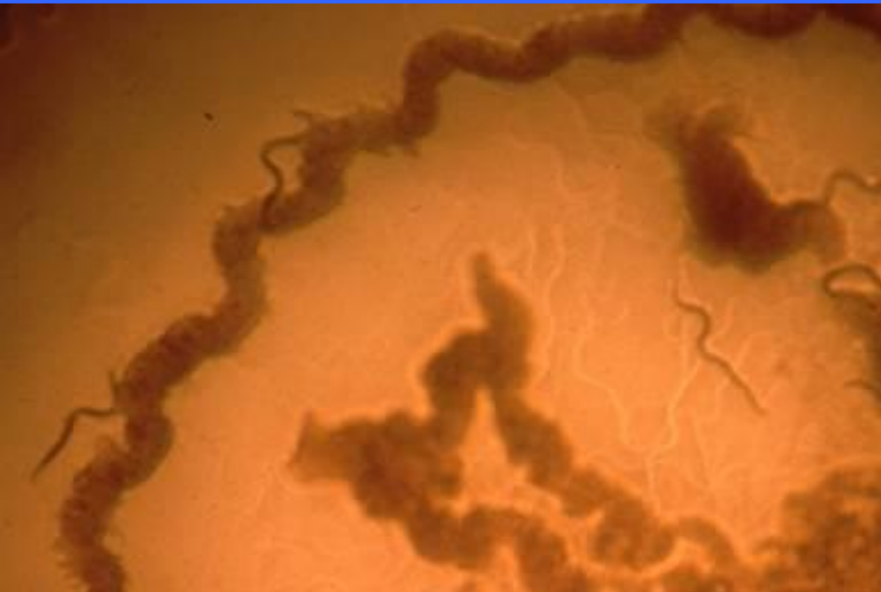


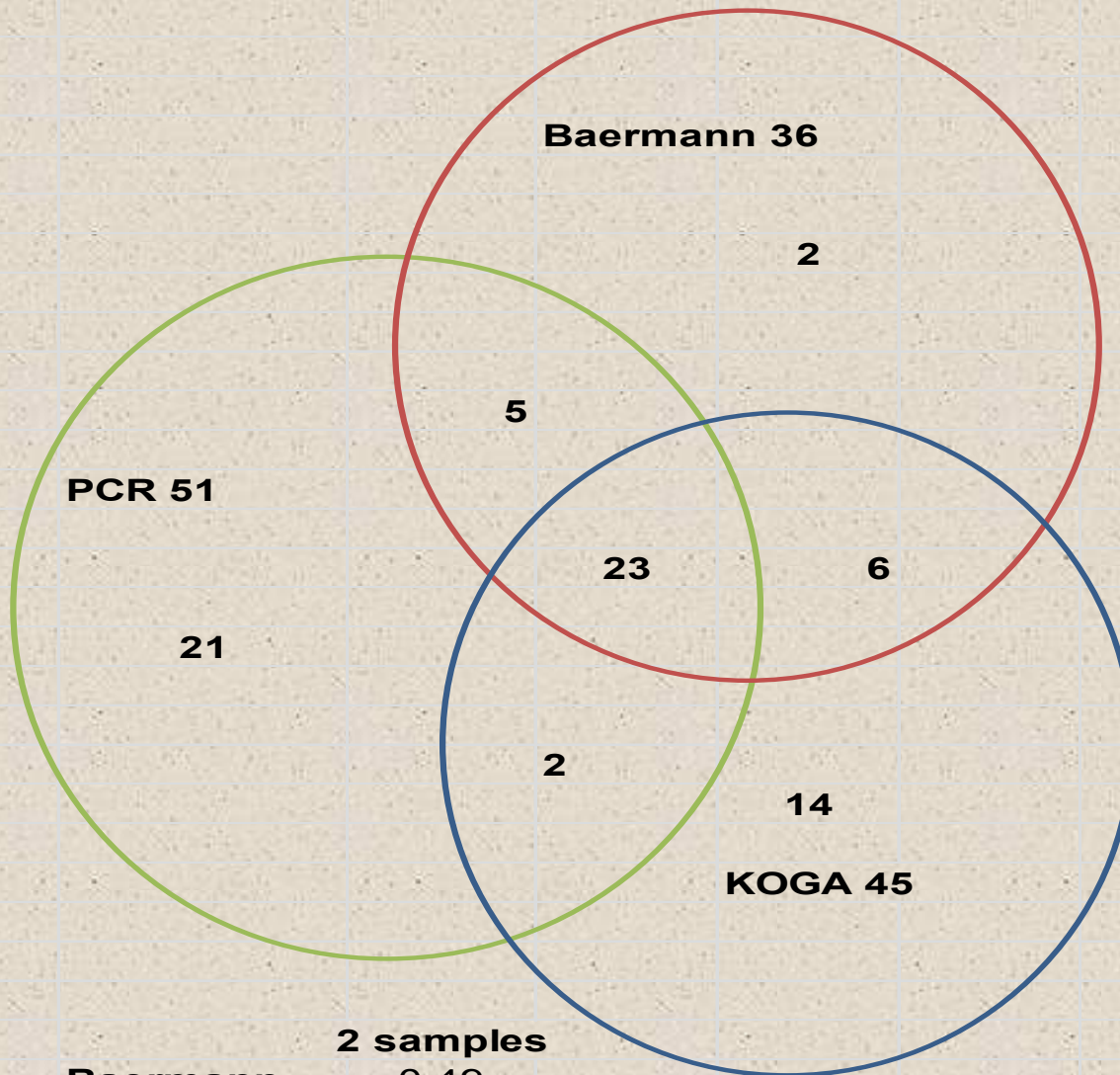


**Antoni
van Leeuwenhoek**
1632 - 1723



Detection of *Strongyloides stercoralis*





**218 samples
from Cambodia**

73 positive

2 samples

Baermann	0.49
Koga	0.62
PCR	0.70

BR+KO	0.71
BR+PCR	0.81
KO+PCR	0.97

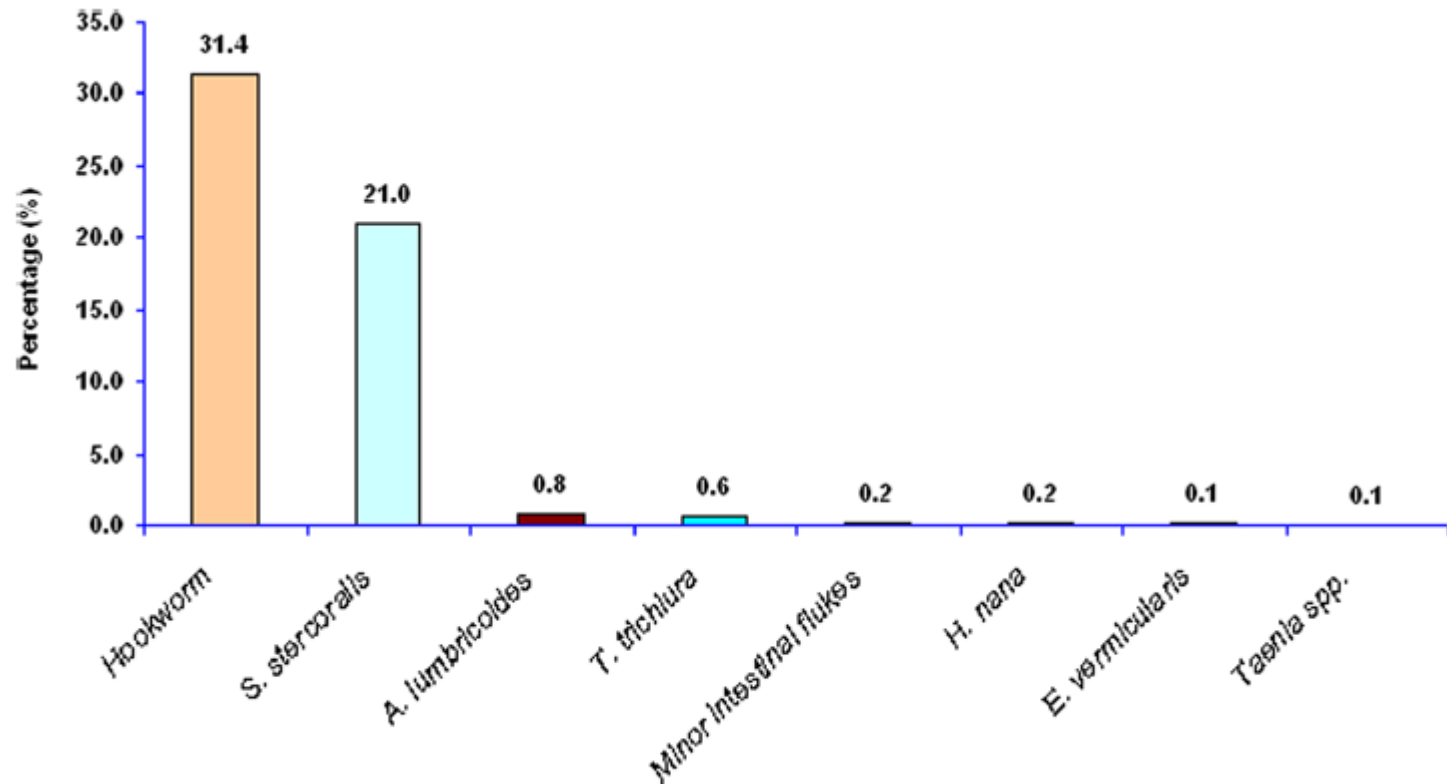
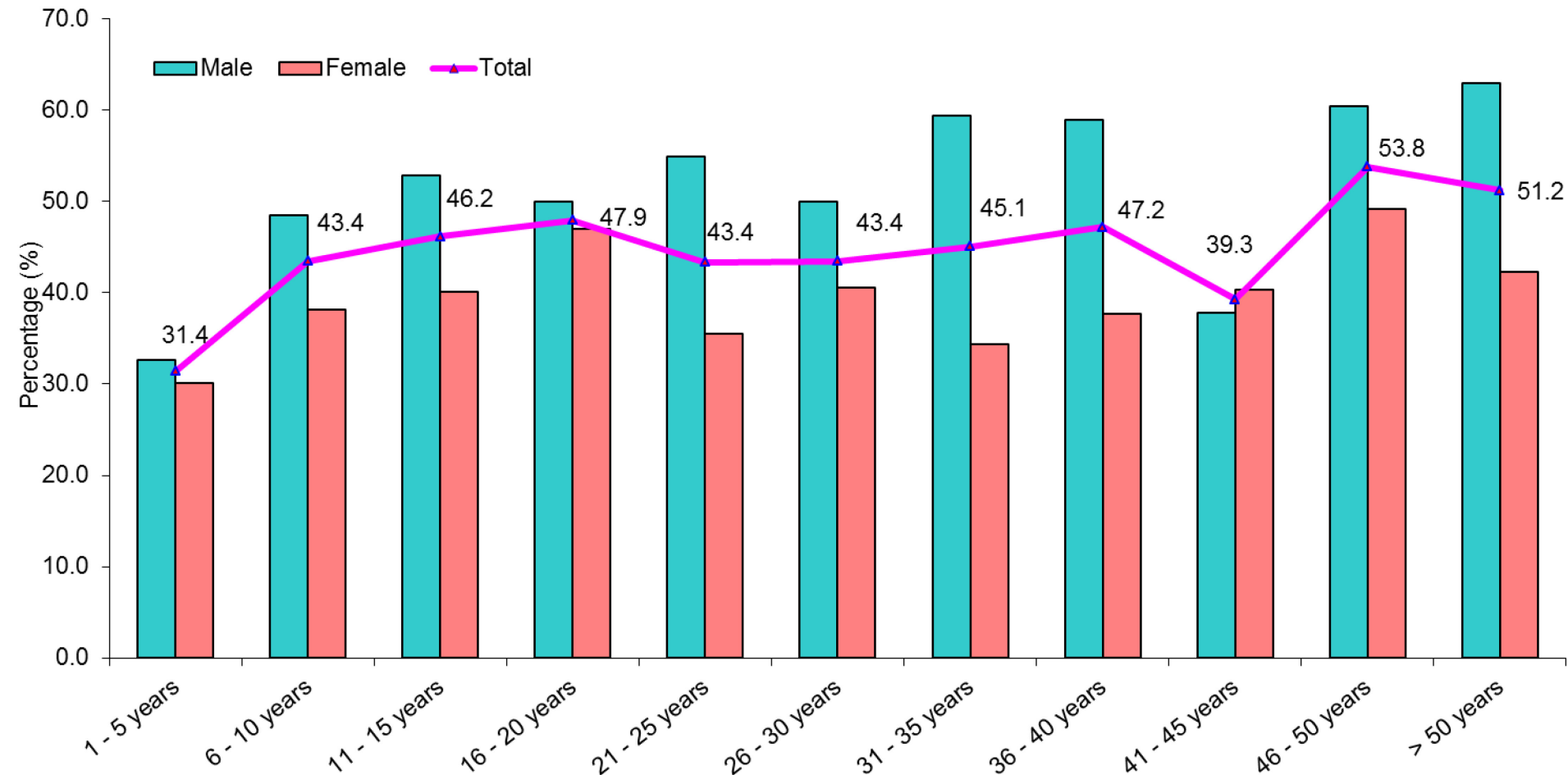


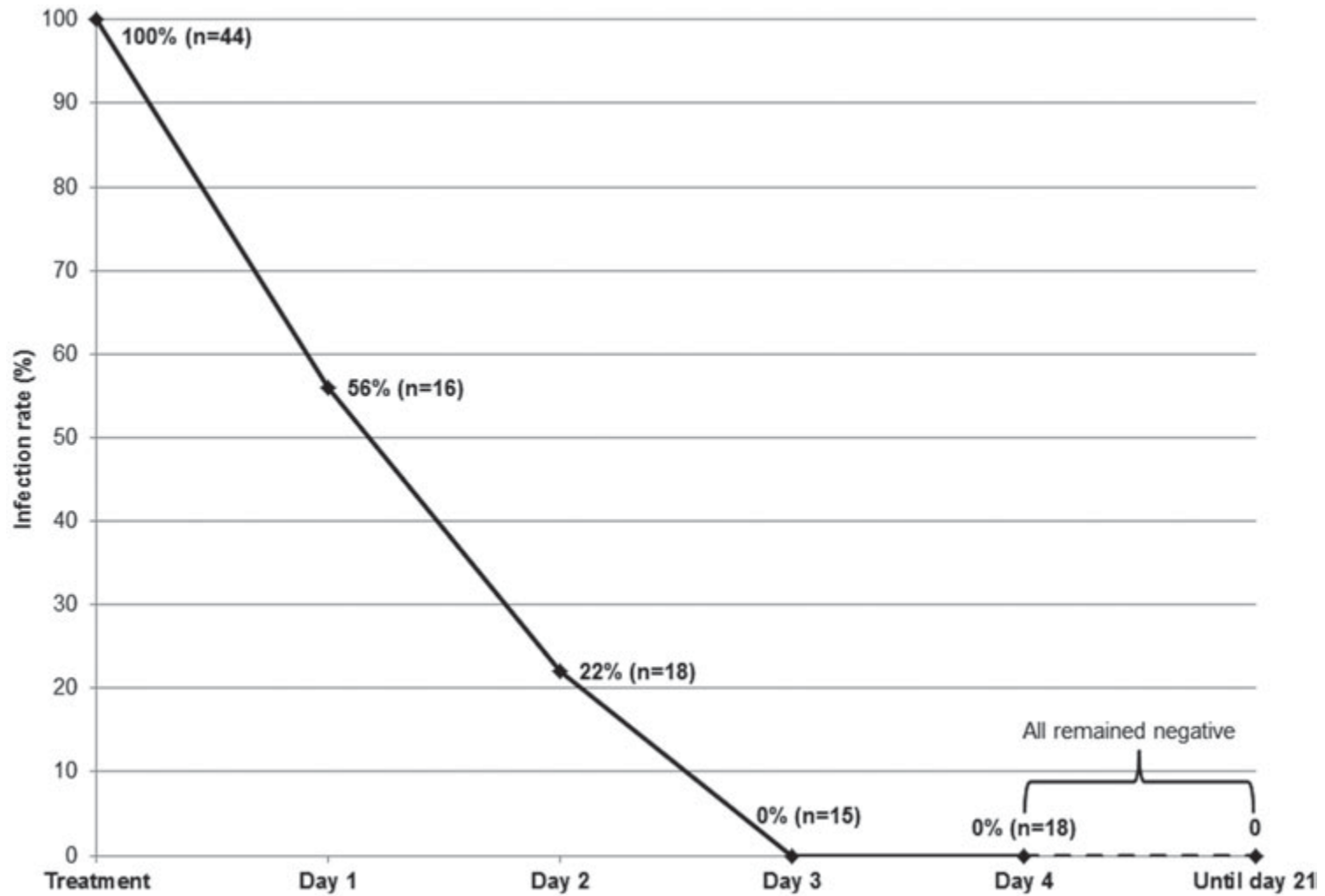
Figure 2 Frequency of intestinal parasitic infections among 2,861 residents in Takeo province, Cambodia.

***Strongyloides stercoralis* Prevalence by age** **Preah Vihear 2010 (n=2396)**









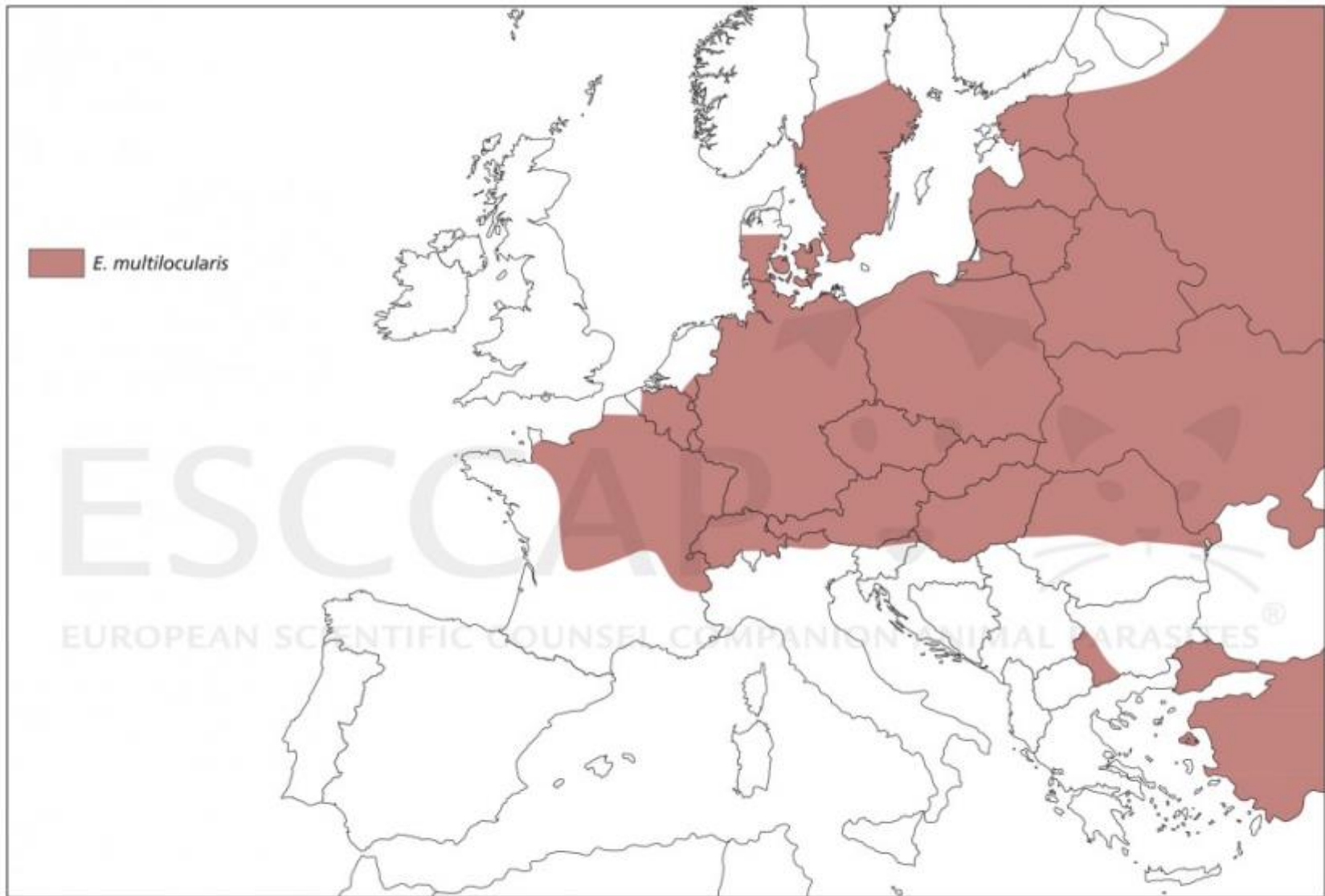
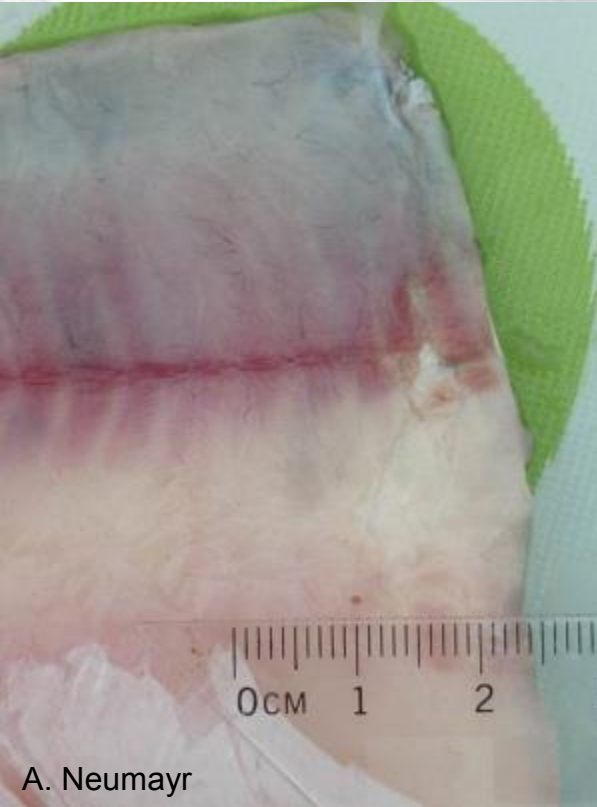


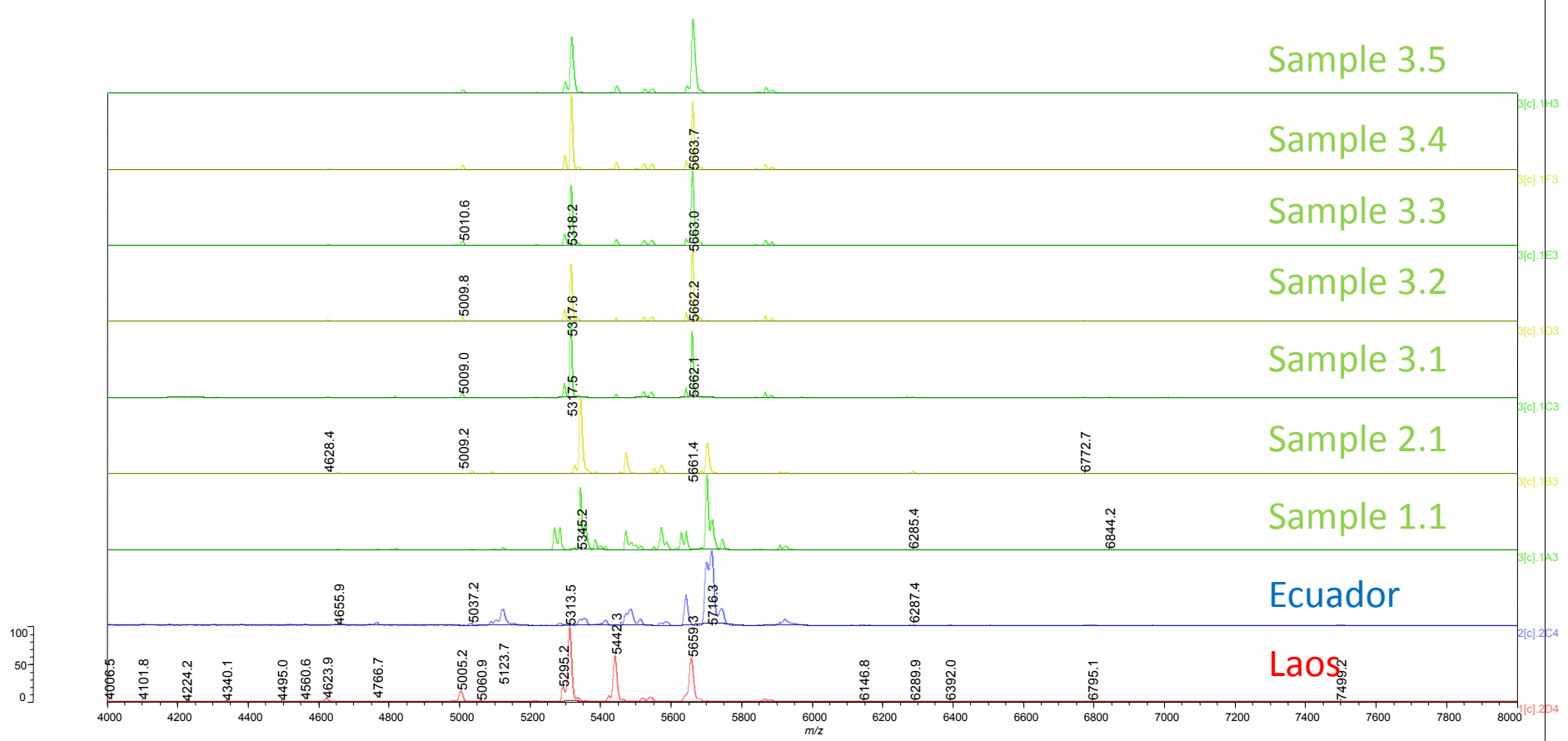
Fig. 1B Approximate distribution of *Echinococcus multilocularis* in the fox in Europe (© ESCCAP)

Diagnosis of Gnathostomiasis by detection of specific antibodies



A. Neumayr

Gaya delip SA0001, Laos delip SA0001, STI Gnathos14_0004
Shimadzu Biotech Axima Confidence 2.8.1.20080410
%Int. 192 mV 17 mV 62 mV 5 mV 39 mV 8 mV 82 mV 2 mV 80 mV





Therapy of Ascaris Infection

Nils Rosen von Rosenstein, Stockholm 1765

Eating raw carrots will eliminate the worms

Tie a string around raw pork meat and put it in the rectum. Remove it after a while, and a number of worms will follow

Blow smoke into the rectum

The Worm Trap

Swiss TPH



TAPE-WORM TRAP, baited and ready for use, 1855

AUGUST 1855

PARASITE TRAP—"The accompanying engravings are views of a patented trap and process for removing tape worms from the human stomach and intestines. The figure shows the hand of the operator fishing for the tape worm. A and B represent two sizes of traps. The patient is put upon a strict course of fasting for several days. The trap, baited with a nutritious food—such as a piece of cheese—is then swallowed. The tape worm, by a little wriggling, displaces a spring under the fine prongs of the bait fork, and is thus transfixed and caught. The worm is abstracted, and great care must be exercised in drawing it up, so as not to break it."



The Treatment of Worm Infections with Filmaronoil

Archiv für Schiffs- und Tropenhygiene Penschke, 1915

Filmaronoil = Aspidinolfilizin $C_{47}H_{54}O_{16}$,

present in *Dryopteris filix-mas* (male wood fern; Wurmfarne)

The results obtained from the treatment of two series of cases with Filmaronöl are recorded in the above note. In the first series, treated at Tanga [German East Africa], there were forty cases..... The examination of the faeces, showed that 91.9 % of the cases still continued to pass worm ova. In the second series, treated at Lindi [German East Africa], there were thirty-one cases, and to each was given 10 gm. of the drug. The subsequent examination of the faeces showed that 60 % of the cases retained their infections.

One case in this latter series died from exhaustion four days after the administration of the drug.

Kantonsspital Zürich

Journal Nr.

Medizinische Poliklinik

193 4.

Name:

[REDACTED]

Beruf: Köchin.

Alter:

31.J.(Dez.1903)

Heimat: Lamon. Italien.

Wohnort:

Zürich, Heinrichstr.108.

Aufgenommen: 23.April 1934.

Entlassen: 24. April 1934.

Geheilt

Hauptkrankheit: Taenia saginata (zur Bandwurmkur).

Gebessert

Patientin wird zur Bandwurmkur eingewiesen.

B e f u n d e .

Afebril.

Körpergewicht: 50,2 kg.

Hb.corr.78%.

V e r l a u f .

Am Vorabend Rizinusöl, Zwiebelsuppe und Härringsalat.
10 gr. Filmaronöl durch die Duodenalsonde und eine Stunde
später Rizinusöl.

Es geht eine 4 1/2m.lange Taenia saginata inklusive Kopf
ab.

24.April abends Entlassung.

Courtesy Dr. B. Beck



A comparative trial of a single-dose **IVERMECTIN** versus three days of **ALBENDAZOLE** for treatment of *STRONGYLOIDES STERCORALIS* and other soil-transmitted helminth infection in children



Cure rates

	Ivermectin	Albendazole
	(n=152)	(n=149)
<i>S. stercoralis</i>	82.9 %	45.0 %
<i>A. lumbricoides</i>	100 %	99.0 %
<i>T. trichiura</i>	11.3 %	42.6 %
<i>N. americanus</i>	0 %	88.3 %

Prevalence of STH after 13 years of MDA

1994

<i>S. stercoralis</i>	34.8%
<i>A. lumbricoides</i>	57.5%
<i>T. trichiura</i>	90.6%
Hookworms	93.9%
Free of infection	1.1%



The search continues

Albendazole and Mebendazole Administered Alone or in Combination with Ivermectin against *Trichuris trichiura*: A Randomized Controlled Trial

Stefanie Knopp,^{1,3} Khalfan A. Mohammed,⁴ Benjamin Speich,^{1,3} Jan Hattendorf,^{1,3} I. Simba Khamis,⁴ Alipo N. Khamis,⁴ J. Russell Stothard,⁵ David Rollinson,⁵ Hanspeter Marti,^{2,3} and Jürg Utzinger^{1,3}

Tribendimidine, Triclabendazole,
Artesunate, Artemether, OZ78,
Nitaxozanide, Oxantel pamoate,
MT04,









Elimination of Schistosomiasis

SCORE: Zanzibar 2012-2017

MDA

Snail control

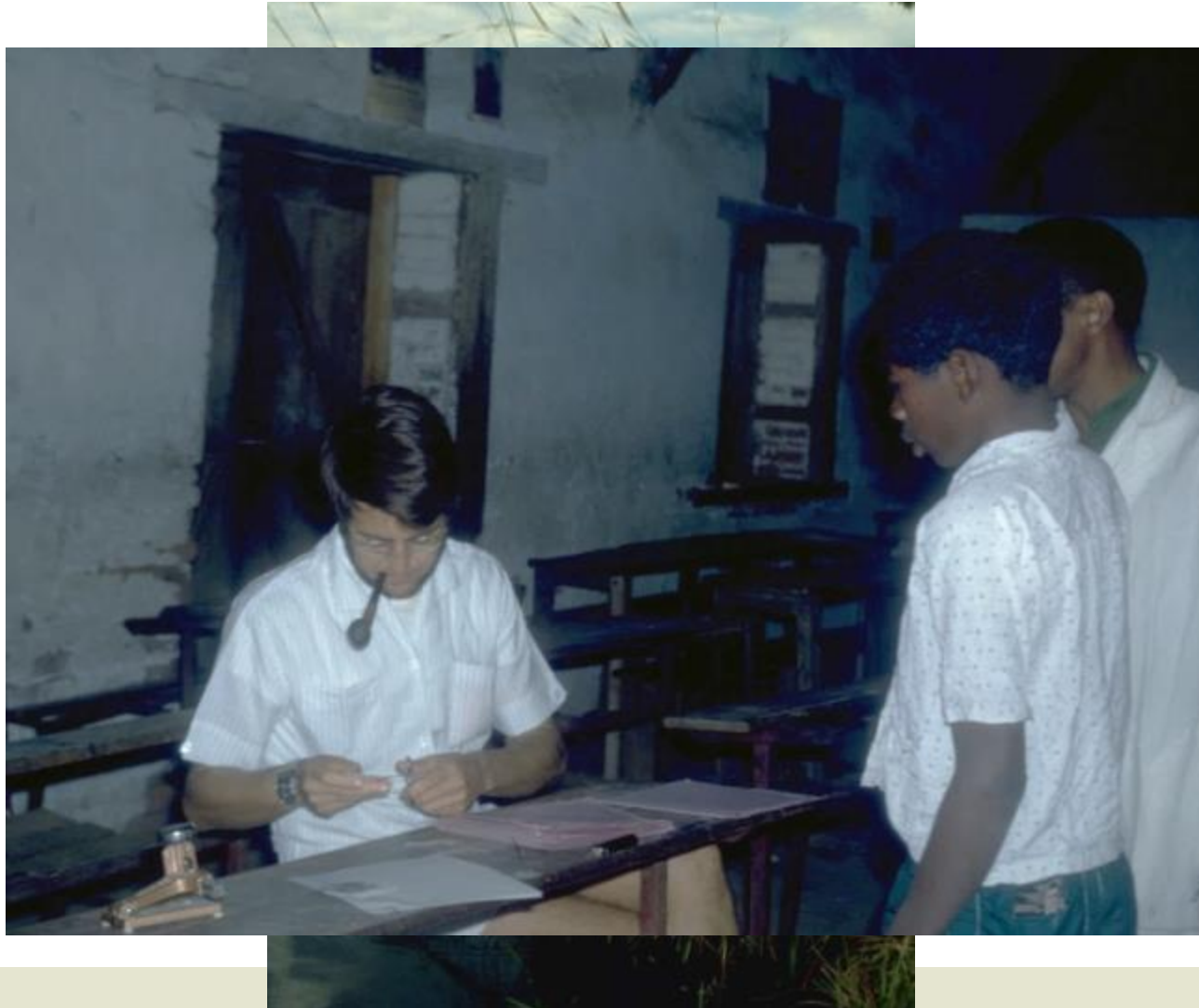
Behaviour change
interventions

The Mangoky Project, Madagascar 1966 - 1971

Elimination of Schistosomiasis



Elimination of Schistosomiasis



Elimination of Schistosomiasis











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EDITORS' BLOG

Last Updated: Wednesday, 3 December, 2003, 13:02 GMT

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Eat worms - feel better

Who would deliberately drink a dose of gut worms? The answer is Anna Glanz, an ordinary mother-of-two from Iowa.

She's testing the remarkable theory that not all parasites are necessarily bad for us. Some of them may actually help us fight diseases.



Anna drinks worm eggs as a treatment

A BBC documentary looks at how some parasites are so well-adapted to using humans as hosts, that when you take them away, there are unexpected results.

Ulcerative colitis is a disease of the intestine caused by the immune system over-reacting - in this disease the white blood cells attack the gut as though it's a foreign invader, making it bleed.

Mother-of-two, Anna Glanz, from Iowa, suffers from it and gets terrible cramps and sudden, intense attacks of diarrhoea.

The disease is incurable, but she is now taking part in an experimental trial run by Dr Joel Weinstock, a specialist in bowel disorders.

He's giving her worms to try to treat the disease.

Drink up

Every three weeks Anna goes to Dr Weinstock's clinic and takes a drink full of worm eggs.

But Anna reckons it is worth it: "I don't really think of them as being alive I guess, it's almost just like taking a pill or something.

"I try not to think of them as disgusting or anything like that. And I couldn't live the way I was living. I was desperate to try anything. I just wanted to get well".



A gutful of parasites might help ease symptoms

Thank you for your attention

Swiss TPH

