12th PROFICIENCY TESTING on:

Detection of *Echinococcus* spp. worms in the intestinal mucosa of the definitive host

Workshop of National Reference Laboratories for Parasites
Rome, 6th-7th November 2024

Azzurra Santoro, Federica Santolamazza, Adriano Casulli

European Union Reference Laboratory for Parasites (EURLP);
WHO Collaborating Centre for the Epidemiology, Detection and Control of Cystic and Alveolar Echinococcosis;
ISTITUTO SUPERIORE DI SANITÀ (Rome, Italy)

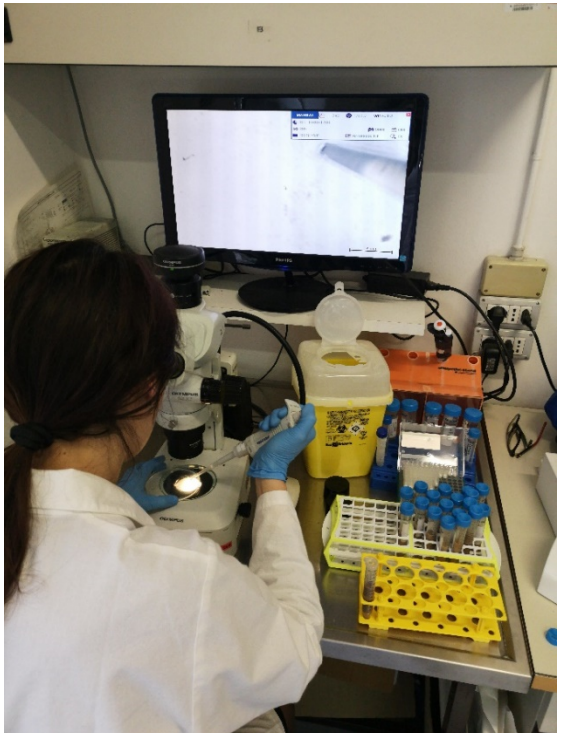
PT on *Echinococcus* spp. in the intestinal mucosa is accredited in a quality system according to ISO 17043 standard

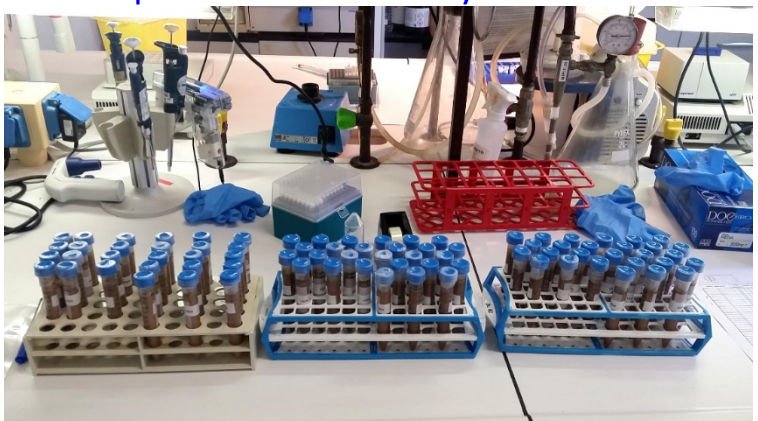
Aim: to test the competence of the appointed NRLs detection of worms of *Echinococcus* sp. in a matrix made by intestinal mucosa

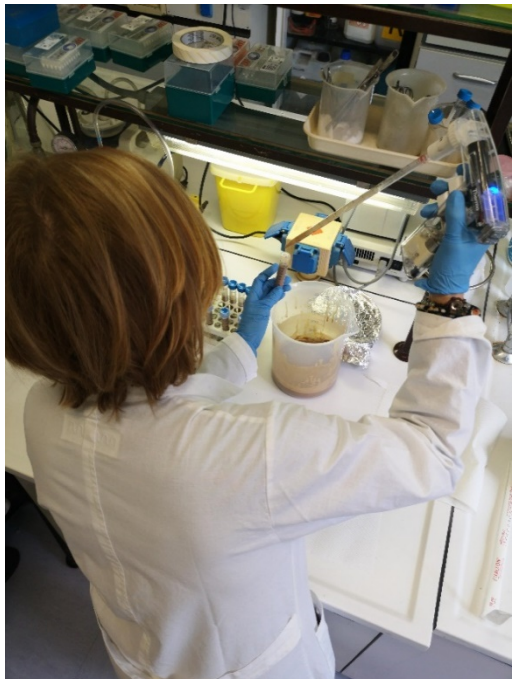
PT panel: consists in three tubes filled with homogenized intestinal mucosa spiked or not with worms of *Echinococcus* sp.

TIMING:

PTs announced: 23rd Jan 2024
Deadline participation form: 28th Feb 2024
PTs dispatched to participants: 11th Mar 2024
Reporting deadline: 18th Mar 2024
Individual PT reports: 28th Mar 2024
Final report online: 28th May 2024



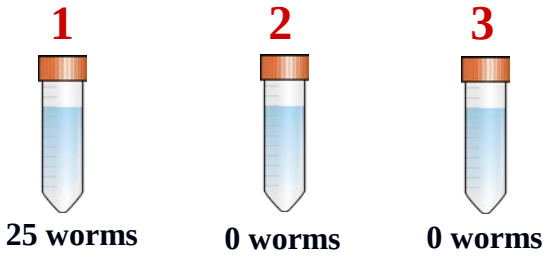


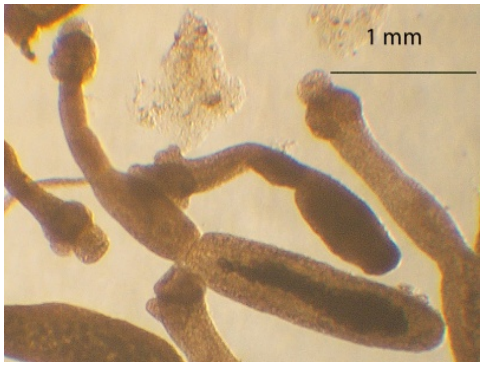


Preparation of samples

- Fox intestines are collected and stored frozen at -80°C for one week.
- Faecal content is analysed by qPCR to exclude *E. multilocularis* infection.
- The mucosa of the small intestine of foxes is collected, cleaned and sent to ISS.
- Mucosa is homogenised (with 70% ethanol; ratio 2:1), aliquoted, and spiked (double check).

PT panel:





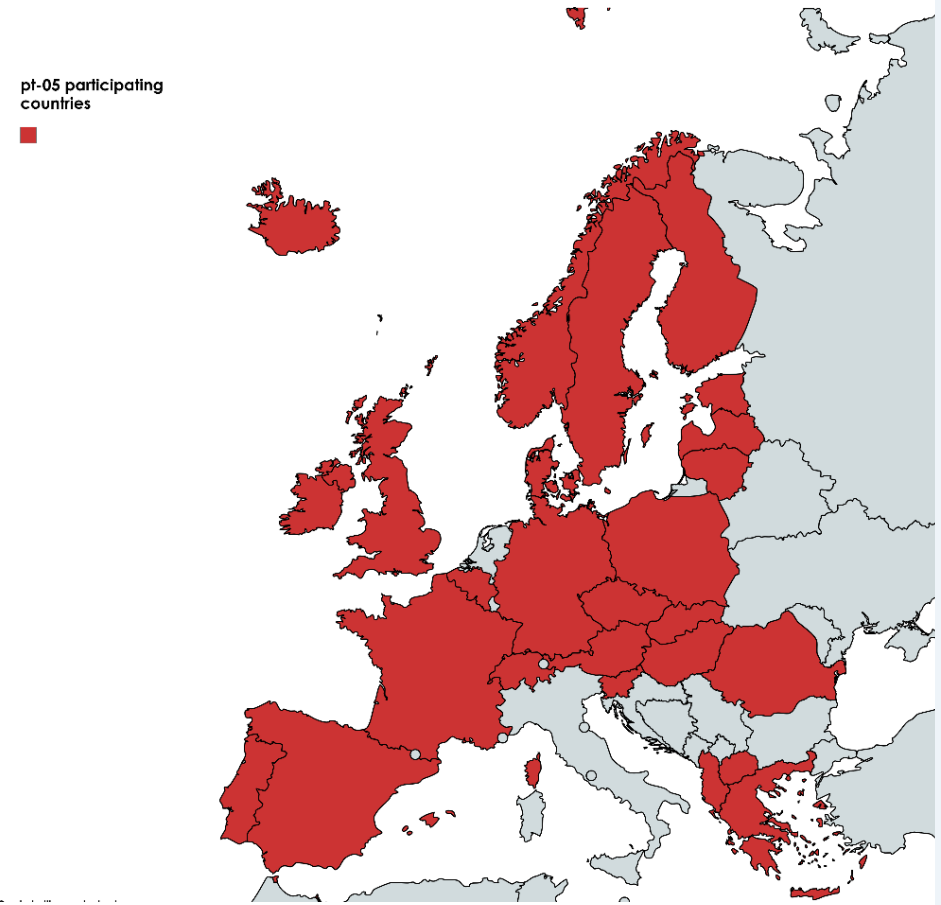
Thanks to PT material providers:

University of Zurich, Switzerland

Piwet, Poland

Ruokavirasto, Finland

Participants (N=28)



Albania, Institute of Public Health

Austria NRLP, Austrian agency for health and food safety

Belgium NRLP, Institute of Tropical Medicine

Cyprus NRLP, Veterinary Services

Czech Republic NRLP, State Veterinary Institute

Denmark NRLP, Statens Serum Institut, laboratory of parasitology, SSI

Estonia NRLP, Animal Health, Veterinary and Food Laboratory

Finland NRLP, Oulu, Finnish Food Authority, Ruokavirasto (ex Evira)

France NRL Echinococcus, ANSES, LRFS Nancy

Germany NRL Echinococcus, Friedrich-Loeffler-Institut fur Epidemiologie

Greece NRL (Department of Parasitology-Parasitic Diseases Entomology & Bee Health, Veterinary Centre of Athens)

Hungary NRLP National Food Chain Safety Office, Laboratory of Parasitology, Fish and Bee Diseases

Iceland NRLP, Institute for Experimental Pathology Keldur

Ireland NRLP, Parasit section, Bact/Paras Division, Backweston Campus, Celbridge Kildare

Latvia NRLP, Institute of food safety, animal health and environment, BIOR

Lithuanian NRLP, National Food and Veterinary Risk Assessment Institute

Norway NRLP, Norwegian Veterinary Institute

Poland NRLP, National Veterinary Research Institute , Department of Parasitology and Invasive Diseases

Portugal NRLP, Instituto nacional de investigacao agraria e veterinaria

Republic of North Macedonia, Faculty of Veterinary Medicine, Skopje

Romania NRLP, Institute for diagnosis and animal health

Slovakia NRLP, Veterinary and Food Institute in Bratislava

Slovenia NRLP, University of Ljubljana, Veterinary Faculty

Spain NRLP, Laboratorio Central de Sanidad Animal

Sweden NRLP, National Veterinary Institute, SVA

UK NRL for Trichinella and Echinococcus, Animal and Plant Health Agency, York

UK (Northern Ireland) AgriFood and Busciences Institute (AFBI), Coneywarren, Omagh

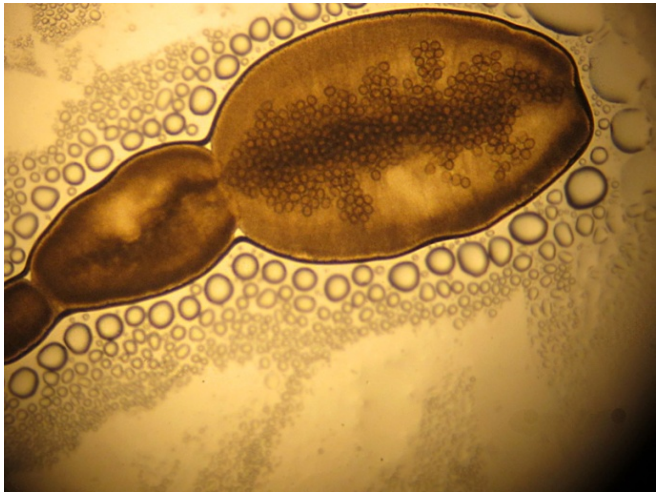
Switzerland, Institute of Parasitology Vetsuisse Faculty University of Bern

Criteria for the **qualitative** evaluation

- For each PT item the evaluation is CORRECT if participant detected one or more *Echinococcus* spp. worms in spiked samples OR no worms in not spiked samples...

  ...OR INCORRECT (false positive or false negative results), irrespective of the number of worms in the samples.

- The **FINAL EVALUATION** is only based on qualitative evaluation and is expressed as "**POSITIVE**" if the results of all samples are correct OR "**NEGATIVE**" if at least one result is incorrect.



SUMMARY of RESULTS (Qualitative evaluation)

Number of participant laboratories submitting results	**28**
Number of participants that passed the PT	28
Number of participants that failed the PT	0

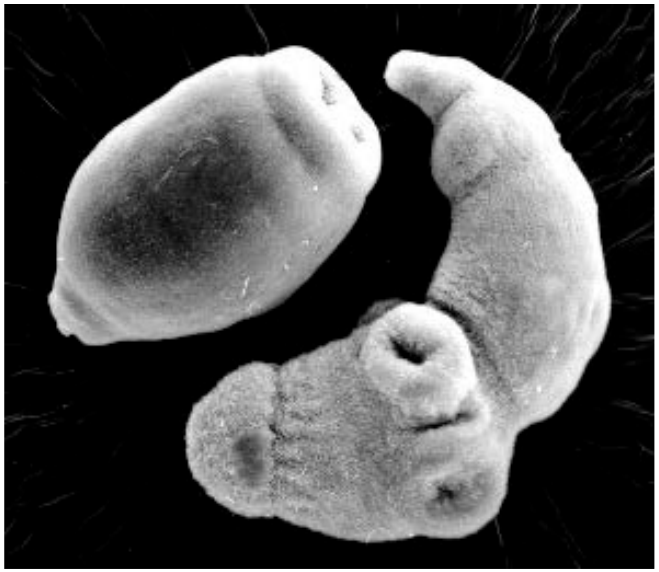
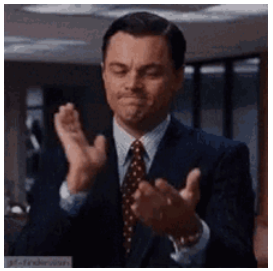


Photo courtesy of Andrew Hemphill



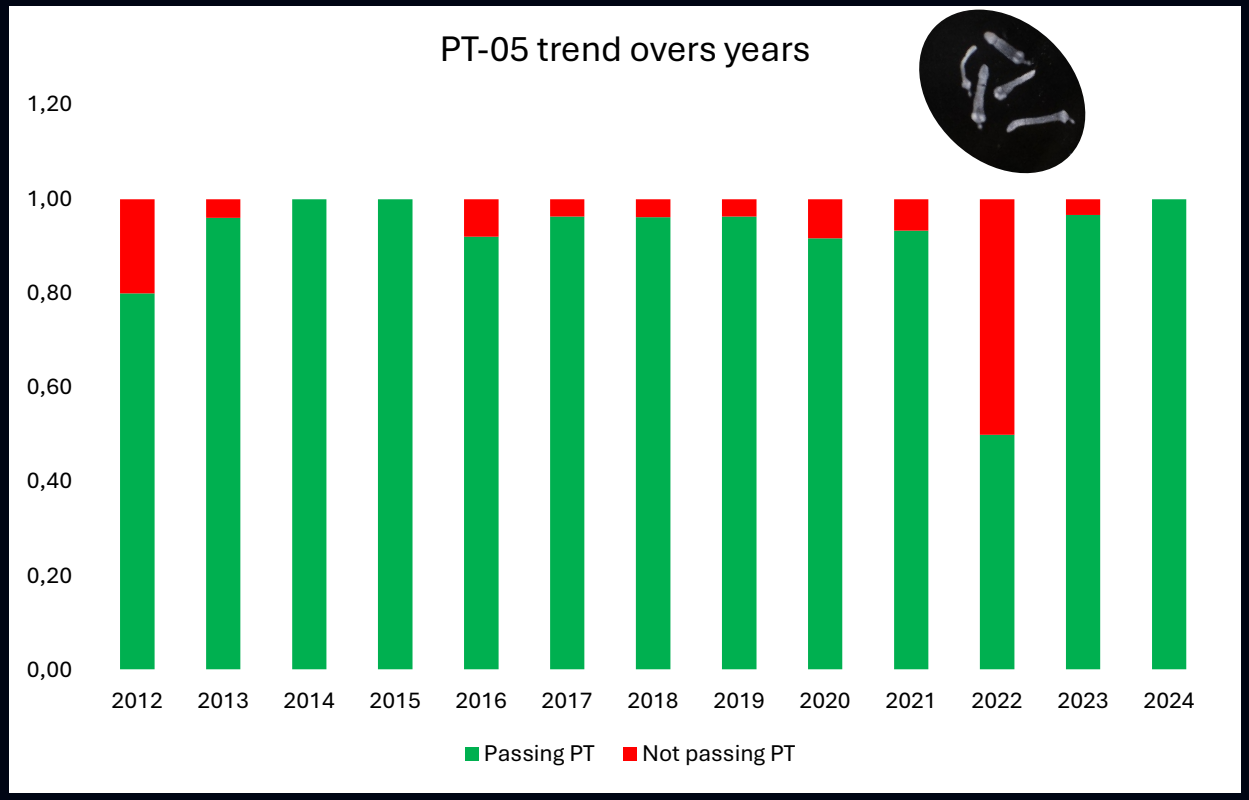
Laboratory code	N° of samples correctly identified	N° of samples NOT correctly identified	Final evaluation
EM1	3	0	POSITIVE
EM3	3	0	POSITIVE
EM7	3	0	POSITIVE
EM8	3	0	POSITIVE
EM12	3	0	POSITIVE
EM13	3	0	POSITIVE
EM16	3	0	POSITIVE
EM18	3	0	POSITIVE
EM21	3	0	POSITIVE
EM23	3	0	POSITIVE
EM26	3	0	POSITIVE
EM27	3	0	POSITIVE
EM30	3	0	POSITIVE
EM32	3	0	POSITIVE
EM33	3	0	POSITIVE
EM34	3	0	POSITIVE
EM36	3	0	POSITIVE
EM38	3	0	POSITIVE
EM39	3	0	POSITIVE
EM40	3	0	POSITIVE
EM41	3	0	POSITIVE
EM42	3	0	POSITIVE
EM43	3	0	POSITIVE
EM44	3	0	POSITIVE
EM48	3	0	POSITIVE
EM50	3	0	POSITIVE
EM53	3	0	POSITIVE
EM54	3	0	POSITIVE

RESULTS (Qualitative evaluation)

QUALITATIVE evaluation:

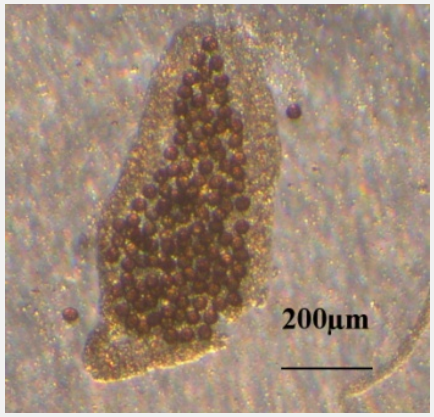
- Sample **1** (negative sample): 28 laboratories (**100%**) out of 28 correctly identified the item.
- Sample **2** (negative sample): 28 laboratories (**100%**) out of 28 correctly identified the item.
- Sample **3** (25 worms): 28 laboratories (**100%**) out of 28 correctly identified the item.

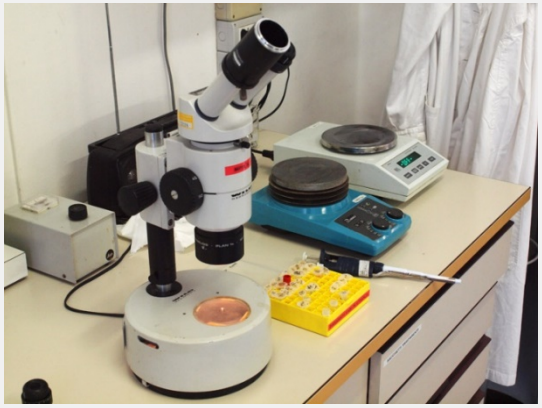
TREND: QUALITATIVE EVALUATION (2012-2024)



Outcomes from 2024….

2024 shows a positive trend, with all the laboratories correctly identifying mucosa preparations infected or not with *Echinococcus spp*. worms, thus showing that the personnel is skilled to accomplish the purpose of this proficiency test.





ACKNOWLEDGMENTS:

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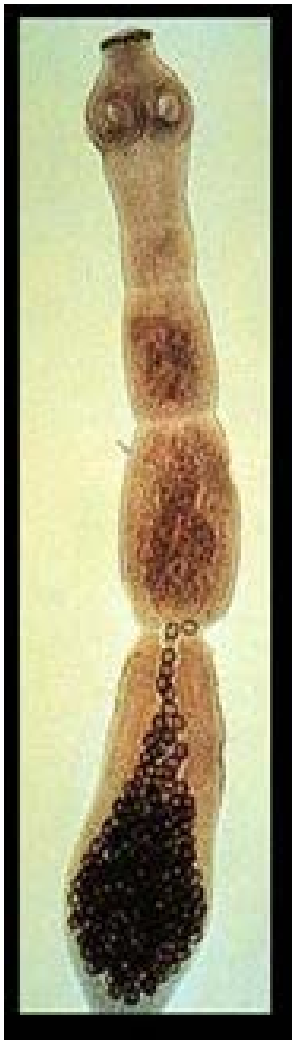
- Irene Tartarelli
- Francesco Celani
- Simona Cherchi



Thanks for the attention!