Epidemiology and **transmission** of cystic echinococcosis between Europe and South America

Funded by the European Union

3e colloque / 3rd symposium
Échinococcose kystique
- Méditerranée -
Cystic Echinococcosis
- Mediterranean
Besançon (France)
18 -19 nobembre 2025

ISTITUTO SUPERIORE DI SANITÀ
DEPARTMENT
INFECTIOUS DISEASES

EURL
PUBLIC HEALTH
FOOD-, WATER- AND VECTOR-BORNE HELMINTHS AND PROTOZOA

Adriano Casulli

WHO Collaborating Centre: Epidemiology, Detection and Control of Cystic and Alveolar Echinococcosis (*One Health*)

European Union Reference Laboratory for Parasites (EURL-P; food safety)

THE LANCET
Global Health
Volume 8, Issue 4, April 2020, Pages e470-e471

Comment

Recognising the substantial burden of neglected pandemics cystic and alveolar echinococcosis

Adriano Casulli *

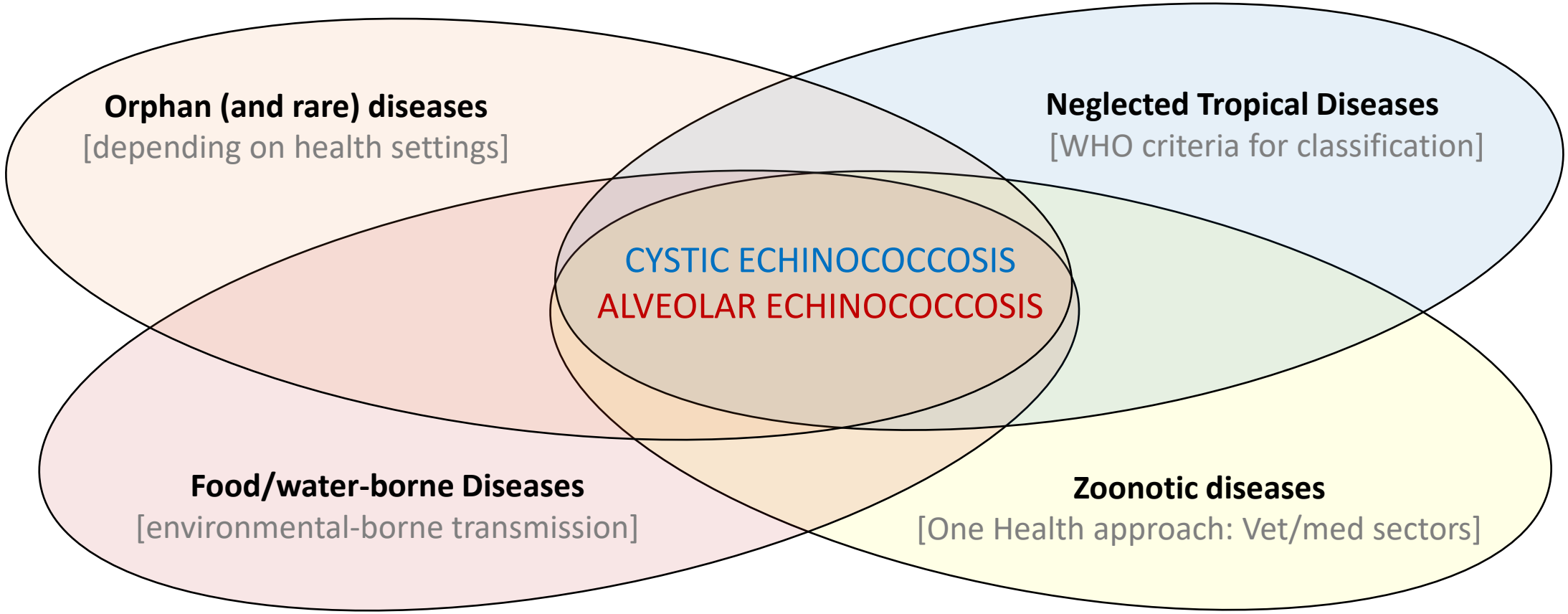
PLOS NEGLECTED TROPICAL DISEASES

EDITORIAL

New global targets for NTDs in the WHO roadmap 2021–2030

Adriano Casulli[1,2]*

GLOBAL PUBLIC HEALTH CONTEXT



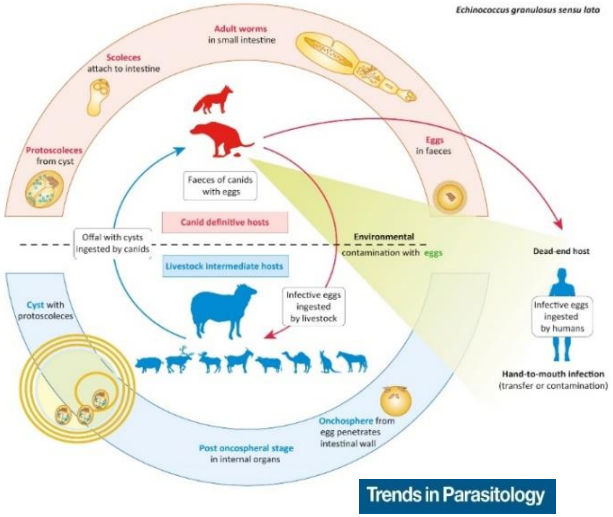
Epidemiology

generated by AI under my suggestions

CASE DEFINITION in **EUROPE** = ECHINOCOCCOSIS

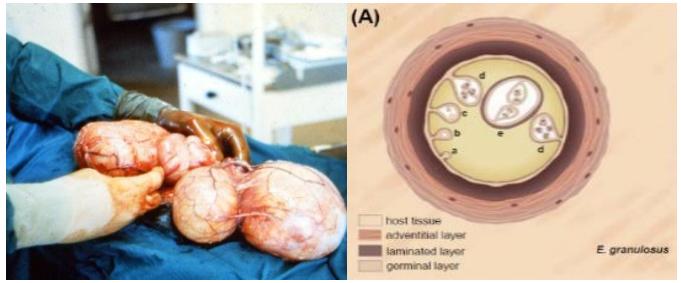
CE: *Echinococcus granulosus sensu lato*

Pastoral/synantropic cycle



Disabling, proteiform and usually benign disease.

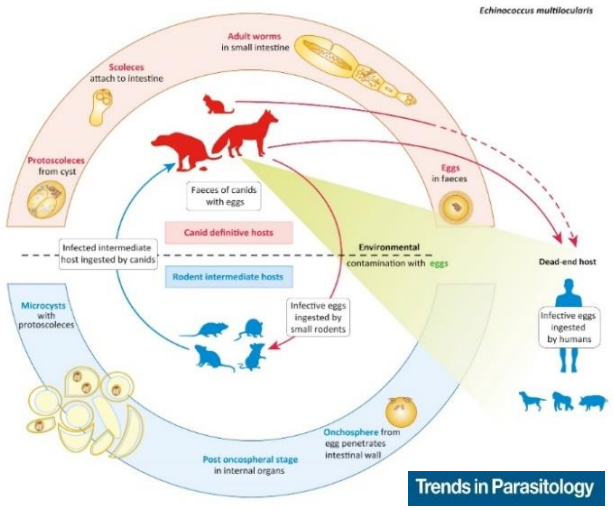
Anatomically **isolated cystis** (<u>1-30 cm</u>) with **expansive growth.**



≠

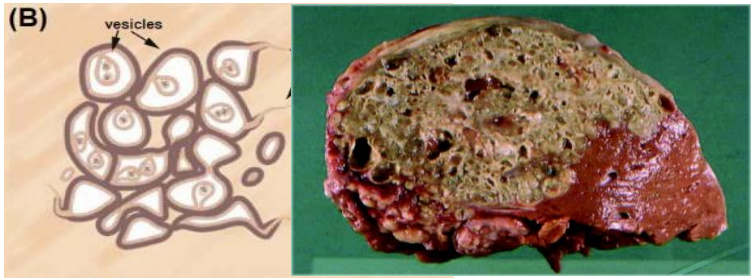
AE: *Echinococcus multilocularis*

Sylvatic cycle

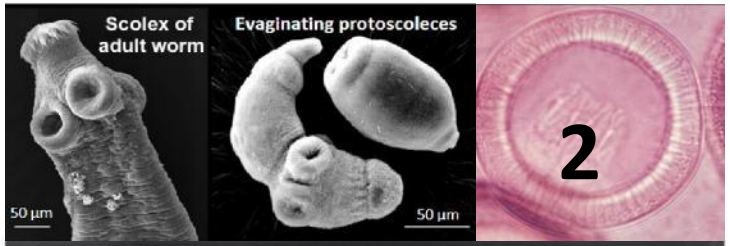


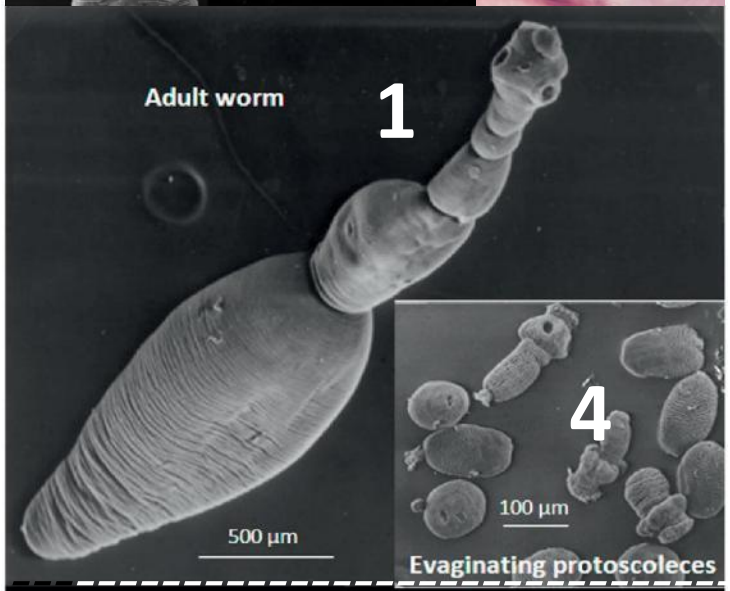
Disease with a high mortality rate

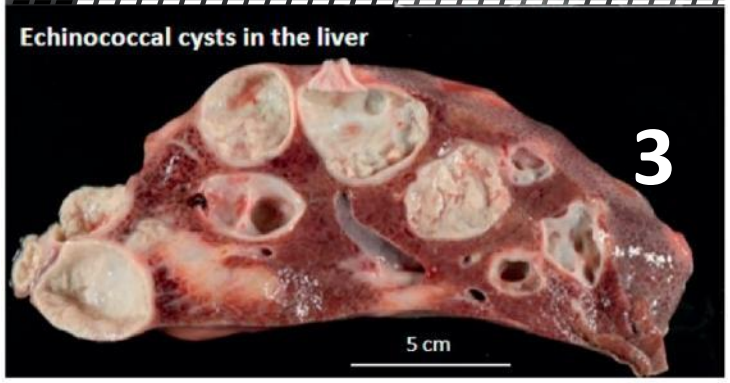
Infiltrative **vesicles** (<u>0.1-1 cm</u>) with central necrosis mimicking a metastasizing tumor



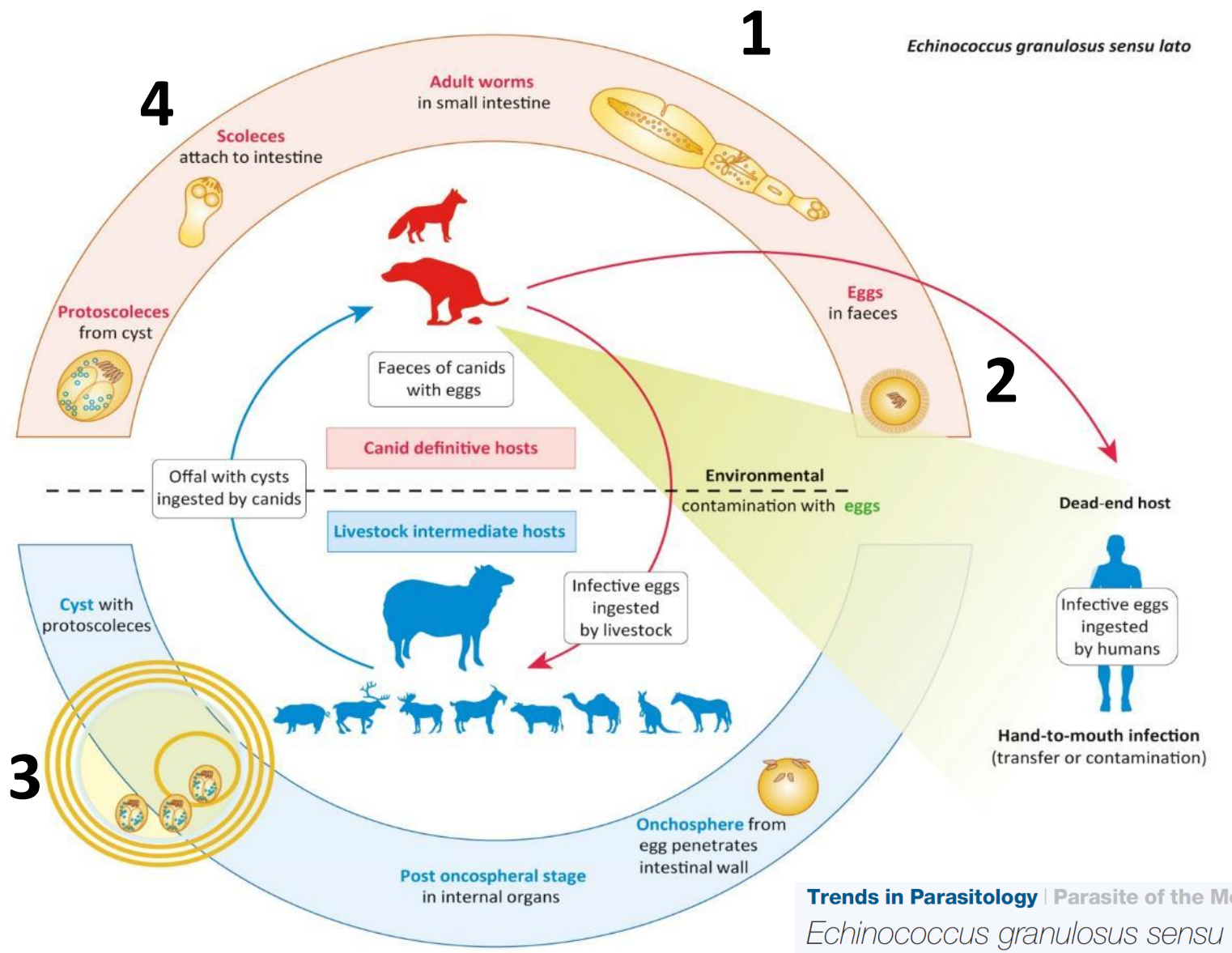
CYSTIC ECHINOCOCCOSIS







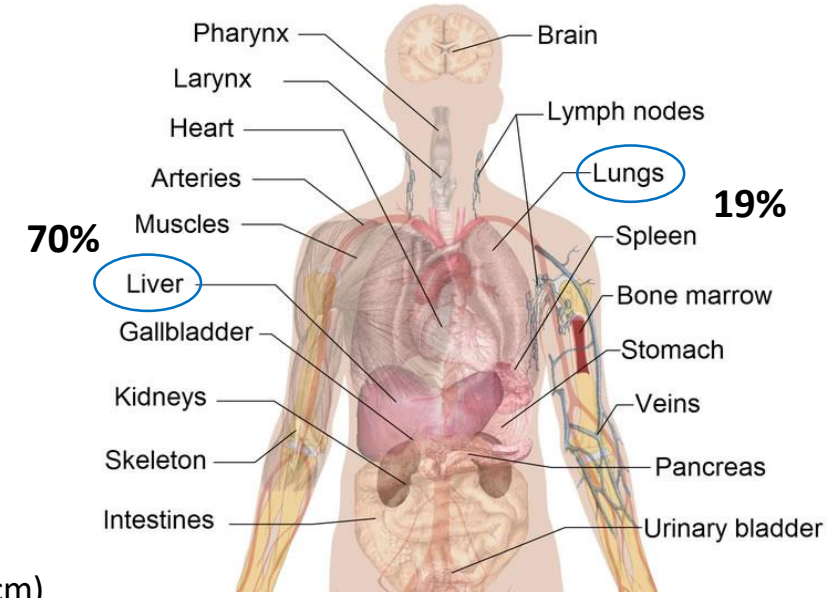
Trends in Parasitology

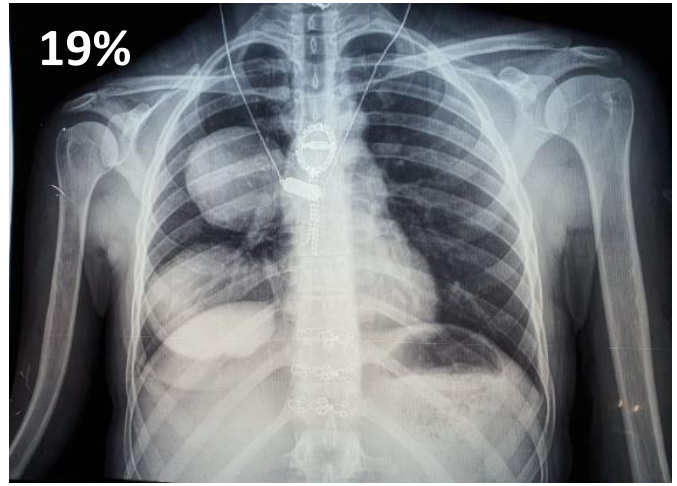


[from Casulli et al. *Trends Parasitol*. 2019;35(8):663-664].

Trends in Parasitology | Parasite of the Month
Echinococcus granulosus sensu lato
Adriano Casulli,[1,2,*] Mar Siles-Lucas,[3] and Francesca Tamarozzi[1,2]

CYSTIC ECHINOCOCCOSIS (in humans)

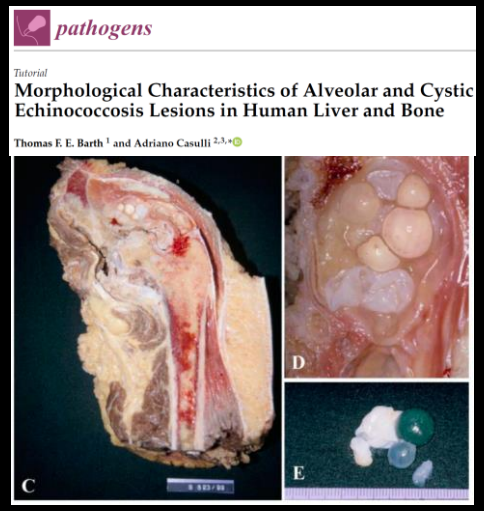




- Anatomically isolated, fluid-filled parasitic cyst/s (1-30 cm) that grow concentrically, mainly causing compression

11% Uncommon localizations

Bone CE


pathogens

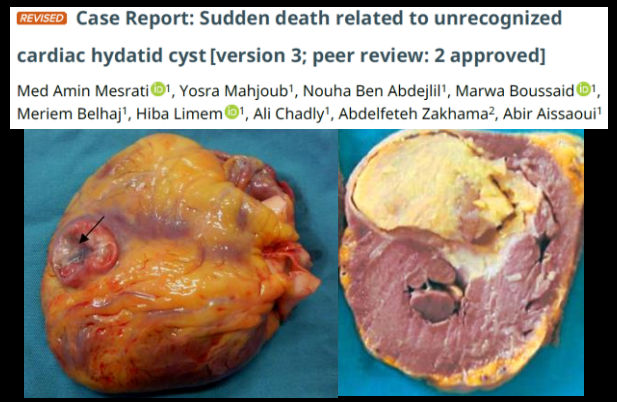
Tutorial

Morphological Characteristics of Alveolar and Cystic Echinococcosis Lesions in Human Liver and Bone

Thomas F. E. Barth [1] and Adriano Casulli [2,3,*]

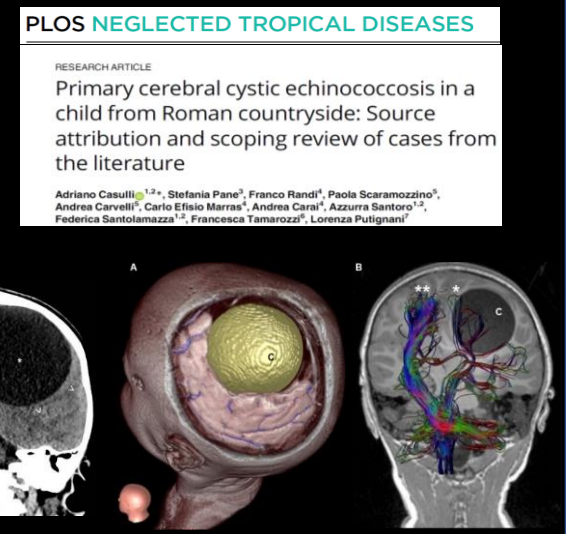
11%

Heart CE


REVISED Case Report: Sudden death related to unrecognized cardiac hydatid cyst [version 3; peer review: 2 approved]

Med Amin Mesrati[1], Yosra Mahjoub[1], Nouha Ben Abdejlil[1], Marwa Boussaid[1], Meriem Belhaj[1], Hiba Limem[1], Ali Chadly[1], Abdelfeteh Zakhama[2], Abir Aissaoui[1]

Cerebral CE


PLOS NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

Primary cerebral cystic echinococcosis in a child from Roman countryside: Source attribution and scoping review of cases from the literature

Adriano Casulli[1,2*], Stefania Pane[3], Franco Randi[4], Paola Scaramozzino[5], Andrea Carvelli[6], Carlo Efisio Marras[4], Andrea Carai[4], Azzurra Santoro[1,2], Federica Santolamazza[1,2], Francesca Tamarozzi[6], Lorenza Putignani[7]

PLOS NEGLECTED TROPICAL DISEASES

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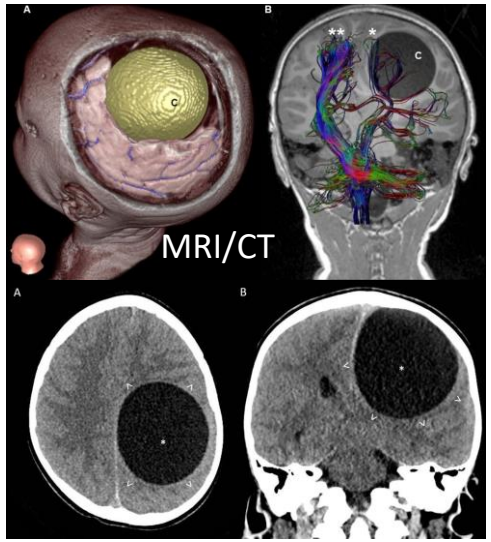
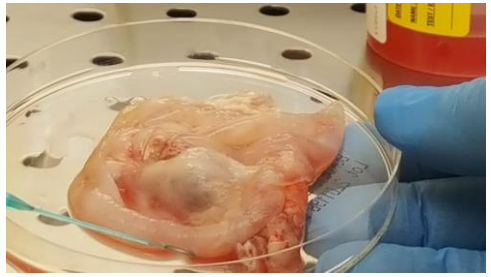
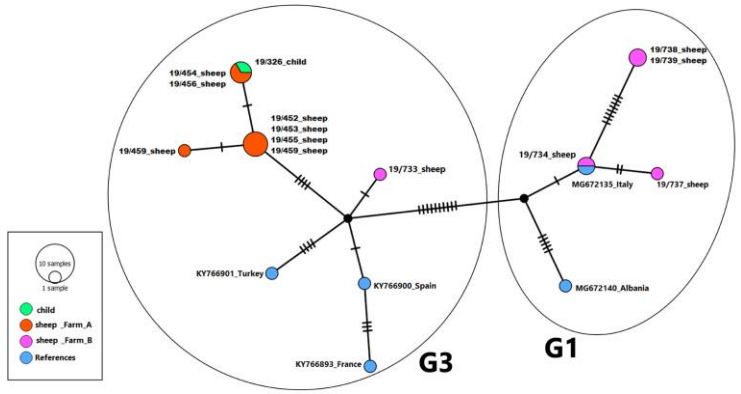






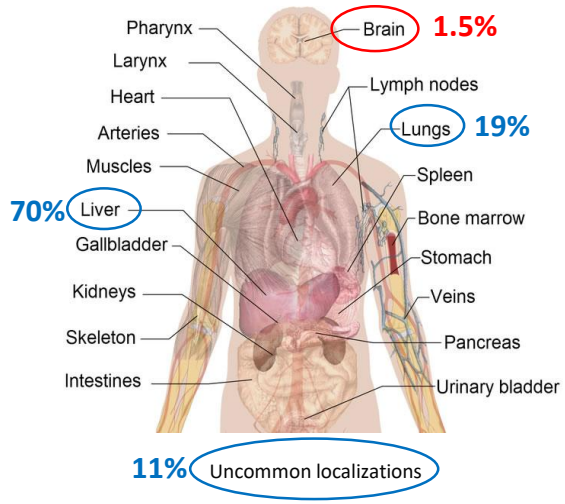
Haplotype network. Concatenated seqs of the mit genes

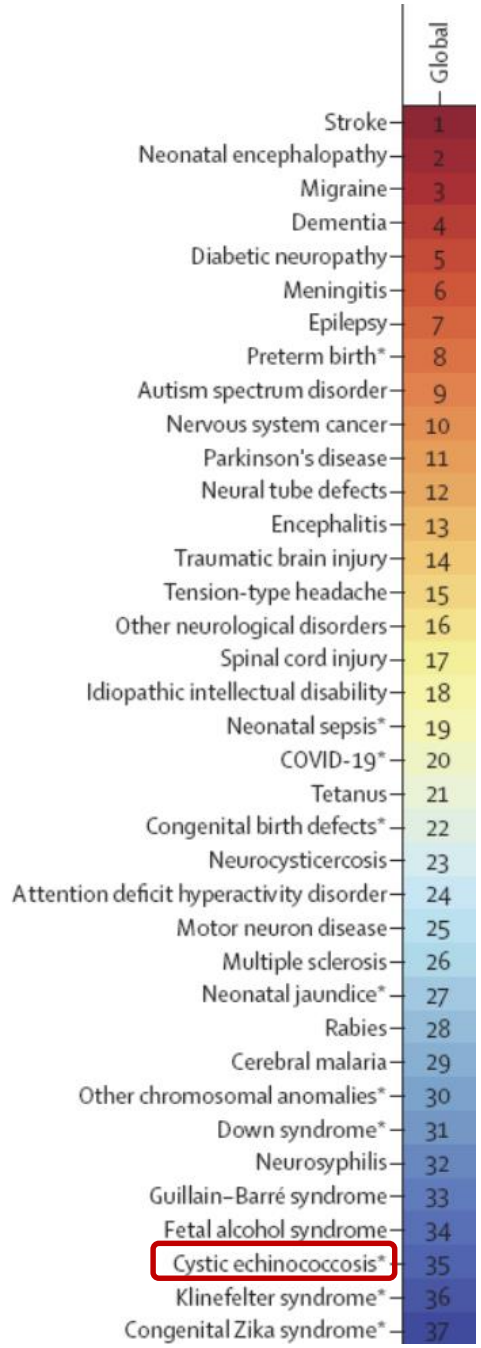
SOURCE ATTRIBUTION:

- Comparative molecular analysis: the infection was caused by *E. granulosus s.s.* (**G3**)
- Infection most likely **acquired in the family farm**

SCOPING REVIEW (**2,238** cases of CCE):

- 80.51% primary CCE; 84.07% single CCE cysts
- Mean age 20 years:70.46% children
- CCE cyst rupture: 12.96%; recurrence post-treatment: 9.61%
- Permanent disability: 7.86%; death: 6.21%





Uncommon Localizations: 11%
(of which **1.5%** CCE)

PLOS NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

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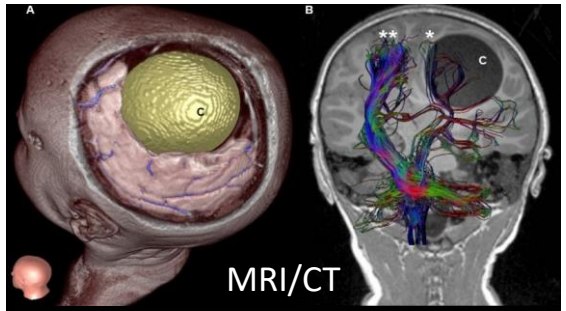
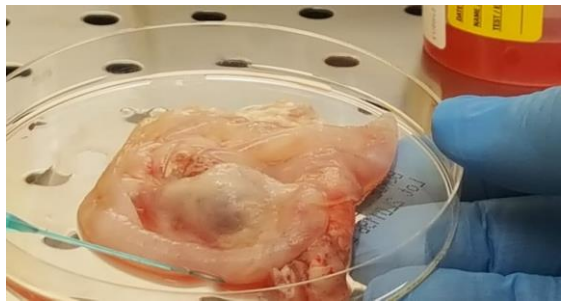




THE LANCET Neurology

Global, regional, and national burden of disorders affecting the nervous system, 1990–2021: a systematic analysis for the Global Burden of Disease Study 2021

GBD 2021 Nervous System Disorders Collaborators † • Show footnotes

Open Access • Published: March 14, 2024 • DOI: https://doi.org/10.1016/S1474-4422(24)00038-3 •

DOI: 10.2903/j.efsa.2024.9106

SCIENTIFIC REPORT

efsa JOURNAL

The European Union One Health 2023 Zoonoses report

European Food Safety Authority (EFSA) | European Centre for Disease Prevention and Control (ECDC)

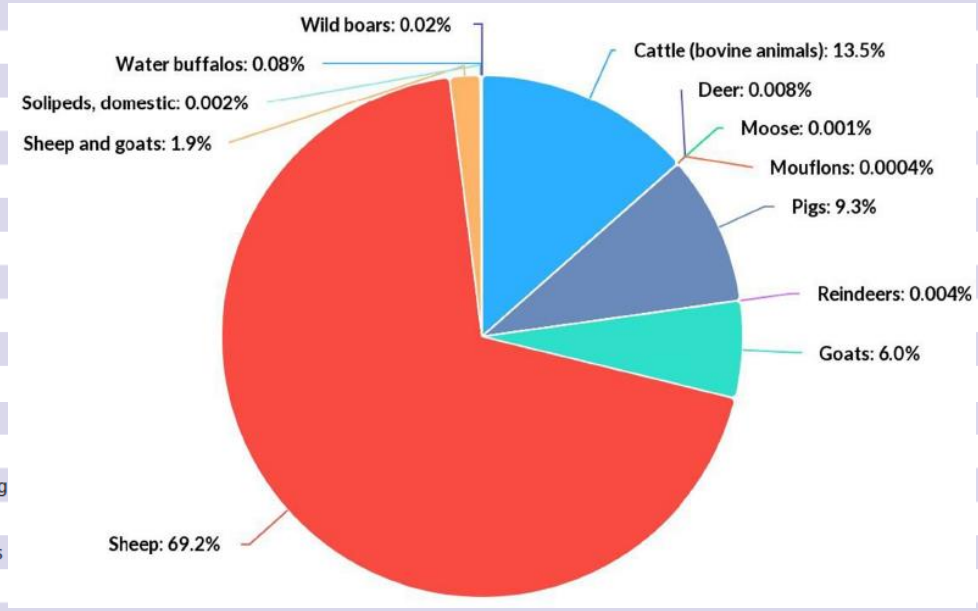
Human cases [EU, 2023]

Notification rate (per 100,000 population) 0.21

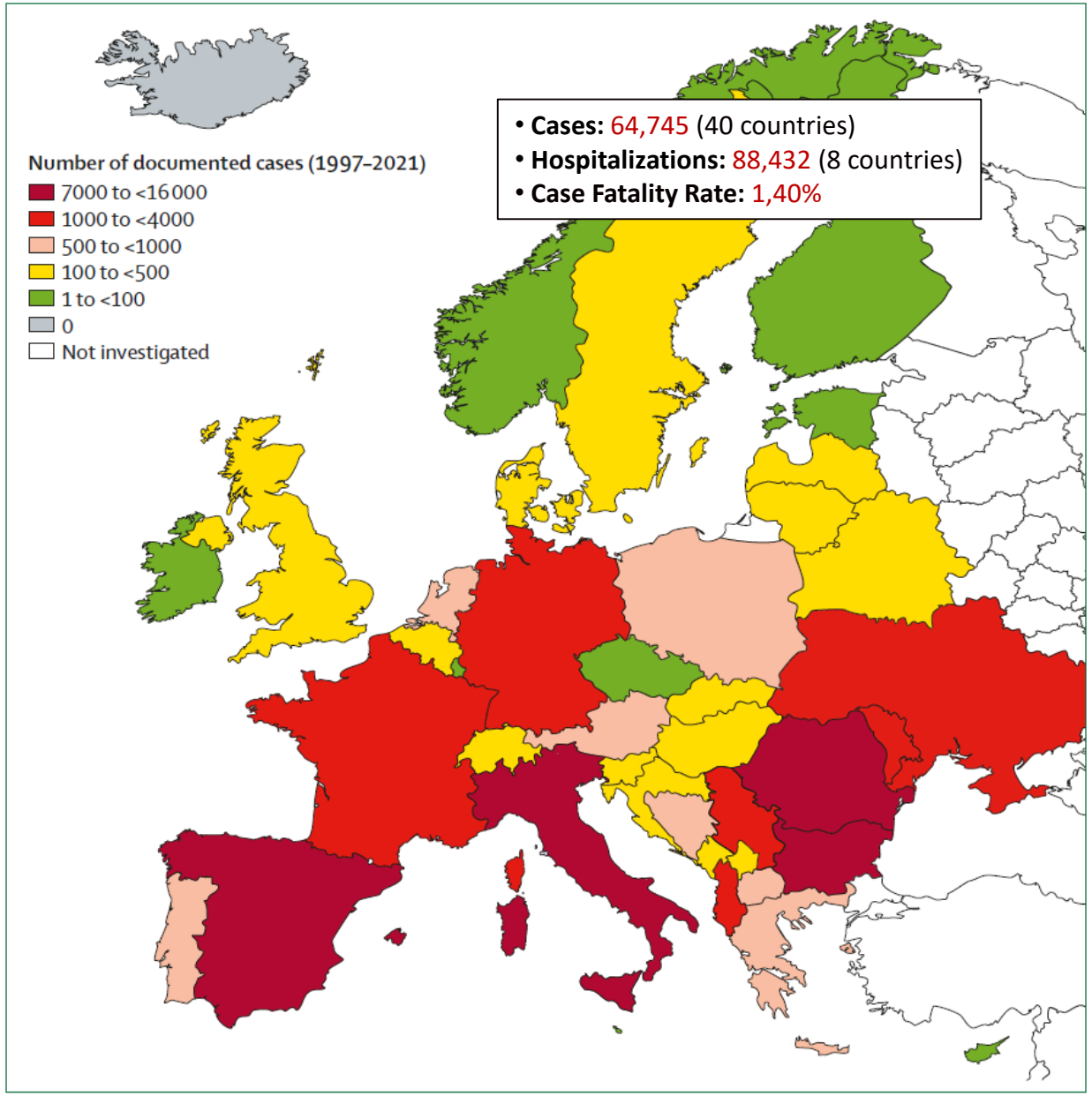
929 Cases of illness

	Unspecified echinococcosis	CE	AE
EU total	**929**	**420**	**204**

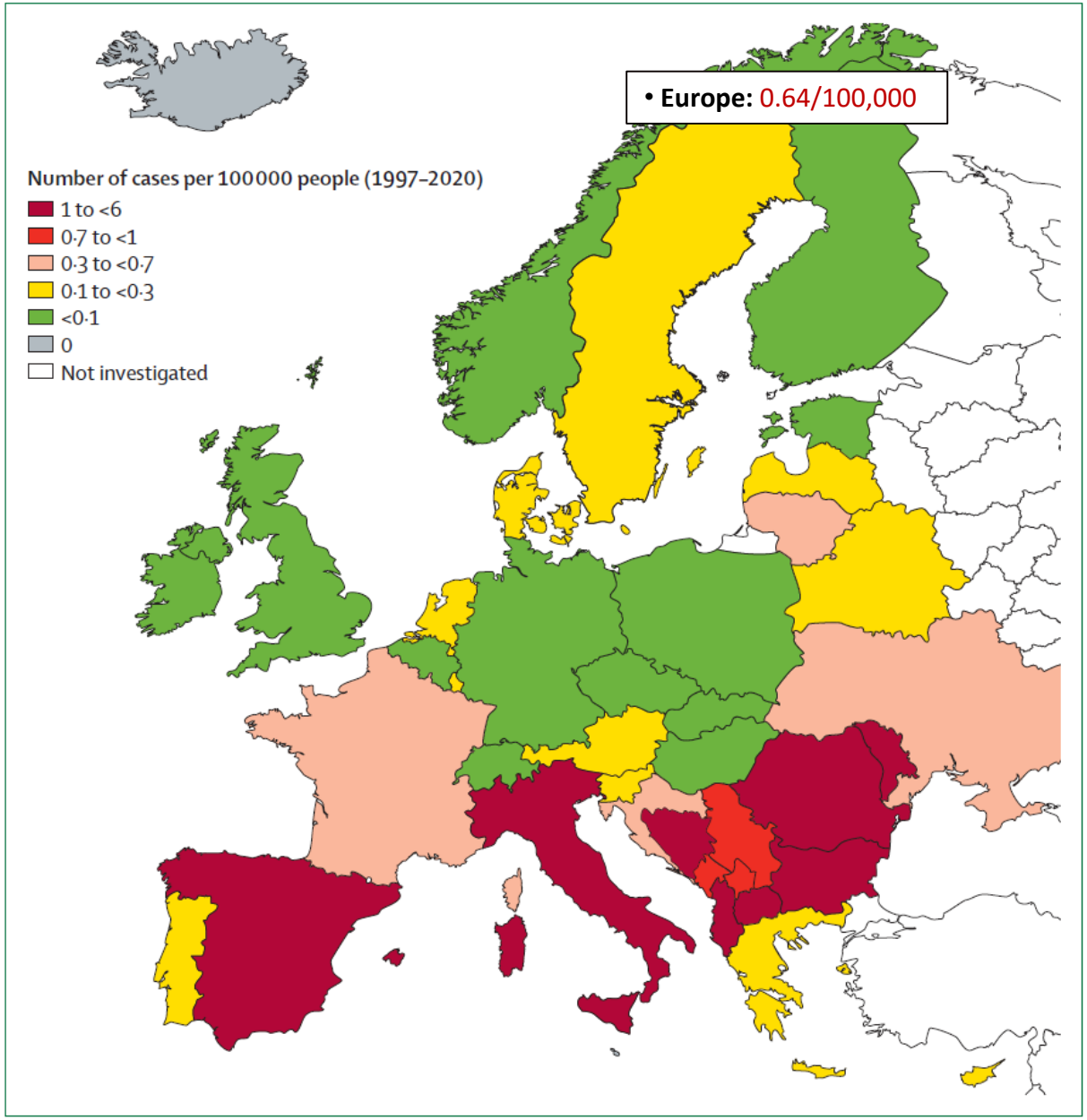
Country	2023 National coverage[a]	2023 Data format[a]	2023 Confirmed cases	2023 Confirmed rate	2022 Confirmed cases	2022 Confirmed rate	2021 Confirmed cases	2021 Confirmed rate	2020 Confirmed cases	2020 Confirmed rate	2019 Confirmed cases	2019 Confirmed rate
Austria	Y	C	54	0.59	54	0.60	42	0.47	34	0.38	36	0.41
Belgium	Y	C	25	0.21	23	0.20	17	0.15	19	0.16	22	0.19
Bulgaria	Y	A	117	1.8	89	1.3	89	1.3	95	1.4	193	2.8
Croatia												0.07
Cyprus												0
Czechia												0.01
Denmark[b]												–
Estonia												0.15
Finland[c]												0.14
France												0.08
Germany												0.18
Greece												0.07
Hungary												0.10
Ireland[c]												0
Italy[d]												–
Latvia												0.31
Lithuania												2.9
Luxembourg												0.16
Malta[c]												0
Netherlands												0.28
Poland												0.18
Portugal	Y	C	2	0.02	2	0.02	2	0.02	1	0.01	5	0.05
Romania	Y	C	38	0.20	4	0.02	1	0.01	0	0	1	0.01
Slovakia	Y	C	10	0.18	6	0.11	2	0.04	3	0.05	11	0.20
Slovenia	Y	C	16	0.76	5	0.24	11	0.52	3	0.14	6	0.29
Spain[e]	Y	C	90	0.19	72	0.15	33	–	8	–	34	0.07
Sweden	Y	C	19	0.18	22	0.21	25	0.24	23	0.22	26	0.25
EU-27 total			**929**	**0.21**	**739**	**0.19**	**592**	**0.17**	**547**	**0.16**	**776**	**0.20**
United Kingdom[c]	Y	C	–	–	–	–	–	–	–	–	3	<0.01
EU total			**929**	**0.21**	**739**	**0.19**	**592**	**0.17**	**547**	**0.16**	**779**	**0.17**
Iceland	Y	C	0	0	0	0	0	0	0	0	0	0
Norway[c]	Y	C	12	0.22	9	0.17	11	0.20	6	0.11	7	0.13
Liechtenstein[b]	–	–	–	–	–	–	–	–	–	–	–	–
Switzerland[b]	–	–	–	–								



Number of CE cases (1997-2021)



Annual incidence of CE (1997-2020)



REVIEW | ONLINE FIRST

Unveiling the incidences and trends of the neglected zoonosis cystic echinococcosis in Europe: a systematic review from the MEmE project

Adriano Casulli, PhD • Bernadette Abela-Ridder, DVM • Daniele Petrone, Dstat • Massimo Fabiani, Dstat • Branko Bobić, PhD • David Carmena, PhD • et al. Show all authors • Show footnotes

Published: November 22, 2022 • DOI: https://doi.org/10.1016/S1473-3099(22)00638-7 •

Check for updates

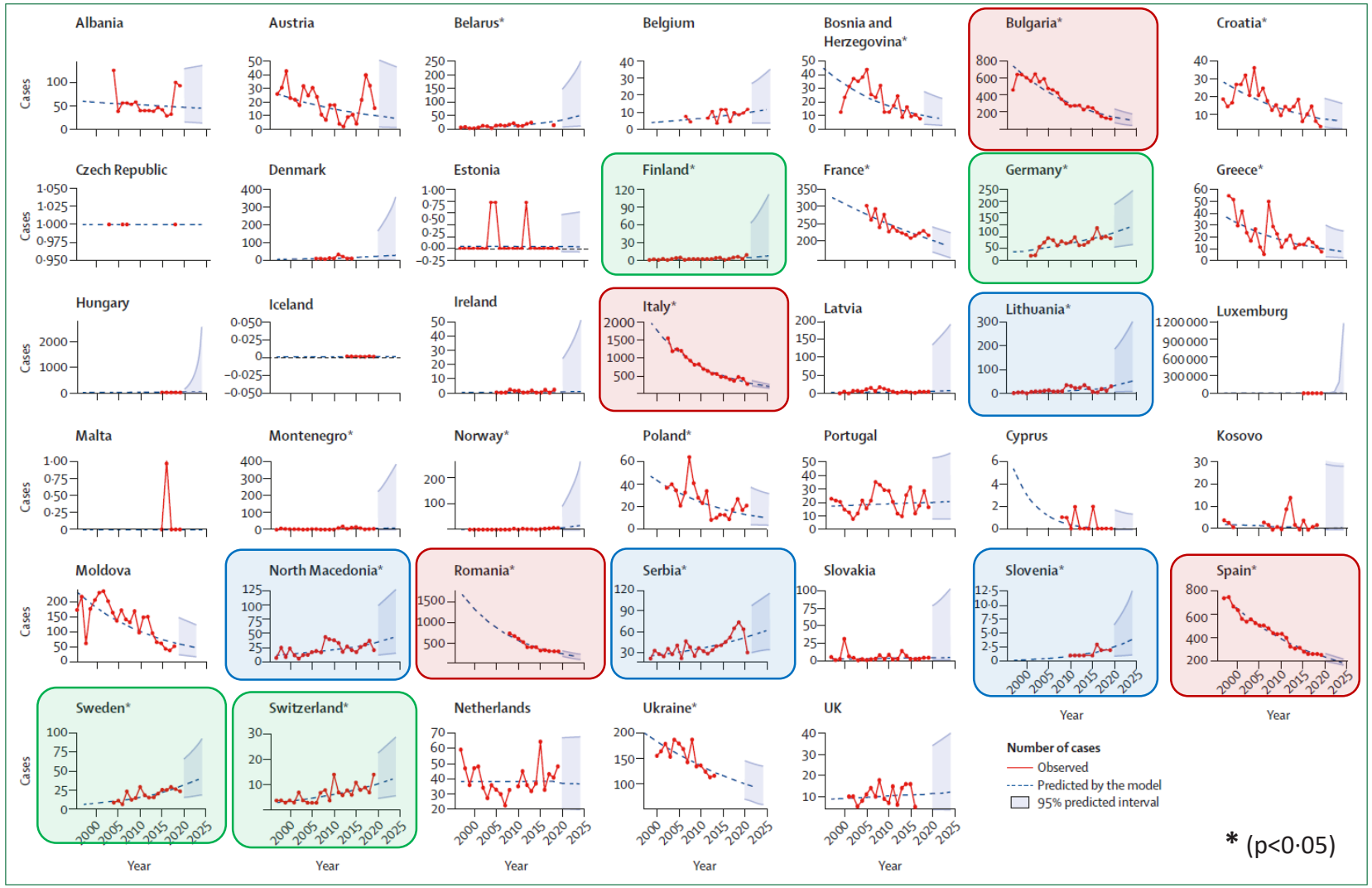
THE LANCET
Infectious Diseases

PDF [1 MB] Figures Save Share Reprints Request

PlumX Metrics

TIME-TREND ANALYSIS
(observed/predicted for 2020-24)

- Estimate for 2023: **1,756** new CE cases/y in Europe
- Estimate for 2023: **1,361** new CE cases/y in EU



THE LANCET
Infectious Diseases
Available online 22 November 2022
In Press, Corrected Proof

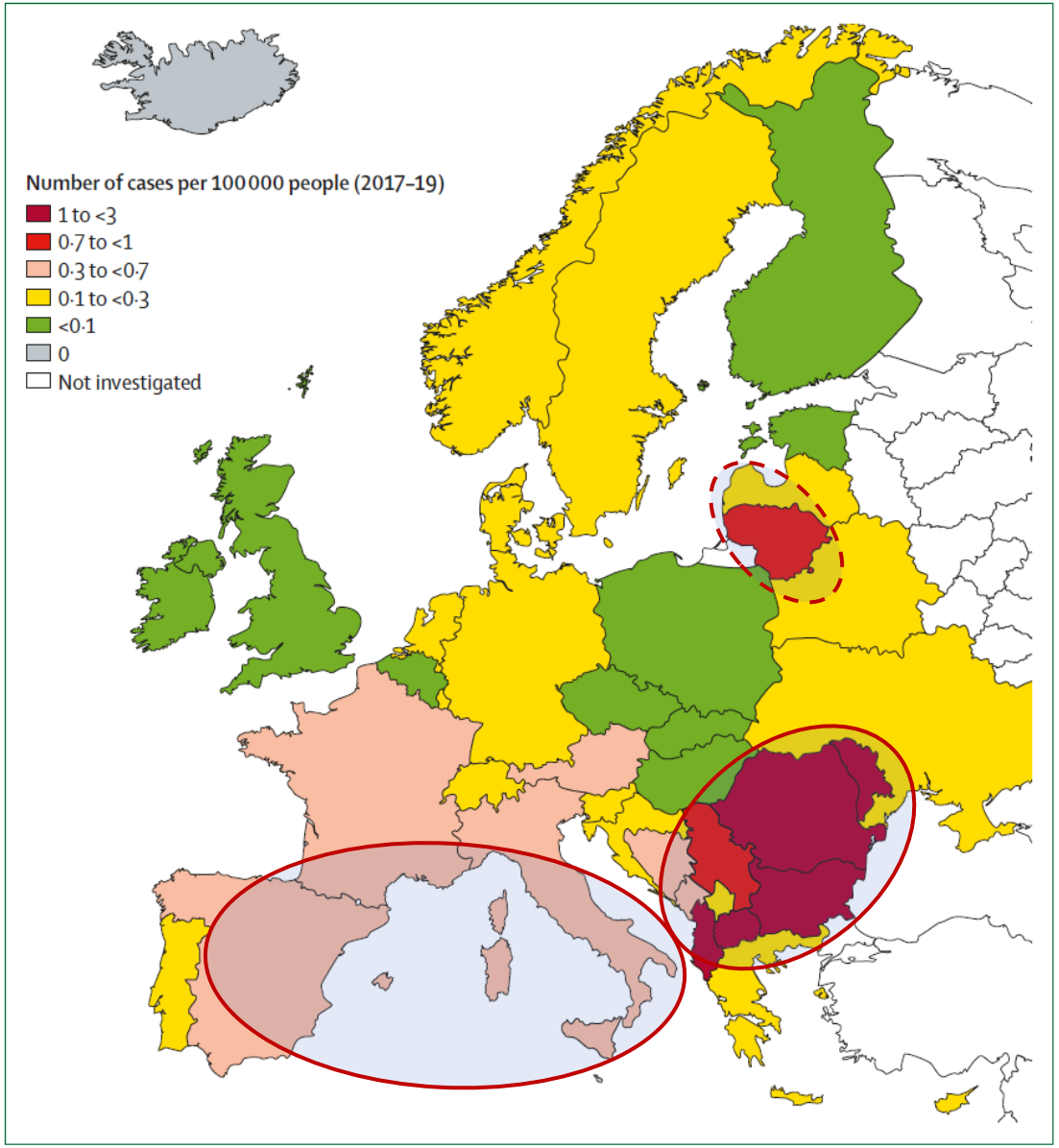
Review

Unveiling the incidences and trends of the neglected zoonosis cystic echinococcosis in Europe: a systematic review from the MEmE project

- **CE remains endemic and neglected** in many countries in Europe

- Based on incidences and trends:
  Balkans should be considered the **current epicentre of CE in Europe**

Annual incidence (2017–19)



Cross-sectional studies for:

- Active search of CE carriers in endemic areas by portable ultrasound machines (ACTIVE SURVEILLANCE)

- Health education campaigns (population)
- Ultrasound screenings (population)
- Trainings (experts)
- Sampling collection (clinical data)

RAPID HEALTH IMPACT PACKAGE!

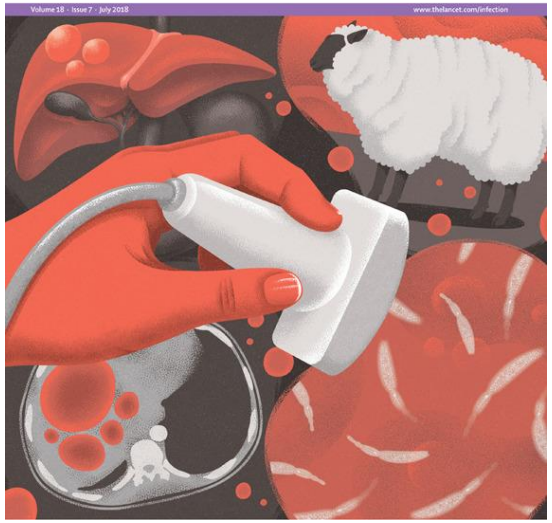
US SCREENINGS	N
ROMANIA	7,461
BULGARIA	8,602
TURKEY	8,618
ITALY	3,274
CHILE	2,439
ARGENTINA	892
PERU	1,181
ALBANIA	3,717
TANZANIA	823
ISS	**37,007**

Timing: 2013-2018
Funder: EC (FP7/Helath)
Total cost: 3.784.916,00 €

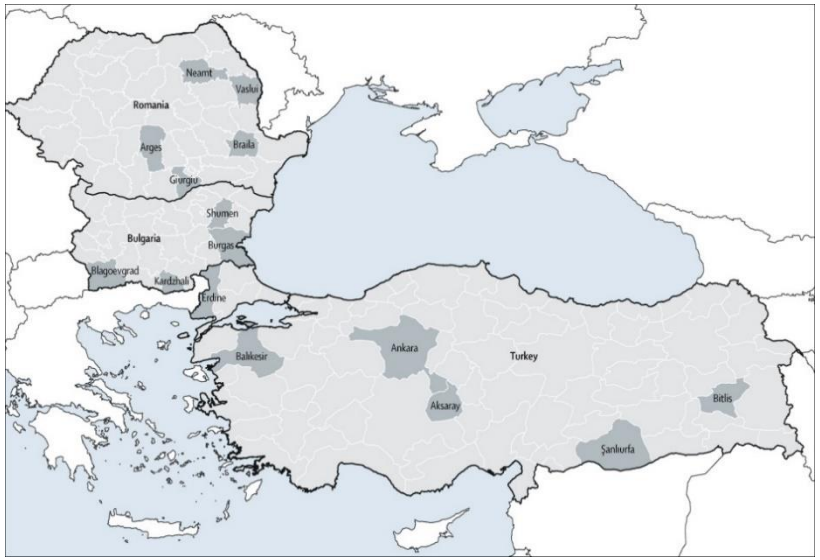
Prevalence of abdominal cystic echinococcosis in rural Bulgaria, Romania, and Turkey: a cross-sectional, ultrasound-based, population study from the HERACLES project

Francesca Tamarozzi, Okan Akhan*, Carmen Michaela Cretu*, Kamenna Vutova*, Devrim Akinci, Rossitza Chipeva, Turkmen Ciftci, Corina Manuela Constantin, Massimo Fabiani, Branimir Golemanov, Denisa Janta, Patricia Mihailescu, Marin Muhtarov, Serra Orsten, Marius Petrutescu, Patrizio Pezzotti, Alexandru Cosmin Popa, Loredana Gabriela Popa, Mircea Ioan Popa, Valeri Velev, Mar Siles-Lucas, Enrico Brunetti, Adriano Casulli*

THE LANCET
Infectious Diseases



- Biggest ultrasound population-based survey (research-based) (2015-16)



Abdominal US screenings on **24,693** people (in **50** villages and **15** districts/provinces) of Bulgaria, Romania, and Turkey.

Estimate of number of individuals with (abdominal) CE (in the rural population)

	BULGARIA	ROMANIA	TURKEY
Standardized prevalence:	0.41%	0.41%	0.59%
N individuals infected:	**7,872** (5,520 - 11,220)	**37,229** (23,405 - 59,166)	**106,237** (33,829 - 330,751)

Species (genotypes) of *E. granulosus sensu lato* in humans (2001-2021)

Casulli et al. Parasites & Vectors (2022) 15:109
https://doi.org/10.1186/s13071-022-05197-8

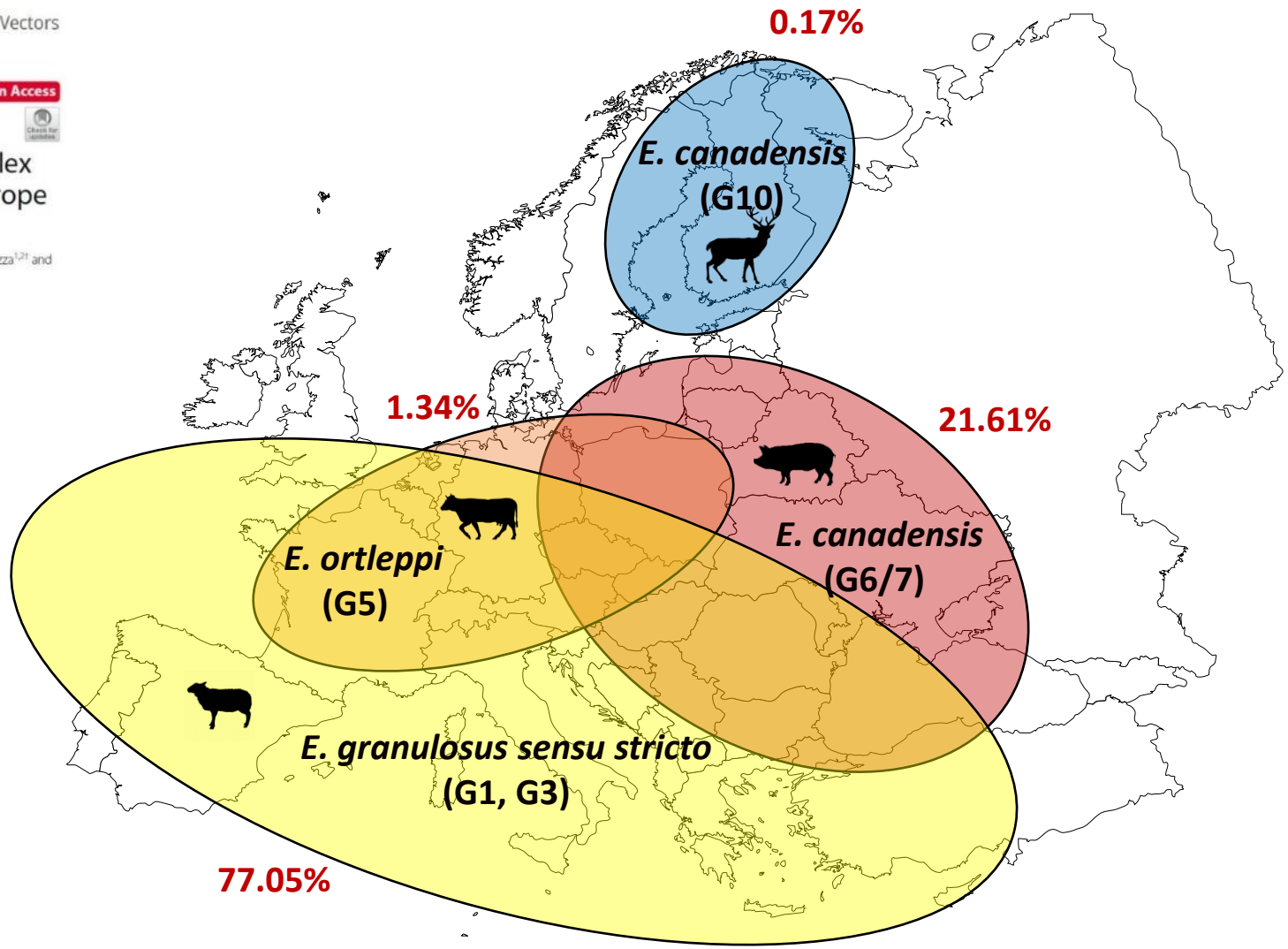
Parasites & Vectors

REVIEW Open Access

Species and genotypes belonging to *Echinococcus granulosus sensu lato* complex causing human cystic echinococcosis in Europe (2000–2021): a systematic review

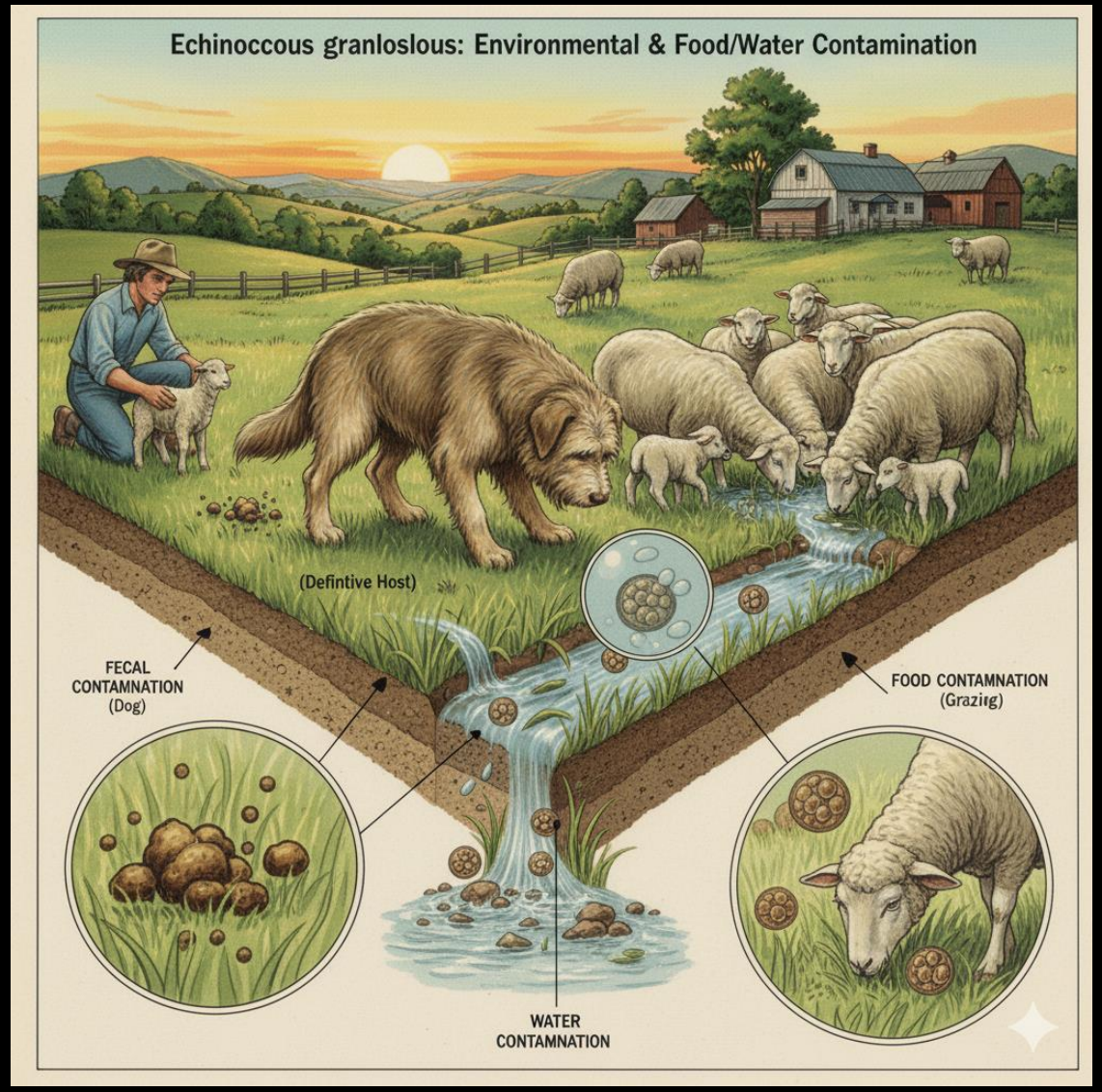
Adriano Casulli[1,2*], Alessandro Massolo[3,4,5], Urmas Saarma[6], Gérald Umhang[7], Federica Santolamazza[1,2†] and Azzurra Santoro[1,2†]

N=597
(human cyst sample molecularly identified)



Currently unknown: whether different species of *E. granulosus s.l.* may have different clinical impact on humans

Transmission



generated by AI under my suggestions

OPEN DEBATE: PATHWAYS of TRANSMISSION

DOGMA:

LONG LATENT PERIOD (months, years) between infection and the (eventual) appearance of clinical signs:
Almost **impossible to track back source of infection**, therefore **challenging to identify determinants** of disease.


PLOS NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

Source attribution of human echinococcosis: A systematic review and meta-analysis

Paul R. Torgerson[1]*, Lucy J. Robertson[2], Heidi L. Enemark[3], Junwei Foehr[4], Joke W. B. van der Giessen[5], Christian M. O. Kapel[6], Ivana Klun[7], Chiara Trevisan[8]


Trends in Parasitology

CellPress REVIEWS

Opinion

Reinventing the Wheel of *Echinococcus granulosus sensu lato* Transmission to Humans

Francesca Tamarozzi,[1,2] Peter Deplazes,[3] and Adriano Casulli[1,2,*]


PLOS NEGLECTED TROPICAL DISEASES

VIEWPOINTS

Tracing the source of infection of cystic and alveolar echinococcosis, neglected parasitic infections with long latency: The shaky road of "evidence" gathering

Adriano Casulli[1], Francesca Tamarozzi[2,*]


Contents lists available at ScienceDirect

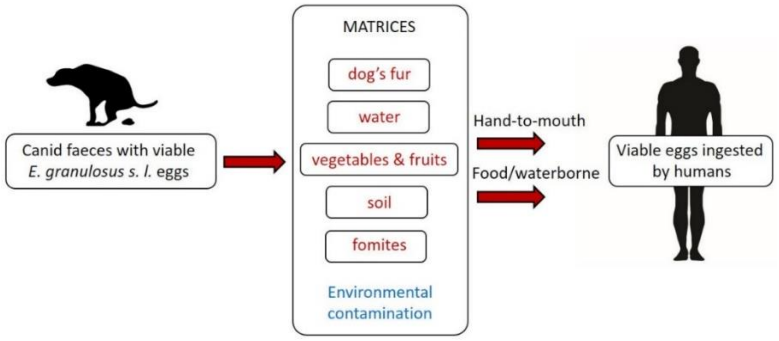
International Journal of Food Microbiology

journal homepage: www.elsevier.com/locate/ijfoodmicro

ELSEVIER

Detection of *Echinococcus* spp. and other taeniid species in lettuces and berries: Two international multicenter studies from the MEmE project

- **PARADIGM on TRANSMISSION**: Historically considered food-borne disease with dogs posing risk to individuals
- **INCREASING CONCERN**: hand-to-mouth transmission and community risk
- **DON'T KNOW**: The relative contribution of transmission by food/water/hand-to-mouth in different epidemiological settings



NEEDED: Integrated approaches, encompassing specifically designed molecular-epidemiological studies

PLOS | NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

Potential Risk Factors Associated with Human Cystic Echinococcosis: Systematic Review and Meta-analysis

Alessia Possenti[1,2], Raúl Manzano-Román[3], Carlos Sánchez-Ovejero[3], Belgees Boufana[1,2,4], Giuseppe La Torre[5], Mar Siles-Lucas[3], Adriano Casulli[1,2,4]*

Potential **RISK FACTORS**

PLOS | NEGLECTED TROPICAL DISEASES

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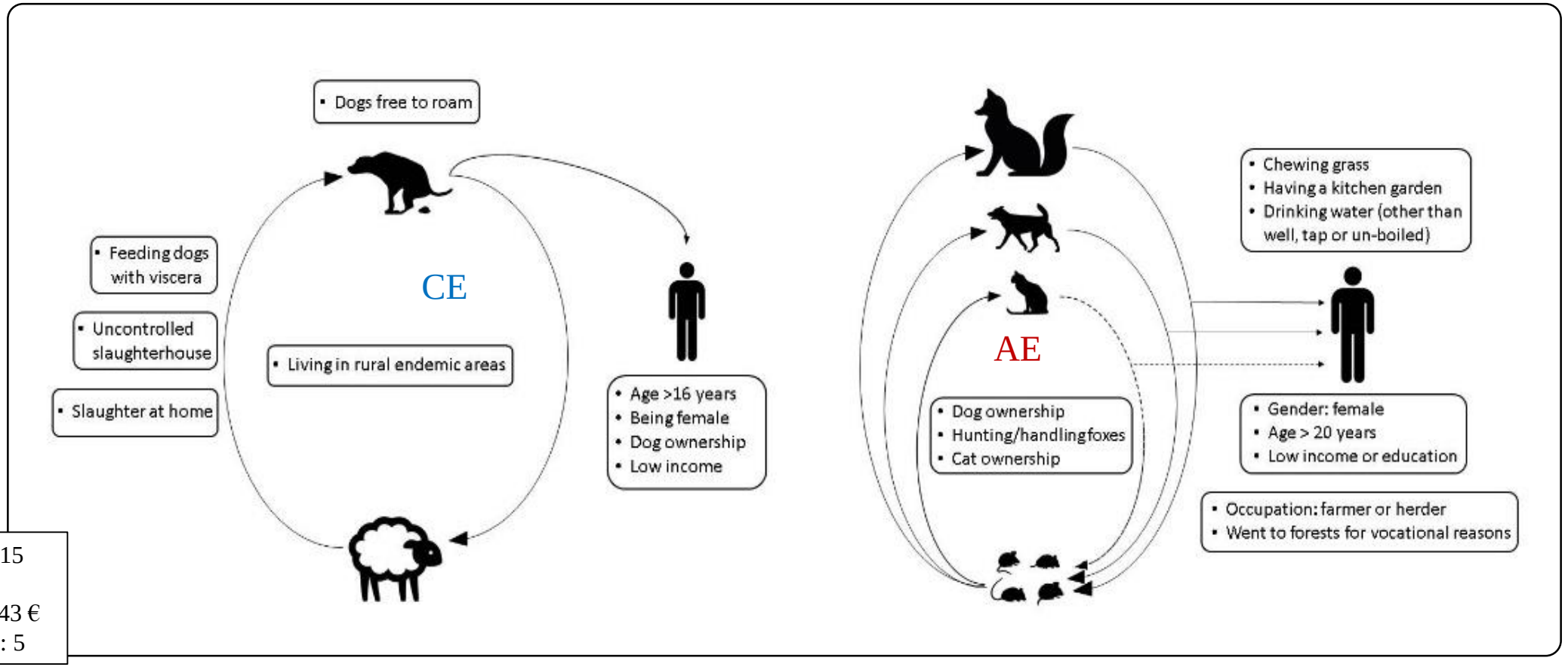
Potential Risk Factors Associated with Human Cystic Echinococcosis: Systematic Review and Meta-analysis

Alessia Possenti[1,2], Raúl Manzano-Román[3], Carlos Sánchez-Ovejero[3], Belgees Boufana[1,2,4], Giuseppe La Torre[5], Mar Siles-Lucas[3], Adriano Casulli[1,2,4]*



EmIA

Timing: 2012-2015
Funder: EFSA
Total cost: 228.443 €
Published papers: 5

- Living in endemic rural areas, being **dog owner** increase risk of infection
- **Food-borne** pathways of transmission do not significantly increase the risk of infection

Contents lists available at ScienceDirect

International Journal of Food Microbiology

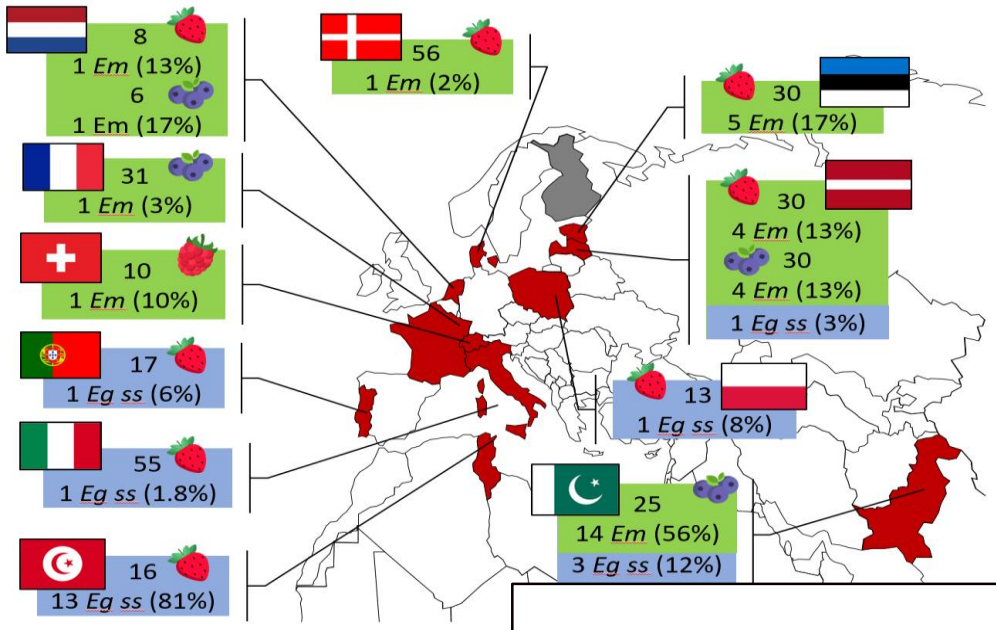
journal homepage: www.elsevier.com/locate/ijfoodmicro

Detection of *Echinococcus* spp. and other taeniid species in lettuces and berries: Two international multicenter studies from the MEmE project

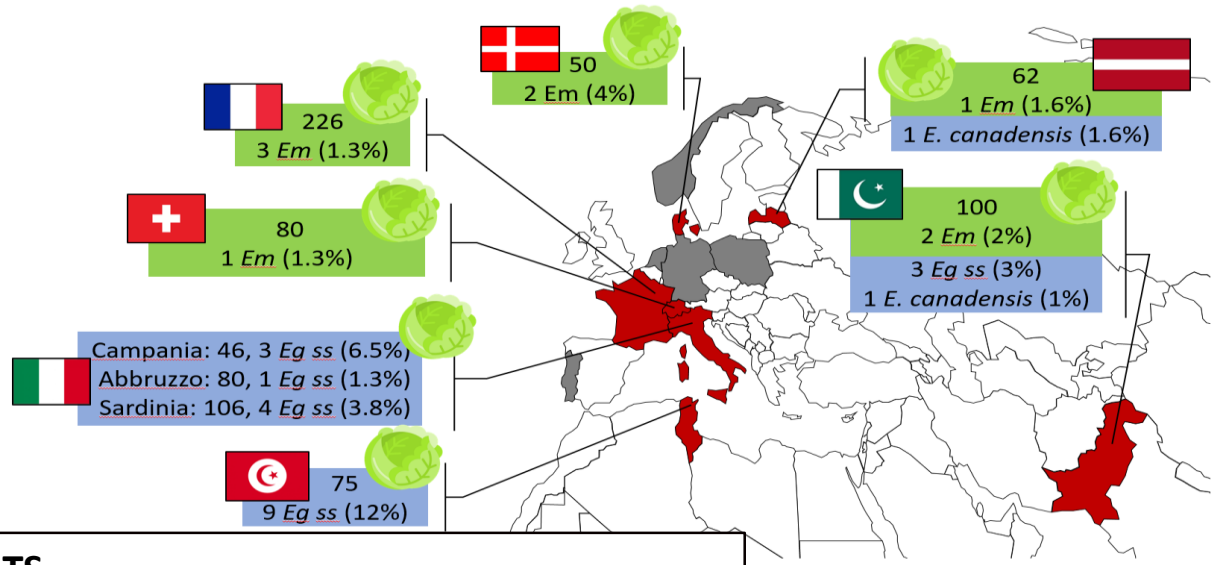
Timing: 2020-2023
Funder: EC (Horizion 2020)
Partners: 20
Cost: 2.496.126 € (co-fund 50%)

- **1,117** lettuces and **480** berries for detection of taeniid eggs DNA
- **12** European countries, Tunisia and Pakistan

BERRIES



LETTUCES

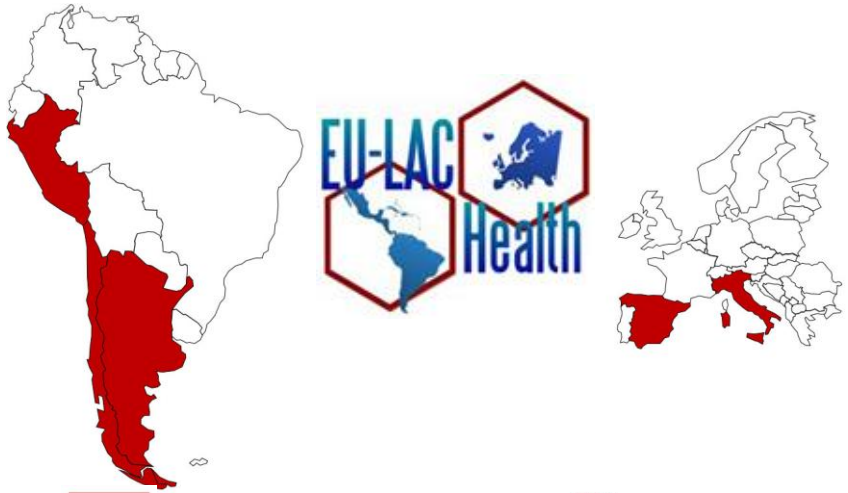


RESULTS

- ***E. multilocularis*** DNA: **1.2%** lettuces, **5.4%** strawberries, **7.3%** blueberries in Europe
- ***E. granulosus*** DNA: **1.3%** lettuces, **1.5%** strawberries, **1.3%** blueberries in Europe

PERITAS

MOLECULAR EPIDEMIOLOGICAL STUDIES on PATHWAYS of TRANSMISSION
and LONG LASTING CAPACITY BUILDING to PREVENT CYSTIC ECHINOCOCCOSIS INFECTION



PLOS Neglected Tropical Diseases

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OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Community risk of environmental-borne cystic echinococcosis transmission in South America: Results from the multistep cross-sectional and case-control PERITAS study

Gerardo Acosta-Jamett, Francesca Tamarozzi, Natalia Castro, Saul J. Santivanez, Raul Enriquez Laurente, Cristina Mazzi, Cristian A. Alvarez-Rojas, Adriano Casulli

Main RESEARCH QUESTION:

- Is there a correlation between environmental contamination and CE human infections in different areas?

What is PERITAS:

Stage 1

CROSS-SECTIONAL STUDY
Ultrasound population-based surveys

Identification of suitable village with high prevalence of abdominal active CE

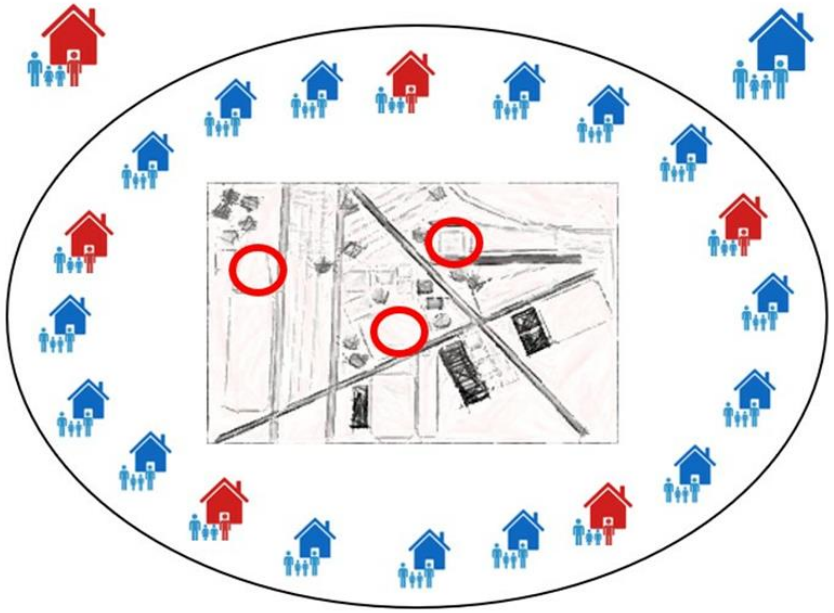
Peru
- Junin region
- Jauja and Concepcion provinces
- Canchayllo and San Jose de Quero districts

Chile
- Coquimbo region
- Limari province
- Monte Patria municipality

Stage 2

CASE-CONTROL STUDY
Sampling of matrices from public areas and households

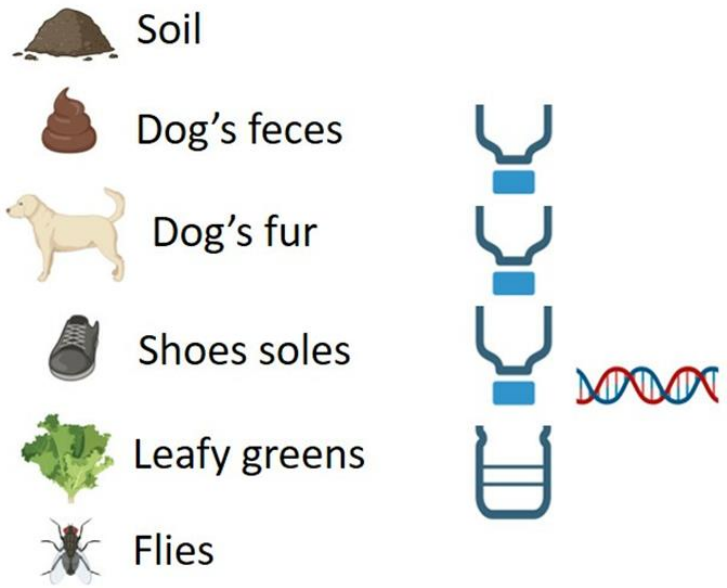
3 public areas (square, parks); markets
5 «case household»:15 «control household»



Stage 3

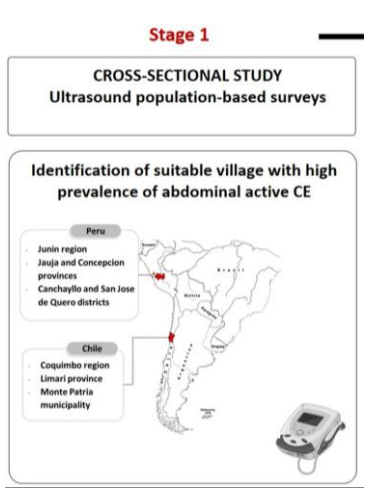
LABORATORY
Molecular identification of *E. granulosus s.l. DNA* in matrices

Sequential sieving system follwed by PCR



S1: ULTRASOUND POPULATION-BASED SCREENINGS

CROSS-SECTIONAL study



Identification of high endemic clusters with active stages of CE (CE1, CE2, CE3a and CE3b)

N= 4,512

Uchiumi et al. Parasites Vectors (2021) 14:262
https://doi.org/10.1186/s13071-021-04753-y

Parasites & Vectors

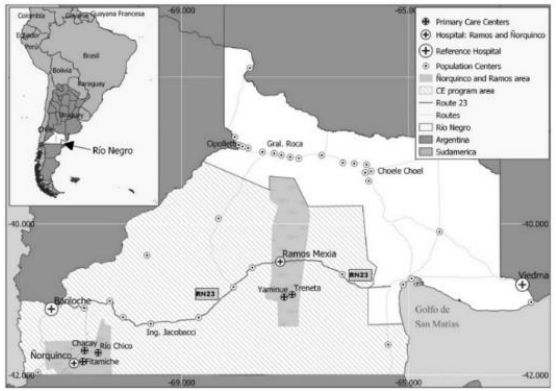
RESEARCH Open Access

Prevalence of human cystic echinococcosis in the towns of Ñorquinco and Ramos Mexia in Rio Negro Province, Argentina, and direct risk factors for infection

ARGENTINA

- 892 people screened by US in 2019
- Ñorquinco & Ramos Mexia towns (Rio Negro province)
- Mean prevalence of 4.7% (95% CI 3.2-6.1)

***Argentina** took part only in the US screening stage but not in the matrices contamination assessment due to administrative and financial restrictions.*



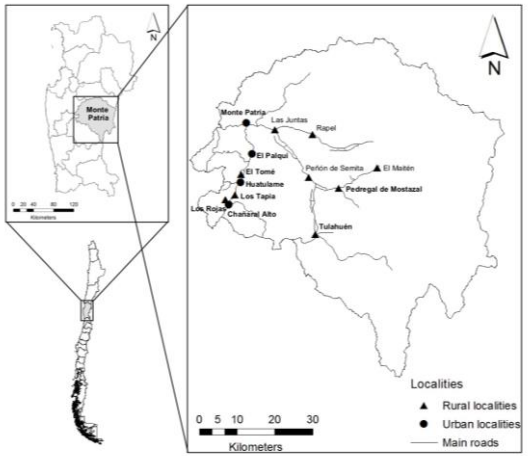
PLOS NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

Prevalence rate and risk factors of human cystic echinococcosis: A cross-sectional, community-based, abdominal ultrasound study in rural and urban north-central Chile

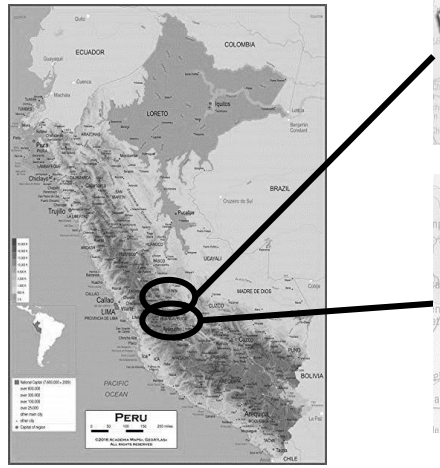
CHILE

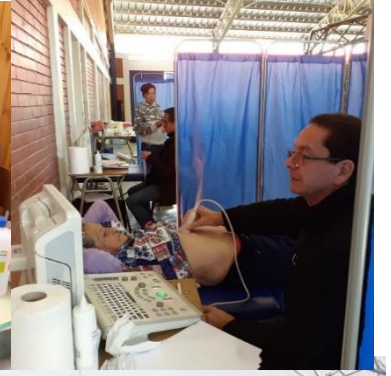
- 2,439 people screened by US in 2019
- 13 localities, Limarí province (Coquimbo region)
- Mean prevalence of 1.6% (95% CI 1.1-2.2)



PERU

- 1,181 people screened by US in 2019
- 12 localities (Junin and Huancavelica regions)
- Mean prevalence of 3.7%





US survey (Coquimbo, CHILE)

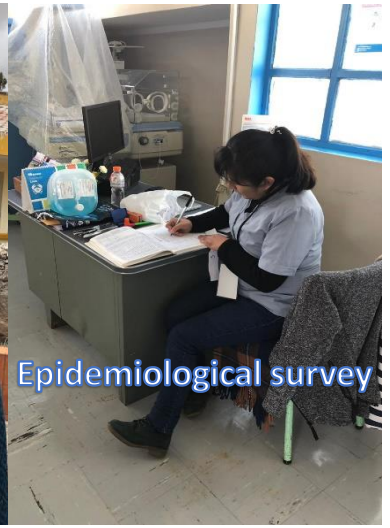
Paused by:

JUNIN and HUANCAVELICA regions, PERU

COMMUNITY	ECOGRAPHIC PREVALENCE
Canchayllo	22/236 (9.3%)
Pachacayo	1/100 (1%)
San Juan de Pachacayo	9/114 (7.9%)
San Jose de Quero	4/148 (2.7%)
Usibamba	1/108 (0.9%)
Chaquicocha	1/91 (1.1%)

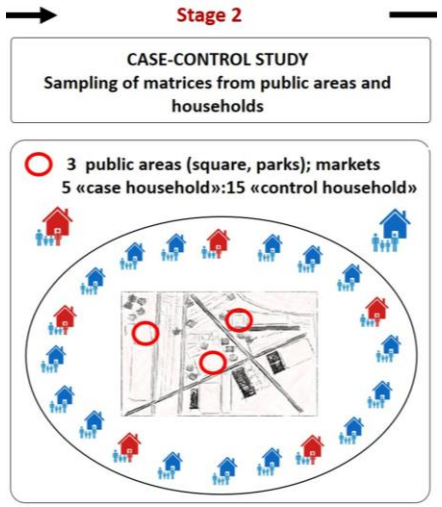
COMMUNITY	ECOGRAPHIC PREVALENCE
Huando	3/33 (9.1%)
San José de Miraflores	1/70 (1.4%)
Cachillallas	2/107 (1.9%)
Tinyacclla	0/76 (0%)
Nueva Acobambilla	0/27 (0%)
Vista Alegre	0/71 (0%)

Highest community % of CE → Canchayllo (Ultrasound: 9.3%)



S2: VILLAGE-BASED Surveys for ENVIRONMENTAL SAMPLING of matrices

CASE-CONTROL study



- Household/backyards (CE not identified: control)
- Household/backyards (CE case identified)
- Public areas: squares/parks (outgroup)

VILLAGE X

HOUSEHOLDS/BACKYARDS
(5 CE case and 15 control)
Judgmental sampling

PUBLIC AREAS
(3 sites per village)
(Village's squares; Parks; Outdoor markets)

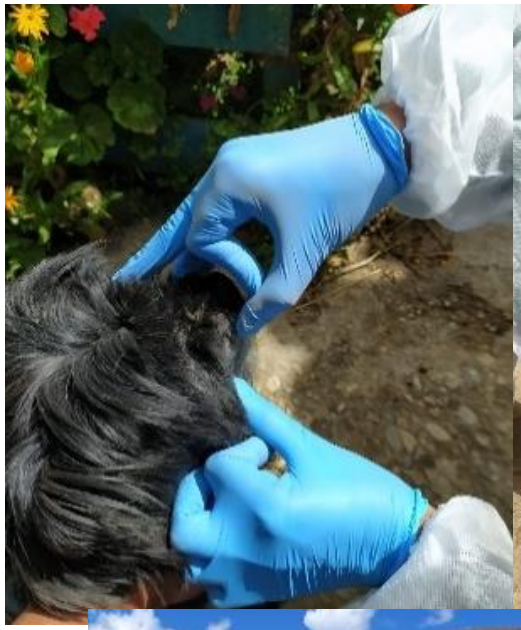
- MATRICES

Soil, dogs' feces, dogs' fur (muzzle & perianal), shoe soles, vegetables

- MARTICES

Soil, dogs' feces, vegetables (markets), flies.

CE-negative
CE-positive
Households/
backyards:




Sampling of Environmental Matrices (Canchayllo, PERU)

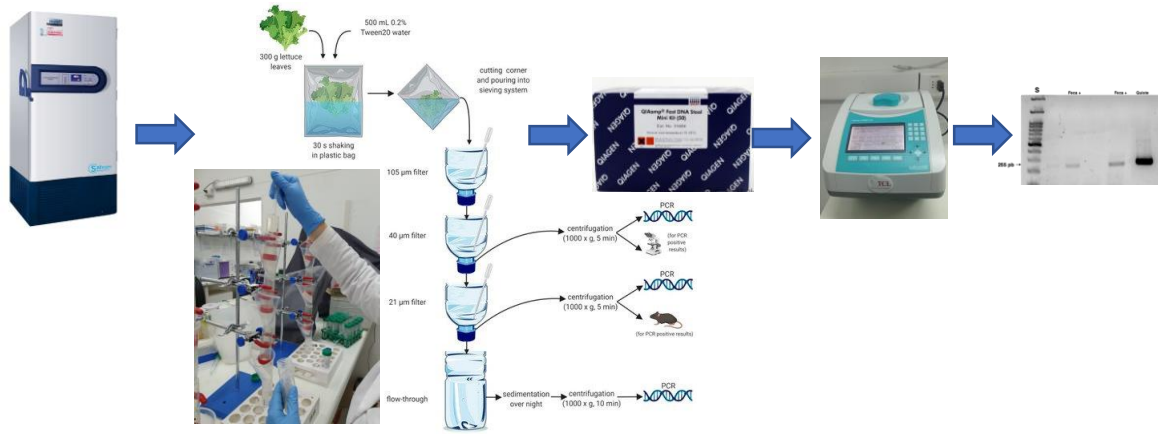
Public areas:

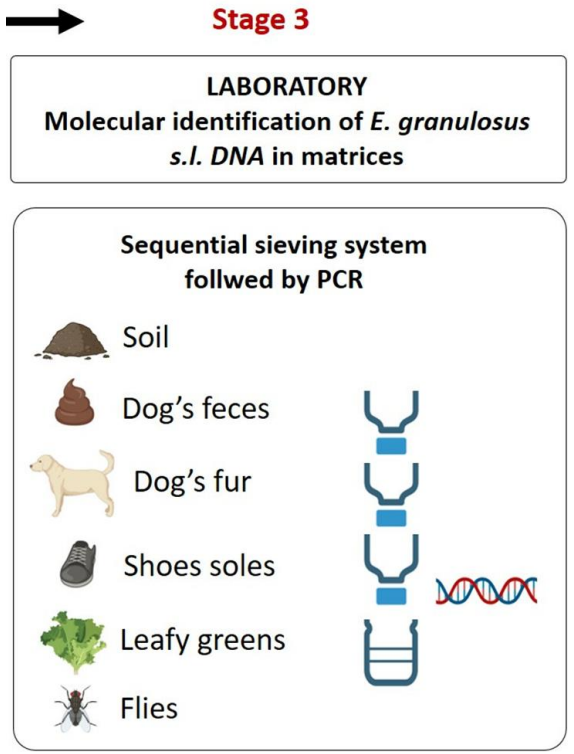


S3: MOLECULAR IDENTIFICATION of *E. granulosus* DNA

LABORATORY studies

- A priori protocols
- Training in Chile [Cristian A. Alvarez Rojas]
- Collection of samples [sieving, concentration, storing] (Mathis - 1996; Guggisberg - 2020)
- Molecular analysis (Chile): conventional/multiplex PCR (Stefanić - 2004; Trachsel - 2007)





Results: High Contamination in Households

Significant levels of *E. granulosus* DNA contamination were found across multiple matrices within households. Bayesian analysis showed no significant difference in the overall risk of contamination between case and control households.

Matrix	Case Households	Control Households
Soil	22% (Chile) - 42% (Peru)	19% (Chile) - 29% (Peru)
Dogs' fur	30% (Chile) - 14% (Peru)	29% (Chile) - 10% (Peru)
Shoes' soles	5% (Chile) - 10% (Peru)	22% (Chile) - 33% (Peru)
Dogs' feces and rectal swab	50% (Chile) - 0% (Peru)	5% (Chile) - 0% (Peru)

Results: Contamination in Public Areas

Public areas such as village squares and playgrounds showed substantial contamination, indicating a widespread environmental risk.

Contamination Ranges

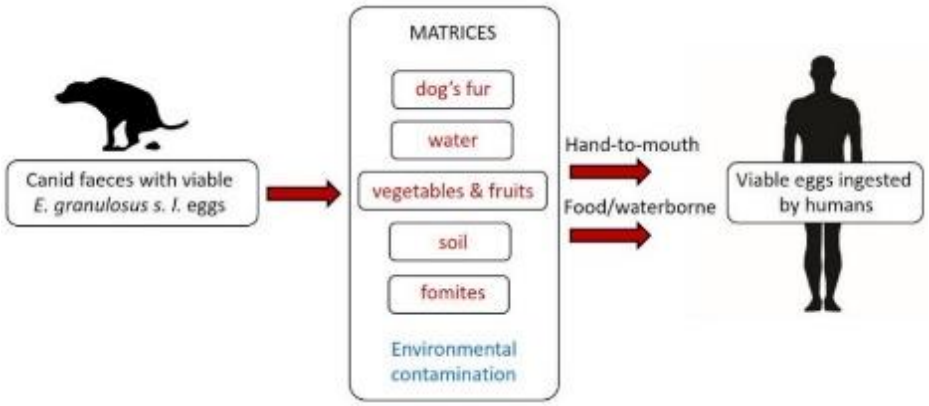
- Faecal samples: 12% to 77%
- Soil samples: 11% to 55%

Public vs. Household

Overall, matrices collected from public areas were **more contaminated** than those from **households**, particularly for fecal and soil samples.

CONCLUSIONS/SIGNIFICANCE

Results suggest the need for a PARADIGM-SHIFT towards considering CE an environmental-borne infection with a "community risk" to which people are exposed



HOME MESSAGE (**PARADIGM SHIFT**):

- from "individual risk" to "community risk" in endemic areas
- from "food-borne" to "environmental-borne infection " (by food, water, hand-to-mouth)

How EU supports
veterinary & **medical**
expertise on *Echinococcus*
by the

EUROPEAN UNION REFERENCE LABORATORIES

EURL
PUBLIC HEALTH
FOOD-, WATER- AND VECTOR-BORNE HELMINTHS AND PROTOZOA

European Union Reference Laboratory for Parasites (EURL-P; food safety)

DEPARTMENT
INFECTIOUS DISEASES

Single Market Programme (SMP Food)

(2006 – ongoing)

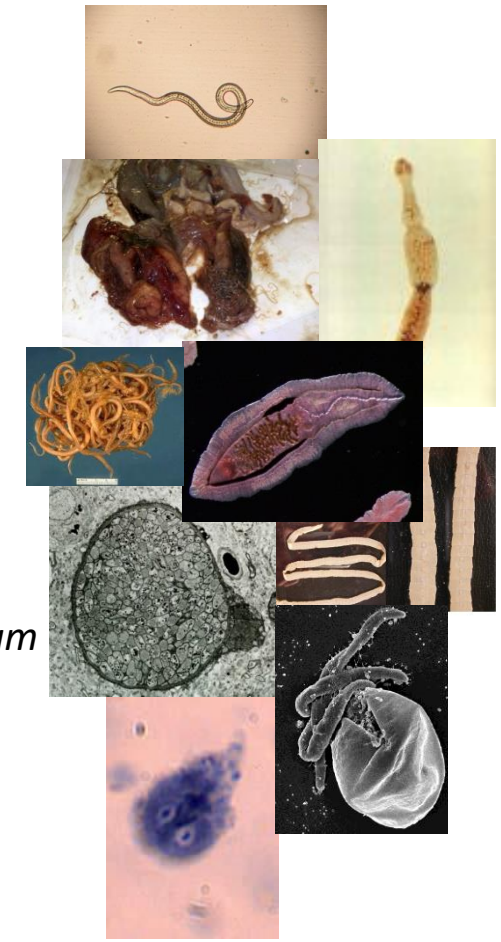
European Union Reference Laboratory for Parasites (EURL-P; food safety)

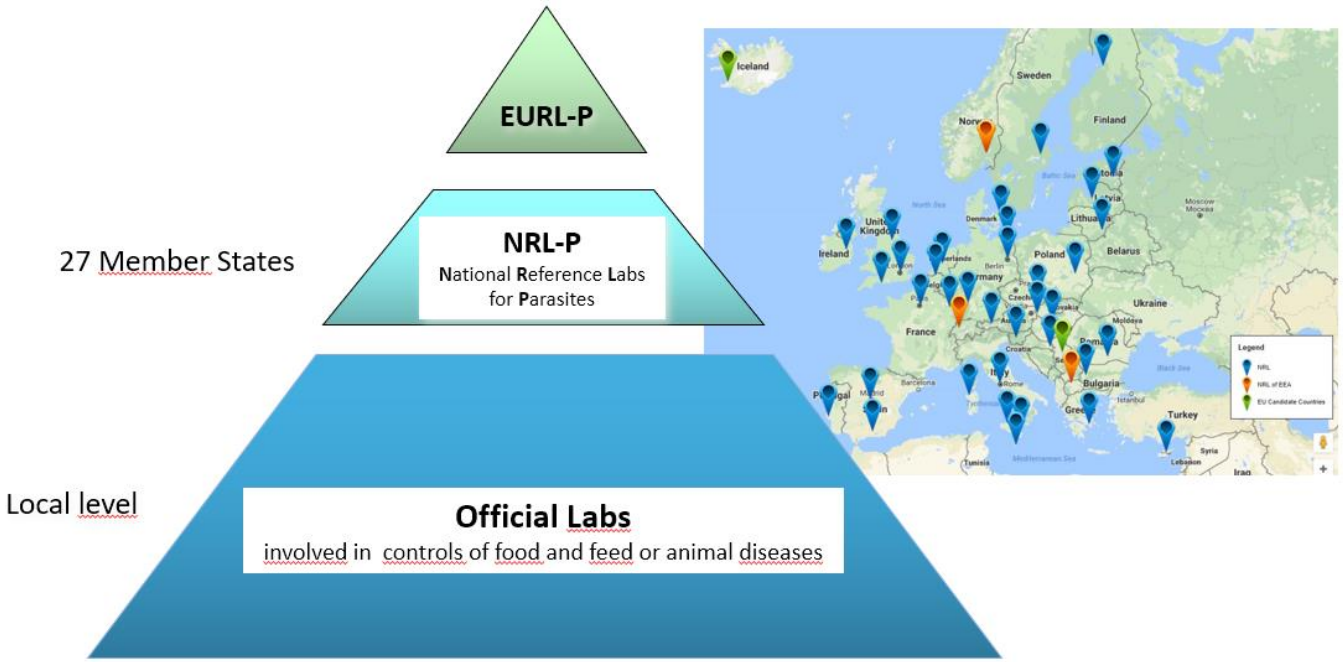
Helminths

- ***Trichinella***
- ***Echinococcus***
- ***Anisakis***
- *Opisthorchis*
- *Taenia*
- *Ascaris*
- *Toxocara*

Protozoa

- *Toxoplasma*
- *Cryptosporidium*
- *Giardia*
- *Entamoeba*
- *Blastocystis*
- *Sarcosystis*





ACCREDITATION

- since **2006** for ISO/IEC 17025 on general requirements for **laboratory testing**
- since **2014** for ISO/IEC 17043, on general requirements for **proficiency testing providers**

EURL PUBLIC HEALTH
FOOD-, WATER- AND VECTOR-BORNE HELMINTHS AND PROTOZOA

European Commission
EU4health
(2026-2032)

1) **LEGAL MANDATE**: Regulation (EU) 2022/2371 on **Serious Cross-Border Threats to Health**

2) **DESIGNATION**: *Commission Implementing Regulation (EU) 2024/2959*

3) EURL for Public Health on Food-, Water-, and Vector-bone **HELMINTHS and PROTOZOA** (EURL-PH-HP)

ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

EURL PUBLIC HEALTH
FOOD-, WATER- AND VECTOR-BORNE HELMINTHS AND PROTOZOA

COVID-19 CORONAVIRUS DISEASE 2019

European Commission
EU4health
(2026-2032)

1) **LEGAL MANDATE**: Regulation (EU) 2022/2371 on **Serious Cross-Border Threats to Health**

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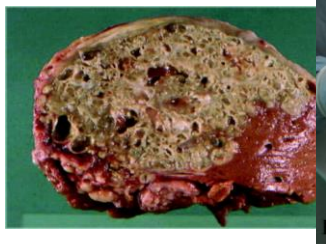
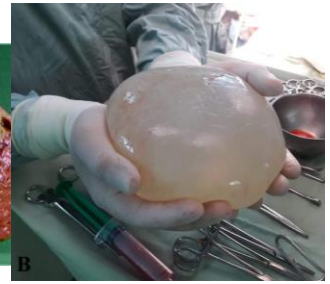
HELMINTHS and PROTOZOA (EURL-PH-HP)

ecdc EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

AE

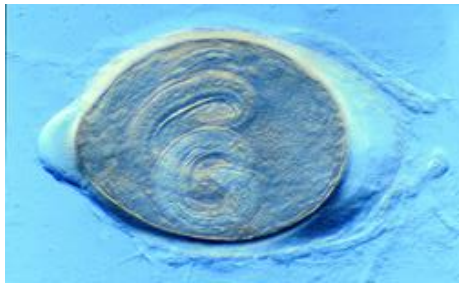


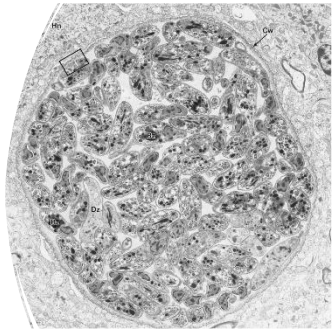
CE



- ***Echinococcus***
  (cestodes)

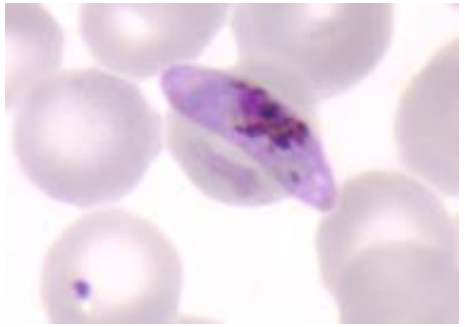
- *Trichinella*
  (nematodes)





- *Toxoplasma*
  (protozoa)

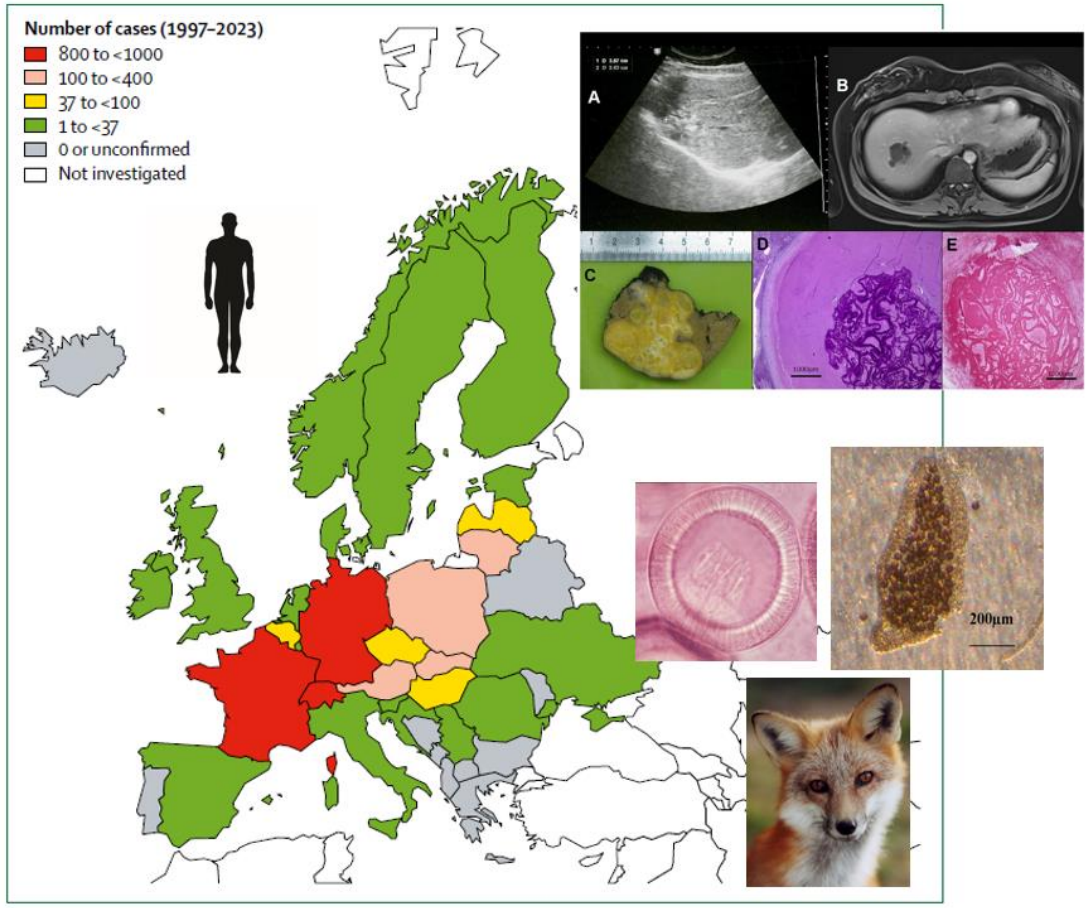
- *Plasmodium*
  (protozoa)



...and **other helminths and protozoa** (*Leishmania*, *Taenia*, *Opisthorchis*, *Schistosoma*, etc.) of EU public health relevance...

LAY THE FOUNDATIONS
of the

EURL
PUBLIC HEALTH
FOOD-, WATER- AND VECTOR-BORNE HELMINTHS AND PROTOZOA



ONLINE FIST: June 25, 2025

THE LANCET
Infectious Diseases

Unveiling the incidences and trends of alveolar echinococcosis in Europe: a systematic review from the KNOW-PATH project

Adriano Casulli, Bernadette Abela, Daniele Petrone, Barbara Šoba, Balázs Dezsényi, Jacek Karamon, Laurence Millon, Urmas Saarma, Daniela Antolová, François Chappuis, Severin Gloor, Marcel Stoeckle, Beat Müllhaupt, Relja Beck, Heimo Lagler, Felix Lötsch, Herbert Auer, Marie-Pierre Hayette, Libuše Kolářová, Sniedze Laivacuma, Mindaugas Šarkūnas, Vitalijus Sokolovas, Audronė Marcinkutė, Karin Troell, Ansgar Deibel, Pikka Jokelainen, Małgorzata Sulima, Dagny Krankowska, Stillhard Roman, Gaëtan-Romain Joliat, Nermin Halkic, Solange Bresson-Hadni, Joanna Halina Bednarek, Andrzej Załęski, Małgorzata Paul, Sheraz Yaqub, Mogens Jensenius, Joke van der Giessen, Laura Nabarro, Peter Chiodini, Florent Demonmerot, Jenny Knapp, Beate Grüner, Peter Kern, Lynn Peters, Federica Santolamazza, Azzurra Santoro**

Human alveolar echinococcosis is a notifiable parasitic infectious disease in most European countries; however, in practice, it is under-reported by national health systems. To fill this knowledge gap, data on the number, incidence, and trend of cases in Europe were extracted through a systematic review approach from both the scientific and grey literature, covering 1997–2023. This systematic review identified 4207 human alveolar echinococcosis cases from 28 of the 40 European countries investigated. Historically endemic Austria, France, Germany, and Switzerland accounted for 2864 (68·08%) of 4207 cases documented in Europe, and Lithuania, Poland, and Slovakia represented an additional 887 (21·08%) cases. Based on incidence rates and trends detected in this study, two main epicentres were seen in countries in the Alpine and the Baltic areas. The mean annual incidence from 1997 to 2023 throughout Europe was 0·063 cases per 100 000 people and in EU member states was 0·060 cases per 100 000 people. Data collected during this period suggest that alveolar echinococcosis is emerging in almost every country where this neglected parasitic infectious disease has been detected.

A new **BINARY STAR-SYSTEM** is emerging in Europe: Two EURLs on PARASITES in a **One Health** perspective

Funded by the European Union

3e colloque / 3rd symposium
Échinococcose kystique
- Méditerranée -
Cystic Echinococcosis
- Mediterranean

Besançon (France)
18 -19 nobembre 2025

Funded by the European Union

ITALIAN NETWORK on Neglected Tropical Diseases
IN-NTD

ISTITUTO SUPERIORE DI SANITÀ
DEPARTMENT INFECTIOUS DISEASES

SOIPA
Società Italiana di Parassitologia

EURL PUBLIC HEALTH
FOOD-, WATER- AND VECTOR-BORNE HELMINTHS AND PROTOZOA

Adriano Casulli
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WHO Collaborating Centre: Epidemiology, Detection and Control of Cystic and Alveolar Echinococcosis (*One Health*)

European Union Reference Laboratory for Parasites (EURL-P; food safety)