One Health Outlook

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One Health, many voices: advances and challenges in toxoplasmosis discussed at the VII Brazilian symposium and IV international symposium on toxoplasmosis

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Abstract

The VII Brazilian Symposium on Toxoplasmosis (SIMBRATOX) and the IV International Symposium on Toxoplasmosis (SINTOX) were held remotely from October 6 to 8, 2025, under the theme "*Toxoplasmosis – Strengthening the Connection between Science and Society for Global Health*." The meeting brought together researchers, health professionals, policymakers, and representatives of civil society from Brazil and abroad, fostering interdisciplinary dialogue grounded in One Health and Global Health perspectives. Scientific sessions and roundtables addressed key dimensions of toxoplasmosis, including human, animal, and environmental transmission pathways; advances in therapeutics and vaccine research; veterinary and epidemiological surveillance; and health education strategies for prevention. Clinical discussions focused on congenital, ocular, and immunocompromised-associated toxoplasmosis, while other sessions examined food- and waterborne transmission, environmental contamination, and emerging challenges linked to parasite diversity. Social and legal panels highlighted patient advocacy, equity, and access to public policies as integral components of disease control. This commentary summarizes the main themes, debates, and perspectives that emerged during the three-day meeting, positioning toxoplasmosis as a model for operationalizing One Health approaches in complex infectious diseases.

Keywords *Toxoplasma gondii*, Toxoplasmosis, One health, Global health, Public health surveillance, Epidemiology, Science-society engagement, Therapeutics and vaccines, Foodborne transmission, Waterborne transmission

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Introduction

Toxoplasma gondii is an obligate intracellular protozoan of global relevance, capable of infecting virtually all warm-blooded animals and estimated to have exposed approximately one third of the human population worldwide [1]. Although infection is frequently asymptomatic, toxoplasmosis can result in severe disease, particularly in congenitally infected individuals, immunocompromised patients, and in the context of atypical or highly virulent parasite strains [2–4].

Its complex life cycle – encompassing feline definitive hosts, a broad range of intermediate hosts, food production systems, and environmental contamination through oocysts disseminated in soil and water – positions toxoplasmosis as a paradigmatic model for the One Health approach [5, 6]. This integrative perspective is especially critical in South America, where the parasite displays remarkable genetic diversity, including non-clonal and highly virulent strains associated with severe disease even in immunocompetent individuals, and where Amazonian toxoplasmosis has emerged as a potentially life-threatening condition linked to atypical genotypes and specific environmental exposures [2, 7, 8].

In this context, the VII Brazilian Symposium on Toxoplasmosis (SIMBRATOX) and the IV International Symposium on Toxoplasmosis (SINTOX), organized by the Brazilian Toxoplasmosis Research Network (RedeToxo), convened remotely in October 2025 under the theme "*Toxoplasmosis – Strengthening the Connection between Science and Society for Global Health*," with the scientific program and submitted works documented in the official proceedings and abstract book [9]. The meeting brought together researchers, health professionals, policymakers, and civil society representatives from Brazil and abroad, reflecting a broader transition in toxoplasmosis research toward integrated approaches linking clinical medicine, environmental health, veterinary science, and social determinants. A central message permeated the event: bridging science and society as a prerequisite for advancing effective One Health responses to toxoplasmosis.

Opening session and keynote lecture

The opening session brought together representatives from SIMBRATOX, SINTOX, and RedeToxo, who emphasized the importance of collaborative research, institutional articulation, and sustained knowledge exchange to advance the understanding and control of toxoplasmosis. Speakers highlighted the strategic role of scientific networks in strengthening national and international cooperation and in bridging research, public health practice, and societal engagement. This shared perspective set the stage for the keynote lecture, which provided the conceptual framework for the symposium by explicitly situating toxoplasmosis within a One Health perspective.

The keynote lecture was delivered by Francisco Edilson Ferreira de Lima Júnior (General Coordination for Zoonoses and Vector-Borne Diseases Surveillance, Ministry of Health, Brazil), who framed toxoplasmosis as a globally distributed yet persistently neglected public health challenge, particularly in low- and middle-income countries. Drawing on the Brazilian context – where seroprevalence reaches approximately 68%, among the highest reported worldwide [10], and congenital toxoplasmosis accounts for an incidence of 14.1 cases per 10,000 live births and an average of 53 infant deaths per year [11, 12] – he characterized these outcomes as largely preventable and closely associated with social vulnerability.

A central focus of the keynote was the need to expand surveillance beyond routine case notification, particularly in relation to foodborne and waterborne transmission, which pose major challenges for prevention and outbreak investigation. Effective responses, he argued, depend on robust surveillance systems integrating laboratory capacity, molecular and epidemiological tools, environmental monitoring, and interinstitutional data sharing – framing surveillance strengthening not only as a technical endeavor but as a governance challenge rooted in collaboration and institutional alignment.

In his concluding remarks, Lima-Júnior underscored communication and social engagement as integral components of sustainable prevention, arguing that effective One Health responses depend on continuous dialogue among researchers, health professionals, policymakers, and society, particularly where cultural, behavioral, and socioeconomic factors shape exposure risks.

Scientific highlights by thematic axis

One health perspectives

Addressing the global complexity of toxoplasmosis transmission, the roundtable "*One Health in Toxoplasmosis: Global Experiences*" brought together Pikka Jokelainen (Statens Serum Institut, Denmark), Lais Pardini (National University of La Plata and CONICET, Argentina), and Karen Shapiro (University of California Davis, USA). Discussions highlighted how transmission of *T. gondii* emerges from interconnected human, animal, and environmental systems while remaining unevenly captured by current surveillance structures, with the session emphasizing the practical challenges of translating integrated cross-sector approaches into coordinated diagnosis, monitoring, and prevention strategies.

Jokelainen presented the TOXOSOURCES project within the One Health European Joint Programme, which combines epidemiology, quantitative microbial risk assessment, discriminatory serology, and molecular typing to clarify the relative contribution of environmental

oocyst exposure and foodborne transmission through tissue cysts in meat. Particular attention to fresh produce and environmental contamination illustrated how key transmission pathways may remain systematically underestimated despite advanced surveillance systems. Pardini discussed the challenges of diagnosis and genotyping of *T. gondii* in Argentina, where geographic distances and unequal laboratory infrastructure constrain surveillance capacity across human and animal populations. The wide genetic diversity of circulating strains – including atypical genotypes shared across livestock, wildlife, companion animals, and congenital human infections – provided concrete evidence of interconnected transmission cycles [13].

Shapiro extended the discussion to environmental dissemination, presenting molecular and geospatial evidence of land-to-sea transmission affecting endangered California sea otters, with highly virulent genotypes – including Type X and the atypical COUG strain – associated with increased mortality and unusual pathological presentations [14, 15]. Collectively, these contributions framed toxoplasmosis as a paradigmatic One Health infection, demonstrating that effective control depends on sustained integration of environmental monitoring, molecular surveillance, and coordinated public health action across sectors and ecosystems.

Therapeutic and vaccine advances

Advances in treatment and prevention were examined in the roundtable "*New Therapeutic and Vaccine Options for Toxoplasmosis*," with contributions from João Luis Garcia (State University of Londrina, Brazil), Érica dos Santos Martins Duarte (Federal University of Minas Gerais, Brazil), and Carolina Gonçalves Pupe (Federal University of Rio de Janeiro, Brazil). Rather than isolated technological gaps, treatment and prevention challenges were framed as translational problems requiring alignment between experimental research, clinical practice, and public health implementation.

Garcia addressed vaccine development against toxoplasmosis, emphasizing the epidemiological importance of oocyst dissemination by felids and foodborne transmission through meat consumption. Despite decades of investigation, no licensed vaccines exist for humans or cats, while a live attenuated formulation remains restricted to small ruminants. Experimental platforms targeting antigens such as SAG1, ROP18, GRA5, and GRA7 have achieved partial protection in animal models, but parasite strain diversity – especially pronounced in Brazil – remains a major obstacle [16], motivating emerging approaches including reverse vaccinology and RNA-based platforms. Martins-Duarte examined drug repositioning as a pragmatic pathway to overcome limitations of existing regimens, noting that Brazilian isolates demonstrate heterogeneous susceptibility to standard sulfadiazine–pyrimethamine treatment [17]. Repurposed compounds, combination therapies, and nanotechnology-based delivery systems were discussed alongside the need for genomic investigations to clarify mechanisms underlying regional differences in drug response.

Pupe shifted focus to pharmaceutical formulation as a frequently underestimated determinant of therapeutic effectiveness in congenital toxoplasmosis, noting that the absence of pediatric-appropriate formulations often forces caregivers to fragment adult tablets, compromising dosing precision and adherence. Dispersible solid tablets and granulated powders were presented as stable alternatives, with data supporting further development toward regulatory approval and incorporation into public health systems. Overall, the session highlighted that innovation in toxoplasmosis therapeutics extends beyond identifying new molecules or vaccine candidates, requiring parallel advances in formulation science, translational pharmacology, and implementation pathways capable of accommodating parasite diversity and real-world health system constraints.

Veterinary science perspectives

Veterinary medicine emerged as a critical yet often underrecognized component of toxoplasmosis surveillance during the "*Veterinary Perspectives*" Science Circle, which included Felippe Danyel Cardoso Martins (Veelab Veterinary Diagnostic Medicine, Brazil) and Liliane Almeida Carneiro (National Primate Center, Evandro Chagas Institute, Brazil). The discussions examined how veterinary practice contributes to surveillance across clinical diagnostics, wildlife health, and public health interfaces, positioning veterinary systems as important sources of epidemiological intelligence within a One Health framework.

Martins highlighted the evolving role of local veterinary laboratories beyond diagnostic testing, functioning as hubs for clinical consultation, epidemiological reasoning, and risk communication. Routine data revealed that toxoplasmosis testing remains uncommon despite widespread parasite circulation, as investigation is typically restricted to severe neurological, reproductive, or fatal presentations – a threshold that contributes to systematic underrecognition of *T. gondii* infection in domestic animals. Operational constraints including reliance on serology, limited access to molecular diagnostics, and lack of methodological standardization further restrict the epidemiological use of diagnostic data.

Carneiro expanded the scope to wildlife, presenting non-human primates as highly sensitive sentinels of environmental contamination. Outbreak investigations demonstrated that neotropical primates frequently develop rapidly fatal toxoplasmosis, often dying before detectable

antibody responses emerge, requiring integrated molecular and post-mortem approaches. Mortality events were frequently associated with environmental contamination linked to felids and human-mediated ecological disturbances, illustrating how wildlife surveillance can reveal transmission dynamics invisible in conventional clinical monitoring. Across both contributions, a recurring gap emerged between where surveillance signals originate and how they are incorporated into formal monitoring systems, with veterinary and wildlife data often remaining fragmented across institutional sectors. The session therefore emphasized diagnostic harmonization and integrated workflows linking animal, environmental, and human health information, highlighting veterinary medicine as a central rather than peripheral component of intersectoral surveillance.

Epidemiology and surveillance

Persistent epidemiological invisibility despite widespread infection framed the lecture "*Epidemiological aspects of toxoplasmosis in Brazil: an analysis of morbidity and mortality*," presented by Rosalynd Vinicios da Rocha Moreira (Sergio Arouca National School of Public Health, Fiocruz, Brazil). The presentation drew on data from national health information systems of the Brazilian Unified Health System (SUS), covering infants under one year of age, pregnant women, and people living with HIV/AIDS between 2010 and 2024.

Findings from this ongoing nationwide analysis revealed increased notifications among pregnant women and newborns consistent with mandatory reporting policies, a substantial proportion of cases among people living with AIDS, and congenital toxoplasmosis as the leading cause of hospitalization within the study population. Upward trends in hospitalization rates, increased infant mortality, and marked regional disparities were also identified [10, 12, 18]. The lecture underscored that toxoplasmosis remains underestimated in Brazil and exhibits heterogeneous epidemiological patterns reflecting broader socioeconomic inequalities, with structural limitations in healthcare delivery contributing to underdiagnosis and distortions in resource allocation and policy prioritization.

Strengthening preventive strategies, ensuring timely diagnosis and treatment during pregnancy, improving data quality, and enhancing interoperability among health information systems were identified as priorities. The presentation reinforced the importance of integrating surveillance data and fostering dialogue between research, clinical practice, and health management from an interdisciplinary perspective to support evidence-based public policy and sustainable disease control.

Health education and prevention

Health education was positioned as a central operational pillar of toxoplasmosis prevention during the session "*Knowing to Prevent: Strategies for Health Education*," which included Lilian Maria Garcia Bahia de Oliveira (Federal University of Rio de Janeiro, Brazil), Andressa Ferreira da Silva (Federal Rural University of Rio de Janeiro, Brazil), Fernanda Ferreira Evangelista (Federal University for Latin American Integration, Brazil), and Cynthia Dantas de Macedo Lins (Federal University of Roraima, Brazil). Rather than a complementary activity, education emerged as a structural intervention linking community engagement, professional training, and prevention strategies across a cross-disciplinary approach.

Bahia-Oliveira introduced the *Brasília Letter* [19] as a strategic framework for multisectoral and pan-American collaboration in toxoplasmosis prevention, expanding the agenda initiated by the *Letter of Búzios* [20] toward integrated cross-sector principles. Persistent knowledge gaps among pregnant women and health professionals – particularly regarding transmission routes and interpretation of diagnostic tools such as IgG avidity testing – were identified as central barriers [21]. Da Silva emphasized the veterinary dimension of prevention, addressing misconceptions that stigmatize cats and highlighting that human infection is more frequently associated with undercooked meat, contaminated water, and soil exposure, while framing dogs as environmental sentinels for shared exposure risks [22].

Evangelista described Primary Health Care (PHC) within the SUS as the main platform for preventing gestational and congenital toxoplasmosis, with waiting-room activities and continuing professional education as feasible strategies to improve counseling quality and adherence to preventive measures. She also emphasized the importance of continuing education for PHC teams through refresher courses and practical workshops. Lins addressed implementation in Roraima, where geographic isolation, indigenous populations, and intense migration create additional challenges for diagnostic screening and follow-up, with telehealth support and point-of-care diagnostics identified as necessary to reduce regional inequities. Taken together, the session reframed health education as a continuous process embedded within health systems through which scientific knowledge becomes actionable prevention, enabling more equitable and sustainable toxoplasmosis control.

Clinical and interdisciplinary challenges

A clinically complex case served as the analytical starting point for the roundtable "*Severe Congenital Toxoplasmosis: Interdisciplinary Perspectives on a Possible Reinfection Case*," bringing together Ericka Viana Machado Carellos (Federal University of Minas Gerais, Brazil), Jorge

Enrique Gómez Marín (University of Quindío, Colombia), Cristina Gardonyi Carvalheiro (University of São Paulo, Brazil), and Andressa Ferreira da Silva. Using a single severe case as a framework, the session integrated maternal–fetal medicine, neonatology, infectious diseases, parasite population genetics, and veterinary public health to reaffirm that prior maternal infection does not invariably prevent congenital transmission.

Carellos presented a newborn whose mother had documented IgG positivity from a prior pregnancy, with maternal history revealing close contact with cats during the current pregnancy. Initially managed for hypoglycemia and respiratory distress, the infant later developed cholestasis and hepatomegaly, prompting serological confirmation of congenital toxoplasmosis. At 41 days of life, ophthalmological examination revealed bilateral macular chorioretinal scarring with retinal vasculitis and vitritis; after 12 months, severe bilateral visual sequelae were documented – illustrating how prior maternal immunity failed to prevent vertical transmission and severe ocular outcomes.

Gómez-Marín interpreted the case in light of the extensive genetic diversity of *T. gondii* in South America, proposing reinfection or superinfection with a highly virulent strain as a biologically plausible mechanism in contexts of intense environmental exposure and overlap between domestic and sylvatic transmission cycles [2]. Carvalheiro addressed the diagnostic uncertainty surrounding maternal serology, emphasizing that IgG positivity does not confer sterilizing immunity and that the absence of accurate tests for reinfection makes atypical transmission scenarios difficult to recognize. Carellos reaffirmed the consensus supporting pyrimethamine, sulfadiazine, and folinic acid for approximately 12 months, acknowledging real-world gaps due to the lack of pediatric formulations and drug shortages. Da Silva emphasized that transmission risk depends on specific household practices rather than cat ownership alone, proposing veterinary counseling integrated into prenatal care as a strategy for targeted, non-stigmatizing prevention. Rather than an isolated anomaly, the case illustrated how rare but high-impact events expose limitations in population-based prevention models and underscore the need for flexible clinical reasoning and interdisciplinary risk assessment.

Ocular toxoplasmosis

Ocular involvement as a major driver of long-term disease burden framed the session "*Ocular Toxoplasmosis*," with contributions from Alejandra de la Torre (National University of Colombia), Daniel Vítor de Vasconcelos Santos (Federal University of Minas Gerais, Brazil), and João Marcello Fortes Furtado (University of São Paulo, Brazil). Examining therapeutic management, congenital disease burden, and broader social implications, the discussion emphasized the recurrent nature of ocular disease, cumulative retinal damage, and its lasting consequences for patients and health systems.

De la Torre reviewed current therapeutic approaches for active ocular toxoplasmosis, noting broadly comparable efficacy across available regimens and a growing tendency among uveitis specialists to treat all active lesions [23]. Standard therapy combines sulfadiazine, pyrimethamine, prednisone, and folinic acid, or trimethoprim–sulfamethoxazole with corticosteroids – the latter avoided as monotherapy due to exacerbation risk. Clindamycin or azithromycin may be used in cases of sulfonamide intolerance, while intravitreal clindamycin with dexamethasone represents a valuable option in pregnancy, systemic intolerance, or refractory disease, with growing evidence also supporting intermittent trimethoprim–sulfamethoxazole prophylaxis in high-risk patients.

Vasconcelos-Santos addressed congenital ocular toxoplasmosis as a major contributor to childhood visual impairment in Brazil, emphasizing that approximately two-thirds of children with lesions at birth develop recurrences, most commonly between four and five years of age, reinforcing the necessity of structured ophthalmologic follow-up throughout childhood [24]. Furtado examined the social burden of ocular toxoplasmosis, describing it as a neglected condition with substantial economic, psychological, and educational consequences that disproportionately affects vulnerable populations with limited access to prenatal care and specialized services. Telemedicine was highlighted as a promising tool for expanding specialist access in underserved regions. Overall, the session illustrated how ocular toxoplasmosis exemplifies the intersection between clinical disease, social inequities, and environmental exposure, demonstrating that reducing visual morbidity requires coordinated action linking early diagnosis, sustained care, and preventive policies across health systems.

Social and legal dimensions

Expanding the discussion beyond biomedical perspectives, the session "*Toxoplasmosis and Civil Society*" examined the disease through social, legal, and human rights lenses, bringing together Débora Catarino Silva (Northwest Paraná Eye Hospital, Brazil), Andréa Lucchesi de Carvalho (Ministry of Health, Brazil), Sonia Isoyama Venancio (Primary Health Care Secretariat, Ministry of Health, Brazil), and Carlos Eduardo Vieira da Silva (Public Defender of the State of Minas Gerais, Brazil). Broadcast live on YouTube, the session enabled direct participation from affected communities and reinforced the symposium's commitment to science-society dialogue and collective responsibility.

Silva traced the emergence of toxoplasmosis-related social mobilization in Brazil, describing how delayed diagnosis, recurrent ocular disease, and limited psychosocial support motivated the creation of advocacy networks such as the Ocular Toxoplasmosis Brazil project – platforms for health education, evidence-based information, and collective support that also generate community-based insights into disease burden. Carvalho advocated a shift from a disease-centered framework toward a perspective focused on living with a chronic condition, highlighting the importance of continuous follow-up, early recognition of disease reactivation, and empathetic communication – particularly during adolescence, when clinical recurrence may intersect with educational and social transitions.

Venancio presented national strategies aimed at preventing vertical transmission, describing advances in prenatal and neonatal screening, strengthening of maternal and child health networks, and initiatives expanding pediatric pharmaceutical care – among them the incorporation of congenital toxoplasmosis into neonatal screening programs, enabling early diagnosis and timely intervention. Da Silva examined the legal dimension, noting that eligibility for disability-related social benefits depends not on diagnosis alone but on documented functional impairment, making detailed medical reports essential tools for accessing social protection and specialized care. Rather than positioning civil society as a peripheral actor, the session demonstrated that sustainable responses to toxoplasmosis depend on continuous interaction between science, health systems, and society.

Food- and waterborne transmission

Environmental and food systems were placed at the center of discussion in the roundtable "*Food- and Waterborne Transmission*," which included Fernanda Silveira Flôres Vogel (Federal University of Santa Maria, Brazil), Diego Averaldo Guiguet Leal (Federal University of Paraná, Brazil), and Maria Aparecida Moraes Marciano (Adolfo Lutz Institute, Brazil). Rather than isolated exposure events, infection risk was framed as an emergent property of interconnected ecological, regulatory, and socioeconomic processes, highlighting the need to interpret transmission within broader system interactions.

Vogel emphasized the difficulty of identifying contamination points along complex production and distribution chains, where variability in animal production systems, heterogeneous inspection practices, and limited traceability complicate epidemiological investigations. Prevention was presented as a systems-level challenge requiring structural improvements in food safety governance and monitoring throughout the production chain, beyond behavioral guidance alone. Leal demonstrated that prevailing regulatory frameworks rely primarily on bacterial indicators that fail to capture protozoan contamination – a critical surveillance blind spot – while evidence from environmental monitoring and infections in marine organisms repositioned waterborne transmission as a systemic problem shaped by sanitation infrastructure, land use, and watershed management rather than a rare outbreak phenomenon.

Marciano discussed the operational role of reference laboratories in outbreak investigations, highlighting technical barriers including low oocyst burden, uneven distribution, and complex analytical matrices, alongside regulatory limitations from the absence of standardized testing requirements for protozoan pathogens. Case investigations demonstrated that identifying contamination sources frequently depends on iterative sampling strategies and coordinated interinstitutional collaboration across health, agriculture, and environmental sectors. Collectively, the session demonstrated that food- and waterborne toxoplasmosis cannot be effectively addressed through isolated interventions, requiring alignment of environmental monitoring, food safety regulation, laboratory capacity, and public health decision-making within integrated surveillance frameworks capable of detecting transmission across the human-animal-environment interface.

Toxoplasmosis in immunocompromised patients

Severe manifestations of toxoplasmosis in vulnerable populations were the focus of the roundtable "Toxoplasmosis in Immunocompromised Patients," featuring José Ernesto Vidal Bermúdez, Lígia Câmara Pierrotti, and Amaro Nunes Duarte Neto (all from the University of São Paulo School of Medicine, Brazil). Integrating perspectives from HIV medicine, transplantation, and diagnostic pathology, the discussion highlighted how high background exposure to *T. gondii*, combined with unequal access to diagnosis and follow-up, sustains the clinical relevance of severe disease in Brazil.

Vidal described cerebral toxoplasmosis as a persistent cause of morbidity in people living with HIV despite widespread antiretroviral therapy [25], presenting a diagnostic framework integrating neurological syndrome, degree of immunosuppression – particularly CD4 counts below 200 cells/mm^3 – and local neuroepidemiology, where toxoplasmosis remains the leading cause of opportunistic focal brain lesions. Clinical and radiological improvement after 10–14 days often supports presumptive diagnosis without awaiting serology, while structured reassessment with repeat imaging and biopsy consideration is recommended in non-responders.

Pierrotti characterized toxoplasmosis as an infrequent but high-impact opportunistic infection in transplantation [26, 27], noting that in solid organ recipients risk is strongly shaped by donor–recipient serostatus, with

vulnerabilities frequently involving interruption of trimethoprim–sulfamethoxazole prophylaxis, while in hematopoietic stem cell transplantation disease is mainly driven by reactivation in seropositive recipients, supporting PCR-based surveillance and preemptive therapy. Duarte-Neto detailed the histopathologic basis of diagnosis, noting that ring-enhancing lesions reflect a necrotic core surrounded by inflammatory tissue, with highest diagnostic yield in the transition zone, and that parasite identification may require PAS staining and immunohistochemistry in sparse specimens [28]. Beyond CNS disease, pulmonary, cardiac, and disseminated manifestations were reviewed, underscoring that toxoplasmosis frequently mimics other opportunistic infections. The session highlighted severe toxoplasmosis as a condition in which diagnostic delay and fragmented follow-up directly influence survival, with effective management depending on coordinated decision-making across specialties and diagnostic platforms.

Tributes, awards and closing remarks

The closing session celebrated scientific excellence and the long-term commitment of the toxoplasmosis research community to integrating science, healthcare, and society. International tributes honored Eskild Petersen (Roskilde University, Denmark) and François Peyron (Civil Hospices of Lyon, France) for outstanding global contributions to infectious diseases and congenital toxoplasmosis, recognizing their roles in advancing clinical knowledge, strengthening international collaborative networks, and shaping evidence-based public health strategies. National tributes recognized Gláucia Manzan Queiroz de Andrade (Federal University of Minas Gerais, Brazil) and Lourenço Higa (Maringá Regional University Hospital, Brazil) for pioneering contributions to congenital toxoplasmosis care and research in Brazil, integrating clinical practice, epidemiological research, professional training, and public health program development.

In addition to the tributes, awards acknowledged excellence in scientific communication and science–society engagement. The Mário Camargo Award recognized the best oral scientific presentations, emphasizing innovation and methodological rigor among early-career researchers, while the J. P. Dubey Award honored artistic and cultural initiatives – including photography, literature, visual arts, and digital media – that translated scientific knowledge into accessible forms, reinforcing the role of art in public engagement and health education.

In their final remarks, the organizers reaffirmed the symposium's mission to strengthen connections between scientific evidence, public health practice, and community participation, positioning One Health approaches as essential for transforming knowledge into coordinated and effective action.

Conclusion

SIMBRATOX and SINTOX demonstrated how scientific research, public health practice, veterinary medicine, and social engagement converge to address toxoplasmosis as a complex global challenge. Through interdisciplinary dialogue and broad participation enabled by a fully remote format, the event strengthened One Health and Global Health perspectives while fostering collaboration across sectors. Persistent gaps and shared priorities identified throughout the meeting – including the need for coordinated surveillance, harmonized diagnostic approaches, education-centered prevention strategies, and stronger connections between science, policy, and society – collectively reinforce that no single discipline or sector can effectively address toxoplasmosis in isolation. Advancing disease control therefore requires sustained integration of scientific evidence, health systems, and societal engagement, positioning One Health not only as a conceptual framework but as an operational pathway toward equitable and sustainable public health action.

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