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RHISSA Research Networks for Health Innovations in Sub-Saharan Africa

cystinet africa Cysticercosis and Taeniosis Network of Sub-Saharan Africa

CYSTINET-Africa

Cysticercosis and Taeniosis Network of Sub-Saharan Africa

Short description of the network project:
CYSTINET-Africa represents a One Health platform that integrates basic, epidemiological, clinical, digital, and social science research – along with One Health capacity-building and the transfer of results into One Health policy at the local and global (WHO) levels. More precisely, its main objective is to eliminate and prevent *Taenia solium* (neuro-)cysticercosis/taeniosis (TSCT), a neglected tropical disease, by connecting the health of humans, animals, and their shared ecosystems through equitable inter-/transdisciplinary research and community empowerment. The CYSTINET-Africa network includes the Sokoine University of Agriculture and the National Institute for Medical Research in Tanzania, the University of Zambia, Eduardo Mondlane University in Mozambique, and two German partners at the Technical University of Munich. Its consortium is led by two directors from Tanzania and Germany, who are supported by a scientific advisory board of experts in the relevant fields and an executive board composed of directors and principal investigators from each partner institution, who are responsible for overseeing project implementation, good governance, and scientific conduct.

MOZAMBIQUE
Eduardo Mondlane University

TANZANIA
Sokoine University of Agriculture
National Institute for Medical Research

ZAMBIA
University of Zambia

GERMANY
Technical University of Munich (Bayern)

Country	Post doc		PhD		BSc / MSc		TOTAL		
	Male	Female	Male	Female	Male	Female	Male	Female	TOTAL
Tanzania I	0	0	2	1	1	0	**3**	**1**	**4**
Tanzania II	0	0	2	0	1	1	**3**	**1**	**4**
Mozambique	0	0	1	1	1	1	**2**	**2**	**4**
Zambia	0	0	2	1	3	0	**5**	**1**	**6**
Germany I	2	1	0	0	1	0	**3**	**1**	**4**
Germany II	1	0	0	0	0	0	**1**	**0**	**1**
TOTAL	**3**	**1**	**7**	**3**	**7**	**2**	**17**	**6**	**23**

List of CYSTINET-Africa students and postdoctoral fellows recruited throughout the project

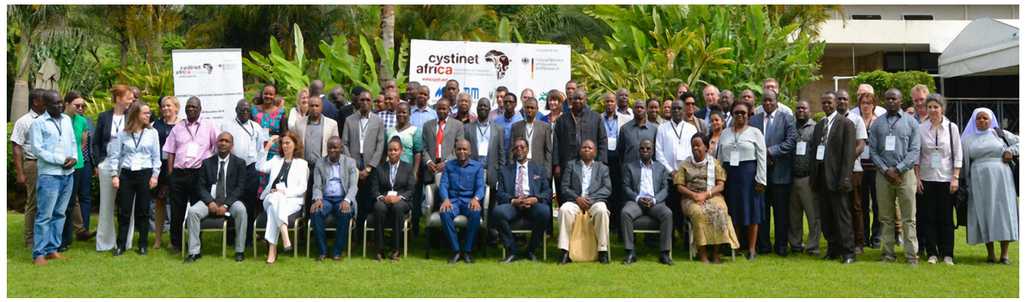
Challenge, approach and impact:
With neurocysticercosis (NCC) causing epilepsy in humans and considerable economic losses in sub-Saharan Africa, *T. solium* has been declared foodborne parasite #1 by the WHO/FAO. CYSTINET-Africa aims to address related gaps on the way to eliminating and preventing TSCT by achieving the following aims:

- Evaluation of the epidemiology of *T. solium* (neuro-) cysticercosis in Mozambique, Tanzania, and Zambia
- Analysis of pathomechanisms involved in the disease complex of *T. solium* (neuro-)cysticercosis in Mozambique, Tanzania, and Zambia
- Assessment (clinical, serological, radiological, immunological) of people with symptomatic NCC in connection with novel treatment in Tanzania
- Investigation of *T. solium* with regard to animal (e.g. pig breed susceptibility) and ecosystem (transmission by insects) health in Zambia
- Implementation of a health education package for *T. solium* prevention in Tanzania
- One Health capacity-building (e.g. an e-learning platform) and contributions to One Health policy

Results confirm both the endemicity of TSCT and a lack of infrastructure and expertise in diagnosing *T. solium* infections in the health and veterinary sectors. Our core findings to date indicate the superiority of antiparasitic combination therapy compared to monotherapy in people with NCC, key immunodeterminants and stage-specific proteome signatures in *T. solium* cysts and the blood of NCC patients, and the positive effect of the health education package on community knowledge. Analysis of the impact of the latter on TSCT prevalence is ongoing, as is the evaluation of data collected on animal and ecosystem health. So far, this has resulted in more than 14 scientific publications.

The capacity-building activities include training/mentoring 23 students/post-docs, designing academic courses, establishing a TSCT serology laboratory, creating a One Health TSCT e-learning platform, and contributing to two international treatment guidelines. Our dissemination strategy supports numerous scientific publications and policy briefs, two international conferences organised by CYSTINET-Africa, active social media management, and regular dissemination of research results to decision-makers for uptake into One Health policy.

Director (Tanzania):
Prof. Dr Helena Ngowi | helenangowi@gmail.com
Co-director (Germany):
Prof. Dr Dr Andrea Winkler | andrea.winkler@tum.de
Link to Website:
https://www.cystinet-africa.net/



The first international conference organised by CYSTINET-Africa was held in Arusha in 2019, with over 100 participants from more than 20 countries attending from across the globe (©CYSTINET-Africa)