Studies of molecular epidemiology, clinical epidemiology, and immunology of tuberculosis in the pastoral communities and their livestock in Ethiopia

Main partners:

UiO : University of Oslo

Institute for Health and Society (HELSAM)
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Addis Ababa University

Aklilu Lemma Institute of Pathobiology (ALIPB)
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Project Objectives:

1. Establish molecular epidemiology of *Mycobacterium tuberculosis complex* (MTC)
2. Determine the magnitude of latent tuberculosis
3. Assess specific immune responses during latent and active tuberculosis
4. Determine prevalence of active tuberculosis
5. Establish the prevalence of mixed mycobacterial infections in humans and livistock
6. Investigate transmission of mycobacterial species/strains between livestock and their owners
7. Capacity building at Aklilu Lemma Institute of pathobiology, Addis Ababa University.

Results:

Master students enrolled (All students are males funded by NUFU)

Awarding Institution	Degree title	2007	2008	2009	2010	2011	Total
UIO	Mphil		1	1	1		3
ALIPB	MSc			1	2	1	4

Ph.D. candidates by funding

Awarding Institution	NUFU		Quota funding		Other funding		Total	
	Female	Male	Female	Male	Female	Male	Female	Male
University of Oslo		2		1*				3

- *Linked RCN project

Important results/findings

Identification and reporting of a New strain of ***Mycobacterium bovis*** (**SB1953**) from infected camels for the first time and this has been registered in www.mbovis.org database.

Short presentation of Ph.D. projects

1. **PhD candidate Mengistu LegesseDadi.Title**: **Studies of epidemiology and immunologyof tuberculosis in the Afar pastoral community of Ethiopia. Objectives: 1)** Study the prevalence of mycobacterial infection and disease in human**. 2)** Examine immune responses during infection and/or disease. 3) Evaluate diagnostic tests for the diagnosis of tuberculosis
2. **PhD candidate Gezahegne Mammo Kassa. Title: Molecular epidemiology of *Mycobacterium tuberculosis* complex in Afar Pastoral communities and their livestock. Objectives: 1)** Study prevalence of infection and disease in livestock**. 2)** Determine species/strains of mycobacteria that circulate in Afar pastoral community**. 3)** Study of transmission between animals and humans based on case control design and molecular characterization**. 4)** Examine the presence of mixed mycobacterial infections in animals and humans

Sustainability/further activities

PhD candidates trained in connection with NUFU project will participate in the teaching of masters and PhD programs, and research activities of the Institute upon completion of their training

Impact of the project:

Manpower development

A total of 7 masters (4 at AAU) and 3 PhD candidates (one linked to RCN project) have been trained.

Technical training: Two technical staff from ALIPB/AAU have been trained on mycobacteriology and molecular techniques in Norway and in Tanzania, linked to the project, and one of the trainees was female

Acquisition of materials and facilities:

1) Establishment of spoligotyping technique for genetic characterization of mycobacteria

2) Purchase of two field vehicles and laboratory equipment such as deep-freezer, Co2 incubator, ELISA reader, and centrifuge.

3) Acquisition and dissemination of scientific data: Two workshops held in Ethiopia and a minimum of 20 scientific articles are expected to be published at the end of the project period, including 12 articles have already been published.

New collaborations: 1)new collaborations have been forged with Norwegian School of Veterinary Science, and National Institute of Medical Science and Nutrition in Mexico, linked to a new collaborative project financed by the Research Council of Norway. 2) Participation in teaching and supervision at ALIPB/AAU: Two staff members of the University of Oslo, Gunnar Bjune (2009 and 2010) and Fekadu Abebe (2011) have participated in teaching advanced immunology course for PhD fellows at ALIPB. In addition, Fekadu Abebe (UiO) is participating in the supervision/co-supervision of PhD candidates at ALIPB/AAU.

Publications: 12 scientific articles-published, 3 submitted, More publications are expected.

Programme: **NUFU**
ProjectID: **NUFUPRO-2007/10198**
Discipline area (s): **Health Sciences, medical sciences, veterinary medicine, biological sciences**
Period: **2007-2011**
Allocation **3.5 million**