CSRS
Centre Suisse de Recherches Scientifiques en Côte d'Ivoire

Afrique One
Aspire

Call for Fellowships Afrique One-ASPIRE

TTP4: Foodborne Diseases and Nutritional Illnesses

TTP4 aims to address the nutritional patterns in transitional landscapes and their impact on food-related diseases by studying the epidemiological links between infectious diseases and selected/related non-communicable diseases of livestock dependent populations. It covers the following aspects:

- Animal-source food value chains – livelihood of livestock dependent populations
- Consumption patterns – true foodborne disease (FBD) burden and risk of infection – non-communicable disease (NCD) analysis and opportunities
- Socioeconomic cost-effective design of interventions

Ref: TTP4-Food-MSc5

Project Title: Livestock product infections and drug resistance patterns in rural and urban settings

Enrolment: The Master fellows will be enrolled at the NM-AIST or SUA, Tanzania or EISMV, Senegal.

Project Description: Livestock products forms are major component of nutritional transition in the modern life style. However, contaminated livestock products are a significant threat to public health. *Escherichia coli* and *Salmonella* spp. are the major causes of contamination of livestock products.

Salmonella spp. is one of the most common pathogenic bacteria associated with food. Meat and meat products, poultry and poultry products and dairy products are the main sources of *Salmonella* and other foodborne pathogen infections in humans. Presence of *Salmonella* spp. in fresh raw products can vary widely. In the infected, *Salmonella* spp. can cause food poisoning which results in fever, diarrhoea, and abdominal cramps. If left untreated disease can develop into typhoid fever. Complications such as heart diseases (endocarditis) and arthritis can furthermore arise.

E. coli is an intestinal pathogen that can contaminate food products via faecal matter. Dairy cow and pig factories often dump millions of gallons of putrefying waste into massive open-air cesspits which can leak. The contaminated water is subsequently used to irrigate crops. This is one possible pathway of how a, potentially deadly, faecal pathogen like *E. coli* O157:H7 can end up contaminating our vegetables. *E. coli* can cause urinary tract infections while *E. coli* O157:H7 can result in acute kidney failure with long-term consequences such as insulin dependent diabetes.

Extensive use of antimicrobial drugs in the animal industry (e.g. meat, dairy and poultry production) and in modern medicine has resulted in drug resistance that threatens human health and raises a very serious public health concern. Antibiotic use can promote the creation of superbugs which can contaminate meat and poultry and might lead to persistent disease in people. Superbugs can also exit farms via farm workers, wind, runoff, and wildlife. Even if they don't immediately cause illness, those bacteria are uniquely equipped to exchange genetic immunity via their plasmids, with other bacteria wherever they encounter them.

Infections with antibiotic-resistant bacteria are commonly confused with malaria and are, hence, often misdiagnosed. Studies if African documenting the magnitude of risk factors and diseases caused by these infections and drug resistance in general, are limited.

In this project we will investigate the existence of animal and vegetable food contamination with *E. coli* spp. and *Salmonella* spp., and drug resistance patterns as risk factor for human infection.

Menthorship Team: Sayoki G. Mfinanga and Esther Ngadaya (NIMR); Bassirou Bonfoh (CSRS); Pammla Petrueka, Joram Buza, and Neeama Kassim (NM-AIST); Kaushik Ramaiya (MUHAS); Julius Mwaisalage (Ocean Road Cancer Institute Dar Es Salaam, Tanzania); Joseph Addo Ampofo (Water Research Institute, Ghana)

Qualifications: The candidate must be a citizen of an African country. Candidates from any discipline contributing to One Health (e.g. public health, veterinary and animal sciences, social sciences, geography, epidemiology or health economics) will be considered. Candidates with a bachelor degree in a relevant field are preferred.

For more information, contact the co-leads:
Bassirou Bonfoh, CSRS, Côte d'Ivoire, bassirou.bonfoh@csrs.ci
Sayoki Mfinanga, NIMR, Tanzania, gsmfinanga@yahoo.com