

CFP-NTD2021 Summaries

21030403 DfND (Drugs for Neglected Diseases Initiative), Geneva Switzerland – Dr. Charles E. Mowbray.

Building the pathway for translational drug development of orally active new chemical entities for cutaneous leishmaniasis.

850.000 euros

Cutaneous leishmaniasis (CL) is transmitted through the bite of sandflies that carry the Leishmania parasite. Around 1.2 million cases occur every year across 90 countries. People affected by poverty, malnutrition and displacement are most at risk. Because it is not fatal, it receives little attention from pharmaceutical companies, funding agencies, and local health systems.

The sandfly bites result in skin lesions which mainly occur on the face or other exposed areas and leave disfiguring, life-long scars which result in severe social stigma, particularly for women and children.

Current treatments are costly and often require weeks of painful injections of toxic drugs called antimonials. Despite severe side effects, these drugs have been used to treat the disease for over 60 years.

Patients need a safe and affordable treatment which can be taken orally or applied on skin, does not cause serious side effects, and can be used in low-resource settings or taken by the patients themselves without requiring follow-up by health workers. The treatment should be able to cure lesions quickly without leaving a deep scar.

<https://www.who.int/leishmaniasis/en/>

21030402 Erasmus MC, Department of Medical Microbiology and Infectious Diseases, Rotterdam The Netherlands, Dr. Wendy W.J. van de Sande.

Development of a point-of-care diagnostic test for mycetoma in Africa.

832.508 euros

Mycetoma is a neglected tropical disease found in (sub)tropical regions. It commonly affects children and young adults. Once infected, painless tumorous lesions appear on the feet. It then gradually increases in size leading to massive destruction, deformities and disabilities, which prevents children from attending school and leaves young adults without a job or chance at marriage.

The majority of the patients will only seek medical treatment when the lesions become so big that they can no longer walk, work and perform their daily activities. This is because patients need to travel for days to get to specialized clinics for diagnosis and treatment. Since almost all patients (84%) belong to the poorest communities, they simply can't afford to go earlier.

Mycetoma can be caused by bacteria or fungi, and hence, treatment differs between the two forms. Therefore, species identification is needed to initiate proper treatment. Since most patients are only seen late in their disease, delay in administering the correct therapy seriously damages the success of treatment and results in the need for amputation in up to 25% of patients. In Africa, amputation is a social stigma, and it has a strong economic impact on individuals and the community. Most amputees lose their jobs and become dependent on family members. The quality of life is, therefore, deeply affected.

Effective treatment could be offered sooner if patients were diagnosed at an earlier stage. But to do this, one must be able to perform diagnostic procedures locally, near the patients, rather than at a remote hospital. In this project, we will develop an easy-to-use diagnostic testing tool that can be used in local rural clinics in Africa with limited equipment and within an hour.



The test will be able to tell what the causative agent is and whether it should respond to the therapy given. To develop this test, DNA sequences will be read of a large sample of causative agents. Unique sequences will be identified that can be used to rapidly identify the causative agent in patients, and to demonstrate if the pathogen will respond to treatment. Since the test will use DNA as the starting material, simple DNA isolation methods will be developed. To make sure that the test is suitable, it will be evaluated under laboratory conditions in Africa. For this, we will test its performance in Senegal and Sudan. At the end of the project, our test will be ready for clinical trials in Africa.

The development of this diagnostic test with the funding of Dioraphte will be a major step forward in mycetoma management in rural Africa. It will allow early mycetoma case detection and initiation of proper therapy in local health-centers. This will reduce the number of amputations needed and tremendously improve the quality of life of mycetoma patients in Africa. Patients will be able to resume their normal daily activities, earn a living and not be shunned. This will affect them, their families and society as a whole.

<https://www.who.int/health-topics/mycetoma-chromoblastomycosis-and-other-deep-mycoses>

<https://www.mycetoma.edu.sd/>