

User-friendly test brings global elimination of Hansen's disease closer

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Credit: Leiden University

Researchers from the Leiden University Medical Center (LUMC) are

working on the first diagnostic test for leprosy that can be used outside a laboratory. This will not only reliably diagnose leprosy, but also be cheap and easy to use. Leprosy mainly occurs in low-income countries. A double challenge for researcher Anouk van Hooij. But the results of the test that she and colleagues have developed are promising. Van Hooij recently defended her dissertation on this subject.

You may think that leprosy is a disease of the past, but over 200,000 people per year still contract this disease. "When diagnosed early the disease can be treated well and the characteristic nerve damage prevented," says postdoc Anouk van Hooij. "The big problem, however, is that there is no [diagnostic test](#) for the early detection of patients."

From the lab to the field

Van Hooij began her Ph.D. at the laboratories at the LUMC, under the supervision of Professor Annemieke Geluk, and researched the differences between the blood of patients infected with *Mycobacterium leprae* and that of healthy people. "We finally found five biomarkers that enabled us to distinguish between these groups." This set of biomarkers was even able to identify leprosy patients with only very few bacteria.

"Together with Paul Corstjens from the Cell & Chemical Biology department, we incorporated these biomarkers into a user-friendly test. This meant we could investigate whether we could also detect leprosy patients in countries where leprosy is still very common," says Van Hooij. The test is similar to a COVID lateral-flow test. "The only difference is that you can't see the results of our test with the naked eye. We have a special reader for that." The test can also be used with finger-prick blood, which makes it more suited to remote areas.

Environmental influence

Armed with tests and readers, Van Hooij and her colleagues traveled to endemic areas, such as Brazil, Nepal and Bangladesh. "It is important to research the test in these different countries because people's immune systems are affected by the environment where they live." Fortunately, this did not have a major impact on the efficacy of the test: the biomarkers could also distinguish healthy people from leprosy patients in the field.

For Van Hooij the fieldwork was a great experience: "You learn a lot from seeing how people there work in a lab and do research. I could also immediately see whether the test is easy to use in those areas."

Before the test can be used in the fight against leprosy, it needs to be validated in studies with larger groups of people, which is what Van Hooij and her colleagues are doing now. They have sent a large quantity of tests to countries such as Bangladesh. "I can't wait to see the results." Van Hooij is continuing to work on the leprosy test, as a postdoc in Geluk's research group. "The aim is to eliminate [leprosy](#) by 2050. A diagnostic test that can be used in areas with few facilities is crucial. I hope that it will be our [test](#)," says Van Hooij.

Provided by Leiden University

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