

Academia and private sector should join hands

ITM researchers point out the need for resistance studies early in the research & development pipelines

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Dit is de omschrijving

There only a few treatments available for neglected tropical diseases. Bacteria, parasites and viruses are unfortunately smart little creatures, which over time often become resistant against the medicines that are trying to defeat them. The ITM will thoroughly test new medication that is being developed against neglected diseases on their efficacy against resistant pathogens. In an opinion paper published in the journal *Trends in Parasitology*, ITM researchers point out the need for resistance studies early in the research & development pipelines, using the parasitic disease kala-azar as an example. They also advocate for more collaboration between academics and the private sector to tackle neglected diseases.

[Neglected tropical diseases](#) are a group of 17 infectious diseases affecting more than one billion people in (sub-)tropical areas, most often among the poorest of the poorest. Kala-azar (Hindi name for black fever) is one of them, and the biggest parasitic disease after malaria, with around a million cases and up to 30,000 deaths each year. The disease is caused by unicellular parasites called *Leishmania*, which are also responsible for a range of other mutilating diseases. The arsenal of drugs to treat kala-azar is limited. Because of increasing resistance two out of the four current drugs are no longer effective.

When pharmaceutical companies develop new drugs, they often test them on a single laboratory strain that was isolated decades ago. To be sure about the efficacy of a compound in an endemic region where pathogens have developed resistance, potential drugs should be tested on actual and recent patient samples. The Institute has a large collection of patient samples for a range of neglected tropical diseases, including those of resistant parasites. It is therefore in a unique position for this endeavour. In collaboration with a pharmaceutical company, ITM is testing a range of promising new drugs against kala-azar and comparing them to analyses performed on the laboratory strain. ITM will present these results in the course of 2017.

“It is important to know if the most promising compounds will also be active against clinical isolates resistant to currently used drugs. These are the die-hard parasites that will challenge the new drugs, once they are used in endemic regions.” said Aya Hefnawy, first author of the paper and a PhD student at ITM in the context of the [Euroleishnet Marie Skłodowska-Curie innovative training network \(ITN\)](#). In this European Union funded programme, PhD students alternate stays in academic and private laboratories.

In the search for treatments against neglected tropical diseases, prospective drug resistance studies should be inserted early in the R&D pipeline. The interaction between academic institutions and the private sector is of the essence in this context. “More initiatives like the EU-funded Innovative Training Network are needed to bridge the gap between basic and applied research. We need to join forces to beat neglected diseases which cause so much harm around the world,” according to Jean-Claude Dujardin, head of ITM’s Department of Biomedical Sciences and an international authority in kala-azar research.

In *Trends in Parasitology*, the ITM researchers have also shown that *Leishmania* develops resistance in various ways, which highlights the fascinating adaptive skills of the parasite. The study also concludes that the same mechanisms drive resistance in the laboratory (after artificially exposing laboratory strains to increased concentrations of the drug) and in patients (non-responding to treatment). These findings can contribute to the development of new treatments in which [resistance can be reverted](#) or [avoided](#).

Link

- [The paper in Trends in Parasitology and a short video about the research](#)