



19 M
people infected



240 M
people at risk



>1 M
people with
vision loss

FILARIA: RIVER BLINDNESS

Developing a first-ever cure for millions at risk

Filarial diseases are a debilitating group of diseases caused by parasitic worms transmitted by the bite of blood-feeding insects. People with river blindness (also known as onchocerciasis) are infected by repeated exposure to the bites of blackflies that breed in fast-flowing rivers. The flies transmit worms that can cause severe itching and disfiguring skin lesions. Repeated infection can lead to visual impairment and blindness. **There is no cure.**

Current strategies that aim to control the spread of the disease through mass administration of the drug ivermectin are only partially effective, resource-intensive, and logistically challenging. Ivermectin kills juvenile worms, but not adult worms that can live for more than 10 years in the human body. It must be administered every year, and large numbers of people go unreached, especially in remote and insecure settings.

The push for progress

New tools that can permanently sterilize or kill the adult worms that cause river blindness are urgently needed to treat patients who develop chronic symptoms, break the cycle of transmission, and make sustainable elimination possible. We have built a portfolio of four R&D projects for river blindness, and together with our partners, we are **advancing the development of new drug candidates that can treat not only onchocerciasis but also a range of filarial diseases.** DNDi has also joined forces within the **Helminth Elimination Platform (HELP)**, a consortium of research institutes, universities, NGOs, and pharmaceutical companies committed to developing new treatments for infections caused by parasitic worms.

Our goal is now to advance the development of new drug candidates, complete Phase II trials, and launch a Phase III confirmatory trial that we hope will result in new treatment options for onchocerciasis. Our research efforts will also support the development of urgently needed diagnostic tools.



Photo credit: Scholars-DNDi

“ We hope to find a treatment that will finally bring respite to people with onchocerciasis. And we hope that we can administer it in the most remote corners of the DRC, so that no one becomes blind from the disease anymore.

Dr Jenny Yanga is an ophthalmologist and co-investigator for DNDi's river blindness trials in the Democratic Republic of the Congo. She says that her experience working on the trials has been a rewarding journey – both personally and scientifically – opening up new opportunities for herself and her fellow clinicians.

Three potential treatments in clinical trials

Emodepside originated at Japanese pharmaceutical company Astellas Pharma Inc. and was commercialized as a veterinary anthelmintic. In collaboration with Bayer AG, DNDi is evaluating emodepside as a potential anti-parasitic macrofilaricidal treatment for onchocerciasis in humans. If proven safe and effective, emodepside will eliminate not only juvenile worms but also adult worms. Our **Phase II trial continued recruiting participants in 2022** after beginning in 2021 at study sites in the Democratic Republic of the Congo (DRC), with partner PNLMTN, and Ghana, with partners KCCR and KNUST.

Flubentylosin is a derivative of tylosin, an antibiotic that targets *Wolbachia*, a bacteria needed for the survival and reproductive processes of adult filarial worms. The compound was identified through a screening process led by AbbVie and A-WOL, the anti-*Wolbachia* consortium at the Liverpool School of Tropical Medicine. With first-in-human studies completed, DNDi initiated a **Phase II clinical trial** in 2021 testing the safety and efficacy of flubentylosin at two recently upgraded sites

in the DRC. The study continued through 2022, with 150 patients enrolled and no safety concerns observed.

Based on encouraging pre-clinical data, DNDi and our partners in the HELP Consortium are moving forward with the pharmaceutical development of **oxfendazole**, identified in 2016 as a potential treatment for river blindness capable of eliminating adult worms. To evaluate the bioavailability of oxfendazole in humans, the HELP Consortium and Ifakara Health Institute initiated a **Phase I clinical trial in Tanzania** in 2022, sponsored by the Swiss Tropical and Public Health Institute.

Advancing pre-clinical research

Pre-clinical development continued in 2022 for **DNDI-6166** (formerly CC6166), a potential treatment for onchocerciasis first identified in 2016 through active screening of drug libraries and lead optimization conducted by DNDi in partnership with Celgene (now part of Bristol-Myers Squibb). **Pre-clinical activities will be advanced in 2023**, including the development of a suitable formulation for future Phase I studies.