

Erin Welsh

Hi, I'm Erin Welsh and this is This Podcast Will Kill You. Welcome back. You are listening to another bonus episode, our second in our miniseries of bonus content exploring in more depth the topics we covered the previous week. As we always say on the podcast, A) we're not experts and B) we can't cover absolutely everything about a disease or a topic in our regular episodes. And those two things probably aren't going to change. But we can talk to actual experts in the subject we covered the previous week and get to explore some aspects of that topic in more detail than we did in our regular season episode. In our first bonus episode, I followed up our hepatitis B episode with a conversation with Dr. Chari Cohen about the stigma and discrimination that people living with hepatitis B often face and how it impacts their lives.

This week I'm very excited to chat with Dr. Wilfried Mutombo Kalonji and Dr. Nathalie Strub-Wourgaft from the Drugs for Neglected Diseases Initiative about human African trypanosomiasis. In particular, I wanted to learn more about the development of fexinidazole, a new drug to treat this disease, one that is much safer and easier to use than those that have been historically available. How was this drug discovered? What are some of the challenges in making sure people who need it have access to it and what impact has it had on control efforts? These are just some of the questions I want to explore in this bonus episode. If you haven't listened to our human African trypanosomiasis episode yet, you may want to do so before you listen to this bonus episode because there's just so much to that story and it'll probably help give a bit of context for this interview.

But either way I'll give a quick overview before we begin. Human African trypanosomiasis, also known as HAT or sleeping sickness, is a neglected tropical disease caused by two subspecies of trypanosome parasites, one of which *Trypanosoma brucei gambiense* is much more common than the other *Trypanosoma brucei rhodesiense*. These parasites which are transmitted through the bite of a tsetse fly have been infecting humans for thousands of years and cause a disease that is considered fatal without treatment. Over the past 50 years or so there have been substantial global and national efforts to reduce the prevalence of human African trypanosomiasis and we've made a great deal of progress towards elimination. For instance, from 2009 to 2020 the number of recorded cases dropped from just under 10,000 to 663 which is absolutely amazing.

But still these parasites persist in 36 countries in Sub-Saharan Africa with some countries carrying a disproportionate burden of disease such as the Democratic Republic of Congo where 70% of cases reported over the past 10 years have occurred. Control and elimination efforts for human African trypanosomiasis face many different challenges. For instance, these vector-borne parasites have a super complex ecology, diagnosis of the disease can be quite tricky, and there are many logistical difficulties in providing care to those who need it. Funding for research or drug discovery is always a challenge and for decades the only available treatments were either arsenic-based with toxic side effects, these drugs are called Arsobal or melarsoprol, or extremely complicated to administer. These last points have changed in the past few years with the discovery and approval of fexinidazole which is an oral treatment effective for both the first and second stages of gambiense human African trypanosomiasis.

This drug was developed through a collaboration between the French healthcare company Sanofi and the Drugs for Neglected Diseases Initiative. And I am super thrilled that I get to speak with not one but two amazing scientists at DNDi about this exciting new development and what it means for the global elimination of human African trypanosomiasis. Dr. Mutombo Kalonji and Dr. Strub-Wourgaft have both been involved in many different aspects of human African trypanosomiasis control efforts from regional fieldwork to clinical trials and from drug research and development to forming industrial partnerships to bring these drugs from the lab to where they are most needed. And I will let them tell you a bit more about themselves and jump into the interview right after we take this short break.

TPWKY

(transition theme)

Wilfried Mutombo Kalonji

I'm Wilfried Mutombo Kalonji. I'm a medical doctor, I'm based in DRC, in the Democratic Republic of Congo in Kinshasa. And I am working for DNDi, currently I'm coordinating our local R&D team and we're working currently on three diseases, human African trypanosomiasis, filarial disease, and COVID. So I'm coordinating all our R&D projects.

Nathalie Strub-Wourgaft

My name is Nathalie Strub-Wourgaft. I'm a medical doctor by training, I've been with the DNDi since 2009 and I've been leading the NTD R&D activities and started the fexinidazole program in 2009 until it came to access to patients in 2018.

Erin Welsh

Thank you so much for taking the time to chat about DNDi and fexinidazole. So I wonder if you could start off by telling me how did you both get involved with DNDi? What brought you to this type of work?

Wilfried Mutombo Kalonji

My first time to hear from DNDi was in 2006, I was working as a doctor in a remote village. So I hear that the DNDi was preparing the project of clinical trials on HAT, human African trypanosomiasis. So I was interested because I was treating those patients and so I was aware of the issue we had with this disease. And then I applied and I was selected to be a local PI, principal investigator, for one of the clinical side studies. So since 2006, that was my first contact. And then after I continue, I was investigating another clinical trial and then after from 2012 I started working as a Coordinating Investigator on the fexinidazole projects. And since 2016 I am full staff of the DNDi.

Nathalie Strub-Wourgaft

As for me it's a bit different. I've been working before in the pharmaceutical industry and in some biotechs and in fact in 2003 when DNDi was launched, I was informed via friends and I kept watching the DNDi website for interest because I've always been interested in doing something that adds value to public health. And once I saw a position that was open for Clinical Development Director and I called them and I said this is me, this is me. And they were at the end of the process so they accepted to receive my CV. I went through interviews and I got the position and that's how I came with DNDi. And I am still there.

Erin Welsh

Wonderful. So today we'll mostly be chatting about human African trypanosomiasis. But DNDi is involved in control efforts for many other neglected diseases. So can you talk briefly about the general missions of DNDi and what type of work the initiative does.

Nathalie Strub-Wourgaft

So in fact, yes, DNDi was founded in 2003 after MSF, Doctors Without Borders, received their Peace Nobel Prize and some people at MSF in fact doctors who were working in the field were facing terrible dilemma where they couldn't treat patients who they were trying to take care of because they didn't have the proper tools, the proper treatments. And so they started looking a little bit more and it was very clear that there were a range of patients with diseases that were totally neglected by the efforts of the industry because they were targeting diseases and all populations that had no economic power and for which there would never be what was expected to be needed, a return of investment.

So they developed the model and at that time there were a few others that started developing what was called product development partnerships, looking at ways of developing treatment options that would be responding to the needs of those that are neglected by this industry. And that's how DNDi decided to focus initially on developing a combination of formal treatment for malaria, fix those combinations. That was aligned with what the WHO was asking for at that time but also focused on some specific diseases where there was both a need, some partners, and hope for short, medium, and long term response.

And that's how a few diseases were selected from the list of neglected tropical diseases which included mostly kinetoplastid-related diseases, so parasitic diseases including sleeping sickness, Chagas, and leishmaniasis. And then we expanded, every 3-4 years we had a revision of the strategic plan and based on needs and opportunities we expanded to onchocerciasis, to pediatric HIV which might come as a surprise but very neglected in Sub-Saharan Africa, and also hepatitis C, and then mycetoma, also extremely neglected. And then in 2020 we started as Wilfried mentioned to engage into COVID response, but COVID response for low and middle income countries.

Erin Welsh

The global efforts towards elimination of human African trypanosomiasis, they've been amazingly successful over the past 10 years. For instance, I saw that only 663 cases were reported in 2020 which is a drop of over 300 from the year before. That's an incredible drop in cases and it shows that real progress is being made. What do you think are the biggest factors contributing to this decline in human African trypanosomiasis cases?

Wilfried Mutombo Kalonji

First it was the diagnostic, that was very, very difficult. And the second and very big challenge was the treatment because the treatment we used to use was Arsobal with arsenic and that treatment was toxic and less effective, was losing its effectiveness. And I think the great moment was when DNDi was involved with all its partners. And when we changed the treatment the first step was to switch from the Arsobal to NECT, the combination of nifurtimox and eflornithine. This was the first quick step we did. By this changing of treatment, we had a very effective drug and less toxic and so we have very, very few relapse and even people was very comfortable to receive this treatment. This was I think for me the very critical moment and with the involvement of DNDi and its partners, we are still working on the best way to ease the treatment and now we are on oral treatment. So all this is was very important and very critical step towards elimination.

Nathalie Strub-Wourgaft

Yeah. So maybe I think we should also recognize the efforts from, I mean this is what Wilfried mentioned, but under the umbrella of national sleeping sickness control programs and collaboration with many partners which I think under also the leadership of the WHO, all of this, there was a momentum and push to consolidate, to have joint efforts on diagnostic and treatment. A lot of training activities performed beyond the national programs and since Wilfried was also part of the national programs, maybe that's why he's being modest. But I think we should recognize that the organization at the country level was also absolutely crucial in making this a reality.

Erin Welsh

So you have both been working in this field for a number of years and have had this opportunity to witness this drop in cases firsthand. So how do you feel that this field has changed since you first became involved?

Wilfried Mutombo Kalonji

I did my medical training in Kasaï province, so this was one of the endemic areas of sleeping sickness. So even during my training I was seeing how those patients were treated by melarsoprol. And when I became a medical doctor, I was in charge of managing those patients in my small village where I was working and I was receiving those patients and the only drug we had at that time was melarsoprol. This was a terrible drug, I even lost two of my patients, it was a sad, very bad experience. When we were treating patients with Arsobal, it was stressful not only for health worker, but even for patients' families. But since we have those new drugs, things change. Even health workers are more comfortable, more confident. This is a great change.

Nathalie Strub-Wourgaft

And I think the key point is also that people are less afraid of going for treatment but maybe also with time they will also be less stigmatized because less mystery is surrounding this disease. With fexinidazole, all patients can be treated in the village, there is nothing magic about the treatment, patients come and some of our colleagues used to say the success will be one day when you consider sleeping sickness as any other infection. It has been impacted by a lot of stigma. This stigma I think may decrease with getting a treatment that looks like any other treatments, it's tablets, there's no specific requirements regarding its use, protection of activities you shouldn't be doing when you take the drug, and a lot of things which make it really more normal. And that's really important because what we need is patients to be treated.

What we have observed is that patients have come sometimes very late for treatment because treatment before meant going to hospital, which meant not being able to work, which meant maybe having an economic impact on the family, which meant also that the family had to accompany patients at the hospital, pay for fees. A lot of things which which are impacting the quality of life and the acceptability of treatment. So it's a huge change.

Erin Welsh

One of the things that I wanted to ask about was the COVID-19 pandemic. How has this had an impact on control efforts? Do you think that we'll see another decline in reported cases of human African trypanosomiasis from 2021 or has the pandemic impacted control efforts?

Wilfried Mutombo Kalonji

So sure, yes, the pandemic has an impact on control efforts. Most of the national program works with what we call a mobile team and those mobile teams work 12 months, every 12 months they spend more than 20 days or more than 15 days going from a village to another doing the screening of the population. So it's not easy for them to go from a village to another village due to COVID restrictions. And since we have this COVID problem, they are they are not able to have a 12 months. This is another problem. And we work with many partners, many founding partners with COVID, they're impacted too. So the national program, you receive not the entire money for the activities. So this is the second impact. And another impact, if I go for instance in the field of another neglected disease like filarial disease, they do what we call mass drug administration. They can't do it. Last week I was visiting some remote areas and there the mass drug administration was not done due to this COVID issue, due to this restriction of movement, and due to the decrease of finance. So this COVID will have a great impact and we must be aware of this.

Erin Welsh

I was wondering if you could talk a little bit more about the stigma surrounding human African trypanosomiasis.

Wilfried Mutombo Kalonji

Yes. As you know it's a chronic disease. The first step is what we call hemolymphatic step. The second stage, it's neurological stage and that stage a patient can become foolish, more sleepy, trouble with behavior, and so on. And for those who suffer from sleeping sickness this was a very great stigma. That was one of the factors that could avoid some people to come to receive the treatment. But now sleeping sickness is more and more accepted and are being humanized. Now things are changing.

Erin Welsh

In our episode on human African trypanosomiasis, we touched briefly on fexinidazole which is this oral medication recently developed to treat this disease. Can you tell us a bit more about this drug starting with how exactly it works?

Nathalie Strub-Wourgaft

We haven't fully elucidated the mechanism of action of fexinidazole but we know it interacts with the enzyme material of the parasite that is responsible for the disease. So in essence it kills it.

Erin Welsh

How effective is it for gambiense?

Nathalie Strub-Wourgaft

So it's really effective. So we did a study, a very robust study in comparison with the NECT which is the standard of care mentioned earlier by Wilfried and we showed that it was non inferior to it, which was the statistical hypothesis, within a limit of 13%. Which means that in essence it is almost as equivalent as NECT with slightly lower efficacy but within a range that is considered as really what the physicians wanted and what the regulators accept. So it's very important because it means that with an oral treatment you can replace an injectable treatment and something else, a combination of an injectable and an oral treatment. But I think something we haven't yet mentioned is that to administer the standard of care which is NECT, you need to have patients being hospitalized.

But before that they need to go through a lumbar puncture to verify if they are eligible for this complex but very effective treatment combining an infusion and a normal treatment or if they can stay with an intramuscular treatment which is simpler to use. But still to get this standard of care, they need this lumbar puncture. The lumbar punctures are painful. Some of us who have had lumbar punctures in the past, we have access to anesthesia but that's not the case when you do lumbar puncture to test patients for treatment allocation. You have headaches first lumbar puncture and that's also one of the factors that made sometimes patients want to avoid being tested just for the sake of not having to go through this lumbar puncture.

Now with fexinidazole you don't systematically need a lumbar puncture. You may need it if patients are experiencing severe neurological symptoms where maybe they will benefit more from this standard of care treatment. But otherwise once a patient has been tested with the parasite, that patient, provided he doesn't have very severe symptoms, can get oral treatment immediately. It has also shown us that it has really high efficacy in stage one meaning in those patients who are not severe and it's also as efficacious in children which is very important as well because otherwise those small kids would require the lumbar puncture if they are in the advanced stage and would require the infusion, the combination of infusions and oral treatment. So overall it is almost the same as the standard of care but it's oral and doesn't need the lumbar puncture.

Erin Welsh

That's wonderful, yeah. And I'd love to hear more about the story of this drug's discovery. How was it selected as a potential candidate for a sleeping sickness medication and then what happened after that?

Nathalie Strub-Wourgaft

So that came from the way we worked at DNDi and it was our predecessors, so Els Torreele and Bernadette Bourdin, who evaluated drugs of the Nitroimidazole class because they were known to have a potential for this disease and looked at a library of I think of almost 700 drugs and started looking at the potential for those drugs. Fexinidazole came out, it had been developed earlier on by predecessors of Sanofi and put on shelves before it came to clinical stage just for probably strategic reasons, nothing else. So it was identified back from the shelves and then as the value chain of clinical development evolved meaning looking at individual testing on parasite labs going to animals to test the efficacy of the drug in animals infected by the parasites. We selected the fexinidazole as a clinical candidate, at which point we also signed a contract agreement with Sanofi and then started engaging in the standard phase 1 healthy volunteer study followed by the very large study in Africa that was co-led by Wilfried and Dr. Kande in the DRC.

Erin Welsh

The historical lack of funding for human African trypanosomiasis and all other neglected tropical diseases, it has meant that drugs are slow to be developed and once available there are many logistical challenges that prevent access by people who need them. So can you talk about how important it is to form industrial partnerships to connect drug development with setting up infrastructure for actually administering those drugs?

Nathalie Strub-Wourgaft

Having a disease that has priority for public health that is on the WHO list of diseases that need to have a solution is one way of attracting funders together with an organization that can bring elements to show it can deliver which was something we did with the development of ASAQ which in fact we had done also with Sanofi. On the other hand, Sanofi as part of their global corporate responsibility activity or access to drug engagement for a long time had been supporting the WHO financially. Therefore it was kind of a natural partner for us to go with Sanofi to engage into this partnership where we would be doing the development and looking for funds to do that which we got from public funding as well as private funding. Then doing the manufacturing and distribution together with the WHO via a donation of fexinidazole to countries via WHO. So it's a bit complex and I think for each disease it's different and it's clear that we have to continue to promote the need to fund research for neglected tropical diseases. But there is a kind of moved to public health interest in doing that, although still not as much as we have seen for TB, malaria, and HIV.

Erin Welsh

So I want to take a quick pause here and then when we get back I want to dive deeper into the story of fexinidazole, specifically with the clinical trials process.

TPWKY

(transition theme)

Erin Welsh

Welcome back everyone. So I was wondering if you could talk about what went into the clinical trials to test the safety and efficacy of this drug and what were some of the biggest challenges in conducting these trials?

Wilfried Mutombo Kalonji

This is a good question. To conduct a clinical trial you need to go where patients are and those patients are living in remote areas. As you may know, our health facilities in remote areas are in a very bad state. So the first challenge, we have many challenges, first we need to improve those health facilities, patient wards, laboratory, sanitation, all those things and even to put clean water and electricity by generator and to provide internet connection because this is very important in clinical trials. We need to train people because health workers working in windows remote areas are not very used to clinical trials. So we need to train them on GCP, good clinical practice, on protocol, on how to manage the clinical trial, how to manage serious adverse events. So we need to train people on this and we need to set up a good way to reach those sites because we have local teams, we have national international teams, so we need to set up a very safe way to reach those remote areas by using safe board, safe cars, and so on. Even to set up all those accommodations because when people go there to work, they need after the working day to have an acceptable accommodation.

So we need to set up all this and again working on those populations, most of them will not would not be able to read or to be involved or to go in the clinical trial, you need to sign an informed consent form. So how to make this at that level for those people who could not read? So we set up an image boxes to explain them clearly what is the clinical trial, so why they are giving their agreement, there was the why of what is it. So we need to follow all this and we set up all this and again because we're in clinical trials, you need to provide food to those patients that we were giving food to all HAT persons, not only for those who were involved in clinical trials. So we set up all this and then after we start with a clinical trial and with many supervision, many follow ups. So we work with the national program and with DNDi and all our partners, Swiss TPH, that was doing the monitoring.

Nathalie Strub-Wourgaft

So when I joined and I was coming from the very well equipped clinical research networks in Europe and the US, I came to DNDi and here we were with a new chemical entity. We had the basic standard package for phase 1, very good. And then we had to start this phase 2 study where for the first time you start treating patients very far away and with little access I would say to information of what was going to happen to patients at the site level. And as Wilfried said we had to do it where patients are and with the only people who know how to treat those patients and who are also physicians that work in very remote areas. So we had to do things that I had not thought before I would need to do which is set up internet connections, bring some equipment that was not there, find ways of doing lab tests in a way that would not bring something artificial and then leaving. So we had to think with many people and it was a collective effort of how can we bring the best science in the conditions where we were?

And in addition to everything that Wilfried said, we had to think about this and bring what we thought were the best sustainable solutions. We had to do electrocardiograms, so we took those devices that allow us to have a direct connection in France with what was happening in the middle of the DRC in one patient, etc. So it was quite a bit of a stretch, their effort. But I have to say with so much enthusiasm from everyone, everywhere, we were all so excited to make it happen. So I think we did something really nice that could serve as a model for future research and that also brought a lot of experience to all of us. Something else we did aside of this was when we said okay, we need to have this study as any study in the world approved by an ethics committee. Well who's the best position to verify that you are not taking risks for patients, that you're responding to your scientific hypothesis, that what you're doing is well done, makes sense, you're not exposing patients to risk?

And when I joined the routine way was to have a double ethics committee, one in the north and one in the south and it was exactly that. And we said well maybe we can do differently, maybe we can have committees from the south and one committee in the north discussing this together and finding ways of consolidating different experiences from different areas of the world in a way that would help to have the best review. This is what we did. And we published and it was a learning experience for all of us, from those maybe from less experienced ethics committees in DRC or elsewhere that were taking a huge responsibility in accepting for the study to be conducted in their patients, but also from the the committee in the north who were faced with questions they had never thought about that made them think a bit differently like funding issues.

Our colleagues from Africa were asking, 'Are you sure that you will have the funding to continue?' Or they were asking questions about how we explained the study to patients or community issues, things like that which they had not ever really experienced. So a very rich experience. And then once everything was in place the study was conducted as it would be anywhere else except that we found again something which when you have experience in clinical trials you wouldn't think is real.

We had the follow up of patients enrolled in the study of 18 months and it is not unusual that once patients are receiving a treatment that here was for 10 days, okay they will come for the follow up visit at 3 months, maybe at 6 months, a few will not come at 12 months. And why the heck would they come at 18 months if they're feeling well? Well we had I think 3 patients lost to follow up out of over 390 patients. This is outstanding. Outstanding. And everybody has been so impressed by this. Why did this happen? Because there was such an effort locally. Not every single patient that was diagnosed and entered in the study was followed and I think again Wilfried can explain how this was done because it was not simple.

Wilfried Mutombo Kalonji

Yes. Clinical trials on HAT, we need to keep those patients because the last follow up was 18 months after receiving the treatment. This was not easy because when they feel good they don't come because they are okay, they received the treatment. The very important moment is when we're doing the informed consent form so that the award that they're aware that they need to come to all the follow up visits because if you don't come it's considered failed. But we had their address, even the name of the leader of their village, the name of the head of news of the village. So we have a motorbike to follow them, the cellphone number of one of their relatives if they have it. We use all this to reach the great majority of patients and as we were all motivated, local team, they're at the national level and at our HQ. So we we did this and we succeeded but it was not easy, but we did it.

Erin Welsh

Yeah, that's incredible. And I can imagine that this enormous effort at the national and the local and the international scales, it's probably led to a lot of lessons in terms of not just how to set up clinical trials and how to reach patients and keep in contact with them. But I wanted to ask what are the biggest lessons do you think we can take from this story of fexinidazole and how can we use them to help control efforts for other neglected tropical diseases or just general health care infrastructure?

Wilfried Mutombo Kalonji

Yes. The great relation to my side is this collaboration because DNDi succeeded to put together the National Control Program. And that was very important to have the National Control Program because they had to give the product profile they need, what was the exact need? That was the first and to have pharmas of course and to have WHO and to have all those stakeholders to put them together working on this project. That is a great, great relation to my side. So it's something we can produce, use it where you want to tackle a health problem. You need to involve the health worker, the control program, the researcher, university, WHO, and all those stakeholders. And together we are strong.

Erin Welsh

So fexinidazole is currently approved to treat the gambiense form of human African trypanosomiasis which is by far the most common form of the disease. But can you talk about how far along we are in the research to determine whether this drug is also effective against *Trypanosoma brucei rhodesiense*, the other form of human African trypanosomiasis?

Nathalie Strub-Wourgaft

Yes. So we have good news because it took some time but we managed to get funding from EDCTP, I think I should mention the other funders for the HAT program, the Gates Foundation, MSF, the UK government, the French government. I just want to mention them because we wouldn't be here without their support. But thanks to EDCTP we were able to start and finish recruitment in a small study of fexinidazole on *T. b. gambiense* because based on the same studies that showed the potential for fexinidazole to work on *T. b. gambiense*, we had the same information for *T. b. rhodesiense*. So we've just finished enrollment and I hope that we'll be able to report on this quite soon. But it's fantastic because here the reference treatment is still melarsoprol which is this arsenic-based treatment. So if we can show that fexinidazole can be an alternative to a drug that is yes very efficacious but also extremely toxic, that would be incredibly useful.

Erin Welsh

Yes, absolutely. Are there other potential applications for fexinidazole? Like for instance other parasitic diseases besides these trypanosomas?

Nathalie Strub-Wourgaft

So we looked at this for leishmaniasis and we conducted a small study in Sudan which didn't show any efficacy. So here we stopped and then we looked at Chagas and the signal for Chagas is not quite clear. So I think we have to wait until we have final results because that could also be one area of interest other than that. We've not looked at anything concrete but it's an anti-parasitic disease so it could have other potential use.



Erin Welsh

So I just have one last question for you and that is what do you hope this next year brings in terms of human African trypanosomiasis research or control efforts?

Wilfried Mutombo Kalonji

I think the great step we made is to ease the treatment. So we moved from melarsoprol to NECT which is the kind of gold standard but with NECT we have many logistical challenge. But now what we have with fexinidazole, that can treat both stages and that's a tablet, it's easy to send it anywhere, even in those remote areas and it's very easy to train people to use this. And this is one very important contribution to our work towards elimination. I think maybe we can complete it.

Nathalie Strub-Wourgaft

I think first we'd like to see fexinidazole roll out and we'd like to see as I said the results of fexinidazole on rhodesiense, that's one. And see that numbers continue to go down, not as an artifact of patients not being treated. But I think what I'd like to see is still attention because we know that what people call the last mile to elimination and sustained elimination or elimination of transmission takes time. There's another compound in our pipeline which is hugely promising as well, a single dose treatment. And I think it's just making sure that there is still interest. The job is not done, it's not finished. There are still patients who need treatment. We need to continue the efforts including to have the commitments of countries to continue to be engaged in this fight. And in fact this comes really nicely because in three days this will be the third NTD, the second NTD day but the third human African trypanosomiasis day in in DRC. So you know I think it's hugely important that we do not think that we have finished but we are encouraged by our successes and the fact that in a way if our success in HAT can be a kind of reference and enthusiastic hope for others to continue to engage in that area of NTDs, we will have double won and fulfilled a bit of our mission.

TPWKY

(transition theme)

Erin Welsh

Thank you so much to Dr. Mutombo Kalonji and Dr. Strub-Wourgaft for such a fantastic interview. It is so incredible to hear what a game changer fexinidazole has been for human African trypanosomiasis and also what this drug's development can teach us about the importance of collaborations among national control programs, healthcare companies, and global nonprofits for the elimination of other neglected tropical diseases. If you want to explore more about fexinidazole or other projects that DNDi is involved in, check out their website [dndi.org](http://dndi.org). And I'll also post some links on the page for this episode on our website.

Also on our website, you can find all kinds of good stuff like the sources for all of our episodes, transcripts, quarantini and placeborita recipes, our [bookshop.org](http://bookshop.org) affiliate account, links to music by Bloodmobile, links to merch, our Patreon, alcohol-free episodes, and so much more. A big thanks as always to Bloodmobile who provides the music for this and all of our episodes and thanks to you listeners. I really hope you liked this deep dive into human African trypanosomiasis and fexinidazole. And a special thank you as always to our wonderful patrons, we love you and appreciate you. We've got a brand new regular season episode coming out next week, so mark your calendars. And until then keep washing those hands.