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Tegen malaria wordt nu vooral preventief opgetreden. Waar preventie faalt, moet er dringend medicatie komen. afp

Preventive action is now being taken against malaria. Where prevention fails, medication must be urgently needed. © afp

INTERVIEW MATTHEW TODD, OPEN SOURCE MALARIA

The big pharma companies will not soon bring a medicine against malaria on the market. Their research is too expensive, their customers too poor. Open Source can also lead to a breakthrough here.

'We are looking for what kind of big pharma is not profitable'

Wim Parys, Johnson & Johnson
'Open source and classical research can best go hand in hand'

ISABELLE VANHOUTTE

BRUSSELS | Almost every minute a child dies from the effects of malaria. Most malaria patients live in Africa and Southeast Asia and have to live on less than two dollars a day, which means that pharmaceutical companies do not see any bread in the development of new drugs against the tropical disease. However, they are necessary. Because they are better than the current drugs, because they are cheaper or because they prevent resistance of the malaria parasite against existing drugs.

Matthew Todd, professor of chemistry at University College London, has been working for years to develop a new antimalarial drug. Without the money from the *big pharma* . The Australian does this, together with colleagues from all over the world, through an open source system. Everyone can cooperate and the results of the research are shared live online on a platform.

In the run-up to an application for a patent - which temporarily gives them the exclusive right to produce a medicine - pharmaceutical companies keep their research secret for as long as possible. "But that is inefficient," says Matthew Todd. Cochrane, an organization that evaluates medical research, calculated that every year 150 billion euros is wasted on research that a competitor is also doing or that was done ten years ago and whose results have never been made public. 'That is why the same mistakes are repeated.'

> 'Our way of rapid research & development can accelerate innovation or stimulate other ways of working'
> MATTHEW TODD
> Open Source Malaria

All information from the open source research immediately ends up in the public domain. 'The intellectual property right would be spread over the different countries, people and institutions in the traditional model. It is then witches work to apply for a patent with that mix of laws. That is why we make all our information publicly available. You can not patent what is already in the public domain. '

Today, seven years after the start of the project, Todd clashes with the same problems as the big pharma. 'Clinical studies are incredibly expensive. How can we assure our investors that they will be reimbursed? "

Which medicine are you looking for?

Todd: 'Since 2010 I have worked on various open source projects. The largest so far is Open Source Malaria, a chemical search for an effective molecule that fights the malaria parasite. Such a pharmaceutical research starts in the labs. When a promising molecule is found, it is tested in different stages for increasingly complex organisms. Scientists from all over the world follow the research and contribute to it. '

How far are you?

'In 2016, we published a first paper with an international team of scientists. That was a milestone: nobody ever published the results of such an open source research in a scientific journal. In the meantime, we are on the move again: we identified a molecule that kills the malaria parasite particularly efficiently in mice. We proved that our molecule also works in complex living beings. Now we are almost ready for clinical trials, a very expensive undertaking. '

Where do your operating resources come from?

"From all angles. We are supported by the Australian government, the NGO Medicines for Malaria Venture and other organizations. And then there are the research laboratories - private or at universities - that invest money and resources in the research. '

"Financiers find us quite attractive. Our team is flexible and often changes, depending on what is happening at that moment. People join, do one thing and leave again. We work cost-effectively. '

Do the financiers also want to support clinical research?

"That is the big challenge. Clinical trials cost tens of millions of dollars. We are currently faced with a lot of economic and legal questions. How will we determine a price for our medicine? How can we assure our investors that they will - if they wish - be reimbursed? Is it possible to get the medicine on the market? Or is there a danger that someone will take over the formula and bring it to the market yourself, it actually steals? If we ask such high amounts, we must have a sound answer. "

What are the options?

'A lot of people talk about de-linkage, decoupling the drug prices from the cost of making them. Then the total production of medicines becomes generic and special funds support research and development. That is an interesting track. '

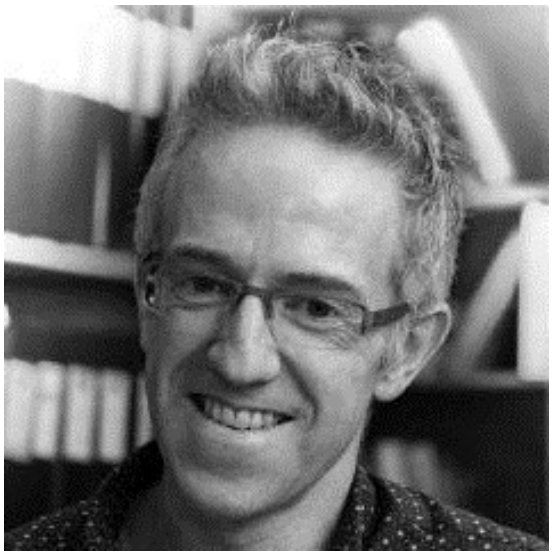
'There are different ways to complete the investment. We can develop a structure that consists of an umbrella organization for the legal side of the story, with various projects that carry out parts of the research. These projects are funded by separate organizations to achieve specific milestones. Traditional philanthropic and public investments could act as leverage to attract private investments. '

'We will see whether it becomes a national or international story, with subsidies, funds or private investments. In any case: someone never did it for us. '

How many people are working with Open Source Malaria?

'At any time, fifteen to twenty people are working. In total, more than 300 scientists contributed to the project. The group of authors of the paper, for example, was of a very diverse nature: beginning students and professors signed up with it, but also employees of pharmaceutical companies. '

Why do pharmaceutical companies not develop that new medicine?



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"Because there is no real market incentive for it. Which listed company is investing in regions where people have to live with a few dollars a day? After all, millions of investments have to be earned back. Then a new cancer drug or a drug that addresses the effects of menopause is financially more interesting. But in the meantime, an extremely large group of people have insufficient access to medicines that can make the difference between life and death for them. The open source model can add an extra, ethical dimension to the choice of which drugs are developed. And that is independent of market impulses. In this way humanity gets a bigger role in the pharmaceutical industry. '

How is the pharma industry facing you?

'That was one of the big surprises. At the very first open source project that I did, in 2010, we discovered at the end of the journey that most of the input came not from academia, but from the pharmaceutical sector. Even though they have a business model that is totally opposed to what we do. '

How do you explain that?

'It could be that large pharmaceutical companies realize that it does their reputation well. In this way they can show the quality of their work in their labs to the rest of the world. Nevertheless, I think that the motivation to contribute to a solution for malaria is the most important one. The scientists in the pharmaceutical companies also want to help people, solve problems and discover new drugs, just like us. '

'Pharmaceutical companies also recognize that there are things that they can not do themselves. And that frustrates them as well. Our alternative open source model can allow a new wind to blow through the entire sector. Our way of 'fast' R & D can accelerate innovation or stimulate other ways of working. We can learn from each other. "

Are you only examining tropical diseases?

"No, we see it broader. A few years ago we completed a project on tuberculosis, this year we started looking for a means to combat mycetoma. This is an infectious disease that can lead to severe skin, muscle and bone deformations. There is virtually nothing against the fungal variant, which mainly makes victims in Africa. Medicines for tropical diseases are slightly less complex than those against, for example, cancer. That is why they are also cheaper to develop. '

'But open source can be used for all diseases. What if I get a rare disease tomorrow and the pharmaceutical industry does not invest in a medicine? Then I'm unlucky, because there is no alternative. That is why it is so important to start a competitive model. Small changes, such as moving drug research and development to the public sector, for example, would not be enough. It would not be a full-fledged alternative. Demonstrating that alternative, independent drug development is possible, that is what drives us. '

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WIM PARYS, JOHNSON & JOHNSON

'Open source and classical research can best go together'

Making all information available online is not necessarily the best or most efficient way of working, says Wim Parys, head of pharmaceutical research and development at the Global Public Health department of pharmaceutical company Johnson & Johnson. 'For disorders in which there is practically no recovery model, such as in tuberculosis or malaria, I am 100 percent behind the open sharing of knowledge and technology. But because research into new drugs is very complex, it seems important to me to work with people who have already earned their spurs on the domain. For example, bringing together experts in a consortium and playing open cards within that network results in the greatest efficiency. '

Are there any open-ended knowledge sharing projects within Johnson & Johnson?

'We are currently working on a major project on tuberculosis. All the players involved are part of that consortium: the academic world, NGOs, the funders and the pharmaceutical industry. We share our expertise in the domain with all members of a consortium and they do the same. We also work with Medicines for Malaria Venture. This NGO is the absolute pioneer in the development of medicines for malaria. Here too we want to make our technologies available to all parties. '

Is knowledge sharing also a piste for non-tropical diseases, such as cholesterol inhibitors?

'These open models are now mainly set up for disorders in which there is no payback model. In my opinion, they can coexist with the classic model, which deals with conditions where a financial return on investment is possible. That model proves at this moment that it works. '

In the US, insulin prices have increased sixfold in the last 15 years. Does that not show the limits of the classic efficiency system?

"Such price rises also bump me against the chest. At Janssen, we made the strategic choice to only do drug research for diseases with a high medical need and where we can achieve substantial innovation. Incremental innovation - in which a very small change is always made to ask for a higher price - is not done in principle. If that happens, it must be raised. The scientific press can play a role here. '

Is the current way of drug research and development sustainable in the long term?

'Medicines are becoming more and more sophisticated and ever more expensive to develop. We will also have to find new financing models in due course. ' *(iv)*