

ELIMINATING MALARIA IN THE ASIA-PACIFIC AND BEYOND

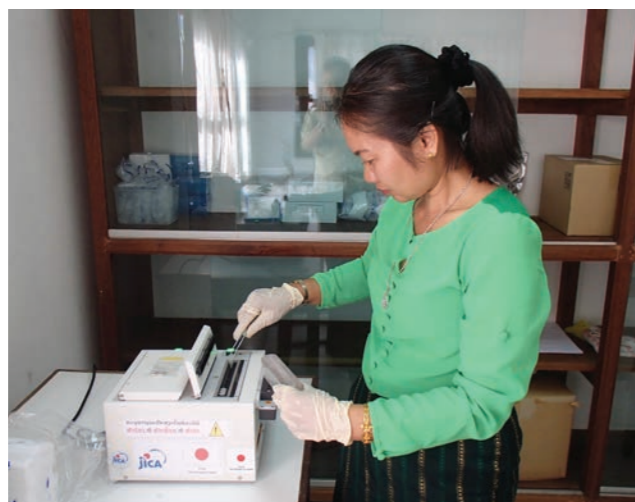
How Japanese researchers are working to **PUT AN END** to the deadly disease.

"In Asia-Pacific, we're in the last stretch of the race to zero malaria," says Shigeyuki Kano, from the National Center for Global Health and Medicine (NCGM) in Tokyo, Japan. But getting malaria cases down to zero doesn't mean the threat is eliminated, he adds. "There are many people who carry the parasites but do not show any symptoms. They can act as a source of infection to someone else via mosquito bites."

Japan, where malaria has been eliminated since 1961, is well placed to address gaps in the malaria funding and development pipeline. The country has made universal health coverage a central pillar of its global health policy. Infectious diseases in particular are a key focus of its official development assistance activities.

Kano is the director of the NCGM's Department of Tropical Medicine and Malaria, and a board member of the non-profit organization Malaria No More Japan. As part of Japan's efforts across the Asia-Pacific he has been working with colleagues in Laos, to field test a diagnostic tool called LAMP — or 'loop-mediated isothermal amplification' to detect these asymptomatic parasitic carriers.

LAMP, developed by Japanese pharmaceutical company, EIKEN Chemical, is about ten times more sensitive than PCR in detecting malaria.¹ Kano believes it could be a game changer in tracking index cases. "For parasite carriers, very sensitive diagnostic techniques, such as LAMP, might help us



▲ Analysing blood in a rural area in Laos where malaria is endemic.

see the iceberg under the sea." However, despite its promise, LAMP is considerably more expensive than standard rapid diagnostic tests, and thus is a hard sell to institutions such as the World Health Organization, with more immediate, front-line concerns including provision of mosquito nets and malaria vaccines and treatments.

Funding essential, but not frontline research, such as the testing of LAMP, is where public-private partnerships, including the Global Health Innovative Technology (GHIT) Fund from Japan, step up. For example, Kano's team, supported by grants from the Japan International Cooperation Agency and the Japan Agency for Medical Research and Development under agreement with the Laos government, is embarking on a project to see whether LAMP can help accelerate the elimination of malaria in Laos.

BOLSTERING FUNDING

"Funding to fight against malaria is lacking," says Osamu Kunii, GHIT's CEO and executive director, who has been working to bring Japan's capabilities to bear on this problem for a decade.

As malaria primarily affects people in poorer nations, pharmaceutical companies have less incentive to develop drugs or technology to target it. "R&D for parasitic diseases such as malaria has been somewhat stagnant," says GHIT's Kei Katsuno. "That's where GHIT comes in, to help incentivize companies and academia to tap into their capabilities to help fight malaria."

Since the fund's founding a decade ago, close to 44% of GHIT's total investment has been dedicated to malaria, spanning all stages of the innovation pipeline, from discovery and preclinical work to clinical development.

Early-stage projects are an inherently risky investment says

Hayato Urabe, also at GHIT. But these nascent projects, such as screening more than 600,000 novel compounds found in the libraries of Japanese pharmaceutical companies for suitability as malaria therapeutics, can sometimes lead to the greatest rewards. "That's where the 'gold nuggets' might be found," he says.

Kunii agrees, "investing in these projects is a bit like sowing seeds — they need time to grow, and then we can harvest them. We will continue to work on accelerating this process."

He emphasizes the importance of attracting people to the malaria research field. "Many experts are more interested in pandemics, we need to charm or incentivize them, and really build the human capacity in the lab and field, with a focus on young researchers and postdocs."

By securing much needed financial and human capital, Japan is taking a leading role in the R&D of new products for malaria elimination worldwide in areas including pharmaceuticals, vaccines, laboratory diagnostics, and vector control, through international collaboration and partnerships. ■

REFERENCES

1. J. P. Vincent *et al.*, *Malar. J.* **17**, 373 (2018); M. Imwong *et al.*, *J. Infect. Dis.* **213**, 1322 (2016).

malaria
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japan

<https://malariaenomore.jp>

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GHIT Fund

The GHIT Fund is a Japan-based international public-private partnership fund between the Government of Japan, multiple pharmaceutical companies and private foundations.

The GHIT Fund invests in new drug, vaccines, and diagnostics development to contribute to global health, supporting Japanese technology and innovation to combat infectious diseases, such as malaria, tuberculosis, and neglected tropical diseases, which affect the world's vulnerable and underserved populations.

In malaria, we have invested more than JPY 12 billion in about 80 projects to date.

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Eiken Chemical is prepared to supply the world with detection reagents for three types of tests targeting *Plasmodium* species, *P. falciparum* and *P. vivax*, which have already been developed using LAMP technology. The Malaria-LAMP assay can detect parasite DNA with high sensitivity in just an hour and a half.

By leveraging this advantage of high sensitivity, Malaria-LAMP can accurately identify low-density parasite carriers who are often missed by more commonly used methods such as microscopy and immunochromatography.