

RESEARCHERS DECODE HOW MALARIA PARASITE MULTIPLIES

Relevant for: Developmental Issues | Topic: Health & Sanitation and related issues

Potent transfer: The parasite is injected into humans through mosquito bite. | Photo Credit: [Reuters](#)

With over 4,00,000 deaths in 2018, according to the WHO, malaria still remains one of the biggest killer infections globally, concentrated mainly in Africa and India. The disease is caused by the parasite *Plasmodium* and transmitted by the *Anopheles* mosquito. To understand in detail how this parasite multiplies within a mosquito, an international team of researchers spent years studying different proteins in the parasite. Their study published in *Cell Reports* has found two important proteins essential for proliferation. These findings can help develop new drugs and thus pave way for malaria eradication.

The team found that two large protein complexes (condensins) called SMC2 and SMC4 played essential roles in the parasite proliferation. One of the co-authors Prof. Rita Tewari in an email to *The Hindu* says: "It means that these molecules are required for every stage of parasite multiplication, and even in the cyst-like structure in the mosquito (oocyst) where the infective stage of the parasite develops. It is at this stage that it is injected into humans through mosquito bite." She is from the School of Life Sciences at the University of Nottingham.

The team showed that when genes behind these proteins were deleted, the number of oocysts in the mosquito gut significantly reduced and were smaller in size compared to the normal ones.

Prof. Tewari adds in a release: "This malaria parasite is very adaptable. Even if you kill it in the human bloodstream, some of these sex cells taken in by the mosquito during a bite can develop and multiply further in the mosquito. Over time, it [the parasite] has adapted to survive and multiply using different modes, which is why it is difficult to control the disease."

The malaria parasite has different models of multiplication in different stages of its life cycle, and it is essential to track down all the important proteins behind it for developing a new effective drug. "We are now studying the novel modes of parasite cell division and the crucial regulatory molecules which are involved in the success of the parasite cell division," adds Prof. Tewari.

"With the increase in drug-resistant malaria cases, it is essential and urgent to find new drug targets. These two proteins are conserved across all *Plasmodium* species and were found to be important for parasite multiplication. This adds a step towards exploring new drug targets" adds Dinesh Gupta, leader of the Translational Bioinformatics Group from the International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi. He is one of the authors of the paper.

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The WHO had to come up the name in line with the 2015 guidelines between the global agency, the World Organisation for Animal Health and the Food and Agriculture Organization.

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