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News: Malaria Prevention

- Recent advancements in malaria prevention have shifted focus from genetically modified mosquitoes to genetically modified malaria-causing parasites. This innovative approach aims to enhance immune system priming during the liver stage of the parasite's life cycle, potentially leading to more effective malaria vaccines.

Genetically Modified Malaria-Causing Parasites

- Malaria-Causing Parasites were genetically modified to **study their behavior, prevent diseases, or deliver treatments**. They are **designed to prime the immune system in the liver, preventing disease before entering the bloodstream**.
- Malaria-causing parasites **cause infection and symptoms begin to show only when they move into the bloodstream from the liver stage**.
- This method **allows for better protection against malaria when exposed to unaltered parasites later, improving overall vaccine efficacy**.
- Additionally, genetically modified mosquitoes can **spread resistance to malaria by mating with wild mosquitoes**.

- Immune priming is a process by which a host improves its immune defences following an initial pathogenic exposure, leading to better protection after a subsequent infection with the same – or different – pathogens.
- **Trial Efficacy:** In the trial conducted, 89% of participants exposed to late-arresting genetically modified parasites (*p falciparum*, in this case) were protected from malaria compared to only 13% for early-arresting parasites.
- Early-arresting refers to killing the parasite on day 1 of entering the liver whereas late-arresting refers to killing it on day 6.
- **Comparison with Traditional Methods:** Traditional methods, such as radiation-sterilized mosquitoes and radiation-attenuated sporozoites (the infective stage of malaria parasites), require significantly higher exposures (up to 1,000 mosquito bites) for similar protection levels.

Malaria

- Malaria is a mosquito-borne infectious disease that affects humans and other animals.
- It is caused by plasmodium.
- Symptoms of malaria include fever, tiredness, vomiting and headaches.
- These begin 10-15 days after being bitten by infected Mosquito.
- It is spread through *Anopheles* mosquito.

- The disease is widespread in the tropical and subtropical regions that exist in a broad band around the equator.
- This includes much of sub-Saharan Africa, Asia and Latin America.
- 25th of April has been declared as World Malaria Day by the World Health Organisation (WHO).
- World Malaria Day was first held in 2008. It was developed from Africa Malaria Day, which was an event that had been observed since 2001 by African governments.
- The theme for the year 2024 is “Accelerating the fight against malaria for a more equitable world”.
- Recently, the World Health Organisation (WHO) endorsed the world's first Malaria Vaccine Mosquirix in the hope that it will spur stalled efforts to curb the spread of the parasitic disease.
- Recently, Yaoundé Declaration was signed by the health ministers of 11 African countries with the highest burden of malaria, committing to accelerated action to end deaths from the malaria disease.