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Genetically modified Aedes aegypti

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Recently, genes from genetically-modified Aedes aegypti mosquito were found to have been **transferred to naturally-occurring Aedes aegypti mosquito population** in Brazil where transgenic mosquitoes were released.

- It is **unclear** if the presence of transgenic mosquito genes in the natural population will affect the disease transmission capacity or make mosquito control efforts more difficult.
- **A.aegypti mosquitoes are responsible for transmitting dengue, chikungunya and Zika virus.**
- The employed genetic **strategy RIDL (Release of Insects Carrying Dominant Lethal Genes)** was supposed to only **reduce the population** of the naturally occurring A. aegypti mosquitoes **and not affect or alter their genetics.**
- But the study has found **transgenic genes in 10-60% of naturally-occurring mosquitoes.**
- Also, the **naturally occurring A. aegypti mosquitoes** carrying **some genes of the transgenic mosquitoes** are able to reproduce in nature.

Zika Virus

- Zika virus is a **mosquito-borne flavivirus** that was **first identified in Uganda in 1947** in **monkeys.**
- It was later **identified in humans in 1952 in Uganda** and the United Republic of Tanzania. Outbreaks of Zika virus disease have been recorded in Africa, the Americas, Asia, and the Pacific.
- Zika virus disease is caused by a **virus transmitted primarily by Aedes mosquitoes** and can be passed from a pregnant woman to her foetus.
- **Sexual transmission of Zika virus** is also possible.
- There is **no vaccine** or medicine for Zika. Instead, the focus is on relieving symptoms and includes rest, rehydration and acetaminophen for fever and pain.

Dengue

- Dengue is transmitted by **several species of mosquito within the genus Aedes.**
- Symptoms include fever, headache, muscle, and joint pains, and a characteristic skin rash that is similar to measles.
- **Dengvaxia** is the **first dengue vaccine but** the Indian drug controller has yet to grant approval to it.
- India has reported 6,210 cases and six deaths from dengue until June 9, 2019.

Chikungunya

- Chikungunya is caused by a **mosquito-borne virus.**
- It is **transmitted** by **Aedes aegypti and Aedes albopictus mosquitoes.**
- Its symptoms are characterized by abrupt fever and severe joint pain, often in hands and feet, and may include headache, muscle pain, joint swelling or rash.
- There is **no specific antiviral drug treatment** for chikungunya.
- There is **no commercial chikungunya vaccine.**

Source:TH