

Should we Use Gene drives to Eradicate Malaria?

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Key Facts

- Globally in 2022, there were an estimated 249 million malaria cases and 608 000 malaria deaths in 85 countries.
- In 2022, Africa was home to 94% of malaria cases and 95% of malaria deaths.
- Children under 5 accounted for about 80% of all malaria deaths in the Region.

Gene drives

Gene drives cause the transmission of genes between generations in sexually reproducing species to be larger than 50%.

This is achieved using transposable elements. These are DNA portions that can integrate through the genome and replicate on their own.

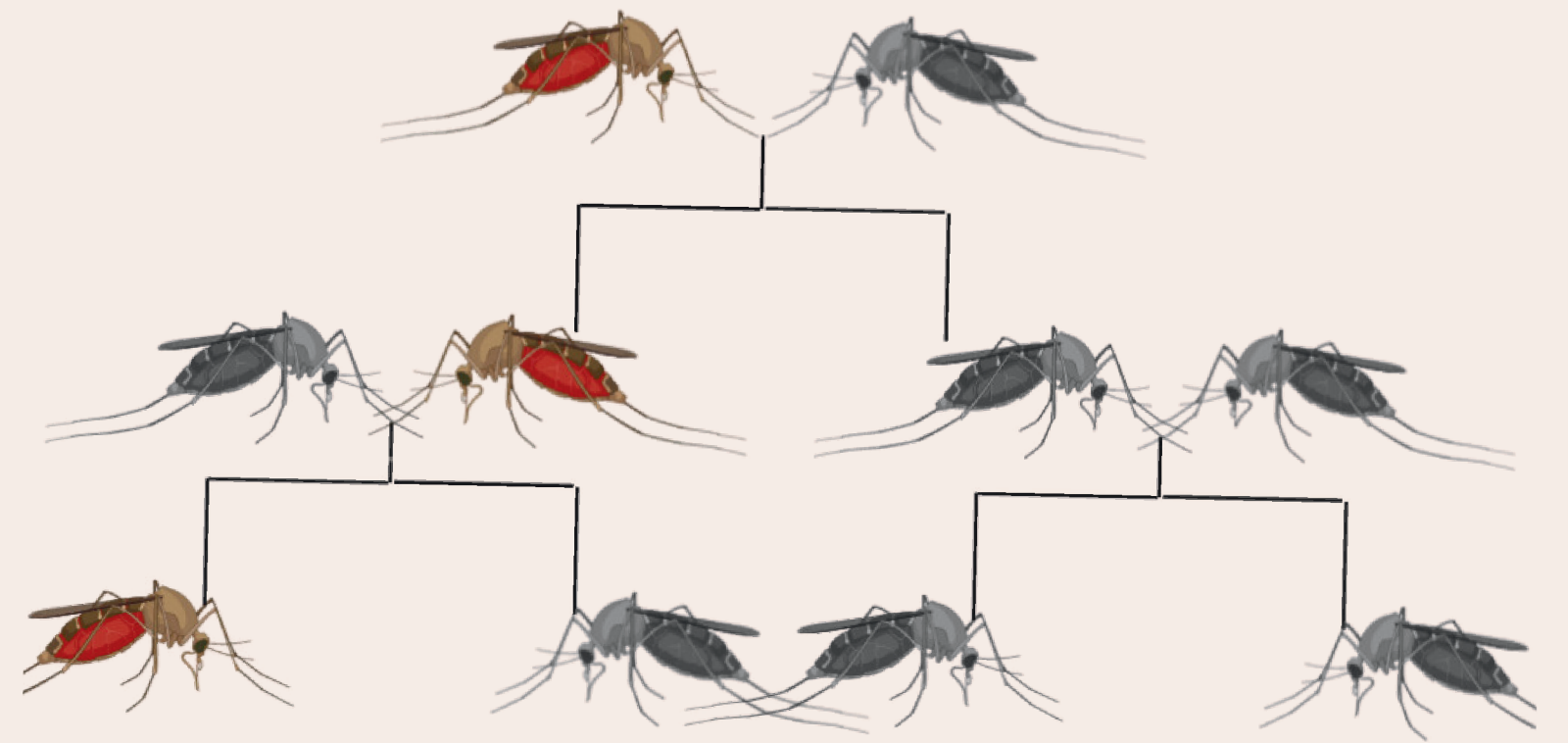
Application

Today, gene drives can be used in two different ways. To hinder the parasite to develop, or to reduce the mosquitos fertility, wiping out the population.
Replace or suppress.

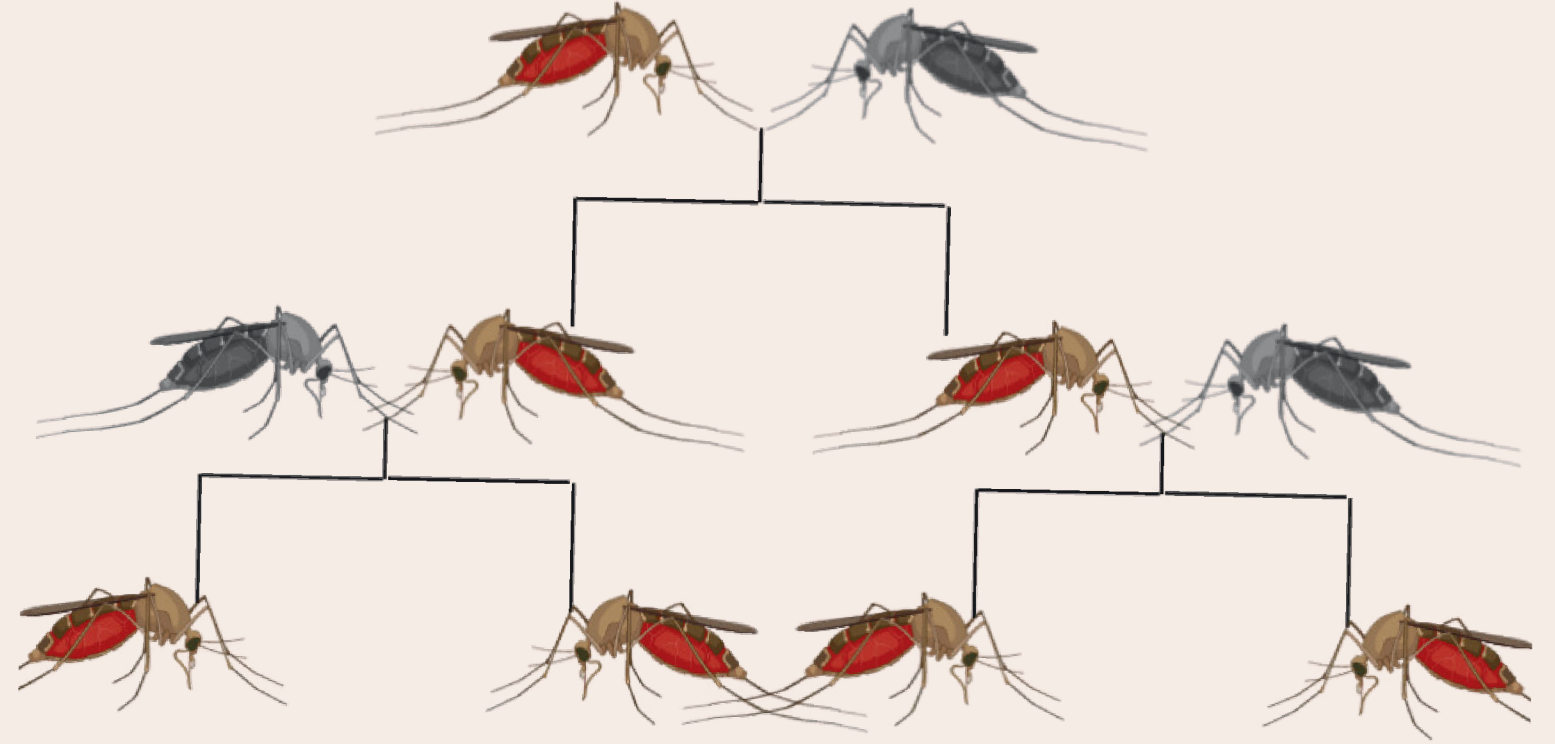
Concerns

- CRISPR is a novel technology
- Precautionary principle
- Uncertain effect on ecosystems and agriculture
- Malaria could adapt

Genetic Editing w/o Gene Drive



Genetic Editing with Gene Drive



Benefits

- Less death cases, especially in children
- Extinction of malaria
- Better quality of life
- Economic growth
- More jobs?

Reflection

Is the use of Genetic modification necessary?

Several alternative solutions to prevent the spread of malaria already exists: vaccines, drugs and preventative chemotherapies. Is such a drastic measure worth the risk?



References

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- [3] Redman, M., King, A., Watson, C., & King, D. (2016). What is CRISPR/Cas9? *Archives of disease in childhood. Education and practice edition*, 101(4), 213–215. <https://doi.org/10.1136/archdischild-2016-310459>
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- All figures created in BioRender and Canva

