
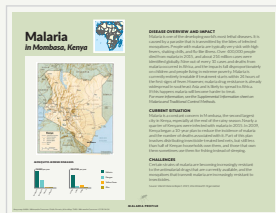


SHOULD WE ENGINEER THE MOSQUITO?



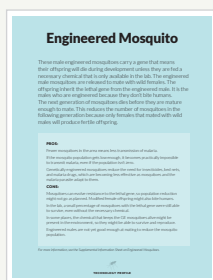
Your group is going to decide whether to release genetically engineered (GE) mosquitoes in Mombasa, Kenya, and how to go about it. Follow the steps below to learn about options, then draft your proposal on the back of this sheet. You can find more in-depth information about the mosquito life cycle, malaria and traditional control methods, and engineered mosquitoes in the Supplemental Information Sheets.



STEP 1: INTRODUCTIONS AND MALARIA PROFILE

1 card, 5 minutes

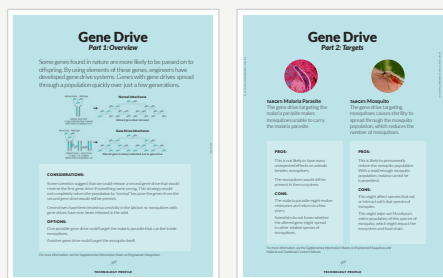
Introduce yourselves. Share your name and your connection to the topic. **Then read the malaria profile card aloud to the group.**



STEP 2: ENGINEERED MOSQUITO PROFILE

1 card, 5 minutes

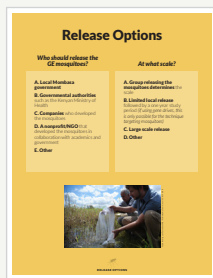
The technology card provides information on one genetic engineering method that could be used to engineer mosquitoes so they would not transmit malaria as well. Engineers are working on other methods but this is one of the more promising options. **Read the technology profile card aloud to the group.**



STEP 3: GENE DRIVE PROFILES

2 cards, 8 minutes

The gene drive cards provide information about a technology that can be added to GE mosquitoes. Gene drives raise ethical considerations, but can improve the success of the GE mosquito strategy. **Take turns reading the gene drive profile cards.**



STEP 4: RELEASE OPTIONS

1 card, 2 minutes

The release options card provides some possible options for how your group can choose to release genetically engineered mosquitoes. As part of your conversation, you can choose one of these options or make up your own. **Read the release options card aloud to the group.**



STEP 5: PERSONAL PROFILES

5 cards, 10 minutes

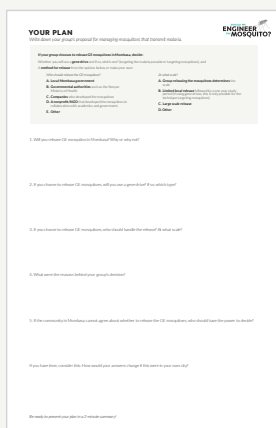
Take turns reading the personal profile cards. You don't need to play the roles of these people, but rather, consider their perspectives as you make decisions.

STEP 6: DISCUSS AND MAKE A PLAN

30 minutes

Discuss whether your group would like to release the GE mosquitoes in Mombasa. As you discuss, consider the personal profiles. How might each of these people feel about introducing GE mosquitoes to help control malaria? For more background information on mosquitoes, refer to the Supplemental Information Sheets. Flip to the other side of this paper to write your plan as a group. **Your group will need to decide:**

1. Will you release GE mosquitoes in Mombasa? Why or why not?
2. If you choose to release GE mosquitoes, will you use a gene drive? If so, which type?
3. If you choose to release GE mosquitoes, who should handle the release? At what scale?
4. What were the reasons behind your group's decision?
5. If the community in Mombasa cannot agree about whether to release the GE mosquitoes, who should have the power to decide?



STEP 7: REPORT OUT

10 minutes

Each group presents their plan in 2 minutes or less. Then participants can comment on each other's plans.

YOUR PLAN

Write down your group's proposal for managing mosquitoes that transmit malaria.

If your group chooses to release GE mosquitoes in Mombasa, decide:

Whether you will use a **gene drive** and if so, which one? (targeting the malaria parasite or targeting mosquitoes), and

A **method for release** from the options below, or make your own:

Who should release the GE mosquitoes?

- A. Local Mombasa government**
- B. Governmental authorities** such as the Kenyan Ministry of Health
- C. Companies** who developed the mosquitoes
- D. A nonprofit/NGO** that developed the mosquitoes in collaboration with academics and government.
- E. Other**

At what scale?

- A. Group releasing the mosquitoes determines** the scale
- B. Limited local release** followed by a one year study period (if using gene drives, this is only possible for the technique targeting mosquitoes)
- C. Large scale release**
- D. Other**

1. Will you release GE mosquitos in Mombasa? Why or why not?

2. If you choose to release GE mosquitoes, will you use a gene drive? If so, which type?

3. If you choose to release GE mosquitoes, who should handle the release? At what scale?

4. What were the reasons behind your group's decision?

5. If the community in Mombasa cannot agree about whether to release the GE mosquitoes, who should have the power to decide?

If you have time, consider this: How would your answers change if this were in your own city?

Be ready to present your plan in a 2-minute summary!