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| **Article Title/Source** | New Weapon to Fight Zika: The Mosquito (New York Times) |
| **Standards Addressed** | **NGSS**   |  |  | | --- | --- | | HS-LS3-1. | Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. |   Common Core State Standards Connections:   |  |  | | --- | --- | | **ELA/Literacy -** | | | [RST.11-12.1](http://www.corestandards.org/ELA-Literacy/RST/11-12) | [Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.](http://www.corestandards.org/ELA-Literacy/RST/11-12)  (HS-LS3-1),(HS-LS3-2) | | [RST.11-12.9](http://www.corestandards.org/ELA-Literacy/RST/11-12) | [Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.](http://www.corestandards.org/ELA-Literacy/RST/11-12)(HS-LS3-1) | | [WHST.9-12.1](http://www.corestandards.org/ELA-Literacy/WHST/9-10) | [Write arguments focused on discipline-specific content.](http://www.corestandards.org/ELA-Literacy/WHST/9-10)  (HS-LS3-2) | |
| **Objective**  Science *and* English skills covered | I can understand and explain how genetic engineering can solve a world problem by:   1. Analyzing an article 2. Discussing it 3. Writing a paragraph summarizing what we have learned |
| **Hook (5 minutes)**  Grab their attention/maintain engagement  Students arranged in groups of about 4 | Show the following image (from <https://journosdiary.com/2016/02/16/curious-case-of-larvicides-causing-microcephaly/>)  C:\Users\mmacive1\Pictures\microcephaly.png  Questions to class (pose verbally and show on power point or board)  What do you see in this picture? What do you think microcephaly means? What do you think caused the differences between these two babies?  HAVE SMALL GROUPS DISCUSS AND SHARE OUT TO FULL CLASS  Today we are going to learn more about what scientists think may be causing this condition in many babies in certain parts of the world, and what they are trying to do to stop it. |
| **Building/Connecting to Required Content Knowledge**  **(10 minutes)**  Teach/review background knowledge will they need to understand this article | Even if you don’t think you will become a scientist yourself, learning science is important for understanding problems (like diseases) in our country and other countries and for being a good citizen in helping make good public decisions.  We are going to read a New York Times article about Zika (the disease that is causing microcephaly) today and discuss it in small groups. By the time we finish today, you will understand this well enough to write a paragraph of your own about it.  Before we go into our small groups, I am going to get you started by reading and discuss the first couple of paragraphs.  TEACHER READS ALOUD first 3 paragraphs of ZIKA article for class.  What do you think it means to be “genetically engineered”?  ***Teacher gives some background on science of genetic engineering and genetically modified organisms – Requires teacher prep.*** |
| **Small Group Discussion**  **(30 minutes)**  Provide questions/activities that allow them to analyze and critique the article with their peers | As you get into your small groups to read the rest of the article, here are the questions you will be focusing on (written for students on handout with the article)  What does it mean to be a “lethal weapon”?  Why does it seem strange to view mosquitos a “lethal weapon” against Zika?  How do mosquitos get to be a “lethal weapon” against Zika?  How do mosquitos work as a “lethal weapon” against Zika?  What are the benefits of this method of fighting Zika?  Why do you think people might be opposed to this method of fighting Zika?  After you have discussed these questions, work together as a group to write out answers to the questions. Take turns so that each group member writes at least one of the answers. |
| **Large Group Review/Summary**  **(10 minutes)**  Check for misunderstandings, reinforce key takeaways, connect back to science classroom content | Ask first group to share their answer to first question. Ask other groups to chime in with additional thoughts.  Ask second group to share their answer to second question. Ask other groups to chime in with additional thoughts.  And so on. |
| **Homework/Follow-Up Assignment** | Students individually write a paragraph that addresses the discussion questions. |

**New Weapon to Fight Zika: The Mosquito**

By [ANDREW POLLACK](http://topics.nytimes.com/top/reference/timestopics/people/p/andrew_pollack/index.html), New York Times, JAN. 30, 2016 (Edited by CSOS Research Faculty to simplify language).

Every weekday at 7 a.m., a van drives slowly through a southeastern Brazilian city carrying a precious cargo — mosquitoes. More than 100,000 of them are dumped from plastic containers out the van’s window, and they fly off to find mates.

But these are not ordinary mosquitoes. They have been genetically engineered to pass a lethal gene to their offspring, which die before they can reach adulthood. In small tests, this approach has lowered mosquito populations by 80 percent or more.

The biotech bugs could become one of the newest weapons in the battle between humans and mosquitoes, which kill hundreds of thousands of people a year by transmitting [malaria](http://health.nytimes.com/health/guides/disease/malaria/overview.html?inline=nyt-classifier) and other devastating diseases and have been called the deadliest animal in the world……..

The battle has abruptly become more pressing by what the World Health Organization has called the “explosive” spread of the mosquito-borne [Zika virus](http://www.nytimes.com/2016/02/02/health/zika-virus-world-health-organization.html) through Brazil and other parts of Latin America. Experts say that new methods are needed because the standard practices — using insecticides and removing the standing water where mosquitoes breed — have not proved sufficient.

So for now, experts say, the best modes of prevention are to intensify use of the older methods of mosquito control and to lower the risk of being bitten using repellents and by wearing long sleeves.

Women are being advised to not get pregnant and to avoid infested areas if pregnant, since the virus is strongly suspected of causing babies to be born with abnormally small heads and damaged brains.Advertisement

[Continue reading the main story](http://www.nytimes.com/2016/01/31/business/new-weapon-to-fight-zika-the-mosquito.html#story-continues-4)

….

The main mosquito that transmits Zika virus … prefers urban areas and bites mainly people, making it very efficient at spreading disease. It bites in the day, so bed nets, a common way to protect people against the night-biting malaria mosquitoes, have little effect. It breeds in small containers of water, such as flower pots, cans and tires that collect rainwater….

The genetically engineered mosquitoes … can work to curtail the spread of Zika.

Since last April, the mosquitoes have been released in one neighborhood populated by about 5,000 people. By the end of 2015, there was a reduction in wild mosquito larvae — as opposed to larvae inheriting the lethal gene — of 82 percent, the company said.…

But critics worry about the long-term effects of releasing genetically modified organisms. The company that produces them has run into public opposition to a proposed test in the Florida Keys.

**“New Weapon to Fight Zika” Discussion Questions**

What does it mean to be a “lethal weapon”?

Why does it seem strange to view mosquitos a “lethal weapon” against Zika?

How do mosquitos get to be a “lethal weapon” against Zika?

How do mosquitos work as a “lethal weapon” against Zika?

What are the benefits of this method of fighting Zika?

Why do you think people might be opposed to this method of fighting Zika?

HOMEWORK: Write a paragraph that summarizes the main point of this article. Use at least some of the questions you discussed in class to help organize your paragraph.