

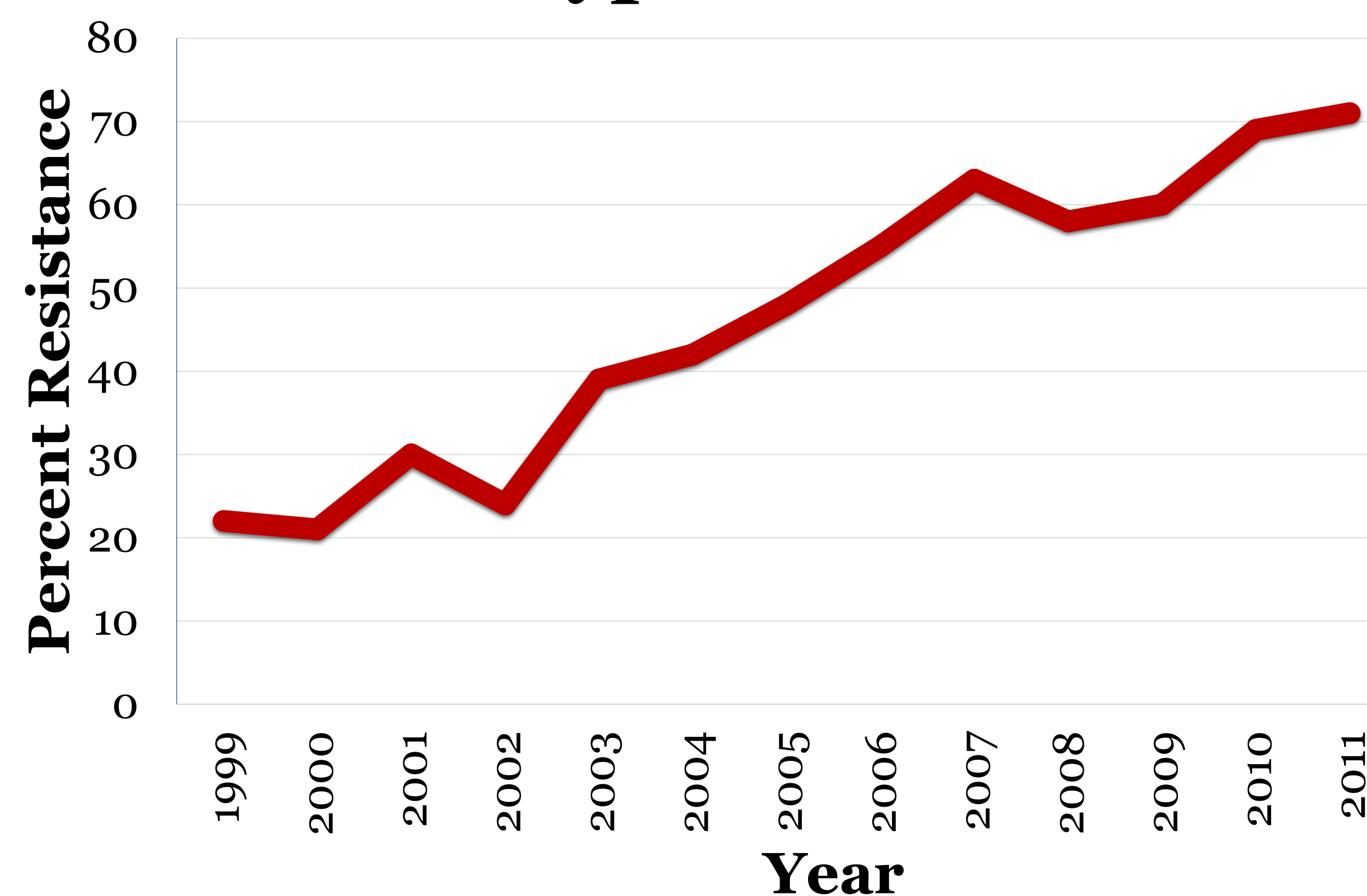
**2 MILLION INFECTED. 23 THOUSAND DEAD. \$35 BILLION LOST.**

## The Problem

- The misuse of antibiotics has substantially increased the number of resistant bacteria
- In the US alone, 235 million doses of antibiotics are consumed annually
- 50% of this consumption is unnecessary

Drug resistance in Salmonella Typhi (typhoid fever) has jumped from about 20% in 1999 to more than 70% in 2011.

## Resistance to Ciprofloxacin in Typhoid Fever



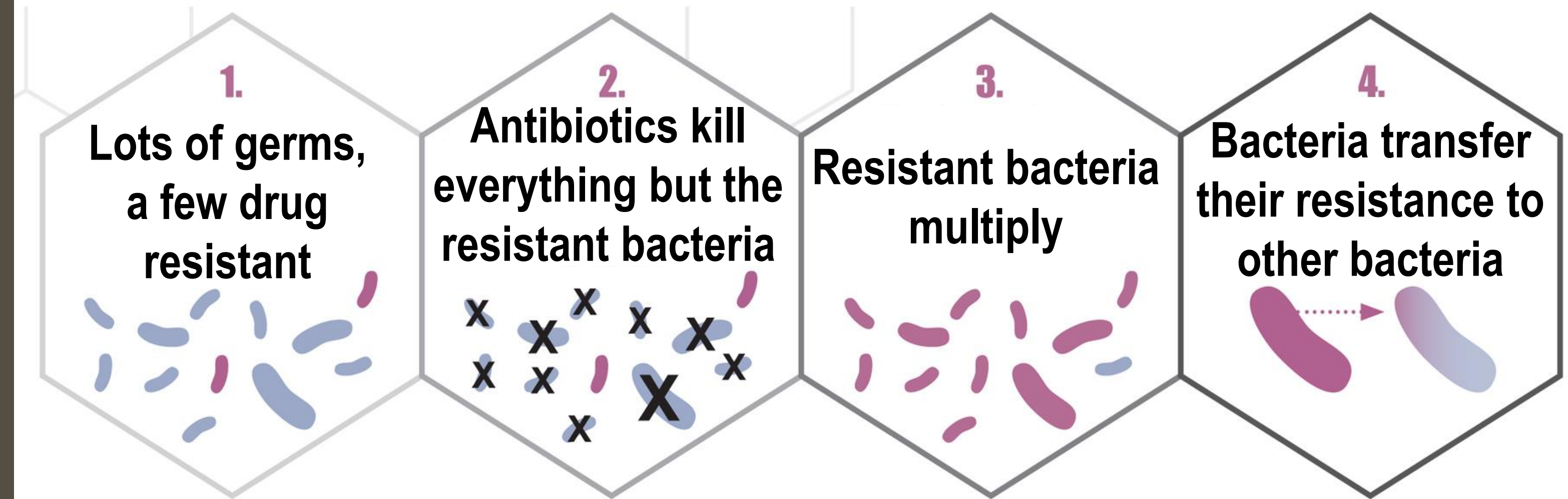
## Abstract

The goal is to reduce the presence of antibiotic resistance by educating Worcester high school students as a part of their biology class. The results of the program will be analyzed through pre and post tests composed of qualitative and quantitative components.

## Approach

- Day 1**
  - Quantitative pre test
  - Jeopardy game
- Day 2**
  - Video about an interview and discussion
  - Antibiotic resistance overview
  - Stop-action Lego video
- Day 3**
  - Gene transfer lab
- Day 4**
  - Discuss current facts and statistics
  - Play "Two Truths and a Lie"
- Day 5**
  - Analyze gene transfer lab data
  - Quantitative post test
  - Qualitative survey

## How Antibiotic Resistance Happens



## Measures of Attribution

- Quantitative pre and post test
- Qualitative post-program survey
- Paired t-test with  $p < .05$  to analyze the data

## Conclusions

What was determined:

- What topics will be covered
- How the material will be presented
- How this program will be implemented

## Acknowledgements

Thank you to Robert Guillette for his correspondence and cooperation.

## References

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