

## Overview

*Transmissions: Gone Viral* follows a group of youngsters — Maria, Rani and Eduardo — who investigate a virus plaguing animals and humans in their neighborhood. The youngsters discover birds that have inexplicably died. They then learn of a mysterious illness affecting Eduardo and Maria's grandmother and other neighbors. The town plans to cancel its big parade that the children have been planning to participate in for weeks. Aided by scientific specialists, they gather evidence and explore evolutionary biology and disease transmission in order to identify the mysterious illness.

## Interactive Elements

Interactives embedded in the narrative engage readers in sorting evidence and finding patterns that may help solve the mystery.



The Build-A-Body interactive engages readers in exploring homologous structures.

Real scientific images are embedded throughout the comic and viewable to readers by clicking the microscope icon.

## Design-Based Research

During the development of the comic book and educator guide, designers, educators and researchers worked together to ensure the resources were useful for educators, while still engaging students from all backgrounds and interests in science.



A prototype used for testing an interactive game in the comic book where readers act as a virus and attempt to widen the spread of a vector-borne illness.

## Qualitative Research Study

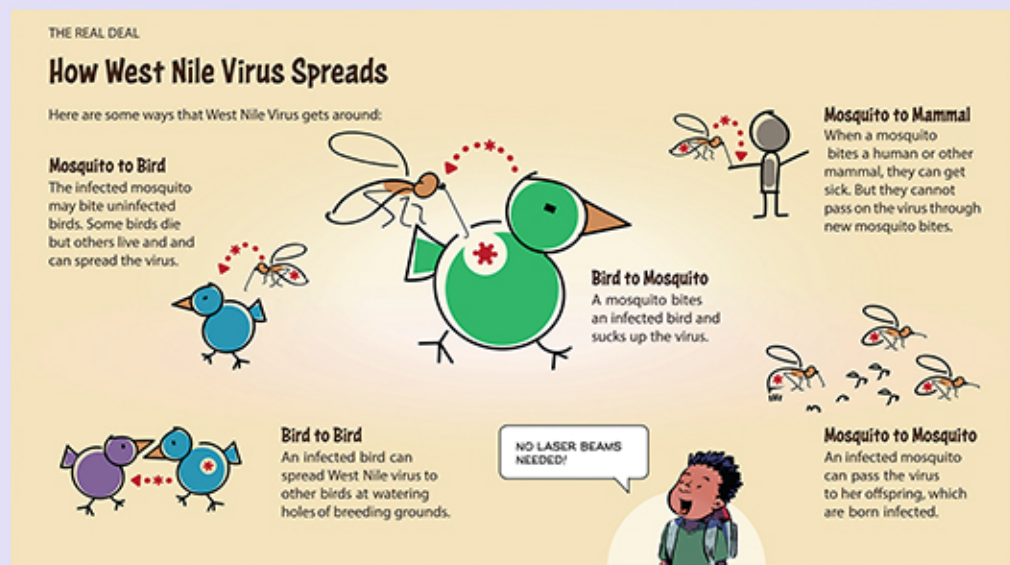
After the release of the comic book, New York Hall of Science staff conducted a qualitative research study to gain more information about the effectiveness of *Transmissions: Gone Viral* and the supplemental resource guide in different settings.



Part of an instrument used as a pre-post test to assess students' understanding of key evolutionary biology concepts.

# Engaging Children in Science Inquiry Skills With Interactive, Digital Comics

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Infographic explaining the transmission of zoonotic disease in the context of West Nile virus.

## Engaging Youth in Practicing Scientific Inquiry

A compelling narrative based on a local urban neighborhood and relatable characters takes the reader on a journey collecting evidence, testing hypotheses, and working with scientific experts. The young characters are at the center of the scientific process, while experts serve as resources for knowledge and methods. Conclusions in the comic are supported by interactives such as real scientific evidence and infographics that illustrate the mechanisms of zoonotic diseases and their dispersal. Readers come along for the journey to identify the mysterious sickness, making discoveries at the same time as the comic's protagonists.

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## Embodying Scientific Approaches

The three main characters in the narrative embody different approaches to scientific inquiry. Maria represents the documentation and collection of evidence, Eduardo embodies the generation of hypotheses (sometimes involving aliens), and Rani is a true science nerd with an intense interest in analyzing evidence using a variety of technologies and techniques.



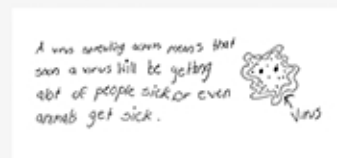
Character Cards highlight the interests, traits and special talents of the three main characters.

## Teacher Advisory Board

Six local middle school educators served on the *Transmissions* Teacher Design Team. Due to the interdisciplinary nature of the project, we recruited educators who taught a variety of subjects including science, health, and English Language Arts and represented diverse student populations, including English Language Learners and students with special needs. From March – June 2017, the advisory board met monthly for several hours and participants also completed asynchronous assignments between meeting dates. The advisory board provided valuable feedback on the comprehensibility and usability of the *Transmissions* story, graphics and planned interactives, and also provided input on the design of supplemental resources to ensure that these materials meaningfully extended the learning made possible via the comic itself.

## Educational Workshops

In February 2018, NYSCI educators ran a three-day camp for 20 students in grades 6 through 8 to pilot test the supplemental educational materials. In particular, the goals of the camp were to test how the educational materials surfaced and built upon student ideas about evidence and the nature of science, as well as how the materials supported learners in systematic problem solving.



Student work where the student is explaining their ideas about what it means when a virus is said to spread.

## Supplemental Resource Guide

The comic book is accompanied by a supplemental resource guide for implementation and support in informal settings.



The supplemental resource guide provides educators in informal settings with NGSS-aligned activities to engage students in thinking through the concepts of what constitutes evidence, practicing scientific inquiry skills, and disease transmission between human and nonhuman animals.