

# Ozobot as Patient Zero

Program Ozobot to mimic the path of Patient Zero as the student travels through the school unsuspectingly spreading a mystery illness to classmates.

## *Created by*

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STEM Educator

## *Topics*

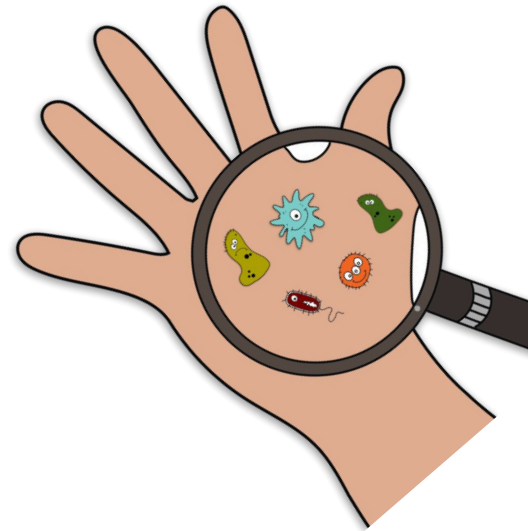
Programming  
Robotics  
Technology  
Science  
Literature

## *Ages*

Grades 1 and up

## *Duration*

45 minutes



# Ozobot as Patient Zero

## SUMMARY

- Read the *Patient Zero Bacteria* or *Virus* story. **Program Ozobot to mimic patient zero** as the student weaves through a school day, coughing and touching classmates, unsuspectingly spreading germs. Refer to the *Mystery Illness Summary* as needed. Recognize various ways germs can pass from person to person. Identify healthy habits.
- Print and read *Germs, Mystery Illness Summary*. Use the information found, such as modes of transportation or the symptom list, as reference and **write your own medical detective story**. Exchange with a classmate and observe what happens!

## GROUPINGS

Individuals or small groups

## MATERIALS

- Ozobot Bit or Evo, one per group
- Printout: *Patient Zero took a Virus to School*
- Printout: *Patient Zero took a Bacteria to School*
- Printout: *Germs, Mystery Illness Summary*
- Printout: *Ozobot took a Germ to School* (writing prompt)
- Printout: *Patient Zero School Map (blank)*
- Printout: *Patient Zero School Map Color Program Solutions*
- Markers
- Code Reference Guide (<http://files.ozobot.com/stem-education/ozobotozocodes-reference.pdf>)

## GRADE LEVEL

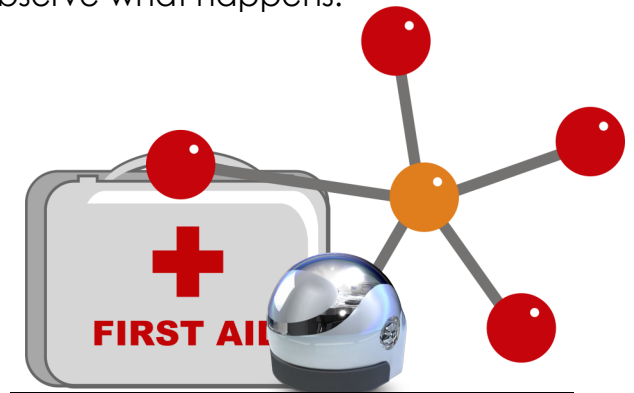
Grades 1 and up

## DURATION

45 minutes

## VOCABULARY

- **Ozobot Bit and Evo** - a little robot that can follow drawn lines or can be programmed using visual codes or through the OzoBlockly programming language
- **Biomimicry** - mimicking nature to perform a task or solve a problem using robotics
- **Chronological Order** - a sequence of events based on the time they occurred
- **Germ** - a microorganism, bacteria or virus, the source of the mystery illness
- **Disease** - an illness with well defined symptoms
- **Communicable** - the spread of a disease from person-to-person through direct or indirect contact with a contagious or infected person
- **Patient Zero** - the person identified as the first carrier of a communicable disease



## Patient Zero took a Bacteria to School



**Program Ozobot** to mimic the path of **patient zero** as the student travels through the school unsuspectingly spreading a contagious **bacteria** to his classmates, causing an outbreak of **strep throat!**

- Read the *Patient Zero took a Bacteria to School*.
- Using the *Patient Zero School Map*, program Ozobot to mimic the path of the infected student.
- Refer to the *Germs, Mystery Illness Summary* as needed.

Richard woke up and hurriedly got ready for school. Downstairs, his mom had breakfast ready for him and his little sister, Clara. Richard noted that his sister was looking tired and she kept touching her throat.

The school bus was close to his house. Richard grabbed his backpack and, in his haste, he drank the rest of the juice from his sister's cup. Richard contracted the strep throat germ from his sister's cup.

On the bus, Richard sat next to Isabella and shared stories about the upcoming soccer game after school. He transferred the germ to his friend through the air while they sat close to each other.

Between classes, Richard noticed he was feeling a bit warm. He walked with his friend Cloe where he unknowingly spread germs to Cloe when they traded homework packets and books before math class.

After math, Richard started sneezing in the hallway. Richard paused by his friend George to get a tissue and blow his nose. As Richard continued through the school hallways, he accidentally coughed on classmate Emily as he passed her in the hallway on his way to music class. Both George and Emily breathed in the contagious germ as it traveled through the air.

In music class, Richard practiced his duet with Charlotte passing the germ to her. Richard's throat was a little tender after singing. Harrison probably got the strep throat bacteria from Richard when he borrowed his drumsticks to use in band practice.

When the bell rang, Richard slowed down and joined his friends, Nathan and Mia, in the lunchroom. Forgetting to wash their hands, Richard spread the germs when he shared a chocolate bar with his two classmates.

When school ended, Richard joined his friend Liam outside for the soccer game. Richard possibly spread the strep throat bacteria through direct contact as the two boys exchanged high-five's, while cheering their team to victory!

# Patient Zero took a Virus to School



**Program Ozobot** to mimic the path of **patient zero** as the student travels through the school unsuspectingly spreading a contagious **virus** to his classmates, causing an outbreak of **chicken pox!**

- Read the *Patient Zero took a Virus to School*.
- Using the *Patient Zero School Map*, program Ozobot to mimic the path of the infected student.
- Refer to the *Germ, Mystery Illness Summary* as needed.

Richard woke up and hurriedly got ready for school. Downstairs, his mom had breakfast ready for him and his little sister, Clara. Pancakes were the family favorite! Clara wasn't eating though, she kept hugging her blanket. Richard moved the blankie from the kitchen table and noticed a small rash on his sisters arm.

The school bus was close to his house, Richard grabbed his backpack and hugged his mom and sister goodbye. Richard contracted the chicken pox virus from touching his sister and her blanket.

On the bus, Richard sat next to Marcus and shared his excitement about the upcoming theater performance after school. Richard transferred the germ to his friend through the air while they sat close to each other.

At school, Richard noticed he was feeling a bit warm, and he had a slight headache. Richard walked with his friend Oliver to class where he unknowingly spread germs to Oliver as they looked through their science journals and iPads together.

After science, Richard accidentally coughed on classmates George and Emily as he paused by his friends in the hallway on his way to drama class. They breathed in the germ as it traveled through the air.

In drama class, Richard slowed down to practice his leading role with Elijah passing the germ to him. Richard started scratching his arm. He didn't think anything of it, maybe a bug bite?

When the bell rang, Richard joined his friends, Charlie and Noah, in the lunchroom. Forgetting to wash their hands, Richard spread the germs when he shared a brownie with his two classmates.

Richard walked down the hallway, passing Mia and Olivia, on his way to his locker. There, Richard accidentally sneezed the virus on Tamara as she collected her school books from the locker next to his.

When the final bell rang and school ended, Richard joined his classmate Sachi for the school's theater performance. Richard possibly spread the chicken pox virus when he held Sachi's hand as they located their seats inside the auditorium.

# Mystery Illness Summary



## Strep Throat

### Symptoms

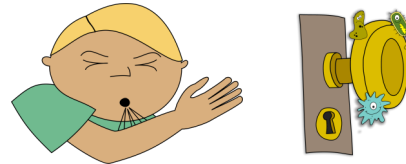
- An infection in the throat and tonsils caused by a bacteria. Symptoms may include red swollen tonsils, sore throat, difficulty swallowing, swollen and tender lymph nodes in the neck, mild body aches, fever, and a general feeling of tiredness and weakness.

## Chicken pox

### Symptoms

- An illness caused by a virus that is transmitted by direct contact with the rash or droplets dispersed by coughing or sneezing. Symptoms may include fever, loss of appetite, headache, fatigue (tiredness), raised pink or red bumps that are itchy. These bumps turn into blisters then crust or scab.

## How does a germ travel from person to person?



### MODES OF TRANSPORTATION

- Direct Contact - A common way for infectious disease to spread is through direct transfer of bacteria from person to person (touch, cough, sneeze, kissing).
- Indirect Contact - Most germs can linger on a tabletop, counter, or doorknob touched by someone ill, you can pick up the germs left behind. If you then touch your mouth, eyes, or nose before washing your hands, you may become infected.
- Airborne - This type of disease transmission occurs when germs travel through the air and are inhaled by another.
- Insect - Some germs rely on a carrier, such as a mosquito (malaria), tick, or a flea to move from person to person. These carriers are known as vectors.
- Contaminated food or water - Another way germs can infect you is through contaminated food (*E.coli*) or water (cholera).

## How does a germ enter your body?

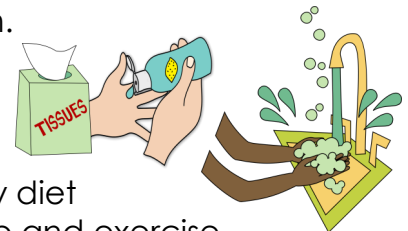
- Microorganisms are capable of causing disease, and usually enter our bodies through the eyes, mouth, nose, or a wound that breaches the skin barrier.

## What are some ways our body protects us?

The human body is designed to protect itself from illness. The network of cells, tissues, and organs that all work together is called the immune system.

## What are some healthy habits that keep a person safe?

- Wash your hands
- Use hand sanitizer
- Maintain doctor well checks
- Drink lots of water
- Maintain a healthy diet
- Get plenty of sleep and exercise



# Patient Zero took a Germ to School One Day

Written by: \_\_\_\_\_



## Write an Ozobot Medical Detective Story!

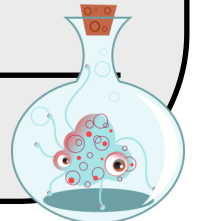
- Print and read *Germs, Mystery Illness Summary*. Use the information found, such as modes of transportation or the symptom list, as reference and write your own medical detective story. How will patient zero travel through your school? Use the blank school map and write your friends into the story!

Setting	Characters	Extras	Problem	Solution
Name of your school:	List the main characters in sequential order, places Ozobot will pass by during your Patient Zero program.  1. 2. 3. 4. 5. 6.	List the extra characters to support your story/program  1. 2. 3. 4. 5. 6.	<ul style="list-style-type: none"><li>• Place the names on your school map.</li><li>• Write your medical detective story! (Use the Germ Illness Summary as reference.)</li><li>• Write your color program for Ozobot.</li><li>• Run and de-bug any challenges.</li></ul>	<ul style="list-style-type: none"><li>• Ozobot can successfully mimic the characters path of Patient Zero from your story on a school map.</li><li>• Have another student read your story and program Ozobot. Compare and discuss your results.</li></ul>



Large rounded rectangular area with horizontal lines for writing the medical detective story.

If box is checked, my Medical Detective story continues on the back...



# Ozobot as Patient Zero

## LEARNING OBJECTIVES and UNDERSTANDINGS

- Identify behaviors to maintain health and prevent the spread of infection.
- Recognize that germs can make a person sick.
- Recognize that viruses and bacteria are microscopic in size and both are germs.
- Utilize critical thinking skills to solve a problem.
- Scientists ask and identify questions to gain knowledge or solve problems.
- Scientists make predictions based on prior experiences.
- Scientists make observations and/or collect data to construct evidence-based conclusions.
- Share findings and conclusions with others.
- Infectious agents, such as bacteria and viruses, can cause illness and can spread from person to person.
- The body can protect and defend itself from infection.
- Understanding how infectious disease spreads in a population helps with prevention measures.

## CURRICULUM STANDARDS

- ISTE 1.c Use models and simulation to explore complex systems and issues.  
4.b Plan and manage activities to develop a solution or complete a project.  
6.a Understand and use technology systems.
- NGSS 3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- NGSS 3-PS2-2 Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
- MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- CCSS MATH 1, 2 Make sense of problems and persevere in solving them. Reason abstractly and quantitatively.
- MATH.PRACTICE.MP5 Use appropriate tools strategically.
- MATH.PRACTICE.MP7 Look for and make use of structure.

## GRAPHIC ARTS

Clipart purchased for commercial use, or used with permission, from the following:



### Ozobot

#### Code Reference Guide

Fast	
Cruise	
Slow	
Turbo	
Straight	
Go Left	
Go Right	
Pause	
U-turn	
U-turn Line End	
Win-PlayAgain	
Win-GameOver	

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Patient Zero School Map

Marcus

Cloe

Oliver

Harrison

George

Emily

Charlotte

Nathan

Noah

Elijah

Isabella

Mia

Olivia

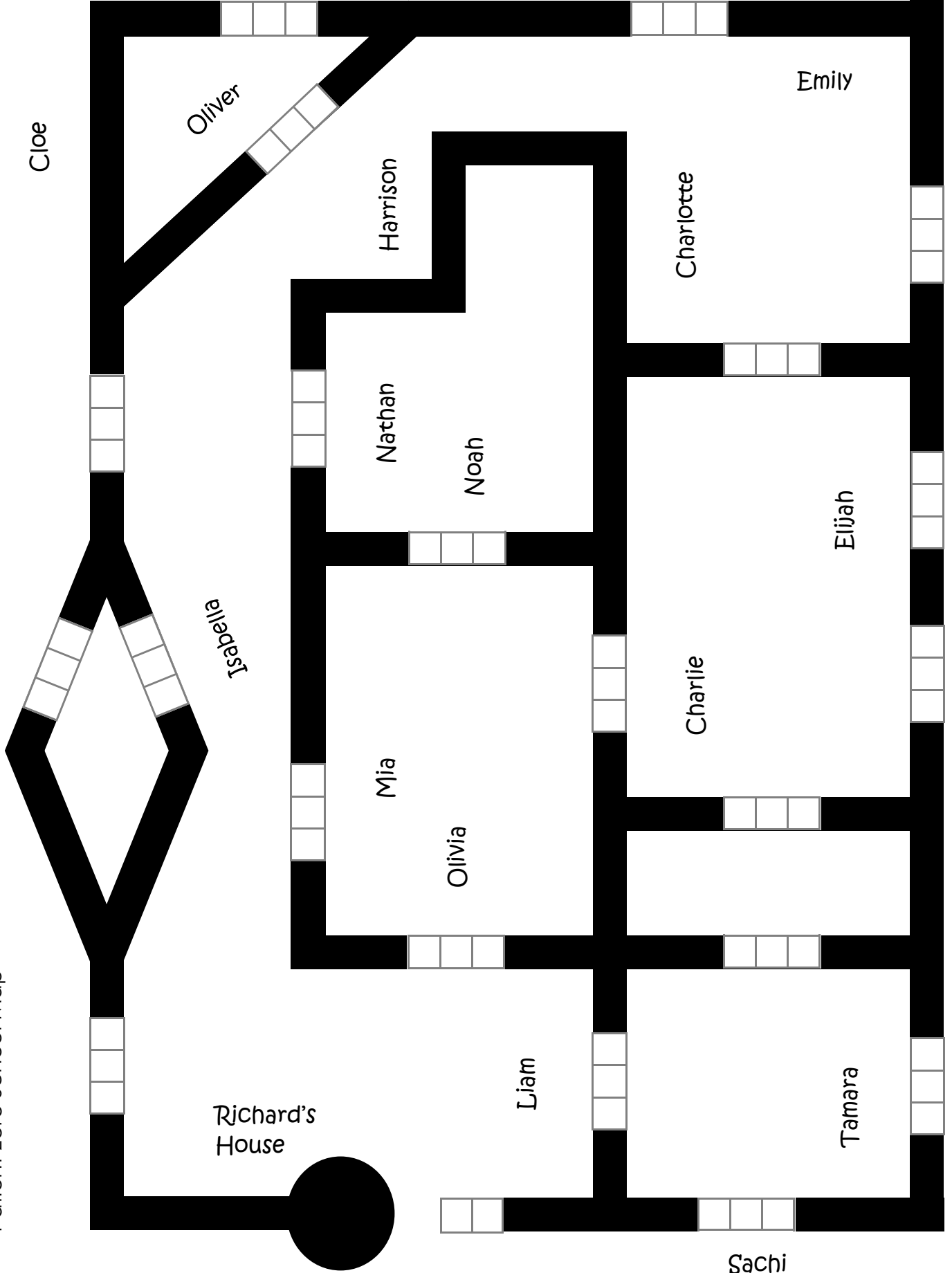
Charlie

Richard's House

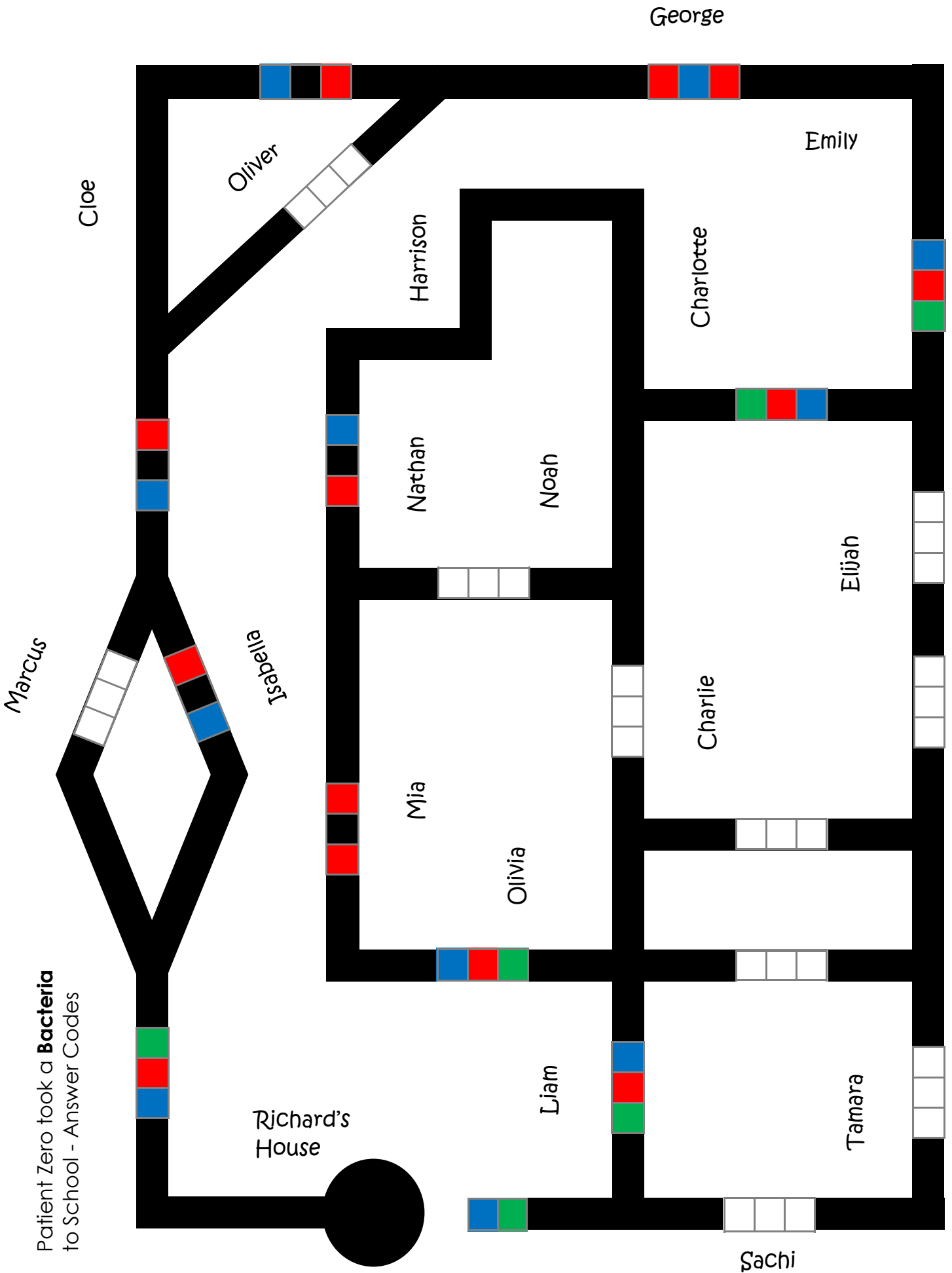
Liam

Tamara

Sachi



Patient Zero took a **Bacteria** to School - Answer Codes



Patient Zero took a **Virus**  
to School - Answer Codes

Marcus

Cloe

Oliver

Isabella

Richard's  
House

Harrison

Nathan

Olivia

Noah

Liam

George

Charlotte

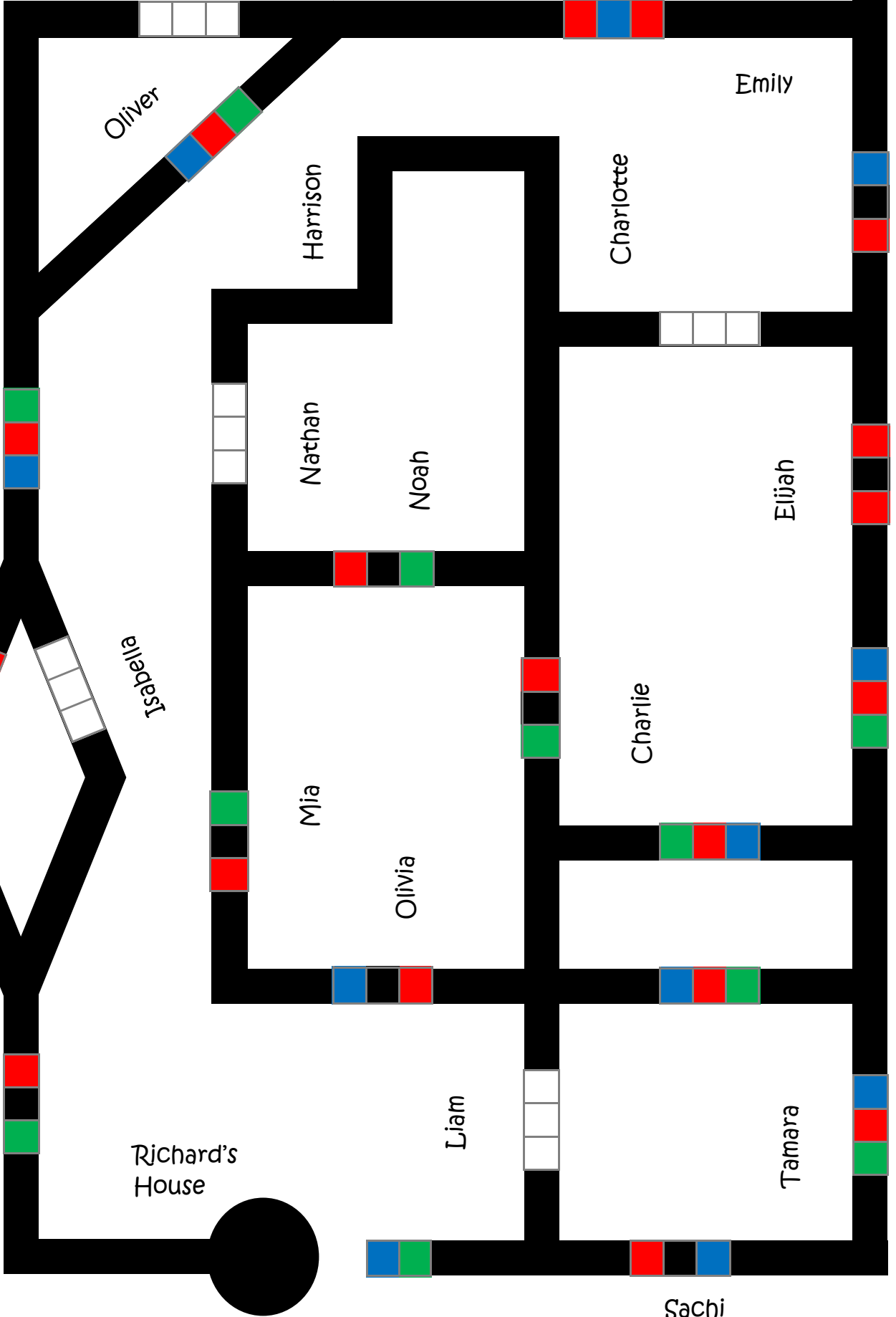
Charlie

Sachi

Emily

Elijah

Tamara



Patient Zero School Map

