

Bay Area Scientist in Schools Presentation Plan

Lesson Name Germs and Your Body

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Grade Level: K **Standards Connection(s):** Observing objects with senses, describing objects, comparing and sorting objects based on size and weight, and communicating observations orally.

Next Generation Science Standards:

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) to survive.

K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Developing and Using Models</p> <p>Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.</p> <p>Use a model to represent relationships in the natural world. (K-ESS3-1)</p> <p>Analyzing and Interpreting Data</p> <p>Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <p>Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-LS1-1)</p>	<p>ETS1.B: Developing Possible Solutions</p> <p>Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people. (secondary to K-ESS3-3)</p> <p>LS1.C: Organization for Matter and Energy Flow in Organisms</p> <p>All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow. (K-LS1-1)</p>	<p>Patterns</p> <p>Patterns in the natural and human designed world can be observed and used as evidence. (K-LS1-1)</p>



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Common Core Standards:

ELA/Literacy:

SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

Mathematics:

MP.2 Reason abstractly and quantitatively.

FOSS Connections:

Kindergarten Module 1: *Animals Two by Two*

Investigation 2: *Land and Water Snails*

Part 4: *Shells*

Abstract:

Did you know that germs are very, very small and that when they grow together you can see them? There are different kinds of germs – good and bad, and different germs do different things. Some types of germs are good for you and help you stay well, others can make you sick, so your body has ways to fight germs to keep you healthy. Through several hands-on activities, students will use their senses and observation skills to learn how your body fights germs. Students will compare “gak” to mucus, learn how tears keep germs out of your eyes, and how nose hair keeps germs out of your body.

Vocabulary/Definitions:

3 – 6 important (new) words

- **Germs:** tiny living things
- **Mucus:** slimy material that keeps your nose wet and traps germs and dirt
- **Health:** when your body feels good and not sick
- **Scientist:** someone likes to learn about how things work and how to understand things
- **Repetition:** doing something over and over
- **Guess:** choose an answer without knowing what the right answer is

Materials:

What will you bring with you?

- Foil plate
- Foil plate with brush
- 2 baggies with 50 beans
- 3 containers with gak
- Baggie with 60 beans
- Bowl, Towel
- Bucket
- Lacrosse ball
- Baggie with glitter
- Hand lotion
- Paper towels
- **Bacterial terrariums – not in kit**
- **Agar plates – not in kit**
- **Kimwipes – not in kit**
- **sterile toothpicks - not in kit**



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Classroom Set-up: *Student grouping, Power/Water, A/V, Light/Dark, set-up/clean-up time needed*

- Set up three stations with materials for demos when the introduction is done.

Classroom Visit

1. Personal Introduction: _____ **4** _____ **Minutes**

My name is _____ and I am a scientist that studies germs. [Scientist defined] In my spare time, I like to swim and play games with my friends like Terry. [Put cornstarch in hand before shaking hands] Hi Terry, how are you doing today?

Terry: I'm very well thanks. Wow, what just got all over the place?

Well Terry, today we are going to learn about germs [define germ]. As you can see from this white powder, they easily move from one person to the next. Germs are very, very small and alive, but you can't see them unless lots of them grow together. [Pick up and show bacterial terrarium.]

Topic Introduction: _____ **5** _____ **Minutes**

Big Idea(s), vocabulary, assessing prior knowledge. What questions will you ask to learn from students?

What colors can we see in here [refer to bacterial terrarium]? Each different color you can see is a different type of germ. There are many types of germs and some can help you and some can make you sick. Have any of you ever been sick? [engage kids] What did it feel like? How did you get better?

Our body has many ways to keep us healthy. [Health defined]

One way your body fights off germs is by producing mucus. Does anyone know what mucus is? Mucus is a slimy material that keeps your nose wet and traps germs or dirt. How does mucus actually protect you from germs? You are going to figure that out using pretend mucus!

The inside of your nose, windpipe, and lungs are lined with tiny little hairs. These hairs help filter out dirt and germs that enter your body and also collect mucus. Do these hairs really make a difference? You are going to make guesses as you compare two pretend nostrils—one lined with tiny hairs and one without. [Guess defined] We will also look at why scientists repeat experiments to make sure they are getting the same answers multiple times. [Repeat defined: doing the same thing again]

Your body also produces tears to protect your eyes from germs. Has anyone ever gotten some dirt in their eye? What happened? You are going to use a pretend eyeball (tennis ball) and pretend germs (red glitter) and figure out the best way to get rid of the germs – tears or wiping your eyes?

Now, I am going to divide you into three groups and each group will go to a different station. Then after you have been to all three stations, we will come back together and talk about what we have learned.



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2. **Learning Experience(s):** _____ **20** _____ **Minutes**
Demonstrations, hands-on activities, images, games, discussion, writing, measuring... What will you do, what will kids do? Describe in order, including instructions to kids.

See attached lesson plans: mucus, nose hair and tears

3. **Wrap-up: Sharing Experiences and Building Connections** _____ **5** _____ **Minutes**
Putting the pieces together – how will students share learning, interpret experience, build vocabulary?
What have we learned about germs? (small and invisible, unless there are a lot of them. There are good and bad germs and sometimes they can make you sick)
How do our bodies prevent sickness? (nose hair, mucus, tears)
How do we help our bodies when we are sick? (handwashing, nose blowing, medicine, resting)

4. **Close:** _____ **5** _____ **Minutes**
How can kids learn more? Thanks and good-bye! Clean-up.
Germs are all around us and we are going to take some samples from you guys and your classroom so that you can see the germs grow. [We are going to take swabs from a doorknob, sink, inside of mouth and desk and plate them on agar plates.]

TOTAL _____ **30-40** _____ **Minutes**

Differentiated Instruction

English Learners: Repeat directions, if necessary, and physically model the defense mechanisms at each station. Vocabulary words can be shown with simple illustrations and/or redefined in very simplistic terms.

Advanced Learners: Have students think of/draw different defense mechanisms of the human body.



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Follow-up – After Presentation

ELA Activity:

Ask teacher and kids to write a letter about what they learned and use drawings.

Things to be aware of in the future: washing hands after playing in dirt, throwing away tissues into which you have blown your nose, exercising and eating veggies to stay in good health.

Mathematics Activity:

Create a variety of physical “germ” models and have students sort and classify the different types of germs.



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