

## EDUCATOR'S GUIDE

# Jesse Steam: Solving Mysteries through Science, Technology, Engineering, Art & Math

Title: *The Microscopic Snot Debacle*

### Series Overview

Ten-year-old Jesse Steam's curiosity about how the world works leads her to one mystery after another as she pedals around town, often with Mr. Stubbs, her tabby cat, keeping her company in the bike basket. Using simple scientific tools and their powers of observation, Jesse and her friends analyze, test hypotheses, and conduct experiments. If the kids get stuck, they know they can count on Professor Peach, a retired college science educator, to step in with a clear explanation.

Each title in the Jesse Steam series focuses on one **STEAM** subject: Science, Technology, Engineering, Art, or Math.

### About This Book

In *The Microscopic Snot Debacle*, Jesse and her friend Kimmy Kat Black are battling sneezing, itchy eyes, and runny noses. They learn that they are suffering from *Pollinosis* or *Seasonal Allergic Rhinitis*, commonly known as Hay Fever. Jesse and her friends use a microscope to get a closer look at pollen—and learn a lesson about how it causes all those yucky symptoms.

This title focuses on **technology**.

### Next Generation Science Standards Alignments and Activities

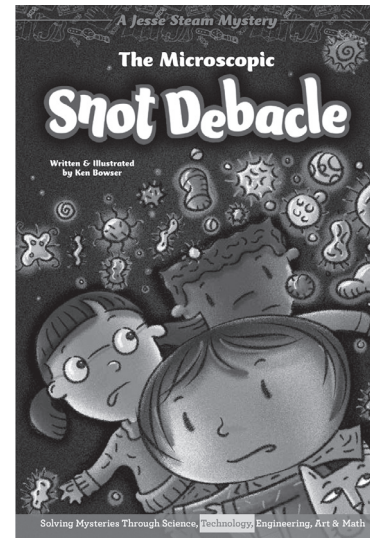
The activities and learning ideas in this guide have been correlated with the **Next Generation Science Standards (NGSS)**:

<https://bit.ly/2kx58A2>

These standards were developed by the National Research Council (NRC) of the National Academy of Sciences. The NRC's Framework for K-12 Science Education combines practices, crosscutting concepts, and disciplinary core ideas to address relevant science, technology, engineering and math (STEM) concepts that students should learn.

For this book, the Engineering Design standard is particularly applicable:

<https://bit.ly/2lzY4mu>



Lexile: 770 GRL: R 3,089 words



## Background and Key Concepts

*The Microscopic Snot Debacle* is about pollinosis, or hay fever. Pollen is a fine, powdery substance (usually yellow) made up of tiny grains that's produced by the male part of a plant. It is carried by the wind or by insects to the female part of the plant, enabling the plant to produce seeds or fruit.

Sometimes, the pollen drifts into our sinuses. Our immune system can confuse it with something dangerous, like bacteria, and cause an allergic reaction. That allergic reaction can cause a runny nose, sneezing, itchy eyes, and other unpleasant symptoms.

## Class Discussion

Start the discussion by asking students if they've ever had an allergic reaction to something, whether it's a food, a clothing material, a skincare product, or something outside or in the air. Ask them to describe the symptoms they experienced due to the allergic reaction. Then ask students if they've ever experienced hay fever, and how it made them feel. Talk about the various things they do that help them feel better.

## Student Activity

### Parts of a Flower

Write the following words on the board: nectar, pistil, pollen, and stamen. Ask students if they can define any of the words. Then write the following definitions on the board:

**Nectar:** a sweet liquid reward for pollinators that is produced by flowers.

**Pistil:** the female part of the flower including the stigma, style, and ovary.

**Pollen:** the fine, powder-like material produced by the anthers of flowering plants.

**Stamen:** the male part of the flower consisting of the anther and filament.

Once you've defined the words, project the following flower diagram on the board:

<https://kidsgrowingstrong.org/wp-content/uploads/2016/05/FlowerParts-gold.jpg>

Have students use this diagram to fill in the "Parts of a Flower" worksheet.

### A Closer Look at Flowers and Pollen

Bring several different flowers, either from a florist or from your own garden, into the classroom. Break students into groups of 2 to 4 (depending on the number of students in your class and how many flowers you have) and provide each group with a microscope. Have the groups look at their flower under the microscope and identify its parts. Groups can then rotate to the different microscopes to get a closer look at each flower.

**Extra activity:** Go outside as a class. Choose a few students and ask them to collect pollen from the flowers using cotton swabs. (Do the first one yourself to demonstrate how to gently remove the pollen without damaging the flower.) Bring the swabs inside to get a closer look at the pollen under the microscopes. Discuss with the class what the pollen looks and feels like.



## **Additional Online Resources:**

<https://kidsgrowingstrong.org/pollination/>

<https://kids.britannica.com/kids/article/pollen/353649>

<https://www.coolkidfacts.com/pollination-for-kids/>

## **Videos**

### **Pollination for Kids:**

<https://www.youtube.com/watch?v=CUPzbTuJlgc>

### **Parts of a Flower and Pollination:**

<https://kids.britannica.com/kids/article/pollen/353649>

## **“Parts of a Flower” Worksheet Answer Key**

1. Petal
2. Ovule
3. Stigma
4. Pistil
5. Anther
6. Filament
7. Stamen
8. Stem
9. Receptacle
10. Sepal

# Worksheet

## PARTS OF A FLOWER

Student Name \_\_\_\_\_

Date \_\_\_\_\_

1. \_\_\_\_\_

6. \_\_\_\_\_

2. \_\_\_\_\_

7. \_\_\_\_\_

3. \_\_\_\_\_

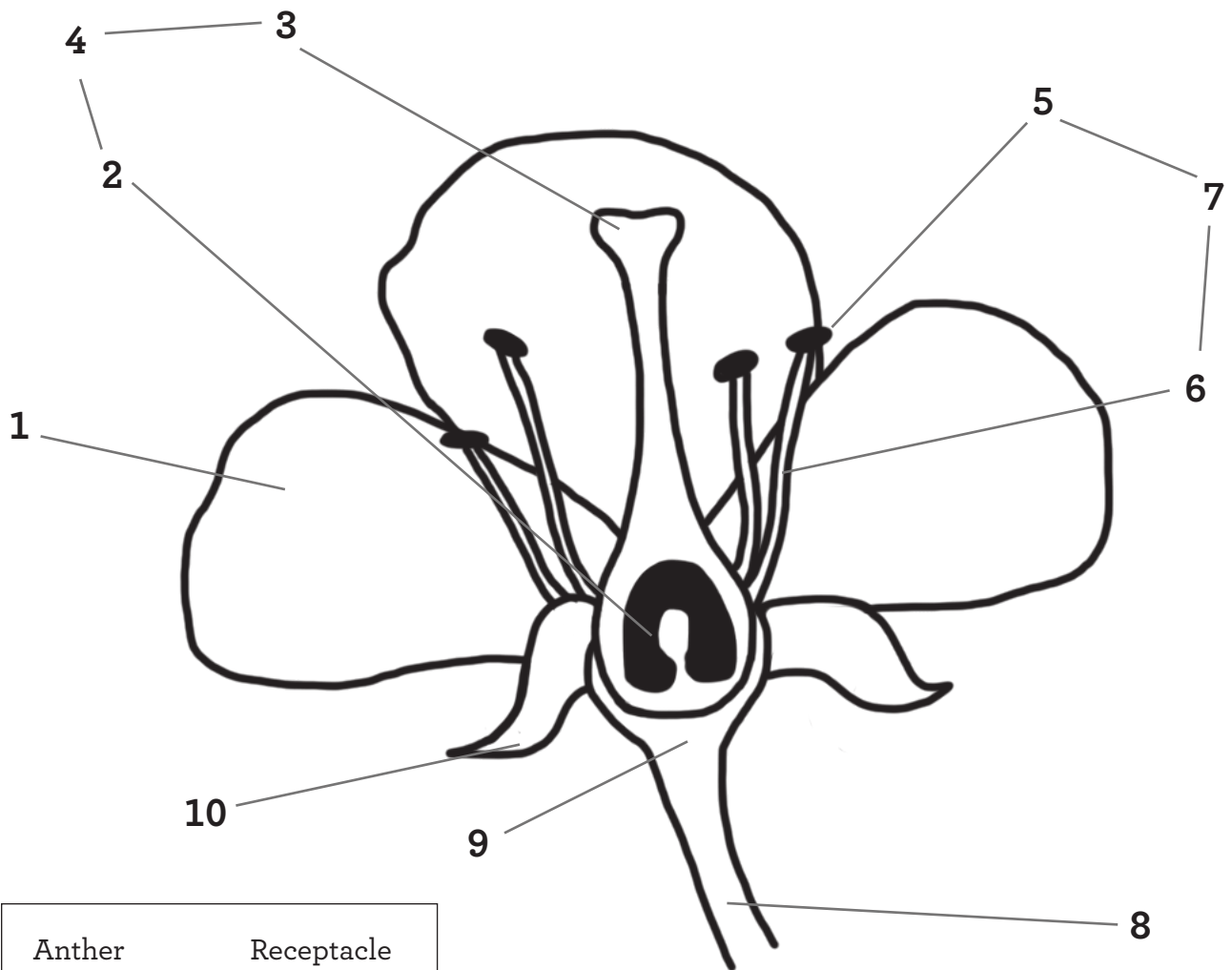
8. \_\_\_\_\_

4. \_\_\_\_\_

9. \_\_\_\_\_

5. \_\_\_\_\_

10. \_\_\_\_\_



Anther	Receptacle
Filament	Sepal
Ovule	Stamen
Petal	Stem
Pistil	Stigma