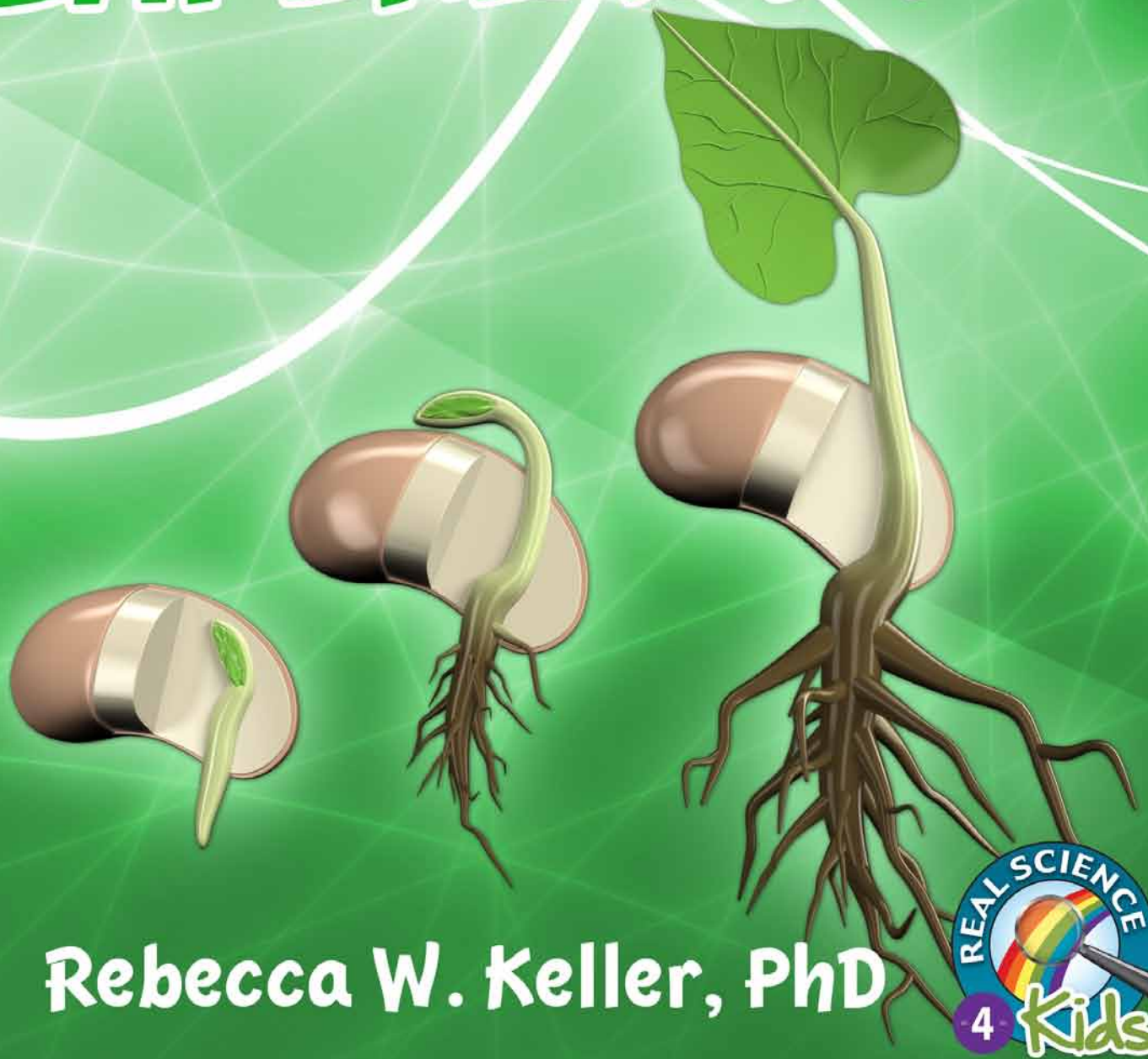
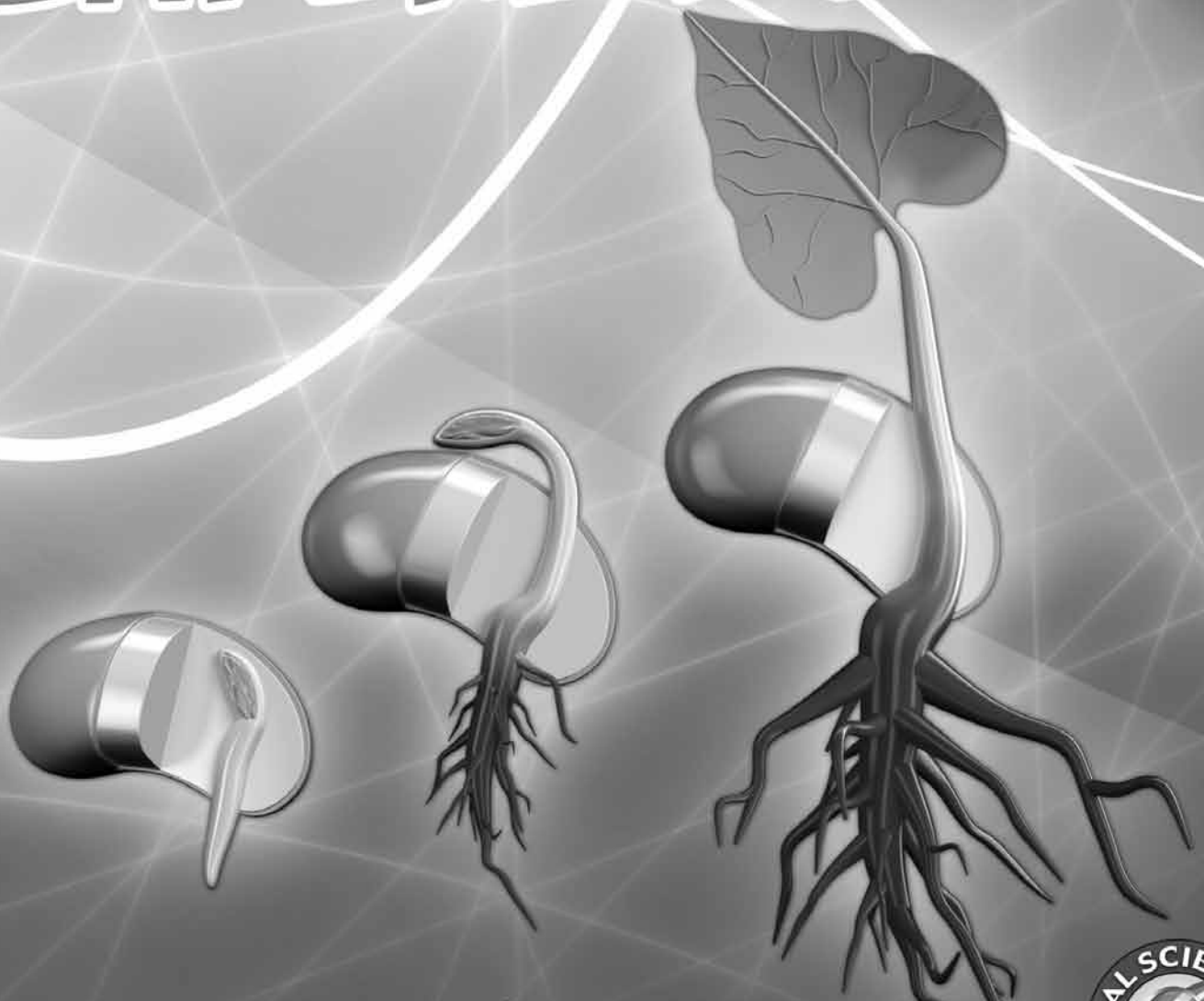
21 SUPER SIMPLE Biology EXPERIMENTS



Rebecca W. Keller, PhD

REAL SCIENCE 4 Kids

21 SUPER SIMPLE Biology EXPERIMENTS



Rebecca W. Keller, Ph.D

REAL SCIENCE 4 Kids

Illustrations: Janet Moneymaker
Rebecca W. Keller, Ph.D.

21 Super Simple Biology Experiments

ISBN 978-1-936114-38-2

Published by Gravitas Publications, Inc.
4116 Jackie Road SE, Suite 101
Rio Rancho, NM 87124
www.gravitaspublications.com

Printed in United States

What Are Super Simple Science Experiments?

Super Simple Science Experiments are experiments that each focus on one aspect of scientific investigation. Doing science requires students to develop different types of skills. These skills include the ability to make good observations, to turn observations into questions and/or hypotheses, to build and use models, to analyze data, to use controls, and to use a variety of science tools including computers.

Super Simple Science Experiments breaks down the steps of scientific investigation so that students can focus on one aspect of scientific inquiry at a time. The experiments are simple and easy to do, yet they are *real* science experiments that help students develop the skills they need for *real* scientific investigations.

Each experiment is one page and contains a short objective, the materials needed, a brief outline of the experiment, and any graphics or illustrations needed to enhance the experiment. The skill being explored is listed in the upper right-hand corner of each page.

The *Super Simple Science Experiments Laboratory Notebook* is a companion book for use with these experiments. It includes lined pages, blank pages, and graphing pages, providing students with a place to record their experimental data in different formats.

Getting Started

Below is a list of the materials and equipment needed for all of the biology experiments in this book. You can collect most of the materials ahead of time and place them in a storage bin or drawer.

Materials at a Glance

Foods

beans, dried (3)
bread slices (2)
celery stalks with leaves (2)
pectin or Jell-O (2 boxes)
meat tenderizer
onion
paper towel
raw egg
salt
sprig of mint
sugar
water, distilled
water, tap

Materials

Super Simple Science Experiments Laboratory Notebook
balloons (several)
candle, small
cotton swabs
drinking straw
food coloring
insects (dead or alive)
liquid detergent
marble
marking pen
matches
paper (shredded newspaper or office paper)
paper, white absorbent
pencil
plant or animal to observe
plastic sealable bags (small, clear)
plastic wrap
redworms, composting (Eisenia fetida) - 1/2 lb
rock
rubber band
rubbing alcohol
spiders (dead or alive)
tape
water: pond water, hay water, or filtered water & soil mixture

Equipment

binoculars
blender
container, large, for water
cooking pan
jars, clear glass (2)
magnifying glass
measuring cup
measuring spoons
microscope & depression slides
petri dish or large jar top
refrigerator
scissors
storage bin, plastic with holes
stove
strainer
test tube or narrow jar, clear
tongs

Other

area with plants (garden, park, forest, etc.)
anthill with ant trail
area frequented by birds

Resources

computer with internet access, encyclopedia, or library

Laboratory Safety

Most of these experiments use household items. Extra care should be taken while working with blenders, stoves, and matches in this series of experiments. The following are some general laboratory precautions that should be applied to the home laboratory:

Never put things in your mouth without explicit instructions to do so. This means that food items should not be eaten unless tasting or eating is part of the experiment.

Use safety glasses while working with glass objects or strong chemicals such as bleach.

Wash hands before and after handling chemicals.

Use adult supervision while conducting any step requiring a blender, a stove, or matches.

Table of Contents

1. What Is Life?

making observations

Objective

To observe the differences between living and non-living things.

Materials

pencil
rock
a plant or animal that can be observed
Super Simple Science Experiments
Laboratory Notebook

Questions

❶ Place the rock on a table or other flat surface. While observing the rock, answer the following questions in your laboratory notebook.

① Does the rock move on its own?
② Does the rock require any food to exist?
③ Can the rock reproduce itself, creating little rocks?

❷ Observe any plant or animal and answer the following questions in your laboratory notebook.

① Does the plant or animal move on its own?
② Does the plant or animal require any food to exist?
③ Can the plant or animal reproduce itself, creating little plants or animals?

Results and Conclusions

The first step in studying life is to understand the difference between something that is "alive" and something that is "not alive." However, defining life can be challenging. Based on your observations, how would you define "life?" Are there any other aspects of life that distinguish living things from non-living things?