



[askDrUniverse.wsu.edu](http://askDrUniverse.wsu.edu)



# FIELD GUIDE

Come explore our amazing world with Dr. Universe  
and friends at Washington State University.



Washington State University is a public research  
university committed to a tradition of service.  
Ask Dr. Universe connects K-8 students with  
WSU researchers through Q&A.



The logo features the word "Ask" in white inside a red circle, with several small red dots trailing off to the right. Below this, the words "DR. UNIVERSE" are written in a large, dark blue, sans-serif font. The "U" in "UNIVERSE" is stylized with a long, curved tail that loops under the "R".

# Ask DR. UNIVERSE

Hello, scientist! Yes, you there, holding this book! Welcome to your very own field guide. Scientists use field guides to take notes as they explore the natural world. This is a space for you to make all your own. Use it to write down BIG questions, draw, do new things, make stuff, and get a little messy! Are you ready?

A large, green arrow pointing diagonally down and to the right, containing the text "Let's go!" in white.

Let's go!

# Meet Dr. Universe

I'm Dr. Universe. Dr. Wendy Sue Universe, that is. If you're anything like me, you've got lots of questions about our world. I'm teaming up with Washington State University researchers to tackle smart questions from curious kids around the world. Kids just like you. Who knows, maybe one day you'll come explore and discover at WSU, too.

Find out more at [askDrUniverse.wsu.edu](https://askDrUniverse.wsu.edu).



# WHAT ARE YOUR BIG QUESTIONS?

## So, you want to be a scientist?

If you like to ask BIG questions about our world, you might just be on your way. Scientists ask and investigate questions about our universe. They observe the world around us, wonder, ask questions, test out new ideas, and share their discoveries with others.

1.

2.

3.

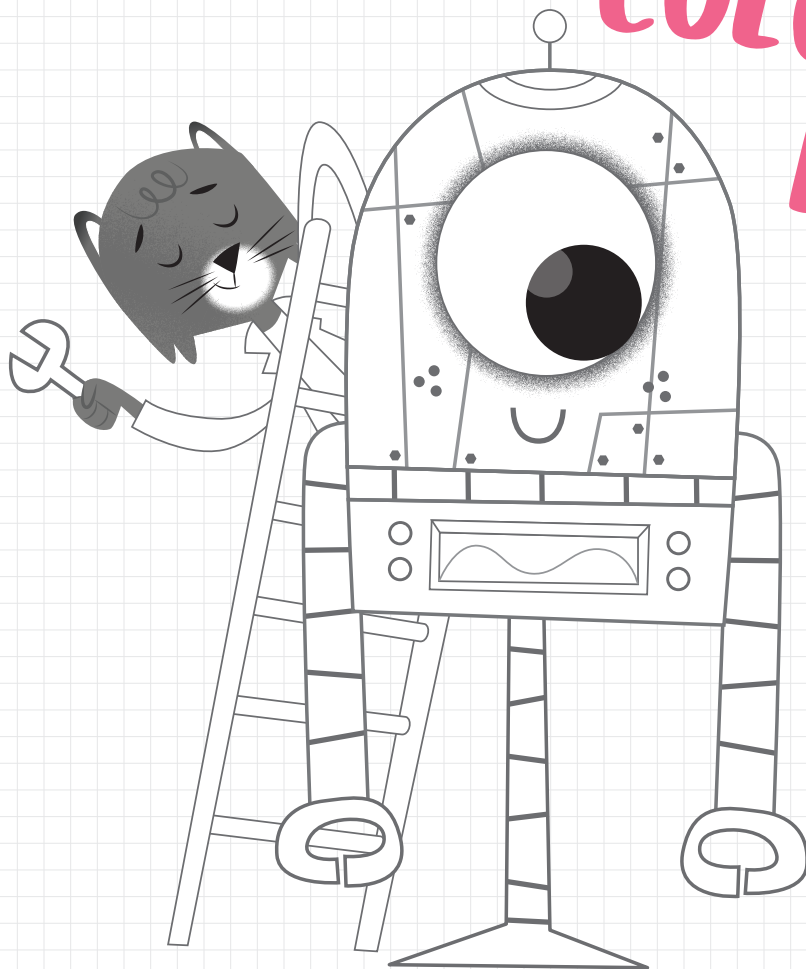




# MY IDEAS AND EXPERIMENTS

you never know when great ideas  
will strike! Write them here.

COLOR MY  
ROBOT!



# PLANTS, BUGS, AND ANIMALS

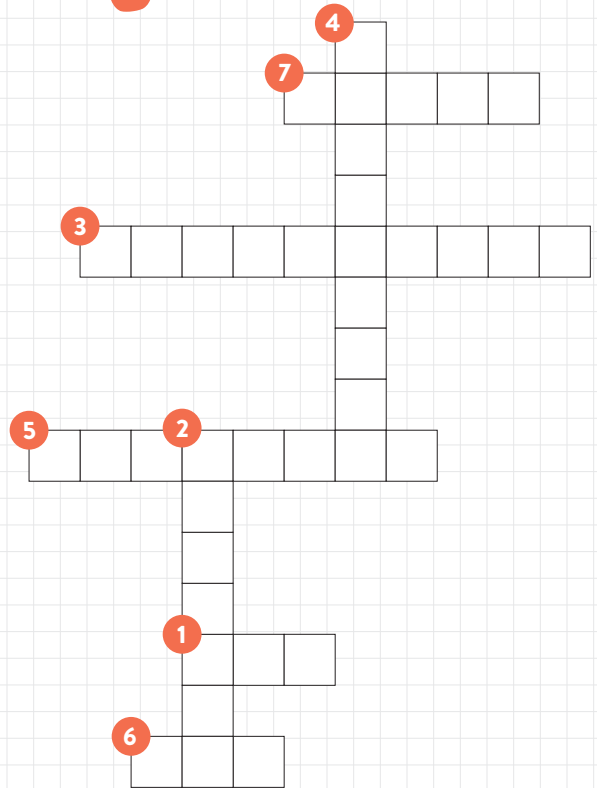
Glue or draw your favorites  
on these pages.

## **FUN FACTS:**

1. Some types of bananas have over 60 seeds.
2. Grizzly bears are one of the biggest mammals on our planet and can weigh up to 800 pounds.
3. It takes more than 500 worker bees to gather just one pound of honey.

# CROSSWORD

- 1 What to do when you have a question!
- 2 Washington State University mascot
- 3 Use this to look up close at something small
- 4 Use this for gazing at the stars
- 5 When you find out something new
- 6 Where Dr. Universe works!
- 7 Dr. Universe's first name



# I met a scientist!

Name of scientist \_\_\_\_\_ works at

Washington State University and

studies \_\_\_\_\_.

Name of scientist \_\_\_\_\_ works at

Washington State University and

studies \_\_\_\_\_.

My question for them was...

My question for them was...

WHAT?!



# DNA extraction experiment

You, and a strawberry, are made up of a LOT of very small parts called cells. DNA is found inside a cell. In this activity, you will break down some cell walls to get to the DNA.

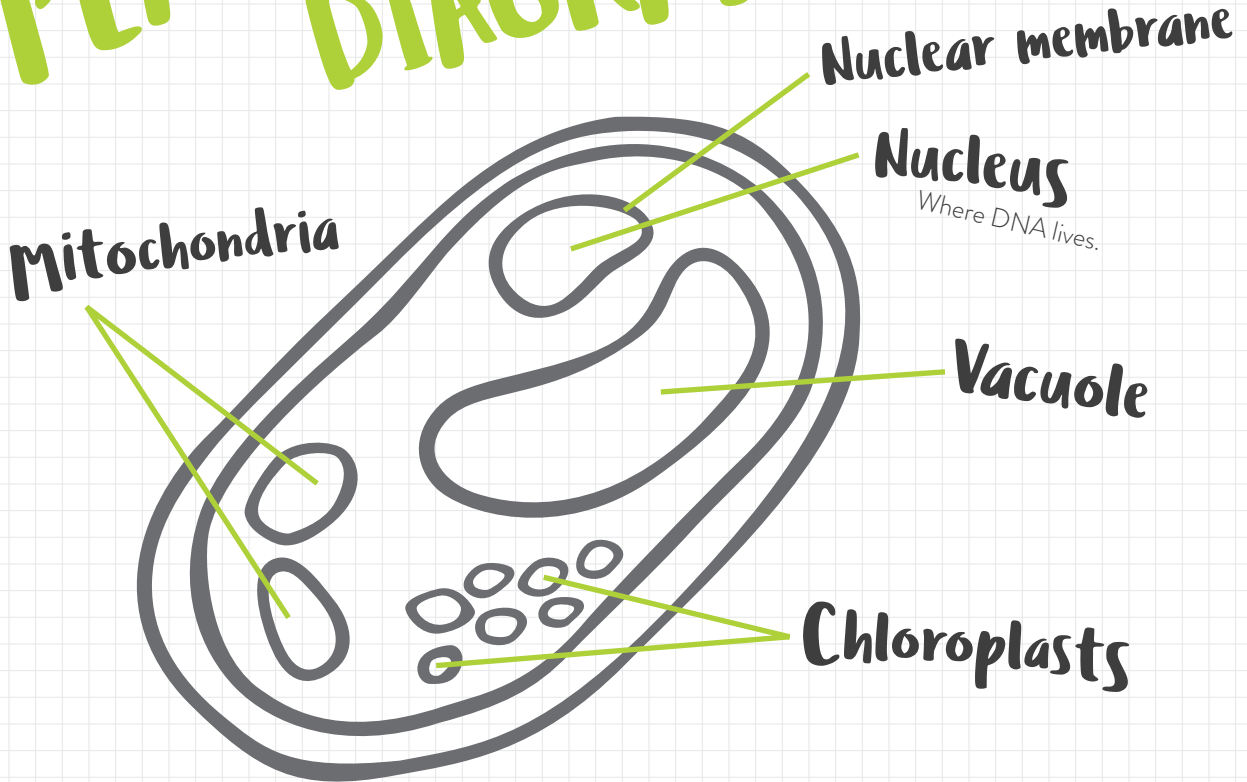
1. Blend/mash up 2 strawberries in a  $\frac{1}{4}$  cup of water.
2. Pour mixture into small cup with lid or test tube with lid.
3. Add a few drops of dish soap—to break down the first cell wall! It is made of lipids, or fats.
4. Gently shake up mixture. Try not to make bubbles!
5. Add a teaspoon of meat tenderizer—to break down the next cell wall! It is made of protein.
6. Add a tablespoon of rubbing alcohol to the cup to isolate the DNA. Do not shake.
7. Watch what happens!
8. Dip a Q-tip into the cup where rubbing alcohol and other liquids meet.

## WHAT HAPPENED?

1. What did the DNA look like?
2. Why might a scientist want to look at DNA?
3. What other things could you extract DNA from?



# PLANT CELL DIAGRAM



# GET OUT AND DISCOVER!

Write your  
discoveries here!

“The more you know, the more you  
realize how much there is to discover.”

—Dr. Universe

# Explorer's Checklist:

I WANT TO LEARN  
MORE  
ABOUT...

- ☐ Go stargazing.
- ☐ Count different animals in your neighborhood.
- ☐ Bake a cake.
- ☐ Collect rocks.
- ☐ Use a crayon to make a leaf rubbing.
- ☐ Draw a cloud.

1.

2.

3.

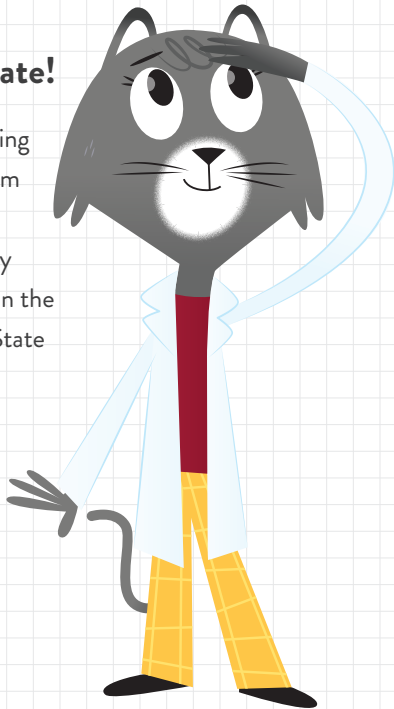
4.



# WHAT ARE YOUR BIG QUESTIONS?

## Let's investigate!

Cut out the following  
pages and mail them  
in to me. I'll try to  
answer them on my  
website or maybe in the  
next Washington State  
Magazine.



Your question:

Your name:

Your age:

Your hometown:

**Place in envelope and mail to:**

Ask Dr. Universe  
PO Box 641227  
ITB 2013B  
Washington State University  
Pullman, WA, 99164-1227



Your question:



Your name:

Your age:

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# Visit the website!

How is ice cream made?

What's a booger?

Is Pluto a planet or not?

Why is the ocean salty?

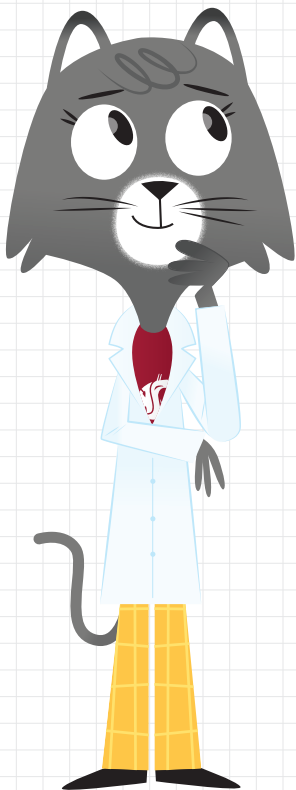
Why don't plants get sunburns?

Why are apples red?

**askDrUniverse.wsu.edu**



Stay  
curious!





This field guide is the property of:

Date started:

month

/  
day

/  
year

School:

Science teacher:

Classroom number:

## LENGTH

1 inch [in] = 2.54 cm

1 foot [ft] = 0.3048 m

1 yard [yd] = 0.9144 m

1 mile = 1.6093 km

1 nautical mile = 1.853 km

## AREA

1 sq inch [in<sup>2</sup>] = 6.4516 cm<sup>2</sup>

1 sq foot [ft<sup>2</sup>] = 0.0929 m<sup>2</sup>

1 sq yd [yd<sup>2</sup>] = 0.8361 m<sup>2</sup>

1 acre = 4046.9 m<sup>2</sup>

1 sq mile [mile<sup>2</sup>] = 2.59 km<sup>2</sup>

## VOLUME

1 cu inch [in<sup>3</sup>] = 16.387 cm<sup>3</sup>

1 cu foot [ft<sup>3</sup>] = 0.02832 m<sup>3</sup>

1 fluid ounce = 29.574 ml

1 pint (16 fl oz) = 0.4732 liters

1 gallon (231 in<sup>3</sup>) = 3.7854 liters

## MASS

1 ounce [oz] = 28.35 g

1 pound [lb] = 0.4536 kg

1 stone = 6.3503 kg

1 short ton (US) = 0.9072 t