

Feeling Good?

Girls on bikes in Mandalay, Myanmar

“Science brings people together,
working toward a common
cause—fighting disease.”
—Pardis Sabeti

1. Look at the girls in the photo. How do you think they feel? Why do you think they feel this way?
2. How has science helped to improve people’s health over the last 100 years? Give examples.
3. Work in small groups to think of three ways in which science affects your daily life. Share your ideas with the class.

1 What's happening in your body when you feel sick?

Discuss. Then listen and read. **TR: 15**

How are you feeling today? Do you have a **sore** throat? Are you coughing? Sneezing? These are all very common **symptoms** that signal your body is fighting a **disease**. Your **immune system** works to protect you from diseases, but when it is weakened, you feel sick. The illness that you feel could be caused by one of two things: **bacteria** or **viruses**.

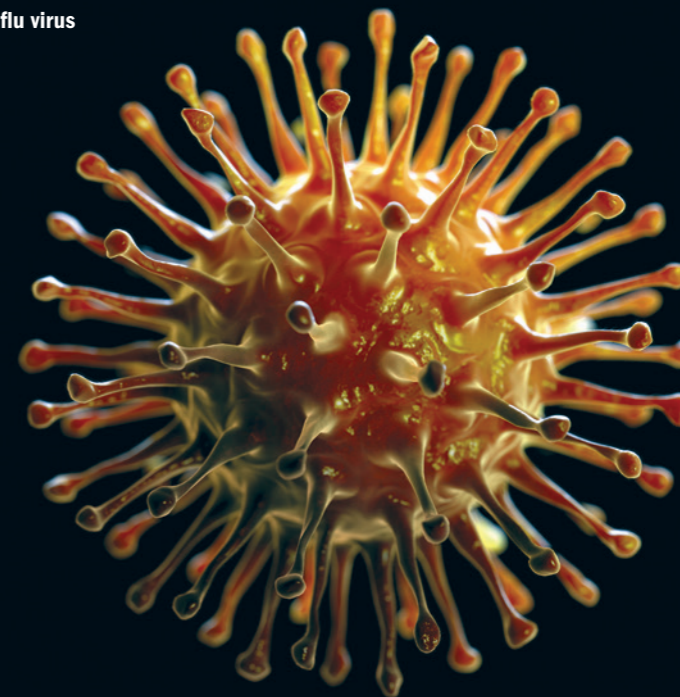
Bacteria are organisms with just one **cell**. They can survive outside the body, but we also have trillions of bacteria living in our bodies.

In fact, there are more bacteria than human cells in our bodies. But don't worry: ninety-nine percent of these bacteria are good for us. They allow us to feel positive emotions, **protect** us from disease, and help us **digest** food. Your mouth alone contains more bacteria than there are people on Earth! Unfortunately there are also bad bacteria that cause illnesses. We can **treat** these bacterial **infections** with **antibiotics**.

Viruses are smaller than bacteria. They cannot exist without a host—an animal or plant to live in. That person next to you who's sneezing? She's the host of a virus. So, watch out! With each sneeze, she sends you over 100,000 virus cells, traveling at a speed of over 160 kph (100 mph)! Once those cells **invade** your body, you become the host. The virus then changes in order to make more viruses in

your body. If you get a virus, you can't treat it with antibiotics. You simply need to wait until your body gets rid of it. Of course, you can protect yourself from viruses such as the flu by getting **vaccinations**, or even just by washing your hands. Over eighty percent of viruses are spread by touching an infected person or thing, so be sure to take care of yourself and stay healthy!

The flu virus



E. coli bacteria

2 **Learn new words.** Listen and repeat. **TR: 16**

3 **Work in pairs.** What do you do to protect yourself against disease? Give two or three examples.

4 Read and circle the correct word.

Pardis Sabeti is a doctor and a researcher. In her recent research on the *antibiotic / virus* that causes Lassa Fever, she wanted to find out why some people get the *disease / cell* and others don't. Pardis didn't just do research in her lab. She traveled to hospitals in Africa to learn more about diseases. There, she helped train medical workers to *treat / digest* people. She hopes that one day her research will help scientists to make a *symptom / vaccination* available that can *protect / invade* people against Lassa Fever.



Scientist Pardis Sabeti is also in a rock band, Thousand Days.

5 Learn new words. Listen for these words and match them to the definitions. Then listen and repeat.

TR: 17 and 18

emotion	illness	positive	to survive
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- _____ 1. state of being sick
- _____ 2. confident and happy
- _____ 3. to continue to live
- _____ 4. feeling

6 Choose an activity. Work in pairs.

1. Make a list of three health problems in your country. Then write the causes of these problems.
2. Pardis is hardworking and creative. Do you have either of these traits? If so, what do you use them for?
3. If you could find the cure for one disease, which disease would it be and why? Discuss. Then share your responses with the class.

SPEAKING STRATEGY TR: 19

Checking in with friends

- Are you OK?
- Are you feeling better?
- Is anything wrong?

Saying how you feel

- Yeah, I'm fine. / Not really. I feel awful.
- Yeah, I'm starting to. / No, I feel worse. I need to go home.
- No, everything's OK. / Actually, I'm feeling pretty sick.

7 Listen. How does Myriam check in on her friend? Write the phrases you hear. TR: 20

8 Read and complete the dialogue.

Yuto: Hey, Aiko. _____
 Aiko: Actually, _____
 Yuto: That's too bad! Do you want to go to the nurse?
 Aiko: That might be a good idea. _____
 Yuto: Come on, I'll walk with you.
(A little while later...)
 Aiko: Hi, Yuto. Thanks for your help earlier.
 Yuto: No problem. _____
 Aiko: Yeah, _____ I think that by tomorrow, I'll feel just fine.



9 Work in pairs. Play Tic-Tac-Talk. Choose X or O. Then choose a square, and use the words on that square to check in on your friend. Mark your letter (X or O) for a correct sentence. Then your friend chooses a square and responds to your question. Try to get three in a row.

tired	need	better
OK	go home	worse
wrong	feel	sick

Is anything wrong?
 Actually, I'm feeling pretty tired.

10 Work in groups. Why is it important to talk to friends about how you feel? Do you ever feel like you don't want to tell a friend how you feel physically and emotionally? How could you politely express this?

GRAMMAR TR: 21

Adverbs: Saying how and how often you do something

Many teenagers like to sleep **often**. They're **always** tired.

Many people **rarely** get enough sleep. They can get sick more **easily**.

If you sleep **regularly**, you're **usually** able to pay more attention in school.

11 Read and circle the correct word.

If you're like a lot of teens, you like to sleep. And that's a good thing! But many people sleep *always* / *poorly*, and this has harmful effects on the body and mind. While you sleep, your body *well* / *regularly* produces cells that work to fight infections. If you don't sleep *enough* / *easily*, fewer cells are produced, and your immune system doesn't work as *effectively* / *always*. As a result, you can become sick more *rarely* / *easily*, especially when you don't get enough sleep.

Lack of sleep also affects your mind. You're more likely to feel angry or depressed, so you react *negatively* / *usually* to almost everything. A lack of sleep makes it difficult to pay attention *rarely* / *carefully* to what's happening in school. Making good decisions, solving problems, and remembering *always* / *poorly* seem much harder when you don't get a good night's sleep. Lack of sleep also makes you react to things more *sometimes* / *slowly*. In fact, tired drivers may be responsible for around twenty percent of all traffic accidents. Sleeping at least seven hours a night is important for your health, your grades, and even your safety!

12 Work in pairs. You learned that sleep is important. Talk about the benefits of sleeping well. Use words from the box in your discussion.

always calmly clearly effectively often regularly usually

A good night's sleep helps me think clearly.

13 Learn new words. Read and listen to information about the connection between sleep and intelligence. Then listen and repeat. TR: 22 and 23



Researchers that study sleep and the **brain** have a **theory**: getting enough **rest** is strongly connected with intelligence. Just as humans prefer to sleep in **comfortable** beds, highly intelligent animals like these chimpanzees **select** the strongest trees for a good night's sleep.

14 Work in pairs. Talk about your own sleep habits. Do you sleep well? What affects your sleep? Why? Use the words in the box to help you.

comfortable enough nervous poorly
rest select stress well

15 Work in groups. Design a bedroom that would result in really good sleep. Draw your design. Explain why the room is good for getting enough sleep. Use adverbs to talk about how the room helps people sleep. Present your information to the class.

16 Before you read, discuss in pairs. Based on the title and the image, what do you think this reading is about?

17 Learn new words. Find these words in the reading. What do you think they mean? Use a dictionary to check. Pay attention to how each word is used in a sentence in the dictionary. Then listen and repeat. **TR: 24**

adolescent experience process structure

18 While you read, summarize each paragraph. **TR: 25**



THE Teenage Brain

Shaping your future

- 1 Being a teenager can be challenging, but it can also be exciting. You're becoming more independent and making decisions for yourself. You are also learning to take risks and solve problems better than you could before. And changes are happening throughout your body, even in your brain.
- 2 You can't see the changes in your brain, but they're affecting how you develop into an adult. At this time in your life, there is a process going on inside your brain that makes it work faster and more efficiently. Imagine that the structure of your brain is like a big road map. There are lots of roads leading to different destinations. When you were a child, as you learned new things, your brain created more and more roads leading to different destinations. By the time you become an adolescent, the most important places on the map have many different roads leading to them. Now your brain's job is to make that map more efficient. It removes the roads that you don't need and works to make the other roads faster.
- 3 As a result, your experiences as a teenager actually affect the way that your brain develops. If you spend hours playing video games, what skills do you use? You learn to see something with your eyes and respond to it with your hands, right? As you develop those skills, your brain is making sure that the roads leading to them are especially fast and efficient. So, your video-game playing could be preparing you for a career such as a fighter pilot, or even a surgeon.
- 4 This is a great time for you to practice new skills and discover what you're good at and what you love doing. Go out and try different activities, and stick with them if you think they're useful. Remember that with everything you do, you're shaping your brain for the future.

19 After you read, work in pairs to answer the questions.

1. What does the writer compare the structure of the brain to?
2. What happened to your brain as you learned new things as a child?
3. How does the brain become more efficient when you are an adolescent?
4. How can your experiences as a teenager affect the development of your brain?
5. What is the writer's advice for teenagers?

20 Match these summaries to the correct paragraph. Write the number on the line.

- _____ What you do as an adolescent affects your brain's development.
- _____ Your brain forms many connections when you are a child and then it makes them more efficient when you are a teenager.
- _____ It is important to try to have lots of new experiences when you are a teenager.
- _____ Teenagers experience a lot of changes.

21 Discuss in groups.

1. How do some of the activities you enjoy doing now provide you with important skills for the future? Give examples.
2. Knowing that what you do shapes your brain, what activities shouldn't you do? Why shouldn't you do them? Give one or two examples.
3. Name three interesting careers. Then imagine what activities a teenager could do now to shape their brains for each career.

VIDEO

- 22 Before you watch, discuss in pairs.** How can each of the following affect your emotions?

diet	health	other people
school	sleep	surroundings

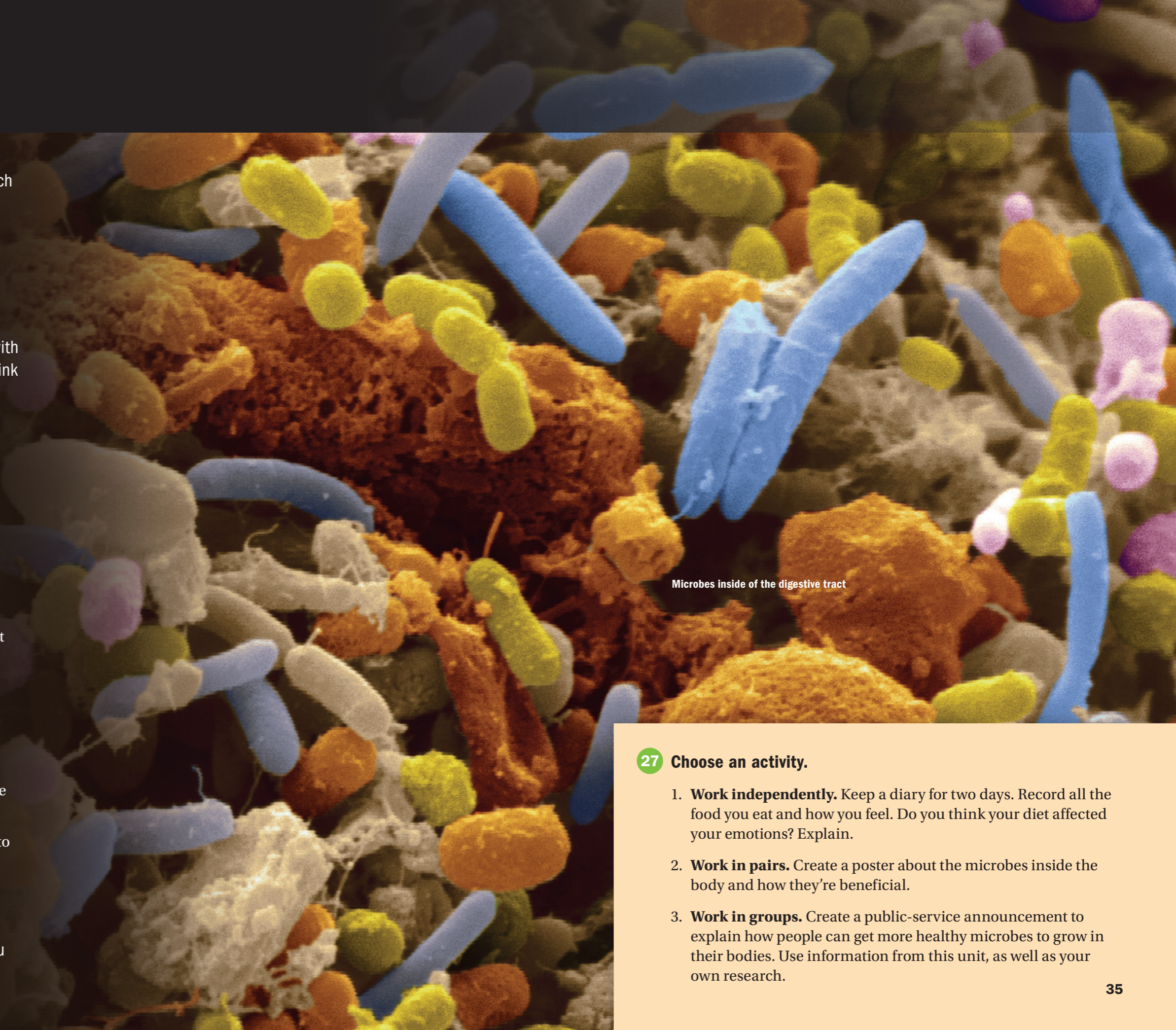
- 23 Work in pairs.** The title of this video is *The Forgotten Organ*. An *organ* is a part of the body with a special task, such as the heart. What do you think the “forgotten organ” is? Discuss your ideas.

- 24 Watch scene 2.1. While you watch, answer the questions.** According to the video, what is the “forgotten organ”? Was your answer from Activity 23 correct?

- 25 After you watch, work in pairs to answer the questions.**

1. What are microbes?
2. What part of your body is almost equal in weight to all the microbes in your body?
3. How many bacteria are in your gut?
4. How do the microbes in your gut send signals to your brain?
5. When Elaine Hsiao observed communication between two mice, what did she notice about the mouse with no microbes?
6. What happened when she put microbes back into the mouse?

- 26 Work in groups.** Some bacteria and viruses are harmful. Discuss examples of harmful microbes. Describe a time when harmful microbes made you sick. How did you treat the situation?



Microbes inside of the digestive tract

- 27 Choose an activity.**

1. **Work independently.** Keep a diary for two days. Record all the food you eat and how you feel. Do you think your diet affected your emotions? Explain.
2. **Work in pairs.** Create a poster about the microbes inside the body and how they're beneficial.
3. **Work in groups.** Create a public-service announcement to explain how people can get more healthy microbes to grow in their bodies. Use information from this unit, as well as your own research.

GRAMMAR TR: 26

Make + adjective: Saying what affects mood and feelings

A lack of sleep **makes** you tired.

Some viruses **make** us very sick.

Does exercise **make** you feel good?

Can this medicine **make** you better?

28 Read. Complete the sentences to say how these things make people feel.

Today we want to know all about you. What makes you feel the way you do?

I love running, and I am on the school's track team. Exercise makes me tired, 😞
 but it also _____! 😊 **Jamie (13)**

Fast food _____ 😞 I really love how it tastes, but I always
 have a stomachache after I eat it! **Paolo (13)**

Seeing people with terrible viruses _____ 😞 I hope that
 scientists can find a way to treat them. **Julia (14)**

Tests _____ 😞 I can't sleep the night before an important
 one. It's awful! **Brad (11)**

Watching my favorite football team _____ 😊 Their games are
 always fun to watch. **Will (12)**

29 Work independently. Use *make* to say how each of the following affects you.

1. A strong immune system _____ *makes me feel healthy.*
2. A virus can _____
3. Good bacteria can _____
4. A good night's sleep _____

30 Work in pairs. Take turns tossing the cube. Say what makes you feel the emotion.



Go to p. 157.

A good video game makes me excited.

Really? Video games make me feel bored. Action movies make me excited.

WRITING

When we write a classification essay, we divide the topic into different categories. Then we present each category and support it with examples. The following phrases are useful when classifying:

- additionally another type/way to begin with the final type/way**

31 Read the model. Work in pairs to identify the different categories in the essay. Underline words that signal the categories.

When people hear the word *stress*, they usually think of something negative. However, stress can have several benefits for the body and mind. To begin with, there is the type of stress people feel when there is something important to do. For example, some students are stressed before a big test. The stress might make them feel nervous, but it also makes them feel focused. This type of stress can help people work efficiently to meet their goals.

Another way stress benefits us is by keeping us healthy. Scientists who study stress learned that a little stress strengthens the immune system. When your body learns to respond to some stress, it's better able to protect you from infection.

The final way that stress benefits us is by helping us react to danger. If you see a car coming around the corner too fast, you might experience stress. This stress sends a message to warn your brain of danger, allowing your body to respond quickly. Without the stress, you may not be able to jump out of the car's way soon enough.

Of course, too much stress is harmful to our bodies and minds. But the right amount of stress makes us more efficient, healthier, and safer.

32 Work in pairs. What are the three benefits of stress mentioned in the essay?

33 Write. Write a classification essay about the negative effects of stress. Give examples.



Take Care of Yourself

“Taking care of others can only happen if you first take care of yourself.”

—Pardis Sabeti

National Geographic Explorer, Computational Geneticist



SEVERELY
INFECTED
by Science
YOUR OWN SAFETY

1. **Watch scene 2.2.**
2. Pardis says that you first have to take care of yourself before you can help others. Do you agree with her? Why or why not? Do you take care of yourself? What could you do to improve?
3. How do you balance work and fun in your life? What are your daily responsibilities? What do you do for fun? Do you have enough time for both? Explain.

Make an Impact

A Create a brochure about healthy living.

- Find out about the importance of sleep, vaccinations, exercise, and healthy food.
- Organize your findings in a brochure. Include photos and drawings.
- Present your brochure to the class.

B Plan and conduct sleep research.

- Write five questions to find out how well your classmates sleep.
- Survey at least ten classmates. Summarize the results.
- Present the information to the class.

C Plan and hold a microbial quiz show.

- Prepare cards with different facts about viruses and bacteria.
- Organize two teams in your class.
- Hold the quiz show. Read each fact aloud. Classmates say if you're describing a virus or bacteria.



Express Yourself

- 1 Read and listen to the song *One Truth* by Pardis Sabeti's band, *Thousand Days*. TR: 27

ONE TRUTH

I'm sitting in here in this room
Watching everything move
I do not know how this city was built
We are forsaken to the sound
Oh that life that goes
But we were born to radiate

We are gathered on the ground
Waiting for a sign to arrive
Looking for the answers in the
starry sky
But we were home all along
and we are the light
We think, we speak, we walk, we
breathe the air

Yeah
A lifetime that we write
We laugh
We cry
We pray
We are love
We dream
We scream
We strive
Our hunger will never die
I'm here in this fight, always

A lifetime for one for one truth
That I'm alive, And so are you
We are here, We are the proof
Yeah

A lifetime for one
For one truth

- 2 Discuss in groups.

1. Pardis recorded this song with other scientists while fighting the Ebola virus. They saw many people, including friends, die of the virus. This made them very sad. To help, they recorded this song. What is the "one truth" that they are singing about?
2. Do you like the song? Why or why not?

- 3 **Connect ideas.** In Unit 1, you learned about colors. In Unit 2, you learned about health. What is the connection between these two units? How can colors affect your body and your mind?

- 4 Choose an activity.

1. Choose a topic:
 - how colors make you feel
 - body and mind
2. Choose a way to express yourself:
 - a song
 - a poem
 - a piece of graphic art
3. Present your work.