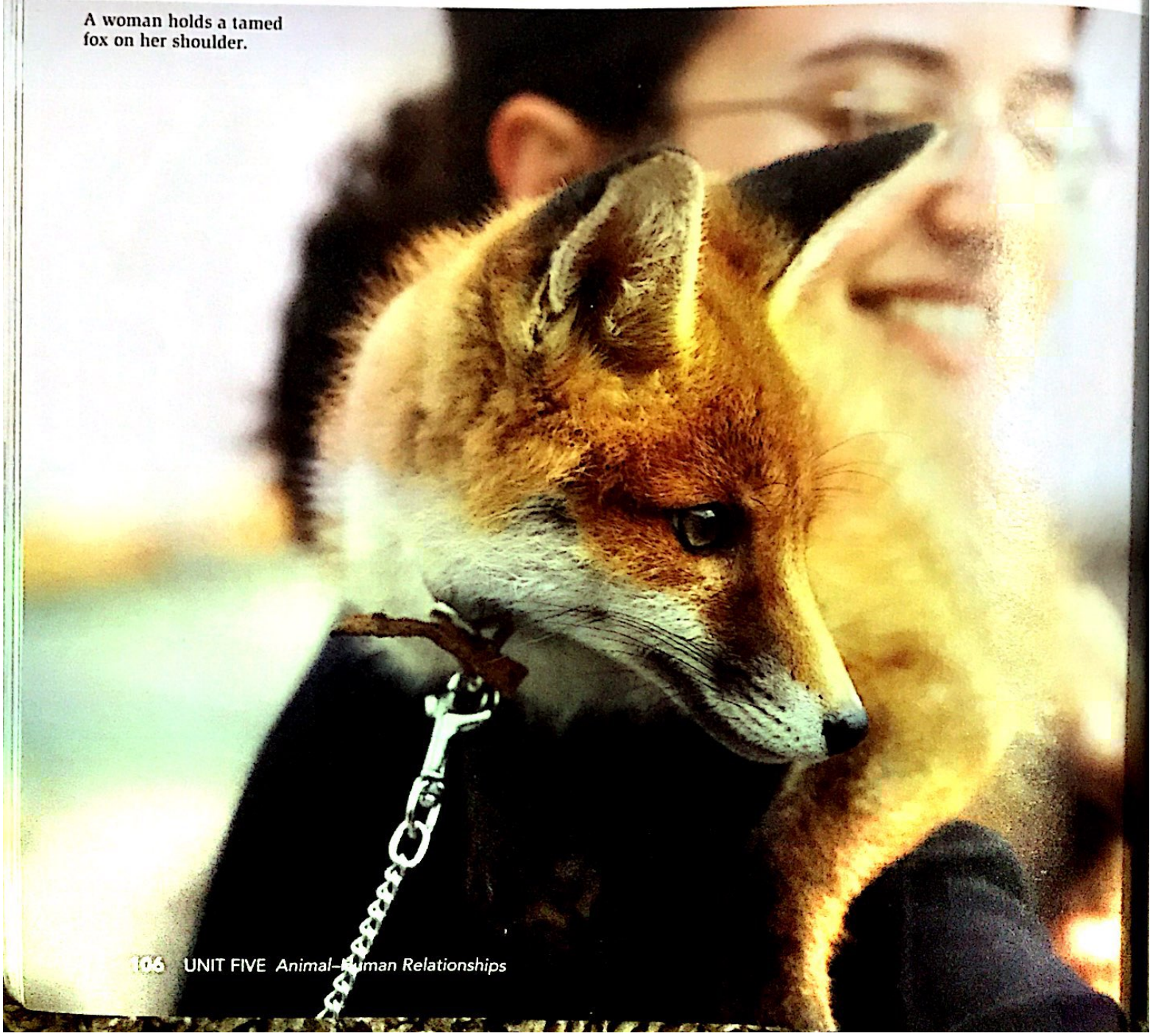
READING 2 TAMING THE WILD

"Hello! How are you doing?" Lyudmila Trut asks, looking into the cage labeled "Mavrik." We are on a farm just outside the city of Novosibirsk, in southern Siberia. Although I don't speak Russian, I recognize the affectionate tone of voice that dog owners use with their pets. 1

Mavrik wags his tail and rolls on his back. He is hoping Trut will pay attention to him. In other cages, there are dozens of other animals doing the same thing. "As you can see," Trut says above the noise, "all of them want human contact." Trut reaches in and scoops Mavrik up, and then hands him over to me. Cradled in my arms, he's as docile as a lapdog.[1] Except that Mavrik is not a dog at all. He's a fox. His behavior is the product of one of the most extraordinary breeding experiments ever conducted. 2

[1] *lapdog:* a small, obedient dog that may be easily held in one's lap



A woman holds a tamed fox on her shoulder.

Some individual wild animals can be tamed and learn to live with humans. This occurs when humans capture a wild animal—a fox, or even a tiger—when it is very young. The animal can be trained to live peacefully in a human environment. However, the tamed animal's offspring will be just as wild as its ancestors. Domestication, in contrast, affects an entire population. It is a process that occurs through many generations, in which wild animals gradually become comfortable living in close proximity to humans. The silver foxes in the Siberian study are truly domesticated, not just tamed. 3

"Their goal was to recreate a process similar to the transformation of wolves into dogs, a process that took thousands of years."

It all started in 1959, when Trut was still a graduate student. Led by a biologist named Dmitry Belyaev, researchers gathered up 130 foxes from fur farms and began a program of selective breeding. Their goal was to recreate a process similar to the transformation of wolves into dogs, a process that took thousands of years. 4

In this program, Belyaev and his colleagues first tested each fox's reaction to human contact. Then they selected the most docile ones to breed for the next generation. They continued this process generation after generation. It is important to note that these foxes did not have sustained human contact. The researchers did not attempt to tame them. Belyaev wanted to be sure that any changes in the foxes' behavior were the result of selective breeding rather than training. By the mid-1960s the researchers were achieving great success. They were producing foxes that were not only unafraid of humans but that were also eager to bond with them. Miraculously, the researchers had accelerated domestication solely through selective breeding. They had compressed a process that usually takes thousands of years into just a few generations. 5

Belyaev wasn't just trying to create friendly foxes, however. He wanted to unlock the secrets of domestication. Domesticated animals are known to share a set of similar physical characteristics. They tend to be smaller than their wild counterparts, with floppy ears and curly tails. They often have spotted coats instead of the solid coats that are more common in the wild. These changes tend to make the animals look like juveniles,[2] which are more attractive to humans. In short, domesticated animals are cuter than their wild ancestors. These traits exist, to varying degrees, across a remarkably wide range of species that have been domesticated, from dogs and pigs to cows and chickens. 6

When the experiment began in 1959, Belyaev predicted that as his foxes became domesticated, they too might begin to show some of these physical traits. His prediction turned out to be correct. Breeding foxes based solely on their behavior resulted in changes in their physical appearance. After only nine generations, the foxes had developed floppier ears, and spots began to appear on their coats. The foxes were also wagging their tails like dogs in the presence of humans, a clear behavioral sign of domestication. 7

Belyaev hypothesized that a collection of genes was responsible for these physical and behavioral traits. He believed that his domesticated foxes shared them with other domesticated species. He proposed that in the history of domestication, these animals had experienced specific changes in their genes. These changes caused them to be less afraid of humans and, thus, willing to live closer to them. Perhaps they ate food that humans left, or perhaps living near humans offered them protection from predators. At some point, however, early humans realized the potential benefit of these animal neighbors and began helping the process of domestication along. Humans actively selected the friendliest ones and began to breed them. "At the beginning of the domestication process, only natural selection[3] was at work," as Trut puts it. "Down the road, this natural selection was replaced with artificial selection." 8

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[2] *juveniles:* young animals or people

[3] *natural selection:* a process in which only those plants and animals with characteristics that allow them to live successfully in a particular environment are likely to live and reproduce

READING COMPREHENSION

Big Picture

A The following statements are the main ideas of some of the paragraphs in Reading 2. Write the correct paragraph number next to its main idea.

____ **1.** In a scientific experiment, researchers were able to significantly speed up the domestication process.

____ **2.** There is probably a genetic explanation for domestication.

____ **3.** Many domestic animals display similar physical features and behavior.

____ **4.** Taming and domestication are quite different processes.

____ **5.** The silver foxes developed the physical features that come with domestication.

B Read the following statements. Check (✓) the statement that expresses the main idea of the *whole* reading.

____ **1.** Selective breeding is more effective than natural selection.

____ **2.** Physical, behavioral, and genetic traits accompany domestication.

____ **3.** Selective breeding is an important scientific tool.

____ **4.** Domestic animals are fundamentally different from their wild counterparts.

Close-Up

A Decide which of the following statements are true or false according to the reading. Write *T* (True) or *F* (False) next to each one.

____ **1.** The foxes in the cages seem very friendly.

____ **2.** Tame animals can peacefully live among humans.

____ **3.** Tame animals usually have tame babies.

____ **4.** It is possible to domesticate an individual animal.

____ **5.** In the beginning of the experiment, the foxes spent a lot of time with humans.

____ **6.** The domestication of the foxes occurred relatively quickly.

____ **7.** Wild animals usually have floppy ears and curly tails.

____ **8.** Tail wagging is a form of behavior that comes with domestication.

____ **9.** Belyaev found the gene responsible for domestication.

____ **10.** According to the scientists in the reading, domestication has included both natural and selective breeding.

B Work with a partner or in a small group. Change the false statements in Exercise A to make them true.

Reading Skill

Understanding Processes

Academic texts often contain technical terms that may be unfamiliar. These include terms for processes, which are especially common in scientific writing. Authors may explain a process in several ways:

1. **Define a process.** *X is a process that . . .*
2. **Describe the steps in a process.** The steps may include signals words: *first, then, after that,* and so on.
3. **Contrast two processes.** *X is not like Y.*

A In Reading 2, underline the sentences that describe the two processes: *domestication* and *selective breeding*. Then answer the questions.

	Domestication Evidence from the Reading	Selective Breeding Evidence from the Reading
1. Does the author give a definition?		
2. Does the author describe the steps in the process?		
3. What is the process contrasted with?		

B Compare answers to Exercise A with a partner. Discuss any differences in your answers.

VOCABULARY PRACTICE

Academic Vocabulary

A Find the words in bold in Reading 2. Use the context and the sentences below to help you choose the correct definition.

1. Children are often very **affectionate** (Par. 1) with their grandparents. They give them hugs and kisses.
   a. showing loving behavior **b.** dependent
2. The horse was very **docile** (Par. 2). He ate carrots from the child's hand and let her pet him.
   a. strong **b.** easy to control
3. A mother lion looks after her **offspring** (Par. 3) for about two years after they are born.
   a. prey **b.** babies
4. Laptops and cell phones have **accelerated** (Par. 5) the shift to digital communication.
   a. made faster **b.** made more efficient
5. Admission to the university is based **solely** (Par. 5) on a student's test scores.
   a. only **b.** partly

6. Everyone is very busy, so we have **compressed** (Par. 5) all of our business into one day.
   a. pushed something big into a small space or time **b.** finished quickly

7. Twins share many physical **traits** (Par. 6).
   a. characteristics **b.** structures

8. Unfortunately, there are many **potential** (Par. 8) problems with the new school plan.
   a. unfamiliar to most people **b.** possible; likely to develop

B Read the following sentences and circle the correct word to complete each one. The correct word is frequently used with the word in bold; the other is not.

1. The promising new drug offers **potential** (benefits / injury) for patients with many types of cancer.
2. Many mammals (produce / keep) **offspring** only once every two or three years.
3. Children often (exhibit / prefer) physical and personality **traits** that are similar to those of their parents.
4. In some cultures, **affectionate** (emotion / behavior) in public is not acceptable.
5. After an injury, heat can **accelerate** the (process / possibility) of healing.
6. The computer program can **compress** a great deal of information (for / into) a small space.

Multiword Vocabulary

A Find the words in bold in Reading 2. Then use the words from the box below to complete the multiword vocabulary.

bond	hands	proximity	road	turned	voice	wild	work

1. **tone of** _____ (Par. 1)
2. _____ **him over** (Par. 2)
3. **in close** _____ **to** (Par. 3)
4. _____ **with** (Par. 5)
5. **in the** _____ (Par. 6)
6. _____ **out to be** (Par. 7)
7. **at** _____ (Par. 8)
8. **down the** _____ (Par. 8)

B Complete the following sentences with the correct multiword vocabulary from Exercise A. Use the information in parentheses to help you. In some cases, you may need to change the verb form.

1. Whenever the baby starts to cry, the grandmother _____ (give him) to his mother.
2. The hotel is _____ (near) all of the tourist attractions, so we will not have to walk very far.
3. Baby animals _____ (in a natural state, without humans) look cute, but they are still dangerous.
4. Scientists are trying to understand the forces _____ (that have an influence or control) inside a volcano.

5. It's too early to think about next year's budget. We will worry about it _____ (later; in the future).
6. We liked our new neighbor, so we were surprised when he _____ (was discovered to be) a criminal.
7. The receptionist could tell that the caller was angry by her _____ (the way people sound when they speak).
8. Most children _____ (develop a close connection to) their parents soon after they are born.

Use the Vocabulary

Write answers to the following questions. Use the words in bold in your answers. Then share your answers with a partner.

1. What **traits** do you think are important in a pet? Do you prefer pets that are **affectionate** and **docile**? Or, do you like pets that are playful and have a lot of energy? Explain your preference.
2. Have you ever had the experience of liking someone when you first meet him or her and then, **down the road**, he or she **turns out to be** a completely different person? Describe your experience.
3. What can you learn about a person's mood based **solely** on **tone of voice**?
4. Would you like to live far away from or **in close proximity to** your job? Do you think there are **potential** problems with living close to your work?

THINK AND DISCUSS

Work in a small group. Use the information in the reading and your own ideas to discuss the following questions.

1. **Evaluate.** Do you think that the silver-fox experiment has been important? Explain your answer.
2. **Predict.** How might the results of the experiment help animals or humans in the future?
3. **Make an inference.** The silver-fox experiment has been going on for more than 50 years. Why do you think it has lasted for this long?
4. **Express an opinion.** Do you think experiments such as this one are cruel, that is, unkind to the animals?
5. **Relate to personal experience.** Would you like to have a silver fox as a pet? What do you think it would be like?

UNIT REVIEW

Vocabulary Review

A Complete the reading with the vocabulary below that you have studied in the unit.

accelerate the process	bond with	in the presence of	undergo a complete transformation
acknowledged that	dates back to	potential benefit	win-win situation
affectionate behavior	down the road		

Meet Vi, a dog that lives in a home for children who are getting treatment at a nearby hospital. The young patients quickly _____ (1) her because of her sweet and _____ (2). She lets them pat her head and scratch her belly. However, Vi does more than just bring smiles to the children. She also provides a(n) _____ (3) for the children's health. This idea of pet therapy _____ (4) the 18th century, when it was discovered that pets helped people relax. Researchers have found that patients' stress levels and blood pressure often go down _____ (5) friendly animals. These changes can _____ (6) of healing—for example, after a heart attack or serious surgery—perhaps more efficiently and safely than some drugs. It is possible that _____ (7), pet therapy will become a common future treatment option.

In the past, pet therapy focused on patients and how animals could help them to recover. More recently, researchers have _____ (8) that the interaction helps the pets, too. For example, some aggressive and disobedient dogs can _____ (9) once they start working in pet therapy settings. It seems that animal–human interaction is a(n) _____ (10) for everyone—both dogs and humans.

B Compare answers to Exercise A with a partner. Then discuss the following questions.

Do you think pet therapy would help you get better if you were sick? How?

C Complete the following sentences in a way that shows that you understand the meaning of the words in bold.

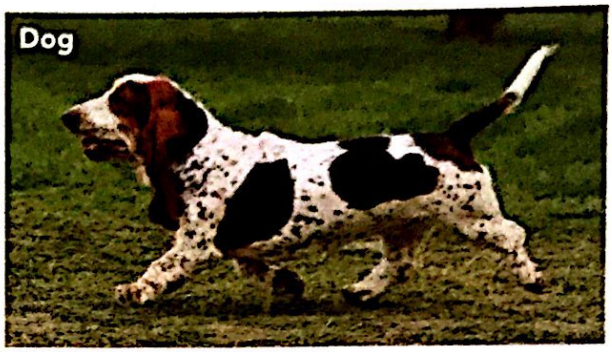
1. I prefer pets that **exhibit traits** such as _____.
2. There has been a **major shift** in _____.
3. I live **in close proximity to** _____.
4. _____ is **a source of pride** for _____.

D Work with a partner and write sentences that include any six of the vocabulary items below. You may use any verb tense and make nouns plural if you wish.

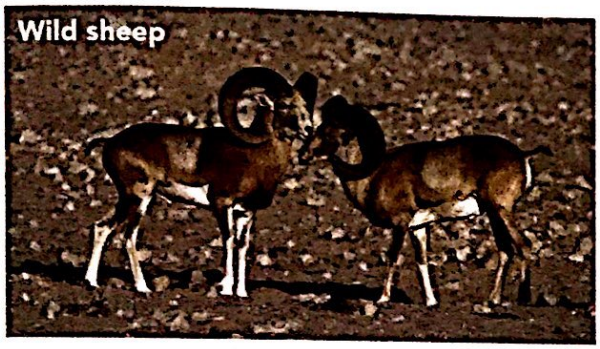
at work	fit the bill	in captivity	rule out
based solely	hand over	pave the way for	turn out to be
economic prosperity	highly advantageous		

Connect the Readings

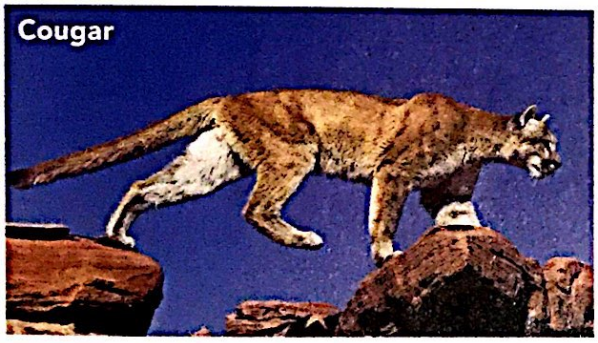
A With a partner, study the photos below of wild animals and their domesticated counterparts. How are the pairs different? For each pair, write a sentence describing the physical characteristics that have changed in the domesticated animal.

Wild Animals	Domesticated Animals
	

1. _____

2. _____

3. _____

B With a partner or in a small group, compare your answers to Exercise A. Then discuss which animal you think has changed the most.

C Discuss the following questions with a partner. Use your understanding of the readings and your own ideas.

1. How has the animal you chose in Exercise B changed the lives of humans?
2. How has domestication changed the life of this animal?