

Man's Best Friend Just Got Better

By Darwin Wigget, *The Guardian*, March 14, 2016

- (1) Imagine that instead of giving a urine sample or getting blood drawn when you need a diagnostic health test, you consult with a dog. It's a funny concept, but your pooch may have more in common with your doctor than you previously thought.
- (2) We've long known that dogs have stronger senses than we do, with their sense of smell getting the most attention. That sense of smell is about 1 million times greater than ours, which is why they've been used in tracking and hunting since they became our companion animals. Today, dogs help us find everything from bombs to drugs, and it's simply amazing what they can do. In addition to smell, many dogs also have a strong "sixth sense": they just notice things that we don't.
- (3) Doubtless, none of this comes as a surprise, especially if you are one of the nearly 8 million dog owners here in the UK. But did you know that your dog's keen senses could actually save your life? Sure, canines are known to alert people about fires or protect them from intruders, but in this case, we're talking about an internal "intruder," like cancer.
- (4) If you think this sounds crazy, you're not alone; cancer specialist Dr. Leonard Lichtenfeld, admitted to laughing when he first read about a study in which dogs supposedly sniffed out cancer. _____, Lichtenfeld soon stopped laughing as more studies appeared, which confirmed the earlier results. "I was initially scornful of claims about dogs and cancer, but the overwhelming evidence of recent research has turned me from a sceptic into a believer."
- (5) While some aspects of dogs' senses are still a mystery to scientists, we do know that when it comes to smell, they are probably picking up on volatile organic compounds (VOCs) in the air. These microscopic chemicals exist in both gaseous and liquid states, and they're emitted by both biological and man-made substances. We can smell them, too; in recent years, things like paint have been criticized for the potentially toxic VOCs that they emit. Due to their superior sense of smell, however, dogs can detect VOCs in extremely tiny amounts.
- (6) Going on this knowledge, several researchers in the past decade have successfully trained dogs to sniff out cancer. The first study Dr. Lichtenfeld read about was conducted in 2004 in England and was published in the *British Journal of Medicine*. Six dogs were trained to detect urine samples that belonged to patients known to have bladder cancer. While their 41 percent success rate wasn't amazing, it was higher than the 14 percent "coincidence rate" determined by the researchers. Since then, dogs have been trained to sniff out other forms of cancer, including skin, prostate, lung, breast and colorectal cancers, with increasing rates of success.
- (7) Two years after the bladder cancer study, researchers at the Pine Street Foundation in California trained dogs to sniff out both breast and lung cancer. Rather than sniffing urine samples, however, the dogs smelled breath samples from the patients. The results were startling—they had an 88 percent success rate with breast cancer and a 97 percent accuracy rate with lung cancer. The most impressive study took place early in 2011, in which dogs in Japan learned to discern colorectal cancer with 98 percent accuracy by sniffing breath samples. This is more accurate than the traditional diagnostic tests for the disease.

(8) So far, the cancer-sniffing dog phenomenon has only been used in research, but scientists are hoping to identify and isolate the exact compounds dogs are detecting to create electronic cancer-sniffing devices. However, while dogs probably aren't going to be used to diagnose cancer any time soon, they are at work right now helping people manage other diseases and health problems. You've probably seen service dogs assisting people who are visually, hearing or physically impaired, but dogs have been trained to do much more than help out people living with challenges like these.

(9) Service dogs are used today to assist people who have everything from neurological disorders to diabetes. Obviously, this is very different from directing a visually impaired person on the sidewalk or letting a hearing impaired person know that someone is at the door. This is where dogs' keen perception comes in. Instead of being trained to pay attention to outside cues, dogs can learn to pick up on signs from their owners that something is wrong.

(10) In the case of people with psychiatric conditions like post-traumatic stress disorder (PTSD) or anxiety disorders, dogs can learn to tell when their human companion is feeling anxious or paranoid through body language and changes in behavior. Dogs provide stability and emotional support; they also remind their handlers when to take medication. Service dogs for autistic people not only help them deal with processing auditory and visual stimuli, but they also alert them to behaviors they might not realize they're engaging in, such as self-harm or self-stimulation.

(11) Dogs have also saved lives by alerting people to health problems before they even occur. Alert dogs let their type 1 diabetic human companions know that their blood sugar levels are off before the person feels any symptoms or takes a blood test. Low blood sugar changes the volatile organic compounds emitted through the pores of a diabetic; the dogs let their owners know of this change by whining or licking their hands. Dogs have also alerted humans to changes in their blood pressure or even let them know when a heart attack was imminent.

(12) However, one should not be left with the impression that all dogs are remarkable detectors. Exactly how well they can sniff out something depends not only on the breed but also on the individual dog—some dogs are just better at it than others!

Questions

1. (1) Which of the following best represents the overall purpose of the article?

- a) to present new research on how dogs can detect cancer.
- b) to inform readers about how dogs serve humans in daily life.
- c) to report on the various ways dogs help with human health problems.**
- d) to argue that trained dogs should soon replace doctors in clinics.

2. (1) In paragraph 2, the phrase “sixth sense” appears between quotation marks because....

- a) the author is skeptical about claims that dogs can detect cancer.
- b) researchers have discovered a previously unknown sense organ in dogs.
- c) the author is speaking figuratively; dogs don't really have six senses, just five.**
- d) the author is quoting a researcher's description of a trained dog's abilities.

3. (1) Supply a suitable transition for the blank in paragraph 4: However.

4. (0.5) What are the following used as examples of in the context of the article: “*skin, prostate, lung, breast and colorectal cancers*” (§6)?

Other types of cancer besides bladder cancer that dogs have been trained to detect

5. (1) According to the article what is the most effective way for dogs to detect illness?

By sniffing breath

6. (1) Why are researchers keen to identify the exact chemicals dogs are able to detect?

The researchers want to develop electronic devices that can smell cancer based on this knowledge of how dogs detect it.

7. (2) In your own words, what is the major difference between a service dog for a blind person and a service dog for someone with a neurological disorder?

Student A: A service dog for a blind person responds to external signs in the environment while a service dog for someone with a neurological disorder responds to internal signs from the patient.

Student B: Dog guides for the blind are trained to notice outside environment to help their owners be safe, but dog guides for people with neurological problems are trained to notice what is going on with or within the owners themselves to keep them safe.

8. (1) How do dogs communicate warnings to their owners about possible health problems? Name two ways.

By licking their owners' hands and whining

9. (1) The following sentences belong at the end of paragraph 5.

“In fact, their noses are so sensitive to these substances that they can pick out some odors in parts per trillion.”

10. (1) Which **one** of the following is not mentioned in the article:

- a) Non-medical ways in which dogs help humans
- b) How dogs' sense of hearing can help disabled people
- c) Which type of dog has the best powers of detection**
- d) Research on dogs done outside the U.K. and U.S.A.

11. (1) Which of the following is probably **not true** based on evidence in the text?

a) Dr. Lichtenfeld is the only cancer specialist convinced of dogs' ability to detect cancer.

b) If properly trained, dogs could help soldiers better cope with the bad memories of war.

c) Sandy may make Christopher's daily interaction with strangers easier.

d) Dogs can be trained to remind their owners to do physical exercise.

12. (4) Mark the following statements T (True) or F (False). Copy the sentence from the article that supports your choice.

1) T Scientists know more about how dogs smell than how they use their other senses.

Evidence: **While some aspects of dogs' senses are still a mystery to scientists, we do know that they it comes to smell, they are probably picking up on volatile organic compounds (VOCs) in the air. (¶5)**

2) T Trained dogs can sometimes detect illnesses more accurately than doctors with modern technology.

Evidence: **This [dogs' 98 percent accuracy at detecting colorectal cancer by sniffing breath samples] is more accurate than the traditional diagnostic tests for the disease. (¶7)**

3) F Trained dogs are now being used in hospitals around Britain to diagnose patients with different kinds of cancer.

Evidence: **So far, the cancer-sniffing dog phenomenon has only been used in research...while dogs aren't going to be used to diagnose cancer any time soon (¶8)**

4) T Dogs can also prevent some illnesses ever happening in the first place.

Evidence: **Dogs have also saved lives by alerting people to health problems before they even occur. (¶11)**

Evidence: **Alert dogs let their type 1 diabetic human companions know that their blood pressure levels are off before the person feels any symptoms or takes a blood test. (¶11)**

Evidence: **Dogs have also alerted humans to changes in their blood pressure or even let them know when a heart attack was imminent. (¶11)**

13. (2.5) Define the following words in context by providing suitable synonyms in word or phrase. Pay attention to the word form of each item.
- a) pooch (¶1) **dog**
 - b) intruders (¶3) **invaders; burglars; robbers; thieves; trespassers; attackers**
 - c) startling (¶7) **impressive; amazing; incredible; shocking; unbelievable; surprising**
 - d) discern (¶7) **detect; recognize; identify; perceive; sniff out**
 - e) imminent (¶11) **going to happen; about to occur; about to happen; coming soon; close; near; approaching quickly**
14. (2) What do the following refer to in the context of the article?
- a) this (¶4) **dogs alerting people about cancer; dogs being able to detect cancer**
 - b) they (¶5) **dogs**
 - c) this knowledge (¶6) **dogs can detect VOCs in extremely tiny amounts**
 - d) these (¶8) **visual, hearing or physical impairment**