The Guardian Weekly

onestopenglish.com
Solutions for English Teaching

Back from the dead

Level 3 | Advanced

1 Key verbs

Fill the gaps using these key verbs from the text.

mutate	disclose	multiply	piece together
recover	outweigh	evolve	merge

1. If something _____ something else, it is more important, more useful or more valuable than the other thing.
2. If two things _____, they combine or become mixed so that you can no longer tell the difference between them.
3. If something _____, it changes genetically.
4. If you _____ something _____, you create something by combining separate parts to make a whole.
5. To _____ means to give information to people, especially information that was secret.
6. The verb to _____ means to develop gradually over a period of time.
7. If you _____ from a disease, you become fit and healthy again.
8. To _____ means to increase by a large amount.

2 What do you know?

Choose the best answer. Then look in the text and check your answers.

1. The Spanish flu virus of 1918 killed
a) 5 million people
b) 15 million people
c) 50 million people

2. What is a pandemic?
a) A disease that affects almost everyone in a very large area.
b) A disease that spreads very quickly.
c) A disease that kills millions of people.

3. What kind of creatures does the adjective 'avian' refer to?
a) Insects
b) Mammals
c) Birds

4. What does a virologist study?
a) Birds
b) The treatment and study of illnesses caused by viruses.
c) Diseases

The Guardian Weekly

onestopenglish.com
Solutions for English Teaching

Back from the dead

Level 3 | Advanced

Back from the dead
By Ian Sample

Scientists have recreated the deadly 1918 Spanish flu virus, to the alarm of many researchers who fear it presents a serious security risk. Undisclosed quantities of the virus are being held in a high-security government laboratory in Atlanta, Georgia, after a nine-year effort to rebuild the agent that quickly swept the globe and claimed the lives of an estimated 50 million people. It was named Spanish influenza because it was first widely reported in Spanish newspapers.

The genetic sequence is also being made available to scientists online, a move that some experts fear adds a further risk of the virus being created in other labs. The virus was recreated in an attempt to understand what made the 1918 outbreak so devastating. Reporting in the journal Science, a team led by Dr Jeffery Taubenberger in the USA shows that the recreated virus is extremely effective. When injected into mice, it quickly took hold and they started to lose weight rapidly, losing 13% of their original weight in two days. Within six days all mice injected with the virus had died.

"I didn't expect it to be as lethal as it was," Dr Terrence Tumpey, a scientist on the project told the journal Nature. In a comparison experiment, similar mice were injected with a contemporary strain of flu. Although they lost weight initially, they recovered. Tests showed that the Spanish flu virus multiplied so rapidly that after four days mice contained 39,000 times more flu virus than those injected with the more common strain of flu.

The government and military researchers who reconstructed the virus say their work has already provided an invaluable insight into its unique genetic make-up and helps explain its lethality. But other researchers warned that the virus could escape from the laboratory.

"This will raise clear questions among some as to whether they have really created a biological weapon," said Professor Ronald Atlas of the University of Louisville in Kentucky. "For me, it raises even more concerns than I already had about the potential of a flu pandemic. It looks as though an avian strain evolved in 1918 and that led to the deadly outbreak, in much the same way as we're now seeing the Asian avian flu strains evolve."

The publication of the work and filing of the virus's genetic make-up to an online database followed an emergency meeting last week by the US National Science Advisory Board for Biosecurity, which concluded that the benefits of publishing the work outweighed the risks. Many scientists remained sceptical. "Once the genetic sequence is publicly available, there's a theoretical risk that any molecular biologist with sufficient knowledge could recreate this virus," said Dr John Wood a UK-based virologist. "If the genetic sequence is on a database, then that is a clear security risk."

Only a handful of scientists have security clearance to access the Atlanta laboratory. Before entering, they must pull on a protective hood, put on breathing apparatus and pass through electronic fingerprint and retina scanners to prove their identity.

The recreation process was laborious. Scientists collected fragments of the virus from lung tissue taken from victims at the time and preserved in formalin or, in one case, isolated from the lungs of a woman victim whose body had become frozen in the Alaskan permafrost. Using the fragments, they painstakingly pieced together and read

the complete genetic code before using the sequence to rebuild the virus from scratch. By creating flu strains with only certain parts of the 1918 virus, researchers investigated which of the eight genes that make up the virus were most responsible for its virulence.

They discovered that rather than being caused by one or two genes, they all played a part, which suggests that the virus had completely adapted to cause disease in humans, something they say could happen again with avian flu strains.

In a second paper, published in Nature last week, Taubenberger and his colleagues analysed the genetic make-up of the recreated virus. Surprisingly, they found it had no similarities to any of the human viruses in circulation, suggesting that the Spanish strain had jumped from birds to humans and did not mix with a human virus first, as had been believed. The finding that Spanish flu came straight from birds has raised concerns among scientists. Previously, a pandemic was thought likely only if an avian strain merged with a human flu virus.

According to Taubenberger, knowing what mutations gave rise to the 1918 Spanish flu virus will help scientists check viruses to work out which, if any, are evolving to the point where a pandemic is possible. The H5N1 strain of bird flu in Asia is already mutating to make it more suited to infecting humans, he said. Despite the insights given by the project, many scientists were alarmed at the recreation itself and particularly that the full genetic sequence was to be made public on an online genetic database.

Viruses have escaped from high-security labs before. During the recent Sars outbreak the virus escaped at least twice, once in Taiwan and once in Singapore, when researchers became contaminated. Other scientists warned that the 1918 virus's genetic code could easily be misused. But some scientists believe a pandemic is unlikely even if the virus escapes, because of most people's natural immunities and the availability of antiviral drugs and flu vaccines.

The Guardian Weekly XXX, page X

3 Comprehension check

Are the following statements True or False according to the text?

1. Publishing the genetic sequence online could be risky.
2. The scientists recreated the virus in order to produce biological weapons.
3. The Spanish flu virus was 39,000 times more virulent than common flu.
4. Viruses never escape from laboratories.
5. Scientists recreated the virus from the lung tissue of victims.
6. The Spanish flu virus was a bird virus that mixed with a human virus.

The Guardian Weekly

one stop english .com
Solutions for English Teaching

Back from the dead

Level 3 | Advanced

4 Vocabulary 1 - Find the word

1. Find another word which means ‘deadly’.
2. What word is ‘flu’ short for?
3. Find an adjective which means ‘modern or relating to the present time’.
4. Find a noun beginning with ‘s’ that means ‘a particular type of animal, plant or disease’.
5. Find two other verbs that means the same as ‘recreate’.
6. Find an adverb that means ‘very carefully and slowly’.
7. In the last paragraph find a past participle that means ‘made dirty, polluted or poisonous by the addition of a chemical, waste or infection’.
8. Find an adjective which means ‘frightened or worried that something dangerous might happen’.

5 Vocabulary 2 - Idioms

Match these idioms with their meanings.

1. swept the globe
2. claimed the lives
3. a handful
4. from scratch
5. played a part
6. took hold

a. from the beginning again
b. became stronger and difficult to stop
c. spread around the world very quickly
d. just a few
e. killed
f. had a role

The Guardian Weekly

Back from the dead

Level 3 | Advanced

one stop english .com
Solutions for English Teaching

6 Collocations - Expressions with prepositions

Complete the expressions from the text by adding an appropriate preposition.

1. give rise _____
2. merge _____
3. _____ scratch
4. responsible _____
5. available _____
6. injected _____
7. escape _____
8. similarities _____

7 Discussion

Is it ethically and morally right to recreate dangerous diseases for the purposes of research? Make a list of the points for and against such research.

The Guardian Weekly

Back from the dead

Level 3 | Advanced

onestopenglish.com
Solutions for English Teaching

KEY

1 Key verbs

1. outweighs
2. merge
3. takes hold
4. piece together
5. disclose
6. evolve
7. recover
8. multiply

2 What do you know?

1. c; 2. a; 3. c; 4. b

3 Comprehension check

1. T; 2. F; 3. T; 4. F; 5. T; 6. F

4 Vocabulary 1 - Find the word

1. lethal
2. influenza
3. contemporary
4. strain
5. rebuild, reconstruct
6. painstakingly
7. contaminated
8. alarmed

5 Vocabulary 2 - Idioms

1. c; 2. e; 3. d; 4. a; 5. f; 6. b

6 Collocations - Expressions with prepositions

1. to
2. with
3. from
4. for
5. to
6. with
7. from
8. to