Mad science

Reading



1a VOCABULARY Solve the clues and complete the crossword.

Across

- 2 An _____ is a type of protein that is produced by animals and plant cells.
- 5 Males have one X and one Y
- 9 engineering happens when you add genes to a living thing.
- 10 Many diseases are now becoming to antibiotics. It is very worrying.

Down

2

10

- 3 A leech is a type of It lives on animals and feeds on them.
- 4 Yellow fever is a disease in Brazil, you must be vaccinated against it if you go there.
- 6 Some foods have been genetically so their genetic structure is different.
- 7 There are over a hundred different of birds in this area.
- 8 Birds cana type of flu to humans.

GM Foods a Danger?

Scientists hopeful of breakthrough

Sickle Cell Anaemia is a serious inherited blood disorder. It is more (f) ______ among people of African, Caribbean and Asian origin. It is caused by a gene mutation and scientists are hopeful that one day they will be able to cure it with (g) ______. They are hopeful that this type of gene therapy will also allow them to prevent (h) ______ disorders such as Fragile X syndrome, a genetic condition that affects cognitive development.

- 2 Read the title of the article on page 31 and choose what you think it is about, a or b? Read the article and check your answer.
 - **a** Scientists are developing a possible new method of treating genetic diseases.
 - **b** Scientists have been using artificial chromosomes to improve humans' abilities.

Read the article again. Choose from the paragraphs (A–F) the one which fits each gap (1–6).

O^{*}CRITICAL THINKING

Are the following fact (F) or opinion (O)?

- 1 Many human diseases involve genes. F/O
- Synthetic biology involves designing new genetic material and life forms.
- 3It is unethical for scientists to change
human chromosomes.F/O
- 4 The team produced the first chromosome for yeast. F/O
- 5 Genetic modification is the most important work scientists are doing today. F/O

1b Complete the news stories with the correct form of words from 1a.

Pet trouble

'It's important to check your pet's health and give preventative treatment for fleas and gastrointestinal (a) ______ because infected animals can then (b) ______ them to humans.' That's the message from Sam Stevens, a local vet, after several families (c) ______ giardia (a gastrointestinal disease) from their pets. 'People forget that there are diseases that can be caught from other animals,' Stevens explained.

5 Match the <u>underlined</u> words with the definitions.

- 1 a method for achieving something .
- 2 from a point where nothing has been done, so you have to do everything
- 3 changes in genes that causes them to become different from others of its type
- 4 having doubt about something that other people think is right or true
- 5 made from artificial materials ...
- 6 faults in someone or something

COULD A MOUSE SAVE YOUR LIFE?

Scientists have created genetically-engineered mice with artificial human chromosomes in every cell in their bodies in new gene therapy research that could save millions of lives. If you have a disease with a genetic cause, life can be incredibly difficult and, at present, most of these diseases do not have a cure. But now, it looks like these mice could be the answer and if this new research continues to be successful, there will eventually be a cure for all of them.

The new type of gene therapy, though, is far less risky and offers an exciting potential solution to the problem. Unlike genetic modification, this therapy, known as synthetic biology, involves creating entirely new, man-made genetic material like chromosomes, which are then added to cells.

The advantage of synthetic biology is that artificial chromosomes do not affect the other chromosomes in cells. This means that the artificial chromosome (known as 'chromosome 47' because the normal number of chromosomes in a human cell is 46) is much safer than conventional gene therapy. The implications for the treatment of disease are huge.

The researchers in the US and Japan working on the mice have so far been producing smaller versions of human chromosomes called HACs (human artificial chromosomes) from existing human chromosomes or creating them from scratch. If these HACs contained healthy versions of genes that are the cause of certain diseases, they could be used to cure people.

The technology, though, is still very new and there is a long way to go before these cures can be used in humans. But there is clearly a lot of potential in this exciting new field of scientific exploration and many scientists are very excited about the possibilities for the future.

The new artificial chromosomes could be used as a means of introducing new genes into human cells, meaning that any gene defects or DNA mutations in humans could be corrected. As these gene deficiencies are the cause of many diseases, this is a big breakthrough for medical science.

Previously, it had been thought that a cure for genetic diseases lay in modifying existing human chromosomes. Scientists would alter the human genome (the complete set of genetic information for humans included in DNA) by adding an extra gene to an existing chromosome, often at random. If they had continued with this type of gene therapy, however, it would have been very risky since there is no way to predict how the gene might affect a human.

Others, however, are more <u>sceptical</u>. This new treatment would mean producing a synthetic version of a full human chromosome, rather than the mini versions so far created, something that is impossible using techniques that currently exist and which is far more complicated than the HACs. But though the technology for this type of gene therapy might not exist yet, synthetic biology is expected to be crucial for the future, and not just for genetic diseases.

Yeast is a favourite target for this type of research because it shares 2,000 genes with humans. The project aims to create all 16 chromosomes of the yeast fungus in order to develop entirely man-made yeast. Yeast is also a crucial component in the manufacture of food and biofuels so it has uses both in medicine and in other areas.

. Producing and using artificial chromosomes either in yeast or directly in human cells has huge potential to save lives, but critics say that designing new forms of life has the danger of unexpected consequences unless more research is done. Some countries are refusing to invest in gene therapy using human chromosomes because they say it is unethical for scientists to create human life. As with many forms of cutting-edge science, the risks of using synthetic biology for humankind are unknown.

The technique means that chromosomes, and therefore substances, can be given new properties that they don't normally possess. One company in California has already created a type of yeast that can produce artemisinin, an ingredient for an anti-malarial drug. Other research includes developing different synthetic genes for yeast so that it can produce a variety of antibiotics and vaccines.

The research with genetically-engineered mice is exciting progress in synthetic biology. Scientists were able to successfully introduce an extra human artificial chromosome in each of the mice's cells, the first time ever that a synthetic human chromosome had worked in an animal. And if a synthetic human chromosome works in a mouse, it could also work in a human.

It could lead to important developments in many other areas, too. Agriculture and food production, the creation of antibiotics and vaccines and even the development of biofuels will all benefit from synthetic biology. The British government is investing more than £60 million in synthetic biology research, including £1 million on an international project to artificially construct a yeast fungus.

Grammar in context

b First

of conditional (a-d).

the verbs given.

flight.

at school.

They

experiments.

would have met him!

human trials to start.

Africa will die.

7

3

4 If the driving test

1 If space tourism

a Zero

Read and match the sentences (1-4) with the type



C would pay

C wouldn't do

C would have

C would know

C could fly

C Only if

a job.

1

1 I'll write up the results this evening in case/unless I'm c Second **d** Third too tired. 2 <u>Supposing/Providing</u> we moved to the US, would the 1 If they had continued with this type of gene salary be similar there? therapy, it would have been very risky. 3 My parents let me go out during the week 2 If they are successful, there will eventually be as long as/suppose I'm back by 9 pm. a cure for all genetic diseases. 4 I'll back up my work on the computer this afternoon 3 If you have a disease with a genetic cause, life as long as/in case it crashes again. 7 can be incredibly difficult. 5 They'll give me the job *provided that/unless* they are 4 If these HACs contained healthy copies of happy with my references. genes, they could be used to cure people. 5 Choose the correct answers. 2 Complete the sentences with the correct form of 1 |wish| more attention in class when I was at school. (be) around when my A paid **B** had paid grandad was alive, he'd definitely have gone on a **2** Peter wouldn't talk so loudly, it gets on my nerves! 2 It would be illegal if they (do) experiments on humans, so they are using rats. A If **B** If only 3 If science lessons had been more interesting, 3 I wish you that! It's dangerous. I (concentrate) more when I was A didn't do B don't do 4 I'm unemployed. I wish I ... (not be) so difficult, A had **B** had had there would be more accidents on the roads. 5 Humans can't fly. If only we 5 If my brother ... (pass) his final exams, **B** would fly A flew he'll be a doctor next month! 6 If only scientists the answer. **6** You are at risk of getting yellow fever if you (travel) to many parts of Africa. A knew B had known (make) a breakthrough sooner if a fire in the laboratory hadn't destroyed their **GRAMMAR CHALLENGE** Complete the second sentence so that it has a 8 Scientists usually (get) more accurate similar meaning to the first sentence, using the results if they repeat experiments several times. word given. Do not change the word given. 1 I regret that I didn't score a goal in the football Correct the mistakes in the sentences. Some match yesterday. wish sentences have no mistakes. ТV a goal in the football match 1 I met Steve at a party. If I hadn't gone to the party, I yesterday. I'll go to the cinema with you, but only if you 2 If scientists eradicate malaria, far fewer people in promise to help me tomorrow. that I'll go to the cinema with you 3 The researchers hope that if they are able to show to help me tomorrow. the medicine works, the authorities would permit 3 When we were younger, we often watched my dad doing experiments. would 4 They're short of money. If they had enough money, When we were younger, we they will build a new hospital. experiments. 5 When these animals are young, you have to feed If the researchers don't find a solution, they will them every hour. If you didn't feed them, they die. 4 have to end the project. unless 6 If I hadn't stayed up so late last night, I wouldn't have , they will have to end the fallen asleep in class this morning. project. 5 Jane won't watch science programmes that include animal experiments. refuses Jane that include animal experiments. 6 I'd love to have some more money! some more money!

Circle the correct alternative.

Unit 4 I can use conditional structures

Developing vocabulary and listening

Put the letters in order in a-h and match them with words 1-8 to make compound nouns and adjectives. Are they written as one word (1), two words (2) or with a hyphen(-)?

	genetically	а	norungt	••••••	
2	set	b	etmi		
3	life	с	psirgn		
4	world	d	cakb		
5	worth	е	irsk		
6	off	f	ofedidim		
7	break	g	hielw		
8	high	h	diwe		
	·				

- 2 Complete the sentences with compound nouns by adding prepositions to the verbs given.
 - 1 The main (draw) to working in this lab is its size.
 - 2 From the (set) the whole team has believed confidently in this project.
 - **3**(cut) in public spending have meant that several research projects have lost their funding.
 - 4 The (come) of the medical trials has been extremely successful.
 - **5** The (break) of the disease affecting sheep has now been confined to a small area.
 - 6 Our teacher always gives us useful (feed) on our homework.

 - 8 I'm afraid there has been a (break) in communications and we didn't receive your request.

3 LISTENING (2) 08 Listen to an interview about the speed of human evolution. Which speaker, the presenter (P) or Jake (J), first mentions:

- 1 genetic Adam
- 2 the country where the study was done
- 3 genetic Eve
- 4 the first humans with blue eyes

4 🔘 08 Listen again and choose the correct answers.

- 1 Genetic Adam is ...
 - **a** the most recent common male ancestor for men today.
 - **b** a man who can trace his ancestors to an ancient human male.
 - **c** the first human male ever to have existed.
- 2 In the Icelandic study the researchers ...
 - **a** found that the men in the study had less than 174 paternal lines.
 - **b** didn't find any genetic mutations in the men who participated.
 - c studied over 750 men and grouped them by paternal line.

- Researchers now know that genetic Adam ...
- **a** lived about 100,000 years ago.
- **b** lived at exactly the same time as genetic Eve.
- c probably lived around 250,000 years ago.
- 4 It is true that ...
 - a only 7% of human genes have remained unchanged in human evolution.
 - **b** a gene mutation led to humans having blue eyes and fair skin.
 - **c** the gene for brown eyes is one of the more recent gene mutations.
- 5 Knowing about gene mutations and when genetic Adam lived ...
 - **a** is something that has always fascinated the interviewer.
 - **b** means scientists know more precisely when events in human genetic history happened.
 - c can't yet tell scientists when humans first arrived in Europe.

$oldsymbol{ar{E}}_{oldsymbol{v}}$ vocabulary extension

- 5 Create nouns by adding the correct prepositions.
- down in out over turn.....: people who attend an event 1 2come: the amount of money a person earns 3 take.....: when one company buys another turn: a decrease Δ 5 burst: a sudden expression of emotion ...take: the number of new students at a school or college cry: a strong negative reaction to a decision by a large number of people Complete the sentences with the correct compound nouns from 5. 1 The of students studying biology at this university has fallen this year. \square 2 There was a good at the lecture yesterday - they had to bring in extra chairs. 3 There's news of a of one of the big pharmaceutical companies.
 - 4 I apologise for my this morning. I was really angry about the decision.
 - 5 I'm looking for a new job as I want to increase my
 - 6 There was an when the company decided to move its production overseas.
 - 7 Due to the in the economy there will not be as much investment in research as last year.

Grammar in context

Read the examples. Are they talking about an imaginary present situation (PRESENT) or an imaginary past situation (PAST)?

- 1 If scientists **had found** the information earlier, they **wouldn't be** researching it now.
- 2 If scientist **knew** exactly when Adam lived, they **would have been** able to pinpoint other historical dates.

2 Read the sentences in 1 again and circle the correct alternative to complete the rules.

- 1 To talk about an imaginary present situation and its <u>present/past</u> consequence we use: If + past simple, ... would/wouldn't have + past
- participle.
 To talk about an imaginary past situation and its <u>present/past</u> consequence we use:

If + past perfect, ... *would/wouldn't* + infinitive

3 Match the halves to make mixed conditional sentences.

- 1 I don't really like science fiction stories. If I liked science fiction stories, ...
- 2 I went to bed late. If I hadn't gone to bed late, ...
- 3 I don't need to speak French for my job. If I needed to speak it, ...
- 4 I missed the plane. If I hadn't missed the plane, ...
- 5 I'm good at maths. If I wasn't good at maths, ...
- 6 I had a lot of history homework. If I hadn't had any homework, ...
- **a** I wouldn't be so tired now.
- **b** I would be on holiday right now.
- c I wouldn't know so much about King Henry VII.
- **d** I would have read that book.
- e I wouldn't have chosen to study it at university.
- **f** I would have done a language course last year.

4 Complete the dialogues with the correct form of the verbs given.



- 1 A: Did you know the Golden Toad became extinct in 1989?
 - **B:** That's terrible! If we did more to protect reptiles like these, they (not become) extinct.



- **3** A: Do you want to go for a walk?
- **4** A: Why is the fridge empty?
 - **B:** I haven't been shopping. There would be food in the fridge if I (go) shopping.
- 5 A: Have you had lunch yet?
 - B: No. If I (have) lunch, I wouldn't be so hungry now!
- **6** A: Why didn't you come out with us last night?

🔁 GRAMMAR CHALLENGE

5 Find and correct the mistakes.

- 1 We won't be able to get home in case there is a train after 10 pm.
- 2 If you won't water plants, they die.
- **3** Sara persuaded us trying that new restaurant and we were glad we went.
- 4 Sam's face was red because he has been running for an hour.
- 5 I'd let you use my mobile if I brought it with me.
- 6 If I could travel anywhere in the world, I go to Cambodia.
- 7 Mike isn't here. I think he might go to the park to try out his new bike.
- 8 We only just missed the train. If we had walked more quickly, we would catch it.
- **9** Dominic admitted to take the money, but he denied stealing the watch.
- 10 If I hadn't lost my umbrella, I didn't be so wet now!

LA C

Developing speaking

Read the texts about statistics and match the graphs (A–C) to the descriptions 1–3.



- 1 This bar chart shows that (a) (approximately) two thirds of the population are not happy about cloning animals. The interesting thing in my opinion is that there is a higher (b) (percentage) of women who are uncomfortable with it than men. Only 17% of women think it's OK, (c) (compared to) 27% of men.
- 2 In this pie chart you can see that just (d) (below) 60% of Americans think that work on cloning that helps with health problems is a good thing. However, just (e) (above) a third of the people surveyed don't agree with cloning.
- 2 Read the texts again and replace the words in brackets with alternative expressions with the same meaning.

3 Correct the following sentences.

- 1 One of four people strongly disagreed.
- **2** A quart of people questioned refused to give an answer.
- **3** Three times so many people made complaints this year compared to last year.
- **4** A considerable number of money was spent on advertising last year.
- **5** The third large response came from teenagers.
- **6** The number of research projects has fallen dramatic in the last two years.
- 7 The company's losses have levelled up in the last six months.

4 LISTENING (2) 09 Listen to the results of a survey on climate change. Complete the charts and graph.



5 D 10 Complete the sentences about pie chart A with one word. Listen and check.

An overwhelming (a) said they agreed or strongly agreed that their actions were effective to help limit the effects of climate change – in fact, the (b) proportion, just under 50%, strongly agreed and about a (c) agreed. (d) under 20% said they neither agreed nor disagreed, and almost (e) in ten said they disagreed. A little (f) 5% said they strongly disagreed.

6 Write a paragraph to describe the other two diagrams in detail using words and expressions from the Speaking bank in the Student's Book.

Complete the table with these expressions.

All in all • Consequently • First and foremost • In contrast • In spite of • Last but not least Moreover • Nevertheless • Personally, I believe that • What is more

Introducing and sequencing	Adding arguments	Making contrasts	Expressing consequences	Expressing opinions	Concluding
Secondly	Furthermore	On the one hand	Therefore	In my opinion	To sum up
SAND ST	A further criticism of	On the other hand	As a result	As far as l'm concerned	

2 Read the for-and-against essay about making organ donation mandatory. Complete it with these expressions and then add the expressions to the table in 1.

> However In conclusion In my opinion Many people claim that My own view Others argue

The list of people waiting for organ transplants is reaching an all-time high with surgeons now able to transplant more and more parts of the body with increasing success. (a), the number of organs donated for transplant is still a long way off meeting this demand and there have recently been calls for the UK to adopt a policy that is currently practised in many European countries. This is an 'opt-out' system where a person's organs would automatically be donated after death unless they had chosen to opt out while they were alive. (b)a majority of people would willingly donate their organs but they do not get round to making this decision while they are alive. They believe that people must be encouraged to confront the decision and if they decide that they do not wish their organs to be transplanted, they can opt out of the scheme. (c) is that this is a particularly difficult topic to deal with, as it is all about the rights of the individual. Some of those opposed to the move say it is all down to a matter of

personal choice. **(d)** that it is not necessarily a lack of donor organs that is to blame for the problem, but a lack of facilities and qualified surgeons.

(e), an opt-out system still allows for freedom of choice and I believe that it would be better to have an excess of possible donor organs than too few. (f), I must say that I hope the debate over this crisis helps bring about a change in the law to make life easier and fairer for all those concerned. 3 Read the essay title and decide if the points are for (F) or against (A) the statement.



Investing in space exploration is an expensive obsession we cannot afford.'

- 1 the money used for space exploration could be used to end poverty on Earth
- 2 space exploration brings huge opportunities for discovery and new scientific knowledge
- **3** through space exploration, we have the possibility of finding new places to live and new sources of important minerals and fuels
- 4 exploring space is very risky, people can easily die
- 4 Plan your essay. Use the ideas in 3 and/or your own ideas. Follow the paragraph plan below.

Paragraph 1: Introduction. Explain the situation
Paragraph 2: Present points FOR the statement
Paragraph 3: Present points AGAINST the statement
Paragraph 4: Summarise/personalise the points and make a conclusion

5 Write your essay using words and expressions from the Writing bank in the Student's Book and the checklist below.

Remember to check that:

- your paragraphs are well balanced
- your sentences are neither too long nor too short and are easy to follow
- you have used conditionals correctly

Grammar

lf .

Rewrite the sentences so the meaning is the same.

- 1 I might be free this evening. In that case I'll come to the science lecture with you.
- **2** I overslept this morning and missed my bus.
- I didn't read about the experiment so I couldn't answer the teacher's questions in class.
- 4 My advice to you is to use a memory technique to memorise the new words.
 - If
- **5** I can't speak two languages so I didn't apply for that job.
 - lf
- 6 I spent too long on the computer last night and now my eyes are tired.
 - If

2 Complete the sentences with the correct words.

- 1 you feel like playing tennis later, text me.
- **2** As _____ as everyone agrees, we'll start work on our presentation tomorrow.
- 3 I can remember ten numbers in a row ... I'm interrupted.
- 4 The party was awful. I I hadn't gone to it it would have been better to stay at home!
- **5** that there's not too much traffic on the roads, we should get there by 4.30.
- 6nobody comes to the party? We'll have a lot of sandwiches to eat!
- 7 I hate getting up so early. If I could stay in bed longer!
- 8 When he was a student he was missing lectures.

3 Circle the correct alternative.

- 1 I'd <u>go/have gone</u> to the mountains last weekend if I hadn't hurt my leg.
- 2 If I'd watched the film last night, I <u>would know/would</u> <u>have known</u> what it's about.
- 3 I <u>would speak/would have spoken</u> better French if I'd lived there longer.
- 4 If I could meet any famous person in the world, I <u>would choose/would have chosen</u> Jennifer Lawrence.
- 5 You should have taken your coat as it <u>might have</u> <u>been/might be</u> cold.
- **6** I told her to stop <u>to talk/talking</u> so much during the science lecture.

Vocabulary

- 1 Choose the correct answers.
 - 1 Scientists have made a in finding the cure for the disease. They hope to eradicate it in the next few years.

A breakdown B breakthrough C outbreak

2 Unfortunately, efforts to find a solution to the problem suffered a yesterday.

A setback B drawback C feedback

- **3** We had to spend long hours doing the research, but it was in the end.
- A lifetime B offspring C worthwhile
- 4 The authorities want to stop illegal animal experiments and there has been a big crack on doing it.
 - A back B down C out
- **5** The research team have refused to comment on the of their experiments.
 - A outset B outlook C outcome
- 6 Kieran has to go for check-ups at the hospital every three months because he is a _____ patient.
 A high-risk B lifetime C setback
- 2 Complete the compound nouns in the text with the correct form of these words. Some words are used more than once.

back • down • in • out

The government is meeting again today to discuss further ways of making (a) cut...... to help the economy. From the (b)set economists have been divided over the best way forward and have complained that their (c)put has not been listened to. They insist that there are many (d) draw...... to the government's current policy and many would prefer a harder (e) crack......on the banking system. Whatever the (f)come of these most recent meetings, the financial (g)look for the country seems uncertain.

Complete the words.

- 1 I'm sorry I'm late, I got caught in a terrible traffic
- 2 Men have one X and one Y c.....
- 3 Cholera is a water-borne disease. It is usually t_____ by water.
- 4 Tom won't mind l.....you a hand, he's always happy to help.
- 5 Many mosquitoes are now real to antimalarial drugs, so researchers are trying to find a new treatment.
- 6 I don't eat food that has been g...... modified because we don't know what the effects could be.
- 7 Humans are probably the most dangerous s..... of animal on the planet!
- 8 Ruth usually g.....new concepts easily, she's very bright.

Reading

1

- Read the article about artificial meat. Six paragraphs have been removed from the article. Choose from the paragraphs (A–F) the one which fits each gap (1-6).
- A The researchers believe cultured meat could help feed the growing world population while reducing the impact on the environment. According to the analysis by scientists from Oxford University and Amsterdam University, artificial meat grown this way would reduce greenhouse gases by up to 96% in comparison to raising animals.
- **B** Tuomisto predicts that if more resources are put into the research, the first commercially lab-grown meat could be available within five years. The first samples are likely to be like mincemeat in texture, while producing steaks could take at least five years longer. 'We can demonstrate that it is possible, but it is expensive,' she said.
- C Another benefit would be to help animal welfare and protect endangered species. If most of our meat was grown, there would be no need for factory farms. Conditions for animals could be drastically improved. Elsewhere, it could also stop illegal endangered species hunts by providing an alternative way to produce meat from these species.
- D 'The environmental impacts of cultured meat could be substantially lower than those of meat produced in the conventional way,' said Hanna Tuomisto, the researcher at Oxford University who led the study.
- E The study found that growing meat in the lab rather than killing animals would generate only a tiny fraction of the greenhouse gas emissions associated with conventional livestock production. To produce artificial meat, or cultured meat as it is also called, involves extracting cells from an animal and converting them to muscle cells. The cells are then cultured with nutrients and essential vitamins and can be grown to any quantity and then shaped into hamburgers, steaks or mince.
- F Aside from its predicted environmental benefits, cultured meat should also provide cheap nutrition. Animal protein is an increasing part of diets, as millions of people in rapidly emerging economies are drawn out of poverty and become able to afford more meat in their diets.

14th January

'Artificial meat could slice emissions and feed the world', scientists say

Meat grown artificially in labs could be a greener alternative for consumers who cannot bear to go vegetarian but want to cut the environmental impact of their food, according to new research.

This may sound like sciencefiction, but if you look at the shelves of any supermarket, you'll find 'engineered' products from soya meat to geneticallymodified fruit and vegetables. Artificial meat is not such a strange idea, and there are many good reasons for doing it.

The process would require between 7% and 45% less energy than the same volume of conventionally produced meat such as pork, beef or lamb, and could be engineered to use only 1% of the land and 4% of the water associated with conventional meat.

3

4 ...

2.

Tuomisto's research shows that cultured meat could be part of the solution to feeding the world's growing population, at the same time cutting emissions and saving both energy and water. Simply put, cultured meat is potentially a much more efficient and environmentally friendly way of putting meat on the table.

The pressure this creates has been an important factor in rapidly rising grain prices,



deforestation in the Amazon basin, increasing water scarcity and rising pressure to find new farmland. Growing meat artificially could potentially take huge pressure off farmlands around the world.

5

6

So what does the meat taste like? Does the taste vary depending on the cells used? Nobody knows yet as humans are not allowed to eat it at present. However, the way cultured meat is grown means theoretically it could be produced to suit any consumer preferences – without any fat, with healthy fat, softer, with more muscle and so on. The possibilities are very exciting, but further research needs to be done before it is approved for human consumption.

Exactly how long it takes before the meat is sold in supermarkets depends on the investment in research and development. Surprisingly, despite all its advantages, very few researchers are currently working on developing the cultured meat technology. Given that it could help to solve both our environmental crisis and the problem of how to feed the world, it is surely a goal worth working towards?

Use of English



- 7 I'll talk to Ben and request that he book a restaurant for tonight. **ask**
 - I a restaurant for tonight.
- 8 I went out last night and didn't finish my project, so I can't go out tonight. **able**

Listening

- 3 LISTENING 11 Listen to five people talking about how computer games affect the mind. Match the speakers (1–5) to the opinions (A–H). There are three extra letters which you do not need to use.
 - A There is a definite link between gaming and violent behaviour.
 - **B** All surgeons now have to play computer games to improve their abilities.
 - **C** Gaming has a beneficial effect on people's job performance.
 - **D** Computer games can help adults improve their memories.
 - **E** People worry about gaming when they should be considering bad effects of other things.
 - **F** Too many young people are addicted to computer games.
 - **G** Playing computer games has a negative impact on young people's learning.
 - H Computer games can help you develop a variety of useful skills.

- 4 11 Match the speakers (1-5) to the jobs (A-H). There are three extra letters which you do not need to use. Listen again if necessary.
 - A doctor
 - business person
- E police officerF student
- 13011
- C lawyer D teacher
- **G** professional
- sportsperson
- H journalist

Writing

B C

5 Choose one of these two writing tasks. Write between 120 and 180 words.

1 Write an essay on the following topic using the notes below and/or your own ideas.

Some people think that genetically modified (GM) food is acceptable because it could help feed people in the future. Others think that it could have terrible consequences and put people's lives in danger.

Advantages: Good for the environment; Could solve world food crisis; Humane; Good for animal welfare Disadvantages: Nobody knows the consequences; Still very expensive; Need strict controls

2 Write a review for this advertisement on a website.

FILM REVIEWS WANTED!

Have you seen a film that really made you think? Write a review of the film explaining why it made you think. Tell us whether you would recommend it or not. The best review will win a prize of £50.

COMMON MISTAKES

 (\mathbf{O})

6

Correct the mistakes in the sentences.

1 If you want to relax I you recommend doing yoga.

- **2** The scientists are positive that if they do more research, they would find a solution.
- **3** I hope the teacher doesn't catch me do my homework in class.
- 4 As long that Jack goes to the party, I will go too.
- **5** Tom continued talk although the teacher had asked him to stop.
- **6** There's no deny that the weather is worse here than in southern Europe.
- 7 Why did Jane tell Peter to come? She shouldn't do that.
- 8 Sam's lost his car keys if he hadn't lost them, he doesn't need to phone his wife.
- **9** In spite the fact that we discussed doing more research, nothing has happened.
- **10** I was having problems Sara agreed to help me, but Tina refused helping me.
- **11** If you have arrived earlier, you would have met Pete, but he's already gone.
- 12 When I'm listening to long explanations, my mind tends wandering.