



GOBIERNO DEL PRINCIPADO DE ASTURIAS

CONSEJERÍA DE EDUCACIÓN

Dirección General de Ordenación, Evaluación y Equidad Educativa

*ESCUELAS OFICIALES DE IDIOMAS DEL PRINCIPADO DE ASTURIAS*

**PRUEBA ESPECÍFICA DE  
CERTIFICACIÓN DE NIVEL  
AVANZADO C1 DE INGLÉS  
CONVOCATORIA JUNIO 2023**

**COMPRENSIÓN DE  
TEXTOS ESCRITOS**

**MODELO DE  
CORRECCIÓN**

## HOJA DE RESPUESTAS

### EJERCICIO 1: THE SURPRISING HISTORY OF HAWAI'I'S HULA TRADITION

Espacio reservado para la persona correctora

1	<u>A</u>	B	C	
2	A	<u>B</u>	C	
3	<u>A</u>	B	C	
4	A	<u>B</u>	C	
5	A	B	<u>C</u>	
6	<u>A</u>	B	C	
7	A	<u>B</u>	C	
8	A	<u>B</u>	C	

### EJERCICIO 2: LAB GROWN MEAT

Espacio reservado para la persona correctora

1	A	B	C	D	E	<u>F</u>	G	H	I	J	K	L	M	N			
2	A	B	C	D	E	F	G	H	I	J	K	L	<u>M</u>	N			
3	A	<u>B</u>	C	D	E	F	G	H	I	J	K	L	M	N			
4	A	B	C	D	E	F	G	H	<u>I</u>	J	K	L	M	N			
5	A	B	<u>C</u>	D	E	F	G	H	I	J	K	L	M	N			
6	A	B	C	D	E	F	G	H	I	J	<u>K</u>	L	M	N			
7	A	B	C	<u>D</u>	E	F	G	H	I	J	K	L	M	N			
8	A	B	C	D	E	F	G	<u>H</u>	I	J	K	L	M	N			
9	A	B	C	D	E	F	G	H	I	J	K	L	M	<u>N</u>			
10	A	B	C	D	<u>E</u>	F	G	H	I	J	K	L	M	N			
11	A	B	C	D	E	F	G	H	I	<u>J</u>	K	L	M	N			
12	A	B	C	D	E	F	G	H	I	J	K	<u>L</u>	M	N			

### EJERCICIO 3: WHAT MUSIC REVEALS ABOUT OUR MINDS

Espacio reservado para la persona correctora

1	TRUE	<u>FALSE</u>	
2	TRUE	<u>FALSE</u>	
3	TRUE	<u>FALSE</u>	
4	<u>TRUE</u>	FALSE	
5	TRUE	<u>FALSE</u>	

## EJERCICIO 1

### THE SURPRISING HISTORY OF HAWAII-S HULA TRADITION

0 Images of Hula dancers can be found ...

A at the docks to welcome tourists

B in all the bars in the islands of the South Pacific Ocean

**C in the front of a number of cars just as a decorative object**

1 This Hawaiian dance is a custom which ...

**A has even been at risk of obliteration**

B has been preserved for commercial reasons

C has been adopted elsewhere for cultural reasons

2 With the arrival of Christianity, the dance ...

A was made illegal

**B was looked on with disdain**

C was only seen in special ceremonies

3 Once Hawaii became an American territory ...

**A many people were attracted to the island**

B the number of hotels dwindled rapidly in the island

C both the Hawaiian language and the dance died out

4 In the 1970s Hawaiian ...

A was the one language spoken in the island

**B was officially included in education programmes**

C constitution was impaired so that Hawaiian matters rose in importance

5 One of the most important festivals in Hawaii ...

A has readily available tickets

B attracts participants worldwide

**C came forth over fifty years ago**

6 A lū'au is ...

**A a party or celebration**

B a place of entertainment

C a historical account of Hawaiian traditions

7 Big Hawaiian resorts ...

- A used to think of the hula as a way to make profit
  - B are actively contributing to the maintenance of the hula**
  - C are taking on professionals to supervise educational activities about the hula
- 8 Wendy Tuivaioe ...**
- A set up the Four Seasons Resort Maui in 2011
  - B was the go-to person for guests and staff at the Four Seasons Resort Maui**
  - C makes sure visitors are welcomed by Hula dancers wearing a garland around their necks

**EJERCICIO 2**

**LAB GROWN MEAT**

QUESTIONS
0 <u>  <b>A</b>  </u>
1 <u>  <b>F</b>  </u>
2 <u>  <b>M</b>  </u>
3 <u>  <b>B</b>  </u>
4 <u>  <b>I</b>  </u>
5 <u>  <b>C</b>  </u>
6 <u>  <b>K</b>  </u>
7 <u>  <b>D</b>  </u>
8 <u>  <b>H</b>  </u>
9 <u>  <b>N</b>  </u>
10 <u>  <b>E</b>  </u>
11 <u>  <b>J</b>  </u>
12 <u>  <b>L</b>  </u>

REMOVED SENTENCES (Remember: one sentence is not needed)
<b>A</b> However, none is commercially available yet
<b>B</b> with minced meat far easier to replicate
<b>C</b> but balancing and distributing them is tricky
<b>D</b> and newer versions also contain fat
<b>E</b> a growing population and increasing demand for animal products
<b>F</b> under local anaesthesia
<b>G</b> it is cultivated in labs through the culture process
<b>H</b> such as omega-3s, found naturally in fish or flaxseed oil
<b>I</b> which is no mean feat
<b>J</b> requiring a tiny fraction of the land
<b>K</b> artificial meat producers do need to take extra care to keep everything sterile
<b>L</b> from powering artificial meat production facilities
<b>M</b> for processing or cooking in a matter of weeks
<b>N</b> may be the healthiest option

### EJERCICIO 3

#### WHAT MUSIC REVEALS ABOUT OUR MINDS

0	Thanks to recent research we can now understand better how music can enhance our lives	<u>TRUE</u>	FALSE
1	A special song may work as a conscious retrieval of the past	TRUE	<u>FALSE</u>
2	Intellectually disabled people may eventually heal thanks to research into the worth of music carried out at the University of Toronto	TRUE	<u>FALSE</u>
3	The pieces of music the participants listened to for the study at that University were uncompiled.	TRUE	<u>FALSE</u>
4	Another recent study about personality and music reveals that painstaking people would rather listen to unpretentious music.	<u>TRUE</u>	FALSE
5	According to the above mentioned study, people with some kind of mental illness are more fond of intense music when they need to release their strong emotions	TRUE	<u>FALSE</u>

### EJERCICIO 1

#### THE SURPRISING HISTORY OF HAWAII'S HULA TRADITION

*Adapted from [www.nationalgeographic.com/travel](http://www.nationalgeographic.com/travel)*

With her flower crown and grass skirt, the hula girl has been synonymous with Hawaiian hospitality since cruise ships first docked in Honolulu in the 1920s. Even today, exoticized images of these traditional dancers headline on travel websites, at tiki-themed bars, and (0C) on wiggly dashboard tchotchkes.

Over the past two centuries, the cherished Hawaiian dance has moved from a sacred religious practice to a tourist attraction, along the way (1A) falling prey to cultural appropriation and near erasure.

For Hawaiians, hula is a living archive of their history and stories but now Hawaiian cultural organizations are reclaiming and safeguarding a more authentic version of hula.

Before Western contact in 1778, hula had been a part of Hawaiian life for hundreds of years.

Prior to the 1820s, there was no written language in Hawai'i, so hula was one way for residents to pass knowledge from generation to generation. But during the 19th century (2B) the sacred dance was spurned as Christian missionary influence swept over the islands. Public performances of hula—deemed a vulgar pagan ritual—were outlawed. Hula went underground, though hālau hula (hula schools) continued to operate in rural villages.

A hula resurgence began in 1883 under King David Kalākaua, who hosted his extravagant coronation at the newly built 'Iolani Palace, and filled the two-week celebration—hula performances, music, and a lū'au. However, the revival was short lived. Hula was once again shunned after King Kalākaua's successor Queen Lili'uokalani was overthrown by American businessmen in 1893. The U.S. annexed Hawai'i in 1898; it became a U.S. territory two years later.

On the continent, many Americans learned about the Hawaiian culture at the 1915 Panama-Pacific Exposition in San Francisco. It ignited a Hawaiian craze and the whitewashed version of hula that permeated Hollywood movies, tiki bars, and vaudeville shows. (3A) When ocean cruises became popular in the late 1920s, thousands of tourists from the U.S. mainland sailed to Honolulu. Hotels popped up along Waikīkī Beach's white sands.

The Hawaiian identity continued to erode throughout territorial rule, and just after Hawai'i became a state in 1959. The Hawaiian language was not taught in schools, and children were often punished for speaking it. As a result, the language almost went extinct. With the loss of the language, hula, which is always paired with chants in Hawaiian, was at risk of becoming obsolete.

The mid 20th-century was a time of rapid change, with the Civil Rights Movement improving the lives of Black Americans in the 1960s and influencing the Hawaiian Renaissance of the 1970s. (4B) In 1978, the state constitution was amended to include Hawaiian as one of the two state languages and to mandate that public schools teach Hawaiian culture, language, and history, including dance.

Locals were reclaiming the hula, too. On the island of Hawai'i, (5C) the town of Hilo launched the Merrie Monarch Festival in 1964. Now, the annual spring festival draws the best hula groups from the islands and the mainland U.S. Scoring tickets to this "Olympics of hula" can be difficult. Other showcases that are more accessible include Maui's Hula O Nā Keiki.

When Thompson and his sister took over (6A) along the whole text the lū'au in 2007, they changed its programming to focus on the stories, histories, and context of the dances. Their show highlights hula and traditional Hawaiian skills, such as poi pounding.

Although it seems improbable, (7A) large resorts—which once tokenized hula—are now investing in its cultural preservation. Many of them offer hula performances and lessons spearheaded by Hawaiian cultural ambassadors who oversee educational programming.

The Outrigger Reef Waikīkī Beach Resort recently unveiled its new A'o Cultural Center, which includes an exhibit of Hawaiian artwork, canoe history, and hula lessons. Besides, (8B) Wendy Tuivaioqe started out at Four Seasons Resort Maui at Wailea as a concierge in 2011. She now oversees activities including lei making and hula dancing lessons.

## EJERCICIO 2

### LAB GROWN MEAT

*Adapted from www.sciencefocus.com*

#### How is artificial meat made?

Also known as cultured or cell-based meat, artificial meat is grown from animal cells in a laboratory. Start-up companies have grown artificial beef, pork, chicken and even fish. A (0) However, none is commercially available yet

There are different ways to grow artificial meat, but most use adult stem cells from a live animal. For beef, a tiny muscle sample is taken from a cow, F (1) under local anaesthesia. The muscle is chopped into smaller pieces, using enzymes to digest it and release the stem cells.

In a huge vat called a bioreactor, the stem cells are immersed in a broth containing salts, vitamins, sugars and proteins, as well as growth factors. The oxygen-rich, temperature-controlled

environment allows cells to multiply dramatically. The stem cells then differentiate into muscle fibres that bunch together, aided by scaffolding material. The meat is ready M (2) for processing or cooking in a matter of weeks.

Producing a thick piece of steak is still some way off, B (3) with minced meat far easier to replicate. 3D printing is one possible option for creating a juicy steak layer by layer, but this technology is still in its infancy.

### **Will artificial meat ever taste as good as the real thing?**

The first artificial beef burger was reported to be rather dry and dense, consisting solely of muscle fibres.

A good meat replacement needs to mimic smell, texture, and taste, (4) which is no mean feat. In an animal, muscle comprises organized fibres, blood vessels, nerves, connective tissues and fat cells. Thousands of flavour molecules contribute to real meat's rich taste. It's possible to add synthetic flavours to artificial meat, C (5) but balancing and distributing them is tricky.

Progress has been made since 2013 and a Dutch company called Meatable now claims to be able to reprogram stem cells collected from bovine umbilical cord blood, turning them into master cells that can differentiate into fat or muscle. In theory, cells from different species could be grown together to create completely new flavours.

### **Is artificial meat safe?**

Artificial meat is touted as being as safe or safer than the real thing, produced in a highly controlled environment.

It is highly unlikely to become contaminated with harmful bacteria such as *E. Coli*. With whole animals, there's always a risk of meat becoming contaminated with bacteria after slaughter.

Having said that, K (6) artificial meat producers do need to take extra care to keep everything sterile.

Some people have raised concerns over the growth factors added to stem cells, which include hormones. These hormones are naturally present in animals as well as in real meat. However, overexposure can have adverse health effects in humans.

### **Does artificial meat contain enough nutrition?**

Artificial meat is packed with protein D (7) and newer versions also contain fat. The nutritional content can be controlled to a certain extent by adjusting fat levels and playing with the levels of saturated fatty acids and healthier polyunsaturated fatty acids.

Saturated fats can be replaced with other types of fats, H (8) such as omega-3s, found naturally in fish or flaxseed oil. It's also possible to add extra micronutrients such as vitamin B12 to artificial meats, as is routinely done to breads and breakfast cereals.

The fact remains that eating too much red meat is bad for our health, increasing the risk of cardiovascular disease, type 2 diabetes, and some cancers. With its controlled fat levels, artificial meat may be slightly healthier, but it would still need to be eaten in moderation.

Plant-based meat alternatives N (9) may be the healthiest option, with similar protein levels and lower levels of saturated fat compared to conventional meat burgers.

## Could artificial meat save the planet?

The global food system is under huge pressure from climate change, E (10) a growing population and increasing demand for animal products. As such, investors have poured vast sums into artificial meat start-ups in recent years. One estimate by US consultancy firm Kearney suggests that 35 per cent of all meat consumed globally will be cell-based by 2040.

Artificial meat can be produced faster and more efficiently than traditional meat, J (11) requiring a tiny fraction of the land. But it faces competition from insect-derived products and plant-based imitation meats, which consumers are already buying in increasing numbers.

Livestock produces a big proportion of global greenhouse gas emissions. Large numbers of people switching to artificial meat, could lead to big cuts in these gases, particularly methane. But a study at Oxford University has suggested that the CO<sub>2</sub> emissions L (12) from powering artificial meat production facilities could be more damaging over the next 1,000 years

## EJERCICIO 3

### WHAT MUSIC REVEALS ABOUT OUR MINDS

*Adapted from <https://edition.cnn.com>*

Music is a powerful tool to access information about ourselves. 0 (TRUE) Two recent studies are offering new insight into how our favorite tunes are linked to memories and our personalities -- and how those connections can make lives better.

1 (FALSE) Hearing a favorite, familiar or "throwback" song can instantly transport you to another moment of your life, bringing back details in startling clarity. And it's not just a fanciful feeling -- there's science behind how our minds connect music with memory.

There has long been a beneficial association between music and patients with Alzheimer's or dementia. Listening to music with a special meaning stimulated neural pathways in the brain that 2 (FALSE) helped them maintain higher levels of functioning, according to Michael Thaut, who was senior author of a study conducted by researchers at the University of Toronto.

These songs held unique significance, like music the people danced to at their wedding, and led to increased memory performance on tests. 2 (TRUE) The findings could support the inclusion of music-based therapy in the treatment of cognitively impaired patients in the future.

Changes were most notable in the prefrontal cortex, known as the control center of the brain, where decision-making, social behavior moderation, personality expression, and the planning of complex mental behavior occur.

When the patients heard music that was personal to them, it powered up a musical neural network connecting different regions of the brain, based on MRIs taken of the patients before and after



listening to the music. This differed from when they heard new, unfamiliar music, which only triggered a specific part of the brain tuned into listening.

There were only 3 (FALSE) 14 participants in the study, including six musicians, and they listened to specially curated playlists for an hour a day over three weeks. But these participants are the same ones from an earlier study that identified the neural mechanisms for preserving music-related memories in those experiencing early cognitive decline.

The research also highlights another connection: music and our personalities. Music is related to our desire to communicate, tell stories, and share values with one another, and it has deep roots in early human cultures. So perhaps it's no surprise that as humans, we've forged connections and bonds with certain genres or musical styles as a way to express ourselves and broadcast our personalities.

A recent study spanning six continents showed that personality types are linked with certain musical preferences. During the study, people from more than 50 countries self-reported their enjoyment of 23 different music genres while also completing a personality questionnaire.

The music fell under five main style categories. "Mellow" is associated with soft rock, R&B and adult contemporary music, including romantic lyrics and slow beats, while "intense" is louder, more aggressive music like punk, classic rock, heavy metal, and power pop. The other categories included "contemporary" (upbeat electronica, rap, Latin, and Euro-pop), "sophisticated" (classical, opera, jazz), and "unpretentious" (relaxing or country music genres).

4 (TRUE) The findings revealed direct links between extroverts and contemporary music, conscientiousness and unpretentious music, agreeableness, and mellow or unpretentious music. Openness was connected with mellow, intense, sophisticated, and contemporary music.

"We were surprised at just how much these patterns between music and personality replicated across the globe," said study author David Greenberg. "People may be divided by geography, language, and culture, but if an introvert in one part of the world likes the same music as introverts elsewhere, that suggests that music could be a very powerful bridge. Music helps people to understand one another and find common ground."

These were all positive associations, but they also found a negative connection between conscientiousness and intense music.

"We thought that 5 (FALSE) neuroticism would have likely gone one of two ways, either preferring sad music to express their loneliness or preferring upbeat music to shift their mood. Actually, on average, they seem to prefer more intense musical styles, which perhaps reflects inner angst and frustration," Greenberg said.

"That was surprising but people use music in different ways -- some might use it for catharsis, others to change their mood. We'll be looking into that in more detail."

The researchers acknowledge that musical taste isn't set in stone and can change. But the study provides a foundation for understanding how music can cross other social divisions and bring people together, Greenberg said.



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## HOJA DE RESPUESTAS

### EJERCICIO 1: IS CYBER CRIME A THREAT TO PUBLIC SAFETY?

				Espacio reservado para la persona correctora
1	<u>A</u>	B	C	
2	<u>A</u>	B	C	
3	A	<u>B</u>	C	
4	A	B	<u>C</u>	
5	A	<u>B</u>	C	
6	A	B	<u>C</u>	
7	A	<u>B</u>	C	

### EJERCICIO 2: THE INGREDIENT IN ALMOST EVERYTHING YOU EAT

		Espacio reservado para la persona correctora
1	<b>crop</b>	
2	<b>biodegradable plastic</b>	
3	<b>processed foods</b>	
4	<b>heats and presses</b>	
5	<b>blending</b>	
6	<b>fatty components</b>	
7	<b>widespread availability</b>	
8	<b>decrease cholesterol</b>	
9	<b>livestock</b>	
10	<b>humanely and sustainably</b>	

### EJERCICIO 3: CLIMATE CHANGE AND BIRDS

				Espacio reservado para la persona correctora
1	A	B	<u>C</u>	
2	<u>A</u>	B	C	
3	A	<u>B</u>	C	
4	<u>A</u>	B	C	
5	A	B	<u>C</u>	
6	A	<u>B</u>	C	
7	A	B	<u>C</u>	
8	A	B	<u>C</u>	

## EJERCICIO 1: IS CYBER CRIME A THREAT TO PUBLIC SAFETY?

Adapted from [www.bbc.co.uk](http://www.bbc.co.uk)

1. According to the man ...

- A it is not appropriate to move fuel**
- B it is proper fuel gets from one site to another
- C it is convenient to move fuel to a safe place

2 There has been an increase in ransomware attacks in ...

- A pipelines and healthcare providers**
- B telecoms, healthcare providers and education
- C nuclear power plants, pipelines and utility providers

3. The aim of a cybercriminal is ...

- A to ally
- B to rival**
- C to conceit

4. Which companies have not full-grown?

- A banking companies and the like
- B big supermarkets corporations
- C healthcare systems and education sectors**

5. The ransomware attack she is talking about ...

- A damaged the operating systems
- B did not damage the operating systems**
- C occurred in a financial company in December last year

**6. Who is responsible for arranging tabletop exercises?**

- A the board
- B the CEO of the corporation
- C executives, corporate executives, and board**

**7. A company is successful ...**

- A when they consider cybercrime an IT issue
- B when they regard cybercrime as critical**
- C when they do not regard cybercrime as a priority

**EJERCICIO 2****THE INGREDIENT IN ALMOST EVERYTHING YOU EAT**

*Adapted from [www.tedtalks.com](http://www.tedtalks.com)*

- 0 **Soybeans** are present today in most foods
- 1 The **crop** has been popular as it is quite economical and fast to cultivate
- 2 Soy is used for cooking and as **biodegradable plastic**
- 3 Although it could seem strange, soybeans are also used when making **processed foods**
- 4 When extracting the fat from the soy, the machine at the same time **heats and presses** the beans producing soy oil
- 5 Phospholipids are used for **blending** the ingredients that tend to separate from each other
- 6 Soy lecithin joins the **fatty components** of cocoa butter and sugar while making chocolate
- 7 Due to its mild taste and **widespread availability**, soy can be seen in many different products
- 8 Good fats in soy can **decrease cholesterol** and reduce the risk of heart disease
- 9 The heavy industry, processed foods, and **livestock** feed need soy farms, which contribute to deforestation

- 10 If we want to continue taking land from the Amazon, we should do it **humanely and sustainably**

### EJERCICIO 3: CLIMATE CHANGE AND BIRDS

[www.scientificamerican.com](http://www.scientificamerican.com)

1. This shrinking phenomenon is considered proved in ...

- A woodrats
- B wild sheep and wolves
- C North American songbirds**

2. After analysing thousands of data, scientists noted that ...

- A some birds' body sizes were smaller**
- B some birds' body sizes stayed the same
- C the majority stay the same, but some dozens were smaller

3. According to Baldwin and his colleagues ...

- A species with small brains are smarter
- B birds with bigger brains can change their behaviour**
- C birds with smaller brains can change their behaviour

4. Due to climate change,...

- A bigger brain birds change their habits**
- B smaller brain birds adjust the things they eat
- C all birds change the places they look for food

5. The scientist's group decided to go through the dataset again because ...

- A they wanted to reanalyze the body size
- B they found birds with smaller brains that did not shrink
- C they found birds with bigger brains that shrunk at a slower pace**

**6. According to Botero, birds with larger brains ...**

- A are fully protected from climate change
- B are not fully protected from climate change**
- C cannot keep away from warmer temperatures

**7. According to the research ...**

- A the song sparrow has a small brain
- B the Swainson's Thrush has a big brain
- C crows have larger brains than the ones in the research**

**8. Small differences in brain size ...**

- A are crucial on birds with a bigger brain
- B are not so significant concerning climate change
- C may highly affect birds when tackling climate change**

## IS CYBERCRIME A THREAT TO PUBLIC SAFETY?

Adapted from <https://www.bbc.co.uk/sounds/play/p09h857h>

3.45 minutes

### Speaker 1

I would love to say that I am very surprised, but sadly not. And I think especially **(0) looking into last year's data and the rise of ransomware attacks around the globe**, it has been quite sad to see how the cybercriminal groups are succeeding in this battle, if I may add.

### Speaker 2

And I've got to ask if cybercriminals can take out a fuel pipeline, what else can they end up taking out? Yes, **(1) it is inconvenient for fuel not to get from one place to another**. But what about a nuclear power plant for a job or nuclear defences?

### Speaker 1

We have recently gathered the cybersecurity leadership community members at the World Economic Forum, 80% of these cyber executives have said that ransomware is becoming such a growing threat that is actually threatening our public safety. As you see, **(2) nuclear power plants, pipelines, telecoms, and healthcare providers, we have seen a rise on them**. When you think and try to position yourself **(3) in a cybercriminal's mind, their goal is to compete**. Where do I target, which might be easiest? For many, many years, financial sector institutions were victims of multiple cyber attacks. As a result, they have matured. Now when you think about other industries and energy, utility providers, **(4) education, and healthcare systems, they have not matured yet**. And that is why we have seen a rise in cyber attacks like ransomware, like data thefts from these institutions.

### Speaker 2

So, what issues does this pose for businesses everywhere, this latest hack, what can they do to better prepare themselves?

### Speaker 1

The biggest risk when you think of a ransomware attack is business continuity risk. How do you ensure that when a ransomware attack hits, your business processes and operations continue, and that is exactly what's happening in this case. **(5) The ransomware attack happened on the corporate network, and as a result, actual operating systems were** stopped to ensure that no further operational losses occur. And in this case, it makes me think that we do not have any more digital rollback plans. We cannot anymore think of our business processes and procedures in a non-digital manner. **(6) One thing that we need to ensure, is that we have prepared as executives, as corporate executives, as board stable tabletop exercises of what we do** if none of our digital systems works. How do we ensure we pay our employees? How do we ensure we can invoice our customers? How do we ensure that we can communicate among our teams? How will I call Mike if I do not know Mike's number because it was on my computer or my phone which is blocked?

### Speaker 2

So, are you talking about businesses going back to paper?

### Speaker 1

In emergencies? Of course, we are so used to being digital that we cannot anymore foresee being non-digital. We have gathered and worked for the last couple of years with around fifty organizations. In doing so in the oil and gas ecosystem, we have observed that **(7) companies succeed**



when they elevate cybersecurity to a strategic business challenge, and they still fail when they treat cybersecurity as an IT issue.

## THE INGREDIENT IN ALMOST EVERYTHING YOU EAT

<https://www.ted.com/talks/>

4.53''

In the 1930s, American industrialist Henry Ford had one overwhelming obsession: **(0) soybeans**. He extracted their oil to make enamel for painting his cars. He crushed them into powder to make plastic parts. And he encouraged American farmers to grow as much of the plant as possible. But he wasn't just feeding soy to machines. At the Chicago World's Fair, he hosted a soy-centric feast. The ingredient had been a staple in Asian cuisine for centuries, but Ford's dinner— full of soy substitutes for dairy, meat and wheat— took the integration of soy into food a step further. Today, soy is in so many foods that most people consume it every day without even knowing it. So what makes soybeans so versatile? And is our global obsession healthy or harmful? 00:54

Soybeans have been cultivated in Asia as early as 5,500 years ago, but since then they've spread across the globe. Part of soy's success is that the **(1) crop** can be grown easily and cheaply in variable conditions. And once they're grown, soybeans have an incredibly high density of proteins and fats; ingredients which in recent years have been used in everything from mayonnaise to **(2) biodegradable plastic**. 01:17

The ideal method for separating these components depends on what you're trying to extract. To isolate soy proteins, dehulled beans are sometimes pressed through rollers to create thin flakes and then steeped in water to draw out the proteins. Alternatively, whole beans can be simply soaked and ground into a whitish, protein-rich liquid. In both cases, the resulting substance can be used to make spongy foods like tofu or filtered to produce soymilk. And at the industrial scale, these proteins can be used in various ways to help make **(3) processed foods**. 01:53

Soy fats may be even more versatile. In one extraction method, soybeans are dried, cleaned, and then fed into an extruder. This machine simultaneously **(4) heats and presses** the beans, producing a liquid containing soy oil and other fatty components. By adding water and spinning the mixture, components are separated into two parts: refined soy oil for things like salad dressing, and a substance called lecithin. 02:19

Lecithin is made of molecules called phospholipids, which have a phosphate head that attracts water and a tail that attracts fats. These features make phospholipids excellent for **(5) blending** ingredients that naturally separate from each other. This process is called emulsification and soy lecithins are used as an emulsifying agent in a huge variety of foods. For example, during chocolate production phospholipids attach to both the **(6) fatty components** of the cocoa butter and the water-soluble sugar particles, making them easier to combine into a smooth mixture. A similar process happens in powdered products that need to be instantly rehydrated. Soy lecithin bonds with the water and helps the powder disperse more quickly. 03:01

While there are other plants we can process for lecithin and proteins, soy's mild taste and **(7) widespread availability** have earned it a place in thousands of food products. But is it unhealthy to be eating this much soy? Not really. Soybeans contain many of the essential amino acids our bodies need, making them one of the best ways to get these proteins without eating meat. And the beans' fat content is largely made up of so-called "good" fats— poly and mono-unsaturated fatty acids, which can **(8) decrease cholesterol** and reduce the risk of heart disease. There are some compounds in soy that may inhibit our body's absorption of various minerals. And about 0.3% of the general population has a soy allergy, which can be severe in rare cases. But for many people, the biggest complaint about soy consumption is the occasional increase in flatulence. 03:53

Outside our bodies, however, soy is much more worrying. To accommodate the soy farms needed for heavy industry, processed foods and **(9) livestock** feed, huge swaths of land have been deforested. Between 2006 and 2017, roughly 22,000 square kilometres of the Amazon were cleared for soy production. In some regions, this has also led to the displacement of farmers and indigenous communities. So if we want to keep using soy and all its byproducts, we'll need to find a way to do it **(10) humanely and sustainably**.

## CLIMATE CHANGE AND BIRDS

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### 4 minutes

**(0) As the world warms, many animals are getting smaller.** For birds, new research shows what they have upstairs may just make a difference in how much smaller they get.

**Shahla Farzan:** This is Scientific American's 60-Second Science. I'm Shahla Farzan. Climate change is affecting animals in a lot of different ways. But scientists have noticed a common trend across a variety of species: they're getting smaller. As in—physically smaller in size. But why, and what could this mean?

**(1) Scientists have observed this phenomenon in very different animal species from wild sheep to woodrats. But it's especially well-documented in North American songbirds.**

In 2019, researchers at the University of Michigan published a dataset of more than 70,000 birds that died after hitting windows in Chicago. **(2) The data showed the body sizes for dozens of species had actually shrunk over the past 40 years.**

But when Justin Baldwin, a graduate student at Washington University in St. Louis, took a closer look at the data ... something stood out.

**Justin Baldwin:** There clearly seem to be some species that were shrinking a lot and other species that were shrinking much less.

**Farzan:** The question was ... why were some bird species shrinking faster than others?

**(3) Baldwin and his colleagues had a feeling that bird behaviour might be playing a role. In birds, species with bigger brains tend to be smarter and can change their behaviour** based on their environment. That means that they might be able to buffer themselves from increasing temperatures, says Carlos Botero, an assistant professor of biology at Washington University and the study's co-author.

**Carlos Botero (4) By adjusting their behaviour,** by changing the places that they look for food, the times of the day in which they do that, the things that they eat, and the ways in which they access those food sources. All those are ways in which they could experience **a little bit less of a negative selection from all this variety of changes that we're seeing through climate change.**

**Farzan:** A bigger-brained bird, for example, might adjust its behaviour and stay in the shadows when it's hot.

So the team decided to reanalyse that massive, original dataset—but this time, factor in brain size. **(5) They found birds with larger brains in relation to their body size are shrinking at slower rates than birds with smaller brains.**

And that was true even after controlling for other factors that could affect how quickly these birds are evolving, like generation time and mutation rate.

**(6) But Botero says, just because these larger-brained bird species can temporarily buffer themselves from warmer temperatures ... it doesn't mean they're completely protected from climate change.**

**Botero:** It is important to realize that what we see here is not an indication that big brain birds are fine, and that they are not having any problems or that they are just capable to take whatever kind of change is coming from this suite of different environmental phenomena that is happening right now.

**Farzan:** Still, the team says there's still a lot to learn when it comes to the ways in which bird behaviour could affect how these species respond to climate change.

For one thing, in this study, there was only about a twofold difference in relative brain size between the species with the largest brain—the song sparrow—and the one with the smallest—the Swainson's Thrush.

**(7) That means the responses could be even stronger in birds with larger brains, like crows, Baldwin says.**

**Baldwin:** We're sampling only a small amount of the potential variation in relative brain size here in our study. And so that does suggest **that (8) even potentially small differences in relative brain size might actually have a large effect on ecological responses to climate change.**

**Farzan:** For now, Baldwin says, one of their biggest takeaways is that smaller-brained bird species could be particularly vulnerable as the climate continues to change.