

CURIOUS?

IFLSCIENCE

WHICH ANIMALS
HAVE THE WORST
TABLE MANNERS?

DO PEOPLE STILL GET
MUMMIFIED?

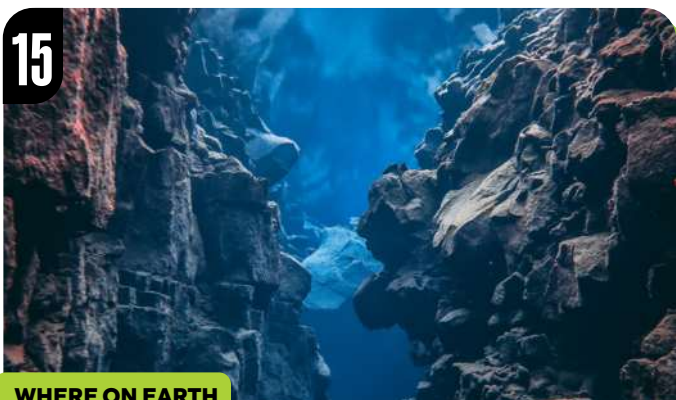
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WHAT ACTUALLY

IS FEAR?

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WHERE ON EARTH

SWIM BETWEEN TECTONIC PLATES

The crystal clear and icy cold waters of Iceland's Silfra Fissure lie between the North American and Eurasian plates.

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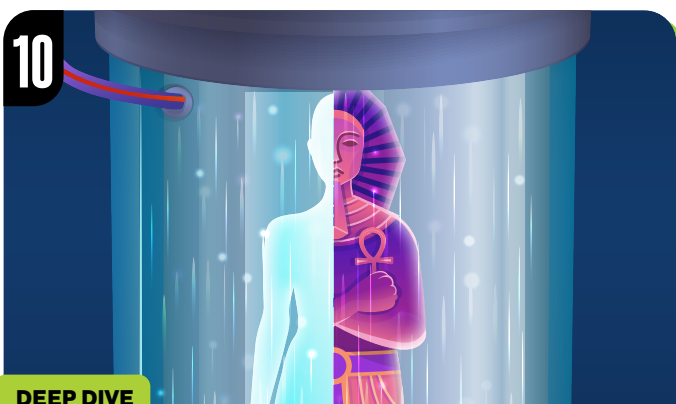


WHAT ON EARTH

SURVIVAL OF THE CLOSEST

Bizarre bugs cluster together on the underside of a leaf in this award-winning image.

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DEEP DIVE

DO PEOPLE STILL GET MUMMIFIED?

It wasn't just the ancient Egyptians who were at it. Dr Russell Moul explores modern mummification.

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Is it always a negative thing? Rachael Funnell investigates.

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IFLScience Goes Nessie Hunting

This October, join IFLScience for spooky season as we don our investigative caps and take a trip to Scotland's infamous Loch Ness on the hunt for everybody's favorite cryptid (sorry, Bigfoot). We visited one of the most studied bodies of water in the world, home to the Loch Ness monster, to speak to scientists, experts, seekers, and non-believers to find out why this myth endures, what people think they're seeing vs what they're really seeing, whether we can create our own convincing "evidence", and what actual science is being carried out in this massive body of water. We also explore why people believe in hoaxes, how "Nessie" has changed over the decades, what cryptozoology is, and why some popular myths may actually be good for science. Look forward to a glut of articles, exclusive interviews, videos, a documentary, and even a special Halloween episode of *The Big Questions* podcast. Did our trip make us believers? You'll have to wait and find out.

World's Largest Hackathon

This month, you can join the largest annual global hackathon as NASA once again kicks off its International Space Apps Challenge on October 4-5. NASA is calling on a wide variety of people – all ages, backgrounds, and skill levels welcome – to get involved. Whether you're an astronomer, engineer, student, or artist, data is available for you to access to help address real-world challenges on Earth and in space set by NASA that range from astrophysics and space exploration to software development. Find all the info for registering, finding an event, and how to join in [here](#).



Five Meteor Showers

October 2025 offers stargazers a whopping five meteor showers, though some will be better than others. The Draconids peak around October 8, but a near-full Moon will limit visibility despite possible bursts of activity. The Southern Taurids follow, peaking on October 10, producing only a few meteors per hour, though bright fireballs are possible. The highlight comes with the Orionids, peaking on Oct 21-22 under a dark New Moon, with 15-20 swift meteors hourly. Toward late October, the Northern Taurids begin, peaking in November but visible from the end of October. Finally, the minor Kappa Ursae Majorids start around Oct 28, peaking in early November.

A Halloween Comet

The Solar System's newest interstellar visitor, Comet 3I/ATLAS, is expected to reach perihelion – its closest approach to the Sun – on Halloween at a distance of about 210 million kilometers (130 million miles) away. It will pass just inside Mars's orbit at about 1.4 astronomical units (the Earth-Sun distance) while remaining more than 1.5 AU from Earth, posing no threat to us but offering a rare observational opportunity for astronomers and amateur stargazers. 3I/ATLAS is the fastest comet ever seen, and at potentially 7.5 billion years old, the oldest too. Once it reaches perihelion, it will be behind the Sun from our point of view and won't be visible again until December.





Wildlife Photographer Of The Year

The world's most prestigious wildlife photography competition is back for its 61st year after a record-breaking 60,636 entries. Showcasing the best of the best across a wide range of categories, it never fails to stun. This year, the winners will be announced on October 14 and the exhibition will open to the public at the **Natural History Museum, London**, on October 17, where it will stay until July 2026. Can't make it to London? The exhibit tours internationally all year round. Don't forget to vote in the People's Choice Award and have your say (these are secretly IFLScience's favorite entries as they usually feature the **funniest pics!**).

Take A (Virtual) Trip To Antarctica

This October, the **British Antarctic Survey** (BAS) is inviting you to send your name on an adventure to the world's most remote continent. In a similar vein to sending your name to Mars, grab your **Ticket To Antarctica**, only with this, you actually get to follow along as a Twin Otter research plane flies thousands of kilometers to a remote research camp built on skis. Sign up and follow the journey with regular "airmail" updates, meet the pilots, and watch science being conducted from the sky. As the BAS says, who wouldn't want to go to the "coolest place on Earth"?

WHAT'S UP?



WORLD MIGRATORY BIRD DAY

Taking action on bird conservation and migration

Name: World Migratory Bird Day (WMBD)

Appearance: Wings and beaks aplenty

Location: Global

Hang on, hasn't there already been a WMBD this year?

Good spot! WMBD actually happens twice a year, and for good reason – it's designed to line up with seasonal migration patterns, when many birds move from the Northern to the Southern Hemisphere and vice versa. The first day was May 10, during the spring migration, and the next is on October 11, aligning with the fall migration.

Why focus on migratory birds in particular? Don't all birds need our help?

You're not wrong. It's not a great time for birds right now; according to the latest **State of The World's Birds** update, over 1,300 bird species are globally threatened. However, migratory birds are particularly vulnerable to the factors driving decline, including climate change and habitat loss.

How does WMBD help?

It's all about raising awareness for

the conservation of migratory birds and the habitats they live in. This can take lots of different forms, from educational workshops, photography exhibitions, and school fieldtrips through to nature reserve cleanups, birdwatching events, and even painting contests. These events often follow a theme, too; this year's is "Shared Spaces: Creating Bird-friendly Cities and Communities". To find out what events are happening in your area, check out WMBD's **event map**.

Besides attending events, how else can I get involved?

There are lots of different ways to get involved in the day, both on a community level and individually. You could, for example, petition your local representative to support bird-friendly urban planning, like minimizing construction in important bird habitats and reducing artificial light at night to prevent collisions.

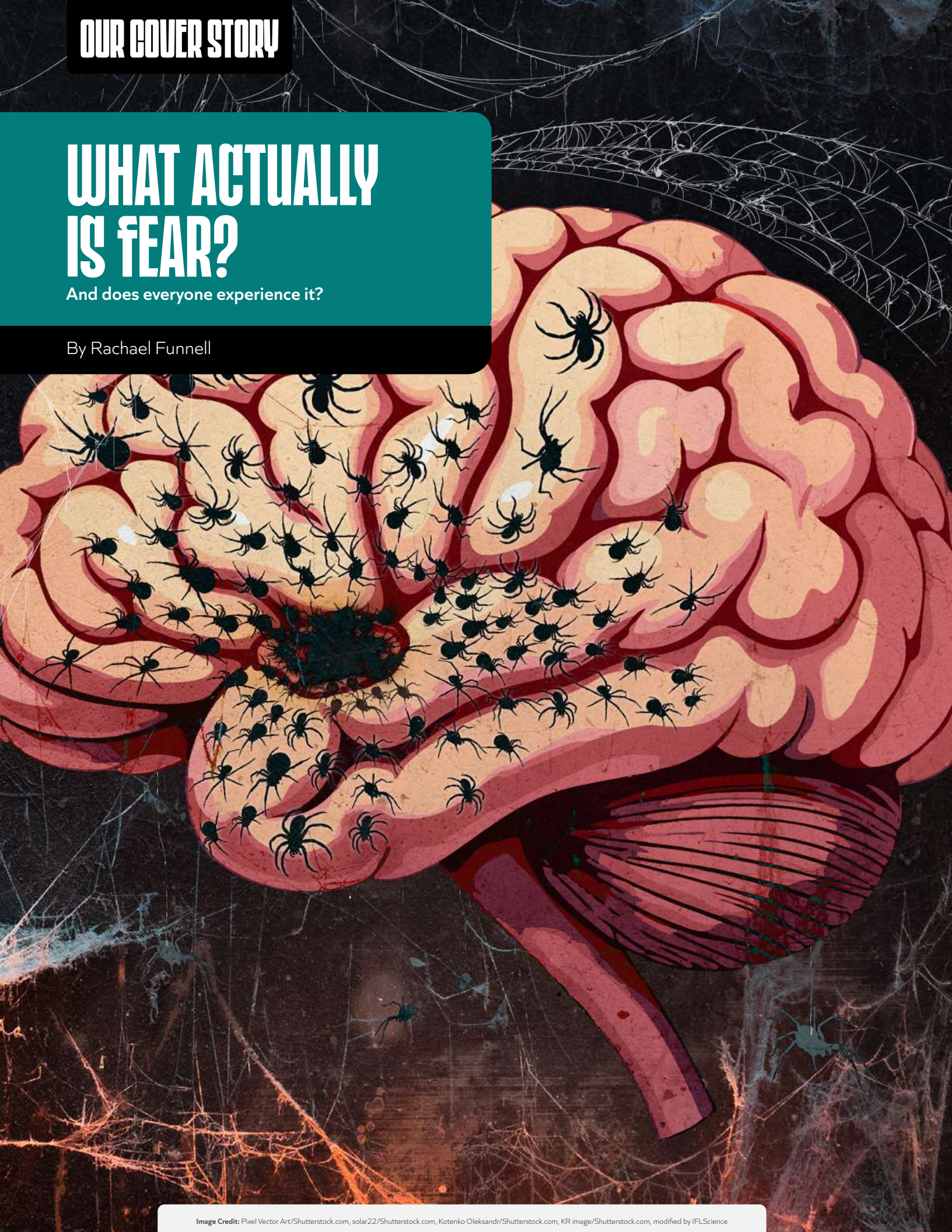
Even changes in your own backyard can make a difference, such as adding native plants that provide food and shelter for migratory birds, and avoiding pesticides while gardening. Storing any plastic waste properly so that birds can't eat or get tangled in it can help too, as well as keeping any cats out of the way.

OUR COVER STORY

WHAT ACTUALLY IS FEAR?

And does everyone experience it?

By Rachael Funnell



A jolt behind the sternum. Sweat. Palpitations. Stuttering breaths. Fear comes to us in many ways, but the overall feeling is a bad one. A sense of “Oh Christ, it’s right behind me, isn’t it?”

For some, it takes almost falling off a sheer cliff to feel **fear**. Others? Simply seeing a spider sends them into a tailspin, no matter how dinky or safe it is. It seems odd, really, for such a physical reaction to have triggers that can vary so wildly from person to person. It got me wondering about what’s actually happening inside our brains when we see something – frightening or otherwise – that causes us to feel fear. If fear has its roots in the brain, then does that mean a particular illness or injury might prevent someone from feeling it? And if so, what does it really mean to live fearlessly?

Fear lives here

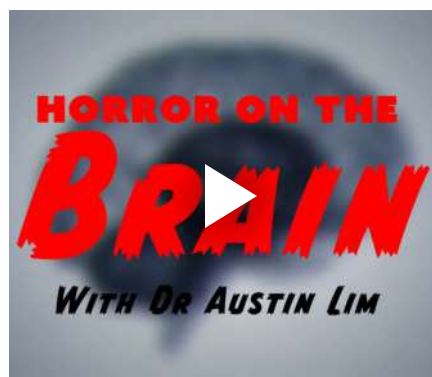
If you were to play a game of pin the fear in the brain, most would agree you’d do well to thumb that tack into the amygdala. We actually have two amygdalae, but – a bit like the **vagus nerve** – everyone’s just kind of agreed to refer to it in the singular.

"WHEN WE HEAR A WOODEN CREAK, SMELL IRON IN THE AIR, AND SEE A MASKED FIGURE EMERGE FROM THE SHADOWS, WE KNOW THAT SOMETHING SCARY IS ABOUT TO HAPPEN."

Named after the Greek for almond, amygdalo, they’re about the same size as their namesake and sit in the temporal lobe, just in front of the hippocampus. They’re also the frontrunners of a cascade of processes that are triggered when we see something that frightens us.

FEAR ISN'T JUST ABOUT FREAKING OUT, IT'S ABOUT PREPARING YOURSELF FOR WHAT EXPERIENCE (BE THAT THROUGH MOVIES OR FIRST-HAND ENCOUNTERS) HAS TAUGHT YOU MIGHT COME NEXT.

“The structure that is usually conceived of as being central to fear processing is the amygdala, especially the basolateral aspect,” neuroscientist **Dr Austin Lim** told IFLScience. “Signals from many of our sensory systems filter through networks in the thalamus then eventually converge on the amygdala. So, when we hear a wooden creak, smell iron in the air, and see a masked figure emerge from the shadows, we know that something scary is about to happen.”



Lim is no stranger to the neural underpinnings of fear, having written ***Horror On The Brain: The Neuroscience Behind Science Fiction***, which featured in IFLScience’s 2025 **CURIOUS Live**. Though our amygdalae may stare down fear when it comes to neurological processing, they don’t stand alone.

“Another key structure is the hypothalamus,” said Lim. “Some of the output signals from the amygdala communicate with the hypothalamus, which, through activating the pituitary gland, then signals for the rest of the

body to respond appropriately: get your heart pumping, your blood vessels dilating, and your respiration increasing to prepare to fight back or to get out.”

“But there are many other brain circuits that could be involved in different elements of fear. For example, one particularly interesting circuit runs through the periaqueductal gray matter, which is involved in pain reduction. This could be in anticipation of whatever horrors the masked being has planned.”

"SHE NEVER EXPERIENCED FEAR, BOTH IN LABORATORY CONDITIONS AND EVEN IN THE FACE OF A REAL-LIFE THREAT."

As you unpick the neurological mechanisms triggered by fear, you start to discover its value. Fear isn’t just about freaking out, it’s about preparing yourself for what experience (be that through movies or first-hand encounters) has taught you might come next, and without that foresight, life can get even more dangerous.

Feeling the fear

There is a very curious **case study** that taught us a lot about the origins of fear, and that’s the story of patient SM. We often throw around the phrase “live life fearlessly” a bit flippantly, but as patient SM demonstrated, losing that emotional response can complicate our response to genuinely dangerous situations.

“The most well-studied example of the involvement of brain structures and fear was a woman code-named ‘Patient SM’,” said Lim. “She was born with a rare condition that selectively destroyed her amygdala on both halves of her brain.”

“As a consequence of the disruption of these circuits, she never experienced fear, both in laboratory conditions and even in the face

of a real-life threat. One section of her case report was titled 'The Knife Incident'. She described being threatened by a stranger with a knife to her neck. She reported walking home after they let her go, then passing by the same location the next day."

IF THERE ARE ALL THESE SQUISHY BITS OF OUR THINK ORGAN DICTATING WHEN WE FEEL FEAR, IS THERE ANYTHING WE CAN DO TO CONTROL IT?

It's a reasonably agreed upon goal to learn from our experiences, so after encountering a situation as dangerous as The Knife Incident, most people would probably adapt their route home to avoid the place where the threat occurred. So, is fear crucial to learning? Quite possibly.

Fear's efficacy as a teaching tool is surely evident as you wander into the children's section of the library. After all, some of the most cursed stories are, in fact, fairytales. When did it become appropriate to tell your children about two kids being kidnapped and cooking a woman in the oven? When we realized it was a good and safe way to teach them about dangers out in the real world (soz, Hansel and Gretel).

Fearless or foolish?

Getting to go through life without fear might sound like a breeze, but as an adaptive response to potentially noxious stimuli, feeling fear is very important. Imagine trying to raise a child who feels nothing when the horse they run towards rears up on its hind legs. Ordinarily, the neighing (and suddenly feeling like a pea) would be enough to send most kids in a U-turn, running back to their parents with some hard-won tears in their eyes. A child that didn't feel fear could well just stand there.

It's reminiscent of the downsides of congenital insensitivity to pain, a very rare but extremely serious disorder in which a person can't feel pain. Pain is a great motivator. It stops us touching **fire** twice and acts as a warning signal when something has gone wrong inside our bodies. Without it, it's hard to navigate the world safely as we're not getting this very useful – albeit rather uncomfortable – feedback that sitting on this squishy sofa is a good idea, and parking yourself on that big metal spike is a bad one.

Overcoming fear

So, if there are all these squishy bits of our think organ dictating when we feel fear, is there anything we can do to control it? As we've looked at, fear can be a good thing, but when it's being triggered by everyday stimuli, it can get in the way of your quality of life.

The good news is that there are proven methods to lessen your experience of fear, and alter the threshold that needs to be met in order to feel it. A recent **study** has shown how cognitive behavioral therapy can lead to measurable changes in the brain, supporting its efficacy at changing the way we read situations and respond to them. This can center around feelings like fear and anxiety and help us to better control our physical and emotional response to things that – when we take a beat and a breath – we can realize aren't really a threat to us.

In fact, once you get to know fear a little better, there can be some aspects to it that are actually quite thrilling (in a good way).

Enjoying fear

Even if you're not a fan of horror yourself, chances are you've met someone who is. Liking things that seem like they really ought to be scary is actually very common, if not nearing the norm. The nature of the scary things we enjoy might vary – from **visiting haunted houses** or kicking back with a true crime podcast – but it all centers around the same idea: that figuring things out through fear can be fun, too.

So, in the spirit of our continued education, who's up for watching *Halloween*? 🌟



SURVIVAL OF THE CLOSEST

Acanthocoris scaber nymphs enhance their protection against predators by clustering together on the underside of a leaf. Those amber drops are their eggs, and now that they've hatched, this grouping behavior will help them to stay alive as they extract nutrients and water from the leaf epidermis. Snapped by Sritam Kumar Sethy, a student at Berhampur University, it won best in category for "Collective and Social Behaviour" in the 2025 joint BMC Ecology And Evolution and BMC Zoology Image Competition.



WHICH ANIMALS HAVE THE WORST TABLE MANNERS?

The winner may surprise you.

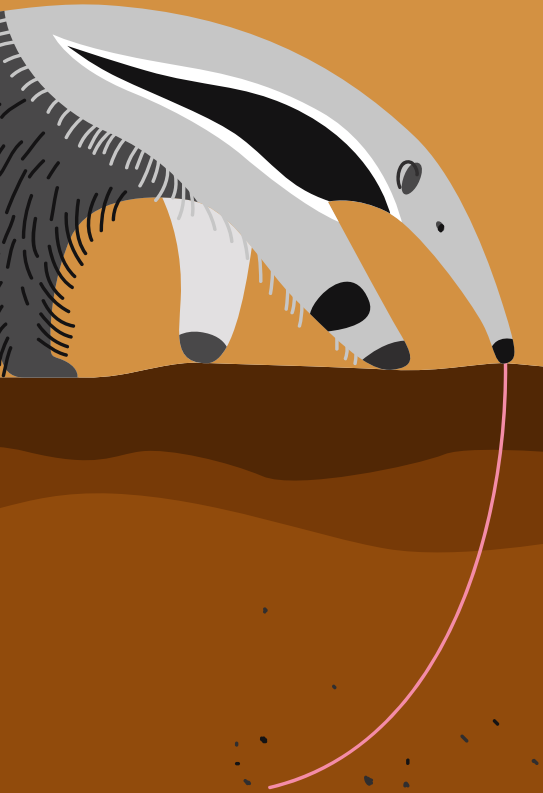
By Rachael Funnell

Imagine yourself in a restaurant like no other: at the table beside you, two owls are on a date. There's an anteater dining solo over in the corner, and a family of leeches sitting around a table just behind you. There's a lot on the menu, but some of the dining etiquette might just put you off your food.

This is the imaginary scenario we put to Chester Zoo's Assistant Manager for Visitor Engagement, **Ashleigh Marshall**, when we invited her to discuss: Which animal has the worst table manners? Of course, animals have no need for etiquette, and they have all evolved these feeding strategies for a reason, but indulge us as we get a bit silver service about it all. There's some seriously questionable eating going on in the animal kingdom.

I heard rabbits eat poop. What's with that?

AM: Yeah, eating poo in the animal kingdom is very normal for a lot of species. That includes rabbits and most rodents. Even things like the capybara here at the zoo will do it, and it's just because of the way their digestive system works.



They don't have the same digestive system as us, which means that actually it's beneficial for them to essentially eat their food twice to make sure that they've got all of the nutrients out of it. It's very common in rodents, and there are other animals that will do it as well.

Things like elephants will actually eat their mother's poo, because they can get lots of good bacteria from it, and it's really common in primates. I'm sure if you've been to the zoo, you've probably seen a chimp playing with its own poo.

Lovely. And the sick birds?

AM: This, again, can be for a number of different reasons. It depends entirely on the species of bird and what they're doing at the time. The one that we probably all know most about is obviously them feeding their babies.

Birds have something called a crop, which other animals don't. It's between their oesophagus and their stomach, and they can store food and partially digest it. That's what they regurgitate back to their young.

Some birds of prey actually produce what we call a pellet, and it literally looks like a solid pellet. Sometimes people think it might be poo, but it's not. It has all sorts of stuff in it. It's just the things they can't digest, like bones and fur and feathers. They'll just regurgitate that back up, because it's not going to go through their digestive system.

There are also some birds that use it as a courtship ritual, which I'm not sure is something that I would like. Apparently, it works for female birds. The males will regurgitate food for them and basically show that they will be able to provide for their chicks in the future. And that's a sign of a good male, apparently.

Any polite eaters?

AM: Our lovely little tree kangaroos will happily sit and munch on a carrot stick. You wouldn't mind sitting next to them at dinner. The one that has to win it is probably our butterflies. They will kind of suck up nectar or fruit or whatever it is they might be eating. So, literally, no mess left behind with a butterfly, and they eat very nice fruit food, like oranges and things, so you're not going to be offended about what they're eating either.

Who has the worst table manners?

AM: I've voted for these guys, mostly because they're my favourite: giant anteaters. Giant anteaters in the wild eat like 30,000 ants and termites a day. In the zoo, they're one of the ones that we have to try a bit harder to meet their nutritional needs, because providing 30,000 ants isn't easy.

So, they have essentially what looks a bit like sand. It's lots of crushed up bugs, and you mix it in with water, and you provide it to them in a bowl. It's just an easy way of getting lots of insects into their body, and then they do have live insects as well, but they go absolutely mad for this mushy, goopy sand mixture. It ends up all over their face and all over their claws, and sometimes halfway all over the floor. So, yeah. Much as I love them, they do not have the best table manners.

Do any of your animals use their own kind of cutlery?

AM: There are quite a lot of animals that use tools. Birds or primates tend to be the more common examples. Chimpanzees are the first ones that come to mind. They're obviously incredibly intelligent animals, and our group here regularly use tools. There are little holes in the wall as part of their indoor house. The keepers fill those with food, nice little sweet treats, and they won't provide them with anything to get in. They have to go outside to this little island, which has got lots of trees and shrubs. They'll rush out there looking for the best branch, strip its leaves off, and run back inside. They definitely know how to use a tool, that's for sure. 🌟



SCIENCE FACT OR FICTION:

DO PEOPLE STILL GET MUMMIFIED?

Thought mummification was just for the ancient Egyptians? Think again, as Dr Russell Moul discovers.





There is a small church in the Upper Austrian municipality of St. Thomas am Blasenstein that, despite its rather ordinary appearance, holds something pretty unusual. Within the church's crypt is a glass case where a long-dead body lies with its arms crossed and its head resting on a burgundy pillow. The individual is believed to be a local parish vicar, Franz Xaver Sidler von Rosenegg, who died in the mid- to late 1700s – but what's remarkable about his remains is that they are completely **mummified**, the outcome of a deliberate effort, known as anthropogenic mummification, to preserve his body.

I'm willing to bet that when you think of mummies, your mind instantly goes to Ancient Egypt rather than the bucolic hills of northern Austria. You may consider examples of the ruling elite who were embalmed and entombed through lavish ritual procedures developed across generations, with the chief aim of preserving and preparing the body for the afterlife. But Sidler's body was not treated with such dynastic pomp. Instead, his embalming was much cruder, involving his abdomen being

filled with wood chips, dry fabric, and twigs used to absorb the gooey bits inside him. Rather than being opened up for this procedure, whoever stuffed this vicar decided to do so via the rectum, which may appear to be unsophisticated when compared to the complex rituals we associate with Egyptian mummification, but nevertheless achieved its purpose.

But why was Sidler embalmed like this? According to **recent research**, the vicar may have been preserved for either transportation or for an elongated laying-out of the dead procedure but somehow got left in this crypt. We know that there was a long tradition of eviscerating the bodies of important dead people who were being transported long distances for burial, as removing their organs helped slow down the body's decay. Maybe that is the case here, or maybe there were other reasons for this embalming that have been lost to time. We likely won't know for sure, but Sidler's remains illustrate two important points: firstly, that mummification has a much broader history than is often supposed, and secondly,

that the motivations for it also varied across time and place. In fact, some may even argue that the desire for it is very much alive in our society today.

Accidental mummification

Death is said to be the great leveler; no matter who you are, scientist, accountant, pope, president, or pauper, you'll experience it in the end. However, that's where the universality of this experience stops. After you die, your body sets out on its own journey of transformation that is very much tied to the conditions it finds itself in.

Generally speaking, **after death**, our body temperature falls as we develop lividity (a characteristic discoloration of the skin as our blood settles in the lower parts of our bodies) and then experience rigor mortis (the stiffening of muscles after death). After this, decomposition sets in due to putrefaction and autolysis (where cells or tissues are destroyed by their own enzymes).

In some rare instances, decomposition can be significantly slowed down in environments where microbial decay is minimal. In these cases, the soft tissues that would usually disappear are allowed to persist long after the person originally died, though the body loses around 60 to 70 percent of its weight. There are many examples of this occurring throughout history. One of the oldest examples is **Ötzi**, the famous 5,300-year-old Neolithic "Iceman" whose body was discovered frozen in the Tyrolean Alps in the 1990s. This incredibly unique individual was likely killed by an arrow wound and then his body desiccated over the centuries while trapped under glacial ice.

Within the last century, another form of mummy has been discovered in the peat bogs of Scandinavia, Germany, Britain, and Ireland. These **bog bodies**, some of which are around 10,000 years old (like the Koelbjerg Man), have been preserved by the cold, anaerobic, and acidic conditions of peat bogs. Here, the presence of a sugar known as sphagnum, which is abundant in bogs, tans the skin, turning it a dark, leathery brown. To date, 2,000 Iron Age bog bodies have been recovered from across Northern Europe, many of which are believed to be the victims of ritualistic sacrifice as their bodies exhibit signs of violence.

Then there are the strange and moving “**saltmen**” of Chehrābād, in northwest Iran. Around 2,500 years ago, multiple miners were killed when the salt mine they were working in collapsed around them. Their bodies, preserved by the high salt content of the mine, which dehydrated their tissues and prevented decomposition, have provided archaeologists with a wealth of information not only about the terrifying circumstances surrounding their deaths, but also the lives they lived. For instance, the body of a 16-year-old boy was frozen in its final moments, his hands raised to protect himself from something falling on him. In another case, the intestines of one of the victims contained substantial amounts of tapeworm eggs, making it the oldest known example of intestinal parasites in Iranian history.

These are just a few examples of historical remains that were mummified by chance. It could be argued that the sacrificial victims who became bog bodies were deliberately placed

into the waters that would preserve them, but it is unlikely that those who did so knew this would be the outcome. But accidental mummification is not limited to unfortunate events of the distant past; the process of environmental mummification still **occurs** today in urban settings, albeit rarely.

Anthropogenic mummification: preservation or preparation?

If you are lucky enough to encounter the Änga tribe of Papua New Guinea, you might be struck by a few unique aspects of their culture. Firstly, these Indigenous people live in the remote, high mountainous region of the Morobe province, far away from most other people. Secondly, they practice an unusual form of ritualized corpse preservation that essentially creates mummies by smoking them on open fires.

Unlike the ancient Egyptians who mummified their dead through a complex process of removing the organs, drying the tissues with

natron, and wrapping the body in linen, the Änga preserve their dead in a seated or fetal position as they are slowly smoked over three months. This painstaking ritual is performed by a group of dedicated tribespeople who are required to stay with the body throughout its preparation. As the body is smoked, it bloats. Those attending it then pierce the flesh with sticks to release the fluids inside. Later, they open the anus wider so that the organs can fall out, which are then collected before they can touch the ground, which is considered taboo.

Mummification was once prevalent across the South Pacific, especially in the 19th and 20th centuries, but the arrival of Christianity and British and Australian colonial influences stopped it. But for the Änga tribe, this practice remains an important ceremonial tradition, allowing them to stay connected with their elders, while also allowing the deceased a way to watch over their loved ones. In this sense, the Änga’s mummies differ from those created by



THE FUTURE OF **IFL**SCIENCE

the ancient Egyptians, who wanted to preserve their flesh as part of their journey into the afterlife, but it still represents a belief that the body can be prepared in a way that allows some sort of posthumous existence.

This type of belief is common within many cultures that have performed mummification rites, but sometimes this form of body preservation is not designed as a preparatory step towards an afterlife, but a demonstration that the deceased achieved a special status in life, be it spiritual or otherwise. For instance, some Buddhist monks in Japan, particularly in Yamagata Prefecture, undertook a level of ascetic practice that led to self-mummification. This turned them into a *sokushinbutsu*, a “living” or “instant” Buddha, someone who is said to have achieved a state of deep meditation that straddles the line between life and death.

The steps needed to reach this state of enlightenment varied between monks within this esoteric tradition, but it generally involved willingly entering seclusion and abstaining from customary diets. Then the monk would enclose themselves in a tomb or grave and chant until they passed away. In some cases, their bodies would remain in situ for a number of years before being exhumed and returned to their temple, where they would be further preserved with charcoal and incense smoke, while others were removed more quickly. Regardless, what they left behind is a mummified body that is meant to demonstrate their level of spiritual achievement.

It is currently unknown when *sokushinbutsu* began, as its origins are bound up with history and mythology, but the practice continued until the late 19th century, when it was banned by the Japanese government.

Natural bodily decay has been problematic for members of other religions, too. Throughout the medieval and early modern period, Catholic adherents struggled with the realities of bodily rot. This was especially the case for individuals who were believed to be saintly or worthy of special commemoration. There is a long history of body preservation and intentional **mummification** within the Church, persisting as late as the 1980s. For one thing, if the body appears fresh, despite having been dead for a

long time, it could be interpreted as a sign of the divine. In some instances, those who did not seem to be decaying normally were made saints for this very reason (so-called **Incorruptibles**).

But religious mummification is not a thing of the past. In 1975, Claude Corky Nowell, an American businessman, claimed to encounter intelligent beings called the Summa Individuals. He soon changed his name to Summum Bonum Amon Ra and founded the **Summum** religion, which blends New Age mysticism with Christian Gnosticism, science fiction, and older traditions, such as Egyptian polytheism. And of course, adherents believe in mummification as a way for the soul to travel to the afterlife while also preserving it for the day when science can clone it. In fact, if you feel moved by this prospect, even if you’re not a Summum believer, you can pay to have your body mummified by the group.

Science offers new frontiers for an old fear

The promises made by modern groups like the Summum raise an interesting point that is rarely considered. That is, the connection between scientific and technological advancements and older views about body preservation. Take, for example, the enthusiasm among some people for cryonics. On the surface, cryonics sounds like something from science fiction, what with its technological and futuristic veneer, but scratch its surface and you see many of the old ideals and fears that motivated ritualistic mummification in the past.

Cryonics is the practice where a person’s body is deep-cooled with liquid nitrogen so that their tissues can be preserved for long periods of time with the hope of future revival. At least, that is the aim. In reality, it is, as **Simon Woods**, Emeritus Professor of Bioethics at Newcastle University and Former PEALS Executive Director, asserted in a **Conversation** piece, “a form of cold mummification”. Those who pay for it have usually bought into the possibility of having their bodies preserved until an imagined future arrives where their condition can be reversed, any illnesses can be cured, and they live a happier, fuller existence without the fear of death. Sound familiar?

“I think there’s something about this deeply seated human concern about mortality,” Woods told IFLScience. “It’s not a new theme, but it’s

a theme that’s never going to go away from shaping human culture that the very shape of a human life is dictated by the very fact of mortality.

“If you look at the culture of many religions, many, if not all, are premised upon the idea that there is a future form of life that will be eternal and better than the one that’s been endured on this earth.”

Of course, it is not easy to assess the extent to which this is a motivating factor for everyone who wishes to be cryonically preserved, but it certainly seems to have infiltrated the PR surrounding it. For instance, **Tomorrow.bio**, a company advocating for cryonics, literally has “For those who defy the end” as a banner phrase on their website. The website also explains that their cryogenic procedure “puts a human into complete biological pause after their legal death”. The language here is slippery, where the use of “biological pause” and “legal death” implies that death hasn’t really happened, and that they can stop decay.

If one were to dress the cryonic pod – where the cold mummy of tomorrow is stored – with an Egyptian sarcophagus cover, how could we distinguish between old practices and beliefs and this new techno-mythology? This is not to say that one day cryonic technologies may reach a point where they can deliver on their promises, however. It is more a reminder that technological sophistication does not necessarily mean humans have developed beyond their oldest fears.

There are, of course, many other philosophical and ethical issues posed by cryonics, especially concerning identity and personhood, as well as the issue of who has responsibility for these time travelers if they can be “**resurrected**” in the future. As Wood pointed out, they would technically be time “immigrants”, trusting that future generations will have the time, resources, and willingness to support them (which is a particularly sensitive issue given that Western societies are currently debating how to deal with living and present people). But this is all beside the point. The development of cryonics really is a powerful reminder that humans will always seek ways to preserve their bodies, whether that is for posterity or preparation for something yet to come. 🌱

(UGLY, UGLY,) VAMPIRES'



The late Professor Richard Fortey was a devoted field mycologist for all his life. In this atmospheric first-person account from *Close Encounters Of The Fungal Kind: In Pursuit Of Remarkable Mushrooms*, he leads us into Australia's rainforests in search of what he declared to be "the ugliest fungus".

We were off the path, picking our way carefully between logs and fallen blocks of weathered rock partly covered by moss and litter. It was an invitation to twist an ankle, or fall into a dark and hidden hole. Caroline had several scars to prove it. In front of us, arising from the ground was what presented as a slightly glistening turd, all greeny-brown and fully life-size. For a few seconds we were lost for words apart from an involuntary "ugh!" or something similar. When a kind of ghastly fascination took over, it was clear that the upper part of the "thing" was densely pockmarked while the lower part was smoother and was some kind of stem (or stipe). This was obviously a fungus fruit body, and the stipe evidently emerged from the ground from something hidden below. It

seemed a reasonable guess that this weird mycological monster was up to no good, so the next obligation was to investigate what happened if we followed that stipe down into the ground. This involved some removal of rocks and not a little scrabbling at the subsoil, and below the surface the stipe became almost white, more like a dead man's finger, with a texture to match. It continued for quite a length – actually, rather more than a finger length. It seemed to turn a corner into something segmented, almost white, and as long as a chipolata sausage, something that parted rather easily from the soil. In one of those moments that on the stage would be called a *coup de théâtre*, we recognised a "face" on one end of the segmented sausage. It was a huge caterpillar!

At this moment everything fell into place. I was taken back to the New Forest a decade earlier, when I had been shown some much smaller, bright scarlet cylinders arising from the soil; they were the fruit bodies of parasites of buried caterpillars – the Scarlet Caterpillar Club, *Cordyceps militaris*. Our find must have been a much scaled-up, and much uglier version of a similarly parasitic fungus. It was without doubt an asco – and the roughened surface of the fruit body was where the spores emerged from the mouths of numerous ranks of small flasks (*perithecia*). A search through reference books quite quickly came up with a name for a species that was first collected in Tasmania in the mid-19th century: *Cordyceps gunnii*. One wonders whether Mr Gunn (the discoverer) would have felt honoured to have his name donated for eternity to an

ugly parasite. In a strange way just putting a name on the fungus diminished our initial revulsion at its weirdness and unsightliness. We could now visualise the spores of a vampire fungus germinating on the body of a healthy caterpillar, its mycelium feeding off the tissues of its host even as the head end continued to browse on decaying tree roots to sustain its lethal interloper. The caterpillar body amassed the fungal tissue. Then came the *coup de grâce* as the caterpillar finally became the entomo-pathogenic fungus, when the developing fruit body sought the air. At that point the spoils of its voracity were deployed in spores spreading its lethal infection to other hosts.

We subsequently found another example that was indeed dusted with white spores. The favoured prey, the entomological equivalent of the bashful maiden in the *Dracula* movies, is the larva of a substantial insect known commonly as the Ghost Moth, the many species of which support a villains' gallery of specialised *Cordyceps* and its relatives. They are scattered over the world, but perhaps the sinister appearance of *gunnii* is the best match for its grisly lifestyle. 🍄

Close Encounters Of The Fungal Kind: In Pursuit Of Remarkable Mushrooms is published by Pegasus Books and is out now.

WHERE ON EARTH

Swimming is great, but you know what it's been missing? The feeling of being sandwiched between two tectonic plates. Sucks, right? But we have good news! You too can dive in the crystal-clear waters that separate one tectonic plate from another, you've just got to get yourself to Iceland.

SWIM BETWEEN TECTONIC PLATES



In Iceland's Thingvellir National Park, you can take a swim unlike any other on Earth. You see, this part of the world has a unique fissure that opened in 1789 when the planet cracked open just a little bit during a series of earthquakes. The seismic event saw two tectonic plates shuffle away from one another, creating one hell of a swimming pool.

It's known as the Silfra Fissure, and it's considered the only place on Earth where you can comfortably dive or snorkel between tectonic plates. Thingvellir is connected to the Mid-Atlantic ridge, a volcanic fissure belt that snakes from the Arctic Ocean south along the Atlantic. The North American plate sits on one side, and the Eurasian plate sits on the other.

There's near-constant activity along the plate boundaries themselves, but it's mild, only shifting about 2 centimeters (0.8 inches) each year. Head into the rift zones, however, and it's a very different story. These regions experience long periods of calm where tensional stress builds up, until releasing it all in a burst of seismic activity. For Thingvellir, the last time this happened was that fateful spring in 1789.

The Silfra Fissure, on the rim of Thingvellir Lake, was created during that event, but it wasn't the only fissure to appear. It was, however, the only fissure to cut into an underground spring.

Water from the Langjökull glacier filters through volcanic rock underground before reaching the spring that feeds into the Silfra Fissure; a geological process that makes swimming here all the more remarkable, because the water that fills the fissure is incredibly pure and gin-clear.

You can see for over 100 meters (328 feet) when swimming in the fissure. It's a chilly dip at a teeth-chattering 2-4°C (36-39°F) year-round, but it never freezes over. The constant influx of fresh glacial meltwater stops it reaching zero, so you're free to cannonball into the crust year-round.

It's an incredibly beautiful place, but it's tough. Swimmers report that the water is cold enough to sting whatever isn't wrapped in a drysuit, but there are tougher species that thrive in Silfra.

Most of the life in Silfra is too small to be seen with the naked eye. Largely, you're dealing with microinvertebrates like the groundwater amphipod crustacean *Crymastygius thingvallensis*. It's also home to Arctic char (*Salvelinus alpinus*), but they prefer to lurk in the darker recesses of the fissure, so if you see one, count yourself lucky! ✨

EXPLORE MORBIDLY CURIOUS

An 18+ book club

Love science? History? Plagues? And a sprinkling of witches? This alternative book club brings a lot of spooky season fuel. – **Available to join now.**

WATCH

TRON: ARES

Film from Disney+

Humankind encounters its first AI being in this feature film starring Gillian Anderson and Jeff Bridges. Follow “Ares”, a highly sophisticated program as it’s sent on a mission into the real world... and yes, it’s dangerous. – **Available October 10.**



LISTEN

THE BIG QUESTIONS

Podcast from IFLScience

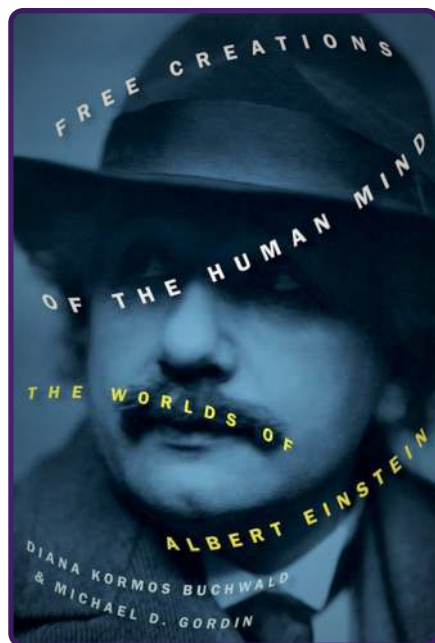
Listen up, folks. IFLScience’s *The Big Questions* is delivering two scientific explorations to your headphones this month. On October 9, we ask: What Is Time And How Do We Measure It?, as senior space correspondent Dr Alfredo Carpineti visits the home of Greenwich Mean Time. “Time is something that is fundamental to our lives and yet is completely mysterious,” he said. “We tackle this crucial question and the history of timekeeping in this episode recorded at the Royal Observatory Greenwich.” Then, on October 23, Dr Russell Moul investigates: Why Do People Believe In The Paranormal? – **Available October 9 and 23.**

DISCOVER

FREE CREATIONS OF THE HUMAN MIND: THE WORLDS OF ALBERT EINSTEIN

Book by Diana Kormos Buchwald
and Michael D Gordin

Many were surprised to see Einstein pop up in *Oppenheimer*, and there’s plenty more about this scientist, humanist, and global citizen that gets left out of the conversation. Drawing from deep archival research, the book disentangles the man behind the tongue-out photo, revealing how Einstein’s scientific genius intertwined with his political and ethical views during the turbulent events of the 20th century. – **Available now.**



EXPLORE

THE STORY OF CO₂ IS THE STORY OF EVERYTHING

Book by Peter Brannen

We often talk about carbon dioxide as a bad thing, but it’s been around long before we came into the picture. How has this maligned gas shaped Earth’s climate, life, and human history? Brannen reveals CO₂ as both life-giver and potential destroyer, urging us to understand its deep influence and grasp the stakes of today’s climate crisis. – **Available now.**

PLAY

ISOPOD: A WEBBED SPIN-OFF

Game from Sbug Games

Lose yourself in this roly poly adventure game through the wonderful world of Webbed. It’s you vs The Fire Ant Conglomerate, so ball up, it’s wrecking ball time. – **Available October 21.**

LISTEN

WE HAVE QUESTIONS

Podcast from IFLScience

Burying Scientists Alive In The Snow? IFLScience catches up with Polar Bears International to discuss what constitutes a day at work. – **Available Oct 20.**

Let's Go Nessie Hunting



Videographer Dom, Managing Editor Katy, writers and presenters Eleanor and Russell

FOR ALL OUR
IFLSCIENCE
INVESTIGATES NESSIE
CONTENT VISIT



THE VAULT



FIND THE
DOCUMENTARY
ON OUR YOUTUBE
CHANNEL

What do you get when you send four skeptical IFLScience employees to Scotland to hunt for the Loch Ness Monster? Eleanor Higgs finds out.

The journey began in Inverness with a car packed and all the Nessie-hunting team assembled. Once we'd managed to reverse out of our car parking space (harder than it sounds), we were on our way to the Nessie capital of Scotland: the very picturesque village of Drumnadrochit.

After some strategizing over lunch at a local deli, we went to the Loch Ness Centre to get the lay of the land. Then, armed with a map and a B-roll shot list, we drove down to Fort Augustus, the site of one of the original "Loch Ness Monster sightings".

One of the most famous (or should I say, infamous) images to come out of the Loch Ness story is the "**Surgeon's Photo**", which depicts only a small head rising from the water. It caused quite a stir when it was first released to the public in 1934. However, it was later revealed to be a fake, created using a child's toy boat.

Being dedicated to our craft, and our chief Nessie hunter Russell's vision for the documentary, it seemed only apt to recreate our own version of the Surgeon's Photo – complete with a toy boat molded with plasticine to look like a black serpent's head rising from the water. This was perhaps easier said than done, we realized, as Russell clambered into Loch Ness and attempted to float his own Loch Ness Monster.

There were two main obstacles to this plan: the rocks were very slippery, and the model was decidedly unstable. However, by pushing small pebbles directly into the plasticine and adopting a Gollum-like crouching position, Russell successfully managed to float the fake Nessie on Loch Ness, just in time for Dom, our videographer, to film a few short clips (much to the amusement of the kayaking tourists who came floating past at just the right time).

Day two started bright and clear, and what better time to jump aboard the Deepscan Cruise and interview Steve, the skipper. Everyone we spoke to for the documentary had something to say about the Loch Ness Monster, whether they personally believed something was hiding in the waters of Loch Ness, had seen something they couldn't explain, or – as in Steve's case – even filmed a creature in the deep.

As to whether our trip to the Highlands has led us to change our skeptical beliefs? You'll just have to watch the doc to find out. 🌟

SPOOKY SEASON WITH THE VAULT

Throughout the month of October, things will be getting spooky over in **The Vault** – IFLScience’s exclusive, subscriber-only cache of the strangest, darkest science stories. We explore the weird and wonderful world of cryptids and even take our own trip to Loch Ness to get to the bottom of the infamous monster myth.

4 INTERNATIONAL OBSERVE THE MOON NIGHT

Join NASA on October 4 for its annual Observe The Moon Night. It’s a chance to learn about lunar science and take part in your own celestial observations. You can find events to get involved with [here](#).

4 - 10 WORLD SPACE WEEK

This year, World Space Week will focus on the importance of sustainable practices in space exploration and habitation with its theme “Living in Space”.



30 HALLOWEEN TBQS PODCAST SPECIAL!

Join us for our Halloween special of **The Big Questions** as IFLScience takes a trip to Loch Ness on the hunt for everyone’s favorite cryptid. What did we find? You’ll have to tune in.



23 MOLE DAY

Not for animal lovers but chemistry nerds, Mole Day is an informal holiday observed by chemistry enthusiasts each year on October 23, from 6:02 am to 6:02 pm. The timing (6:02 10/23) reflects Avogadro’s constant – approximately 6.02×10^{23} – which represents the number of particles (atoms or molecules) in one mole (mol) of substance, one of the seven base SI units.

20 NEW WHQS PODCAST EP!

Find out why some scientists are burying themselves alive in the snow in October’s offering of **We Have Questions**.



18 INTERNATIONAL ARCHAEOLOGY DAY



12-18 EARTH SCIENCE WEEK

2025 OCTOBER

It’s spooky season, and we’re celebrating in style with a dedicated cryptid month over in The Vault. There’s also a plethora of podcasts, a supermoon, and plenty more to look forward to.

7 SUPERMOON

There will be three consecutive supermoons this year, the first of which will take place on October 7, followed by one on November 5 and another on December 4. Keep your eyes peeled for a Moon that looks slightly larger than usual at around 3:48 am UTC.

8 ADA LOVELACE DAY



10 WORLD MENTAL HEALTH DAY

World Mental Health Day is a chance to talk about mental health and how, together, we can help improve it.

ARE YOU DRAWN TO **THE DARKER** OR **LIGHTER** SIDE OF SCIENCE?

Choose how you end each issue. For those who prefer the darker side, Holly Large explores a brand-new game that sees players solve crimes using bugs. If you like your science lighter, discover why there's no need for fancy restaurants to have a successful first date.



EXPLORE YOUR SIDE ON FACEBOOK

INSECT DETECTIVES

If you've ever fancied yourself as a regular Jack Hodgins (*Bones* fans unite), then we come bearing good news – with the help of a unique course that sees students learn through an alternate reality game, you've now got the chance to dip your toes into the world of **forensic entomology**.

For those who are not familiar, forensic entomology is a type of applied science in which insects are studied to provide evidence in legal investigations. TV programs get something right in that this can be used to investigate murders, as the appearance of certain insects can help in determining time of death, but it's used in all other kinds of contexts, too.

"Forensic entomology plays a bigger role than people realize – not just in homicides, but in civil lawsuits, neglect cases and even food contamination," said Erin Bauer, a graduate lecturer in entomology at the University of Nebraska–Lincoln, in a **statement**.

Bauer is the brains behind *The Death of Dannie Bee*, the interactive game course she's developed as part of her PhD,

looking into the outcomes of game-based learning.

"It's not like the television show 'CSI,'" said Bauer. "But insects – like maggots or fly specks – can offer crucial clues about a body's location and time of death. This class introduces that methodology to the students."

In the game, students join a fictional detective and forensic entomologists in investigating the death of the titular Dannie Bee and two others, all of whom are suspected to have died under shady circumstances.

In a series of activities that revolve around real-life forensic entomology methods, such as analyzing maggots and collecting insect fragments, the students are tasked with finding out the time, location, and cause of the deaths.

"This course shows students how insects can tell a story – about where a body's been, how long it's been there or even whether evidence has been moved," said Bauer. "It's about piecing together a puzzle using biology, and that kind of analytical thinking is valuable far beyond the classroom."

The **course** is open to anybody and allows students to work at their own pace, which is ideal if you need to squish it in around other commitments. It's running all the way up until December 16, so you've got plenty of time to don your virtual gloves and get investigating.

PEOPLE, NOT PLACES

Fretting over a first date? You're probably not the only one. There's a lot to think about: what to wear, what to say, and crucially, where to have it. Except, actually, location might not be that important after all. If you've not got the budget for a fancy restaurant, worry not – science says it's about the people, not the place.

To reach this conclusion, researchers from the University of Georgia randomly paired up over 200 strangers, and with discussion prompts in hand, sent them off on first dates in two different locations. One was dubbed "appealing": this was a room with a comfy couch and chairs, plants, artwork, nice smells, and of course, what kind of first date room could be complete without some sexy, sexy dimmed lighting?

Well, the second date room certainly didn't have all that. It was a cold, cramped office space, with white cinderblock walls, a wooden table and chairs, and the ultimate sin – bright, overhead fluorescent lighting. No wonder it was called the "unappealing" location.

We'd argue neither is a typical place to have a date – going on a date for science isn't typical either, but there you go – but as the researchers found out in their **study**, that doesn't seem to matter.

After going on the dates, participants were asked to report their enjoyment of the date, how much they revealed about themselves, how responsive their date partner was, how close they felt to them, and their romantic interest in them. They were also asked about the setting of their date – although they didn't know why they were asked that.

The researchers found that, regardless of which setting they were in, people reported similar levels of closeness and romantic interest.

"I think the reason that we didn't find differences between these settings is because of the meaningful conversations that were happening in both spaces," corresponding author Daisi Brand told **UGAToday**. "Participants reported knowing that they weren't in an appealing setting, but they still felt close or romantically attracted to the other person."

So don't worry about whether your first date is at a Michelin-starred restaurant or a dingy café – focus on the person in front of you instead.

"You don't need a moonlit cafe or magic backdrop to hit it off," said study adviser Richard Slatcher. "A sincere conversation can matter more than the setting."



The Darker Side of Science



THE LIGHTER SIDE OF SCIENCE