

it wasn't for his calcaneus. As a young man, he received a Vietnam War draft deferment due to a diagnosis of bone spurs in his heel. Plantar calcaneal spurs—bony growths on the underside of the calcaneus—are common, affecting 11–21 percent of young to middle-aged people. They can be debilitating, causing heel pain, though about 20 percent of calcaneal spurs don't cause symptoms.

A 2015 letter supposedly from Trump's personal physician said he would be the healthiest person ever elected president. Health-wise, heel spurs are, it seems, Trump's Achilles' heel.

Canal of Schlemm (scleral venous sinus)

How body snatching was a grave anatomical problem

Grave robbing demands a stiff sentence. Digging up a fresh corpse and stealing it for anatomical dissection is a heinous crime. So, the fortnight Friedrich Schlemm spent in the slammer in 1816 seems a touch lenient. What's more, the German doctor's sentence had been halved, after he'd pled for clemency.

Schlemm, who'd go on to discover the canal named after him that drains nutrient-supplying fluid from the front of the eye, had argued that the body he stole was a particularly interesting specimen to study. Importantly, his professors had also spoken up for the young man. This may be because body snatching and anatomy teaching often went (decomposing) hand in (dissecting) hand.

Systematic human dissection is believed to have begun in the third century BCE, but it ceased after the deaths of the few Greek medics who performed it.

During the next 1,500 years in Europe, opposition, especially from the church, ensured cadavers for dissection remained strictly off the table—until it was acknowledged that studying human anatomy actually required seeing it thoroughly, in the flesh. In 1315, an executed criminal starred in the first officially sanctioned systemic human dissection performed in full public display since ancient times. It took place in Bologna, Italy, site of the first body snatching scandal four years later.

By the eighteenth century, the boom in anatomy training led countries to pass laws broadening the types of corpses available to medical schools, beyond executed criminals. These included unclaimed bodies of paupers and prison inmates.

England lagged behind legally, hence gangs of body snatchers—“resurrectionists”—did a lively trade. It was a sellers’ market. In 1816, one gang even went on strike, refusing to supply a hospital until it coughed up more cash. When the hospital bought from freelance body snatchers, the resurrectionists raided the place, mutilating the strikebreaking corpses.

Not that stealing the dead was a cakewalk. Mourners booby-trapped graves. Body snatchers were attacked, some were killed. And on top of that was the inexorable time pressure: resurrectionists had to supply cadavers before they were too decomposed.

Schlemm wasn’t particularly concerned about whether his pilfered corpse was a puddle of putrefaction. It had been dead for over two weeks; a lifetime in resurrectionist terms. But Schlemm said he just wanted to study its bones. A dollop of decaying tissue was neither here nor there.

Lenient as Schlemm's punishment seems, perhaps he was rehabilitated afterward. He discovered his canal, also called the scleral venous sinus, in the corpse of a man who'd hanged himself, a body legally available for dissection.

Carina

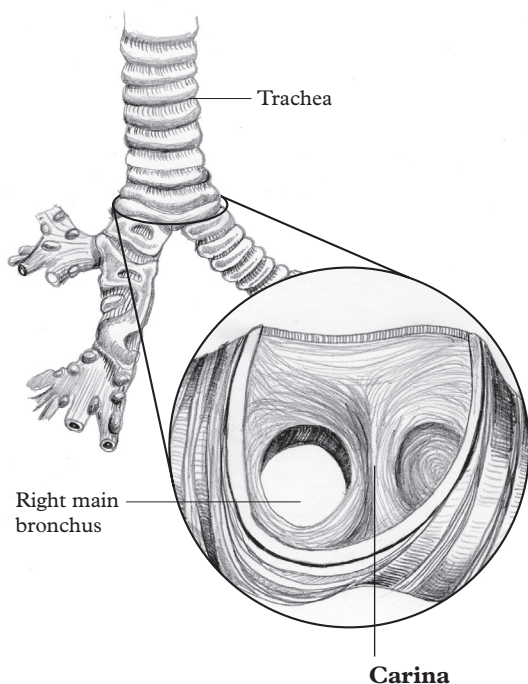
How your windpipe stops you from keeling over

What can race through you at the velocity of a passenger jet, with a violence that can rupture organs, and can save your life? The next time food goes down "the wrong pipe," you may get an inkling. An uncontrollable, explosive inkling. Especially if the food in your airway gets all the way to your carina.

The food has to be ejected quick smart. What follows is a defensive cough reflex triggered by sensors lining the windpipe (trachea) that are particularly concentrated at its lower end, in the carina. A life-saving cough is not to be sneezed at.

A cough involves three phases. Breathing in. Increasing pressure in the chest by closing the voice box (larynx), while contracting chest and abdominal muscles. Then suddenly opening the larynx to expel the air at high speed. Velocities inside the airways approach the speed of sound—up to 800 kilometers per hour (500 miles per hour)—according to many reputable medical sources.

Though all this pressure and velocity has its downsides. Complications of coughing include loss of consciousness; bleeding veins in the eye, nose, and anus; ruptured spleen; and rib fractures. Nevertheless, the crux of a cough is to generate high-speed airflow to clear the airways.



The carina's shape, and that of the airways around it, are also designed to protect. It's a ridge of cartilage that separates the two tubes (main bronchi) that branch off your trachea to the right and left lungs. It looks like the underside of a boat: carina is Latin for "keel." "Careening" a boat is putting it on its side to clean or repair it. Because the right main bronchus is wider and runs more vertically from the trachea than the left, the carina preferentially directs things right. It's

a deceptively simple protective trick: better just one side blocked than both.

The carina is at the level of a landmark that can be felt on the outside of the body: the angle of Louis, aka sternal angle. This horizontal ridge on your breastbone (sternum) is likely named after French doctor Antoine Louis. In the 1790s, he helped refine the design of the guillotine. Hence the infamous killing machine was originally called a “louisette.” Though Louis soon lost the naming rights, which went to his collaborator and fellow medic Joseph-Ignace Guillotin.

Last used in France as late as 1977, the guillotine did for thousands during the French Revolution. They had a blade stuck in their windpipe and were destined for a coffin.

Carotid artery

How bad blood was spilled in Transylvania

Benjamin Dudley was the first doctor in the US to treat pulsatile exophthalmos by ligating the carotid artery. But tying a ligature around a major artery in the neck is humdrum compared with Dudley’s bloodthirsty exploits in Transylvania. And while pulsatile exophthalmos is odd, a pulsating eyeball protruding from its socket isn’t as out-there as the dramatic duel the professor of anatomy and surgery fought against a colleague. A shoot-out triggered by a quarrel concerning the brain of a dead Irishman, whose body was later stolen by one of those involved.

Dudley’s Transylvania wasn’t Count Dracula’s Eastern European stomping ground. This was Transylvania University in Lexington, Kentucky. At the beginning of

the nineteenth century its medical school was one of only five in the United States. But not all was well in its hallowed halls. Bad blood between three of its professors dominated. Dudley, Daniel Drake, and William Richardson were at each other's throats.

Things came to a head in 1818, when Dudley and Drake disagreed over the former's autopsy examination of the brain of an Irishman who'd died after a head injury. A dishonored Dudley challenged Drake to a duel. Drake, not believing in dueling, declined. So Richardson, his ally, stepped in to defend his honor.

This wasn't as peculiar and foolhardy as it sounds. While dueling was illegal in Kentucky, upper-class gents (though rarely doctors) often settled disputes this way. The most minor discourtesy could precipitate pistols at dawn. Pistols that were reliably inaccurate, ensuring the combat often conveniently ended with honor upheld and anatomy intact. But Dudley wanted blood. He had the audacity to actually prepare for the combat, practicing with a crack shot medical student.

On the fateful day, the two professors solemnly bowed to each other, before firing at ten paces. Richardson went down, blood spurting from an artery in his groin. His retinue, unable to stem the bleeding, resigned themselves to his imminent demise. Step forward Dudley, who had Richardson under his thumb—literally and metaphorically—as he pressed his digit on the artery to stem the bleeding enough for his life to be saved.

Dudley and Richardson became lifelong friends. As for the Irishman whose autopsy led to the duel, Dudley's marksman medical student stole the body from its grave for use in the professor's dissection room.

Today Transylvania University is going strong. Though it's unlikely many carotid artery ligations take place on campus. Its medical school shut in 1859 following infighting and a lack of cadavers for anatomy teaching.

Carpals

How couples should avoid acrobatic amorous antics

"Sally Left The Party To Take Cathy Home. She Likes To Play, Try To Catch Her. She Loves To Please The Tall Campus Hero. Some Lovers Try Positions That They Cannot Handle."

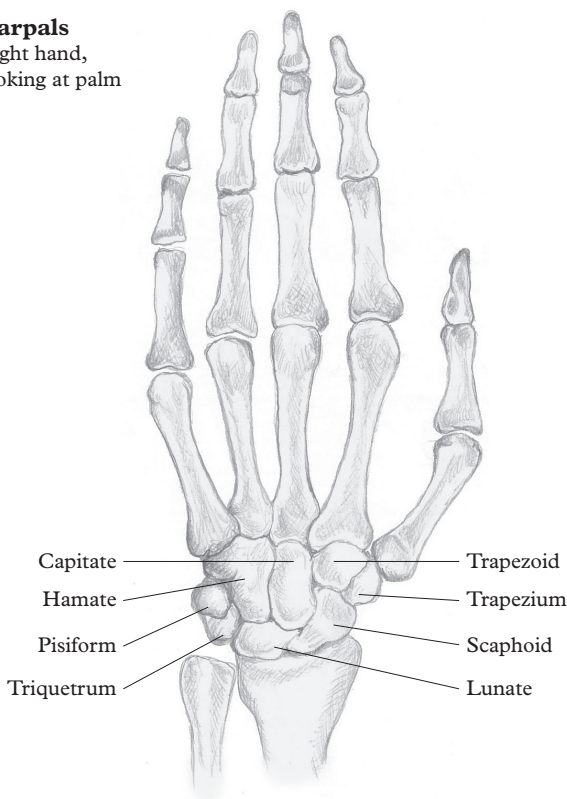
This isn't a quartet of undercover agents introducing themselves in covert spy code. Or an eccentric cryptic puzzle. Or snippets of chat on a hookup app.

They're mnemonics. Four acrostics medics use to memorize the name and order of the eight carpal bones in our wrist. Each acrostic has the same pattern of first letters in their eight words: S, L, T, P, T, T, C, H. They're handy mental stepping stones toward recalling the bones: scaphoid, lunate, triquetrum, pisiform, trapezium, trapezoid, capitate, and hamate.

Medics make mnemonics (some *far* cruder than the ones above) because there's *so much* to remember. And always *more*. According to a 2011 paper, medical knowledge is expanding faster than our ability to absorb and use it effectively. It estimated that, in 1950, medical knowledge was growing at a rate that meant it would double every fifty years. In 1980, the doubling time was seven years. In 2010, 3.5 years. By 2020, the doubling time would be just seventy-three days. Take a long holiday, and you're an out-of-date has-been.

Carpals

Right hand,
looking at palm



Which makes Sally and her carnal capers a helpful drop of carpal knowledge in a vast, untamed, ever-rising ocean of information. Especially as our hands are super complicated. Aside from the more than thirty muscles involved in hand movement, the carpals are just eight of twenty-seven bones in each one.

Your carpals form a 3D puzzle, comprising two rows of four bones each. They connect with your forearm bones and the metacarpal bones in the palm. In order, from right to left, if you're looking at your right palm, with the row closest to your forearm first, they are:

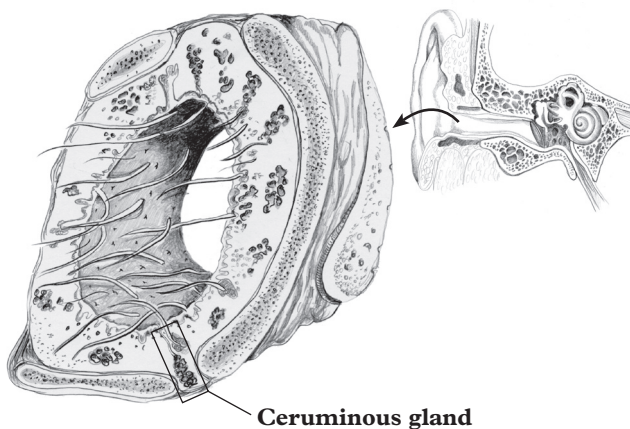
The scaphoid, from the Greek for “skiff,” because it looks like a boat. The crescent moon-shaped lunate, as in “lunar.” The pyramid-shaped triquetrum, from the Latin for “three-cornered.” And the pisiform, a small pea-like bone, “pisum” being Latin for the green veggie. Then there are the trapezium-shaped trapezium and trapezoid. The capitate, so named because it has a head, in the same way that a “decapitated” body doesn’t. And lastly, the hooked hamate, named after the Latin for “small hook.”

Of the carpals, Sally is most likely to fracture her scaphoid, leading to tenderness in her anatomical snuffbox, the classic hallmark of these injuries. That’s especially if she falls onto her outstretched hand while trying an adventurous acrobatic position, with the tall campus hero, that she clearly can’t handle.

Ceruminous gland

How wax on, wax off will have your ears burning

It’s easier to be uncomplimentary about certain complementary therapies than others. Steaming crocks of sanctimonious woo-woo that demand you make like a duck and “quack.” But on the quackpot scale, many of these can’t hold a candle to a popular “therapy” to remove earwax, aka cerumen. Ear candling. A dangerous scam, according to the US Food and Drug Administration.



Practitioners stick a hollow tube that's been soaked in beeswax into the ear and light the other end. This supposedly creates negative pressure, drawing wax out of the ear. But the only negative pressure it creates is the desire to believe the therapist's flimflam. This ramps up when the candle is opened after it's extinguished and, bogus-pocus, inside is the removed earwax. This residue *is* wax. Candle wax.

If wax is going anywhere, it's from the candle into the ear. This can perforate the eardrum and cause temporary hearing loss. Try it, and you may be burned twice: certainly conned, maybe injured. A survey of 122 US otolaryngologists uncovered thirteen cases of burns.

Earwax can build up, blocking the ear canal and putting pressure on the eardrum, causing symptoms like hearing loss, itching, and pain. But normally your ear removes the wax itself. Helped by jaw movements from

eating and talking, this self-cleaning process drives wax out the ear canal.

Cerumen is a mixture of dead skin cells and secretions from ceruminous glands (“cera” is Latin for “wax”) and other glands in the outer part of the ear canal. It’s not made deep in the canal. Often problems are caused by attempts to remove the wax actually pushing it further in. Q-tips are notorious for packing wax deeper in the ear canal, irritating sensitive tissue and causing the symptoms mentioned above. The standard advice is: nothing smaller than your elbow should be introduced into your ear canal.

Cerumen protects your ear canals. Dark, warm, and often moist, the canals are brilliant bug breeding grounds. Cerumen moisturizes the skin and is a barrier against water and microbes. It may even kill bacteria and fungi.

The sticky goo also traps dust and hairs. As an added bonus it tastes bitter (admit it, you knew that), which may deter larger bugs—insects—from making your ear canal home.

Earwax has also had odd out-of-body uses: as a salve for wounds, and, more distastefully, lip balm. Plus, it’s had literary functions. Ornately painted medieval manuscripts have it to thank for their beauty. Pigments used to decorate the texts were mixed with it so they could be applied to the parchment. So, there’s more to cerumen than meets the eye, and ear.

Circle of Willis (cerebral arterial circle)

How brainy blancmange is not to be trifled with

One of the world’s most iconic artworks may have an astonishing anatomical message encoded within.

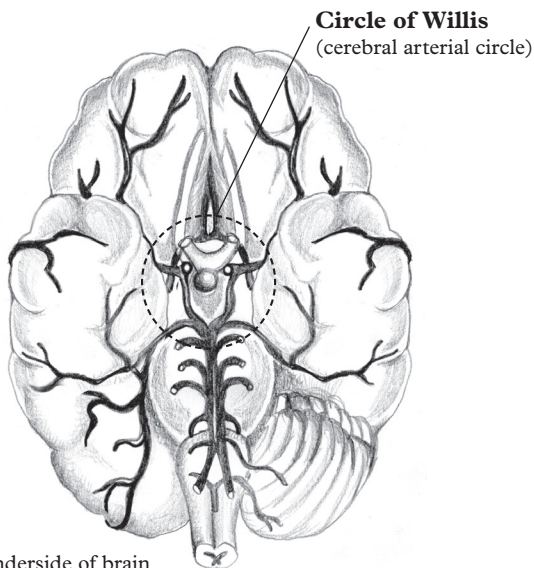
Hiding in plain sight in Michelangelo's *The Creation of Adam* on Vatican City's Sistine Chapel ceiling is what looks remarkably like a human brain. It's stunningly subversive, if you see it as a message about where the real creative power lies. Not with God, but within *us*.

Since the ceiling's completion in 1512, visitors have craned their necks to view the much-memed masterpiece. A white-haired God gives life to Adam, the fingers on their outstretched arms almost, but not quite, touching. It's loaded with symbolic meaning. But any neuroanatomical symbolism remained unnoticed until 1990, when a US doctor sensationally revealed that God seems to be surrounded by the outline of a brain, cut down the middle, front to back.

Michelangelo dissected many bodies and knew a brain when he saw one. So, what was the Renaissance genius saying? That God's gift to us is not just life, but also our intellect? Or much more controversially, that the human brain is the ultimate creator?

This was heresy in the sixteenth century. Still is. Though there's no disputing the genius of your (yes, *your*) spectacularly inventive, imaginative, intuitive brain. Its 120 billion neurons and 100 trillion interconnections make it arguably the most complicated object in the known universe. Yet it's mostly just plain old water, with the consistency of blancmange.

That's food for thought, for a brain that needs huge amounts of fuel for thought. It's just 2 percent of our body weight, yet when we're at rest, 15–20 percent of the blood from our heart travels to it. Your circle of Willis—a clever arrangement of blood vessels at the brain's base—helps safeguard the vital fuel supply. Here's how:



Underside of brain

Imagine four freeways entering a city, each serving one of its quarters. If the roads aren't connected, an accident in one would block traffic getting to its quarter. A ring road, fed by all the freeways, would prevent this calamity. The circle of Willis (cerebral arterial circle) is the brain's ring road. If one artery supplying the brain gradually narrows, others in the circle take up the slack.

It's named after Thomas Willis, a seventeenth-century English anatomist who wrote a book featuring an exquisite illustration of the blood vessels. The artist was none other than Christopher Wren, who later designed an iconic European religious building. Not the Sistine Chapel, but London's St. Paul's Cathedral.

Coracoid process

How you're a little cuckoo

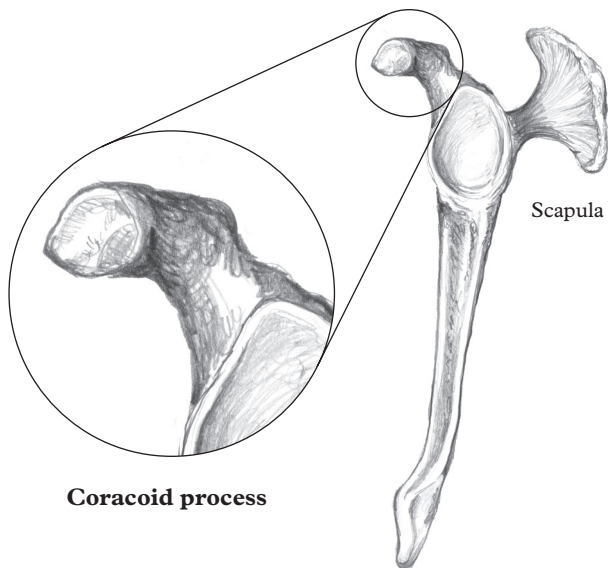
Very little is known about Old MacDonald, other than that he had a farm. And on that farm, he had a considerable collection of creatures that created a cacophony of calls, cries, and chirps. There were tweets-tweets here, clucks-clucks there, and quack-quacks literally everywhere.

So, the geriatric agrarian might have had a soft spot for his bony coracoid process. Like tweet, cluck, and quack, “coracoid” is birdlike, and onomatopoeic, sounding like the animal it relates to.

An anatomical process is a protrusion from a structure. Your coracoid process is a hook-shaped protrusion from your shoulder blade (scapula). It looks a little like a raven’s beak, hence “coracoid,” which combines the Greek for “raven” (“korax”) and “form” (“eidos”). Korax, coracoid, and *Corvus*—a collection of bird species including crows, ravens, and rooks—are words made using the “Here a caw, there a caw, everywhere a caw-caw” call of these mischievous feathered fiends.

The coracoid process projects forward from the top of the scapula and is an anchor for many ligaments and tendons. Surgeons call it the “lighthouse of the shoulder” because it’s a vital landmark to help scalpels steer clear of nearby nerves, arteries, and veins.

Shooters whose shotguns smash into this lighthouse can also come a cropper. “Trapshooter’s shoulder” is a stress fracture of the coracoid process caused by a gun’s repeated recoil. If they were firing at living birds, as opposed to clay ones, shooters injuring the birdlife in their body would be sweet, sweet justice. And if their



coracoid process doesn't get them, there's more avian-related anatomy waiting.

For example, there's a goose foot near the knee. The *pes anserinus* is three muscle tendons, joined so they resemble the bird's webbed foot. *Anserinae* is the name given to types of waterbirds that include geese and swans. A *pes* is an ancient Roman unit of length, roughly equal to one foot.

The skull has a *crista galli*, Latin for "cock's crest." This triangular ridge of bone sticks up from the front of the skull's base.

And the tailbone is a *coccyx* because it looks like the beak of an ancient Greek "*kokkyx*." This is the

clock-dwelling and notoriously devious cuckoo. (A man with an unfaithful wife is a “cuckold” because the word comes from “cuckoo,” due to the females’ habit of laying their eggs in other birds’ nests.)

The cuckoo is also an onomatopoeic bird, as in “Here a cuckoo, there a cuckoo, everywhere a cuckoo-cuckoo.” “Ee-i-ee-i-o,” as Old MacDonald would say.

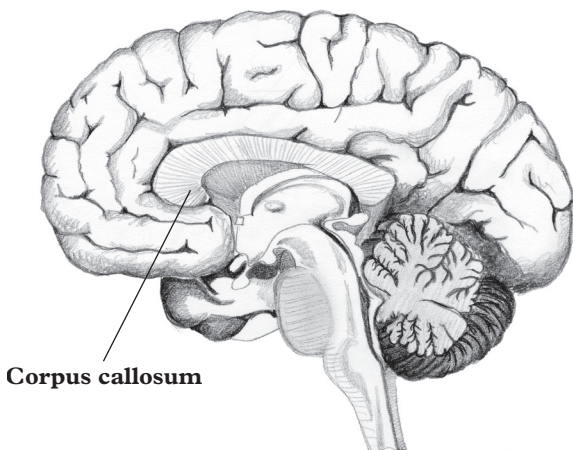
Corpus callosum

How connections power the genius in us

The da Vinci code is not a ridiculous conspiracy thriller chock-full of fantastical religious claptrap purporting to be gospel truth. Not a truth-busting blockbuster that rubbed Catholics up the wrong way, causing unholy pulp friction. The real da Vinci code is Leonardo da Vinci’s key to intelligent, creative thinking: “To develop a complete mind, study the science of art, study the art of science. Develop your senses, learn how to see. Understand that everything is connected,” he is often quoted as saying.

Whether or not the Italian polymath actually uttered this, he certainly lived the mantra. He was as at home painting the *Mona Lisa*’s enigmatic smile as he was dissecting a face to understand the anatomy within. Da Vinci’s genius was at the intersection of science and art.

Geniuses may be rarer than hen’s teeth, but anyone with a brain has superpowers. Extraordinary cerebral capabilities that stem from *neural* connections. And there’s no bigger connector in the brain than its corpus callosum. This thick, ten-centimeter-long (four-inch) nerve superhighway is a bridge between our brain’s hemispheres, and a key area linked to intelligence.



The corpus callosum is a tough body of tissue running down the middle of our brain, from front to back. “Corpus” is Latin for “body,” as in corpse. “Callosum” means “hard.” A callus is hard, thick skin. Callous people are hard-hearted. Thanks to its 250 million or so nerve fibers, it enables the hemispheres to talk to each other. And how our corpus callosum is wired may help determine whether we’re a bright spark or a dimwit.

During adolescence our corpus callosum grows. The resulting increase in brain connectivity could be why we have enhanced learning capacity at this time. In adults, greater corpus callosum thickness is linked to increased IQ. Hence, eggheads may have more efficient communication between brain hemispheres than people who are one egg short of an omelet.

However, when it comes to intelligence, our brain doesn't put all its eggs in one basket. You don't need to be Einstein to figure that many interconnected brain parts must determine our smarts (along with a good deal of environmental influences). Though, in the case of Einstein, his brain hemispheres *were* particularly well connected, thanks to an unusually thick corpus callosum.

Like da Vinci, Einstein was also passionate about science and art, their connection shaping his creativity. "I often think in music. I live my daydreams in music. I see my life in terms of music," he said.

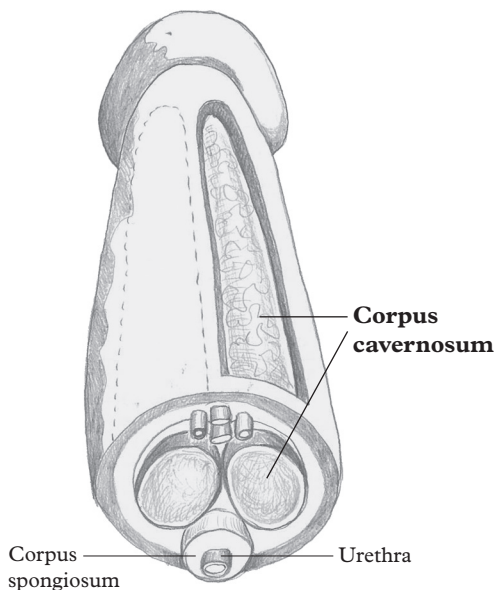
Corpus cavernosum

How phallic insecurity is unfounded

What is it with powerful men and their phallic symbols? Thrusting them proudly in our faces. Outdoing each other as they raise them higher and higher into the sky. Standing tallest at 828 meters (2,717 feet) is Dubai's Burj Khalifa. Though it'll be trumped by Saudi Arabia's one-kilometer-tall (3,281 foot) Jeddah Tower, when the much-delayed project is completed.

This architectural one-upmanship isn't new. Potent men have long lorded it over us with their brick-and-mortar erections. Ancient Egyptian obelisks symbolized the pharaoh's power. And for almost four thousand years, the Great Pyramid of Giza was the world's tallest man- and woman-made structure. Men's penile erections, however, are the great levelers.

For as long as man has possessed a penis, guys have fretted about the length of their manhood. The good news for bros anxious that theirs is on the short side



is that it probably isn't. Most men underestimate their penis size compared to other guys. And if their flaccid penis seems shortish, it's unlikely to be abnormally short when erect. When penises get erect, short ones lengthen more than longer ones, research shows. Hence, erections are relatively similar in size. In short: flaccid penises vary a lot in length, erect phalluses less so.

“Phallus” is from an ancient word meaning “swell,” which a penis does thanks to its corpora cavernosa (plural of corpus cavernosum). These two columns of tissue running down the left and right sides of the penis's shaft are packed with blood vessels. When a man is turned

on, the vessels open up and blood rushes in, pumping up the corpora cavernosa.

But what keeps the blood inside the corpora cavernosa, to maintain the erection? Crucially, they are surrounded by a tough tunic of tissue, and as they expand, they stretch their tunic covering. This squashes the veins emptying the corpora cavernosa, helping prevent blood draining away and preserving the erection.

It's a high-pressure situation, for man and penis. One that climaxes when sperm exit via the urethra. This is kept open because it's surrounded by another column of tissue, the corpus spongiosum.

So, while an erection may be a colloquial "boner," that's a misnomer. There's no penis bone to make it rigid. Though an erect penis can fracture if it's accidentally thrust against something hard and buckles, rupturing a corpus cavernosum's tunic covering. This toe-curling trauma can leave a man with a curved or bent erection. More Leaning Tower of Pisa than Burj Khalifa.

Cranial suture

How you get less boneheaded as you mature

How many "hips" precede a congratulatory "hooray"? How many hands are there on each face of London's Big Ben clock? How many feet in a mile? Simple questions. Straightforward answers. Now here's a curly one. How many bones are there in the human body?

Ask the Internet and it'll often say "206." That's a nice round 200, plus the six tiny bones in our ears. For this we can thank *Gray's Anatomy*. Not the TV drama with a similar name, but the famous textbook first

published in 1858 as *Anatomy, Descriptive and Surgical* (a much less catchy name for a show).

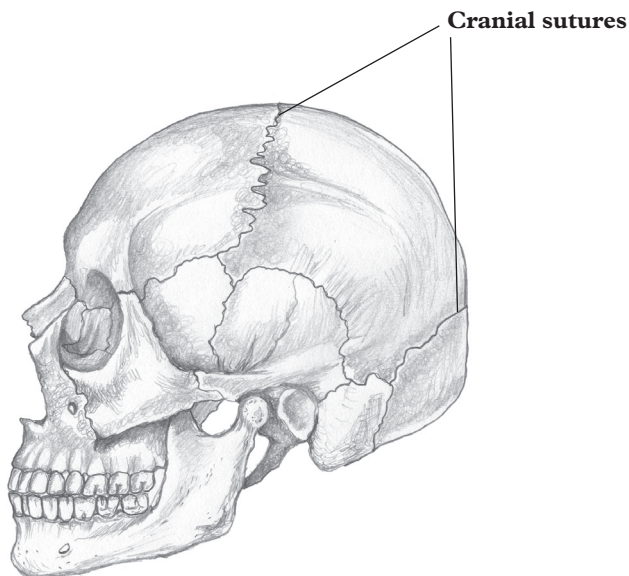
The problem for English anatomist Henry Gray, and every quizmaster since who has insisted 206 is correct, is that they're asking the wrong question. It should be, "Roughly how many bones do we have at a certain age, say 65?"

The fact is, the number of individual bones in our body *falls* as we get older, as an article in the journal *Clinical Anatomy* points out. Hence, the authors had an issue with textbooks that repeated 206 as definitive.

The cause of this bone confusion? Bone fusion: as we age, some bones join. This is especially the case in our skull (cranium). Here there are twenty-one bones when we are twenty-five years of age, seventeen when we're twenty-five to forty-four, and just one in later years, the paper estimated. (Importantly, while bones in the cranium may fuse, the original bones still keep their names. Hence the number of *named* bones in the skull doesn't change.)

When we're growing and developing, skull bones need to be separate, to allow our cranium to expand. The bones in the dome of our skull that encase our brain are separated by joints called cranial sutures. As we're being pushed out of our mum during labor, these seams help us along by allowing our head to mold to the shape of the birth canal. Gaps between them in newborns are called fontanelles. As we mature, the sutures fuse, reducing our bone count.

The paper's estimates for the total bone number at various ages were: 214–16 at twenty-five years; 208–10 at twenty-five to forty-four; 189–93 at forty-five to sixty-four; and 186–93 in the over-sixty-fives. "One would



have liked to imagine that the number of bones was determined once there was general agreement on the age to sample the population,” it said.

So, the answers to the questions at the start of this story are: Two “hips.” Two hands. And 5,280 feet. As for the number of bones in our body, that depends on the question.

Cremaster

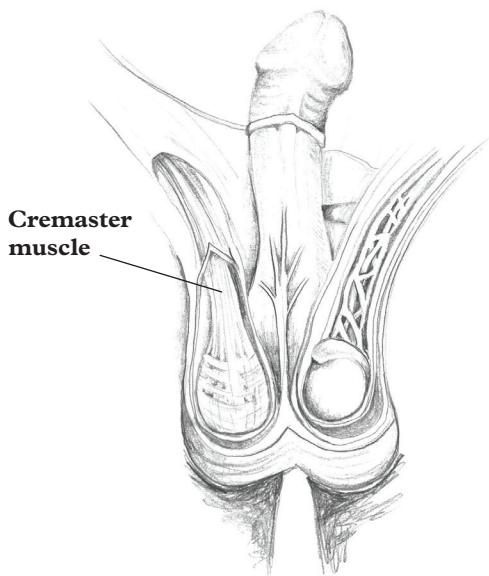
How testicles deal with the ups and downs in life

No matter who wears the trousers in a heterosexual relationship, it’s not that uncommon for both parties to be wearing lingerie. Many men, usually heterosexual guys, get a kick out of slipping on women’s intimate

apparel under their chinos. It's a fetish that's generally harmless, so good luck to them in their satin knickers, sheer stockings, and suspenders. And they aren't so unusual, when you consider that all men wear suspenders, whatever their taste in underwear.

These suspenders are sinewy rather than silky. Cremaster muscles: strips of flesh running from tummy to testicle. Each testicle (testis), snug inside its scrotum, has one. They raise and lower the gonads, like cables suspending an elevator. Hence "cremaster," from the Greek for "suspender."

This testicle yo-yoing is no trivial matter. The very survival of our species depends on it. Men's family



jewels are far too precious to be left to their own devices. Sperm are made in the testes, and without sperm there'd be no you, me, anyone. Testes, like bar owners in mobster movies, need PROTECTION.

Gonads, going up: for good sperm making, testicles need to be kept at a roughly constant, optimal temperature. When the weather's chilly, the cremaster muscles automatically contract, lifting the testes away from their exposed position in the scrotum, toward their owner's warm groin. This testicle-protection service also kicks in if a man is in danger, and during sex. (Guys' exquisitely sensitive gonads aren't great grinders.) The cremaster muscles are constantly on alert, looking out for their owner's gonads. Just stroking a man's upper inner thigh causes the testis on that side to ascend. It's called the cremasteric reflex.

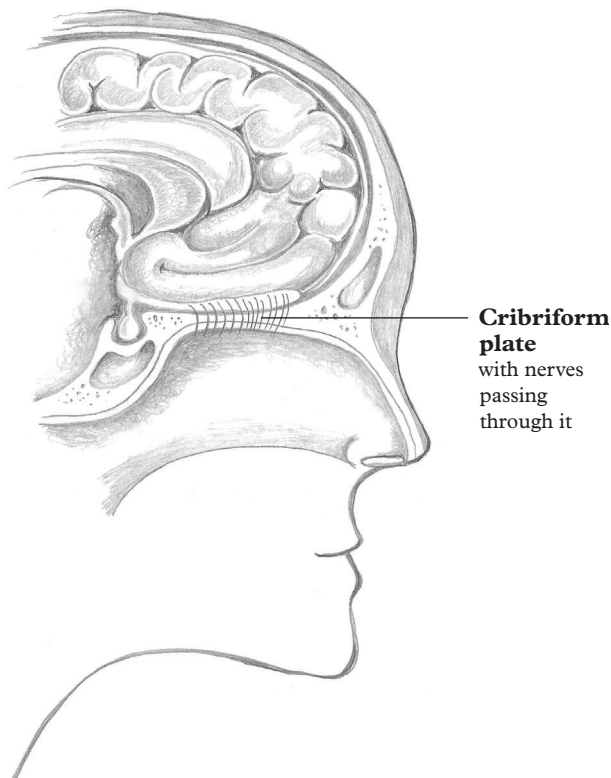
Gonads, going down: when the danger has passed, or when it has warmed up, the cremaster muscles relax, lowering the testes back down.

Sometimes the cremaster muscles are a little too eager for their owner's good. "Refrigeration engineer's testis" involves the muscles going into overdrive, pulling the gonads hard into the groin, so they're painfully squished. Hence, men shouldn't spend too long in walk-in coolers, like those in liquor stores. To do so would invite a nasty bout of suspender-induced gonad-versity.

Cribiform plate

How bloodcurdling bogeymen pick our brains

If Hannibal Lecter fancies brain for supper, he saws off the top of some poor soul's skull and sautés a slice of gray matter. So far so sociopath. A pathogen wanting



to turn brainbox into lunchbox doesn't have the luxury of power tools. If you're a single-celled, brain-eating amoeba, you need an existing anatomical path through the skull. A vulnerable spot in the brain's protective case. For *Naegleria fowleri*, our cribriform plate is just the ticket.

One of the deadliest pathogens known to man, and woman, *Naegleria fowleri* lives in soil and warm fresh water, like lakes, rivers, and hot springs. When swimmers splash infected H₂O into their nose, this menacing blob of shape-shifting goo can ride the wave, up their nostril. Here, the brain-bound amoeba slithers along nerves that transmit our sensation of smell. These lead to the cribriform plate, a part of the ethmoid bone in the roof of our nose, just below our brain.

“Cribriform” means “sieve-like” in Latin. For *Naegleria fowleri* it means “doorway.” The cribriform plate is about 2 centimeters (just under an inch) long, half a centimeter wide, and riddled with holes. Holes that allow our smelling nerves, and *Naegleria fowleri*, to pass through. Fortunately, infection is very rare. But if this bloodcurdling bogeyman does end up in your brain and starts tucking into it, you’re doomed. It’s killed almost everyone with signs and symptoms of infection.

Because the cribriform plate is full of holes in the base of our skull, ancient medics thought it was some sort of strange cerebral exhaust pipe. The highly influential second-century Greek physician Galen, whose theories dominated European medicine until the seventeenth century, believed our brain’s waste products dripped down through it, and then out our nose as mucus.

While that’s crazy talk, brain fluid can drip, drip, drip from the nose if the thin, delicate cribriform plate is damaged. Usually that’s due to a fist or car steering wheel smashing into a face. Very rarely, it’s due to COVID. Or rather, COVID testing.

People have been known to fracture their cribriform plate with a COVID nose swab vigorously inserted at

too great an angle upward. Do this, and you might find yourself in hospital with cerebrospinal fluid—clear liquid that surrounds the brain—dribbling from your nose.

Cerebrospinal fluid, mixed with a splash of Chianti, and a dash of rendered abdominal fat, would make a mouthwatering jus to serve with Dr. Lecter's supper.

Cupid's bow

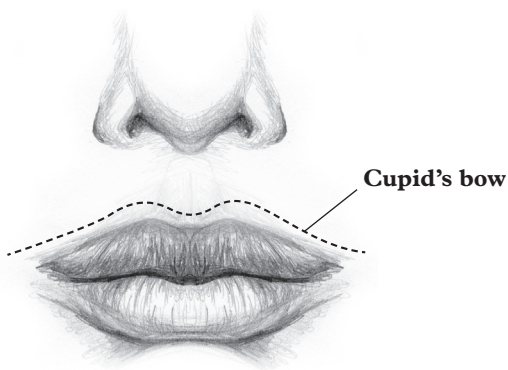
How insta-glam lips win the dating, and mating, game

Beauty is big business. Movie stars, Instagram influencers, and cosmetic doctors know there are big bucks in voluptuous breasts, broad smiles, and full lips. And, when it comes to all things lippy, big is becoming even more becoming. Research looking at white female models in fashion magazines found their lips became fuller over the years.

Want the look? Then you apparently need the lips. Full lips are linked with youth, health, and attractiveness. That's not surprising: lips get thinner and less pouty as we age. Proof that lip shape can determine how we feel about someone also comes from our language, "thin-lipped" being a way of describing someone as mean.

One of our most eye-catching lip shapes is our Cupid's bow. Here, the red part of the top lip (vermilion) rises from each side to twin peaks, then dips in the middle. It makes the shape of a bow, like Cupid's, the Roman god of desire and attraction.

In the game of love, Cupid was the original first-person shooter. The chubby cherub's arrows inflamed uncontrollable desire in those they pricked. Likewise, our Cupid's bow is a factor that can determine whether



we're hot stuff or given the cold shoulder. A well-defined Cupid's bow has long been associated with youth and beauty.

Hence, in our selfie-obsessed world, it's not surprising that lip jobs, where fillers are injected to accentuate the Cupid's bow, and other parts, are booming. If that's not an option, there are even apps that can enhance lips in photos, for an iPhone, luscious look.

It's predictably superficial. But there could be a deep-seated explanation. Our obsession with beauty that's only skin deep may have evolved to help us pass on our genes.

Research found that young white women with higher levels of the sex hormone estrogen were rated in photos as having more attractive faces than those with lower levels. Higher estrogen levels during the menstrual cycle are known to be linked with increased likelihood of conception. The most attractive women had big eyes, a large forehead, a small jaw, and full lips. Hence these

features may be clues that a woman is a healthy, fertile mate, making them seem attractive.

Perhaps there is something to the quip “She’s got child-bearing lips.”

Dilator and sphincter pupillae

How Shakespeare knew the eyes have it

There’s more to the eye than meets the eye. Eyes are windows to the soul. Shakespeare recognized this, the eye being perhaps the dominant motif in the Bard’s sonnets. But eyes are not just windows, they’re also *mirrors*.

Stare intently into a stranger’s eyes and what do you see? Stars, if they take offence at the intrusion. Otherwise, reflected in their pupils is a tiny image of yourself. It’s how pupils got their name, from the Latin word “pupa,” meaning girl or doll. Schoolkids are also “pupils” because of the word’s link to children.

Your pupils are transparent black holes. Black because it’s dark inside your eyes. The obsidian pupils sit in the center of your vibrant irises—“iris” and “iridescent” are from the ancient Greek for “rainbow.”

Like schoolkids, your ocular pupils don’t spend much time sitting still. They’re constantly dilating or constricting, thanks to the iris’s dilator and sphincter pupillae muscles. Dilator pupillae runs through the iris in a bicycle-spoke pattern and can expand the pupil to 8 millimeters (a third of an inch) in diameter. Sphincter pupillae travels in a circular pattern, constricting a pupil to as little as 2 millimeters across.

The muscles react to the conditions, dilating or constricting as needed. Hold a torch up to a mirror and

you may see your pupils constrict, then dilate when the light is removed.

But changes in brightness are just one trigger for them. Where you're looking, what you're looking at, and more, also determine pupil size. Stare at something nearby, and your pupils constrict. Gaze into the distance, and they do the opposite.

That's the where; the *what* is more mysterious. Turns out, eyes *are* a window to your soul, in that they betray your innermost feelings. Any arousing scene, thought, or emotion makes your pupils dilate. Concentrating on calculating seventeen times twenty-three in your head. Evocative music that gives you the "chills." And sex. One study using different images, some arousing, some not, found pics of nude women made men's pupils dilate most. For women, it was babies, and naked men.

On the flip side, a number of studies have found people with larger pupils were rated as more attractive (though research has also found the opposite). Women in sixteenth-century Italy believed this. They were said to use the plant belladonna (Italian for "beautiful lady") to dilate their pupils. Belladonna is also called deadly nightshade, and was likely the potion Shakespeare had in mind when Juliet fakes her death in *Romeo and Juliet*.

Duct of Wirsung (pancreatic duct)

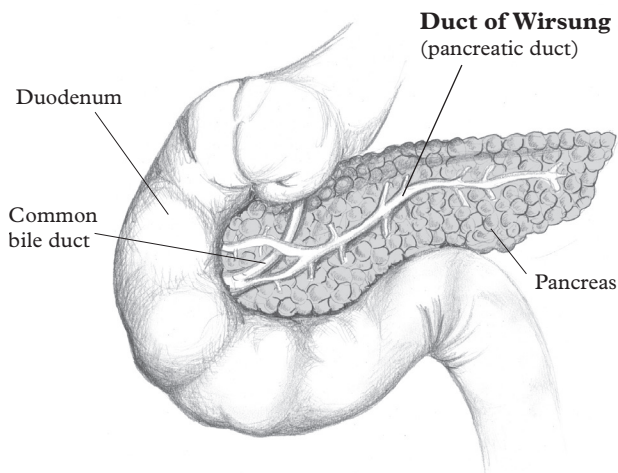
How the grapes of wrath incite murder

To be involved in one murder is a misfortune. To be publicly embroiled in two looks like carelessness. We're not talking about a hitman, mobster, or drug baron here. This was a wholly innocent bystander. A silent witness to two homicides. One that resides in your

insides. Your duct of Wirsung, aka pancreatic duct. A tube just 3 millimeters or so across and about 15 centimeters (6 inches) long in your pancreas that transports digestive juices.

Murder one. This tragedy of our anatomy began in March 1642, in the Italian city of Padua. Dangling in the spring sunlight was Zuane Viaro Della Badia, who'd been hung for murder. For Johann Wirsung, Badia's body was an anatomical piñata, destined to be opened up and explored on his dissection table. Fatefully, there were just two onlookers when Wirsung dissected Badia's corpse. Only they knew the truth about the German anatomist's claim that he'd been first to discover the duct that bears his name, in the murderer's pancreas.

Murder two. Instead of publishing his discovery, Wirsung himself engraved a drawing of the duct on a



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