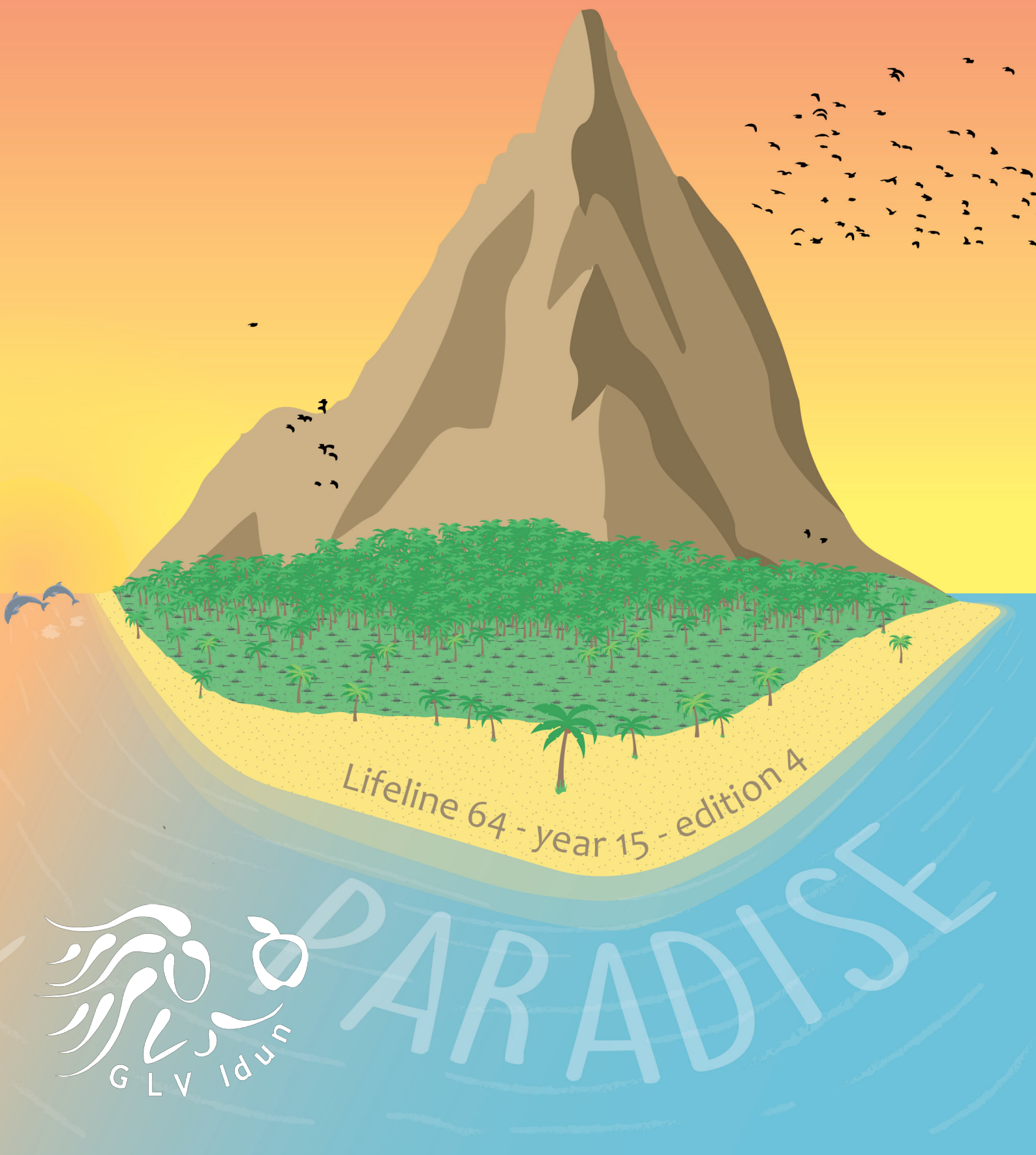


# Lifeline



SCIENTIFIC NEWS

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## PREFACE

Dear reader,

The last Lifeline of the year has come around again, so it's fitting that our theme this time reflects the essence of renewal and growth. Hopefully, 'Paradise' foretells the kind of summer we will have this year, but it also encompasses a deeper level of significance and pleasure that is indispensable for most human beings. Even though we are scientists, this theme reflects the grandeur of life, which we hope to convey with our pieces. Among our pages, you will find not only beautiful science writing but articles celebrating such emotions as passion and nostalgia. Flip the page to read about divinity, phylogenetic forests, and how bees tell time! You can also peruse our review section, where we taste Eve's apple in its most glorious, dough-encrusted form. Even though this marks the ending of another year, we hope that our magazine will continue to be written and read for many academic generations to come and continue to celebrate the tradition of enthusiastic scientific communication. It has been such a pleasure to address you all for the past four editions, and I'm excited to see how the Lifeline will blossom in the coming years.

Happy reading,

*Dana Frank*

Lifeline editor in chief 2020-2021



Dear reader,

It's time for the last Lifeline of this (lustrum) year, with the theme 'Paradise'. This is originally a religious concept, but I think it can mean a lot more than that. For example, the tropical rainforest, which is so full of life that it resembles heaven on earth. Or more figuratively: a place or state in which you feel completely happy and without worry.

How would you describe your own paradise? When do you feel completely happy? Is it in a certain place, with certain people, or while doing something specific? For me, I always feel in paradise when I am listening to good music, especially at a very high volume. For example, 'Paradise' by George Ezra, or 'Paradise by the Dashboard Light' by Meat Loaf, or 'Garden of Idun' uh I mean Eden, by The Strypes. Anyway, time to put on some nice music and read this divine edition of the Lifeline!

On behalf of the fifteenth board,

*Aliëk Hasperhoven*

Chairman of GLV Idun 2020-2021

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### 2017

#### PHYSICS: FOR USING FLUID DYNAMICS TO PROBE THE QUESTION “CAN A CAT BE BOTH A SOLID AND A LIQUID?”

Have you ever noticed how cats can seemingly pour into various containers and fill them entirely? Naturally, people that study fluids pondered the same question. Rayology is the study of how a substance flows. The state of a substance greatly affects this, as you would expect a solid does not flow like a liquid, and a liquid, unlike a gas. To examine the Rayometry of cats, researchers took many photos of cats and analyzed them using the criteria of Rayology. Cats in baskets, cats lying over bars, cats on glass, and so on. They found that the cats combine apparent features of both solids and liquids, maintaining their form while also molding to the shape of the surface or container. This may have something to do with the high flexibility of felines, as well as the fur filling in any missing areas. A shaved cat, for example, would not appear as fluid as a furred cat.



### 2018

#### MEDICINE: FOR USING ROLLER COASTER RIDES TO TRY TO HASTEN THE PASSAGE OF KIDNEY STONES.

It all started with some curious anecdotes of spontaneous kidney stone passing on roller coasters and bungee jumps. Kidney stones are a painful occurrence formed when urine is concentrated, allowing minerals and salts to stick together into a rock within the kidney. To test the ‘coaster vs kidney stone’ theory, researchers took 3 kidney stones of different sizes and suspended them in urine within an artificial kidney environment. Then they went for 60 rides! The method of attack was Big Thunder Mountain Railroad: a popular ride at Disneyworld Florida, where most accounts of this phenomenon were reported. They apparently hid the kidneys so as not to scare the other guests on the ride. They found that indeed the roller coaster did aid in the passage of kidney stones, with the rear of the roller coaster passing 23/36 kidney stones! But the front only passed the stones at a ratio of 4/24, so for a bumpier, stone-breaking ride, sit on the back of the coaster, and please keep your arms and legs inside the vehicle at all times.



### 2019

#### ECONOMICS: FOR TESTING WHICH COUNTRY’S PAPER MONEY IS BEST AT TRANSMITTING DANGEROUS BACTERIA.

You’ve always heard that money is dirty. But obviously, what really matters is how dirty *your* country’s money is compared to others! First, researchers sterilized various currencies, then they inoculated the bills with three drug-resistant strains of pathogens: MRSA, e. Coli, and VRE. They checked on them after 3hrs, 6hrs, and 24 hrs. Romanian Leu harbored all 3 types after 6 hrs and was the only currency to have a pathogen on it after a full day! Canadian and US money had only MRSA after 6 hrs, and the Euro yielded only E coli after 6 hrs and VRE after 3. Then they tested how well each currency transmitted the pathogens to the hand: The Euro did not transmit the bacteria to the hands but the US dollar and the Romanian Leu did. The Croatian Kuna won on all accounts - yielded no strains after 3 hrs and did not transmit to hands. Too bad, Euro! You tried.



### 2020

#### MATERIALS SCIENCE PRIZE: FOR SHOWING THAT KNIVES MANUFACTURED FROM FROZEN HUMAN FECES DO NOT WORK WELL

An old well-known tale caught the eye of researchers: Once an old Inuit man refused to move into a settlement. His family objected to him staying out on the ice, so they took away all his tools. “So in the midst of a winter gale, he stepped out of their igloo, defecated, and honed the feces into a frozen blade” then killed a dog and used its ribcage to make a sled and harness another dog to sled away into the darkness.” Researchers, reading this, naturally wanted to know if it was possible. So, by eating a diet of only meat and fat, pooping, and making multiple frozen poop knives, they attempted to cut some pig hide with it. None of the attempts worked, and they concluded the story of the poop-knife debunked.



By Meiske Pieters



# LIVING IN PARADISE

You open your eyes and see a beautiful landscape that looks like it was painted by Bob Ross himself. Nature is surrounding you, plants, fruit, and clear water everywhere. No one is interrupting you; the only sounds are those of singing birds, a few insects (that leave you alone), and the cool breeze that mixes with the sunbeams to make it the perfect temperature. Just like every day. You live in a perfect land where only pleasure exists, no pain. You live in paradise. Can such a paradise make us truly happy? And can we create our own?

Brock Bastian, a social psychologist, often focuses his research on pain and pleasure. According to him, the two are interwoven. For starters, exposing children to pain, failure, and loss, builds a sort of psychological immune system. If a child moderately gets exposed to these parts of life while growing up, they can better deal with those experiences in the future. But even if this psychological immune system is unnecessary; because unpleasant experiences will never occur in paradise, you would still need pain to experience pleasure. Pleasure is not endless.

In an experiment where people got to eat chocolate, they rated the first piece of chocolate as the best one. The others were still good, but less so. The amount of pleasure they experienced getting lower with each piece they ate. Up until the seventh piece, where the same piece of chocolate that gave them so much pleasure in the beginning, now made them feel awful.

So, pleasure is not endless, and the amount of pleasure can vary; because that first piece of chocolate, that was the best one. I think we all recognise this: the first bite is always the best bite. Especially when you are hungry. The pain of hunger increases the pleasure of eating eventually. I am not talking about starving yourself here, but just imagine never feeling hunger again. Or a need for anything,

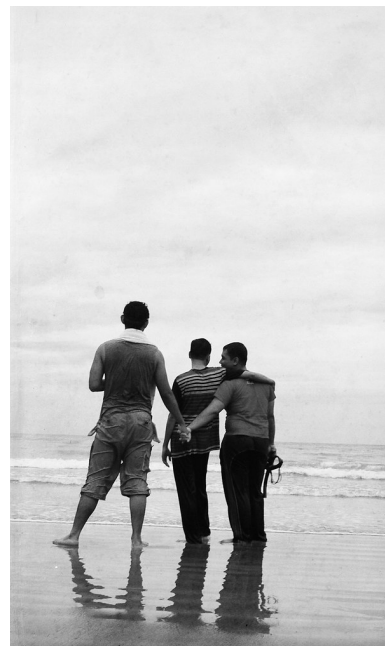
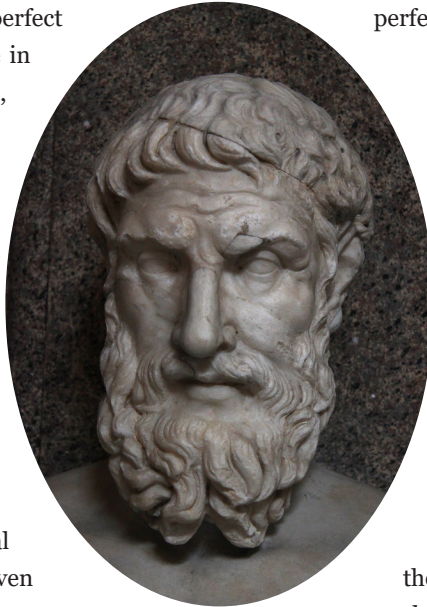
for that matter. In paradise, everything is always perfect. Your stomach is always filled, so you will not experience hunger. The temperature is always perfect, so you will never experience getting into a warm bed when you are cold ever again. Everything is always at the same level, and even though that level is perfection, it leaves you bored.

So, if you could choose a life without pain, would you? That is the question philosopher Robert Nozick proposed in the experiment he called “the experience machine”. This machine simulates real life, but it only has you experience the pleasurable moments. It is the life that you see others living on their Instagram feed. Only highs, no lows. But fake. You would have to leave reality behind for this, even though once you are in the machine, you would not know this.

If maximising the net pleasure in life was the most important thing, you would get into that machine immediately. But to a lot of people, it is not.

There are other values just as, if not more important than pleasure. A modern-day example of this would be if your partner were cheating on you and you got to choose: do you want to know or not? Your relationship besides this is perfect, so if pleasure were the greatest value, you would pick no. But there are other values, such as truth, knowledge, and authentic connection with others, that would lead you to pick yes. If you would want to know, you would not want to live in Nozick’s experience machine.

So, a real world with just pleasure and happiness would not be as pleasurable as we would hope. But what would make us happiest in the end? Greek philosopher Epicurus’ studies focussed on how we would be the happiest. He saw there was a discrepancy between what we think we need vs. what we actually need. We think we need romantic and sexual relationships, a lot of money, and luxury to be happy. Epicurus saw we only needed: friends around, downshifting work so you can combine it with a hobby, and finding calm in your own mind.



# WILL NOT MAKE YOU HAPPY



By Juultje Eenink

In his eyes the ideal situation was a sort of community where close friends lived together, people worked for themselves, and everyone took the time to find calm in themselves by reading and writing stuff down. He was a philosopher, but in this case, he did not just think about this - he actually started such an epicurean community. It was a huge success. More and more epicurean communities opened up all around the Mediterranean sea, with at the height of the movement having over 400.000 people living in those communities.

Who knows, those communities might still have existed, if not for the Christian Church. They put the communities to a stop and turned them into monasteries. If only they knew that this was probably the closest to paradise we have ever come...

## SAYING GOODBYE



# Mastering student cooking with Koen



Hi guys! Summer is coming and I will present you with a new recipe. This dish is great for hot summer days. It is also vegan. Have fun cooking this amazing dish!

My best,  
Koen

## Ketjap tofu rice bowl

In this recipe we are going to use tofu. Tofu can be bland and water-logged. To achieve tasty tofu proper preparation is necessary. There are some tricks you can use to create tofu that is tangy and tasty. I will discuss these methods shortly. Multiple vegetables can be used in this dish, so feel free to experiment to your own likings. I like the combination of Kecap Manis glazed tofu with rice, avocado, broccoli, cucumber, and bell pepper (paprika). The sweet taste of the tofu really compliments the freshness of the vegetables. Altogether, this dish is tasty and healthy!

### INGREDIENTS (FOR 2):

- Tbsp of olive oil
- 2 large tablespoons Ketjap Manis (sweet soy sauce)
- One cup of brown rice
- 1 cucumber
- 1 red bell pepper (paprika)
- 1 avocado
- 1 broccoli
- One block of tofu
- Pinch of salt and pepper
- Sesame seeds

### HOW TO MAKE:

Start preparing the brown rice by putting it to boil.

Remove the tofu block from the packaging and drain it by applying pressure to it.

Cut the tofu into blocks and dry them using kitchen paper. Marinade the tofu using Ketjap Manis and a pinch of pepper. Cover the tofu in sesame seeds and cook the tofu up into a baking pan until its crispy. The sesame seed layer will give the tofu a nice crunch while it still remains juicy on the inside.

Cut the broccoli into pieces and boil them in a pan.

Meanwhile, cut the cucumber into round slices, and cut the red bell pepper and avocado into blocks.

Place the rice on a plate. Cover the rice with tofu, broccoli, cucumber, red bell pepper and avocado. Sprinkle some sesame seeds on top. Add some more Ketjap Manis to your liking.

Now it is ready to serve!

# THE DIVINE MIND:

## PERFECTIONISM



What would your divine, or perfect, world look like? Your heaven on earth? Would it contain cacti that never die, puppies that never age, or the non-existence of disease? Some utopic daydreaming does not harm (and can even be fun), as long as we realize that this perfect world is only imaginary. The word Utopia literally translates to 'no place', because when imperfect humans try to strive for perfection, they fail.

criticized by these people if they do not meet perfection. Other-oriented perfectionism sets the tone for the expected ability of other people. These perfectionists also have unrealistically high standards, however, not for themselves but for their loved ones, coworkers, or pupils.

Nowadays, in this economy, perfectionism is often seen as a positive trait. 'Healthy perfectionism' is a term used to justify the irresistible urge for immaculacy. The thing, however, is that striving to be your best is not the same as perfectionism. Perfectionism goes beyond a good result or achievement: it is about avoiding critics, failure, and judgment, about hiding behind a shield. It is unhealthy, as perfectionists show feelings of unworthiness, low self-esteem, and extreme fear of failure. Not to mention that perfectionism is linked to several mental illnesses, such as depression, anxiety, OCD, and eating disorders.

It is funny that in this article about how perfection does not exist, I still tried to write the perfect sentences. Perfectionism is also known as the 'tyranny of the shoulds', illustrating the burden that comes with the focus on what could (or should) have been. For the perfectionists among us, I hope that you realize that sometimes doing the thing is enough, rather than striving for the result being flawless. It is not in our nature to be perfect, so why would we try to be?

## The Tyranny of the "Shoulds"

~Karen Horney,  
1885-1952



Perfection in the physical world does not exist; it is an abstraction that lives within our minds, something as untouchable and unimaginable as divinity. This causes perfection to be a paradox: the desire for something to be as good as possible most often results in imperfection. Several attempts to define perfectionism have been made, but I personally think the one from the OCD Cognition Working Group is the best fitting. They describe the condition as 'the tendency to believe there is a perfect solution to every problem, that doing something mistake-free is not only possible, but also necessary, and that even minor mistakes will have some serious consequences'.

Pathopsychological perfectionism can be subdivided into three domains according to researchers Hewitt & Flett: self-oriented, socially prescribed, and other-oriented perfectionism. Each domain shows an unhealthy desire to reach ideal standards, but the motives and behaviors differ among them. Self-oriented perfectionists set unrealistic personal standards, accompanied by high levels of self-criticism. They define themselves by the ability to reach a goal (and thus also their inability). The self-oriented domain shows similarity to socially prescribed perfectionism, where individuals try to live up to the expectations of others. They believe themselves to be highly

Als ik niet zo'n perfectionist was, zou mijn leven perfect zijn.

OM  
DENKEN

English translation: 'If I wasn't such a perfectionist, my life would be perfect'



# ESCAPING DEATH

## THE IMMORTAL JELLYFISH



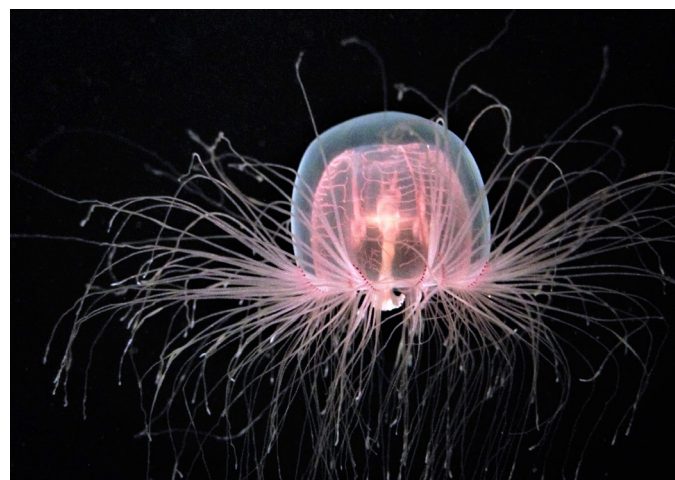
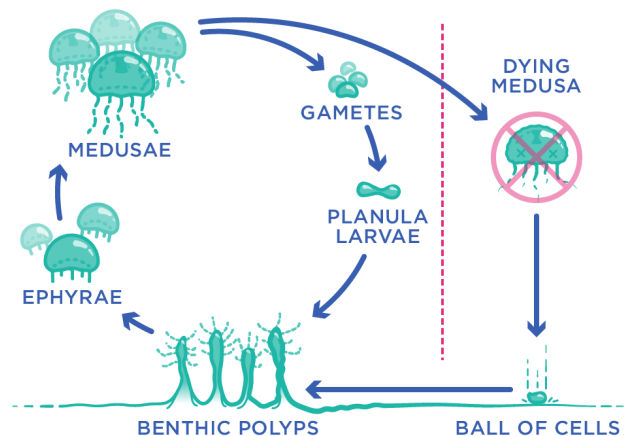
By Nadia van Eekelen

When you're young, you love celebrating birthdays. You're a year older, and that deserves the biggest party with balloons, gifts, and loads of cake. But over time, we start disliking the thought of growing old - another birthday, another year closer to stiff joints and walking sticks. Humans keep trying to escape or delay the process of ageing, but it's just inevitable.

At least, it seems to be. There is one species on this earth that proves that immortality is not science fiction: the jellyfish *Turritopsis dohrnii*. This little jelly, smaller than your pinky nail, is able to live forever. Whenever it is threatened by death, it hits the reset button of life.

The jellyfish begins its life as a larva, called a planula that develops from a fertilized egg. The planula swims at first and then settles onto the seafloor or another surface, like a rock, a ship, or even the body of another jellyfish. There, it develops into a polyp: a structure that is shaped like a tube, with one end attached to the surface and the other end extending into the water with tentacles surrounding its mouth/anus. It remains stuck there for some time and grows into a little colony of polyps. One of these polyps will form an outgrowth, called a bud, that breaks away from the rest of the colony and becomes a free-swimming little jellyfish, called the ephyra. The ephyra eventually develops into the medusa, the adult stage that is capable of sexual reproduction.

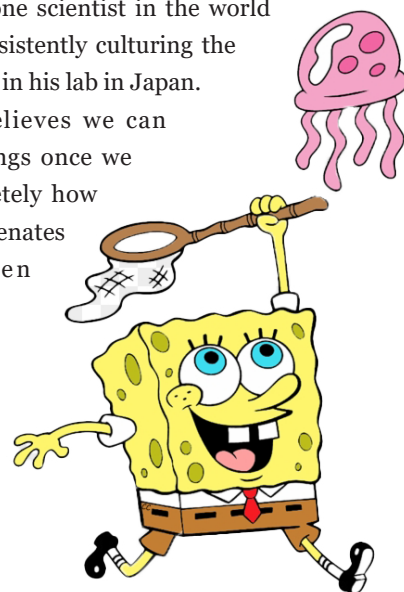
The medusa stage is normally the end stage of a jellyfish's life, but not for the *Turritopsis dohrnii*. These jellies have an extraordinary survival skill. In response to environmental stress, like physical damage or starvation, it can revert to an earlier life stage, like the polyp phase. It then forms a polyp colony again that eventually buds and grows back into a medusa. This medusa is genetically identical to the injured adult jelly. Of course the jellyfish can still be eaten by predators or killed in another way, but, in theory, this process of switching between life stages means it can live forever.



You can imagine that humans would spend millions on learning how the jellyfish performs this trick. That enormous amounts of resources and biotechnology would be put in this research. That scientists would spend all their time trying to determine how to age in reverse. That pharmacists would try to find its purpose for human medicine. But none of this happened. The biggest reason: the immortal jellyfish is extremely difficult to culture into a laboratory, despite the fact that it can survive in almost every ocean in the world. It will simply not survive or not produce offspring in a lab, keeping the mechanisms of rejuvenation a secret.

Some progress has been made, though. It is now known the little jelly undergoes cellular trans-differentiation. This is an unusual process in which one type of cell is converted into another type of cell; the same that happens in human stem cells. Still, many biologists are hesitant to say the jellyfish has promise for human medicine.

There is just one scientist in the world that has been consistently culturing the *Turritopsis* polyps in his lab in Japan. He, however, believes we can achieve great things once we figure out completely how the jellyfish rejuvenates itself. And even become immortal ourselves.



# PASSION ON STAGE

## CARLOS SANTANA



By Devi Seijkens

Dear readers,  
As I'm writing this, I have some bad news. This will be the last thing I write as an editorial member of the lifeline. It has been my honor and pleasure to write for this wonderful magazine. And with this pleasure, I would like to write about one of my favorite artists one last time. The artist I'm writing about and I have one very important thing in common: we make music for the ladies. In this edition I'm writing about one of my favorite and most inspirational guitarists: Carlos Santana.

Carlos is a Mexican/American guitarist, born in Autlán on July 20th 1947. He grew up in a family of 7 and grew up with a musician in his life: his father played the violin in a mariachiband. At 4 years old he followed in his fathers steps as he learned to play the violin, but at 8 years old, the guitar became his main instrument. Early in his career, Carlos earned his keep by playing music in strip clubs. If you ever hear one of his tunes, I think you can imagine his songs being played there today.

Santana's big break came in 1969, at the legendary Woodstock Festival. Here he performed with his band: Santana. His legendary performance is known for a legendary anecdote: Santana admitted to tripping on LSD while performing. He played his entire set flawlessly, while believing his guitar was a snake. This alone sets him atop many a list of great guitarists in my book. How one would be able to play a snake flawlessly just baffles me.



Another fun story is about Santana's guitars. Santana is credited as one of the artists that made PRS guitars one of the 3 mainstay brands of high-end guitars. Early in his career, Santana relied on mostly Gibson guitars, famously playing a red Gibson SG at Woodstock. One day, Paul Reed Smith(founder of PRS guitars) offered Santana another branded guitarist's guitar to check it out and see if he'd like Paul to make one for him as well. Santana loved the guitar so much, he never gave it back to Paul and Paul getting in some trouble with the other guitarist. But since then, Santana has had 13 different signature models with the brand and is famous for using only PRS guitars since then.

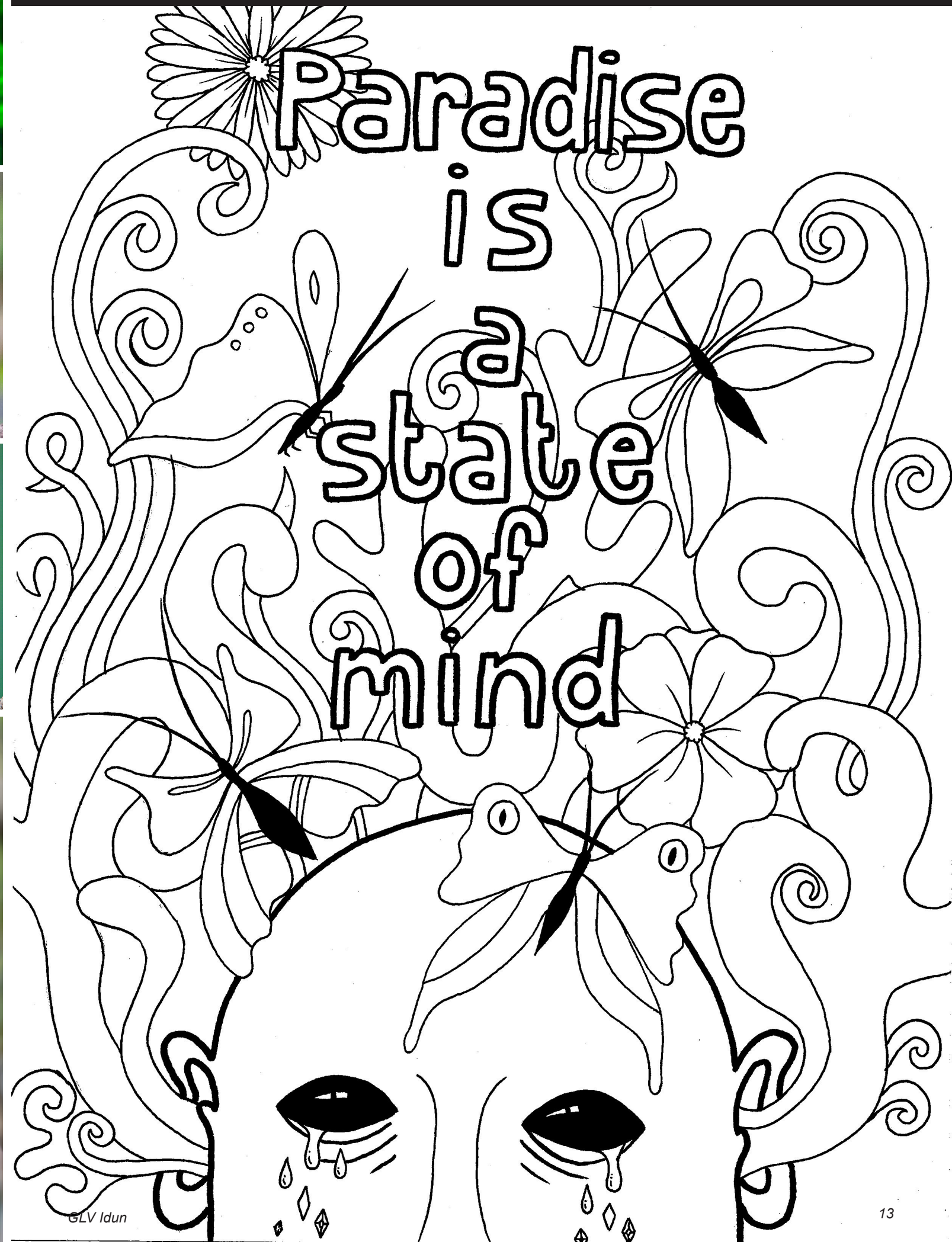
While Santana has sung some on his own records, he is mostly known for collaborating with many different vocalists. I think most people know 'Smooth', the final #1 hit from the 90s. While this song was with Rob Thomas, he's worked with the likes of Michael Jackson, Chad Kroeger (Nickelback) and Seal. One of his songs was featured on Guitar Hero III, Legends of Rock, and this helped reaching a younger audience with his music. He was even featured as a playable character in a later version of the game: Guitar Hero 5, featuring his song 'No one to depend on'.

Carlos Santana, a storied guitarist with a recognizable sound. He played one of the biggest stages ever in Woodstock, while promoting Latin music to most of the world. Open to collaborate with any good musician and while he himself admits to writing his music solely for women, loved by many a guitar loving man.

And with that, once more: It has been an honor and a privilege. Signing off,

*Devi Seijkens*







# GARDENING PHYLOGENIC TREES



By Dana Frank

Many metaphors hold a sacred role in biology, but none rival the tree of life. Drawing grand, elegant parallels between evolutionary nomenclature and botanical anatomy, phylogenetics, the study of evolutionary relationships, is a wonderfully poetic analogy.

Indeed, to evolutionary biologists, a phylogenetic tree is quite a thing to behold. Given what we know of the intricacies of natural selection and adaptation, representing such nuance in simple graphical form has a comparable effect to admiring a striking portrait; we recognize the restraints and simplifications but admire how it reflects at least part of the truth.

Because of this, cladistics and phylogeny are more than a filing system for biologists. It is a narration style for telling the magnificent story of life (from our perspective). We must, however, always be cautious of our fallibility. Phylogenetics is not a unique discipline in that it is designed specifically from the perspective of humans and often should only be read as such.

The truth is that humans ultimately just divide the tree of life into what they recognize as 'separate' clades. There's no good reason for Linnaeus' classification system other than it is convenient for us to understand.

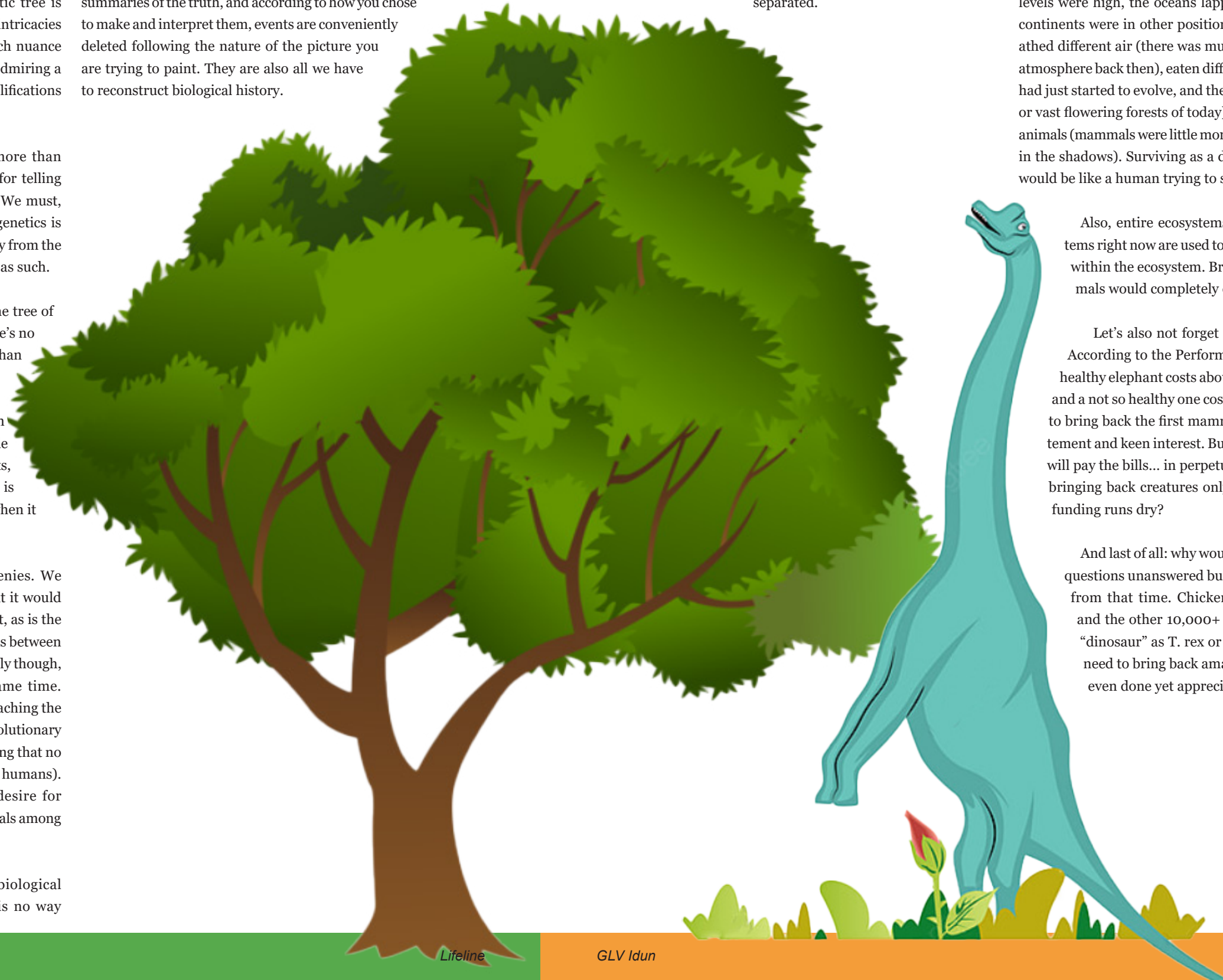
Similarly, drawing trees as though they contain hierarchies is subjective and usually misleading. The tale of common ancestry can be elusive to many biologists, who are not immune to speciesist arrogance. What is deemed to be 'older' or more upsettingly 'primitive' when it comes to extant taxa is nonsense and a contradiction.

Truthfully, there are no hierarchies in phylogenies. We weren't even the last to diverge in our order (not that it would be meaningful anyway). Our ancestors no longer exist, as is the nature of ancestors. In phylogenies, they exist as nodes between branches rather than the branches themselves. Crucially though, all extant clades have evolved for precisely the same time. Primitive species don't exist. There is no ladder for reaching the top of the tree. All living organisms are on equal evolutionary footing, and all branches reach the same point, meaning that no organism is more evolved than another (that includes humans).

Our high level of self-obsession and itching desire for pedestalling ourselves needs to go. There are no pedestals among the branches of life.

Still, we need metaphors to describe certain biological concepts, despite these problems, because there is no way

to observe them. From time to time, we have to deal with pigeonholes, where even the most appropriate-looking trees may well be meaningless metaphors, sterile and devoid of substance because they don't accurately represent what happened millions of years ago. In fact, most of cladistics and taxonomy is arbitrary. But phylogenetic trees neither lie nor tell the truth. They are summaries of the truth, and according to how you chose to make and interpret them, events are conveniently deleted following the nature of the picture you are trying to paint. They are also all we have to reconstruct biological history.



# WHY DINOSAURS SHOULD STAY DEAD



By Renate Kloostra

Imagine: you're entering through these big gates, ready for what is supposed to be the best thing you've ever done in your life. You look at the right and you see these gigantic feet stomping around. Not solitary no, but in herds. You look up and see a gigantic creature: A diplodocus, or so says the informational sign in front of fences that keep you and the creature separated.

This would be a dream for a lot of people, a real arcadia, to have a real Jurassic park. To be able to look at real dinosaurs and experience their world. But as the first film already told us, this would be a terrible idea. In this article I'm going to explain why.

First of all, it would be sad for the animals themselves. The world was a lot warmer back then. There were no ice caps, sea levels were high, the oceans lapped far onto the land, and the continents were in other positions. Dinosaurs would have breathed different air (there was much more carbon dioxide in the atmosphere back then), eaten different food (grasses and flowers had just started to evolve, and there were none of the grasslands or vast flowering forests of today), and interacted with different animals (mammals were little more than ratty creatures scurrying in the shadows). Surviving as a dinosaur on our current planet would be like a human trying to survive on Venus.

Also, entire ecosystems would be disturbed. Ecosystems right now are used to certain animals and their roles within the ecosystem. Bringing back new, gigantic, animals would completely disturb nowadays ecosystems.

Let's also not forget the economical side of things. According to the Performing Animal Welfare Society, a healthy elephant costs about \$70,000 per year to care for, and a not so healthy one costs even more. Spending money to bring back the first mammoth will surely generate excitement and keen interest. But when the thrill subsides, who will pay the bills... in perpetuity? Are we really considering bringing back creatures only to euthanize them when the funding runs dry?

And last of all: why would we? Yes, there are still many questions unanswered but it's not like there is no life left from that time. Chickens, ostriches, turkeys, eagles, and the other 10,000+ birds of today are every bit as "dinosaur" as T. rex or Triceratops. So why would we need to bring back amazing creatures when we aren't even done yet appreciating our very own dinosaurs?

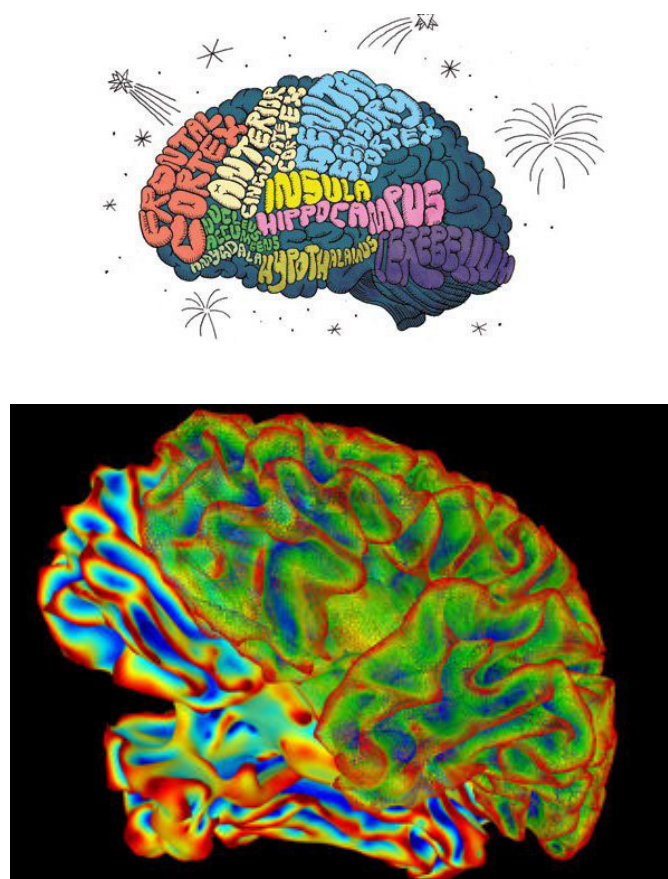


# CHEMISTRY OF LOVE

By Anette

Spring is the time for love and affection. Nature blooms, and so do we. Love is a wonderful feeling, shivers, blushing, butterflies in the stomach, and a tickle in the heart. For years love was considered magical and a mystery, but now we know that most love is a chemical reaction in our brains. What is actually going in our heads when we fall in love or have sex with our loved ones?

The feeling that we define as love consists of quite a few components. First of it is lust, which is the arousing and sexual part of love. The arousal is mainly caused by our sex hormones, testosterone, and estrogen. Although usually these hormones are associated with males and females respectively, the truth is, both hormones exist in every human, and, an increase in testosterone concentration will cause arousal in both sexes. But much more interesting brain chemistry takes place during the high time of our sex lives - orgasms. An orgasm will figuratively make your brain explode. More than 30 brain regions are activated! Our brains will release oxytocin and prolactin, which are the hormones that make us want to cuddle and take care of others. These hormones are also related to childbirth and breastfeeding. But the most appreciated hormone released after orgasms is dopamine. Although dopamine is associated mostly with pleasure, it also triggers a learning and achievement sensations, which inspires us to look for more sex and food in the name of survival. Orgasms also do quite a few cool tricks. For example, the chemical reactions cause the pain tolerance to increase about 50% in females during an



orgasm, and also the rational cortex of the brain is shut down to avoid performance anxiety.

But sex is not all there is to love. Attraction also plays an important role. Attraction is what makes us miss our significant other, keeps us on the toes, and makes us fall head over heels. The hormone cocktail released also contains dopamine, but in addition, it also includes norepinephrine and serotonin. These two are very important neurotransmitters that maintain proper brain and nervous system functioning. Also, the same mixture of hormones can be achieved by having a delicious meal, listening to your favourite song or having a hot bath. Love does not seem so special now, does it?

Weirdly enough, two lovers who have been separated from each other have the exact chemical balance in their brain, as do drug addicts who are in withdrawal. So love really is a drug. Nothing mystical but a very special and complicated chemical reaction that we should cherish. So go, love, yourself and others, and be a little chemist!



# WHAT TIME IT IS?

By Jente Zeubring

We, as humans, have a weird perception of time. Every week-day you have to get up for college at 8 AM. Finally, it is Saturday! After a long work week, you are exhausted and feel relieved that you can finally sleep in on a Saturday. You wake up on Saturday and check the time. It is 8 AM!!! Weird, isn't it, this perception of time?

Ecologists have been interested if time is also perceived by other animals, like bees. Bees live to make some sweet honey. You get to a flower, get the nectar, and go back to the hive. Sounds simple right? The forager bees (bees that collect honey) need to know the current ratio of nectar-collecting to the nectar-processing rate in the colony. They bring the supplies, and for honey, this is nectar. Next, the worker bees process the nectar, which results in the product, the honey. This is similar to a big factory, but here I will call it the hive. Every time there is a supply shortage, the forager bees need to fill up the nectar reserves, so the hive keeps working. To do so, they estimate the time it takes them to find the source, the flower, and bring back the nectar. How wonderful is that!

To convince us people that the bees have a perception of time took a bit longer. Researchers could not believe that bees had the perception of time. But to test it anyway, they set up a trail. Here was already known that bees could recognize the environment. Every day at the same place, they introduced a highly rewarding food source. The training lasted several days, and once the bees came towards it every day, they took it away. The next day, the

bees came to collect the food but found an empty spot at the same time! The same thing happened for a few days. But of course, by trial and error, they did not come back.

Researchers could not believe what they saw; it must have been due to the sun's position. So, they redo the experiment. A different colony, again with a highly rewarding food source, but this time in the dark. In fact, they put the entire hive in a fully darkened barn. They repeated the experiment, but the bees still proved they had some perception of time. The researchers still did not believe it. "It must have been because of the warmth of the sun!" So again, they repeated the experiment.

This time, they went to even greater lengths to get rid of the warmth of the sun. In an old mine in France, they put up a hive again. Every day at 8 AM, they put down the food source. But still, the bees came like clockwork back to the same spot every day at 8 AM. Some could still not believe it: "it must have been due to the rotation of the earth, that is how they can estimate time!"

But the bees kept coming at 8 AM. So, one day, they load the beehive into a truck, put it in an airplane and flew the beehive to a new mine. They flew the bees all the way to Canada. They set up the experiment as it was in France, but this time, the bees did not come out at 8 AM! They came out at 2 AM! Why? Because the bees were jetlagged! If bees could talk, they would probably have joked: "what time is it? it is cele-bee-tion!"





# AFFECTIVE TOUCH

## HOW TO GET PEOPLE TO ACTIVATE SOCIAL BONDING

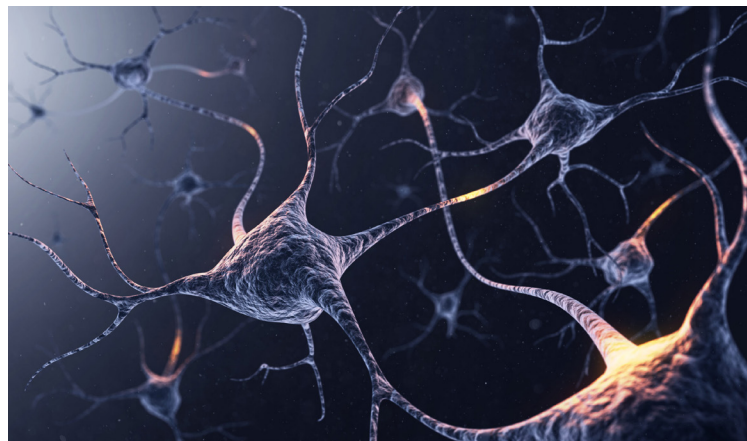
By Lauren Hansen-Manguikian

### 1. WHAT IS PLEASURE?

The gorgeous display of a sunset, laughter with friends, biting into a juicy apple... we can get pleasure from so many different activities. Even activities that cause pain can feel good in certain kinky circumstances. The motivational theory of pleasure states that a feeling is pleasurable if the subject wants to be feeling it. However, this doesn't explain why some feelings are simply more likely to be pleasant than others.

Evolution has painted some sensations with a 'hedonic gloss.' Meaning they have gained a positive valence because they have been helpful in propagating our genes. Prime examples are taste systems: foods rich in sugar helped us get the energy we needed to survive. We then evolved a taste tuned to sugar: sweetness, which activates reward sensations in the brain. This way, evolution has made it so we seek out calorie-rich foods, increasing our likelihood of survival in a food-scarce context. The next most obvious pleasurable sensation is that of sex, for which we evolved another special tactile circuit to indicate the likelihood of passing on your genes - rewarding us for its activation.

These might be considered the basic sensory pleasures: food and sex. These activities are linked most to the propagation of our genes, and the most likely to be pleasurable. But in humans, social interactions are incredibly important to the propagation of genes - making feelings of social bonding perhaps as rewarding as the basic sensory pleasures.



### 2. THE SOCIAL PLEASURE

What greater evidence for this than a specific type of neuron designed only to sense social touch, and cause feelings of emotional bonding when activated? For our ancestors, social touch was SO important that it evolved its own neuron specifically designated to sense it: the C-tactile Afferent! This neuron is extremely special and picky about what activates it.

Most neurons designated to sense touch are highly myelinated - a kind of sheath along a neuron's body that allows the signal to travel faster. This is so they help us react to danger as quickly as possible. But unlike most tactile neurons, CT-Afferent neurons are unmyelinated, making them sloooooow-conducting. And while most tactile neurons fire more as the speed of the stimulus increases, CT neurons are 'tuned' to a peak impulse frequency. Anything faster than 3cm per second or slower than 1cm/second will not activate the neuron. Similarly, it only responds to light touch, so that too much force will not activate it at all.

The most recent theory of these neurons is that they support emotional, hormonal, and behavioral responses to skin-to-skin contact with group-mates. Grooming was an extremely important social bonding activity for our primate ancestors, which fits with the evolution of CT-fibers because they are only present in hairy skin.

Next time you are cuddling someone, get out your measuring tape and a timer, then lightly graze their skin the tips of your fingers at the rate of 1-3cm/second. This will be very romantic. If they seem concerned, tell them that you learned all your cuddling tips from the lifeline and this will produce optimal levels of bonding per unit of time cuddled.

# FEMALE PLEASURE



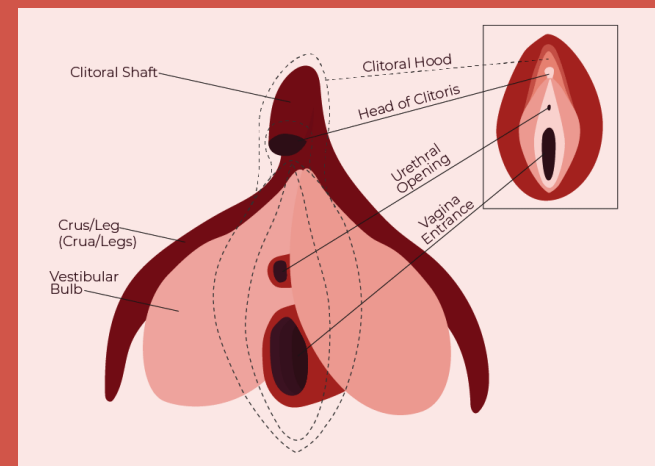
By Meiske Pieters

### SEX EDUCATION

In my opinion, sex education in the 21st century is exceptionally bad. I got one lesson about sex, which coincided with the chapter about reproduction in Biology during high school. We learned about STDs, contraceptive methods and everyone received a condom to take home. I'm not saying these aren't important topics, but I have sex for pleasure and not to reproduce (yet). Also, in my classes, the equivalent of jacking off was the menstruation cycle. Female pleasure was never discussed, even though jerking off and sperm were mentioned, nothing was said about fingering or squirting. A bit weird, wouldn't you agree? For that reason, I will focus all the attention on female pleasure, or more specifically the vulva and all the amazing things it can experience.

### THE BASICS

We'll start with a bit of anatomy and contradictions. I mentioned the vulva, and not the vagina, because "vagina" only describes the canal between the hymen and cervix. While the vulva consists of the labia, clitoris, urethral opening, vaginal opening, hymen, glands and, of course, pubic hair. So, whenever you want to mention your flower, pussy, fish lips, vajayjay, penis glove, just call it vulva, because that's what it is.



The beautiful vulva is very vascularised and full of nerves. The clitoral glans you are probably familiar with, it's the little pea-sized knob at the top of the inner lips which has a hood over it. The glans has the highest density of nerves and seem to be the centre of pleasurable sensations. But this is only the (literal) tip of the iceberg, the biggest part of the clitoris isn't visible and lays mostly underneath the labia. The clitoral body is wishbone-shaped and consists of erectile tissue. This is the part that fills with blood during sexual arousal.



### FEMALE ORGASM

The classic concept of orgasm is a brief peak of sensation of intense sexual pleasure, with rhythmic contractions of the muscles in the pelvic region. From an evolutionary point of view, the function of the female orgasm is unclear. Unlike that of male ejaculation, which is to release sperm cells with essentially the goal to reproduce. You would think, women would get these pleasurable sensations when receiving vaginal penetration, to reward them for trying to reproduce. Although orgasm isn't necessary for a female to be able to conceive, it could be that the contractions of the uterus help to transport sperm towards an egg. A simpler explanation would be that sexual pleasure would lead to women having more sex, resulting in a higher chance of reproduction.

A little over 20 years ago Helen O'Connell was the first to do an extensive anatomical study on the clitoris and stated that: "... current anatomical descriptions of female human urethral and genital anatomy are inaccurate". Weirdly, clitoral anatomy is still mostly absent in the medical world. O'Connell's team only found 11 articles on anatomical dissection of the clitoris, that were published since 1947 (and not focused on restoring sensation after a cliterectomy, or female genital mutilation). It seems that the female orgasm just isn't important enough. But since you're reading this, you must think differently, so I will provide you with some last bit of controversy: there aren't different types of orgasms. It was Sigmund Freud who made the distinction between vaginal and clitoral orgasms. According to him, women should get psychological help when they liked touching their clitoris or wouldn't climax from vaginal intercourse, because women were ought to take pleasure in being penetrated. I'm sure he wasn't aware that less than a third of women regularly come from vaginal intercourse alone. You are lucky if you can climax during vaginal intercourse but not having an orgasm during the old in-out is the norm.



# NOSTALGIA BOUGHT CHEAP:

It will be a nostalgic sensation for many a dutchy: Apple pie. Whether or not your grandma has a good recipe or not, I think most of you will get this somewhat nostalgic sensation when eating apple pie. The combination of apple, cinnamon and crust is simply a classic combination, that will never go out of style. That’s probably why most supermarkets and general stores nowadays all sell their own version. For this review, we aim to give you the best advice on which you should buy if you look to still that nostalgia craving.

We took the apple pie from 4 different stores: Albert Heijn, Jumbo, Hema and Coop. We rated them based on flavor, appearance, flavor and most importantly: FLAVOR. Furthermore, we used some different types of whipped cream as an addition to the apple pie. Although in some countries apple pie will come with vanilla ice cream, Dutch tradition indicates the use of whipped cream. So if you’ve had apple pie, but never tried it with cream, we can already advise you to try that!



### Hema: €5,50

First up, we have the apple pie from the Dutch staple Hema. Known for their hot dogs and smoked sausage, they’re also known for their large assortment of affordable pastry. But unfortunately for Hema, they really miss the mark in this review. The crust was considered dry and stale by nearly everyone. Furthermore, it looks rather unappealing. Where many of the other pies in this review had an appealing ‘grandmotherly’ appearance, this one looked like it came straight from a loveless factory. Now, it’s pretty safe to assume so do the others, but at least they don’t show it. This all boils down to Hema scoring an average of 5.1. Comments: Hennie: ‘More dough than filling.’ Dana: ‘Factory made, not good.’

### Coop: €6,-

Next up, one of my personal favorites: The Coop apple pie. Coop is one of many supermarkets our lovely city has, and their apple pies are actually pretty good. This is also supported by our results here, with the average score of 6.9. Our panel found this pie to taste more traditional, with a snappy well baked crust and this one actually already came with some whipped cream on it. This might’ve worked against it though, as Marit commented: ‘F\*ck preplaced whipped cream!’ Meiske: ‘The apple saucy stuff is tasty.’ Apple sauce is tasty indeed Meiske!

“  
F\*CK REPLACED  
WHIPPED CREAM!

### Jumbo: €4,29

Next up, the runner up in our review. But Devi, why are you already ruining who’s the winner!? Because you probably already looked at the table, so you already know where this is going, come on guys. Overall, the Jumbo pie narrowly outdid the Coop, with an average score of 7.0. Over the last couple of years, Jumbo has really picked up the pace in the affordable pastry game. Where Hema used to be the go to place to go, nowadays I think Jumbo has more to offer and ,as is supported by this review, is just more tasty than most counterparts. Nadia: ‘Taste is really good, but I dislike the structure. It’s very gooey.’ Jente: ‘It’s ugly but nice on the inside. Additional tip: Mixes well with white wine!’ Devi: ‘Takes the cake.’

# APPLE PIE REVIEW



By Devi Seijkens

### Albert Heijn: €6,-

Last but not least, at least according to our panel: Albert Heijn. Look, even if you just moved to the Netherlands, you’ll know Albert Heijn has got the grocery game locked down. But now, it seems that Albert Heijn is also trying to win the pastry game. According to our panel, they are doing very well in the apple pie game. With a lofty average score of 7,6, appie won our review, and probably deservedly so. Although there’s a lot that could be said, I think our panel member Anette summed it up perfectly: ‘Moist.’

### Concluding remarks

Look, for the longest time I’ve thought you can’t mess up apple pie. But this review(And Hema) has shown us that in fact you can. Most Dutch grocery stores sell great apple pie, with Albert Heijn being the best of the bunch. Also interesting to note: Jente really likes apple pie or reviewing while drinking wine (potentially both). As a side note, vegan whipped cream options are really good nowadays. The one we got tasted like merengue according to Marit and Anette and actually elevated most pies even more. Also, as this was the first time we had seen each other in person in months, we might’ve been a little bit to excited to do this. But probably the biggest conclusion of all: If you still have grandparents that can make you some apple pie, just ask them. It’s a great excuse to visit them and have amazing pie, while it saves you 4-6 bucks. And if there’s one thing in the Dutch experience you should try more often it’s saving money.



	AH	Coop	Hema	Jumbo	
Anette	7	5,5	5,5	6	6
Dana	9,5	6	5	7	6,9
Devi	6	8	4,5	9,5	7
Hennie	6,2	7,5	4,5	6,5	6,1
Jente	8	8,5	7	8	7,9
Marit	8	6	4	6,5	6,1
Meiske	8	7	5	5,5	6,4
Nadia	8	6,5	5,5	7	6,8
	7,6	6,9	5,1	7	



# BAS EN Z'N BEESTJES

Beasts by Bas



By Bas van Boekholt

In our shared history, we've had many different animals as companions. Some we bred for meat and others for company, but in all cases, it was the humans that decided to entangle their lives with another animal. But not this creature. It chose us. It decided to join humans scouring the seven seas, it saw whole empires rise and collapse, and it has caused many human deaths. But it joined our civilization, not from the spotlight but looking from the dark. Some humans worship this animal, but most of us despise it, making its name a synonym for untrustworthiness and cowardness. When these animals are in a group, they are even called a mischief. This time, Bas en zijn beestjes will restore their name and give these animals the attention they deserve. Let me introduce you to humans' true best friend, the rat!



While the term rat can refer to a number of different species in the rodent family, all the "true" rats belong to the genus of *Rattus*, which consists of 64 different species. Rats are medium-sized rodents with long tails which they use for balance, regulating their body temperature, and communication, among other things. Rats are mainly nocturnal and live underground. They vastly outnumber humans due to their incredible fecundity. They start breeding from 5 weeks of age and produce 3-6 litters of 5-10 pups in a year, meaning that one pair of rats could potentially have an offspring of 1.250 individuals in just one year! However, this number is small compared to the number of the 25.000 drop-pings a rat leaves per year.

The main reason why rats are perceived as vermin is due to the fact that they can be responsible for the spread of diseases. They have been known to help spread the bubonic plague, typhus, and leptospirosis. They are most notorious for the spread of the black death. However, recently researchers believe that it was not rats but gerbils that spread the disease, making them innocent bystanders. Even though they can carry diseases, they are not dirty. Rats wash themselves constantly by licking their fur. They

spend several hours every day cleaning not only themselves but also other group members, making them actually less likely to catch and transmit parasites than cats and dogs.

Next to being clean animals, rats are also very social animals. They get depressed when being alone and love to play with others. When playing, rats laugh a lot which is unfortunately too high-pitched for the pathetic human ears to hear. However, you can still recognize a happy rat by their ears. A happy rat has relaxed, droopy ears that become slightly pinker. This can be accompanied by grinding of the teeth and vibrating eyes. Next to playing, rats are also able to empathize with other rats. They take care of injured and sick rats in their group and get stressed when they see another fellow rat in pain. They even succumb to peer pressure. Brown rats are prone to disregard personal experiences in order to copy the behaviour of their peers. The urge to conform is so strong that they will even choose to eat unpalatable food if they are in the company of other rats who are eating it.

Rats are amazing swimmers that are able to hold their breath for several minutes as well as swim for three days straight. On the other hand, if you deprive them of water, rats will still last longer than a camel! They have amazing senses, with whiskers that are more sensitive than human fingertips, eyes that can move in opposite directions, and a tongue that can taste poison in astoundingly small amounts. One drop of poison in an Olympic-sized swimming pool is enough for rats to pick the poison out, and they will never eat anything that once made them sick.

In conclusion, rats are amazing creatures that we must be proud of to have by our sides. They are the unseen and unsung superheroes that took us, humble humans, as companions and therefore deserve a place in the hall of fame. So next time you see a rat scouring through your room, don't jump on a chair and scream your lungs off. Take an example from the Karni Devi temple in India, where rats are worshipped. Walk to your kitchen, take some oats and milk and present it to them. Who knows, you might have found a new best friend.









Is this absolutely extraordinary?



Pfizer, Moderna and J&J coming to rescue summer



Sugar Daddy	
$C_{12}H_{22}O_{11}$ Papa	
Sucrose Father	
(Fructose + Glucose) Man	
$\beta$ -D-Fructofuranosyl $\alpha$ -D-glucopyranoside Human Male	
(2R,3R,4S,5S,6R)-2-[(2S,3S,4S,5R)-3,4-dihydroxy-2,5-bis(hydroxymethyl)oxolan-2-yl]oxy-6-(hydroxymethyl)oxane-3,4,5-triol <i>Homo sapiens</i> , XY	



Ecological balance maintained





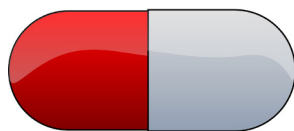
# IDUZZLE...



By Juultje



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-pi



k=m

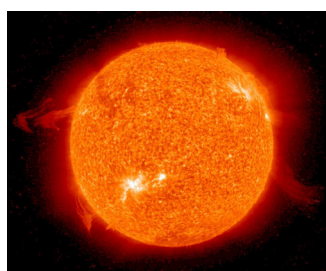


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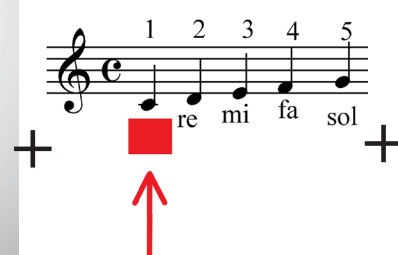
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d=s



-happy, -al



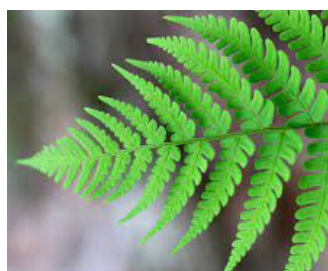
l=f



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-ti, -s



f=v, -n



-s



-b



-h, -o



The previous Iduzzle was won by **Mara Di Giusti**. Congratulations! She has won a marvelous prize, which she is very happy with! Would you like to be mentioned here in the next Lifeline? Please submit your answer to the Iduzzle to [redactie@idun.nl](mailto:redactie@idun.nl) before October 30<sup>th</sup>.

Answer to iduzzle 63: At your darkest hour I'll light a candle for you.