

LIFELINE

Year 17
Edition 4

Bloom
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Lovely Idunnaren,

Everything in life goes in circles. Stagnation. Silence before the storm. Chaos. And then. Everything sprouts again. Growth. Finally, all in bloom. This edition of Lifeline is the last of this academic year and to finalize everything with a beautiful ending before the summer break, we are dedicating Lifeline to blooming. Everything from personal growth, celebrating spring and summer, the friends who are graduating and blooming in their lives and anything else that makes your mind bloom. So come, join us for the last Lifeline in this academic year! Puzzle the Iduzzle, bust some myths with Marit and see what fun things we have reviewed this time! Cheers, dear Idunaren for this amazing year and let's end with a BLOOM!

With love,

Anette Hallik

Lifeline editor in chief 2022-2023

Hello there, I am sad to announce that this edition of Lifeline is already the last one of this academic year, and so this will also mean my last preface as the chairman of GLV Idun. At the beginning of the year the seed was planted with the introduction weeks, where we got to meet lots of new faces within Idun. It has been a pleasure to see so many of these new faces grow and become closer within our association. I think this is one of the biggest strengths of Idun; Every newcomer is kindly welcomed and has a place amongst the garden, that Idun is, the plants that are already there will make room and nurture the new seedlings to create an environment in which they can grow, develop and ultimately come to BLOOM! I want to end this last preface with a thank you to every member of the association who helped to make this year of Idun as amazing as it has been.

Jippe Jansman

With kind regards,

Chairman of GLV Idun 2022-2023

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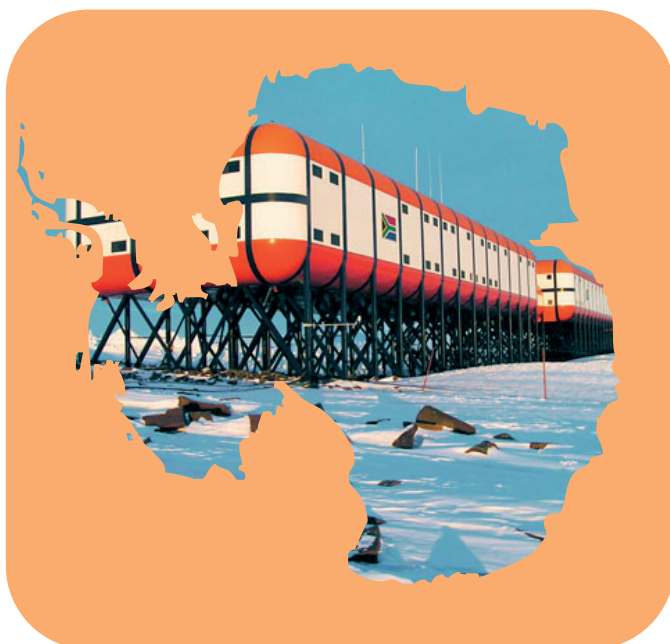
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SCIENTIFIC NEWS

By Jelle de Jong

Antarctica Is Alive!

In the Stygian depths of the South Pole one might not expect to find a paradise, but sure enough, there is one. Since 2015, a team of researchers from New Zealand has been busy trying to get a first look into some of the numerous subglacial lakes, rivers and caverns that sprawl throughout Antarctica. The surface of this continent contains some of the driest, windiest, coldest and most lifeless spots on this planet, the world hidden below it is very different. Subsurface Antarctica has a lack of sunlight, which makes photosynthesis impossible. While light is a crucial part of most ecosystems, it is not strictly necessary; There are interesting alternatives, like the biomass that was trapped in the ice over millions of years. Not much is known about this sort of ecosystem, but missions like these uncover this mystery. Measurements were taken at locations of suspected subglacial lakes. By melting up to half-a-kilometer deep holes through the ancient ice sheet, instruments could be lowered into the lake. The missions have already yielded some spectacular results; Video evidence of the numerous lifeforms that occupy these depths in great numbers. Don't worry, they are not some sort of Lovecraftian creature, just amphipods. These shrimp-like crustaceans depend on the same nutrients that are eaten directly and indirectly by the microbes and that form the basis of the subglacial ecosystem. Future missions will shed more light on what creatures remain hidden there.



By Cecile Bruil

A Scream For Help

We all know plants need water to bloom, but who knew they would actually scream if they are thirsty. Scientists recently discovered that dry tomato and tobacco plants make ultrasonic plopping sounds when they are dehydrated. How exactly these sounds are produced remains to be discovered. The most likely explanation, however, is the popping of bubbles in the plants' water-carrying tissues. This would be equivalent to humans' creaking joints. Therefore, it might be just a feature of the plant's physiology as opposed to an intentional scream for help. It does, however, sound more dramatic to say 'plants scream', so I will. The human ear cannot hear these plopping sounds, hence why you never noticed a plant screaming, though, your dog might notice it. The sound emission is not unique to tomato and tobacco plants, similar screams are detected in corn, wheat and cacti. Whether they are intentional screams or not, the sounds can be of great use: by using microphones in greenhouses and on fields to pick up these ultrasound plant screams, farmers might be able to know when their plants need to be watered and when they are nicely satiated.





By Michelle Berendsen



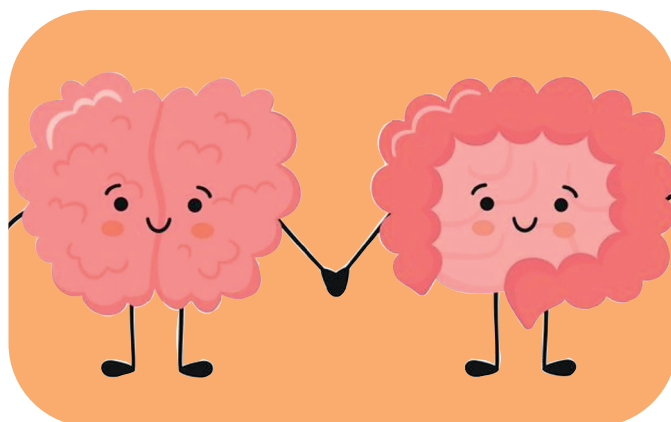
By Alessia Palazzo

Are Fingerprints Failed Hair Follicles?

Fingerprints are known to be unique, yet their formation was pretty much mysterious until now. Fingerprints consist of skin ridges organized in arches, loops and whirls that create complex patterns. A recent study found out that the development of these patterns is the result of a Turing reaction-diffusion system involving 3 molecules: WNT, EDAR and BMP. WNT promotes cell proliferation and EDAR production, EDAR in turn enhances WNT expression while BMP has an inhibitory effect on both. Cell proliferation leads to the downwards growth of the skin resulting in a trench, which, after a few weeks, grows upwards to create a ridge. The process of ridge formation resembles a set of waves propagating from 3 main start sites: the center of the fingertip, along the border with the nail and at the junction with the intermediate phalange. Variation in the precise start sites and interactions between wavefronts determine the unique pattern of skin ridges. Similar mechanisms are also used for the development of other skin patterns. Indeed, the study shows that skin ridges originate from hair follicles failing to recruit a mesenchymal condensate (stem cells that develop into connective tissues). In the end, fingerprints are just failed hair follicles!

Probiotics As The New Brain Protective Supplement?

We sleep for more than one-third of our lifetime, which is crucial for our physical and mental well-being. Nevertheless, almost 30% of adults regularly experience insufficient sleep due to professional obligations and lifestyle. This can result in inflammation and oxidative stress, which lead to cellular damage and increased risk of disease and death. However, there is a solution to inhibit this critical process: probiotics! The latest research has shown inflammation due to chronic restricted sleep can be reduced by probiotic supplementation. Probiotics have been shown to reduce inflammation through multiple pathways, including rebalancing gut microflora, improving gut permeability and preventing neuroinflammatory processes. The microbiota has been altered by administering single or multi-strain probiotics resulting in little effect on levels of inflammatory cytokines in the brain and plasma of sleeping animals. Still, it enhanced the antioxidant capacity and contrasted the rise of peripheral inflammation and oxidative stress levels associated with sleep loss. Probiotics did show their protective role against neuron inflammation via the production and release of specific gut hormones. So probiotics will be mainly administered to improve sleep quality by reducing the Pittsburgh sleep quality index (PSQI), a standard indicator reflecting the impairment of sleep quality. Therefore, probiotics can attenuate oxidative stress and inflammation in the brain and potentially limit its negative consequences.



THE ORCHID'S LURE

By Clara Seinsche



When you think of an orchid, you probably have the typical house plant orchid in mind. It is of course a pretty flower, however, it isn't anything special in biological terms - yet, there is a huge diversity of Orchids with currently around 28.000 accepted species, some of which aren't boring at all once you take a closer look. This is especially true when considering pollination strategies - Orchids preferably engage in sexual reproduction, which requires the aid of pollinators. In many flowering plants, these are attracted by means of nutritious nectars, whereas 1/3 of all orchids solve this challenge *femme-fatale*-style.



Pheromones are powerful fragrances, typically emitted by individuals of one species to attract conspecifics. Yet, their effectiveness in luring carefree individuals also makes them a great candidate for exploitation: for example in the case of the hornet *Vespa bicolor*, which uses a honey bee pheromone to locate its prey. While this is deceptive, the orchid *Dendrobium sinense* adds another level by fooling the exploiter. It does so by emitting the same fragrance that bees produce when alarmed, deceiving the hornets into pursuing prey that isn't there, and instead aiding them in pollination.

While *Dendrobium* fools its pollinators, bucket orchids *Coryanthes macrocorys*, even proceed to subject their pollinators to life-threatening conditions: visiting bees will be trapped into a bucket filled with sticky liquid, almost drowning them, before they are released through an escape pouch, where they pick up pollen for their next adventure.



Male euglossine bees love collecting fragrances to impress females. In their search, they are regular guests at the male flowers of *Catasetum*, which just smell too lovely to ignore. Yet, they are also not altruistic, and smack the males in the head by shooting arrays of pollen on them. Stumbled, the males look for shelter - and find it in the helmet-like female flowers, just above the males.



Another common strategy is called pseudocopulation, for example, seen in hammer orchids. These masters of deceit have flowers evolved to mimic the appearance and smell of female thyroid wasps sitting on the stems of plants. Males are lured to the orchids and, in an attempt to copulate with the fake female, land on the flower. The increased weight on the petals then triggers a movement which smacks the male into another part of the plant, a deliberately placed pollen sack, which attaches to its back. Hopeless as it is, the male will be deceived again, delivering the pollen to another individual of the same orchid species.

These are just some examples of deceptive and non-rewarding orchids, which should display why this group of flowers is so highly regarded among botanists and gardeners alike. Therefore it is no surprise that explorers have been hunting rare orchids around the world for centuries. One particularly rare genus, *Stanhopea*, even lured two orchid hunters into the Darien Gap, a strip of jungle in southern Panama, known to be one of the most dangerous areas on earth, where they were kidnapped by guerilla fighters and held captive for nine months. The orchid's lure just seemed irresistible...



GLOOMY AND BLOOMY

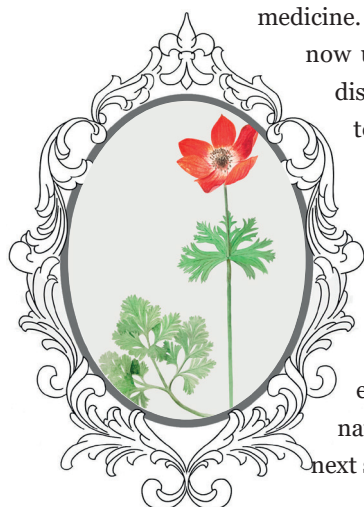
By Anette Hallik



Beautiful red blossoms. Dancing in the wind and turning their faces to the sun. Poppies, namely *Papaver somniferum*, are a beautiful species of flower, growing in the wild in eastern and southern Asia, as well as all over Europe, but believed to originate from the Mediterranean area. However, these pretty blooms hide quite a few secrets. Today, we are taking a little walk through the poppyfields of history.

Our story starts a few millennia back - the first assumed record of the usage of poppies as a drug comes from 2100 BC, where the Sumerians recorded poppies as a medication on their clay tablets. A more elaborate reference of the use of poppy milk as a painkiller is dated a few centuries before Christ, where it was used for surgery and amputations to keep the blinding pain away. Even Anno Domini, poppies did not lose their popularity in medicine. Opium derived from poppies was

now used for an even wider array of diseases: everything from diarrhoea to eye diseases. With the rise of technology and science in the 1800s the well-known morphine was extracted from opium leading to a wider and safer use of the incredible properties of poppies. We use poppy-derived morphine even today, however the addictive nature of morphine brings us to the next secret of the poppy.



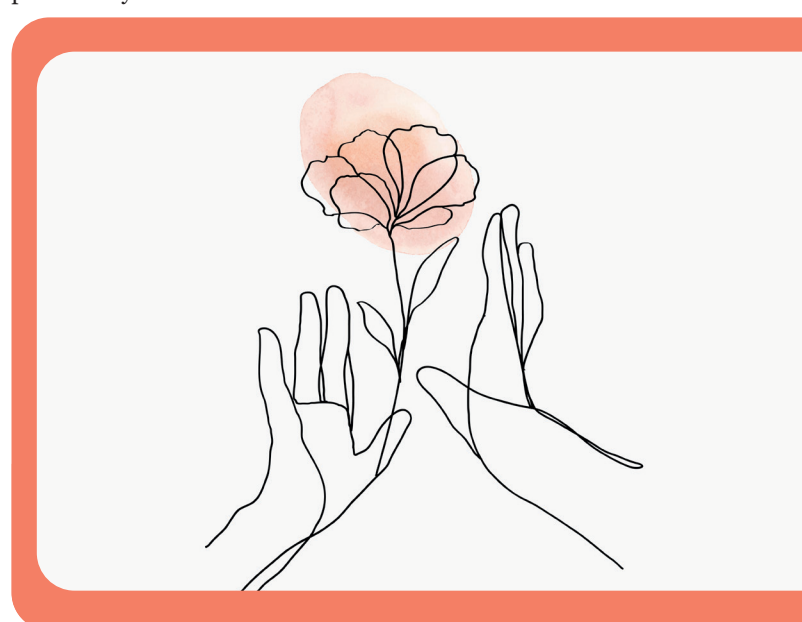
Just like many other medications, opium dragged its users into the sedative embrace and did not want to let them go. Global recreational use of opium started in the 1600s and is still going on today. Opium usage and addiction took over the whole world, creating a whole new market. Most of opium growing and production took place in South-Eastern Asia, leading greedy Europeans to strengthen their trade routes and business relationships. The British East India Company soon established a monopoly over the opium market as the United Kingdom and United States were using enormous amounts of it. Naturally, if any good becomes so influential and desirable, people start fighting, and so, let opium wars begin. By the end of the 1800s, the opium usage and addiction had grown so large that nations finally started fighting against it, pushing through acts to restrict recreational use and minimize smuggling. Nonetheless, by that point morphine and heroin were already



discovered, soon after codeine came, all produced from opium, and until today opium based drugs are heavily used in recreational ways as well as in medicine.

However, poppies are not only known for opium, they also play a huge role in symbolism. For ancient Egyptians poppies symbolized death and eternal life, leading to usage of poppies in funeral rituals. In Greece, the red blooms were decorating the goddess of fertility and springing from her footsteps.

In china, the flowers symbolized faith and loyalty between lovers. The sedative and pain-relieving effect of poppies has tied them to magic, the border of life and death and eternity in many cultures. Often poppies were grown on graves and memorial sites. This connotation with remembrance only got stronger during World War I, where soldiers saw fields of poppies growing on destroyed battlefields in Belgium and France. Surprisingly, poppies grow especially well on the churned soil that the battles leave behind. The bright red blossoms brought hope to the tired fighters and soon made their way into poems, growing to be one of the most powerful symbols of remembrance in World War I.



Poppies have made their way into medicine, folklore, witchcraft, addiction and even warcraft. The tiny red blooms hold a lot of power, memories and mysteries.

INTERVIEWING...

...The Good Spirits of Linnaeusborg

By Cecile Bruil



You have all seen them wandering around the floors of LB, fixing your professors laptop-to-board connection, resolving malfunctioning devices, or, maybe at a Wabber drink on a Thursday evening. No matter if you are new to Linnaeusborg or are a real trooper, you for sure have seen Henri & Theo-Henk at some point. The building managers go around doing their jobs like the true professionals they are, but, from time to time they loosen up on the professionalism and have a true blast with the Idun board and members.

On one of those fun Wabber evenings on which the building managers joined after their shifts, Theo-Henk jokingly mentioned being featured in Lifeline. We, as Lifeline, will not pass on the opportunity to feature these icons. Therefore, ladies and gentlemen, let me introduce you to Henri & Theo-Henk!

When asked about their most fun experiences, feeding the fish in Covid times immediately came to mind for Henri. During the harsh lockdowns, noone could enter Linnaeusborg.

Henri

Honorary member of GLV Idun

Job: Building Manager LB and Herdershut Schiermonikoog for 11 years

Favourite part of LB: Kantine/ take-away

Favourite Idun committee: El (due to Roelof de Vries and Merel Jager!)

Favourite ice cream flavour: Pistachio



Only the care-takers in the animal facility could feed/clean the research animals and the building managers could do an occasional inspection round to see if the building was not on fire. Nobody from the board nor Wabber was allowed in, however, the fish tank in the suite still needed to be cleaned and fed... Henri mentioned that he would be in contact with the board and Wabber to illegally sneak them in during inspection rounds for them to quickly take care of the fish, before leaving the building again.

One of Theo-Henk's funnest moments is a very iconic one:

Theo-Henk

Honorary member of GLV Idun

Job: Building Manager LB and Herdershut Schiermonikoog for 2 years

Favourite part of LB: Suite!! And their office

Favourite Idun committee: No favourite

Favourite ice cream flavour: Pistachio and Hazelnut

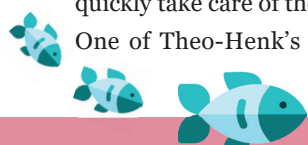
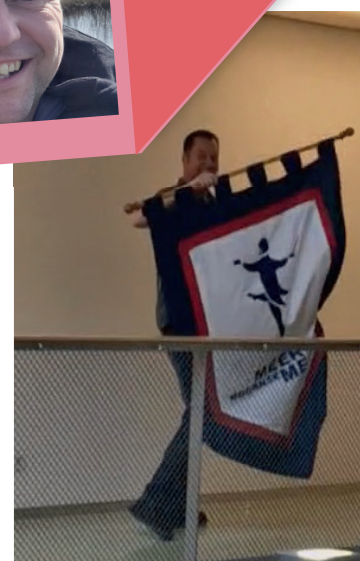


the brassing of the Idun banner.

Brassing is an interesting concept, one Henri and Theo-Henk hadn't heard of before, until Tim (aka 'directeurtje') meticulously explained the process. On a Friday in March this year, Theo-Henk was in 't Hok, accompanied by Tamar who was nose deep into the budget files, and Kennedy who was mesmerised by first-years collecting

their lab coats. Kennedy made sure to give them the best fitted lab coats and was looking through all the boxes with different sized coats. With his head in the boxes, both board members were well distracted. Theo-Henk saw his chance and grabbed the huge banner from the wall and ran across the 1st floor with it. He brassed the banner. The iconic moment was captured on video by directeurtje, who then advised them to write a bras-letter. This letter contained two simple demands: 1. A clean boardroom and 2. A free beer. The demands have been fulfilled to the joy of Henri and Theo-Henk. Now only one question remains: when will the opportunity to bras the banner strike again?

Our building managers are an iconic part of our Idun culture. They make an effort to build a good relationship with the board and make sure to be both serious and goofy when time allows. I hope you now have names to the faces you are all familiar with. And make sure to say 'Hi' whenever you see them ;)



MARIT'S MYTHBUSTERS

Plants cannot be used in traditional medicine



They say knowledge is power, but what if this knowledge is total nonsense? When you fall on your tailbone, you won't get blind and when you get a jellyfish sting, please don't pee on it. You will be surprised how many biological misconceptions are rooted in your mind and that of others. In our rubric 'Marit's Mythbusters', I will debunk common myths that many of you believe to be true.

You wake up with your head hurting, mouth as dry as the Sahara, and throat feeling like you swallowed razor blades. Again. Desperately reaching for paracetamol for the sixth day in a row, you remember your parents' words. Although they swear by natural plant medicine, or phytotherapy, you remain a skeptic. However, desperate times call for desperate measures; is it worth a try?

Although using plants to relieve symptoms or cure illnesses is often labelled as alternative medicine, some phytotherapeutic plants show promising results, while others are already used in practice for ages. As early as around 1500 B.C. a papyrus roll was describing the therapeutic use of willow bark (*Salix sp.*) in cases of pain. Nowadays, willow bark, or at least part of it, is present in the majority of households, in the form of aspirin. And there are more substances found in traditional medicine that find their origin in plants.

To slow down the conduction of the AV node in the heart, often digoxin is used. This substance, retrieved from the cutesy-looking foxglove (*Digitalis purpurea*), blocks the sodium-potassium channels in heart cells, thus ultimately slowing down the heart rate. Not surprisingly, digoxin is prescribed in cases of atrial fibrillation or chronic heart failure, but not entirely without risk; the therapeutic index is tiny. This means that the effective dosage of digoxin is very close to the maximum dose that can be given without harm. Just like that ex, digoxin can become toxic very quickly.

Yet another endearing flower restores the reputation of toxic plants. It is the snowdrop (*Galanthus nivalis*), the landmark of spring, that emerges from the ground where the early sun touches the earth. You should not be fooled by the delicacy of this white flower; Rather be impressed by the wiseness it radiates. The snowdrop is a rich source of galantamine, a substance that enhances acetylcholine functioning in the brain by suppressing the neurotransmitter's degradation. This superpower makes it a good treatment for light to mildly severe Alzheimer's in some patients. Indeed, under the brand name 'Reminyl', it has helped patients in stabilizing their cognitive functions and slow down the process of memory loss. While phytotherapy is still categorized as an alternative medicine, plants and their derivatives have been widely used or become an inspiration for numerous drugs and medicinal purposes.

When it comes to food, we like to add some herbs and spices to make them tasty. But what if the key to good mental functioning can be found in our kitchen cabinets? In Chinese and Ayurvedic medicine, turmeric does it all. In addition to anti-inflammatory purposes and neuroprotection, some studies also found that turmeric significantly lowers depressive symptoms and anxiety. Also, the hot and spicy molecule capsaicin is promising in the treatment of Parkinson's disease, by repressing neuroinflammation in the brain. Of course, there are many more examples where plants or their derivatives relieve symptoms of depression, anxiety, ADHD, bipolar disorder and many more.



Using nature and plants as inspiration for treatments of diseases and increasingly accepting them in our current healthcare system is an interesting direction that should not be disregarded immediately. However, structural research is necessary to investigate their effects and eventually get them to bloom.



A QUICK GUIDE TO SPEAKING FLOWER

By Eva Lemson



How to transform from wallflower to shakespearean lover.

Communication is key in any relationship, as we are taught from a young age. But in this modern world, where there are many, many options for communication, from a quick text to the traditional physical conversation, sometimes words can't communicate the message we'd like to send.

The proposed solution for all your communication troubles; Flowers. So this time, I'll guide your way to romantic proposals, passive aggressive digs, and scheming, all through the subtle subtext of pretty botany.

If you wish to speak the language of flowers, one should first get some main concepts out of the way, to ensure their message comes across as intended; The language taught in this article will be the language originating from the Ottoman Empire and European high society. Another flower language is *hanakobota*, the Japanese flower language. While some meanings might coincide, this author is not responsible for the language

barrier you might stumble upon - or possible fights and/or accidental proposals that might be caused by it.

First, all about love:

Red tulips are a declaration of love, whereas yellow tulips are a sign of hopeless love and white tulips a sign of innocent or young love.

Hoary stock stands for lasting or long-standing love and Christmas rose is a sweet way to tell someone you feel at peace with them. To ask someone to be yours, a four-leaf clover is perfect. An apple blossom stands for persevering love (after a darker time) and plum blossom for persevering beauty.

If you want to tell someone they are beautiful in other ways, you can do that by giving them hibiscus for delicate beauty, american cowslip for divine beauty and amaryllis for attention-catching beauty (which is great for giving to a more timid character).

Further, Morning glory is for unrequited love, but also obsession. And oak-leaved geranium is for true friendship. Pink rose stands for appreciation of motherhood and hemlock is a very passionate declaration of love with the meaning of "you will be the death of me."

And now for our passive aggressive messages to straight up death wishes. Big sunflowers are a flower for "You are vain", (but small sunflowers are a sign of adoration). Yellow rose says "I think you cheated on me." Black rose is a flower for "You are dead to me.", where tansy is a message for "I wish you the worst." Rhododendron is symbolizing revenge, "I am out to get you" and monkshood is a flower for "Beware of what tea you drink", which perfectly fits its poisonous nature. Basil just stands for pure hatred.

Now, the placement of your flowers. Following Hawaiian tradition, the flower behind the left ear is reserved for someone married/taken. Behind the right ear, however, is a sign of singleness. Flowers gifted by a suitor that are pinned to the middle of one's chest is a sign of rejection, or willingness to have a friendship instead of love. Flowers pinned onto the heart, however, are a clear declaration of love.

The next time you are picking up flowers for your beloved trusting partner, avoid the yellow roses, and maybe don't pick up tansy for your mother's birthday.



ARE YOU A STUDENT? ARE YOU STRUGGLING? LIFELINE IS HERE TO SAVE THE DAY AND MAKE YOUR LIFE JUST A LITTLE BIT EASIER. WE COLLECTED A BUNCH OF TIPS, TRICKS, GADGETS AND HACKS TO HELP WITH OUR CHAOTIC STUDENT LIVES

Suite snacks: If you are ever in the need of a quick snack, don't go to the vending machines! Instead go to the Idun suite in LB (1st floor) to get some cheap snacks. While you're there hang out on the comfy couches for a while ;)

Soepkaart: Everyone knows that the best canteen food in LB is the soup. If you are a frequent buyer of soup then make sure to ask for a 'soepkaart', you will

get a stamp for every soup you buy and a full card (8 stamps) will get you a FREE soup

CV checks: Before applying to your dream job, it is advised to let your CV be checked. Both GLV Idun and the FSE career services offer free CV checks and can help with any career related questions (i.e. motivational letters, linkedIn)

TM calculator: this tip is for all of our LST friends who at one time or another might need to calculate melting temperatures of primers, PCR annealing temperature, or, the length of primers. The online TM calculator will be your friend!

A nice day out: To find a great deal for your day trip to the zoo or theme park make sure to check both Social-deal.nl and vakantie-veilingen.nl for the best deals and discounts. Using these free sites can save you a lot of money!

Studium generale: An amazing way to indulge yourself in academics is Studium Generale. Various topics are discussed by professionals in cosy evening talks, the best part: it's free for students!

Quillbot: This free website can help you with rephrasing the sentences you want to put in your report. However, make sure to still correctly cite the sources used to avoid plagiarism!

Børgør fries: We all like a good burger and fries every once in a while right? We highly recommend going to Børgør on Thursdays to get the best fries (including special Børgør sauce) for just 2 euros. And on weekends you can get a burger + fries with a discount as well. Enjoy your next meal :)

Research Rabbit: We have all been there: You found a great article, but now you cannot find any related papers. Research Rabbit is an AI programme which is able to show you the relevant papers to the one paper you found. It's totally free and will definitely help you with your reports

Balconies in LB: Whenever you have a break in LB and want to get some fresh air, go to the 2nd, 4th or 6th floor to enter the balcony. There are picnic tables and there is a nice view of the Zernike campus. Best part: nearly no one knows they exist (until now)

BioRender: When writing your research paper or thesis you of course want the prettiest of pictures to go along with your text. To create these images use BioRender! You can make schematic images of everything, from rats to yeast and from agar plates to receptors, everything bio-related can be found on BioRender. And again, a basic account is totally free!

Uni museum: If you have never been to the University Museum in the city centre you are definitely missing out! It is a free museum (take your student card) with multiple expositions on different topics: a temporary exposition, Allesta Jacobs' room, anatomical room and a Ferringa exposition

Diy plants: For some easy green in your room maybe plant some seeds of fruits and veggies in some soil. Lemons, avocados and bell peppers are some options. Within days they will sprout and soon you might have a little tree in your pot



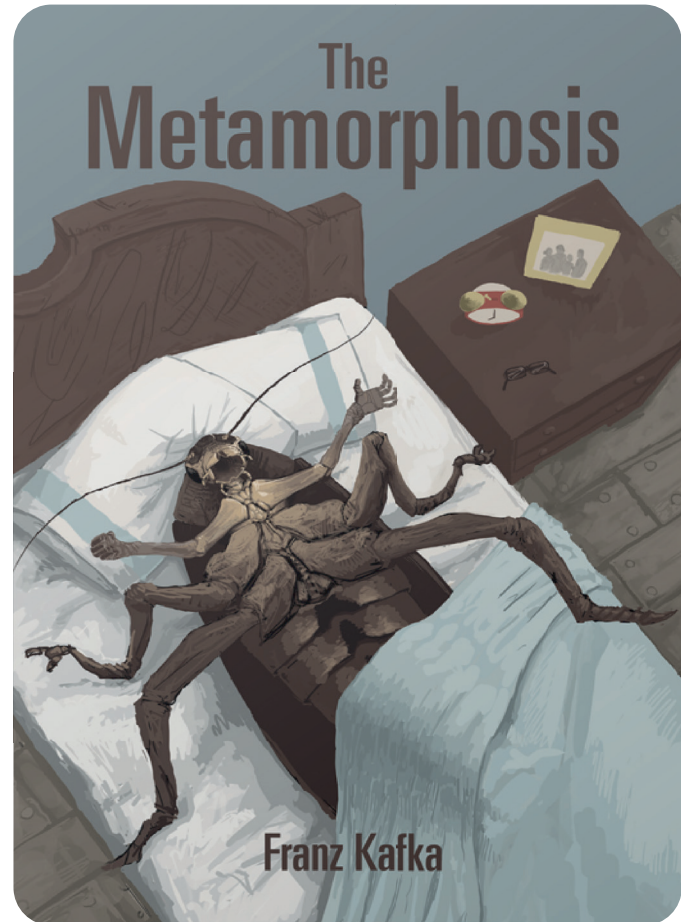
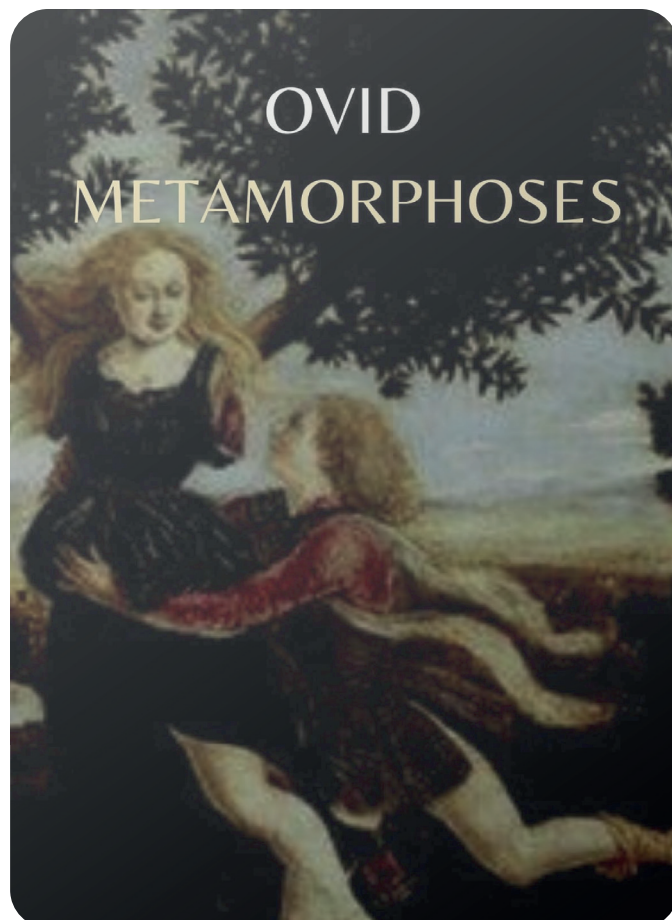


ECHOES OF METAMORPHOSIS: *A JOURNEY*

The word metamorphosis originates from ancient greek: meta means “after,” “changed” or “beyond” and morphé means “shape”. Metamorphosis is therefore easily defined as a change in shape. As biologists, we all know what biological metamorphosis is: the process by which an animal radically changes its body structure after birth. However, not everything is about science since we weren’t the only ones interested in this phenomenon. The process of shape transformation fascinated poets, writers and philosophers throughout history, each developing their own interpretation of the theme. In this article I want to show you that besides being a biological concept metamorphosis has many more interesting shades.

The most famous classic author exploring this topic is the Roman poet Ovid, who wrote “Metamorphoses”, a latin poem which contains over 250 stories explaining how transitions helped shape our world. Ranging from the origin of the universe to the deification of Caesar, Ovid’s stories contain different types of transformation: from human to animals, objects or constellations, from animal to human and also sex changes (how innovative!).

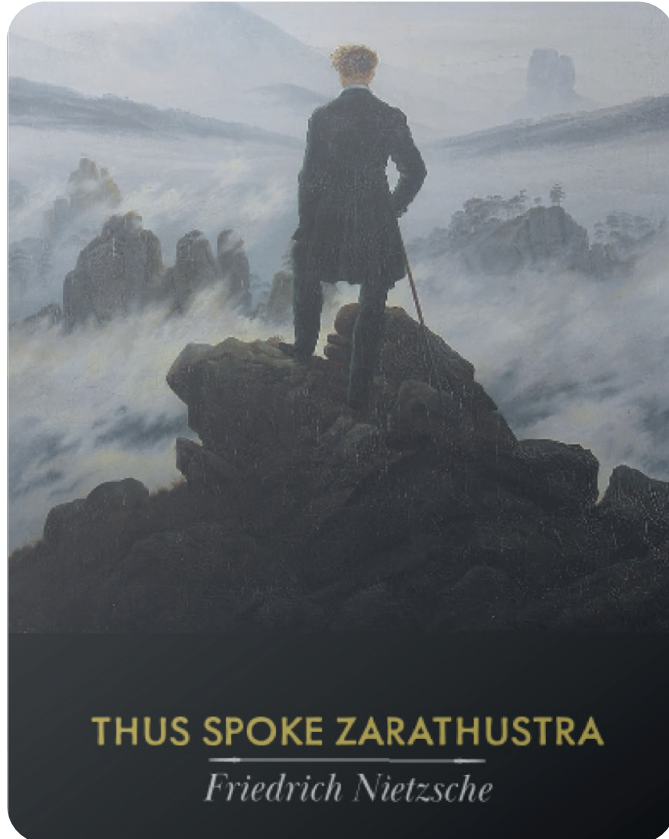
Ovid’s idea of metamorphosis was based on Greek mythology where metamorphosis consists purely in a physical change in



shape, whereas human personality (and soul) is maintained. The general purpose of myths was to explain natural phenomena and human behaviors and, as you may know, Greeks liked to attribute things to gods. Metamorphoses are no exception since in most cases the transformation was induced by a god.

Were gods just going around playing with their powers and transforming people? Well...kind of. Although in the majority of the myths metamorphosis is either a punishment or a reward for human behaviors, there were cases in which gods just wanted to test or deceive mortals. So, be careful while you walk down the street, Zeus might transform you into a frog just for the fun of it!

Metamorphosis wasn’t just a recurring theme in mythology, but was also quite important in literature and philosophy. Kafka’s book “The Metamorphosis” is a staple that I think everyone has heard of during a boring high school class on 20th century literature. But in case you missed it, “The Metamorphosis” is a novella about a guy called Gregor that one day wakes up as a “monstrous vermin” (probably a cockroach). While at the beginning his family tries to take care of him and support his needs, in the end he becomes a liability and Gregor decides to kill himself for the sake of the family.



Gregor's metamorphosis resembles Greek metamorphoses because he maintains human consciousness, however, he also shows cockroach-like behaviors like hiding in dark places and eating rotten food (ewww). On the other hand, his metamorphosis is quite mysterious since no background information nor some clues are given by the author to explain this sudden change. The most common interpretation is that Gregor's life was already terrible: he was enslaved by the system and overwhelmed by a job he didn't like, but had to tolerate to provide for his family. In this case, metamorphosis is perceived as a liberation, not only for Gregor that finally has a good excuse to quit his job, but also for his family that is forced to come up with other solutions and eventually becomes independent of his labor.

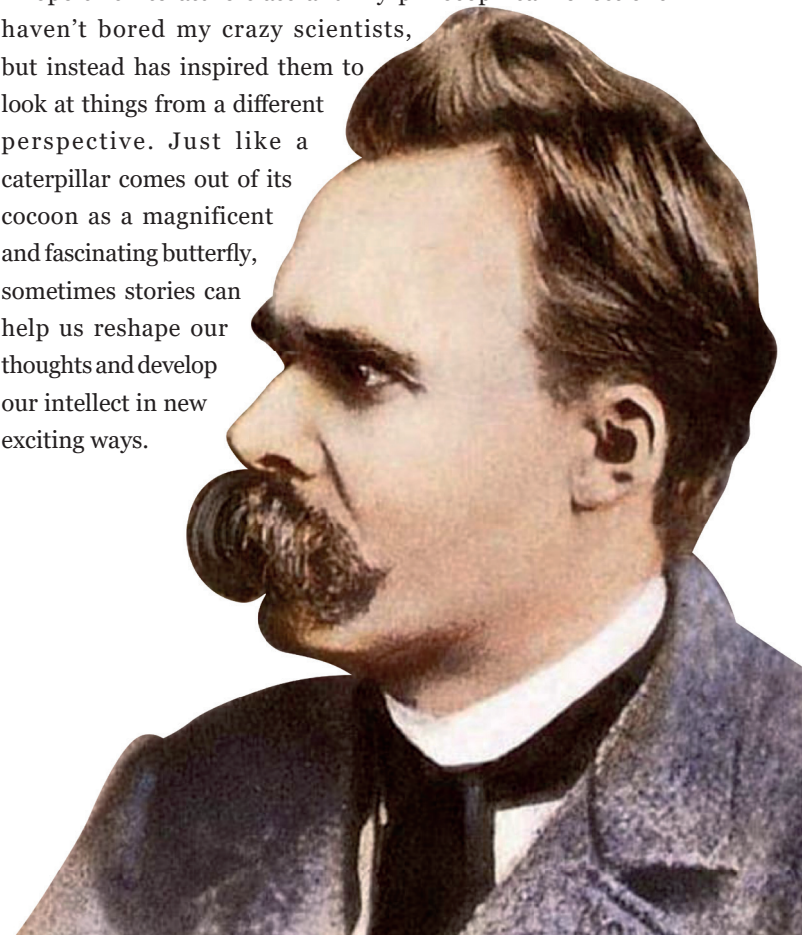
In line with the concept that metamorphosis frees you, let me introduce you to Nietzsche, a philosopher of the 19th century with some mind-blowing ideas. Unlike Ovid and Kafka, Nietzsche saw metamorphosis as a psychic transformation rather than a physical one. In his book "Thus Spoke Zarathustra", he tells how this man descends from his cave after 10 years of isolation as a new elevated person: the "overman" (Übermensch).

The overman is someone that has overcome himself fully and follows no law except the ones he gives himself. He is free of prejudice and master of his own life. Metamorphosis is therefore

seen as a way to give meaning to life and elevate towards a more free existence. Nietzsche sees improvement as overcoming your old self (hence the word "overman"). Indeed, he thought that humans are a bridge between animals and overmen: humans started to direct their power inwards to gain self-mastery, but somehow got stuck in the process and their power remained constrained. In another of his works, Nietzsche claimed that humans are part creatures and part creators, so we have the intrinsic ability to reshape ourselves. The overman is someone that is 100% creator and therefore able to change themselves as they wish without constraints.

In the context of literature, metamorphosis has acquired different meanings (from physical to mental transformation) and different interpretations (from punishment to liberation). We all know that animals have the capacity to metamorphosize, but can also humans undergo a similar transformation? I think that human metamorphosis is a potential: potential to become the person you want to be, potential to change your life, potential to disappear for a while and re-emerge as a new person. I see metamorphosis as an opportunity to take your life in your hands and redirect it towards your goals.

I hope this literature class and my philosophical reflections haven't bored my crazy scientists, but instead has inspired them to look at things from a different perspective. Just like a caterpillar comes out of its cocoon as a magnificent and fascinating butterfly, sometimes stories can help us reshape our thoughts and develop our intellect in new exciting ways.



HOW PLANTS MAKE

What made the world “bloom” into the place it is today? To me, one of the things that makes it great is the choices we have; there is so much to do, so much to explore, learn, and experience. There is so much to do that it’s hard to be bored. Even better than the already existing things; new things! The increase, progress and growth associated with novel commodities make us feel optimistic and give us the motivation to keep going ourselves. Even when we think we have seen it all, there is always more! Often based on things you already know, but improved, adapted and more convenient. Sometimes though it is entirely new, exotic, totally takes over the minds of everyone, and even changes our way of living. The origin stories of our bred plants and cultivars have changed our world for the better many times over.



While novel things can be invented locally, but that only gets you so far. What makes biology-related inventions great is that they are the legacies of long-forgotten empires, potential ancestors, and dedicated people. Shared through time spans of ten thousand years, many organisms are closely tied to the journey of humankind, travelling the continents on mysterious trading caravans and accompanying us on courageous journeys over the great oceans. Let me take you on a journey through time and space, visiting the most popular cultivars around us, filling up the shelves in our supermarkets.

Where better to start than in Ancient Mesopotamia; the peoples there were the first to practise agriculture some 11000 ya. This is the first place an empire grew, an empire that collected the knowledge and practices of places as far as India to Egypt. Before the Bronze Age collapse, Mesopotamia bloomed as the centre of its Eurasian world. This is where the oldest known crop, figs, were first cultivated. Many followed, like pomegranates, apricots, dates (9000 ya), melon, wheat, cilantro, spinach and cumin. All these plants were cultivated in and around Mesopotamia. To the south,

in the Middle East, grapes were first cultivated. This quickly led to the use of yeast and alcohol production (and the first laws around alcohol abuse, I can imagine). Indeed, the revered fluid that filled the goblets of crusader kings was first cultivated by the ancestors of the very countries they were invading.

Even further South we find Ancient Egypt; the last refuge before the impenetrable Sahara makes nearly all biology-related trade impossible (no sane trader would even try to get a slow caravan of fresh food across an endless desert). This explains why Sub-Saharan Africa is so isolated; most caravans traded only traded in gold and other precious materials. The only viable trading partner across the Sahara was Aethiopia, located to the South of Egypt. We can thank the Ancient Aethiopians for our coffee and watermelons. On the opposite side of Africa (laterally) we can find the calabash. The calabash is also known as the bottle gourd, and, when hollowed out, is traditionally repurposed as a container, helmet or bowl. Amazingly, by attaching pipes, strings and whatnot, it also serves as the basis of countless West African instruments! Additionally, it is a relic of when Africa split from South America, as it is a lonely relative to the Cucurbita found overseas.

A perfect bridge to go over the Americas. All squash species are from Mesoamerica, so pumpkins, zucchini and gourds. Mesoamerica was to the Americas like what Mesopotamia was to Eurasia; a prosperous and inventive intercontinental trading hub. They began with the domestication of corn 9000 ya. Vanilla, avocados, and papayas can all be traced back to there too. The Americas have been a blessing to European cuisine; imagine a kitchen without beans, (bell) peppers and paprika. Our beloved capsaicin would be gone! Now let’s remove South American ingredients too; there would be no tomatoes, potatoes, and chocolate, as well as passion fruits and pineapples. Because of the many migrations through Mesoamerica, the Southern Americas are home to countless cultivars of beans, potatoes and peppers (black beans, jalapeños, kidney beans, chilli pepper and green beans). Many of these made their way to Europe after the 1500s, but not everything was valued as much as it deserved to be. One example that we probably would have liked if it was taken here earlier is the guarana, a fruit whose seeds contain twice the caffeine content of coffee beans. No surprise that it is still a popular ingredient in South American drinks. Compared to the South, there is not that much to find in Northern America, which is





where blueberries and cranberries are from. Perhaps the most famous berry, the strawberry, is a hybrid between a North and South American species, hybridised in France only in 1750. Although tomatoes are from the Andes Mountains, they were brought to Europe shortly after colonisation, and became a significant source of umami flavour in the Western diet. Cacao trees are from the Amazon and were long cultivated by Mesoamericans. The cacao fruits it bore were used as a valuable currency. Not for the cacao bean we adore so much today, but the fruit itself. While the Europeans only produce chocolate with the beans, the Mesoamericans also ferment the fruit to make alcohol. Without wine, beer or coffee the Americas managed just fine with their cacao booze and guarana drink.

With all this talk about Europe, let's hop back across the pond. While the people East of the Andes Mountains grew countless cultivars of the potato, the Spanish sadly only took a tiny few variants they liked back to Europe. It is not hard to imagine that only taking a few led to a very low genetic diversity of potatoes in Europe. This vulnerable cultivar was especially susceptible to disease, which led to disasters like the Irish potato famine. A quarter of the Irish population died or fled the country. Yet another reason diversity in the kitchen is important! One of the most diverse components of our food are our spices. Spices are made in plants as a repellent for herbivores, fungi, and bacteria. This makes spices invaluable for food preservation, which is especially important in warmer regions, where food spoils very fast. This explains why the Mediterranean has many; bay leaf, sage, lavender, dill, parsley, rosemary, thyme, mustard, fennel, mint, and chamomile. We will find many more spices when travelling East; but not before mentioning more about Europe.

Leaving behind the olives, artichokes, asparagus, celery, peas, beets and turnips we make our way north with the Romans. When the Romans took over Europe, so did the crops within their Empire; Cabbage species were cultivated throughout all of Eurasia. Broccoli was cultivated from cabbage in Italy, Cauliflower was bred from cabbage in Cyprus, kale was cultivated from cabbage in Greece, and Brussels Sprouts were cultivated from cabbage in Belgium. When I mention the contribution of our

friends from Belgium, I have to mention carrots too. Carrots were originally cultivated in Central Asia, where a yellow carrot was bred in addition to the naturally occurring white and purple. When carrots made their way into Europe, more colours were bred, like black and red. The orange carrot was bred in the 17th century as a tribute to William of Orange, who led the struggle for independence of the Netherlands from Spain. Sadly, there's not much more to share about our country; the apples, pears, and plums that grow here all come from another place. This place is in Central Asia, on the mountain slopes surrounding the Taklamakan desert (alongside peach, garlic and rhubarb).

Oranges are also not from the Netherlands, but from Indomalaya. The original citrus plants can be found there, most importantly the citron, mandarin and pomelo. The orange is a local hybrid between the pomelo and the mandarin. The lemon and lime are hybrids that also involve the citron. The hybridization of these species was not exclusive to Indomalaya; the clementine was hybridised in Algeria from mandarin and orange, and the grapefruit was hybridised from orange and pomelo in the Caribbean.

More domesticated plants from the Indomalayan are rice, sugarcane, cucumber, banana, ginger, radish and coconut. Spices from there are basil, turmeric, cinnamon and black pepper. Allspice comes from the Island of Jamaica, and cloves, mace and nutmeg are from the Maluku Islands.

While Europeans cook their American potatoes, Asians stir-fry European vegetables. It is the connectedness that makes all of our recipes possible. The cultivars we enjoy so much are the legacy of long-gone cultures that perpetually left their work to be continued by the next. All contributions added up to create state-of-the-art products, products that seem to neglect borders and to work with for geneticists given how much people have meddled with their genetics already. To those that are fortunate enough to modify plants; be honoured that you are able to continue the long line of steps that were made by countless people before you.

BLOSSOMING THE CHILD'S BRAIN BY DRAWING

By Michelle Berendsen



Creativity, do you have it? Creativity is the ability to develop original ideas, and everyone has it to some extent. In fact, creativity is not limited to artists or those with a background in the arts. Anyone can be creative if they have a vivid imagination, enjoy doodling or even like problem-solving. However, creativity is not just about being good at something. It is also a way to express



oneself, process emotional experiences and organise memories. Creativity is closely bound up with an individual's personality and emotional life. From a young age, it would help to engage in creativity, such as drawing, since this is a way of non-verbal communication. It helps to organise and process emotions and memories, especially in young children who can graphically relive happy events such as birthday parties or sad events as a therapeutic exercise. Imagination and drawing allow children to explore and increase their expression and communication skills. The children's enjoyment of improved vision through the drawing of creative and expressive pictures will also elevate memory and the recall of events in children. Moreover, drawing is an excellent exercise in problem-solving as it encourages children to create visually realistic representations of the world around them. And it even improves fine motor control skills and hand-eye coordination.

Moreover, to consider creativity in educational settings, it might be helpful to look into why confident children love drawing and others do not want to be close to it. To express creativity in children, they need attributes, encouragement, and skill to engage in creative activities. Some children may not choose to participate because of a lack of self-confidence or are anxious about the open-ended task with several possible solutions. It helps by encouraging the children play. Imaginative play and free choice activities would seem to be the critical components of the early childhood setting with creativity. Also, the educational system should involve the children in their learning process.

Creativity can be flourished by asking open-ended questions, tolerating ambiguity, encouraging experimentation and persistence, and praising children who provide unexpected answers. This should facilitate actions and stimulate the children's willingness to engage in creative behavior. Adult research also shows a peak of creativity in most people between their 30s and 40s, with productivity declining after the 50s. Still, the beauty of expressiveness is in lifelong learning practices and not only in school. Therefore, it is essential to continue to provide opportunities for creative expression throughout a lifetime. The advantage of adult learners is that they are highly motivated and self-directed. However, some adults have problematic learning experiences because they lack confidence in their academic performance. These learners must provide a supportive learning environment with a positive experience and a creative side. This can be achieved through innovative learning practices that rely on experiential, often intuitive learning.

So, how can we stimulate this creativity in children? Firstly, creativity is a valuable skill that can benefit people of all ages. Still, encouragement is essential. Not only is encouragement needed, but also joining the child and giving them your time. Children who draw with their parents have much more enjoyment due to the parent's engagement, creating a pleasant creative environment. Also, the drawing demonstration supports them in their own picture, giving them the confidence to accomplice their drawing. So, whether you are a child just starting your creative journey or an adult looking to explore your creative side, there



is no better time than now. So why not pick up a pencil and start drawing or doodling today? Who knows what kind of creativity you might unleash!

HUMANS VS CHATGPT

Can professors and students recognize texts written by ChatGPT?

By Eline van Aalderen



In the last few years, chatbots are blooming. The emergence of natural language processing (NLP) technology has revolutionized the way we communicate with machines. Recently, Snapchat came up with a new highly-discussed function (My AI), but chatbots are also more and more used by students to generate texts. ChatGPT, a large language model developed by OpenAI, is a prime example of this technology with its ability to generate high-quality human-like texts. However, as Artificial Intelligence (AI) language models become more sophisticated, it becomes questionable whether human readers are still able to distinguish between AI-generated and human-written texts. To shed some light on this aspect, the students of the Honours College course: 'Practical Statistical Hypothesis Testing' designed and conducted a small case study.

A total of 74 participants (37 professors and 37 students) were presented with five random texts and were asked to determine whether ChatGPT was involved. The expected average score, if they were randomly guessing, is therefore 2.5 (out of 5). The observed average score was equal to 2.61, so very close to 2.5.

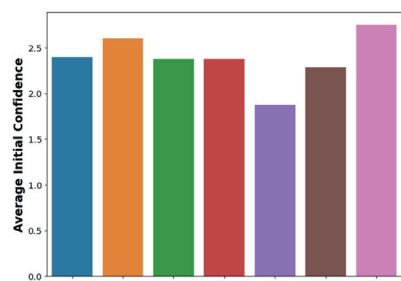


Figure 1: Average initial confidence per scientific field.

This means the average participant could not detect whether ChatGPT was used. The average scores for the students and the professors were 2.59 and 2.62, respectively, indicating that there was no significant difference in their performances. Furthermore, they were asked how confident they felt in their ability to detect texts generated by ChatGPT.

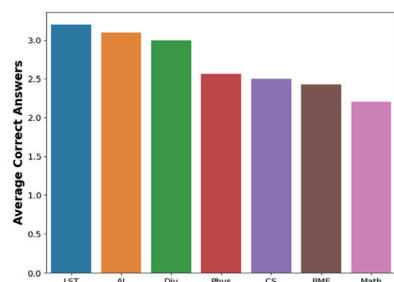


Figure 2: Average number of correct answers per scientific field.

The histogram in Figure 1 shows the field-specific average initial confidences and the average scores per field are shown in Figure 2. The group with the largest number of correct answers was Life Science and Technology (LST) with a score of 3.2. It is remarkable that Mathematics (Math) performed worst, although the Math participants started with the highest confidence.

In addition to human-written and ChatGPT texts, we also included hybrid texts. We generated those by quickly proofreading and amending the ChatGPT texts. This was to remove standard phrases which ChatGPT uses regularly to make the text more difficult to identify. As expected, pure ChatGPT texts were a bit easier to detect than hybrid text types as can be seen in Figure 3.

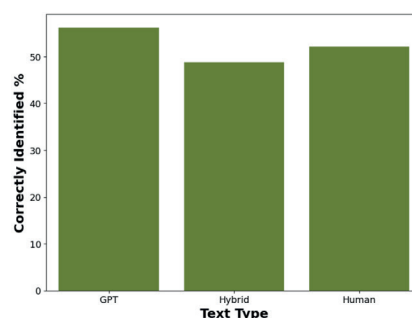


Figure 3: Fractions of correctly identified texts per text type.

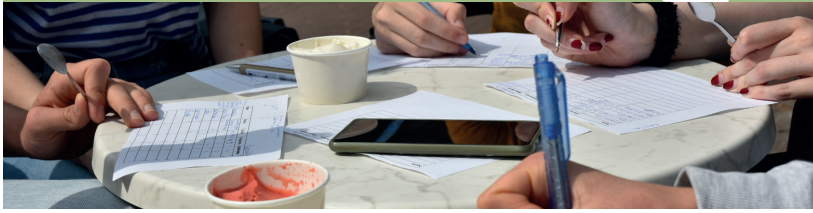
Conclusion

Most importantly, the results of our study suggest that humans struggle to recognize whether ChatGPT was used to generate texts. There seems to be no difference between students and staff, and the performance difference between different scientific fields seems relatively small, ranging between 2.2 and 3.2 out of five correct answers. We also observed that the probabilities of giving the right answer did not strongly depend on the text type. However, it seems that the use of ChatGPT was slightly easier to detect in pure ChatGPT texts than in 'hybrid texts'. So in the very unlikely case that you consider using ChatGPT for academic purposes, our current conclusion would be that you could safely do so. However, using ChatGPT without making it explicit is a fraud, we, therefore, recommend not making use of it. Furthermore, new AI-driven ChatGPT scanning systems are coming up, such as ZeroGPT, which search for suspicious formulations, so be warned!

P.S. Unlike the Chatbot article from the previous edition (Lifeline Edition 71, Chaos), this article is not generated by ChatGPT, but this research is completely performed by Eline van Aalderen and The Honours College Consortium 2022/2023: *Frederico Remi, Jovan Andreevski, Keerthana Umesh, Mikel Martinez Garrido, Matías Sanatacruz Vallejo, Nora Totsche, Vlad Ungureanu, Hana Glumac, Anna Gumenyuk, Eline van Aalderen, Jonas Scholz, Laia Bonet Orrego, Lizaveta Yurkianets, Lana Bitar, Charlotte Hessels, and J.Q. Chen attended the Honours College course: 'Practical Statistical Hypothesis Testing' in 2022/2023 taught by Marco Grzegorzczak.*

More detailed information about our ChatGPT study will be published in the 1st issue of 2023 of the student magazine Periodiek from FMF.

REVIEWING... ICE CREAM ...REVIEWING



It is undeniable. The sun is shining, it is 21 degrees Celcius, birds are chirping and the flowers are blooming: **it is summer!** At least, when we did this review hehe. As temperatures are rising and summer is near, what else could we possibly review than I C E C R E A M ? Luckily for us, ROOM has opened a new cafe with delicious ice cream flavours just outside of the city centre, next to the Noorderplantsoen. Therefore, Lifeline took the hard task upon them to test out ALL the fifteen flavours they had and rate them *oh so honestly*.

ROOM has a unique way of 'scooping' ice cream, as they continuously stir it in their bowls. This ensures no ice crystals are formed and keeps the ice cream sooo smooth and fluffy and honestly, it's the best.

This time, we invited a special guest to our review, as this person was the first to send in the Iduzzle answer for all the past three editions this academic year! To reward his effort and test if his ice-cream-eating-speed is as fast as his Iduzzle speed, our honorary Lifeline member Jurn joined us to rate different ice cream flavours on their tastiness, the texture, the uniqueness, and the repeatability of the ice cream.



First up, cheesecake. An okay start. For the Dutchies: this tasted like pure nostalgia, as it resembled a frozen Danonotje strawberry dessert. Lifeline agreed that it was more a sweeter, creamy strawberry ice cream than a true cheesecake, but not bad nonetheless. Overall, Lifeline liked this flavour and its texture, but would not likely get it again. As Marit put it nicely: 'If I'm paying for two scoops, I'm not paying for this.'

Next, we let the marvellous vegan mango sorbet melt on our tongues. For some members, *ahem* Cecile *ahem*, this ice cream tasted so much like the tropical fruit, it was perceived as 'too healthy'. As they say, there is no accounting for good taste. Still, most Lifeliners were enthusiastic about this taste, rating it an average of 8,8 for taste.

IT TASTES TOO HEALTHY

How amazing would it be if you would get a morning coffee ice cream instead of a regular cup of filter coffee? Changes are that you can find some Lifeliners doing this, as this flavour was AMAZING. It is creamy, coffee-like, and not too bitter. Comparisons with the 'cafe noir' cookies and 'hopjesvla' were made, which are beautiful things to be compared to. With some 100s being given for taste, this flavour ranked (spoiler!) second of all ice cream flavours tasted on this particular day.

Our seccie and praesus drooled as this flavour stood at the table. It is no surprise that they each rated this ice cream a 100 for flavour. Fresh, cooling, and perfect on a warm day, the lemon sorbet ice cream is what you want. While there was a little variety in rating the taste (some people LOVED this, but others felt differently, and I quote Jurn: 'It's good for a lemon, but still lemon'), we recommend to try this flavour still.

We will stay in the vegan flavours because as life scientists we'd like to lower our carbon footprint sometimes (or at all times). Strawberry sorbet blew our minds. We expected it to be boring and a bit standard, but it was sooooo good. After tasting, our praesus suspected there to be vodka in it, as it 'tasted just like the one she made at home'. Jurn thought it was nice and a very straightforward flavour: 'What you get is what you order'.

Next up, a rather unique flavour. Gwen Stefani would love this, as it contains B-A-N-A-N-A-S. And toffee. Which makes banoffee, for the perceptive reader. While this flavour scores very well at texture and uniqueness, the flavour is not the best. It's very sweet - too sweet, some might say - and has a very artificial banana taste. If that's what you're going for, Lifeline won't judge you (maybe a lil), but this was not the flavour for us.



I THINK THERE'S VODKA IN THIS

So, we figured that the banoffee was just not to our taste and the only way was up. Boi were we wrong. Although the majority of the flavours we tested were AMAZING, and delicious, and take our money, this flavour was really disappointing. 'Coconut and Pineapple' sounds like a piña colada summer dream, but according to our praesus it's more like a 'body cream taste'. Not exactly what Lifeline is going for this summer, so we recommend you to try any of the other delicious flavours ROOM has to offer.

Our seccie was delighted when the next flavour was brought onto the table. Her undying love for Bastogne cookies was finally available in ice cream form. Therefore, she was very critical of this flavour, and really missed the cookie chunks in it. We tried to explain that the continuous stirring of the ice cream at ROOM did not allow for any chunks, as they would be stirred in anyways. Most of Lifeline felt the same: not a bad flavour and it has potential, but could have been better.

Next up is a personal fave: hazelnut. WOW. This flavour absolutely blew our minds. The nutty flavour was so strong and good and intense and nice. We loved it. This is also why hazelnut scored pretty high at uniqueness: the flavour itself is not very new, but the way it tasted was. A great flavour that you cannot go wrong with. Do order!!!

Okay, okay. We've seen chocolate. But how often have you tried a dark chocolate flavour? This flavour was rich and intense, but not

too heavy on the stomach. Some Lifeliners thought it was too strong, but they have no taste (sorry not sorry). You could eat this on its own, but just try and think of the other flavour combinations you could pair it with! Almost anything works. The 'dark' part of the dark chocolate makes it not too sweet, which is something most of us really appreciated. We like!

Next up, yoghurt cherry. With this flavour, what you see is what you get: it has a rich yoghurt and a rich cherry taste. While some Lifeliners put this flavour in their top 3, it reminded others of their daily yoghurt breakfast. As a fellow reviewer noted wisely: 'If I'm getting ice cream, I kinda want it to be special and not taste like my breakfast'. We could only agree. Still, the flavour is fresh and perfect for a summery day.

Lastly, we had some flavours that were not the worst, but also certainly not the best. Therefore, we quickly go over them, so you still get an idea if you want to try it or not. Pistachio was nice and lovely, but after the amazing hazelnut, a tad bit disappointing. If you fancy nuts (hehe), we advise you to go for hazelnut, but pistachio is a good, more subtle option. White chocolate, again, tasted exactly like they promised: like white chocolate. Too sweet for most of us though, but has potential in a nice flavour combination. The same holds true for dulce de leche: toooo sweet, but if that's your thang, go for it. Finally, vanilla was a good vanilla (according to our vanilla expert), but it's still vanilla.

Overall, we had so much fun reviewing all 15 flavours ROOM had to offer. Weird looks from people on the terrace, seeing 7 people eat 15 scoops of ice cream were more than worth it. We hope you have a good overview of what to order (and what not!) when you crave that creamy deliciousness. Lifeline out (*mic drop*)!

BAS EN Z'N BEESTJES

BEASTS BY BAS

By Bas van Boekholt

Some animals get their name based on their appearances, such as the octopus or the naked mole-rat. Other animals get their name based on the sounds they make, like the cuckoo, the pobblebonk frog or the zyzzyx (perfect word for hangman). And then there are animals that are so weird, that defy normal description so much that you can only go into the realm of myths and legends to name it. This edition's animal fits in that last category. The animal is aptly named after the Greek monster consisting of a split body existing as part beautiful woman and part giant snake (which part was what is heavily debated). This monster was the mother of many legendary Greek monsters such as Cerberus the three-headed dog that guarded Hades, the sphinx and even the fearsome Hydra! Just like this Greek monster, our animal has both mammalian and reptilian traits. Let me introduce you to the electro-sensing, ever-loving echidna!

The family of echidnas (Tachyglossidae) consist of two genera living respectively in New Guinea (Zaglossus) and Australia (Tachyglossus). Similar to most mammals, echidnas are warm-blooded, nurse their offspring and have a very long life (up to 50 years!). However, simultaneously in two out of these three traits, they differ slightly from other "normal" mammals. First of all, their offspring are born in an egg, a trait they only share with the platypus, and second, their body temperature is one of the lowest of all mammals with a mere 32 degrees Celsius. On top of that, their body temperature can change up to 10 degrees during the day akin to some of their reptilian friends. They are toothless animals but use their impressive long sticky tongue (which is about a third of their body's length) and the hard pads on the roof of their mouth to gobble up and "chew" their food. The name of the genus Tachyglossus literally translates to "fast tongue". However, the most obvious feature of the echidna is its spines. These spines are basically hairs and form the echidna's most important defense. When threatened, an echidna uses one of two techniques. It either rolls up in a spiky ball or performs the "sinking ship", where it digs itself straight down while staying horizontal until only its prickly back still sticks above the ground.

In addition to their weird appearance, echidnas also have a peculiar mating ritual. When the breeding season starts an echidna male will look for a fertile female and just starts following her closely. He is soon joined by other males adding to the queue and forming a "mating train". One female can have

up to twelve males following her and this procession can last up to one month, with males dropping out and rejoining. When the female is worn down she will stop and lie down. However, for the males, this is only the beginning. Together they will burrow a donut-shaped deep trench around the female after which they try to push each other out. The last one standing in this "arena" is allowed to mate with the female. Some males don't want to go through these strenuous trials and they just wake up early from their hibernation, search for a female and rape her (just like in the original Sleeping Beauty fairytale). Therefore, it can happen that a female echidna will wake up from hibernation being pregnant.

When a male mates, he whips out his four-headed penis

(yes, you read that right) of which only two heads will swell and be used while the other "shut down". If he mates with multiple females he will alternate between his heads.

Why and how we don't know as it is a challenge to study the echidna in its natural habitat and they refuse to mate in captivity. Prior to 2007, no one had ever even seen an echidna ejaculate. There have been attempts using

electric stimulation but they only led to swellings

and no ejaculation. Unlike her Greek counterpart an echidna, the mother does not create monsters but lays an egg which she immediately deposits in her pouch. Ten days later a puggle crawls out, but will stay in the pouch drinking from milk patches (not nipples) until he is about 2 months old and his spines start growing out. The mother digs a small burrow and comes by once every five days for another drinking session. After another half a year, the puggle leaves the burrow and goes out on its own.

As you can read echidnas are a special type of breed with a special type of breeding. I have not even talked about their electroreceptive organs, their unusual brain structure (their neocortex makes up half their brain) and the fact that they are only able to dream if the temperature is right (25 degrees seems to be the sweet spot). I think I made it clear why the echidna belongs in the Hall of Fame. However, while usually I end with a lesson about what we can learn from the animals, today I will do the opposite. Guys, this is for you, if you like someone don't follow in the mating footsteps of the echidna. Don't stalk someone for over a month, create a moat around them and whip out your four-headed penis. You then rightly deserve the same faith as all the Greek monsters, a brutal death.





Me: I just bought a new plant
Friend: Didn't you just buy one yesterday?
Me:



r/houseplants starter pack



"Is this a variegation?! 🤔"



"Should I repot it?"



"Please help me save my dying monstera :("



"Do you think it's dead?"



"Can I plant it in soil yet?"



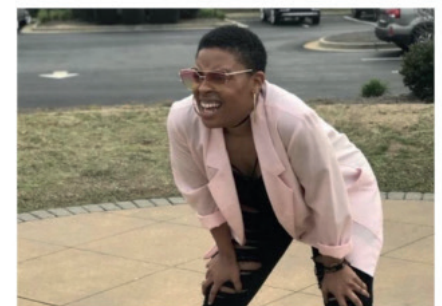
"Family pic in the living room"

KAPWING

Me pouring the 2 day old water glass from my nightstand into a plant



Me looking for roots after I put a cutting in water 5 minutes ago



PLANTS OUTSIDE



"mmm, concrete. cozy"

GLV Idun

PLANTS AT HOME



"is this tap water? i'm allergic"

@planty_hoes

Me telling my partner I won't buy any more plants this month.

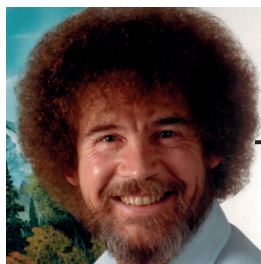


THE IDUZZLE

YOUR FAVOURITE PUZZLE



s=w, rk=t



+l, -b



-h, e=s



g=m



n=u



e=ful



-t, -u



-e



b=c, -b



-s, -m



-r



g=s



e=y



-p, t=f



n=r



-e



+a, -s



-r

The previous Iduzzle was won by **Ellen Heikema**. Congratulations! They have won a marvelous prize, which they are 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 before September 30th.

Answer to iduzzle 71: The only order in the universe is just a cycle of calm and chaos