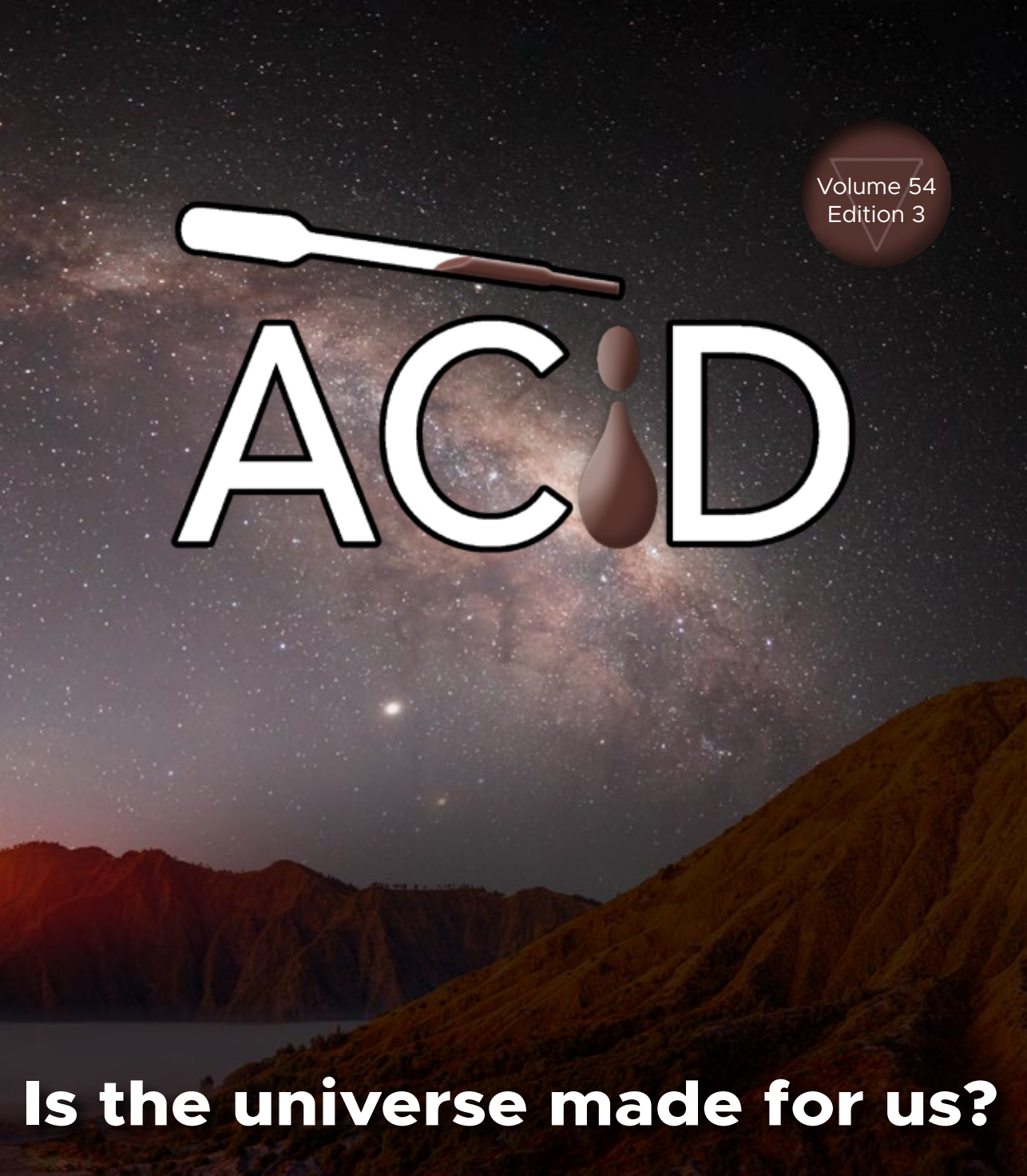


Volume 54
Edition 3

# Is the universe made for us?

Amsterdams Chemisch Dispuut

**Turning back the hands of time on our bio clock**
How a new theory of aging might help to increase human lifespan
**The dangers of not suiting up in space**
**Interview with Fuat**
**These plants are not rooting for you**

# From the Editor

**Dear reader,**

Spring has begun and we are ready to enjoy the sun more, walking outside on the "earth", which happens to be the theme of this edition! In this third edition of the 54th year of ACiD we also take off looking at the entire universe, space, and even the stars with a horoscope. We keep it close to the university as well, with another Chemistry vs. piece, an interview with Tiago Martins on good work-life balance, and an interview with the döner king himself, Fuat! We have spread our wings to other universities for you as well; we interviewed several other chemistry study associations in the Netherlands to ask them about the studies and student life there. Furthermore, we also take a deep dive in the science of toxic venoms and the process of ageing. Do not worry, the recipe, pictures, advertisements, and the smaakmatrix are all still there too to love! We hope you enjoy reading this edition as much as we enjoyed writing it!

On behalf of our entire editing team,
**Anne-Fay de Jong**

# Content



# Colophon


**Editorial office**
Anne-Fay de Jong (chair)
Rianne van Diest (secretary)
Fenna Roest (design)
Myrthe Zwart
Siebe Lekanne Deprez
Anna May Inzenhofer
Jiri Sanramat
Janne van Asselt
Kirsten Pama

**Contact**
Amsterdams Chemisch Dispuut
(Room A0.09)
Postbus 94214
1090 GE Amsterdam
Phone: 020 – 525 7861
Mail: blad@acdweb.nl
Website: www.acdweb.nl

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# From the Chair

**Dear ACD'ers,**

It has been a while since I last wrote to you, which means quite some things have happened. The agenda was packed with all kinds of activities from our committees! I could mention all of them but then I fear that I will write more than one page. Instead, I want to highlight some of my personal favorites.

Starting with the Winter Wonder Ball together with the NSA, which was a great way to start 2023. Chemunity organized events like Meet-your-PhD, the Power of Networking and Meet-your-Master. I enjoyed all activities, but my favorite was the networking event, where I learned some minor changes that could really boost my CV! And let's not forget about the three-course dinner with some professors.

Thanks to the ABC we had plenty of borrels with the most creative themes. We had the Bring-your-Sibling borrel, Guinness borrel, "If only it were Summer" borrel and of course, my favorite, the Carnaval borrel. We also had another VU borrel, this time with GeoVUsie in their bar "Houtzagerij in den Koele Blonde".

Some ACD'ers and I went on a ski trip to Risoul in February. As part of the winter sports committee, I put quite some effort in organizing an amazing trip. Looking back to the days we spent skiing, snowboarding, and après-skiing, I feel like we set up a fantastic trip!

Finally, I am looking forward to the (when writing this) upcoming Spring party with Spectrum: Tropical Neon. ACD also organized a spring themed party with Spectrum last year which was so much fun, so I am really hyped for this year! Besides, it is also my birthday that day and I just can't wait to party the night away with everyone!

Love,
Your chair
**Fay Heemskerk**

# Het Wel en Wee van de OC

*Evelien van Erven*

**Dear reader,**

In my last column I set out some lines I wanted to keep you informed on in this column, but as there is a lot more to the task of being in the programme committee than just sitting together and looking at course evaluations, I still have more to talk about.
First, some quick updates on the previous points:

- Paper course evaluations: the vote to go back to paper (which has been proven to raise our current and barely informing <30% response rates to 80's and 90's) did pass our committee. However, its actual implementation is surprisingly difficult. It is therefore unlikely that you will receive any paper forms for evaluations in this academic year.
- UvA Q and its replacement by a new medium: no news as of right now.
- There have been no new pressing matters concerning the implementation of the new curriculum and its mixing with the old. Any problems that have arisen are being worked out in private as we speak.
- GLASS and the 42 EC limit: the last FOC (Forum OC, faculty programme committee meeting) taught us that this 42 EC limit is apparently not a hard line. You are still able to apply for more than 42 credits in a semester, although we as a committee are still figuring out what rules are present here. By the time this column reaches you, an official announcement will hopefully be sent out, containing our findings regarding this matter.

With that out of the way, it's time to tell you about one of our other main tasks, besides digging through the critique you (hopefully) supply us with through filling out course evaluations at the end of periods: the Teaching and Exam Regulations, or TER (OER in Dutch). Every year these are revised, and every year the programme committees have a vote of approval for them. The TER-A for next year, which is the faculty-wide part, has already been approved, but part B, the programme-specific one, is in an interesting position with many rather drastic revisions proposed. We do not agree with all of them, and are still working out the details on these issues.
One major new addition to the TER-B of the bachelor is a new major Sape Kinderman is working on, Molecular Life Sciences (MLS abbreviated). This major is attempting to provide biology students with more options for chemistry and vice versa. We are currently a bit hesitant regarding this major, with our main critique being that it spreads chemistry students even thinner across a second biochemical option and does not prepare them adequately for the Master's degree offered by the UvA and VU. While we do see the potential it has to attract new students, its implementation is going a bit faster than we feel comfortable with.

I will keep you up to date on these matters and anything else I deem important. Hopefully you now have a slightly better idea about what the programme committee is working on.

**OC mail:** ocs-science@uva.nl
**OC page:** https://student.uva.nl/onderwerpen/opleidingscommissie

# Is the universe made for us?

Siebe Lekanne Deprez

*Humans have always been concerned with the existence of humans and Earth, and how it originated over the course of history. New theories are introduced to this day that try to explain why life exists at all. What do these theories say and what do we need to think of them?*

Throughout history, humans have devised theories about the origin of life and the universe in which they put themselves in a unique position ("we may be the only intelligent lifeform in the universe" argument). One example is the homocentric / geocentric model in which all celestial objects revolve around the Earth. This model was the predominant way of viewing the universe for countless humans in old European civilizations such as the Egyptians, the Greeks and in Arabia.[1] We may find the theory ridiculous nowadays, but history tends to repeat itself and also modern theories (read further) place humans and life in its center. Before I give an example – the anthropic principle in cosmology – I first want to explore why humans feel the urge to distinguish themselves from other species. Although there are many different answers to this question, I came across two perspectives which I found interesting and can be taken as food for thought.

From a biological perspective, humans view themselves as special because their human point of view is the only manner in which they can perceive the world (through their senses). People can generally hear sounds, see light, touch objects, smell petrichor or metals[2], or experience the taste of our delicious bread recipe. Our experiences completely depend on the senses of our own body and so far, we are not capable of experiencing the world in a different way. Thus, humans literally stand at the center of their own world because it is not possible to experience it in another way. If humans would not have their senses, would it even be possible to know what the world entails and where humans originate from?

Furthermore, humans construct societies that place themselves in the center of attention. We (a West-European society) currently live in a rather individualistic society that stresses the importance of "setting your own goals" and "being responsible for your own life". The trend goes hand in hand with a more existential conscience in which the role of a higher/divine presence has dimished[3] and in which humanism is more popular. Although one can argue that this is quite a recent (>20$^{th}$ century) trend, a common thread is that humans place themselves at the center, sometimes at the cost of other species or life forms. As a consequence, we regard ourselves as special.

The above examples are only speculations, but there are theories that are more sophisticated and are supported by science-based observations (though that does not necessarily make them scientific). One such theory is the **anthropic principle of cosmology**[4] that tries to answer the question about why the universe is as it is. It imposes the condition that the universe could only exist because it enables intelligent lifeforms, such as humans, to exist. Let us see what the implications are!

Officially, the **anthropic principle** states the following: *the observed properties of the universe must be compatible with the existence of intelligent observers, such as human beings.* In other words, humans may only exist when the properties of the universe are just right;

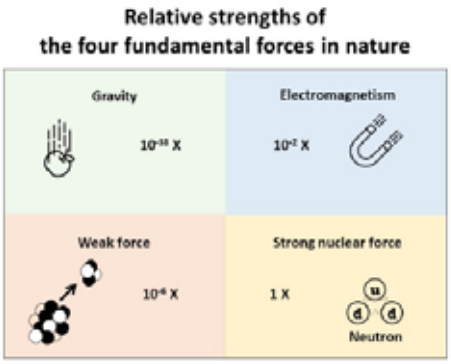
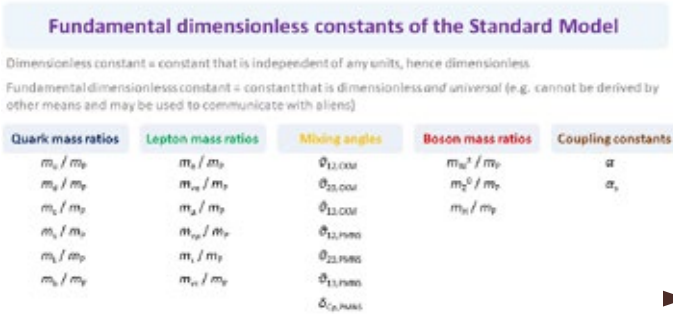



Figure 1; Overview of the four fundamental forces according to the Standard Model of particle physics. Their relative strengths are presented with the strong nuclear force being the strongest one (and acting on the smallest scales) and gravity the weakest one (but occurring on the largest scales).

otherwise, humans could not live in this universe because the universe is not suitable for them to live in. So, it is like a self-fulfilling prophecy in which the fact that we live in this world means that the world is special. But, it is still unclear what the meaning is of the "properties of the universe". Fortunately, the Standard Model in particle physics may shed some light on the issue. The properties of the universe are described as the presence of the four fundamental forces in nature and the relation between them: gravity, electromagnetism, the weak force, and the strong nuclear force (Figure 1). These forces give shape to the universe as we know it. Gravity and electromagnetism probably sound the most familiar, since we experience it in our everyday lives. A person can apply enough electromagnetic force in the form of muscle contraction to pick up an object, thereby overcoming the gravitational force[5] between the object and the whole *Earth*. On the other hand, the strong nuclear force and weak force are relevant on subatomic scales. The strong nuclear force enables nuclei to form, and the weak force does the opposite: it enables unstable atoms such as $^{235}U$ or $^{13}C$ to decay. The forces are understood through the Standard Model (excluding gravity) and form the basis of how we view processes that we observe.

Importantly, the relative strengths of the forces determine what kind of universe we live in. The fact that nuclei and atoms can form, that these combine into molecules with certain shapes, that these shapes make up even more complex structures to eventually form objects on human scale and larger, all depend on the relative strengths of the forces. Were, for example, the strong nuclear force to be much weaker than it is in our current universe, then atoms would not be able to form and our world would look completely different. Of course, without humans to observe it.

It turns out that there are twenty-five fundamental dimensionless constants that govern the strength of three forces (Figure 2; gravity is not included). Each of them represents a constant without any units that cannot be derived from theory. I like to think of them as that we would be able to communicate with aliens were we to encounter them by sharing these constants because they would measure the same constant. These constants thus describe the properties of one's universe!




The twenty-five dimensionless constants determine how strongly particles interact with each other. Quarks make up protons and nuclei while leptons are different and include electrons. The mixing angles gives information about the behavior of quarks (CKM) and neutrinos (very light particles that belong to leptons; PMNS). The bosons are force carriers that mediate the interaction we call "force" and the coupling constants indicate the relative strengths of the electromagnetic and strong force.

Now the **anthropic principle** makes its grand return: why do the constants have their measured values? Well, maybe it is a proof that we live in a special universe since other combinations of values would not result in intelligent lifeforms, and so we would not be able to measure them. It seems almost like a conspiracy theory that among all possible values for each constant, it happens to yield the precise values for enabling the conditions for Earth to form, for water to exist, for life to thrive and for humans to exist. It certainly makes us, humans, feel unique.
Zooming out again, many cosmologists and physicists have investigated the extent of the anthropic principle and many points of critique can be brought up to the table, as Sabine Hossenfelder explains in her book "Existential Physics".[6] There are actually several variations of the principle: strong, weak, participatory and final, each having certain nuances. In this article, I focused on the "strong" variant.

Furthermore, the anthropic principle is closely related to the multiverse or “we are living in a simulation” paradigms. To determine how "special" our universe is, you would need to give a probability to find our universe with its associated constants, which may imply that there are other universes with a different combination of constants. However, it is impossible to assign probabilities because our universe is the only one we know exists (N=1 in statistics is never a good thing...).
What are we to make of this? For one, everyone is free to believe in the anthropic principle. Since there is no scientific evidence that proves otherwise, the question “Is the universe made for us?” is still open. However, I consider this question quite useless, because I expect we will not get an answer soon. Instead, I prefer to zoom in on our world and ask the question “How can we shape a pleasant world to live in, forming our own “special” universe?”. A question I ever hope to be able to answer.

**Notes and sources**

1. Mahony, M. S. Ptolemaic astronomy in the Middle Ages. https://www.princeton.edu/~hos/mike/texts/ptolemy/ptolemy.html (accessed Mar 25, 2023).

2. Throwback to edition 53.1 and 53.2 about the smell of rain (petrichor) and metal!

3. CBS. Welk Geloof Hangen we aan? https://longreads.cbs.nl/nederland-in-cijfers-2020/welk-geloof-hangen-we-aan/#:~:text=Meer%20dan%20de%20helft%20(54,tot%20een%20andere%20religieuze%20groep (accessed Mar 25, 2023).

4. Plainly speaking, cosmology is "the study of the universe."

5. Keeping Newton's description of gravity; I am going to include Einstein's picture (general relativity), in which gravity is actually described by geodesics in a curved spacetime.

6. Hossenfelder, S. Existential physics: A scientist's guide to life's biggest questions; Penguin Random House LLC: New York City, New York, 2022.

# Chemistry in other cities

*Anne-Fay de Jong & Jiri Sanramat*

Studying chemistry in Amsterdam is very nice, but you might want to spread your wings to another university to broaden your perspective and your CV. We took the liberty to interview some chemistry (related) study associations from a few different cities to get to know them a little better and maybe make the choice of uni easier for you! We asked two associations from Utrecht, Proton (P) and Amino (A), and two other cities, Alchimica from Wageningen (W) and Chemische Binding from Groningen (G). From their answers, you'll learn about their university, study programmes, research groups, and more!

**What is the name of your study association and in which city is it located?**

**P:** Utrechtse Scheikundige Studentenvereniging Proton (U.S.S. Proton) and we're located in Utrecht.

**A:** U.L.S.V. Amino and it is located in Utrecht.

**W:** M.S.V. Alchimica, Wageningen

**G:** Our study association is De Chemische Binding from Groningen.

**How many chemistry-related degrees are available/affiliated with your study association? Are these degrees international or Dutch?**

**P:** Only one Bachelor, the Bachelor of chemistry. For the Masters, there is nanomaterials science, a Master that is the most affiliated with chemistry. In the year 2024, a new Master's will start: Sustainable and Circular Chemistry. There are also lots of biochemical Masters that one can do, but those Masters are often more associated with the Bachelor of Molecular and Biophysical Life Sciences.

**A:** We have one chemistry degree for the study of Molecular and Cellular Life Sciences, which is an international Bachelor's study.

**W:** Alchimica is the study association for the Bachelor Moleculaire levenswetenschappen (BML, Dutch) and the Master of Molecular Life sciences (MML, international).

**G:** We have members from the Bachelor and Master of Chemistry and of Chemical Engineering. All degrees are international.

**How large are the degrees, student-wise, at your university? Both Bachelor(s) and Master(s).**

**P:** The Bachelor has 360 students. The Master has 168 students.

**A:** We have around 140 first-year students each year.

**W:** Our Bachelor's typically has around 80 first-year students and the Master's around 40.

**G:** In both Bachelor's together, there are 300 to 400 students and in the Master's in total around 150.

**What is the focus of the courses at your degree(s) (chemical engineering, biochemistry, analytical chemistry, general chemistry, etc.)?**

**P:** The main focus of the Bachelor's is general chemistry. In your first year, you'll get introduced to all the different parts of chemistry, like organic, inorganic, analytical, physical and biochemistry. After that you can choose your own courses, focusing on the parts that you are particularly interested in. Later on, in your Master's, you can choose more specifically which part of chemistry you want to study. There are different research groups which you can choose from, some focus on catalysis, and others more on spectroscopy or colloid chemistry. There are quite a lot of opportunities for you to truly choose the subjects you are interested in and want to study.

**A:** Our degree focuses on life at a cellular level, and we have a mixture of biology courses and chemistry courses. Therefore, our chemistry courses focus very much on organic chemistry and biochemistry.

**W:** Our Bachelor's and Master's focus on preparation for a career in research, a majority (62%) of our students will do a PhD and go into (fundamental) research at a university. Our study programme is quite broad entailing almost everything from cell to atom while looking at this from a biological, chemical and physical perspective. Especially the combination of these fields is relatively unique to our programme.

**G:** The focus of the Chemical Engineering degree is obviously Chemical Engineering and for Chemistry, a wide variety of chemistry will be covered with the Bachelor tracks Sustainable Chemistry and Energy, Chemistry of Life, and Smart Materials.

**Does your university offer cool and/or special (chemistry-related) Minors for students from other universities?**

**P:** Unfortunately, nothing that is specifically relat-

ed to chemistry.
**A:** No, we do not have a chemistry Minor.
W: Our university offers a variety of chemistry-related Minors, ranging from bionanotechnology and bio-based sciences to chemical sciences. If these pique your interest you can read more at [1].
**G:** The university offers different electives for the Minor, which cover a wide field of Chemistry. Otherwise, there are other Minors in the natural sciences like the Einstein Minor or the Future Planet Innovation Minor.

**What kind of research is performed by your faculty?**

**P:** Depends on the research group. The biggest groups focus on catalysis (MCC, ICC, OCC), whether it's making them or understanding their processes. Another big group focuses on luminescent materials (CMI). There are many more research groups, that all perform different research. There are also a lot of biochemical research groups, but we are not always fully associated with them.
**A:** The biochemistry research is most related to our study association, think of studying proteins, membranes, and other cell parts.
**W:** Not applicable, the WUR doesn't use the concept of faculties, or to be more precise, all chair groups are part of the same faculty. But most of our courses come from chair groups from the biomolecular sciences cluster [2]. This might range from biopolymers at PCC to biosensors at ORC or optimising photosynthesis at BIP.
**G:** We have five different institutes: the Stratingh Institute for Organic Chemistry, which is the biggest one, including the Nobel prize winner Ben Feringa, the Groningen Biomolecular Sciences and Biotechnology Institute (GBB), the Zernike Institute for Advanced Materials (ZIAM), the Energy and Sustainability Research Institute Groningen (ESRIG), and the Engineering and Technology institute Groningen (ENTEG).

**How large is your study association and how would you describe the atmosphere within your association?**

**P:** We've got around 100 to 200 active members, who are in committees and show up to activities. There are also a lot of members who just come to relax in our association room and even more who have become a member for the discount on the study books. Our song starts with: "Proton is wel wat klein, maar het is er reuze fijn!", which roughly translates to: Proton might be small, but it's always fun. That sentence perfectly describes our atmosphere. You'll quickly get to know everyone and in our Proton room, you'll always feel welcome.
**A:** Our study association has around 400 members, and it is a small close association, everyone knows each other, and we have a lot of active members. We are like a small family.
**W:** Around 300 to 350. We are a very comfortable, open, and accepting study association. As is general for almost the entire WUR, the atmosphere is not hierarchical at all, one can easily walk up to a professor, call them by their first name and have a chat.
**G:** We have more than 750 members including our board mascot Barry. I would describe it as informal, welcoming, fun and chill.

**How student friendly is your city (housing, nightlife, safety etc.)?**

**P:** Utrecht is known as a great city for students, the nightlife is great, and public transport is as well (when there are no strikes of course). Housing can be a slight issue, as it can take a very long time to find a room. Students usually look for 1 to 2 years before finding a room.
**A:** Housing in Utrecht is very hard; everyone struggles with it. Furthermore, Utrecht is a student city: we have a very fun nightlife in the city, and it is relatively safe.
**W:** Wageningen is probably one of the most student-friendly and safest student cities in the Netherlands, as it's more a village than a city, with around 40 thousand inhabitants of which a third are students. Housing is relatively good compared to other student cities, though if you do consider studying here it's advised to register at https://room.nl well in advance. Wageningen has a whole host of student associations and night activities during the week. The main difference with 'actual' cities is that most nightlife activities are organised by associations and not by pubs and bars.
**G:** In general, Groningen is very student friendly. Groningen is one of the youngest and happiest cities in the Netherlands. It has a vibrant nightlife, and safety is high. However, housing is a problem, so start looking early for a room or apartment if you want to come here. And as you know: "Er gaat niets boven Groningen."

1. https://www.wur.nl/en/education-programmes/bsc-minors/list-of-bsc-minors.htm
2. https://www.wur.nl/en/research-results/chair-groups.htm

# The dangers of not suiting up

*Janne van Asselt*

Space is a mysterious place and we have just begun to unravel its secrets. We all know that it is a stupid idea to enter space without a spacesuit, but why exactly? Movies show us all kinds of scenarios, ranging from quite realistic to completely ridiculous. Some show bodies or heads exploding, others instantaneous freezing, some bodies get sucked into the vacuum, and one shows that barely anything happens to the body.[1] But which of these scenarios is accurate? Let's dive into science to find out.

You will encounter several problems when you enter space without a suit. The first and most obvious one is a lack of oxygen.[2] Space is an almost perfect vacuum, so there is not much gas to breathe in, let alone sufficient oxygen. However, holding your breath is definitely not the solution to this problem. Because space is a vacuum, holding your breath means that your muscles have to fight against space itself. The oxygen in your lungs will expand, which will rupture your lungs. To make it an even worse death, your brain will remain conscious for about 15 seconds. So instead of holding your breath, you should ensure you breathe out as much air as possible to prevent the rupture of your lungs.

So onto the next issue, the lack of atmospheric pressure will cause the water in your body to vaporize. This is because the lack of pressure will lower the boiling points of liquids significantly. The evaporation of water in your tissues will cause your body to swell to twice its normal size. Water in your eyes and on your tongue will also start to boil. During a test of space suits, one person was shortly disconnected from the hose that provided pressurized air.[3] "*As I stumbled backwards, I could feel the saliva on my tongue starting to bubble just before I went unconscious, and that's kind of the last thing I remember*," he recalled. You might now think that your blood would also start to boil, as it is 50% water. However, this is not the case due to your blood pressure.[2] Even in these extreme conditions, your body is able to keep your blood pressure up, meaning you can stay conscious while you are blowing up like a balloon.

Then there is one more problem: since you have left the earth, you are no longer protected by the atmosphere. You will be exposed to unfiltered solar radiation, which will cause immediate

sunburn. This might not be the case if you are far from a star, but if you're outside the ISS you will definitely experience sunburn. But even though the water in your body will evaporate and your skin will get sunburnt, it is still very cold in space, abou -270°C. That would suggest your corpse would freeze soon, but this is not true. Your body is a good insulator, and since you are in a vacuum there is no medium to transfer heat. So you'll stay warm for a decent amount of time.

So now that we know several causes will kill you, only one question remains: what will happen to your corpse? Well, it will stay unchanged for a long time. Normally, the body decomposes because the immune system is no longer active, which means that microbes can start breaking down tissues throughout your body. In space though, the radiation and temperature will kill these bacteria before they can decompose your body. This will ensure that your corpse will be preserved for millions of years. If you're close enough to a star, your body will basically mummify like the ancient Egyptians. Mummification is the dehydration of the body, which the Egyptians used to do by placing the body in hot sand.[4] They did this because they believed that your body is the home of your soul or spirit, and if the body were destroyed, the spirit would be lost. The heat of the star will also dehydrate, or mummify, your body. So if you do die in space, at least you'll know that your soul will not be lost.

So even though the laws of the universe might suggest that the universe is made for us, it is mostly just our earth that can be considered as our safe space. Going into space without any protective equipment would lead to death due to a lack of oxygen and no protection from the Earth's atmosphere. The movie that showed the most realistic scenario is *The Expanse*. Here barely anything happens to the body, which is way more realistic than how the body blows up like a balloon and explodes as shown in *Outland*. So next time you go to space, make sure to suit up!

**Sources**


1. Liptak, A. 19 Times Someone Gets Thrown Into the Vacuum of Space, From Worst to Best. https://gizmodo.com/19-times-someone-gets-thrown-into-space-from-worst-to-1753938085 (accessed March 11, 2023).

2. The Infographics Show. What would happen to your body in space? https://www.youtube.com/watch?v=Ys4Po-TRNftY (accessed March 11, 2023).

3. Kwan, J. What would happen to the human body in the vacuum of space? https://www.livescience.com/human-body-no-spacesuit (accessed March 11, 2023).

4. Anthropology Outreach Office, Smithsonian's National Museum of Natural History. Egyptian Mummies. https://www.si.edu/spotlight/ancient-egypt/mummies#:~:text=But%20why%20preserve%20the%20body,the%20spirit%20might%20be%20lost (accessed March 11, 2023).

# Interview with Fuat

*Kirsten Pama*

As a student at Science Park, you probably have heard the name Fuat before. Fuat is the owner of the food truck ScienceDöner. He is known for his delicious döner kebab, which he uses to create the best Turkish pizzas, kapsalons, and döner sandwiches. If you don't feel like eating döner, you can also eat a falafel sandwich, fries, or spring rolls. He has a wide range of products, so there is a dish for everyone.

Fuat is not only known for his good food, but also for his great personality. He is very popular among the students, and when you want to get some food, there is always a line to wait in. Despite this line, the food is always good and Fuat still makes time to have a conversation with you. Because Fuat is such a great phenomenon at Science Park, Janne and I decided to interview him.

**Can you please introduce yourself?**
"I am Mister F. Özman, Fuat Özman. I am from Turkey, Istanbul to be specific. Almost thirty years ago, I came to the Netherlands. I used to be a tailor, and I have also worked at a cleaning company. I mostly worked in Amsterdam. I now live in Amsterdam Noord. I started this food truck in 2010, so I have been here for more than twelve years. The students are my friends. It's almost like they are my children."
Fuat got interrupted by a customer, who wanted to order a kapsalon. His coworker helped the customer.

**With who do you work here?**
"Most of the time, it's just me and my son, but sometimes other people help."

**How did this truck come to be ScienceDöner?**
"Almost fifteen years ago, I lived in Amsterdam Oost, close to here. I worked at a cleaning company. This neighbourhood had some students back then, but no student housing. The green building did not exist yet. I started the döner truck at Science Park station, where the bicycle parking is now. The truck was there for two to three years. After that, I moved to the other side of the station, where the green building is now. When they started building the student apartments, I moved to where I am now."

**What do you love the most about having this food truck?**
"Of course I love many things. I love that many students keep in touch with me. For example last year, in 2022, my mother died. Many students sent their condolences, even via WhatsApp. I really loved that. I was sad, but many students shared my sadness.
Also when it was my birthday, a few people came over with a huge birthday card. More than 100 students signed it! Some people just wrote 'Fuat, congratulations', but others even wrote stories in it. I liked that very much. It is the contact I have with students that I love the most about this job."

**What is your favourite item from your menu?**
"I like everything, but I hardly ever eat anything from the menu myself. I used to eat it much more often, but now my wife brings me food most of the time. She says to me: "Don't eat too much meat, you're older than 60. You have to eat healthy!" She brings me food in those little plastic bowls. I really like everything.
If I really have to choose between the items on the menu, I would choose the Turkish pizza, because I make them taste really good."

**So how do you make these?**
I make them at home with bell peppers, parsley and some onions. I also use minced meat. I make them with my wife, and I take them here with me."

**And for the last question, we have seen your name spelled in many different ways. How do you actually spell your name?**
"It is Fuat."

After the interview, Janne and I ordered some spring rolls with sweet chilli sauce. Fuat went to make them, and he helped other people who were waiting in line. The spring rolls were amazing as always, and I will definitely be eating here until I finish my degree!

# A Recipe for ~~Disaster~~ Bread

by Jiri Sanramat

Let's get that bread gamers! I remember an article from the Guardian titled: 'Gwyneth Paltrow broke down and ate bread during the quarantine.'[1] First of all, what a shame. Same girl, because bread is simply very lovely. As someone who has lived in the Netherlands his whole life, I too eat a lot of bread on a weekly basis. Most people, including me, buy their bread from a supermarket. That is a real shame because freshly baked bread is the best, whether it's from a bakery or your own kitchen. So people who do a keto diet, turn the page, because here is a recipe for plain Jane white bread.

**Ingredients (for 4 slices)**

- 14 g yeast
- 180 mL and 640 mL water (divided)
- 50 g granulated sugar
- 44 g unsalted butter
- 1.2 kg flower
- 44 g melted unsalted butter
- 1 tablespoon of salt

**Preparation:**

In a bowl, dissolve the yeast in 180 mL warm water by stirring it, and let it rest for 5 minutes. Add the other 640 mL of water, sugar, salt and one tablespoon of salt, and the flower in a bowl and mix it.

Mix the flour by adding water in small portions with a dough hook until the dough is soft, but not sticky. Knead until a soft ball of dough forms and clear the sides of the bowl.

Transfer the dough ball to a greased bowl and coat the dough fully in grease. Cover with a plastic wrap and place it in a 'draft-free' spot (google it, I'm not going to explain). Let the dough rise for at least 45 minutes to 1 hour.

Take the dough and place it on a lightly floured surface. Press on the dough softly to remove the air. Then, divide the dough in two and form it however you like (gently). Preheat an oven to 240oC, and place an oven rack at the lowest setting.

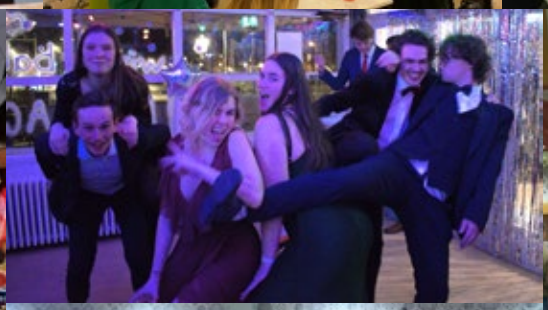
Brush the loves with the melted butter, then bake the bread for 30 to 35 minutes. Take them out of the oven, and brush them with melted butter immediately. Allow to cool for at least 10 minutes before you slice it!

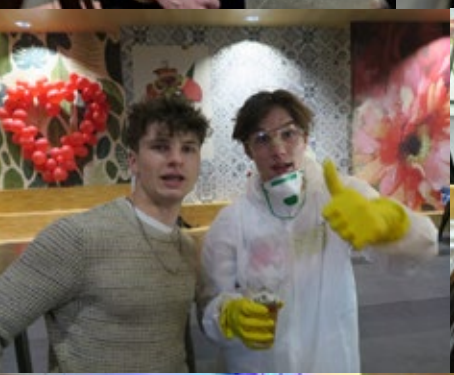
Enjoy!

1: https://www.theguardian.com/lifeandstyle/2021/may/10/gwyneth-paltrow-pandemic-lowest-point

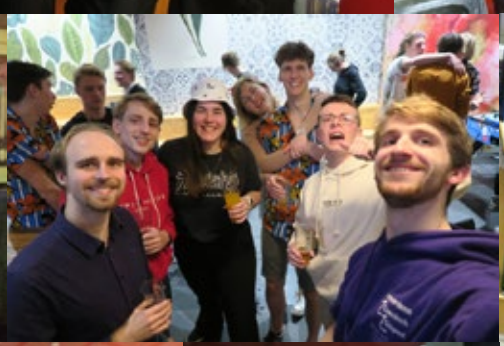










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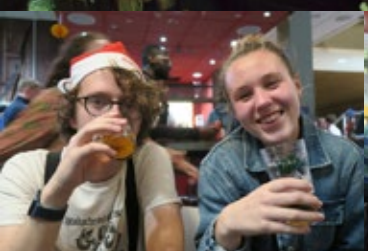


# BEC trip to Bologna

*Janne van Asselt & Tim de Groot*

Every year the Foreign Excursion Committee organizes a trip abroad, and this year we went to Bologna! A week full of pasta, pizza, wine and good company... And we also learned about the local chemistry by visiting universities.

After a long journey we finally arrived in Bologna on Sunday. Once we'd all settled in it was time for a walk through the city to learn more about its history and see some beautiful historical sites. The next day was labor day, which is celebrated in Italy so most stores were closed. In the morning we went to a nearby park to have a small sports tournament with all our travelers.

On Tuesday we visited Pisa. We started the day at the university of Pisa where we got a tour of many different labs within the Chemistry and Industrial Chemistry departments. Afterwards we were welcomed with a lunch at the university cafeteria where we could ask further questions to some of the professors and students at the department. Then it was time to visit the touristic places of Pisa, so we of course took some creative pictures with the famous leaning tower.

The next day we visited the Department of Industrial Chemistry at the University of Bologna where we spoke with some local students about our and their associations. We also got a tour of the brand new campus and this made us a little jealous. The student labs are equipped with enough glassware and instruments for everyone, and even better than that there was even a 300 MHz NMR just for students. In the afternoon we went to a vineyard to learn more about the process of making wine and of course to taste some of it. The sun, the beautiful landscape and the great wine provided us with an amazing afternoon. During the evening we also visited the Spoiler Festival, which was organized by one of the study associations that we met earlier that day.

The university of Bologna is the oldest university of Europe, but so far we had only seen the brand new campus, so on Thursday it was time to visit the old one. Here we visited the analytical and electrochemistry laboratories, as well as the library, which were all very interesting. In the afternoon some of us also visited the museum at the university which had some very unique exhibitions.

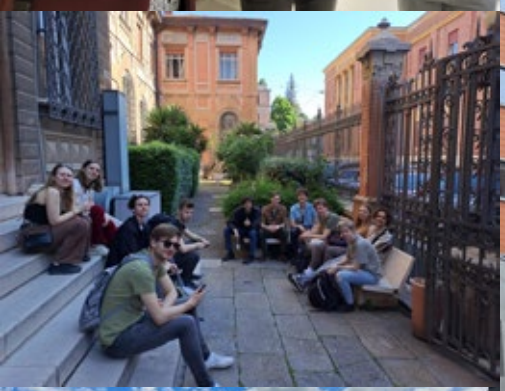
On Friday the group split up for three different museum visits, namely the Archeological Civic Museum, the Museum of Modern Art, and the Memorial Museum of Ustica. The museums were very different so there was something that everyone liked, and some people even visited multiple museums. After spending the afternoon apart the entire group joined together for the final dinner with all travelers where we had a delicious meal and talked about the wonderful week we had so far.

*This trip was sponsored by Amsterdams Universiteitsfonds, Stichting Scheikunde VU, and Fonds Community building of the VUvereniging.*







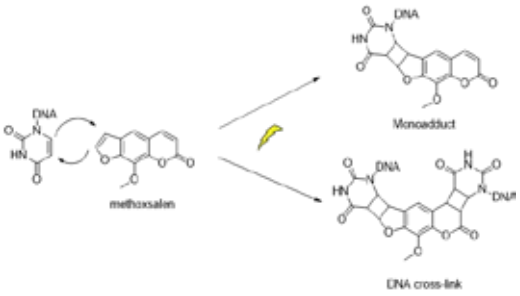
# These plants are not rooting for you

*Rianne van Diest*

*It is spring, which means that temperatures are rising, birds are singing, and plants start growing again. While the sight of green leaves and colourful flowers is a pleasant change after a winter of bare branches, these plants are not all as lovely as they seem. Besides the hay fever they can induce, some of these plants are quite toxic! As the BLAD committee we obviously want to keep our readers safe, so here are some plants you should leaf alone (pun intended ;)).*

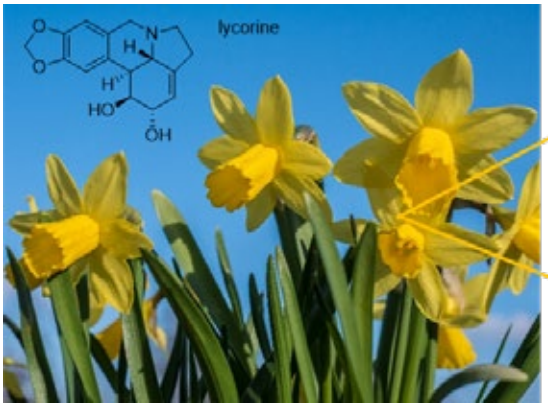
## Giant hogweed

This plant, with leaves in the shape of claws, is an invasive species in the Netherlands. If the sap of the plant touches the skin, you can get blisters and burns with permanent scars. Upon contact with the eyes, it can even lead to blindness. What makes this plant so dangerous? The sap contains furocoumarins, which are phototoxic.[1] When exposed skin is irradiated by UV-light from the sun, these compounds enter an excited state that forms adducts with DNA bases via a [2+2] cycloaddition reaction. The adducts can form cross-links between the DNA-strands, which leads to cell death and inflammation. Reasons enough to stay far away from this plant! The only advantage? This plant can grow up to five meters high, so it is not easy to miss.




## Buttercups

Their small yellow flowers have a cute appearance, and their name might suggest that they are edible. But don't be fooled! Buttercups are toxic for both humans and animals. The sap of the plant contains the toxin protoanemonin. This compound can alkylate various proteins and DNA via nucleophilic conjugate addition.[2] It is known that these reactions can, among others, cause cell damage, and affect substrate oxidation and ATP production in mitochondria.[3] The toxic effects of protoanemonin vary from blisters on the skin, to poisoning symptoms such as nausea, spasms, acute hepatitis, or paralysis upon ingestion. So, just enjoy the happy yellow from these flowers but keep your hands off ☺.




Raphides of calcium oxalate

## Daffodils

Spring and daffodils go together hand in hand. Yet, you should be careful around these flowers, since they are toxic upon ingestion. Now you might wonder: why would I eat a daffodil? Well, there are quite some cases reported in literature where the bulbs were confused for onions...[4] The alkaloid lycorine is responsible for the toxicity of daffodils. Although the exact mechanism of toxicity is not understood, it is known that lycorine inhibits protein synthesis by affecting the termination of mRNA translation.[5] This prevents cell growth and will eventually lead to cell death. You should also be cautious with touching the flowers and bulbs. The sap contains calcium oxalate crystals and various irritating alkaloids. The calcium oxalate crystals can damage the skin due to their needle-like shape (raphides), which in addition enables easier penetration into the skin for the alkaloids. These flowers are definitely not as innocent as they seem!

1. Christensen, L. P. Chapter 29 - Polyphenols and Polyphenol-Derived Compounds From Plants and Contact Dermatitis. In *Polyphenols: Prevention and Treatment of Human Disease;* Watson, R. R., Preedy, V. R., Zibadi, S. B. T.; Academic Press, **2018**; pp 349-384. DOI: 10.1016/B978-0-12-813008-7.00029-1.

2. Ohiagu, F. O.; Chikezie, P. C.; Chikezie, C. M. Toxicological Significance of Bioactive Compounds of Plant Origin. *Pharmacogn. Commn.* **2021**, 11 (2), 67-77. DOI: 10.5530/pc.2021.2.15.

3. Pirvu, L.; Stefaniu, A.; Neagu, G.; Pintilie, L. Studies on Anemone Nemorosa L. Extracts; Polyphenols Profile, Antioxidant Activity, and Effects on Caco-2 Cells by in Vitro and in Silico Studies. *Open Chem. J.* **2022**, 20 (1), 299-312. DOI: 10.1515/chem-2022-0137.

4. Ageta, K.; Yakushiji, H.; Kosaki, Y.; Obara, T.; Nojima, T.; Gochi, A.; Naito, H.; Nakao, A. A Family Intoxicated by Daffodil Bulbs Mistaken for Onions. *Acute Med. Surg.* **2020**, 7 (1), e595. DOI: 10.1002/ams2.595.

5. Vrijsen, R.; Vanden Berghe, D. A.; Vlietinck, A. J.; Boeyé, A. Lycorine: A Eukaryotic Termination Inhibitor? *J. Biol. Chem.* **1986**, 261 (2), 505-507. DOI: 10.1016/S0021-9258(17)36118-5.

# Turning back the hands of time on our biological clock

How a new theory of aging might help to increase human lifespan

*Myrthe Zwart*

*Nothing in life is as inevitable as its end, death, and the slow creep towards it, known as aging. With the development of science and healthcare, we have been able to eradicate many diseases and conditions leading to early death, so much so that the average human life expectancy in the Netherlands is now approximately 83 years, compared to an average of 60 years in Europe in the 1950s. The exceptionally high standard of healthcare in Western countries has caused people to question if it is even possible to continue to increase the human lifespan, and whether that is desirable, since many of the years added are not necessarily healthy years. However, this has not deterred the myriad of researchers looking for the promised 'fountain of youth' in one way or another. But how close are we actually to immortality, or more reasonably, how close are we to being able to turn back the time of our biological clock?*

**Biological immortality**

In order to find strategies to slow down, or reverse, human aging, we must first understand the process of aging. Aging is an inherently complex mechanism to study, since it involves many different factors and varies greatly among species and between proliferation methods. Immortal species might help us to understand how to become immortal ourselves, but their strategies for immortality vary wildly. Take symmetrically dividing bacteria, such as *E. coli* for example, which can split into two daughter cells and restore their youthfulness upon cell division, or the immortal jellyfish *Turritopsis dohrnii* which is thought to be biologically immortal due to its ability to revert to an earlier part in its life cycle (Figure 1) which it can do indefinitely, in theory.[1] A new jellyfish starts out as a fertilized egg, after which it then swims around in the ocean as a planula larva. The planula can attach to a rock on the seafloor and form a colony of polyps. A part of the polyp colony can eventually break off and form a young jellyfish (ephyra), which then matures into a sexually mature medusa. For most jellyfish this is the end station, but the *Turritopsis dohrnii* can revert to a little blob of cells when faced with environmental stress factors and can start its life cycle anew.

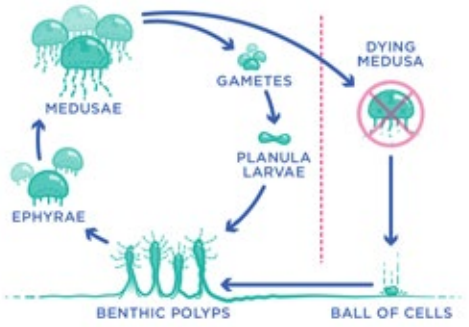



Figure 1. Life cycle of the 'immortal jellyfish' Turritopsis dohrnii.

**Theories of senescence**

Unfortunately, as humans we do not have the ability to simply revert to our teenage self during a midlife crisis, a fact proven by the many that have tried and failed to do so. But what does our aging process involve and what sort of options does this give for intervention? Due to its complexity, there are many theories of aging, but the most well-known ones can be loosely grouped together into the 'damage accumulation theory' of aging.[2]

Senescence is the scientific term for aging and cellular senescence refers to cells that cease to divide but continue to live. When human life develops, the potency of cells is decreased from omnipotent to pluripotent to, eventually, unipo-

omnipotent to pluripotent to, eventually, unipotent cells. When unipotent cells divide during mitosis, they need to copy the DNA of the mother cell for the daughter cell, a process performed by DNA polymerase. However, DNA polymerase does not copy the entirety of our DNA and tends to skip over the end of the chromosomes; luckily for us, evolution solved this issue by adding telomeres to the end of the chromosomes to prevent DNA loss. Every time the cell divides, a little piece of the telomeres is lost, known as telomere attrition, meaning the cell can only undergo so many divisions before the telomeres are shortened so much that DNA information is lost; after about 50 cycles the cell becomes senescent. Cellular senescence is a double-sided blade, on the one hand it helps to prevent cancer by ensuring cells can't divide if DNA loss would occur, but on the other hand it means that damaged cell types can only be replenished so many times. Fortunately, we also possess multipotent stem cells to replenish damaged cells, but we tend to lose those as we get older.

So, over the years our bodies become less adept at replacing damaged cells, while we accumulate more and more damage. Free radicals wear our body down in a process known as oxidative stress, carcinogens such as radiation mutate our DNA, and since DNA polymerase is not 100% error-proof it slowly builds up DNA mutations over time. The ways in which mammals such as humans deteriorate over time have been summarized by researchers into the hallmarks of aging (Figure 2).


**Biological clock reversal**

So, does this mean our bodies are doomed to be worn out, just like we wear our favorite clothes out beyond repair? Well no, at least according to Dr. David Sinclair and his 'information theory of aging' that is based in epigenetics. Sinclair's theory states that the hallmarks of aging are not a cause, but simply the symptoms of loss of epigenetic information and therefore a loss of cellular identity. Senescence is the loss of how DNA is expressed, not the loss of information in the DNA itself, meaning that the original information is not deleted and can therefore be restored to its original state, much like deleting a file on your computer is often not permanent; the file may seem lost, but can be restored from your bin. This seems to be supported by the fact that we can now use adult cells for cloning and create an exact healthy replica of an organism with a normal lifespan, a feat that should not be possible if information is permanently deleted due to aging.[3]

Epigenetic information is held by histones and DNA methylation, which control the accessibility of the DNA and therefore regulate gene expression and DNA damage and repair. Aging often leads to loss of histones, global hypomethylation, and local hypermethylation, resulting in dysregulation of transcription. So how can we protect our cells against this information loss? When model organisms such as mice are exposed to environmental stress, they tend to overexpress certain genes that aid in protecting and repairing the DNA, the so-called 'longevity genes'.[4] Practices such as intermittent fasting (caloric restriction), high intensity interval training, and cold exposure seem to trigger these genes and may have a protective effect against aging.

Figure 2. The 9 hallmarks of aging and their functional interconnections.[2]

Slowing aging, however, was not enough for Sinclair and he went beyond to demonstrate age reversal in mice. In 2012 Dr. Shinya Yamanaka received the Nobel Prize for his discovery of a group of factors that can reprogram mature cells back to be pluripotent (embryonic) cells. In a 2020 paper, the group of Sinclair showed that it is possible to reverse glaucoma in blind elderly mice and restore their vision, using three of the Yamanaka factors.[5] In addition, in a recent 2023 paper they showed that they could drive the aging of an entire mouse forward and backward by degrading the epigenetic information, followed by a restoration using the Yamanaka factors, showing that it is indeed possible to reverse aging.[6]

Whether the theory and strategies of Dr. Sinclair are successful at extending the human lifespan remains to be seen. However, as scientists, we tend to be overly optimistic of our findings and ignore potential negative impact. Although extending human life seems benign, we should be cautious of its impact on our natural resources and society in general.

1. Martell, L.; Piraino, S.; Gravili, C.; Boero, F. Life Cycle, Morphology and Medusa Ontogenesis of Turritopsis Dohrnii (Cnidaria: Hydrozoa). *https://doi.org/10.1080/11250003.2016.1203034* **2016**, 83 (3), 390–399. https://doi.org/10.1080/11250003.2016.1203034.

2. Vujin, A.; Dick, K. The Information Theory of Aging: Hacking Immortality? *Health Science Inquiry* **2020**, 11 (1), 148–154. https://doi.org/10.29173/HSI304.

3. Burgstaller, J. P.; Brem, G. Aging of Cloned Animals: A Mini-Review. *Gerontology* **2017**, 63 (5), 417–425. https://doi.org/10.1159/000452444.

4. Warner, H. R. Longevity Genes: From Primitive Organisms to Humans. *Mech Ageing Dev* **2005**, 126 (2), 235–242. https://doi.org/10.1016/j.mad.2004.08.015.

5. Lu, Y.; Brommer, B.; Tian, X.; Sinclair, D. A. Reprogramming to Recover Youthful Epigenetic Information and Restore Vision. *Nature* **2020**, 588 (7836), 124–129. https://doi.org/10.1038/S41586-020-2975-4.

6. Yang, J. H.; Hayano, M.; Sinclair, D. A. Loss of Epigenetic Information as a Cause of Mammalian Aging. *Cell* **2023**, 186 (2), 305-326.e27. https://doi.org/10.1016/j.cell.2022.12.027.

# Chemistry vs. Electrical Engineering

*Anne-Fay de Jong & Siebe Lekanne Deprez*

## Electrical Engineering

**First of all, what is your name and why do you study Electrical Engineering? (Electr. Eng.)**
Hi! My name is Geert and I study Elect. Eng. for six years now. My choice for the study originates from my interest in video games and electronics. One time when I was around 15 years old, I took apart a big tv with these large cathode tubes and studied the contents. It was quite a labour, but I thought it was very fun. Later, I learned how to program, as I had a high school project about designing a video game and my part in the programming, which I very much enjoyed doing. At the end of the high school period, I realized that I wanted to do something with programming, while not only sitting behind a screen (like IT) all day. So, when I heard of Elect. Eng. I immediately considered it.

**What do you think Chemistry entails?**
My core idea of chemistry is the creating or changing molecules. I see this in both industrial creation processes like making plastics, but also in changing the molecular structures of raw materials through processing. I can also think of medicinal chemistry, as developing medicines is somewhat related to chemistry. So, in my view, chemistry is occupied with creating a mixture of different chemicals for industrial purposes and for human beings (medicinal).

**Who is 'the' Chemistry student?**
I assume the student is mostly male (like my study) and is a maths fan because of all kinds of specific calculations you have to perform like calculating energies, reaction times, and orbitals. The student also shows great fascination about why things happen, as they do and try to see patterns. I experience it within my study too, as my friends play factory kinds of games and I think the same applies to chemistry students. The chemistry student is thus a very curious one.

**In what do Chemistry students overestimate themselves?**
My dad is an engineer of natural sciences and I take him as reference. He assumes that he knows how most processes work. Instead of being transparent about making an assumption, he is always overconfident and thinks his assumption is 100% correct unless a more credible source gives another answer. But, what a credible source is remains a mystery haha.

**What are Electrical Engineering students better at?**
Doing more practical stuff, like if something were to break in my house, I could probably fix it faster than a chemistry student. I don't think chemists understand the electrical components as well as Elect. Eng. students do in, for example, a broken speaker and know how to fix it.

**What are Chemistry students better at?**
Chemistry is everyday useful and can provide some nice life hacks. For example, you would know that you shouldn't mix bleach with water. But apart from that, it feels too niche actually. Maybe chemistry students are better in certain thinking processes in which they are required to view problems from multiple perspectives.

**What do you think is the major difference and the major similarity between Chemistry and Electrical Engineering students?**

A major difference is that Elect. Engin. Students are much more practically educated and probably handier in everyday situations. Of course, chemistry students are considerably handier in the lab but outside of the lab, not as much as Elect. Engin. students I think.

I think we are both very much "puzzle people", meaning we like to engage with problems and try to solve them; we both want to know what is going on and want to fix it. Chemistry students put this into practice by focusing on what reactions will happen, how these happen, and which side products may form. On the other hand, Elect. Engine. Students pay more attention to how components send info to each other: what kind of interferences happen between components due to electrical and magnetic fields? Is the build as it should be? Which parts get easily busted? Different questions, but same puzzle solving process.

**What do Chemists do all day?**

Three things mainly. Firstly, sitting behind their desk reading an ungodly number of research papers. I think they also spend a lot of time in the lab: mixing compounds, trying to make a product they want to make etc. Finally, I think they wait a big part of a day for reactions to finish, which should not be underestimated.

## Chemistry

**First of all, what is your name and why do you study Chemistry?**

**M:** Hello, I am Mike, and I am a third-year bachelor's student. I wasn't quite sure about what to study at first as I like a lot of subjects. However, I am happy that I ended up in chemistry as I love that you can make a huge impact on the world by studying small molecules.

**L:** My name is Lianne. I study chemistry because it was a subject I was good at in high school. Also, I loved all technical subjects, but I found chemistry the most overarching of all.

**What do you think Electrical Engineering entails?**

**M:** I think that Elect. Eng. focuses on everything including electrical systems such as design, testing, and manufacturing. Besides, I think that you will also get a great deal of physics, focused on electromagnetism.

**L:** I think it has something to do with the engineering of electrical stuff, like light, cars and boilers. Students who study Elect. Eng. learn how to design these things.

**Who is 'the' Electrical Engineering student?**

**M:** I think the Elect. Eng. student is someone who does not shy away from a challenge and is able to focus on precision work for longer times. I also expect them to be problem-solving and good in a practical setting.

**L:** The Elect. Eng. student is a very smart person who is creative and technical at the same time. Therefore, I think they are people who dare and are able to colour outside of the lines.

**In what do Chemistry students overestimate themselves?**

**M:** I believe that chemistry students can overestimate themselves in the idea that everything can be solved by chemistry or is chemistry. This way they might think less of other studies while eventually, every discipline plays its role in solving problems.

**L:** Chemistry students overestimate their ability to do math and physics. During our studies, we learn a little bit about math and physics. Therefore, soon we think we are pros in math and physics. However, we are not.

**What are Chemistry students better at?**
**M:** Chemistry students are probably more skilled in multiple areas. This is the case as chemistry is a central science having connections with topics such as physics, maths, and biology. This way they have a lot of knowledge at the borderlines of science.

**L:** Chemistry students are better at seeing the overlay of different subjects, as chemistry consists of multiple themes and subjects, more than studies as physics, math or Elect. Eng..

**What are Electrical Engineering students better at?**
**M:** Physics. I think that most Elect. Eng. students have much more knowledge about classical electromagnetism compared to chemistry students. Besides, I expect them to have more practical experience regarding making stuff such as computers.
**L:** Elect. Eng. students are better at creative thinking. We as chemists are more busy with researching already existing material. However, Elect. Eng. students design stuff.

**What do you think is the major difference and the major similarity between Electrical Engineering and Chemistry students?**
**M:** I believe that the major difference lies in how both look at the world. chemistry students may notice certain things Elect. Eng. students don't notice and the other way around. Therefore, both types of students also miss certain perspectives. I think a major similarity will be having a problem-solving and initiative mindset.
L: A major difference is that chemistry students research more, whereas Elect. Eng. students are busy designing stuff. A major similarity is that a lot of physics and mathematics are involved in both studies.

# Real Horoscopes

*Jiri Sanramat*

## Aries (March 21 – April 19)


Ah Aries, you fiery and bold of nature piece of human being. Financially speaking, this will be your week! Due to their unhealthy obsession to be number one, Aries are very likely to finesse their cousin out of 20 euro this week. Nothing more than deserved. From a romance point of view, it is better to stay away from anything that breathes the coming few weeks. It is not like you had a chance with them anyway!

## Taurus (April 20 – May 20)


This month, you will be treated like the prince or princess that you are! SIS emails will be positive and you are rewarded for your efforts. Like a real taurus, you will enjoy luxurious evenings with your favourite person: yourself! Just don't be too mean to people this month, as they can sense that you still have crippling anxiety and secret feelings for your ex (but you just hide it very well).

## Gemini (May 21 – June 20)


Gemini are of a curious nature; this will eventually lead to their downfall this month. This downfall can come from all fields of life: finance, romance, or work/school. The playfulness that you normally have, will have to be suppressed. You never know what could go wrong! Just make sure that you feed your pets okey?!

## Cancer (June 21 – July 22)


~~-The first mistake you made this month was being a cancer in general. I mean, who in their right mind would want to be a sign that is named after a deadly disease.~~
-My editors brought to my attention that the word 'cancer', in relation to zodiac signs, is derived from the Latin word crab, and not the disease. My sincerest apologies for this, it will not happen again.

## Leo (July 23 – August 22)


The zodiac element of Leo is fire, and that sort of makes you prince Zuko (or Azula if you have mental problems). A Leo has the spirit of a lion, a fire in his heart, and his face tattooed on the back of Memphis Depay. Leo's will have a very kinky month: light a fire in your bedroom and use candles! Just don't burn the house.

## Virgo (August 23 – September 22)


Unlike Leo, you are a Virgo. Not that there is anything wrong with not saving yourself for marriage, but if you had only saved yourself during that one party in that one sketchy looking abandoned old V&D storeroom, you would not have had crabs (or cancers (red. Latin)) now. On the upside: you can now see a physician for the first time since you came out of the womb.

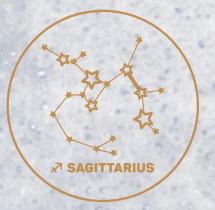
## Libra (September 23 – October 22)


Libra, or as we say in the Netherlands, weegschaal; you are not only the balance in your own life, but also in that of those around you. It is like being a sort of Anakin Skywalker - just don't let yourself go on the younglings. Not unlike Anakin Skywalker, people will try to seduce you to join the dark side (analytical chemistry). However, as a chemist you probably don't have a 'Padme Amidala' in your life that can be used as leverage to you, loser.

## Scorpio (October 23 – November 21)


Like a scorpion, love will sting through your heart. The moment you saw him/her/them, you knew that nothing in your life would ever be the same as before. However, I must disappoint you: nobody, not even your mom, could love a face like that. Luckily for you, there's Jack Daniels for that.

## Sagittarius (November 22 – December 21)




Respectfully, but Sagittarius sounds a bit like saggy titt.... (My lawyer has advised me to not finish this joke). You can cancel me, just like all your tinder dates do <3. Oh yeah, and something will happen in your life. Or not, who knows. It is not like horoscopes are real either way.

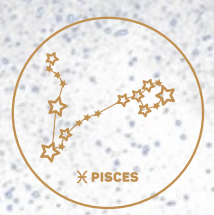
## Capricorn (December 22 – January 19)


Your friends and loved ones truly notice that you've been really happy lately, maybe a bit capricorny but that's life. Watch out for people that try to backstab you, like that one professor that you suspect doesn't like you, but why would he not like you? It is not as if you ever spoke to him. Your love life will flourish, unlike your wallet. Maybe cancel HBO Max.

## Aquarius (January 20 – February 18)


All the girls that have ever dumped yours truly, have been an Aquarius. Therefore, my horoscopic vision may have been clouded while deciphering your future. Here it comes: you will suffer from terrible migraine attacks all month, and your favourite show will be cancelled from Netflix. Your pinky toe will endure great pains. Luckily for you, horoscopes are not real... or are they?

## Pisces (February 19 – March 20)




Pisces are objectively the best sign (not biased). You may be the last zodiac sign, but you will end on top. Financially, you can take some risks because they will be favourable for you in the long run. You will find the love of your life, if you had not found them already. You are blessed by the planet and stars, and Beyonce.

# Smaakmatrix

*Inspired by the Parool*

## Scientific

## Beer-related

## Horrible

## Brilliant

The garbage cans at Science Prak attract fruit flies

EU response to BBB N-plans

New tunnel found in side Great Pyramid of Giza

Trump was indicted

Matterhorn needs to be removed from To-blerone packaging

The BEC was fun

Memes in the UVA room!

No paying by card at Spring party

Survived the Beer Cantus

New spring beer