

The Optimist

A journal to help you survive the valley of shit



June 2021

EDITORIAL

Not long ago, we found ourselves at the pub the Optimist asking ourselves: why the hell did we ever decide to pursue a career in science? A few drinks in, we realized that we would not be doing relevant science if it was easy. Moreover, in any other job we would probably be bored. To be able to survive our PhD – in a healthy mental condition – we realized we had to change our mindset. We need to learn how to deal with failure, how to be patient and how to create a healthy work-life balance. In order to bring optimism back for ourselves and our fellow PhD students, we came up with the idea for this interactive journal by PhD students for PhD students. Our goal is to become healthy scientists that are hardworking but relaxed, ambitious but sharing, and confident but humble. We are convinced that the best way to achieve this is by sharing our struggles and by seeing the humor in it. But that is not enough. We believe the efficiency of science can be improved. The scientific method has proven very successful over the last decades. Nothing we write down here will change this. However, we would like to step away from the idea that the current way of doing science is the only way and encourage constructive discussions. Therefore, in every edition we will focus on a topic that merits some thought.

*The optimist team,
Matthias, Donya, Hava & Simone*

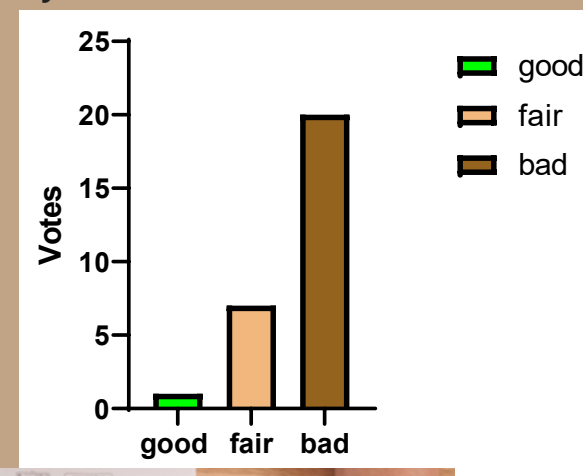
Cover: Paula Longás

Sustainability in science

Does your research contribute to the climate crisis?

We recently asked you (our followers on Instagram)

how you would rate the eco friendliness of your lab?





Not impressed with our amateur statistics?

How about this fact: did you know that life sciences **laboratories generate 5.5 million tons of plastic** waste per year (1) and that the associated environmental impact is estimated to be 100 to 125x more than household waste. Just to put that number in perspective, between 4.8 and 12.7 million tonnes of plastic enter the ocean each year (2). And it doesn't just end with consumption. Most of the laboratory plastic is incinerated which costs money and further increases energy consumption.

We all know (or should know as scientists) that recycling, eating sustainably and reducing our carbon footprint are ways to preserve our planet's resources. What may not be so obvious to see, however, is how our laboratory practices are lagging behind. Like most professions it is easy to get so worked up in our field of work and to neglect our ethical obligation as humans on this planet.

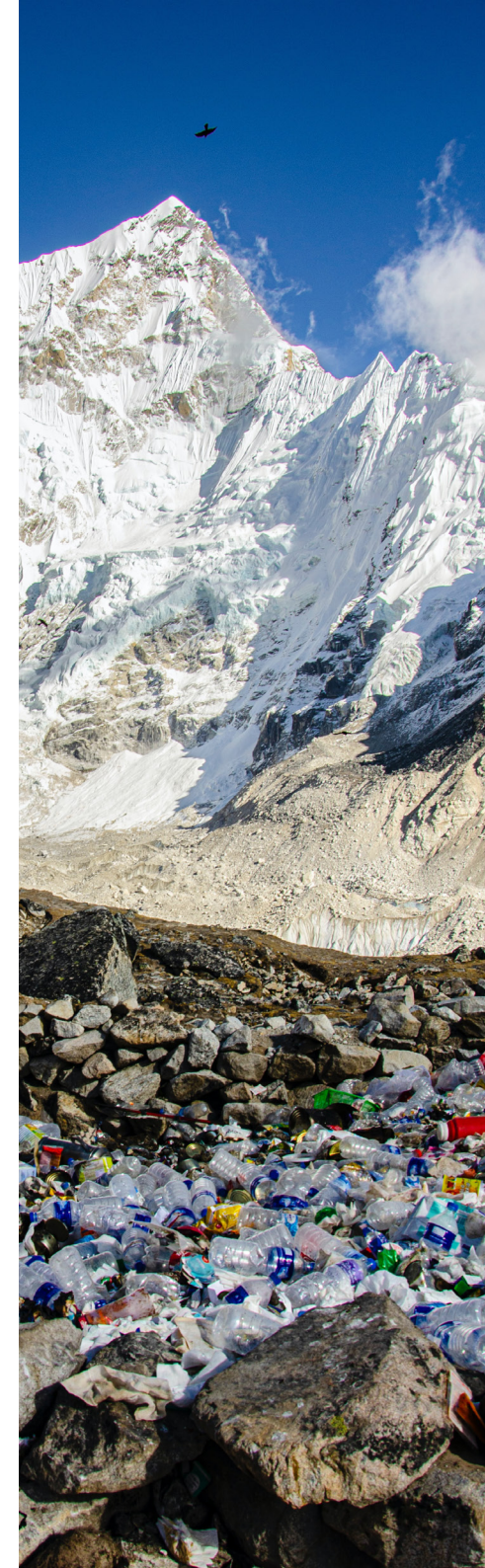
How has this issue resisted change for so long? Well, the answer is complex. It is fear of contamination, carelessness and complacency. One of the greatest caveats in experimental research is biological/chemical hazardous waste production. We are taught from our undergraduate years that if our pipette touched an

unwanted surface – it would be best to discard it, “better safe than sorry” when in doubt. We are definitely not saying you should contaminate your samples, but perhaps to be less carefree and omit applying this approach to everything. Reuse items when possible. It is time to start thinking about how our impact in the lab is adding to the global waste. Despite our greatest desire to resist change for the sake of time spent on research, not every Eppendorf or pipette tip was used with care. We all make mistakes but if this commodity was in low supply we would surely pay more attention to how we use it.

Changes to make for a greener lab:

1) Don't take single use plastics for granted

In recent times we have seen Covid19-related shortages in 1000 µl filter tips, filter bottles, low attachment plates and 50 ml falcons which not only remind us just how much plastic we were using (3) but how much research depends on this. Whilst shortages in consumables are familiar to some labs due to limited funding, researchers in heavily funded labs need to take a moment of self-reflection.



Shop around when eco alternatives are available

2) Be wary of your suppliers

We not only have to be conscious about our use but vocal to the suppliers and shop around when eco alternatives are available. This may not be possible for our favourite antibody. I also realise this is precious time that could be put into actual research but we don't buy houses without checking the market and neither should labs be buying products without keeping sustainability in mind. On the positive side, there are many suppliers who are not part of the regular list of scientific suppliers and distributors which have sustainability built in to their product production (4).

3) Keep your eye on packaging

What inspired me to write this article was package duty (unboxing deliveries for colleagues). If you have ever been on package duty for your lab you will

appreciate just HOW MUCH packaging is used in scientific research. Whilst cardboard boxes are recycled and Styrofoam boxes are reused when they can be, there is still a surplus of Styrofoam boxes sent out compared to those reused. Package sizing often seems ambiguous and not always related to the size of cool packs and dry ice within the box. This is because the demand for change is not so high. As a suggestions to improve this issue: in our lab order sheet we have inserted a column "priority/ grouped order" – priority means the order should be made immediately whilst grouped order means that the ordering is grouped at the end of the week so that items when possible be shipped together. However, we understand despite our efforts these items are not always made in the same production factory let alone same country.

4) Check before you leave

Labs require a lot of energy for freezers, microscopes, hoods and electrical equipment. Before you leave the room, check that everything not needed is unplugged or switched off! Setting up stickers next to electronics or light



switches have worked well in our lab. Be familiar with your surroundings – we often do not know these things until we look for them. Don't assume the lights will switch off automatically or that your hood has an automatic timer. In the future when purchasing new equipment, opt for appliances which have timer systems embedded to reduce energy use.

5) Prioritise sustainability

We can guarantee that the topic of sustainability comes up less in lab meetings than reagent costs.

Green projects can boost lab morale

As the younger generation, we should make sure that this is something we ask for. When building new buildings, this is just as important as your office seating plan. Green spaces and green team initiatives are not only good for the environment but also for our mental health. According to a scientific study, we need approximately 120 minutes/ week in nature (7). Creative initiatives centered around green projects can

boost lab morale for example. buying a shared lab plant. In our lab – we have set up an eco-friendly shop where we place a money box and supply local honey, fair trade chocolate and other items for when we are peckish. Instead of supporting non-sustainable companies (like Nestle which are often in our vending machines) we have made a cute little shop with eco items. Priority will create the demand for vending machines in institutes to supply sustainable brands. Try to avoid supporting brands which are known to be the worst contributors when it comes to climate change. (5, 6)

Specific Tips To Get You Going:

- Set up an **EcoTeam/Eco** ambassador within your lab

(I am part of the LVDB green impact eco team, we regularly meet in order to set up ways to improve lab practice and educate ourselves on green practices). Green Impact is helping labs all around the world. <https://www.kuleuven.be/duurzaamheid/sustainability/news/green-impact>

- **Share the info with colleagues** – a problem shared is a problem halved
- Purchase **concentrated products**
- For example 10X PBS versus 1X PBS can save nine plastic bottles per use.
- **Use the smallest size tube** when possible
- Avoid using a 50 ml tube for a 5 ml sample
- Use **green cleaning products**
- An easy one is the use of recycled paper for cleaning!
- Pay attention to the volume of hazardous substances you prepare
- On the order list of your lab add a tab for bulk order. Ask around and see if your colleagues are planning the same order.
- When sterility is not important – **avoid unnecessarily wrapped items.**
- Plan events outside. Spending at least 120 minutes a week in nature is associated with good health and wellbeing and is sustainable (7)

In addition to your lab, there is an initiative to align things across the center (CBD) run by Prof. Sandrine Da Cruz and Prof. Wim Annaert, for more information contact them

****In this article we have focused on experimental lab sustainability. If you are not in an experimental lab, fear not! Bioinformaticians are not guilt free of contributing to the carbon footprint. The yearly electricity usage of data centres and high-performance computing (HPC)**

facilities (200 TWh) already exceeds the consumption of countries such as Ireland or Denmark, and is predicted continue to rise over the next decade (8,9) however this would require its own article.

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Edited by Hava Izci, Simone Marcigaglia, Silke Vanderhaeghe & Matthias Koch



DOING A PHD IN THE STONE AGE



For this edition of our PI interview, we sat down together with prof. dr. Patrick Neven to talk about his own PhD experience. Professor Neven is a gynecologist and breast specialist at the department of gynecological oncology at the Multidisciplinary Breast Center (MBC) at UZ Leuven. When he finds time next to full-time consultations and operations of his patients, he also works on clinical research in breast cancer. His research focuses mainly on hormone sensitive breast cancers among many other clinical and epidemiological breast cancer research topics.

How did you come across your PhD project at the time?

As an assistant in obstetrics and gynecology in the late 1980s, I made the observation that breast cancer patients on long term tamoxifen were more likely to present with abnormal vaginal bleeding than those not using tamoxifen. Tamoxifen was the first selective estrogen receptor modulator (SERM) that is, still today, administered in patients with hormone-sensitive or estrogen receptor positive breast cancer. In a case (tamoxifen users) control (non-

tamoxifen users) study, both in women with and without vaginal bleeding, I observed more women with endometrial polyps in the group using tamoxifen. The Lancet accepted this observation for a paper in 1989 after which I started a small prospective study using office hysteroscopy prior and 6-monthly on tamoxifen. After 16 patients, it was clear that 20 mg use of tamoxifen induces endometrial polyps, also in asymptomatic women. These observations and the histopathological study of the sub-epithelial endometrial changes (edema)

producing the typical tamoxifen exposed endometrial images on ultrasound and hysteroscopy (published by the NEJM) were the base of my PhD thesis. I further participated in clinical studies and trials where I was responsible for the uterine and endometrial safety of tamoxifen in other clinical settings (prevention trials) and several other SERMS tested against tamoxifen for breast cancer efficacy (prevention and therapy) and endometrial safety. I also assisted in the development of the 2nd generation SERM, raloxifene – still available to treat and prevent osteoporosis – which showed fewer uterine side-effects but was found less effective to protect against breast cancer (relapse). Many other SERMs were tested back then for breast cancer prevention and osteoporosis therapy/prevention.

How would you describe the experiences that you had during your PhD time?

At that time, I wrote up my PhD (with Prof I. Vergote as my promotor) during a full-time clinical activity, partly in London (during 2 years, I joined the team of JH Shepherd, M. Baum, J. Cuzick and T.

Powles) where I did a clinical (research on b-core of hCG in gynecological cancers) fellowship in breast and pelvic surgery followed by a clinical position in Brussels (St Jans Kliniek) and now for the last 20 years in UZ Leuven. I thoroughly enjoyed my PhD experience overall, as it gave me the opportunity to continue writing articles and organizing international gatherings on endocrine prevention and treatment of breast cancer. During my PhD, I got the chance to work on the first Apple computer (MacIntosh) which was a really cool experience. I wrote my thesis before and after clinical appointments and consultant activities in international ad board meetings with a word processor on that computer which worked phenomenally.

Are there things that you would approach differently in hindsight?

If I could re-do my PhD today, I would also work on molecular differences of different selective anti-estrogens respectively estrogenic on the endometrium and anti-estrogenic on breast (cancer) tissue.

Is there life after a PhD?

In this section, we interview former PhD students about the value of their PhD and which career moves they made later on.



Dr Antina De Boer was a PhD student in the Lab of Ludo Van Den Bosch from 2014 to 2019. Antina studied the role of EphA4 in Stoke recovery (promotor Dr Robin Lemmens).

She has since returned back to her roots in the Netherlands where she is currently project manager at PRA Health Sciences in Groningen. Apart from research, Antina is an avid runner.

What did you enjoy the most during your PhD?

I think most of the (former) PhD students will agree that although doing a PhD is challenging and stressful. Looking back, it was a pretty good time. Because you are all in the same situation, experiencing the same difficulties and working as hard as you do, you turn from just colleagues into good friends, which is an amazing and special part of the academic environment. For me this applied as well, I honestly never *not* wanted to go to the lab, not

because I was looking forward to the experiments, mice, papers and meetings, but because of the lovely people that were there.

Besides this social aspect, I also really appreciated the intellectual opportunities that the PhD provided. Exploring your own ambitions and capabilities, the development into an independent scientist (or maybe more relevant; an independent individual) and the chance to take classes, courses and trainings to develop the skills that were not so well developed yet.

I realize this sounds sort of like a perfect story, almost an advertisement to promote others to go do a PhD.

”This period has been the hardest of my life so far

Therefore I should also mention that this period has been the hardest of my life so far. On a professional but especially on a personal level. However, at the end, it turned me into a stronger and more confident version of myself.

Why did you decide to leave academia and go for your current job? Which steps did you have to take to achieve this?

I now sometimes wonder whether the whole PhD/academic career was really something that suited me at all. I somehow ended up doing a PhD because

my master degree was easy and I found a project in a field that I was interested in. Back then, I never really thought about other opportunities, simply because I was not aware of them and this seemed the logical next step.

However, I don't think the flexibility, uncertainty and long-term goals/achievements are really my thing after all. I often felt that I was not good enough, not smart enough and that I had other qualities that did not result in those high quality papers or presentations at conferences.

”I realized that I did learn a lot of useful skills during my PhD

I missed the feeling of meeting a deadline (because there were so many others still to come), working in a team and having an immediate impact on society.



Because I did not really know about other career opportunities, I started to go to different career events, looking for job advertisements, did a career guidance course (do such a course; it really helps) and started talking to people that left academia and were doing clinical research. Soon I realized that I did learn a lot of skills during my PhD that turned out to be useful in many other jobs.

Although I think I already knew this, I just needed to hear it from someone else, someone outside of my direct environment. In that time I also started to take courses that would be of interest during my job search.

I joined several ethics, clinical trial, social engagement and GCP related trainings and included these on my CV and LinkedIn profile.

Eventually I decided to apply at PRA Health Sciences, a clinical research organization

(CRO). I started to look at job vacancies, contacted HR and went for a general introduction to discuss any opportunities within the company. Although no jobs were available back then, I now knew someone. When the Project Manager position became available, I reached out to this person asking if I should apply for this vacancy or not (I was actually not expecting to be able to apply for such a responsible job already). He encouraged me to send my CV and cover letter and about 3 weeks later I had my third and final interview with the head of project management at PRA.

What are your main tasks and which skills that you acquired during your PhD proved to be useful?

As a project manager at PRA, I am the main contact for the CRO on one side

and the sponsor (pharmaceutical/biotech company) on the other side. This means that I am responsible for the timely delivery of all parts of the clinical study including budget and contract, submission to the ethical committee, clinical conduct, data/statistical analysis and delivery of the clinical study report. Of course these are all different aspects of a study and therefore performed by several individual team members or departments. However, the project manager is responsible for the overall study and needs to ensure that the sponsor's expectations are met. This takes management skills, meaning that you have to be able to 1) prioritize between projects/issues, 2) create realistic timelines and expectations, 3) communicate clearly with both the study team and sponsor, 4) support individual team members were needed and 5) keep oversight of all your studies.

My main tasks are replying and sending emails, leading sponsor and study team meetings, interacting with other project managers (not only from our Groningen unit, but also our global team) and having a lot of phone calls. Besides these daily/practical tasks, I have to reach out to other labs/institutes when sponsors

are requesting services that we cannot offer, I need to keep up to date with relevant SOPs, I review all study related documents, for example the clinical study protocol, inform consent forms, data management plans, safety management plans etc. and as project manager I am responsible for the delivery of the trial master file meaning that I have to ensure all study related material are stored and delivered on time.

I would not have been able to do this job without several skills that I acquired during my PhD. These mainly include planning, organizing, working independently, having productive discussions, prioritizing, providing guidance to others, being critical and being able to clearly communicate.

What would you give as advice to PhD students?

Talk to people, find out what your interest is, have general introductions in different scientific areas or companies, go explore. And mostly; enjoy your still flexible life as it will be different when you have to book every working hour on a specific study code! :)

News you may have missed

We all know how depressing reading the news can get, especially if you are already having a tough time at work. But do not despair! We've navigated through all that negativity to come up with a selection of articles that are guaranteed to lift your spirits!

3D-printing wood to save forests.

An emerging start-up from the Boston area came up with a sustainable alternative for wood manufacturing (1). The new technology takes waste products from wood processing facilities (namely sawdust and lignin) and combines them with a process termed additive rematerialisation. Remarkably, this 3d-printing technique allows to manufacture very elaborate designs while recreating the wood grain of any type of tree, from mahogany to the endangered Chinese rosewood (2). With this new technology Forust aims to recirculate the millions of tons of wood waste produced every year in an effort to build a more sustainable future.



Optogenetics allows partial recovery of visual function in a blind patient.

An article recently published in Nature medicine (3) showcases the current advances of the PIONEER clinical trial for Retinitis Pigmentosa (RT). RT is a degenerative inherited visual disease that often leads to total blindness and affects more than 2 million people worldwide. This clinical study involved the intravitreal



injection of an adeno-associated viral vector encoding a light-sensing channelrhodopsin in combination with light-stimulating goggles in a single 58-year-old patient. Through a series of visual identification tests, the researchers were able to describe a partial recovery of vision in the treated eye, which represents a huge first step in the treatment of a disease that has no current approved therapy.

New Australian marine parks protect area twice Great Barrier Reef's size

The Australian Morrison government recently announced the addition of two marine parks surrounding the Christmas and the Cocos islands (4). This \$5.4 million investment is set to guarantee better protection from invasive fishing practices and the consequent preservation of biodiversity. This region is just off the coast of



North-western Australia and will cover a total of 740 000 km², raising the protected share of Australia's oceans from 37% to 45%. This decision was well received among conservation groups as it aims to create a safe haven for many endangered species in the Indian Ocean such as the southern bluefin tuna and the scalloped hammerhead shark, both of which use the unique ecosystem around these islands as breeding grounds.

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Delicious Home made Pizza

Serve: 3 dough balls (250 g each)

Ingredients

For the dough (60% hydration, i.e. the water amount is 60% the flour weight):

- 276 ml Lukewarm water (for the yeast to feel happy)
- 14 g Salt
- 0.14 Instant dry yeast (IDY)
- 460g Wheat flour

Topping

- Tomato sauce
- Some salt
- & anything you like: Mozzarella, Funghi, Salami, etc. (yes, even pineapple in combination with cooked ham!)
- You can even leave the tomato sauce away to make a pizza bianca: A simple example: top the pizza with some mozzarella and parmigiano and cherry tomatoes

Preparation

- 🍕 Dissolve the salt in the water in your mixing bowl (use the most stable & heavy bowl you can find)
- 🍕 After the salt is dissolved add the yeast: for this recipe we use instant dry yeast, as it is very easy to work with.
- 🍕 Add now the flour gradually. At first the mixture will be very wet and sticky like a pulp, but will eventually, starts to become a firm dough.

Tip! Keep a little bit of the flour aside. Once the dough is firm use this flour to rub in your hands (like you do with soap). This will help you to remove dough that is sticking on your fingers and combine it with the dough ball

🍕 Work/massage the dough, press your fingers into it and fold it over. You do not need to be violent, just use as much force as necessary.

🍕 Continue kneading and folding for about 10-20 minutes. With every knead & fold you will create a stronger protein network in your dough. The dough will become less sticky as the flour absorbs the water



Elasticity is a sign that your dough is ready. If you push a hole in your dough, and the dough goes back to its original state, it shows that a gluten network has formed



Crash course: elasticity & plasticity

Kneading the dough will form a protein/gluten network in the dough. This gluten network will give the dough elasticity (ability/propensity to keep its shape) & plasticity (ability to be shaped).

- 🍕 Try to get all the leftover flour and little dough pieces into the main dough. Once this is done, your dough is ready for bulk fermentation (fermentation in which the dough is in a large single mass)
- 🍕 Cover your mixing bowl with the dough tightly with wood or a damp

clean kitchen towel (I like to use one of these IKEA glass boxes with a air-tight seal)

- 🍕 After 18-24 h divide the single dough mass into smaller dough balls (250 g). Try to form a nice round ball. Make sure the upper side of the ball is even.
- 🍕 Let the balls ferment (single dough ball fermentation) overnight at 4°C
- 🍕 You can cook your pizza the next day for lunch or dinner. Just make sure you put out your dough balls 2-3 h before cooking them. It will be easier to shape the balls after they warmed up a bit.



🍕 The shaping of dough is an art in itself and takes many years to perfect. Here we keep it simple: Cover your dough ball completely with flour to prevent it from sticking. Push your fingers into the dough ball from bottom to top. This also helps to push any gas bubbles from the dough center into the border (this will give fluffier borders). If you feel comfortable stretch the dough. Whatever you do, try to do it even, to maintain a round pizza shape. (There are also plenty of youtube videos available).

Tip! Please never ever use a rolling pin, because it will: 1. push out all the beautiful gases your yeast produced during fermentation 2. Bring you in serious troubles with Italians (the latter is the biggest problem)

🍕 Once you have a nice shape, top your pizza with pizza tomato sauce, add a bit of salt on top. And add whatever you like (mozzarella, basil, vegetables)

🍕 The cooking of the pizza depends on your home oven. Try to use the highest temperature settings (usually around 210 - 250 °C). After 10 -15 minutes your pizza should be ready to eat. If you have a garden with a wood fired oven, your pizza cooking time will decrease drastically to 60 - 90 seconds!

🍕 **Tip!** Try to get a pizza stone for the home oven. These stones have the property of a real pizza oven and will make your pizzas even more delicious.



Buon appetito!

Nature & Exploration



The pandemic has forced all of us to put on our hiking boots a bit more often. Although we appear to be in the final stretch towards freedom, we want to keep you motivated to get outside and get some fresh air in those chemical-filled lungs. Here we list three hiking options in case you are tired of hiking the same streets in Leuven every day. With bars and restaurants reopening, you might even enjoy a beer or snack along the way!

Zoet waterwandeling – 4.5 km

Departure:

Recreatiepark Zoet Water
Parking CC Roosenberg
Maurits Noëstraat
3050 Oud-Heverlee

How to get there:

It's only a 30-minute bike ride from Leuven or you can take bus 337 and hop off at 'Oud-Heverlee Zoete Waters'.

How to walk:

Follow the 'wandelknooppunten': 17 - 16 - 15 - 14 - 12 - 13 - 14 - 17

Sightseeing:

At the Minnebron you can tap fresh (drinking) water from the source!

Sint-Kamilluswandeling – 7.5 km

Departure:

Buurthuis Korbeek-Lo
Pastoriestraat 1
3360 Korbeek-Lo

How to get there:

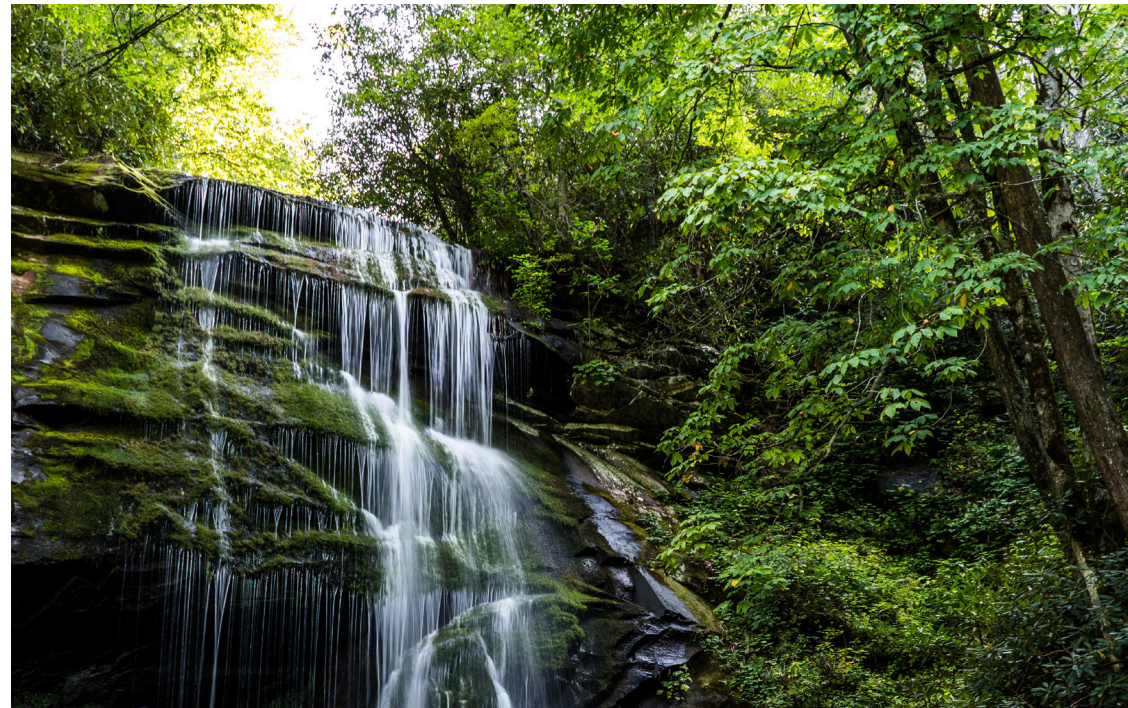
Bike for 15 minutes or take busses 8 or 380 until the bus stop Korbeek-Lo Bierbeekstraat.

How to walk:

You'll find official hiking signs marked with 'Sint-Kamilluswandeling' showing you the directions.

Extra:

You'll walk by the ruins of an ancient Roman villa.



Dikke eikenwandeling (Big oak walk) – 13.4 km

Departure:

CC De Borre
Speelpleinstraat 10
3360 Bierbeek

How to get there:

It's a bike ride of 30 minutes from Leuven. Both busses 6 and 7 will take you there if you hop off at 'Bierbeek Gareelmaker'.

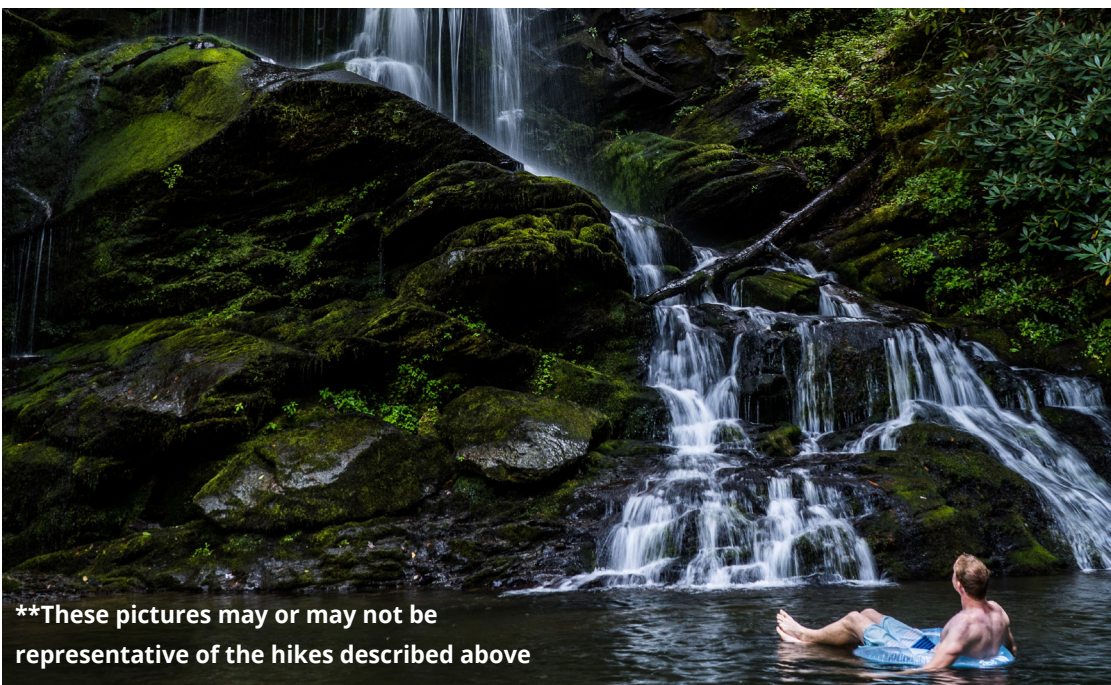
How to walk:

Here you'll have to follow the 'wandelknooppunten' again: 7 - 77 - 78 - 73 - 74 - 75 - 76 - 113 - 114 - 115 - 72 - 71 - 70 - 7

Extra:

This walk will take you along 'Ad's Path' where you get to admire multiple tree sculptures.

Source for all hikes: www.toerismevlaamsbrabant.be

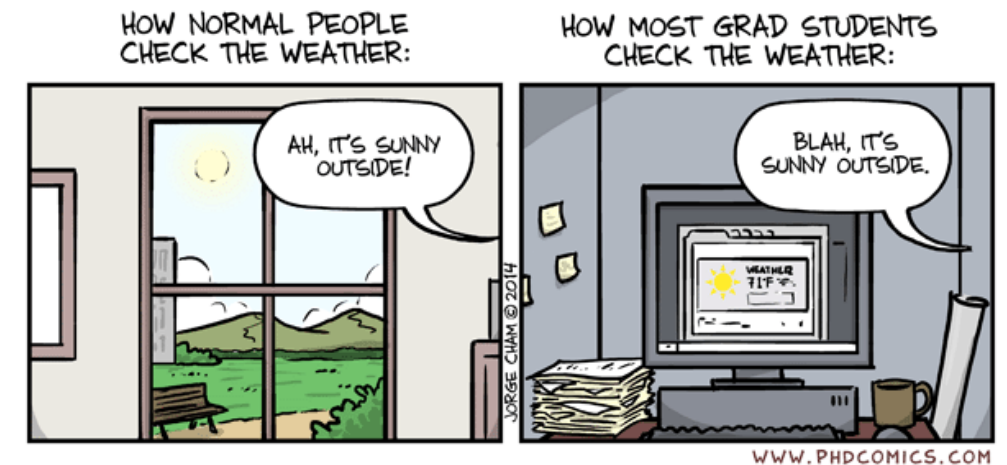
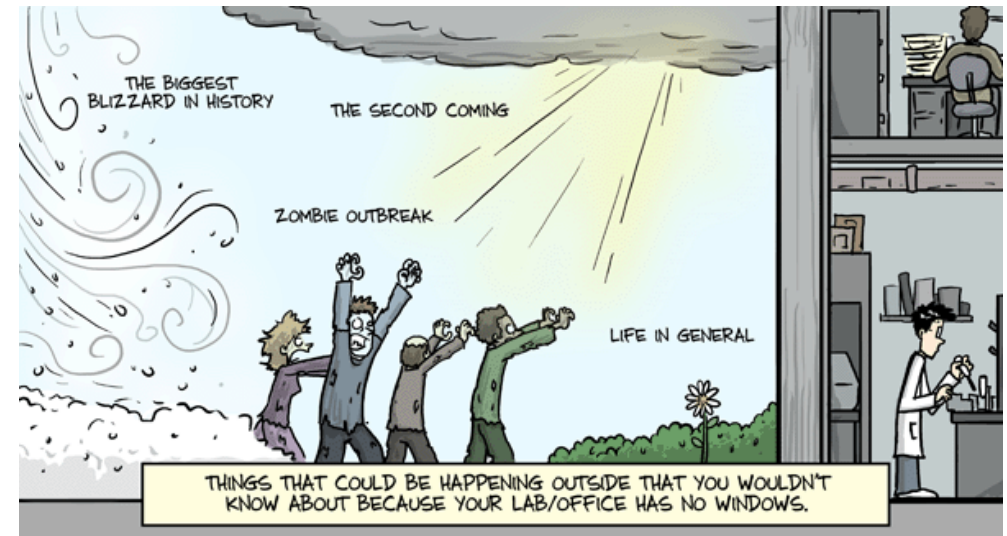


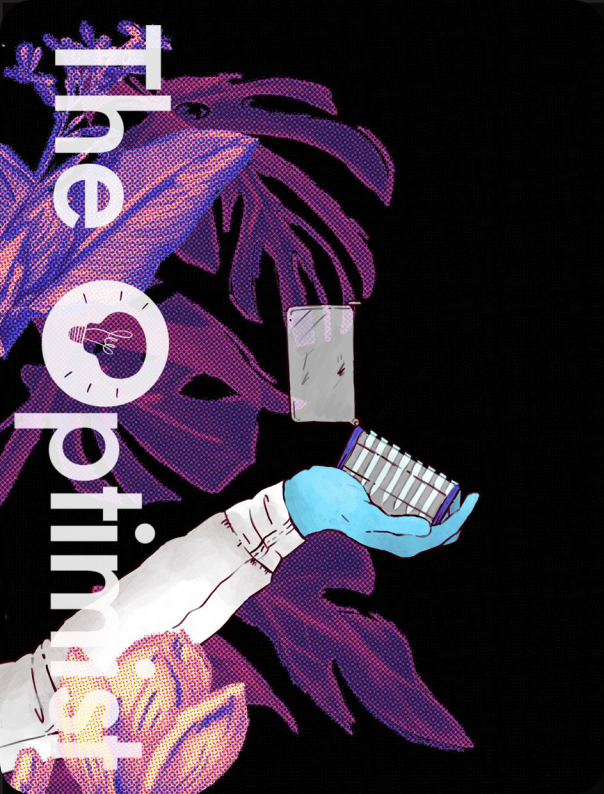
****These pictures may or may not be representative of the hikes described above**

Comics

that might motivate you to enjoy a bit of the sun...

(maybe during a nice hike?)





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For recent & previous issues visit:
<https://cbd.vib.be/community/optimist>

Thank you

Main topic

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Is there life after a PhD

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Main topic

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