WUR from within: straight, sharp, transparent

No 12

Resource

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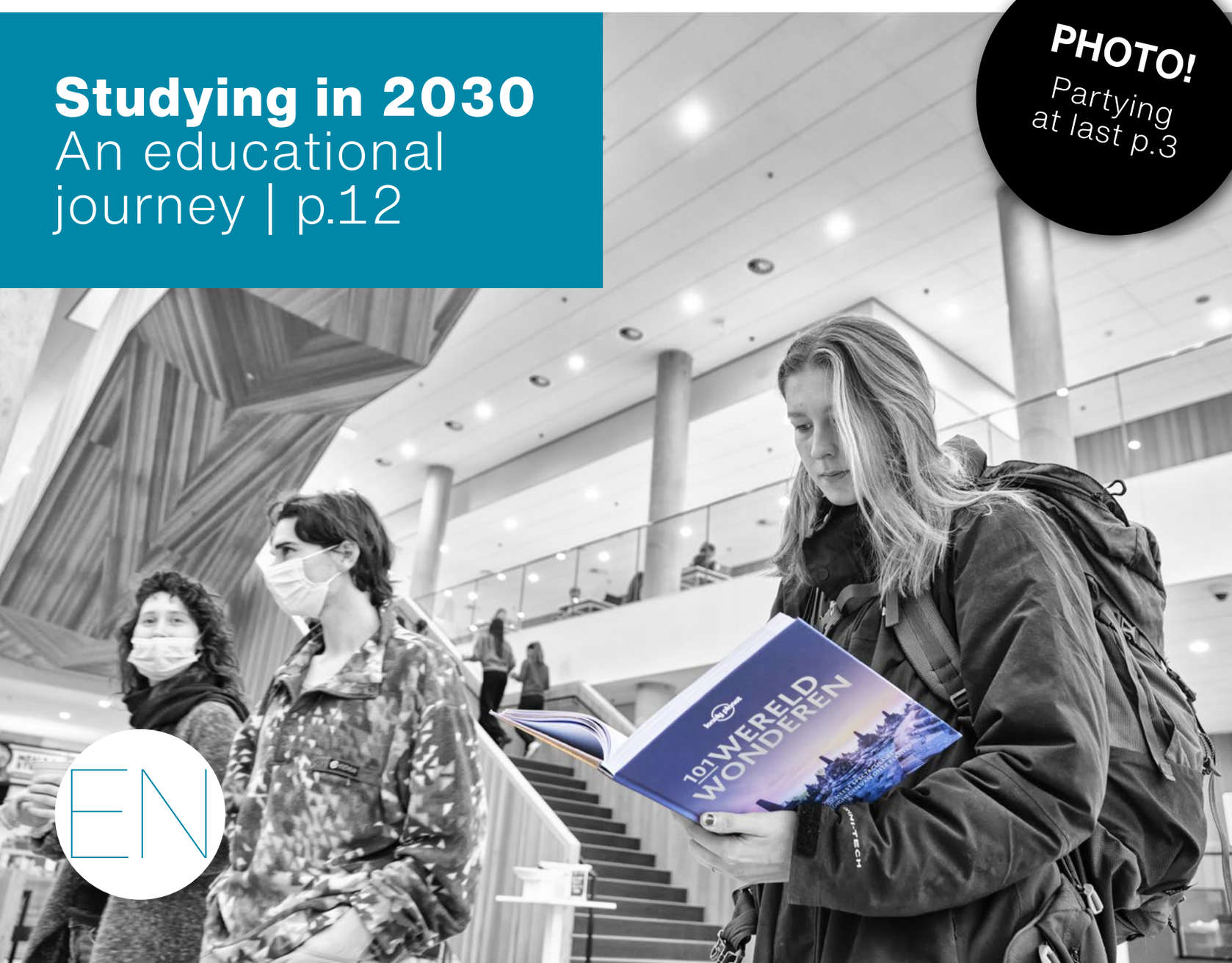

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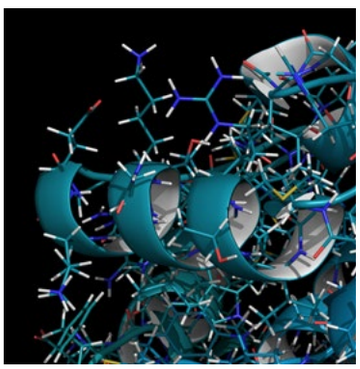


FOREWORD

Disbelief

As with most Covid press conferences, we knew in advance what the health minister Ernst Kuipers would announce on Tuesday 15 February. That is why I don't usually turn my TV on for them. But this time I did. Why? FOMO (fear of missing out) perhaps, missing a historic moment? Or did I need to hear the minister say 'good evening, the country will be opening up again' to really believe it?

Because it is hard to believe we are really going to open up after two years of social distancing, caution, lockdowns and self-isolations, and wavering between hope and fear. That we will be back to full lecture halls and parties in the pub without having to worry about facemasks, fixed seats and 1.5 metres distance. 'It's time to rock,' to quote the chair of a major Wageningen student society on our website. He too could hardly believe it. But in the words of Kuipers: 'Young people should be able to spread their wings, and meet up with people. [...] We are desperate for culture, going out, because that too is indispensable for a healthy society.'

'Covid cast a shadow over our lives,' said Kuipers, but it felt as if that shadow disappeared during his press conference. After two years of clouds, the sun is shining again.

Luuk Zegers
Student & Education editor

Read the latest news and background stories at resource-online.nl

PARTY TIME

After two years of being cautious, everyone could let their hair down again at student society SSR-W on Monday 21 February. No fixed seats, no face masks and no social distancing. The society put on a reopening party during its members' evening. The event was planned for Friday 18 February but Storm Eunice put paid to that. But everyone got to party on Monday, at least until one in the morning. That closing time restriction will also be lifted on 25 February, after which everyone can dance until the break of dawn. LZ

Photo Guy Ackermans

WUR compensates for delays in PhD research due to lockdown

Most of the 5.3 million euros that WUR is getting from the National Education Programme to compensate for the effects of the pandemic on research will be used to extend the contracts of PhD candidates and postdocs.

Photo Marte Hofsteenge

WUR previously received just under one million euros from the Ministry of Education to deal with the impact of the lockdown in 2020. WUR used that money to add up to three months on the contracts of PhD students and postdocs that ended in 2021. Now there will be more money. The university will use this funding to extend the contracts of PhD candidates and postdocs who have got behind and whose contracts end in 2021 or 2022. Another round of funding is expected in early 2022 for PhD candidates and postdocs whose contracts are due to end in 2023. They will get an extension of up to six months. WUR will also add on an extra three months where needed for the first group — the ones who got an extension of three months.

Some PhD candidates have got particularly behind with their research, for example because they needed to study abroad or do greenhouse trials with plants that only flower in spring. They too will get an extension of six months. All extensions are based on the lockdown in 2020.

WUR also wants to allocate extra money to PhD candidates and postdocs who were unable to build a research network due to the lack of conferences and exchanges, as well as for the group who suffered from loneliness and stress. AS

A lot of Covid funding for student supervision

The university has received 2.6 million euros from the National Education Programme (NPO) to compensate for the impact of Covid-19 on education. Almost half this sum will be used for extra supervision of students doing theses or internships.

Over the past two years, many students have postponed their internship or thesis research because of the Covid-19 measures. As a result, the university faces a wave of additional thesis and internship reports requiring supervision. This year, WUR will use the Covid funding to support some 50 chair groups in their supervision of students. 'A total of 270 extra thesis students and 135 extra internships required supervision in periods 1 and 2,' says education policy officer Eva Verschoor. 'We were able to honour all the applications by the chair groups.'

The rest of the money will be used for a number of other measures. For example, students have not been able to explore the job market properly, so extra funds have been made available for (online) career meetings and career coaching by study associations and WUR's Student Career Services.

Picnic tables

A further 200,000 euros is earmarked for enhancing students' academic progress. Degree programmes will receive funds for extra mentor groups. An additional 200,000 euros is available for more activities in support of student wellbeing, to be organized by the Training & Support Network. A fund is also available for student organizations to run extra activities now that the campus and the student societies have reopened.

'We were able to honour all the applications'

WUR is also going to finance the purchase of extra picnic tables and sports activities on the campus from this fund. The Student Staff Council advised on how to spend the Covid millions. AS

500

That is how many people are now allowed in a pub without having to test for Covid. The compulsory closing time of 1 am will also end on 25 February. Good news for student societies, says SSR-W chair Anne van der Molen: 'That 500 limit is fine for parties with our members.' Bigger events are allowed too but then all visitors need a negative Covid test (the '1G' policy). 'We'll consider that when we start organizing open parties again.' LZ

Micro-poems in Resource

Apt and WUR-related, with a feel for language. As of this issue, a WUR alumnus with the pseudonym 'Herscho Duds' will be summarizing a *Resource* topic in a short poem. After studying in Wageningen, HD left for the US for a career in academia. In addition to scientific articles, he publishes short stories and poems in the Netherlands and the US. 'Writing fiction and poetry is more than a hobby for me; it relaxes me and sharpens my mind. I particularly like the short, haiku style.'

WUR μ BITS AND i SNACKS

ONLY EIGHT YEARS TILL
THE BRAIN WILL EAT
BITS NICE AND SWEET
EVERY DAY ITS FILL

Herscho Duds

Eunice takes hold of the beetle

Storm Eunice ripped a wing case off the artwork *Must Leave* in the Orion pond. The insect is on the point of flying off. The wing has not been found so far, reports the beetle's spiritual father, Professor Marten Scheffer.

A colleague told him on Saturday that the artwork had been damaged by the storm. Scheffer himself came to survey the damage yesterday, armed with a wader suit and boots. The right wing case is missing. A quick search of the neighbouring area failed to locate it. 'I suspect it is in the pond. But you never know. The wing is made of fibreglass so it's not that heavy. It could be anywhere.'

Dredging

Incidentally, Wageningen did not get as much wind as on the coast, where gusts of up to 140 km/hr were measured. That is clear from the measurements at De Veenkampen, WUR's weather station in the Binnenveld. But it was close. At the height of the storm here, between four and five in the afternoon, the weather station's equipment measured gusts of wind of 115 km/hr. On Sunday and Monday, there was also a lot of rain, with 38 mm falling on both days. Hardly the weather for searching for a covering plate in the water. But when the weather becomes calmer, Scheffer certainly plans to dredge the pond to look for the missing bit of beetle. Unless someone else has found it by then, of course. The honest finder will be rewarded with a bottle from his home distillery. RK

'I suspect the missing wing is in the pond'

Photo Roelof Kleis

Work pressure? Hire more support staff

Research groups should hire more support staff to reduce the workload, recommends an Animal Sciences Group (ASG) workgroup.

'WUR has a lot of rules, programs and recording systems, for example for teaching, timetables, animal experiments and practicals,' says workgroup member Sylvia Brugman. 'You are always having to apply for and document things. These are extra administrative tasks. We want qualified, permanent support staff who can take over these tasks.'
Brugman, a researcher in the Host-Microbe Interactomics chair group, was asked by the ASG directors to investigate the main reasons for the high work pressure. WUR had hired extra teaching staff in response to earlier recommendations, but she found that was not enough. 'In the 2021 Employees' Monitor, nearly half of the WUR employees said they found the workload too high.'

Hidden labour

The workgroup doesn't just recommend hiring more support staff, it also advises keeping closer track of how many people and hours are booked per project. 'We are only able to record eight hours of work a day, whereas we often do overtime in the evenings. That means there is a lot of hidden labour that goes unrecorded.'
The workgroup also points to the competitive culture in academia. Researchers should say 'no' more often if they get yet another interesting call for projects or if their manager asks them to run through some documents in the weekend for a Monday morning meeting. 'That leads to stress and work pressure, so you should discuss this in your group.'
The workgroup's recommendations inspired Geert Wiegertjes, professor of Aquaculture and Fisheries, to make a video. It was posted last week on the intranet, and has already got a lot of views and likes. AS

'WUR has a lot of rules, programs and recording systems, for example for teaching, timetables, animal experiments and practicals.' ◆ Still from the ASG video

Prize for emulsion thesis

Food technologist Emma Hinderink has won the WUR Chemical Sciences (WURCS) thesis prize. The jury judged her doctoral thesis to be the best in 2021. They had plenty to choose from, says Professor Han Zuilhof: there were 70 theses, accounting for a fifth of all PhD theses that year at WUR. Hinderink obtained her PhD last April for her study of the use of plant proteins in emulsions. Emulsions are mixtures of oil and water. The mixture is only stable if an emulsifier is added. Dairy proteins are traditionally used for this. Hinderink investigated what happens to the stability of emulsions if you mix or replace animal proteins with plant proteins. Hinderink's prize is 500 euros and 'eternal glory'. WURCS was created in 2017 and consists of all molecular-oriented scientists in ten chair groups and two research institutes. RK

9300 tree species still unknown

It is an intriguing question for scientists: how many different species are there on the planet? The estimate for trees was 64,000 species until recently, but new calculations give a much higher number.

The study was initiated by the Global Forest Biodiversity Initiative (GFBI). Professor Gert-Jan Nabuurs was one of the founders of the GFBI, which collects data on forests. According to Nabuurs, its database has information on more than 1.3 million forest plots, home to some 28,000 different species. But many parts of the world are not well represented.
Statistical methods were used to estimate the total number of tree species on the planet based on this and other databases. The resulting estimate was 73,300 species, which is 9300 more than was previously thought. According to Nabuurs, the figure shows how much biodiversity is as yet unknown. 'The numbers are high even for organisms this big. What is more, there are only a few species that we know a lot about.'

'There are only a few species that we know a lot about'

Protect primeval forests

Almost half the unknown species are in South America. That is hardly surprising as half the known species are found there too. Tropical rainforests are acknowledged hotspots for biodiversity. The importance of the study lies not so much in the figure itself, says Nabuurs. 'It is about drawing attention to the wealth of species and showing which areas have most biodiversity. So we really need to protect the remaining primeval forests.' RK

Fear of wolf is short-lived

Can you use wolf sounds to chase deer away from tree nurseries? Ecologist Martijn Weterings (Wildlife Ecology and Conservation) put this to the test.

Tree nursery owners on the edge of the Veluwezoom National Park have a problem with fallow deer eating their trees. 'So we came up with the idea of using sounds as an alternative to shooting the deer,' says Weterings.
In one part of the Veluwezoom park, 36 cameras were hung up opposite sound boxes. In various sessions over the course of a couple of months, the sound boxes produced the noises of wolves or sheep, or no sound at all as a control. The cameras recorded the effect of the sounds on the numbers of roe deer, red deer, fallow deer and wild boar passing by.

'The experiment was done with animals that have no experience of wolves'

The results are rather unclear. At first, the wild boar and deer seemed to stay away when they heard wolves. But that effect depended on how dense the woods were in that area. What is more, the effect was short-lived in all cases: the animals disregarded the wolf noises after three weeks. Does that mean the experiment failed?

Naive

Absolutely not, says Weterings. 'The experiment was done in 2019 with what we call naive animals: animals that have no experience of wolves. But the wolf has since returned to the Netherlands. That sound habituation process could go differently now that animals are occasionally killed by a wolf. It means the animal could be "punished" for disregarding the sound, and that will break the habituation process.'
Weterings says the small number of deer in the park at the time of the experiment is the reason why no difference was found in the reaction to wolves and to sheep. 'It meant the differences were not significant.' The small numbers were also why it was not possible to distinguish between roe deer, fallow deer and red deer. So more research is needed to investigate the effect of wolf sounds on the behaviour of large wild animals. RK

Wolf in the Netherlands. ◆ Photo Shutterstock

A Little Wiser

Do dogs wag their tails because they are happy?

‘There are several reasons why a dog wags its tail,’ says Bonne Beerda, a lecturer in Behavioural Ecology. ‘Dogs get the measure of each other by reading each other’s tails. A dog that’s wagging its tail could be telling you: I am friendly and have no bad intentions.’

But tail-wagging isn’t always a sign of happiness. It's more generally an expression of excitement (positive or negative) or conflict. Beerda: 'You see that for example when a dog wants to go somewhere it’s not allowed, or wants to leave but is not allowed to. It wags its tail then too.’

But when the boss comes home, a dog wags its tail out of joy, right? Even that can vary: it is primarily from excitement, Beerda tells us: ‘The dog wants to greet the owner and jump up, as dogs do, but that is usually not allowed. Then you sometimes see its whole butt moving to and fro with the wagging tail. That means the dog is suppressing what it really wants to do, which is to go crazy.’

Research shows that the direction in which a dog wags its tail reflects its state of mind. ‘The right side of the brain is more involved in avoidance,’ says Beerda. ‘And that corresponds to tail-wagging to the left. When it’s a case of approaching someone, it is more to the right. Researchers made dogs watch videos of other dogs wagging their tails. If the tail on the video was wagging to the right, the dog watching was relaxed. If the tail was being wagged to the left in the video, the heartbeat of the dog watching the TV went up. A sign that the dog was tense.’

The way the tail is wagged and the position of the tail provide additional information, says Beerda. ‘A dog that wags its tail gently and in relaxed slow movements is usually friendly. A stiff, short wag of the tail can indicate fear or possibly aggression. A dog with its tail between its legs is fearful or submissive. A dog with its tail in the air is self-assured or dominant.’

According to Beerda, dogs wag their tails much more than their ancestor, the wolf. ‘We humans selected for childlike traits when we domesticated wolves: playfulness, social behaviour, non-aggressive behaviour. Wolves do still wag their tails when they are pups, you see.’ TL

‘We selected for childlike traits when domesticating wolves’

Bonne Beerda, lecturer in Behavioural Ecology

Every day we are bombarded with masses of sometimes contradictory information on pressing issues. In this feature, a WUR scientist gives you something to hold on to. What are the facts of the matter?

Every question makes you a little wiser. Do you dare to ask yours? Email us at redactie@resource.nl

Illustration Marly Hendricks

Turning peat soil benefits climate

Farmers in peatland areas can reduce flooding and droughts on their land and achieve lower CO_2 emissions by turning the soil over. This involves bringing sandy soil to the top and digging the peat into the subsoil, under the groundwater table.

These findings come from research by Wageningen Environmental Research. Soil scientist Willy de Groot studied the plots of two Frisian dairy farmers who had turned over their peat soil three years earlier. Initially, the soil profile consisted of a 30 cm top layer of clay, then a thin, 20 cm layer of 'schalter' peat with poor permeability, followed by 60 cm to 1.5 metres of moss peat, and sand under that. After the soil was turned over, there was topsoil of sand and peat, on top of the remains of the clay and peat layers.
For the farmers, the main benefit of this process was agricultural: they had fewer problems with excess water and the soil became firmer, so they were able to work on the land for longer. The soil dried out less in the summer too.

Farmers had fewer water problems and the soil became firmer

The CO_2 emissions also fell because the peat soil was now under the groundwater table. De Groot estimates the benefit to the climate at eight tons of CO_2 per hectare per year, about 25 per cent of the emissions in peatland areas. Multi-year studies are needed for more reliable estimates.

More leaching

There are also downsides to turning over the soil. More nutrients (such as nitrogen) leach into the groundwater from sandy soil. Moreover, the ecological consequences and impact on the landscape of such a major intervention have yet to be assessed.
De Groot carried out the study for the provincial authority of Friesland, which wants to know whether turning over the soil could be an alternative to the main climate measure in peatland areas: raising the groundwater table. De Groot calls for more test sites on farms. AS

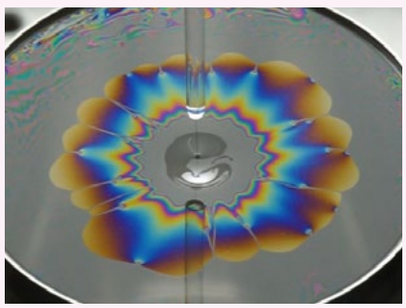
Daisy pattern discovered in a soap bubble

It sounds like magic. Let a drop of liquid fall onto a soap bubble and the liquid extends to form a flower shape. The first time she saw this, Melika Motaghian (Physics and Physical Chemistry of Foods) was surprised but now she can explain the physics.

Motaghian is doing a PhD on the behaviour of liquids when they spread. It is important to be able to understand and control this behaviour for the development of products such as shampoo, lubricants and cleaning agents.
The 'Marangoni effect' plays a key role in her research. This physical phenomenon is seen in the 'tears' on the side of a glass of wine. The alcohol (ethanol) on the edge of the glass evaporates faster than water, so the concentration of water is higher there. Water has a higher surface tension than ethanol and therefore pulls on the surrounding liquid. So the wine rises up until it falls back under the force of gravity.

Soap bubble

Motaghian used the Marangoni effect to test how liquids spread in a soap bubble. First she created a soap bubble using a kind of bubble blowing ring. Then she let one droplet of a mixture fall on the bubble. Because the soap has a higher surface tension, it pulls the drop apart in the soap film. Motaghian investigated mixtures of surfactants, such as soap, and polymers, such as polyethylene glycol, a molecule with a long chain of ethylene glycols.
At low concentrations of the polymer, the drop formed a perfect circle in the soap bubble. 'The surprising result was that when the polymer got above a certain concentration, instead of a circle it formed a daisy in rainbow colours,' says Motaghian. The daisy shape is due to the elasticity of the polymers in the drop. 'When a certain concentration is exceeded, the polymer strands become entangled. That makes the liquid elastic.'



A drop of the polymer surfactant solution spreads in a soap bubble. Photo Melika Motaghian

At high polymer concentrations, the drop spreads into a daisy pattern

So the drop doesn't extend equally far everywhere. The variation in the stretching looks like the petals of a daisy. Motaghian published her discovery in the *Journal of Colloid and Interface Science*. SS

Hi-tech rodent catcher

The Rivierenland water board reports that it managed to catch a coypu (a rodent) for the first time using a smart trap-cage. WUR pest expert Bastiaan Meerburg sees potential.

The use of technology to control pests is not new in itself. In greenhouse horticulture, highly agile mini-drones hunt down and destroy harmful insects. But technological solutions for tackling rodents *are* a novel development, says Meerburg.

'You want to avoid bycatch for both economic and ethical reasons'

The smart trap-cage, which was developed with the help of Applied Biology students at the HAS university of applied sciences, uses image recognition and artificial intelligence. A motion sensor, camera and modem linking to a database are used to determine whether the animal in the cage is a coypu. If so, the cage door closes and a signal is sent to the rodent catcher on duty. Any other creature that happens to enter the cage, such as a duck or otter, is allowed to leave.

Big beasts

Meerburg understands why such smart technology is being used for coypus. 'Like muskrats, they are a non-native species that can cause huge damage to flood defences. And they are big beasts; they weigh six to ten kilos,' he explains. In the Netherlands, coypus are found almost exclusively along the border with Germany. They are caught wherever possible to prevent them from spreading further. 'The more specific the trap, the better. You want to avoid bycatch if possible for both economic and ethical reasons,' says Meerburg. That is why he thinks the smart trap-cages are a promising solution for combatting and monitoring coypus and muskrats. But he has doubts whether they will work on brown and black rats. 'They are highly intelligent creatures and capable of learning from one another. We will have to see whether they are a bit too smart for the smart trap-cage.' ME

The coypu (*Myocastor coypus*) originates from South America and is recognizable by its white whiskers and large orange incisors. Photo Shutterstock

In other news science with a wink

◆ POOP

The Romans used a potty as a mobile toilet. British archaeologists (University of Cambridge) deduce this from the contents of excavated jars that date back to Roman times. The encrusted remains on the inside contain the fossilized eggs of whipworms, a human intestinal parasite. The jars were found near a bathhouse. First take a dump and then a bath. Makes sense.

◆ ALCOHOL-FREE

Danish biotechnologists (University of Copenhagen) claim to be able to make alcohol-free beer that tastes like the real thing. The hoppy flavours that are so characteristic of real beer are created artificially and added. No fermentation is involved, and thus no alcohol either, the scientists proclaim triumphantly. The new beer will be on the Danish market by the end of the year. It's the alcohol, stupid!

◆ ADVERTISING

A third of TV advertisements play to empty rooms , according to American research by Cornell University. Older people mainly switch to other channels. Young people leave the room or shift their attention to a phone or tablet. Consumer items such as beer or cars hold the attention best. Medical products the least.

◆ EXACTLY

Protons turn out to be a little bit smaller than was always thought: not 0.88 femtometres, but only 0.84. A femtometre is 1/1015 metres. The discovery was made by physicists at the University of Bonn. Is this some kind of quantum-mechanical inflation? No, just a systematic measurement error in the past, say the researchers. So it won't cause any earth-shattering changes. RK

Taxidermy

Vincent Oostvogels

Stuffed animals, skulls, shells, you name it... Taxidermy seems to have become very trendy recently. Shops that are chock-full of such items have sprung up all over the place. There's one in Wageningen, where you can fill your basket with tropical butterflies and if you really want to push the boat out, you can pick up a stuffed polar bear.
I have always collected feathers, skeletons and egg shells – just stuff I found lying around. In secondary school I was the only one, but when I came here to study biology, I was suddenly surrounded by peers with similar collections. Some things are leftovers from courses I took: for example, I still have the skull of the piglet that I had to dissect for Human and Animal Sciences 2, and some pinned insects that I caught on the Pyrenees excursion for Webs of Terrestrial Diversity.

'My latest acquisition is a stuffed gadwall from the Wageningen water meadows'

My latest acquisition is a stuffed gadwall duck from the Wageningen floodplains My girlfriend saw it first: a beautiful male, dead but still completely intact. I took it home, but because I didn't want to pay to have it preserved, it stayed in my freezer with the bread for more than a year. Finally, my parents offered to pay for it as a graduation present. The taxidermist did a fantastic job and now that duck is in pride of place in the living room, in a display case made by a friend of mine. When I look at it, I always try to imagine what he might have experienced. Many of the gadwalls that winter here come from Scandinavia or Russia and it is known that they can live for up to 20 years.
That duck, and everything else I have collected over the years, is all about the stories. It is about memories of places and people, and the links with certain animal species in my environment. You don't get any of that in those shops full of stuffed animals. So I honestly wonder what people see in a random dead animal when they don't have the story behind it?

To comment and see the gadwall duck, go to resource-online.nl

Vincent Oostvogels (25) is in the first year of his PhD research project on biodiversity restoration in the dairy farming sector. He dreams of having a few cows of his own one day.

Studying in 2030

AN EDUCATIONAL JOURNEY

Online and hybrid educational innovations have gained unprecedented momentum since Covid-19 appeared on the scene. The way students organize their studies also seems to be changing for good. Three WUR experts paint a picture of studying in the future for *Resource*, with four themes. Text Luuk Zegers ◆ Illustrations Valerie Geelen

1 Tailor-made education - Lonely Planet Degree Guide

Instead of looking at whether you fit in as a student, you will soon be able to tailor your education to your requirements.

Current students already have a lot of choice as to which direction they take in their studies, says Erik Heijmans, head of WUR's Education Support Centre. ‘For example, in the Master's phase there is room for multiple electives and students can choose the topic of their thesis research, the Academic Consultancy Training (ACT) project they want to work on, and where they go for their internship. And many students also decide to do two Master’s degrees.’ So a student's career can already be tailored to their personal preferences. The scope for tailor-made education will only increase, expects Ulrike Wild, Director of Open & Online Education at WUR. ‘You no longer check whether you fit in with the programme; you put together a programme that suits you. With a more flexible system, you can also facilitate learning paths that are more in line with today’s multidisciplinary issues.’

Heijmans: 'You can make combinations with every discipline and every set of courses. By combining the themes of soil remediation and plant breeding, for example, you can create a customized learning trajectory.’ And it could be even freer than that, he says. ‘Make sure there is a firm foundation of compulsory elements, such as a thesis and a number of academic skills courses. The students can also design their own degree programmes. You can think up any combination at Wageningen. With the theme of food, for example, you can go in the direction of health, soils, technology, sustainability, production, logistics, and so on. In short, you can be innovative in how you combine disciplines .’ This does require coaching, says Heijmans. ‘To prevent someone from taking only introductory courses. That way you end up knowing a little bit about everything. Your studies do need to have focus and depth.’ Wild: 'Ingrid Hijman inspired me with the concept of the Lonely Planet Degree Guide: a travel guide to our domains in which you as a student can map out your own route.’ Universities will also cooperate more between domains, Heijmans expects. ‘Delft has architecture, Wageningen has sustainability. Bring them together and you get sustainable urban development. That kind of crossover is the future. The rapid development of hybrid education in the Covid era is also making it easier for students to take courses at other universities. That was already possible, but it is becoming easier and easier.’

The expectation is that soon you can tailor your degree programme to your personal preferences. You will have a kind of Lonely Planet Study Guide that lets you plan your own student journey.

2 Lifelong learning (for everyone)

The standard path of three years on a Bachelor's degree and two on a Master's will end and professionals will return to the university during their careers for in-service training

'In the past, you did a Bachelor's and a Master's and then you were done,' says Professor of Education and Learning Sciences Perry den Brok. 'That is no longer the case. Your degrees are a starting point, but learning doesn't stop when you have finished your Master's degree. The government is going to create personal budgets for lifelong learning.'

Den Brok expects that increased use will be made of 'badges' and 'microcredentials'. 'Microcredentials are when you follow parts of a recognized programme, for which you can receive a partial certificate or partial diploma. Badges indicate the level to which you have mastered certain skills. Before long, the courses you have taken will be listed on the front of your certificate, and on the back will be the skills level you have attained in, say, leadership skills, entrepreneurship, and so on. You might also postpone part of your Master's programme until later in your career. Maybe halfway through your Master's degree you have enough skills to start a good job, and postpone the rest of your studies until later. Very useful, especially if there will soon be national or international standards for badges. Then a record will be kept centrally that you have done everything that comes under level 1 of a skill. Other universities and companies will see that, and you can also show on LinkedIn that you not only know a lot about forestry, but also that you have certain skills.'

Lifelong learning also means that people are returning to university later in their careers for further education, says Ulrike Wild of Open & Online Education. 'So more people will study part-time alongside a job. Perhaps they will spread their studies over a longer period of time, alongside their career. I think that everyone

Studying will no longer stop once you get your Master's. The motto is 'lifelong learning'. You can expect to see microcredentials: certificates you get for doing part of a recognized programme.

will soon have a kind of personal "wallet" or portfolio that lists what they have studied, how much education budget they have left, and what education they have access to. Then you carve out your own personal learning path throughout your life. That also takes the pressure off you to constantly make the right decisions: you learn now what you need now. The courses you take are like building blocks.'

If people return to university throughout their careers for further development and training, the makeup of the student population also changes, says Den Brok. 'A new group of students is added to the current Bachelor's, Master's and PHD students. How will this new group, the professionals, be taught? Will they just sit in the classroom with regular students? For some courses this will work and even have its advantages, but not for others. So we need to think about which education we make available to working people, and in which way, and whether they will take lessons together with students. You can't just throw everything open to everyone. So: find out what the need is and then make targeted choices.'

If you take the concept of microcredentials to its logical conclusion, it could also have consequences for who gets access to university. In the Netherlands at present, you have to have a high school certificate (VWO) or be a graduate of a university of applied sciences. Wild: 'Perhaps it will soon be possible for people who have completed an intermediate vocational education (MBO) course and have specialized in electronics to take a few courses at university to further develop their skills in that field. Then you won't get a full degree, but you will get those microcredentials.'

3 Stretch students with real-world challenges

Education needs to get more active: no more lecturing to big groups with a few questions at the end, but putting students to work on assignments in the real world.

Den Brok, Wild and Heijmans agree that lectures - in the classic sense of the word in which students sit and listen – are past their sell-by date. Heijmans: 'Students should not be passive consumers of education, but active participants in challenging, highly cognitive assignments that require knowledge. In Wageningen, we often pamper students to make sure they get to the finish line. If you activate them by having them work on a practical problem, they have to actively look for the relevant knowledge themselves. Knowledge acquired that way is more likely to stick. I can give a lecture on chemistry, but I can also say: here is a fire extinguisher, find out how it works. Then students end up learning about chemistry themselves. A student chooses a degree programme out of enthusiasm or fascination, so they need you to challenge them.'

Through Academic Consultancy Training (ACT) projects, student challenges, internships and their thesis research, WUR students already work on practical pro-

‘THE HUMAN RACE IS FACING CHALLENGES THAT CANNOT BE SOLVED USING ONE ISOLATED DISCIPLINE’

jects on a regular basis. ‘But it would be good if more courses like ACT were introduced into the Bachelor's programme,’ says Heijmans. There is a tremendous increase in interest in learning through challenges, Wild observes. ‘That is because of the multidisciplinary aspect: students from different programmes work together on complex assignments. The human race is also facing challenges that cannot be solved using one isolated discipline.’

But in Den Brok’s view, this does not mean that the university will be more geared to hands-on professional education. ‘Academic values and depth will remain important. But the problems of the future demand more than academic skills. We need creative thinking, entrepreneurship, the ability to cooperate with people from other domains, and so on. At the moment, universities still primarily train their students to be researchers, but by no means everyone becomes a researcher. University graduates are also needed in companies, social organizations and in politics. These things call for different profiles and skills. Challenge-based education helps to develop those skills.’

4

New apps and VR

New apps and virtual reality (VR) are becoming increasingly important during fieldwork and as preparation for or replacement of practicals.

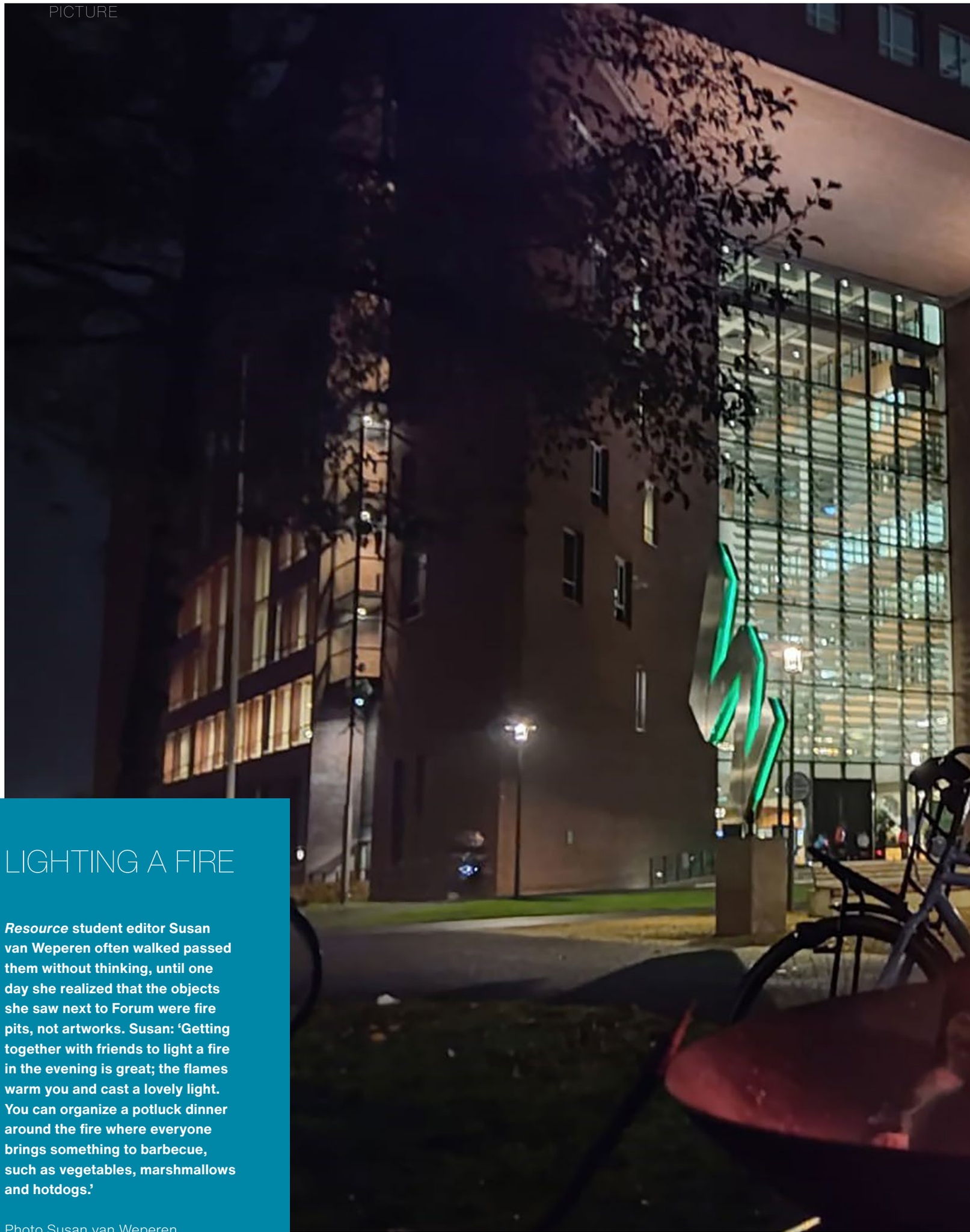
There have been some notable digital innovations in the field of education in Wageningen recently. For example, Bauke Albada (Organic Chemistry), Harry Bitter (Biobased Chemistry & Technology) and Han Zuilhof (Organic Chemistry) developed a virtual reality (VR) app with which students wearing VR glasses can practise building their apparatus and performing a complex distillation.

‘These kinds of innovations do not replace the real thing in every case, but they can enrich the learning experience,’ says Den Brok. ‘You practise with lab skills before you set to work for real. We have also tried it out in teacher training: maintaining discipline in a digital classroom with VR glasses on. It is still experimental at the moment, but the better the technology gets, the more complex you can make it.’ Heijmans sees opportunities in the VR field too. ‘At VU Amsterdam University, they use VR to see how joints move in a 3D situation. If you cut open a dead animal, it no longer moves. Using VR for this means fewer dead animals and a simulation may even show how it works more clearly.’

Since the Covid period, the Peek educational app has been in use increasingly often too. This app from Wageningen was devised by Teun Vogel (Soil Physics and Land Management) to make fieldwork more fun and educational. Heijmans is enthusiastic. ‘Instead of trotting along behind the teacher, you go out into the field with a task to solve. Then it is still good to have a teacher in the field, because the inspiration is important, but their role changes: from a sage on stage to a wise guide on the side.’ ■

Dies Natalis on the future of education

The theme of WUR’S 104th Dies Natalis (Founders’ Day) this year is 'Metamorphoses, shaping tomorrow's education'. The keynote speaker at the ceremony on 9 March, Dirk van Damme, says in an interview on wur.nl: 'I think that Covid brought about a tectonic shift in the way we look at education and how it should be offered. There is going to be a much greater integration of digital and distance learning in regular education.' Until the end of May 2021, Van Damme was Senior Counsellor at the Directorate for Education and Skills of the OECD in Paris. He will give a presentation on developments in and the future of education.



LIGHTING A FIRE

Resource **student editor Susan van Weperen often walked passed them without thinking, until one day she realized that the objects she saw next to Forum were fire pits, not artworks. Susan: 'Getting together with friends to light a fire in the evening is great; the flames warm you and cast a lovely light. You can organize a potluck dinner around the fire where everyone brings something to barbecue, such as vegetables, marshmallows and hotdogs.'**

Photo Susan van Weperen

What if the government is against you?

SCIENCE IN TROUBLE IN BRAZIL

Brazilian scientists are trying to combat deforestation and illegal mining, but the government is not on their side. Under Bolsonaro, the trend for cutting budgets has continued and anti-science sentiment is spreading. How are Judith Verstegen's fellow researchers in Brazil holding up?

Text Stijn Schreven

University lecturer Judith Verstegen (Geo-information Science and Remote Sensing) sees at close quarters what it is like when you can't take the pursuit of independent science for granted. Among her close collaborators are the Brazilian researchers Gilberto Câmara and Michelle Picoli. Câmara has worked at INPE since 1980 (see inset) and was director there from 2005 to 2012. He is retired now, but continues to work voluntarily as a senior researcher at the institute. Without people like Câmara, the institute's research would have gone into a serious decline. INPE's budget today is 85 per cent lower than in 2010, with inevitable consequences. 'There is less money for research and fewer staff. People are not replaced when they retire,' says Câmara. 'And in the case of INPE, there is less scope to do research the government doesn't like.' As examples, he mentions studies on illegal mining in protected areas and the monitoring of deforestation in the Amazon and Cerrado.

It is not just financially that the cards are stacked against the scientists. 'The current director of INPE was nominated by Bolsonaro,' says Câmara. 'They replaced the previous director, a scientist, with this puppet.' Câmara's research was opposed internally by the director, Clezio Marcos de Nardin. 'Judith Verstegen and I wanted to submit a research project,' he begins. 'Because I am connected with INPE, my proposal had to have the director's approval, which he withheld. I took him to court, but the judge sided with him, even though he was lying. I am a researcher at INPE, but he said I had no ties with the institute.'

'NOW OF ALL TIMES I SHOULD MAINTAIN MY RELATIONSHIP WITH THE SCIENTISTS'

This only strengthened Judith Verstegen's resolve to continue working together. 'When that proposal was blocked, I could have decided never to work with Brazilians again. But I'm not like that. This is happening because of the political climate. Now of all times I should do my best to maintain my relationship with the scientists, because they need our support.'

Begging

Grants for PhD students have remained at the same level since 2013, while the cost of living has gone up. A lack of prospects is threatening to drive a generation of bright minds abroad or into a career outside science. 'Companies are attracting researchers away from science with salaries that are slightly higher than the grants,' says Michelle Picoli, a Brazilian postdoctoral researcher at UCLouvain in Belgium. 'Some supervisors are begging PhD students to at least finish their dissertation before they leave.' There are no statistics on the

Photo Nelson Antoine / Shutterstock.com

number of people emigrating or leaving the sciences, but Picoli is one of them. She and 14 others published a letter in Science to express their concerns. 'I was working on a project at INPE, funded by the Amazon Fund. When the suspension of that fund was announced, I left for a new job in Belgium.'

Like Câmara, Picoli sees the job market at research institutes and universities shrinking. 'In recent years there has been a sharp decline in vacancies for professors. Many of the positions of retired professors remain unfilled. That is one of the reasons why some former and emeritus professors continue to work. They do not earn more money by doing so, but do it out of dedication to science and society.'

Elections

Both Câmara and Picoli expect Bolsonaro's presidency to end this year. Elections are due in October, with former president Luiz Inácio Lula da Silva (Lula) standing as a candidate. Câmara emphasizes that scientists must take action. 'Being hopeful doesn't get you anywhere, but action does. Many institutes are repositioning themselves to influence the new government. The younger generation did not experience the dictatorship of 1964-1985. They have to learn to fight.' Picoli agrees: 'Researchers in Brazil see their scientific work as an act of resistance. The mentality is changing. They want to restore trust among the population by separating facts from pseudo-facts. For example, Brazilian scientists recently revealed that Dr Evaristo de Miranda's research group works with questionable data and literature to sow discord around issues such as climate change and deforestation, with a big influence on government policy.'

Picoli hopes Lula wins, and then change will come. During his previous term, Lula invested in science and opened new universities. You don't build up research budgets overnight, however, Picoli says: 'They have been cut over several years and recovery will take at least five or ten years. Once they leave, young researchers will not return quickly.' Câmara expects that a new government will soon replace the director of INPE. 'It is a very prominent institute,' he explains. 'It would be a symbolic act, and people want high quality data for the new government's policies.' ■

Science in Brazil has had its budget slashed during Jair Bolsonaro's presidency. The Ministry of Science, Technology and Innovation (MCTI) has 66 per cent less to spend than it did in 2018. The budget of the Brazilian National Institute for Space Research, INPE (the Brazilian counterpart of NASA), was more than halved from 2020 to 2021. INPE is one of the main watchdogs on deforestation and changing land use in Brazil, using satellites to monitor the Amazon forest and the Cerrado savannah. Cuts in science are therefore a threat to nature conservation too.

Tinkering with proteins

Tom van den Bergh understands proteins. The 3DM system he co-developed accurately charts how proteins work and how you can manipulate them.

Text Roelof Kleis

Life on earth is impossible without proteins, which play a key role in all processes in living cells. So they are present in staggering numbers and great diversity. And due to mutations, no two proteins are exactly the same. A human being couldn't possibly keep track of them, but a computer can. Tom van den Bergh recently obtained his doctorate in this field.
The focus of his study is the 3DM programme, which collects, organises and analyses protein data. He worked on it a lot during his Bioinformatics studies in Leiden, where he did both his Bachelor's and his Master's theses on research that resulted in 3DM, the life's work of his current boss Henk-Jan Joosten. Van den Bergh initially worked in the basement of the Microbiology lab on De Dreijen campus, where Joosten started a small company called Bio-Prodict in 2008.
'I did my MSc there, and then went on to work for the company,' says Van den Bergh. But the basement soon became too small, and the company moved to Nijmegen, where it has been for over 10 years. 'I did my PhD part-time while I was working for Bio-Prodict. That's why it took a while. I think it took me about eight years, altogether.' He had finished his thesis two years ago, actually. But his defence was postponed due to Covid-19.

Folded

'3DM is the 3D version of a system that brings together all the available information about protein families,' Van den Bergh explains. 'And a protein family consists of all the proteins that are folded in the same way in 3D. A protein is a chain of amino acids that folds itself into an effective 3D structure in response to various physical and chemical forces. The folding creates cavities, cracks and places where reactions can occur.'
But proteins mutate in the course of evolution. 'So there are very many proteins that differ slightly in their amino acid sequence, but still fold in the same way,' Van den Bergh continues. 'There is a lot of data on amino acid sequences online. With 3DM we superimpose the structures of those comparable proteins over each other. This alignment of 3D structures happens quite literally on the computer screen. This kind of alignment can involve hundreds of thousands of proteins. The images show which parts of the protein, and therefore which amino acid sequences, are essential for the functioning of the molecule.

'Two weeks of work on a 3DM system like this can save you six months' work in the lab'

'If you have a protein no one knows much about, you can skip a whole lot of research thanks to this system. Based on its structure and similarity to known proteins, you can deduce all kinds of information about the unknown protein,' explains Van den Bergh. 'Just by comparing the amino acid sequence, you gain a lot of information. Positions in the protein that always remain the same are apparently important for the functioning of the protein. These positions are of course also subject to mutations, but such mutations disappear due to evolutionary pressure, because the organism does not survive.'

Predictions

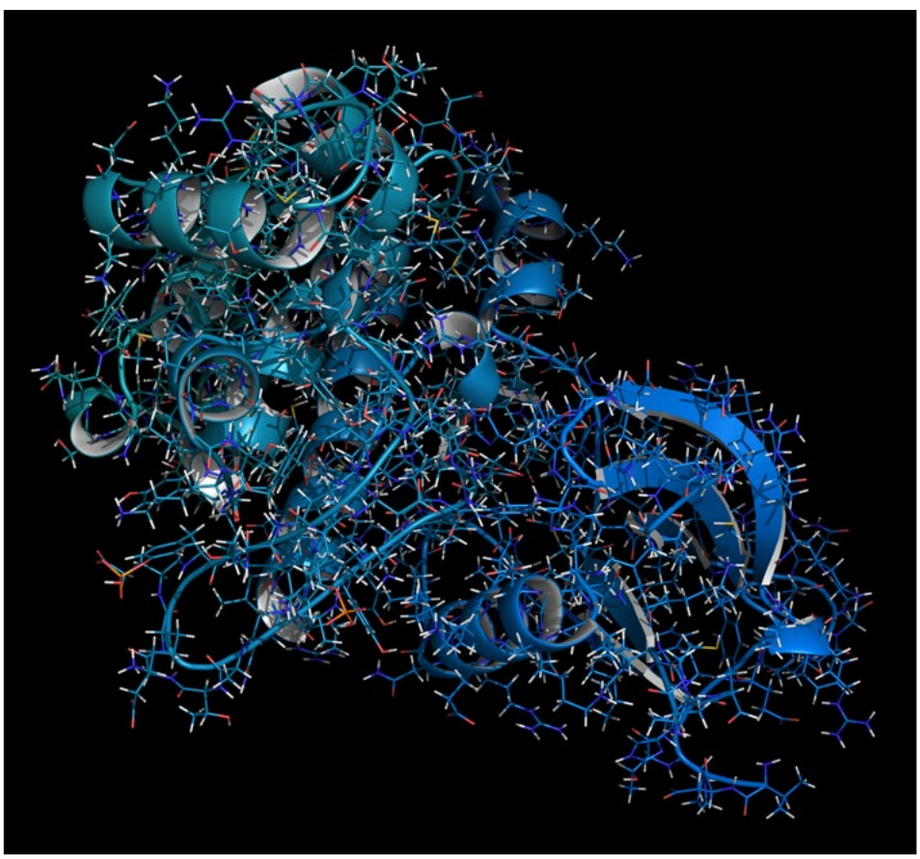
There are very many applications of 3DM. Biotechnologists, for example, make eager use of it to develop new or improved enzymes. Van den Bergh: 'Once you have mapped all those mutations, you can ask the simple question: which one has an effect on the specificity of the protein? Where do you have to change the enzyme to make it also work with a slightly different substance? Or to make it work faster or at a higher temperature, or remain more stable? Two weeks of work on a 3DM system like this can save you six months' work in the lab'.

The medical applications are at least as interesting. Using machine learning, Van den Bergh developed a programme that predicts the likelihood of a mutation at a particular location in the human genome leading to disease. 'If you can predict which mutation will change a protein in a desired direction, you can also predict which mutation will negate the effect of a protein. I have done this for three proteins that are involved in LQT syndrome, a condition that can lead to cardiac arrhythmia and an increased risk of cardiac arrest. An abnormal protein does not necessarily mean that you have LQT. Each genome is slightly different, due to natural variation. No doctor wants to treat someone who is actually healthy. The predictor tells you whether a change in the protein is likely to be pathogenic or not.'

Exome

That was the state of affairs two years ago. Van den Bergh: 'We have now made this predictor for the entire human exome, in other words for all human proteins. We can predict the effect of every mutation in a protein.' And that was no small task. Humans have 20,000 genes that code for proteins. One gene can also code for several protein variants, which can be traced back to almost 6000 protein families.

It sounds like science fiction: predicting the risk of disease on the basis of your genome. 'But a lot of questions remain unanswered,' says Van den Bergh reassuringly. 'Our predictor only says whether a mutation *could* lead to illness. It cannot tell you how ill you will become or exactly which disease you will get. But things are certainly developing extremely fast.' ■



3D computer model of a protein structure. The effective parts of similar proteins look alike. By aligning the 3D structures of those proteins, the effective parts are revealed. • Illustration Shutterstock

Teacher Sumaia Hussaini fled Kabul

‘I want to help women students in Afghanistan’

Sumaia Hussaini taught at the teacher training college in Kabul that was set up by WUR, and is now in the asylum seekers’ centre in Paterswolde. She is happy to be in the Netherlands. ‘In Kabul people have lost all hope, especially women’.

Text Albert Sikkema

Halfway through *Resource’s* conversation with Sumaia Hussaini in the desolate asylum seekers’ centre (AZC) in Paterswolde, Groningen, something snapped in her. Until then, she had been politely answering questions in English. She is 32 and has a husband and two daughters aged three and seven months, respectively. She taught Animal Sciences at the National Agriculture Education College (NAEC) in Kabul, which was set up by WUR. She also trained teachers, and helped develop the curriculum of the teacher training programme. Sumaia taught both men and women and helped run a preparatory agricultural course designed specifically to enable women to do the teacher training course.

Threat

The last two years in Kabul were difficult. The college was closed a lot because of the coronavirus, and the teachers tried to offer an online alternative, in the form of videos of practicals and PowerPoints of lessons that they sent to the students. And the threat of an attack by the Taliban was never far away. That movement was not against agricultural education, says Sumaia, but the threat came from their arbitrary and ruthless actions – there were attacks on schools, hospitals and mosques, preferably in places where foreigners worked. ‘Every foreigner was a target, so danger was always in the air.’ She laughingly recounts how NAEC's doorman had an alarm button to warn staff of a surprise Taliban attack, which went off by accident one day.

When the Taliban entered Kabul, Sumaia’s public life was over: ‘I hate the Taliban, I was afraid of them, so I no longer went out. My husband, who worked for the army, was in danger too, but he still went shopping. For the first few days there weren’t many Taliban fighters on the streets, but they were greatly feared.’

That is why she was not sad to leave Kabul 10 days after the Taliban seized power. ‘I was able to send an email to the Dutch crisis team in Kabul. They didn’t reply, but suddenly one evening I got a phone call from the crisis

'I want to teach. I have a Bachelor's in Veterinary Sciences and a Master's in Animal Care, from Kabul. I don't know what the degrees are worth in the Netherlands.'
◆ Photo Guy Ackermans

team telling me to go to the airport. We arrived at the airport at one o'clock in the morning, but we only managed to get inside at eight o'clock.' She is not complaining, though: she was able to go straight to the Dutch military personnel at the airport. And so, after a stopover in Pakistan, she and her husband and two daughters arrived in the Netherlands in the summer of 2021.

Emotional

She only gets emotional when I ask if she is still in touch with her family and friends in Kabul. 'People in Kabul have lost one thing: hope. Especially the women. They have lost their jobs, their education and their freedom. All the women in Kabul have been living indoors for six months. That's because of the Taliban. They say they respect women, but we hear stories about how they misbehave and beat and stone women in the provinces. Their way of thinking hasn't changed.'

'All the women in Kabul have been living indoors for six months because of the Taliban'

'The good thing is: I can make plans'

Sumaia is happy to be in the Netherlands, and she hopes that she and her daughters can go to school here. She has not been able to start learning Dutch yet because of the Covid restrictions. She hopes they can

NAEC in better times • Photo WUR

‘We want the students to finish their agricultural training’

leave the AZC soon. She is waiting to be allocated a house in Scherpenzeel.
What does she want to do herself? ‘I want to teach. I have a Bachelor's degree in Veterinary Sciences and a Master's degree in Animal Care from Kabul. I don't know what those degrees are worth in the Netherlands. Maybe I can do a PhD. The good thing is: I can make plans.’
For the time being, she is still involved in the teacher training programme in Kabul. She has just done a workshop in Wageningen on distance learning. ‘We want the students who started the agricultural training to be able to finish it. I am still an employee of NAEC. Maybe I will get paid for this, but to me that's not the most important thing. I mainly want to help women students in Afghanistan.’ ■

Uncertain future

‘I still feel as though I am in a bad dream’, says Ezzat-Ullah Murad. Last summer, he was still the general manager of the National Agriculture Education College (NAEC) in Kabul and now he is a refugee in the Netherlands. Sitting beside him is Hamdullah Tokhi, the former dean of the teacher training college, who nods in agreement. Last year, they were very busy preparing the new four-year teacher training programme and had just received approval for it from Afghanistan’s education ministry when the Taliban unexpectedly invaded the capital, the school was closed and Ezzat and Tokhi were put on the evacuation list. Now they and their families are in different parts of the Netherlands.
Today, they are back in Wageningen, where they both did a professional Master’s at Larenstein University of Applied Sciences when it was still in Wageningen. They then set up NAEC in Kabul. And although they fled, they are still involved in the teacher training programme today. They have just completed a workshop on distance learning and will probably soon be hired by the Wageningen Center for Development Innovation (WCDI) for three months to design the distance learning programme for women students at NAEC.
The future of the teacher training programme in Kabul is uncertain. The Dutch ministry of Foreign Affairs has made funds available until May this year, when WUR's contribution ends too. Ezzat and Tokhi are worried about the future and hope that new donors will be found for the next three years so that NAEC can grow into Afghanistan's first agricultural university. They are hoping for follow-up so that they can continue to contribute their expertise to NAEC or similar projects. The Taliban have reportedly expressed their support for NAEC and women's education, but the political situation in Afghanistan is still unclear and uncertain. Both Ezzat and Tokhi are reluctant to go back to Afghanistan because there are too many risks involved at the moment.

UNIque houses

There are student houses and there are weird and wonderful student houses. In this column we visit the latter. This time it's Huize Ruysdael.

Merijn: 'There used to be a pub in Wageningen that closed down, so we got the wooden floor and the bar top from there. It was just lying in the street outside the pub. We mounted the bar on an old piano. Huize Ruysdael was first located on Asterstraat, but we had to move at some point. We then moved the entire brown café with us, transporting everything on a skateboard.'
David: 'In the kitchen there is a photo of Alexander Pechtold doing the washing up. When he was still mayor of Wageningen, Huize Ruysdael invited him to dinner and he accepted. Because our Gentlemen had cooked for him, he had to do the washing up. We have also invited the current mayor to dinner since then.'
David: 'There's a lot of smoking in our fraternity, the Toebacksuygers. Our house is named after a former cigar brand from Wageningen, the Heeren van Ruysdael. Everyone who comes to live here becomes a "Gentleman of Ruysdael", numbered in order of arrival as a resident. So I am Gentleman number 19, for instance.'
Martijn: 'I am Gentleman of Ruysdael number 20.'
David: 'There are a few customs in the house. We have a bell, for instance, like you see in almost every pub. You ring it when you've got something to celebrate. In the pub, you ring it for a round of drinks, in our house the bell ringer has to drink a shot with everyone individually. So now I would have to drink one shot with each of you.'

Huize Ruysdael

Residents:
Martijn Smakman, David Jacobs, Brand Snippe and Casper Krijnse Locker. Former housemate Merijn Lamers is in the photo too.

UNIque because:
the four residents, Gentlemen of the SSR-W fraternity De Toebacksuyghers, wake up every day in their very own Dutch-style 'brown café`

Martijn: 'That might not sound attractive, but people really like it. It is a good concept.' LZ

Would you like to be in *Resource* with your UNIque house? Email us at resource@wur.nl.

From the left: Martijn Smakman, David Jacobs, Brand Snippe and Merijn Lamers ◆ Photo Guy Ackermans

Five tips for writing and funding your own PhD project

You want to do a PhD at WUR and you have all the relevant knowledge of your field at your fingertips. All you need now is to find the funding to start your research. But how do you apply for a grant successfully? *Resource* asked some people who know the ropes for their top tips. Text Katerina Mouka, Nicole van 't Wout Hofland and Monique van Schie ◆ Illustration Shutterstock

1

Help with writing

Research at WUR is divided into domains, which are represented by graduate schools. Our tip: find out which graduate school is active in your research field. Most of them offer an (honours) graduate programme for second-year Master's students, in which you write a proposal for a PhD project with support from a coach. One or more of the proposals written in this way receive funding for implementation. If your proposal does not receive funding, you will still have gained valuable experience in preparation for an academic career. There are six graduate schools at WUR: Experimental Plant Sciences (EPS); Production Ecology and Resource Conservation (PE&RC); Advanced studies in Food Technology, Agro-Biotechnology, Nutrition and Health Sciences (VLAG); Wageningen School of Social Sciences (WASS); Wageningen Institute of Animal Sciences (WIAS) and Wageningen Institute for Environment and Climate Research (WIMEK).

'CHOOSE YOUR SUPERVISOR CAREFULLY'

2

Take your time

Applying for a grant is a time-consuming task. 'It can take a year from writing a proposal to the final verdict,' says Bart Pannebakker, associate professor of Genetics. Referees and the committee sometimes need as long as nine months to assess the proposals submitted. So it makes no sense to rush the writing process. 'Take your time and make sure you have another, perhaps temporary, job on the side,' advises Pannebakker. Or start while you are still a student. The course called Research Master Cluster: Proposal Writing offers students who want to do a PhD the opportunity to write a proposal in a classroom setting. They receive advice from a scientist's perspective, feedback from their fellow students, and writing tips from lecturers. 'In consultation with their supervisors, students can choose to actually submit the written proposal. But even if they don't, the course enables them to gain experience.'

3

The presentation

In most calls for research proposals, the application process ends with a short presentation followed by a discussion. This is an important moment, according to Dolf Weijers, chair of Biochemistry and a coach on the EPS graduate programme, with six successful proposals. ‘The presentation really has to be rock-solid. The candidate, supervisor, theme and project must all be well-matched. To achieve this, I recommend choosing a group and supervisor you get on really well with. If there’s a click there, it can be a lot of fun to come up with a plan together and it will be an exciting prospect to work with these people. Together, you can then choose a project that challenges you, but in which you are also sufficiently at home to see the both the big issues and the limiting factors. Take the process very seriously; a proposal has got to be good and convincing, both in the broad lines and in the detail. You don’t often get much time for the presentation, so focus on the core of your project.’

4

WUR network

If you want to apply for a grant, you need a supervisor; you have to submit the proposal together. ‘A supervisor only invests time in a subject that is in line with their research field.’ So make sure you orientate yourself thoroughly to the research at WUR and forge contacts with scientists. Show what you have to offer so you can get the scientist in question on your side. Theses and internships are the perfect opportunities to do so, but you can also expand your network by talking to different scientists. Such a network is also useful for internal talent calls. NWO (the Dutch Research Council, ed.) is a well-known source of research funding. Unfortunately, it is a very competitive programme in which only two or three of every 25 proposals are honoured. You stand a greater chance of getting a grant through the graduate schools (see tip 1), but there is a catch: ‘Each chair group is often only allowed to submit one proposal per year,’ says Pannebakker. ‘A researcher only embarks on that procedure with the best student.’

‘THE PRESENTATION MUST BE ROCK-SOLID’

5

Clear key question

Hanneke Suijkerbuijk, a PhD candidate in Entomology, worked at Marketing and Communications at WUR before deciding to do a PhD. ‘In retrospect, it was helpful to work in a different environment before starting my PhD because it helped me realize where are my strengths and weaknesses lie.’ Suijkerbuijk applied to the NWO’s Green Top Sectors graduate school for funding for her research. ‘It was hard to explain why I had left the academic world and now wanted to come back.’ It took her three months to write her research proposal. ‘I received feedback from my supervisor and also from a diverse group of people with different backgrounds and ideas. That helped me a lot. The two most important tips I have are: make clear how your research will add to the current body of knowledge, and ask yourself whether you and your team have the right skills to achieve that.’ Suijkerbuijk has a bonus tip: ‘Choose a project that interests you, work with people you enjoy collaborating with, and choose your supervisor carefully.’ ■

Key people: Martijn Harkink

They are indispensable on the campus: the cleaners, concierges, caterers, gardeners, receptionists - the list is long. *Resource* looks up these key people. This time, meet Martijn Harkink (35), an animal caretaker at WUR's dairy farm De Marke.

Text Susan van Weperen ◆ Photo Guy Ackermans

‘This dairy farm was established by Wageningen University 30 years ago with a view to gaining experience in circular agriculture. A farm with real cows was needed in order to do experiments and research, and that is how De Marke in Hengelo (Gelderland) came into being.

I have been working here for three years now and I work in the barn on a daily basis. All my work involves taking care of the 85 cows we have here. I give them their hay and assist with inseminations. I make sure that everything runs smoothly.

I get a lot of satisfaction from working with cows. I grew up on a mixed farm; my parents kept pigs and dairy cows. So I got the hang of farming from an early age.

I do my best to keep the cows healthy every day, and it pays off. Last year, for instance, we had a 100,000 litre cow and that was a real achievementon our farm. This cow - Betje 316 - has given 100,000 litres of milk in her life and we think that is important in terms of sustainability. When a cow reaches such a milestone, everyone’s happy of course.

The job has its less enjoyable sides too, such as being on call at night or weekend shifts, but that is just part of the deal. When I’m on call, I sometimes get woken up at night and I have to go to the farm to fix a broken milking robot. Fortunately, this does not happen very often.

We are hoping to build a new barn at the Marke in the near future, to make our work easier and so the animals can be healthier and live even longer.’

‘This cow - Betje 316 - has given 100,000 litres of milk in her lifetime’

Campus ◆ residents

Sophie's Bionutrients

Sophie's Bionutrients only moved onto the campus recently, but has been around for four years. Founder Eugene Wang from Taiwan started the company in Singapore but will move to Wageningen later this year. The eight-strong company's headquarters will be here because the Netherlands is a more suitable location for expanding the company. Sophie's Bionutrients extracts proteins from algae as a food ingredient for plant-based milk and meat substitutes. WUR alumnus Ewoud de Voogd, who joined the company last year, is busy finding office space. For the time being, he has arranged for a few hot desks at Startlife in Plus Ultra II where the staff of Sophie's Bionutrients — four of whom are still in Singapore — can work.

Sophie's breeds algae in large fermentation vats, extracts the proteins from the algae and processes them into food ingredients. Marieke Vanthoor-Koopmans, whose doctorate was supervised by René Wijffels, Wageningen's 'algae professor', recently became the company's chief technology officer. The main challenge is how the company can produce large quantities of protein at low cost. Sophie's has already extracted 50 kilos of protein from algae several times at a test location, and now wants to build a large-scale factory. That will cost 20 million euros. The company is looking for investors.

'The Wageningen campus is a hub for the protein transition'

What's great about the campus? 'There are lots of researchers and entrepreneurs who are working on the same issues as we are, and you meet them all here. This is a hub for the protein transition.' AS

There are about 100 companies on the campus. We introduce them to you in *Resource*. This time: Sophie's Bionutrients in Plus Ultra II.

All the flavours of the world can be found in the WUR community. Zeyneb Gokce (28), an MSc student of Environmental Sciences, shares a recipe for artichoke dolma.

Flavours of WUR

Zeytinyağlı Enginar Dolması

(Artichoke Dolmas)

'Imagine today is a holiday and you are sitting around a large table with your family. What do you see on the table? A plate that looks like it's full of colourful flowers. Stuffed artichokes with olive oil is a delicious dish. Whenever I see stuffed artichokes, I imagine a dinner prepared for guests or family and I feel at home.'

Ingredients (for 4 people)

- 2 tbsp olive oil
- 1 finely chopped onion
- 500g of peas, potatoes and carrots
- 6 artichoke bases
- 1/4 glass of boiling water
- fresh dill

For the sauce

- 2 tbsp olive oil
- 1 lemon
- 1/2 tsp sugar
- 1 tsp salt

1. Dice the carrots and potatoes. Boil the peas, potatoes and carrots.
2. Chop the onion and fry it for about 5 minutes.
3. After draining the peas, potatoes and carrots, add them to the pan with the onions. Fry them for 3 minutes.
4. For the sauce, mix 2 tablespoons of olive oil, the juice of a lemon, 1/2 teaspoon of sugar and 1 teaspoon of salt in a bowl.
5. Add the six artichoke bases, hollow side down, the sauce and ¼ glass of boiling water to the pan of vegetables and cover.
6. Bring to the boil, then lower the heat and simmer for 25-30 minutes, until the artichoke bases are completely soft.
7. Stuff the artichokes with the vegetables.
8. Serve with finely chopped dill.

Zeyneb Gokce
Master's student of Environmental Sciences from Turkey

10-euro lunch voucher

Share your recipe with *Resource* and get an **Aurora voucher worth 10 euros.**
resource@wur.nl

Mindset

Emma Mouthaan

‘Each generation has something that is worse than the previous generation. That’s life. You can keep complaining (justifiably so or not, I’ll leave that to you), or you could stay true to yourself and buckle down to work hard on your life. This isn’t a reproach, just a mindset.’

This was one of the responses I received to an Instagram message I posted urging people to make themselves heard at the compensation protest last Saturday. In that post, I stated that the suggested 100 euros in compensation per student felt like being kicked when you’re down. The compensation in no way reflects the debt students have incurred under the student loan system. And it is unfair that both the students before and after the loan-system generation can benefit from a basic grant, while loan-system students are burdened with a huge debt.

I know few people who work as hard as the students and graduates of this generation

On the one hand, the gentleman quoted above is right: life is not always fair, and at some point you must learn to accept that. I, for one, accepted my sky-high debt that will probably never be compensated quite some time ago. However, that does not mean that I won’t express my discontent with the loan system. Nor does it mean that I will refuse to campaign for fair compensation for all students who have been adversely affected by the loan system! Anyway, how is standing up for yourself and others, or expressing dissatisfaction with an unjust state of affairs that affects many, complaining?!

The second thing that stands out in this reaction is the fact that he contrasts ‘complaining’ with ‘staying true to yourself and buckling down to work hard on your life.’ These two things are not mutually exclusive. To be frank, I know few people who work as hard as the students and graduates of this generation. For them, having an active social life, at least one part-time job, a CV teeming with extracurricular activities and good grades is no longer an exceptional accomplishment but merely what is expected.

And at the same time, some 8000 students protested in Amsterdam last Saturday, while ten times that number signed the petition for fair compensation.

When will we see similar dedication among millennials, boomers and everyone in between? Stating that full compensation is impossible is nonsense, just a mindset.

Emma Mouthaan (26) is a Master’s student of Molecular Nutrition & Toxicology. She is also doing a Master’s in Writing at VU University Amsterdam. Emma blogs about studying and finances on her site De Skere Student. She has also written about fashion and food.

IN MEMORIAM

BIRGIT ELANDS

On 3 February, our highly esteemed colleague Birgit Elands passed away with cancer. Birgit worked for the Forest and Nature Conservation Policy group (FNP) for more than 20 years. Starting as a coordinator and researcher in the EU Multifor project, she went on to become an assistant professor, working on human-nature relationships in the Netherlands, Europe and Southern Africa. Birgit published many well-cited scientific papers about biocultural diversity, nature connectedness, leisure, stewardship practices and cultural and spiritual nature values. Birgit was also an enthusiastic teacher who inspired students and taught them a lot about the social impact of nature conservation practices, and the need to strengthen the inclusiveness of these practices. She was convinced that education and stimulating real-life engagement with nature are key to sustainable transformations.
We remember Birgit as a kind, warm and engaged person, dedicated to her work and to FNP. Birgit will remain with us, in the themes she put on the agenda, in the articles that students will continue to read, and in the social interaction which Birgit valued so highly.

In loving memory, on behalf of Birgit's colleagues at FNP

Colophon

Resource is the independent medium for students and staff at Wageningen University & Research. *Resource* reports and interprets the news and gives the context. New articles are posted daily on resource-online.nl. The magazine is published every fortnight on Thursday.

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Motivation crisis

‘My thesis is going badly. When I started, I was brimming with energy, but a pile-up of Covid-related setbacks both socially and in my education have had a negative effect on me. I've been at it for a year and a half and I'm falling further and further behind schedule. I've been given productivity tips and I’ve tried mindfulness, but it hasn’t helped. I’m feeling anxious. How can I get my old energy and motivation back?’

M., Master’s student
(name known to the editors)

Fifteen minutes

‘Many students and staff are going through a similar rough patch right now. And even those who aren’t sometimes lack motivation or feel down. That is normal and should not be ignored. Take 15 minutes a day to allow yourself to moan about the situation and then move on. Remember why you were excited about the project in the first place and focus on that. For me, it also works to start the day with something that gives me energy, like yoga. And don’t forget: your thesis does not define the rest of your life. It just brings you to the next phase, which may be brighter and more fulfilling.’
Cristina Furlan, teacher at Systems and Synthetic Biology

Feasible steps

‘Discuss this with your thesis supervisor as soon as you can. Hopefully that will relieve a lot of stress and anxiety. Your supervisor is keen for you to complete your thesis too, and can help you make a schedule. Then you can divide the huge mountain called "Thesis" into small, achievable steps. As soon as you complete a step, you experience a sense of achievement and that motivates you. Also, see if you can work more on campus or join a thesis circle. As for your energy, decide for yourself whether a holiday could help. And when you start work again, plan days off.’
Lian van Lumig, study advisor in Environmental Sciences

Like-minded

‘The pandemic has had a terrible impact on the mental health of students: you are not alone! Try finding people who are going through the same sort of rough period. Talking with them can be of great help. It is hard to regain the energy and motivation that you had before when you feel stuck in your current project. Meet your supervisor and draw up a detailed plan for finishing your thesis, including deadlines and deliverables. Follow the plan and you will be done in no time. Remember: for most of us, life begins only after university.’
Max Finger Bou, PhD student of Microbiology

Sports routine

‘I think it's important for you to get back to a routine that has room for both exertion and relaxation. Exercise helps. I get a lot of energy from team sports or group lessons at the Bongerd. Participating in sports with others motivates you, but you can also set yourself a sports-related goal. When you achieve that goal, your self-confidence and motivation increase. Approach your thesis in similarly realistic steps and build up from there.’
Sifre van Teeffelen, student of Molecular Life Sciences and secretary of Thymos

NEXT WURRY

‘I’ve had quite a healthy lifestyle over the past two years. There were fewer parties because of Covid and I was so busy with my thesis that I didn’t drink much at home either. Now that my diary is filling up with drinks dos and parties, I am finding my alcohol tolerance is not what it was... Last Sunday, I couldn’t do a thing due to a major hangover. Of course one solution is to drink less, but does anyone have tips if you happen to have had one too many?’

J.G., student
(name known to the editors)

Do you have advice or tips for this WURrier? Or could you use some good advice yourself? ***Email your tips or your question (100 words max) by 4 March to resource@wur.nl*** *subject noWURries.*