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RESOURCE **[EN]**

For everyone at Wageningen University & Research

no 14 – 15 March 2018 – 12th Volume

Creator of life

Lee Cronin wants to mimic genesis of first cells | **p.12**



PARTY OF THE CENTURY

It cannot have escaped anyone's notice that WUR celebrated its 100th anniversary last week. There was a concert, a laser show, a formal ceremony and a dinner for professors. On Friday night it was the turn of the students. At the Party of the Century, they could let their hair down at five different venues. Ceres decorated the garden with festive lighting for the occasion. See too pages 4, 12, and 26 for more reporting.  photo Sven Menschel

Look at the photo series
on resource-online.nl



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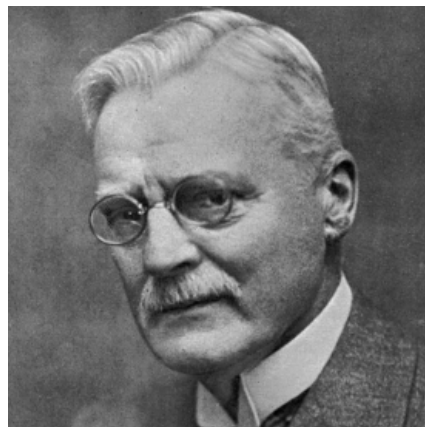
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WHAT THE PEOPLE WANT

'Science should be subject to what we the people want.' The Dutch newspaper *De Volkskrant* elicited this assertion this month from a demonstrator at the Oostvaardersplassen. She sees the nature reserve with its large grazers dying of starvation as an experiment by the (scientific) elite that she must oppose. A radical point of view, but it relates to the risks recently flagged up by the KNAW in its recommendations about scientific diversity in the Netherlands. Such diversity is being maintained but we should not be complacent about it, the Academy warns, given the increasing influence of society and of financiers on research questions. The question, 'whose questions should science seek to answer' is not new, but is still relevant. WUR's research agenda – and a lot of other topics – will be talked about in a series of discussions about the organization's new strategic plan. We'll be reporting on the dilemmas that this throws up in this and the next few editions of *Resource* (see page 6).

Anton van Elburg, acting editor-in-chief



>> [Moth badly affected by light pollution | p.8](#)

CENTENARIAN UNIVERSITY LOOKS AHEAD



Professors wait in the Forum for the procession to Orion.



Trumpeter Eric Vloeimans performs during the ceremony.

PHOTOS: GUY ACKERMANS

Wageningen University celebrated its 100th Foundation Day in the afternoon of Friday 9 March. And it did so in style, with top speakers and music. President Louise Fresco formulated the main tasks for the university for the next century: improving the food supply 'while saving the planet'.

British chemist Lee Cronin gave the keynote speech. His central question was: how did life on Earth come about and how can we research that in the lab? After his eloquent presentation, very few people in the audience could reproduce exactly what Cronin had

proposed. But his creative and exploratory speech was inspiring, said several students and PhD candidates.

The performance by trumpeter Eric Vloeimans and his band Levanter must have had a hefty price tag, but it was certainly good value. The jazz trio played superbly. Then it was time to bestow honorary doctorates on the Russian evolutionary biologist Eugene Koonin, the Chinese plant scientist Fusuo Zhang, the Swedish ecologist Carl Folke, and the British environmental sociologist Katrina Brown.

Carola Schouten, representing the Dutch government in her capacity as Deputy Prime Minister, gave

a laudatory speech about the achievements of the university but looked ahead too. We need to discuss critically whether everything that is scientifically possible is also socially desirable, she suggested to her audience. 'I look to Wageningen for the answers. Give us the facts and the ins and outs.'

'Your questions resonate perfectly with our ambitions,' responded Board president Louise Fresco. 'We want to strengthen the collaboration between the university and the research institutes. And the most important issue is dialogue with the wider community.' The university's main task, in Fresco's view, is to improve the food supply

'while saving the planet'. But what changes that will require over the next 100 years, Fresco doesn't know either. After all, we don't know yet what the post-fossil fuel society will look like. 'Our job is to formulate unknown questions.' Like the questions Lee Cronin posed earlier in the afternoon, perhaps. **AS**

Read too the article about Lee Cronin on page 12.

See the photo series on resource-online.nl

WAGENINGEN HAS LARGEST PROPORTION OF STUDENTS

Of all the Dutch university towns, Wageningen has the largest number of resident students relative to its size. One quarter of all households is a student household, says a report by Statistics Netherlands (CBS).

This puts Wageningen ahead of Groningen (22 percent). For many years, Groningen was the town with the largest percentage of students.

Each student in a student house represents one household. It makes no difference whether the student shares the accommodation with several others or is

the sole occupant of a housing unit. Statistics Netherlands bases the figures on income statistics from the tax department for the period 2011 to 2015. These data show who received student funding during those years. The number of student households in Wageningen grew a lot between 2011 and 2015: from 3800 to 4900. That is a growth of 29 percent. The biggest increase in student households took place between 2013 and 2014, when 400 new households were added. WUR's student population currently stands at 11,150 BSc and MSc students, of whom 6,275 are women (56 percent). **KvZ**



PHOTOS: GUY ACKERMANS

MORE MONEY FOR WAGENINGEN RESEARCH

The ministry of Economic Affairs is investing an additional 13.2 million euros in Wageningen Research (WR) this year, announced the ministry in parliament on 26 February.

The ministry's aim is to give new impetus to Dutch institutes for applied research. The total amount being spent on this is 42 million euros. Applied science research organization TNO and energy research centre ECN are getting an extra 19 million be-

tween them, deltas research institute Deltares 4.2 million, maritime research institute Marin 2.7 million and the aerospace centre NLR 2.9 million euros. This is a systematic budget rise, which may go even higher in the coming years.

The funding is a response to the report of the Schaaf committee, which evaluated the quality of the six research institutes. This committee notes that the research institutes no longer had a sound knowledge base, due to years of budget cuts by The Hague.

In its coalition agreement, the new cabinet therefore allocated extra funding to applied research: 80 million in 2018 and up to 200 million in 2020.

In the short term, Wageningen Research now has to outline in a concise spending plan how it wants to spend the extra millions. WUR's plans must take into account the knowledge and innovation agendas of the ministries and top sectors, and must conform to the National Science Agenda. **AS**

COLUMN|VINCENT

Inventing a tradition

As the sun rises above the waterway at a quarter past seven, the ice sings and the easterly wind is biting. Yet chirping peewits are already declaring the arrival of spring. Feeling somewhat awkward on my skates, I am reminded that there was once an entire culture around hunting, collecting and eating their eggs. Those days are long gone. No more peewit eggs in our cookery books.

But the nest hunters carried on — and started to protect the increasingly rare field birds. I used to accompany such field bird conservationists sometimes as a schoolboy. Only now do I realize how important those Wednesday afternoons were in my decision to study at Wageningen.

Every now and then, a pair of greylag geese flies above the frozen floodplains. The greylag goose is certainly not the most popular bird species in our fields but at least it is one that is doing well. So well that we could even 'harvest' some of the population. The most approachable method is to regularly collect their eggs, a strategy that has been gaining ground for some years.

Could that take on the status that gathering peewit eggs once had? I imagine us learning to love the greylag goose. King Willem-Alexander gratefully receiving the gift of the first goose egg every spring. A tradition being invented in which enthusiasts go off into the fields in search of goose eggs, accompanied by curious people who learn in this way to see the countryside in a whole new light.

It must be the cold; I hurry off to my lecture. **V**

Vincent Oostvogels (22) is exploring the delicate interface between nature management and food production through his two Master's programmes, Forest and Nature Management and Animal Sciences



in brief

>> FORUM

Robot polishes the floor

Visitors to the Forum this week might have run into a new cleaner. Not a chatty one though — it's a robot. Producer Diversey demonstrated the Swinglibot on Monday for cleaning company Asito and WUR's Facilities & Services. Asito already makes use of the Swinglibot — at Grolsch for instance. Dorien Botterhuis of Asito: 'The results there are positive. Less sick leave is taken, and the place is cleaner than it used to be.' What is more, the machine can clean with much less water because the dirty water is filtered and reused. Asito in Wageningen wants to use the robot in the sports hall at De Bongerd sports centre. A decision still has to be made on this by Facilities & Services. **RK**



PHOTO: ROELOF KLEIS

>> FOOD ISSUES

Advice to school students

High school students who do their interdisciplinary project on the global food supply can now obtain advice from the Wageningen Borlaug Youth Institute. This institute is an initiative of board president Louise Fresco, and is named after the American agriculturalist Norman Borlaug. In the institute, Wageningen students are going to help school students to translate their research findings into recommendations. Professor Arjen Wals gave the university students some training in this at the end of February. Wageningen professors are regularly approached by school students seeking information about the global food supply. **AS**

>> CENTENARY BOOK

Publication postponed

The publication of the centenary book *1993-2018 hoe Wageningen wereldtop werd* has been postponed. The book written by journalists Joost van Kasteren and Martijn de Groot was originally going to be launched on Monday 19 March, but the event has been cancelled. There are a few matters to be solved first, says WUR spokesperson Simon Vink. One of these concerns adding a list of the professors of the past 25 years to the book. 'But the content remains unchanged,' says Vink. One of the developments described in the book is the successful merger of the Agricultural University and the research institutes of DLO, to become Wageningen University & Research. **AS**



CITIZENS AND FOOD MANUFACTURERS CAN HAVE CONFLICTING INTERESTS

WHO DECIDES WHAT WUR RESEARCHES?

Should WUR scientists determine their own research agenda or should they follow the agendas of external financiers? This is the question for the new strategic plan. Resource asked two nutrition researchers for their views.

What nutrition research should WUR be doing in the next few years to make a difference? This is something Harry Wichers, a scientist at Wageningen Food & Biobased Research, often reflects on. On the one hand, WUR tells Western consumers how they can eat and live more healthily: eat moderately, don't overdo the sugar, salt and fat, and eat less processed food and more fibres.

However, Wichers notes that this advice is regularly at odds with the interests of food manufacturers. They don't want people to eat less. On the contrary, they are busy expanding their networks of sales outlets. What is more, they are interested in new food technology

such as printing foodstuffs. Wichers fails to see the health benefits of spinach ink coming out of the printer, but an innovation like that could get WUR a joint project with industrial partners. Nutritional advice telling people to cut down on consumption, however, does not bring in research funds, is insufficiently concrete and only delivers health benefits in the long term.

'This goes to the heart of what we have been facing in nutritional science for years and which is starting to worry us more and more,' says professor of Nutrition Sander Kersten. 'Researchers prefer to decide for themselves what they study but if they need co-financing from the private sector, they will have to accommodate the private partner's wishes to some extent. So the choice is already being made for us. We have to go along with that.'

Kersten says the trick is to successfully sell your own research ideas to companies. Wichers thinks that Wageningen Research

should retain scope for investing in research itself as a way of keeping its knowledge appealing and cutting edge. **AS**

Strategic plan theme: domain

WUR wants to present a new strategic plan next autumn. Ten working groups are currently considering ten themes that will appear in that plan. One of them is the research domain. What are the topics where WUR aims to make a difference based on its own ambitions, and what are the topics where it can make a difference given the scientific agendas of ministries, companies and interest groups? Staff and students can discuss this at meetings organized by the 'domain' working group on 16 March, 28 March and 12 April, on all three days at 12:30 in Impulse.

AUTONOMOUS GREENHOUSES

WUR Greenhouse Horticulture is looking for international multi-disciplinary teams that can design an autonomous greenhouse, one that can be controlled remotely using artificial intelligence. The challenge kicks off officially on 19 March.

The Greenhouse Horticulture business unit of Wageningen Plant Research has a modern greenhouse complex in Bleiswijk that it is making available to five international teams. Each will get 96 square metres in which to design and control an autonomous greenhouse. 'In today's greenhouses, sensors send data to a central computer, which uses this to control the climate and crop cultivation. The horticulturalists decide on the climate strategy, so they actually control the greenhouse,' explains Erik Toussaint of the Plant Sciences Group. 'In an autonomous greenhouse, the computer takes the decisions and humans have a supporting role.' So the au-

tonomous greenhouse is controlled by artificial intelligence.

WUR will be actively inviting teams but others can also apply on their own initiative via the challenge website, which will go online on 19 March. There will be a preliminary challenge in early June in which teams will have to prove what they can do before an international jury. The jury will select the five best teams, who will start growing vegetables in the autonomous greenhouses in early September. Or rather, their computers will start growing the veg.

A support team from WUR Greenhouse Horticulture will assist the teams with advice, provide all the necessary digital information, take measurements in the greenhouses and award the teams points.

The project is sponsored by the Chinese internet company Tencent, which wants to encourage the development of artificial intelligence for food production. **AS**



PHOTO: GUY ACKERMANS

CAROLINA LEVIS WINS RESEARCH PRIZE

Carolina Levis, a researcher at Forest Ecology and Forest Management, has won University Fund Wageningen's Research Award 2018. She leads a team of ecologists and archaeologists who demonstrated that some tree species in the Amazon were already being planted and used by the indigenous population

before the arrival of Columbus. With these findings she put paid to the idea that the Amazon region was pristine forest before the Spanish landed there. The Brazilian researcher received a replica of the 'Wageningen Tree' statue and 2500 euros during the symposium on 12 March on *What is Life?* **AS**

WUR TO USE BIBLIOMETRICS TO FIND WOMEN

Wageningen University & Research will be using bibliometrics in the search for suitable women for professorships. WUR Library will track down candidates on the basis of publication data.

Female professors are hard to find. Recruitment via the traditional channels produces too few candidates. Human Resources is now looking for new methods and plans to do a trial with bibliometrics together with WUR Library. The articles published by the chair group will serve as the starting point, explains information specialist Theo Jetten of WUR Library. 'The first step is to convert article titles and abstracts into relevant keywords. We will then discuss with the appointment advisory committee whether these keywords are meaningful. Then we will use those keywords to search a

database for potential candidates.'

In the next stage, other bibliometric data will be used as well, such as the H-index and citation scores, which give an indication of someone's scientific quality. Incidentally, the search is not limited to women. Jetten: 'The idea is to use this as a way of identifying candidates that you might otherwise miss, such as international candidates. The university wants more women, but it is up to the appointment advisory committee which candidates they then decide to approach.'

The new recruitment approach comes from Delft. Wageningen will be testing the instrument in the recruitment of a new professor of Law, says Hedwig Casteels of Corporate Human Resources, which is responsible for recruiting profes-



PHOTO: GUY ACKERMANS

Roughly 20 percent of Wageningen professors are women. WUR's target for 2020 is 25 percent.

sors. She hopes the new approach will highlight talented women and international candidates in particular. Wageningen has at least six vacancies for professorships this year. Recruitment for five of them started back in December, before the new method was available.

WUR appointed four female professors last year. Two were personal professors and two were professors holding a chair. On the other hand, eight male professors were appointed — four personal professors and four professors holding a chair.

📍 RK, KvZ

PROFESSOR: 'INACCURACIES IN CONTROVERSIAL ONLINE LECTURE'

Leonie Janssen-Jansen, professor of Land Use Planning, thinks the online lecture by emeritus professor Arnold van der Valk should be withdrawn again. She says the lecture includes deliberately inaccurate statements.

Janssen-Jansen has been working at WUR since 2015, and is Van der Valk's successor. Before that she worked at the University of Amsterdam, where she did research on the case Van der Valk talks about in his online lecture on spatial planning. Property developer SADC complained to WUR about inaccuracies and framing in that lecture, which is part of a MOOC (massive online open course). Janssen-Jansen agrees with SADC. 'In 2002, the development plan established that the area would become an industrial estate. So this is not about agricultural land, as Van der Valk claims. And there was no speculation on the land; the amounts he mentions are not abnormal for in-

dustrial estates.'

According to Janssen-Jansen, the people at the care farm were able to stay there free of charge for 16 years. Not because of 'bottom-up' resistance, as they claim, but because nothing was being done with the land because there were so many disused office buildings. 'So it is not true that SADC is now chasing De Boterbloem off its farmland.'

According to Janssen-Jansen, Van der Valk deliberately spreads inaccurate information. 'You can't expect me to believe that, as a professor, you are not aware of the development plan. Freedom of opinion and expression is good, but your opinion should be based on facts.'

The online lecture was initially taken offline after SADC's complaints, but can now be watched again, until a new version goes online. Not a good idea, says Janssen-Jansen. 📍 LvdN

Read too Point of View on page 22: Avoid controversy in online lectures?



Resource is looking for new Dutch and international bloggers for Resource Online.

Requirements: interesting personality, opinionated, good writer, student at WUR, funny, open minded, curious. Interested in the job? Please leave us a message at linda.vandernat@wur.nl

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ARTIFICIAL LIGHT KILLS OFF MOTHS

The increasing amount of artificial light at night is disastrous for moths that are drawn towards it, shows a Wageningen study led by Frank van Langevelde of Resource Ecology and Michiel Wallis de Vries of Plant Ecology and Nature Conservation.

There are far more moths than butterflies, with nearly 800 moth species in the Netherlands. But their numbers are going down, and have fallen by nearly one quarter in the past 30 years.

For the first time, the researchers have now proven a strong negative link with light. The populations of species that are drawn to light have dropped much more markedly than those of species that are not attracted to light, or are active both by day and by night.

The researchers made use of data from *Noctua*, a database managed by the Dutch butterfly association *Vlinderstichting*. This includes counts carried out using light traps. For the years 1985-2015, the researchers plotted the number of moths caught against time, producing trend lines for 481 species. Some species remained stable or even increased, but the overall trend is very clearly one of declining numbers. The researchers then used statistical analyses to look at the possible causes at play. It was as clear as day that artificial light is a factor in the decline.

The negative impact of artificial light had already been demonstrated for particular species. According to Wallis de Vries, this study



Moths confuse artificial light with the moon, by which they orient themselves.

shows for the first time what the effect is at population level. And it is quite remarkable. Artificial light only lights up a relatively small part of the surroundings, and yet the effect found is an average for the whole of the Netherlands. It would seem, the researchers conclude, that the impact of artificial light reaches way beyond the immediate vicinity. One reason for this might be that well-lit roads form a

barrier for moths, and another might be that the glow above cities has more far-reaching effects than we realized. Moths are the main source of food for bats and nocturnal birds. Their caterpillars are also important as herbivores, so they form an important link in the food web. The impact of artificial light on moths could therefore have a knock-on effect on other groups of species. **RK**

DUTCH MOSQUITO CAN TRANSMIT RIFT VALLEY VIRUS

The commonest species of mosquito in the Netherlands, *Culex pipiens*, can transmit the dangerous Rift Valley fever virus (RVFV), shows research by Wageningen Bioveterinary Research.

RVFV, which is transmitted by mosquitoes, causes perinatal deaths and miscarriages in sheep in North Africa and the Middle East. In humans, the virus causes flu-like symptoms and occasionally death. The virus appears to be spreading into Europe, so WUR's veterinary institute is doing research on the virus and how it spreads. The institute has already developed vaccines against this animal disease.

Now virologists at the institute wanted to know how fast the virus could spread in the Netherlands if there was an outbreak. It was

known from earlier research that Dutch lambs were extremely susceptible to the virus. Now experiments have demonstrated that the Dutch mosquito can contract the virus, propagate it and pass it on in its saliva.

The researchers added the virus to blood which they then offered the mosquitoes under artificial conditions. This proved that the mosquitoes could absorb the virus. Then lambs were infected with the virus in the institute's high-security high containment unit, and the mosquitoes proved to become infected as they fed on the infected lambs.

RVFV is one of a group of viruses that are not yet a problem in Europe, but which could suddenly spread there. The list also includes the Zika virus, the West Nile virus and the chikungunya virus. **AS**



Wageningen Bioveterinary Research has done research on whether *Culex pipiens* can contract, propagate and transmit the Rift Valley virus.

'TONGUE ON CHIP' CAN REPLACE TEST SUBJECTS

Researchers at Wageningen Plant Research have 'printed' receptors from the mouths and intestines of people onto glass plates. This will let them do research on nutrition and medicines without needing test subjects.

The researchers have dubbed the new technique 'receptomics' and published their findings in the journal *Sensors*. 'This technique lets us predict the human body's reaction to many different substances in a short time without requiring a single test subject,' says coordinator Maarten Jongsma, a molecular biologist in the Bioscience business unit, part of Wageningen Plant Research.

Our bodies contain various different receptors, proteins that detect substances and send signals about them to the cell they are attached to. These receptor proteins are on your tongue, for example, to let you taste things and in your intestines to detect when food has arrived.

Specific pieces of DNA code for different receptor proteins. The researchers have 'printed' this DNA in minuscule droplets on glass plates. In addition to the DNA for the specific receptor protein, each droplet also contained a piece of DNA that codes for a protein that emits a colour signal. The researchers then cul-

tivated cells on the different droplets. These cells absorbed the two types of DNA and then proceeded to make the proteins. This resulted in little groups of cells that all made one receptor protein plus the colour signal protein.

Next, the researchers pumped a thin layer of liquid onto the plates – for example, tomato juice or coffee – and they used the colour signal proteins to record which receptor proteins reacted to it. But they were still not finished. Jongsma: 'Human cells also have a lot of other receptors. They react to all kinds of substances in the liquid. The colour signal only tells us that the cells have reacted. The trick is to pick out the reaction of that one specific receptor.' The research team of cell biologists, molecular biologists, statisticians and programmers developed smart software to let them find that needle in the haystack.

The technique offers possibilities for giving personalised recommendations on diet and medicines in the future, says Jongsma. 'Each individual person has a slightly different set of receptor proteins. A doctor can give more specific advice by determining what types a patient has and linking that to receptomics test results.' **TL**



The researchers 'printed' human receptor proteins on glass plates.

VISION

'Remove the large grazers from the Oostvaardersplassen'



For many years, ecologist Frank Berendse kept out of the discussion about the large grazers in the Oostvaardersplassen nature reserve. Now that the debate has flared up again about whether or not to feed the animals to help them through the winter, the emeritus professor of Nature Conservation and Plant Ecology has said what he thinks: the wild herds of Heck cattle, konik horses and red deer should be removed from the area.

Why are you coming out with this now?

'Up to now I always thought: the deterioration of nature in the agricultural areas is a much bigger problem; let me focus on that. But the dying animals in the Oostvaardersplassen are undermining the support for nature conservation among the general public. And the biodiversity in the dry part of the Oostvaardersplassen is going downhill fast. Once it was a gorgeous nature area with nightingales and whinchats. Now it's a desolate plain with barnacle geese, greater white-fronted geese and greylag geese.'

Isn't it a pity to end an experiment like this? Two of your PhD candidates did their research on this.

'In 1983, the idea was that the presence of the large grazers would lead to a park-like landscape with thorny shrubs and thickets of trees. I thought that was an interesting idea and Frans Vera did his PhD on it with me. Later my PhD student Perry Cornelissen did a lot of research on the development of the area. Now we can see that those forecast developments aren't taking place. Nor is there much chance of their doing so anymore. The soil is so nutrient-rich that the seedlings of the blackthorn and the hawthorn either get grazed on or – in places with less grazing – get overshadowed by herbs and grasses.'

So no more grazers at all?

'What is there now really isn't very natural. So yes, it would be better to get rid of them altogether. Instead, we could flood the dry area, expanding the swampy area. We could put down wooden walkways through it. People would be able to experience that gorgeous nature much better that way.'

How are your colleagues responding?

'I've had one furious email, but I'm getting much more support, even from the rangers of the state forest service *Staatsbosbeheer*.' **SvG**

'NATURE EVOLVES ALONG WITH HUMANITY'

Climate change, explosive population growth, genetic manipulation and robots – humans are making their mark on the planet. Unspoilt nature is becoming increasingly rare. But the philosopher and artist Koert van Mensvoort thinks we need to change our view of nature. He talked about this on 13 March during Wageningen's Science Week, part of WUR's centennial celebrations.

If a bird builds a nest, we call that nature, but if a human builds a house, we call it culture. According to Koert van Mensvoort, the founder of the Next Nature Network, this distinction has become much more blurred. 'We originally saw culture as everything made by humans and nature as what was born or germinated, untouched by human hands. But what about cloned sheep, rainbow-coloured tulips, climate management and hypoallergenic cats? There is virtually no nature left in the sense of something that has not been influenced at all by humans.'

The boundary between nature and culture is blurring and sometimes the roles are even being reversed, thinks Van Mensvoort. 'Technology and nature are traditionally seen as two opposites, whereby technology is at the expense of nature. But I think our relationship with nature is changing. The original distinction between what is born and what is made is gradually shifting towards a new definition in which culture covers what we can control and nature everything that is uncontrolled.'

So in that new definition, the rain-



Koert van Mensvoort: 'In a world where insect drones are pollinating flowers, technology is an integral part of our nature.'

bow-coloured tulips and hypoallergenic cats are part of our culture. And vice versa, culture can also become a part of nature. 'Much of the technology we develop turns out in practice to be just as wild and unpredictable as nature. Take our economic system for example, or computer viruses: things we created but at the same time are so complex that we don't fully control them. Perhaps this is our new nature.' Humans are taking part in the evolutionary process, says Van Mensvoort. 'And nature isn't disappearing, it's evolving with us. In a world where insect drones are pollinating flowers

and we are creating food with 3D printers, technology has become an integral part of our nature. A kind of nature 2.0.'

If we can change our view of nature, Van Mensvoort thinks that could lead to bio-inspired designs. For example, scientists at the Massachusetts Institute of Technology have added nanoparticles to plants to make them emit light in the dark. In the future, this could let trees replace streetlights. This is not a real proposition yet but it shows that people's mindset needs to change, says Van Mensvoort.

TL

VIRUSES CAN HELP COMBAT COTTON CATERPILLAR

Cotton farming in Pakistan is hampered by the cotton leafworm, a kind of caterpillar that is becoming increasingly resistant to insecticides. PhD candidate Ghulam Ali looked for and found baculoviruses that kill the caterpillars, thereby putting a biological pest control method centre stage.

Large-scale cotton farming in Pakistan relies almost entirely on BT cotton, a genetically modified variety with a gene of the *Bacillus thuringiensis* soil bacterium built into it, which causes the plant to manufacture a poison against caterpillars. The common cotton caterpillar, *Heliothis zea*, has almost disappeared, but has made way for another caterpillar, *Spodoptera litura*, which is resistant to BT cotton.

Pakistani entomologist Ghulam Ali set out to look for a biological method of pest control that

would work against this new cotton pest. He took samples in several cotton-farming areas of Pakistan and identified a type of virus called SpltNPV. He determined with a test that four members of the SpltNPV family, from different regions, were capable of quickly destroying the cotton caterpillar. Ali also found the virus's DNA information that could be responsible for the accelerated death of the caterpillars.

These virus types could develop into a biological pest control method for the cotton sector in Pakistan, says Ali's supervisor Just Vlák. But Ali would have to go through several steps first. He would have to find a breeding company for the pest insect *Spodoptera litura*, so the virus could propagate in it. And he would need to persuade Pakistani agricultural extension workers and cotton farmers to switch from insecticides to biological pest control. AS





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Final-year student wanted to make WUR even greener!

In 2017 Wageningen University & Research received the SustainaBul Award for the fifth time in a row, and it headed the global GreenMetric ranking. As a leading sustainable institution, WUR now plans to develop an ambitious vision and strategy for the management of resources and waste within the organization. We therefore need to know the nature and volumes of materials and products entering WUR and leaving again as waste. Are you interested in doing this 'material stream analysis' as an MSc graduation project or internship within the Environmental Technology group? (You will get an allowance!)

Contact
 David Strik
 in the Environmental
 Technology group
 e-mail: david.strik@wur.nl



PROPOSITION

Crisscrossing Pakistan in search of a laboratory

Ghulam Ali was back in the Netherlands for a few days to defend his thesis at WUR. Now he is back on his parents' farm in the northeast of Pakistan. A glacier in his home country plays a significant role in his proposition, he explains.

'My research concerned viruses that can serve as a form of pesticide against larvae on cotton plantations. Both the viruses and the larvae are only found in Pakistan, so my fieldwork had to be done there and I would have liked to do my laboratory research there as well. But after collecting my samples of larvae I could not find a decent research facility. Pakistan is a developing country and there is hardly any research infrastructure. I went to various universities around the country. But without any result.



Ghulam Ali got his PhD on 6 March for a study on the diversity and biological activity of nucleopolyhedroviruses in the larvae of *Spodoptera litura*.

In that period I had a kind of dream in which I saw myself standing on the Siachen glacier in the north of Pakistan. It is one of the biggest gla-

ciers in the world, and the Silk Road once ran past it. In that dream I couldn't get off the glacier, no matter which way I went. That's how I felt in Pakistan when I couldn't find anywhere to conduct my research.

People who get stuck on a glacier in real life hopefully get rescued by helicopter.

The helicopter pilot who res-

cued me was my supervisor, Professor Just Vlak. He made sure I could do my laboratory work here in Wageningen.

Cotton is a major crop in Pakistan but a lot of pesticide is used in farming it. I want to persuade farmers and government bodies that there are other ways of protecting crops as well. Alongside my research work, I run a farm with my father. We don't stand to benefit from the results of my PhD research, though, because we grow rice and grain.' **KvZ**

Being stuck on a glacial mountain is as terrifying as doing PhD experiments in a developing country.

Cronin wants to recreate transition from dead to living matter

Making things come alive

On 9 March Lee Cronin gave the keynote speech at Wageningen University's 100th foundation day. The unconventional British chemist links an age-old question – how did life come about? – with ultramodern chemistry.

text Albert Sikkema *photo* Guy Ackermans



Lee Cronin poses one of the most fundamental and crucial scientific questions: how did life on earth come about? If we turn back the evolutionary clock, we end up about four billion years ago with the bacterial cell, the oldest and smallest living creature to be subject to evolution. But how did that first bacterium emerge from the dead material – atoms and molecules – on Earth, wonders the British professor.

We have an established image of the process as a turbulent ocean, a kind of primal soup of chemical elements with thunder and lightning on the horizon. The storm creates electricity and life emerges from the convergence of electricity and matter. Cronin is familiar with this time-honoured story but says, ‘To be honest, we have no idea whether it’s right.’

CREATIONISM

Cronin, who works at the University of Glasgow, also assumes that life on Earth emerged from dead matter. ‘The main evidence for this is the fact that there is life on Earth. It is an open and

‘Not in order to play God but in order to understand how life came about’

very exciting question. Many researchers focus on the question of what chemistry was needed for life, but nobody works on the functional systems that make life possible. Our group thinks this is the only way to answer this question.’

So Cronin is trying to recreate the transition from dead to living material in the lab. And he thinks evolutionary theory applies to this process as well. ‘The fact that evolution takes place in the biological systems we know gives us start-

ing points for the idea that evolution might also have played a role in the formation of the first living cell. We are now researching in laboratory experiments how the first cells might have come into being. This seems to us to be the only way biology can have started on Earth.’

Cronin is not afraid of being provocative. During the Masterclass for Wageningen researchers, he gives reasons why creationism cannot be right. Creationists think life on Earth came about through a unique act of creation, and life only exists on Earth. The chances of that are as big as the chances that a monkey you sit down at your computer will happen to write a novel, argues Cronin.

EVOLUTION MACHINES

The chemist wants to build an ‘evolution machine’. ‘In this I am God the creator,’ he says. ‘Not in order to play God but in order to understand how life came about.’

In his lab he seeks to bring together the fundamental building blocks for life. This means atoms and molecules that react to each other and form new structures, fed by a source of energy. In these ‘fitness landscapes’ there are no proteins and no DNA, elements of biological life as we know it. Using software programs, he tests countless random combinations of atoms and molecules, hoping thus to find ‘evolutionary algorithms’ that convert dead matter into living matter.

‘The question how life on Earth came about is actually a historical question. The only thing I can do as a chemist is conduct experiments in the laboratory and see whether my experiments lead to living systems.’

PRINTING DRUGS

As well as this quest for the origin of life, Cronin also works on practical matters such as how to print medical drugs. Medicines are complex molecules, and are currently made by pharmaceutical companies. The chemist wants to make them using a 3D printer, so that one day everyone will be able to print their own drugs. To achieve this, Cronin needs a toolkit of basic molecules. All medicines are made up out of carbon, hydrogen and oxygen molecules. As well as these chemical building blocks, he needs a recipe: the right combination of basic molecules for the drug. ‘We need to divide the manufacturing process into different steps with precisely defined building blocks,’ he explains. If you combine those building blocks with the right reagents, you get a kind of ‘ink pattern’, as it were, with which the 3D printer can construct complex chemical structures. Cronin’s group has successfully produced the painkiller ibuprofen this way.

Cronin foresees a future in which people keep the basic ingredients for medical drugs at




Before the formalities of Foundation Day, Lee Cronin poses with the cortege of professors.

home, in the same way as they have the ingredients for a meal in the fridge. If they need a medical drug, they get a recipe from the pharmaceutical company to print it at home. ‘The value is in the recipe, which has been validated by research, and not in following the recipe. The drug is an app, essentially.’

Cronin’s chemical computer, or ‘chemputer’, opens up the possibility that medical drugs can be made anywhere in the world, but also that drugs can be developed for small or poor groups of people. It also makes it possible to test new molecules on human cells quickly, speeding up the development of new drugs considerably.

WILD IDEAS

Cronin expects chemistry to change a lot in the coming years. ‘The chemists of the future will also have to be able to program computers, build databases and design semiautomatic systems for integrating their chemical knowledge so as to create new applications.’

Throughout the masterclass, Cronin throws out challenges to the physicists and biologists in the room. He thinks these disciplines can learn a lot from each other, under the influence of computer science and bio-informatics. ‘The biggest problem is that physicists, chemists and biologists speak different languages and don’t understand each other.’ He thinks the young computer-savvy generation is going to change things. ‘If I am allowed to allocate research funding, I don’t give any money to old researchers with brilliant track records. Because they will just do more of the same research. I put my money on young researchers with wild ideas, without track records.’ 

Prof. Lee Cronin
 That moment when you realise you are giving the keynote at 100 yr old celebration of the establishment of a University & ca 1500 ppl are going to get an inorganic chemistry lesson @WUR



Cronin tweeted this message just before his speech.

Growing university an issue in local elections

Is WUR taking up too much space?

It is not really within the municipality's mandate, but the growth of WUR is nevertheless a prominent issue in the local elections in Wageningen. The main question: how much space is it acceptable for the university and its students and staff to take up?

text Stijn van Gils and Kenneth van Zijl

Directly or indirectly, the election programmes of all the Wageningen political parties running in the municipal council elections of 21 March are full of Wageningen University & Research. Numbers of both Dutch and international students at the university have grown tremendously in recent years, and that has its implications for the town. Housing prices have risen sharply and, in spite of all the effort, there is still a serious housing shortage among students. Every party is clear about the fact that something has to be done about this. From the left-wing greens of GroenLinks to the conservatives of the VVD: everyone wants affordable housing.

HIGH RISE

But when it comes to how to achieve this, opinions differ. GroenLinks wants more high-rise, building compactly in the town to spare the surrounding countryside. The VVD, the local Stadspartij and the Christian ChristenUnie are more cautious on this point. They feel new buildings should fit into the townscape, and they don't think that is possible everywhere.

Views diverge on the appropriate short-term solutions too. GroenLinks thinks home owners should be allowed to convert family homes into student housing. The socialist party (SP) and the Stadspartij have reservations about that. They are concerned that there should also be sufficient housing for the 'ordinary citizen'. Students can live outside Wageningen temporarily, say these parties, although they would prefer all students to be able to live in Wageningen if they want to. The ChristenUnie would like to combine some of the student accommodation with old people's homes, to improve social integration.

SPARING THE COUNTRYSIDE

If at all possible, most parties would like to spare the countryside from development. All the parties are against any expansion plans for the time being. Yet some building permits have already been issued, for more houses and business premises in the Nude and at Kortenoord, for instance. In the long term, some parties (VVD, SP, and to a lesser extent the centrist liberal D66) think it would be acceptable to expand the city boundaries in future if necessary.

In the issue of accessibility of the town – and in particular of WUR – opinion is divided along the same lines. The parties that want to expand into the countryside 'if necessary' are also prepared to do so for more roads. De facto, this positioning is just playing to the audience, since the provincial government has taken control from the municipality over the main new road plan, for a ring road around the campus. Most parties do not see it that way though, and continue to assert their standpoints. Only the new party, Connect Wageningen, says 'that discussion is pretty much over'.


CYCLISTS

There is little difference of opinion on infrastructure for cyclists, something most parties want to invest in. Work is currently going on to create a fast cycle path from the town centre to the campus. Most parties would like to see more such paths, or at least a solution to the bottlenecks for cyclists. In order to encourage even more cycling, the SP, the labour party PvdA and the ChristenUnie want to see paid parking on campus. Other parties, such as the Stadspartij, are hesitant about that, fearing that staff will then park in the residential neighbourhoods, with all the problems that can entail. All parties agree that WUR's expertise should be put to optimal use in the town. Parties such as GroenLinks and Connect would like to see the municipality getting involved more often in the Aca-

democratic Consultancy Training course. The Stadspartij says that already happens a lot. And it warns against imagining that WUR knowledge could solve all the municipality's problems.


MORE CONSULTATION

The student party Connect Wageningen has the most to say about WUR and students in its programme. The party feels that students' voices are not listened to enough and demands more attention to the welfare of international students. The party also wants the municipality to communicate more in English. Most parties go along with that, although the SP does add that Dutch shouldn't go forgotten either. The party would like to see more free language courses made available to international students.

None of the parties are directly critical of WUR. But some grumbles can be detected between the lines. The tremendous growth of the university brings not just new life and possible job opportunities with it, but also pressure of numbers and friction. But enforcing a slower growth rate is not feasible as it is not within the municipality's mandate. So for the time being, the parties that are concerned about this stick to demanding more consultation. 

Student candidates introduce themselves in videos on resource-online.nl



									
Accommodation									
New building in Wageningen should be compact: small homes and high-rise.	Agree	Agree	Agree	Agree	Depends on the site, definitely not everywhere	Agree	Not everywhere	Not everywhere	Should be room for larger houses
Wageningen is growing: we can sacrifice some surrounding countryside for more homes.	Disagree	Disagree	Possibly	Possibly	Disagree	Disagree	Disagree	Disagree unless environmental compensation	Agree
We should house more students outside Wageningen.	Agree	Disagree	Disagree	Disagree	Agree, if necessary	Disagree	Agree, temporarily	Agree	Disagree
Allow family homes to be converted into student housing.	Disagree	Agree	Disagree	Sometimes	Disagree	Agree	Disagree	Disagree	Agree
Accessibility									
Access to Wageningen by car is fine; no more roads are needed.	Agree, research says there's not a problem	Agree	It's complex	Disagree	It depends	Disagree	Agree	Disagree	Disagree
Paid parking should be introduced on campus.	Agree	Agree	Agree	Disagree	Disagree, will lead to problems in local neighbourhoods	Not for the municipality to decide	Agree	Disagree	Disagree
There shouldn't be a campus ring road.	Agree	Agree, municipality should continue its opposition	Agree	Disagree	Disagree; see latest municipal proposal	A question for the province now	Agree	Disagree	Disagree
WUR in Wageningen									
WUR should carry on growing.	Disagree, shouldn't be an end in itself	No opinion	Agree	Possibly	Not something we can influence	Disagree, but not our decision	Disagree	Agree	Agree
The municipality should communicate more in English.	Agree, but Dutch shouldn't be superseded	Agree	Agree	Agree	Agree, already trying this	Agree	Agree	Agree	Agree
The municipality should invest more in welfare of international students.	Invest in welfare of everyone	Agree	Agree	Agree	Invest in liveliness	Agree	Agree	Agree	Agree

We congratulate wageningen university & research

These partners, sponsors and suppliers all congratulate WUR on its 100th anniversary

AERES



As proud neighbours on campus we would like to congratulate everyone at WUR on their impressive history of 100 years of innovative and ground-breaking international research. A top class performance! On this big birthday we wish you at least 100 more fruitful years.

idealis



IDEALIS

Idealis congratulates Wageningen University & Research on its 100th anniversary.

UNILEVER



We congratulate WUR on this terrific anniversary! We look forward to continuing the longstanding close collaboration between Unilever and WUR and we hope, as part of the Wageningen Foods Innovation Ecosystem, to go on making an active contribution to a sustainable global food system together.



JUNUSHOFF

In 1880, when Junushof Theatre was built on the Juniusbolwerk, The National College of Agriculture, the forerunner of Wageningen University & Research, started up across the road at Duivendaal. Junushof wishes WUR a festive start to its second century – nowadays located on the outskirts of Wageningen but no less connected with our splendid town.

HOTEL DE WERELD



For Hotel de Wereld and OMundo restaurant, the university means community spirit. Its drive for sustainability inspires us. We would like to thank the university for the mutual trust built up, and send our good wishes for the future on behalf of all our team. We look forward to many more years of very enjoyable collaboration.



POSTSERVICE

We are proud to have been working together for nearly a quarter of a century, 'to explore the potential of our cooperation to improve the quality of our service.' So PostService wholeheartedly congratulates Wageningen University & Research on its centenary. Here's to WUR!

HEERENSTRAAT THEATER



We wish WUR another 100 years of Wisdom & Wonder. Although we're very different, WUR and the Heerenstraat Theater are both places where people observe, experience and marvel at our world. Our means may be completely different, but our aim is the same: 'To infinity and beyond!' (Toy Story, 1995).

METEOGROUP



100 years of WUR means 32 years of a special partnership with Meteogroup. This is a relationship that goes beyond that of customer and supplier. We are one of WUR's true knowledge partners and many students have started their meteorological career with us. Meteogroup is now 'the global weather authority', but it all started at WUR. Congratulations!

KINDEROPVANG PRINS VLEERMUIS



To us, WUR has meant a widening of our horizons in knowledge and culture, thanks to the staff and students who bring their children to us. We wish WUR another 100 fantastic, successful years. Congratulations!

MUGMEDIA



Students, staff, researchers, the Executive Board: they all play a prominent role in Mugmedia's programmes. For many years we have thoroughly enjoyed showcasing Wageningen's interesting education and research. We wish Wageningen University & Research a festive centenary year and a bright future!



100 years

1918 — 2018

WOUDENBERG DRANKEN



Woudenberg Dranken Wageningen congratulates WUR on its centenary. We'll raise a glass to the future!

KADANS SCIENCE PARTNER



We congratulate WUR on its centenary with all our hearts, and thank the organization for the collaboration we enjoy. We also wish WUR a great future full of innovation and enterprise. Here's to working together to ensure the further development and strengthening of the ecosystem and the climate of entrepreneurship.

This co-discoverer of vitamins missed out on a Nobel Prize

Wageningen's greatest: Gerrit Grijns

Looking back on a century of Wageningen research raises the inevitable question: who was the greatest Wageningen researcher? According to the *Resource* editors, the answer is Gerrit Grijns. 'Gerrit who?' we hear many readers ask. Obviously high time to pay tribute to this founder of contemporary nutrition science.

text Roelof Kleis photos Rijksmuseum Boerhaave Leiden, WUR archives and Guy Ackermans



The name Gerrit Grijns is unlikely to ring a bell with very many people. Which is a pity. Grijns was professor of Animal Physiology at Wageningen from 1921 until he retired (at the age of 70) in 1935. In the academic year 1929-30 he was also rector magnificus for a year, as was customary in those days. But what gives Gerrit Grijns an important place in the annals of science is his contribution to the discovery of vitamins.

To understand that contribution we must go back to the Dutch East Indies, today's Indonesia, at the end of the 19th century. In the last decade of that century, before Wageningen even existed as a higher education institution, one of the main causes of death in the Dutch colony was beriberi. This disease started with general weakness and exhaustion, leading to numbness in arms and legs and usually ending

WHY GERRIT GRIJNS?

Designating the all-time greatest Wageningen researcher is a risky undertaking. Who gets to decide? And on what basis? The *Resource* editors based their choice of Gerrit Grijns on one simple but indisputable fact: as far as we know he is the only Wageningen scientist ever to be nominated for a Nobel Prize. Two riders are in place here. One is that Nobel nominations remain under lock and key for 50 years, so there might have been more Wageningen nominees for all we know. Only at the next big anniversary in 2068 will it be clear how many people Grijns should have shared the honours with in 2018. Secondly, Grijns did his most significant work before Wageningen Agricultural College – the current WUR – even existed. The *Resource* editors are of the opinion, however, that someone who was professor here for 14 years and was even rector for a year can be counted among Wageningen scientists.



◀ Gerrit Grijns in his director's office at the Medical Laboratory in Batavia.

1865

Gerrit Grijns was born in Leerdam

in death from heart failure. An autopsy revealed degeneration of the nerves. The victims of the disease included many soldiers and prisoners. In fact, the situation in prisons was so acute at one point that three months 'inside' was tantamount to a death sentence.

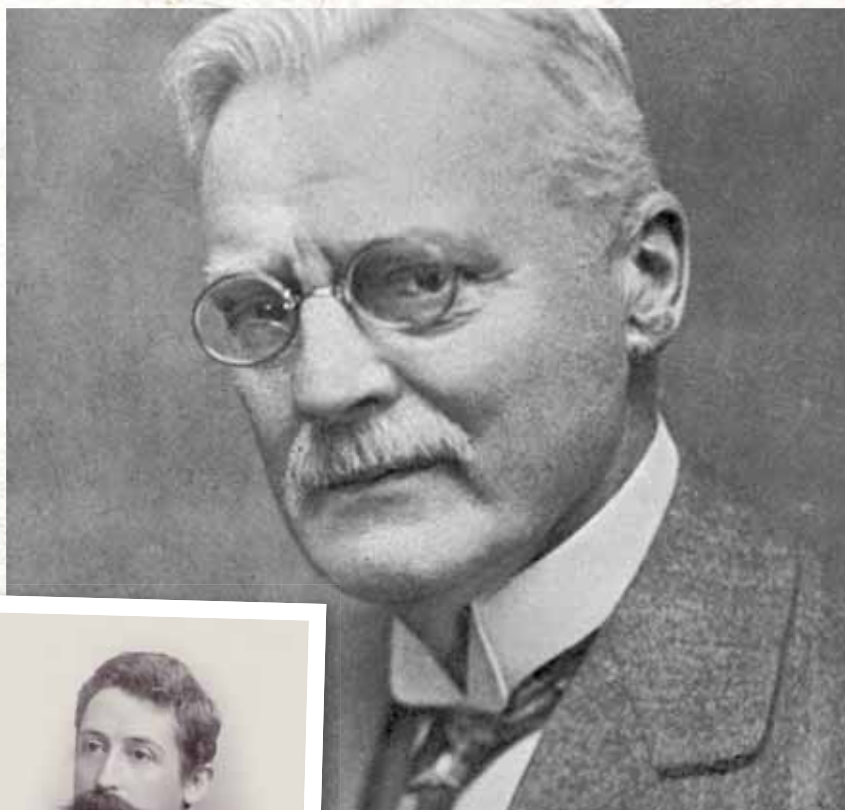
HUSKED RICE

In 1886, the Dutch government in Batavia – present-day Jakarta – decided to establish a research facility with the aim of tracking down the cause of beriberi. This was eventually achieved by the Dutch doctor Christiaan Eijkman, who discovered that the disease was caused by eating hulled, white rice. The story of this discovery is too good to keep to ourselves. His quest for the cause of beriberi set Eijkman on the trail of a bacterial infection. Pasteur had just discovered penicillin and a bacterial infection seemed a promising line of enquiry. Eijkman had also spent a few months working with the German scientist Robert Koch, who discovered the tuberculosis bacillus. He tried to infect rabbits and monkeys with beriberi using blood from soldiers who had died of the disease. Without success. Then he tried the same thing on chickens. This time with success. Within a month all the chickens fell sick, with symptoms that strongly resembled beriberi. Eijkman called the disease polyneuritis gallinarum.

But oddly enough, even the chickens Eijkman had not infected went down with this disease. And the chickens perked up again a few weeks later, just as suddenly as they had fallen ill. Eijkman was faced with a riddle. Until he found out that there had been a change of cook at the military hospital next-door. The previous cook fed leftover cooked white rice to the chickens. The new cook thought that was a waste of precious 'military' rice, and the chickens went back on a diet of ordinary, unprocessed rice. The changes of cook coincided precisely with the appearance and disappearance of the disease in the chickens. Eijkman was now on the rice trail. Further research proved convincingly that the lack of husk on rice was the cause of both the chicken disease and beriberi. Both diseases could be treated quite simply with the right diet.



▲ The department of serology at the Medical Laboratory in Batavia.



▲ Gerrit Grijns during his years as professor at Wageningen.



▲ Christiaan Eijkman as a young man in the Dutch East Indies.

1896

Grijns took over Christiaan Eijkman's research in Batavia



▲ A beriberi patient (1914).

DISEASE OF DEFICIENCY

Eijkman still didn't know what the nature of this link was, though. He assumed that a decisive role was played by the starch in the rice. He hypothesized that this starch triggered a bacterium in the intestinal tract to produce a toxic substance. And that this process was combated by a substance in the husk of the rice, dubbed the anti-beriberi factor. As a bacteriologist, he stuck to the infection theory. This is where Gerrit Grijns comes into the picture. After Eijkman left for the Netherlands for health reasons, Grijns was appointed in 1896 to take over the research in the Medical Laboratory in Batavia. This was a homecoming of sorts: after graduating in medicine at Utrecht, he had already been Eijkman's assistant in the Dutch East Indies from 1892 to 1894. In his new post, Grijns spent three years conducting a series of nutrition tests on chickens, with the

aim of identifying the mystery substance in wholegrain rice.

What came out was that polyneuritis had nothing to do with the presence or absence of carbohydrates, proteins, fats or salts in the diet. A bacterial infection struck Grijns as just as unlikely. He eventually concluded that there was an as yet unidentified substance in wholegrain rice which the nervous system needed for its metabolism. According to Grijns, polyneuritis was not caused by something in the rice – whether a toxin, a bacterium or anything else – but precisely by something that was lacking. In this case: a protective substance that was removed with the outer husk of the rice. Grijns came up with the great term 'partial hunger', thereby discovering the diseases of deficiency.

VITAMIN B1

Grijns published his findings in 1901 in an extensive article in the *Medical Journal for the Dutch East Indies*. In spite of his fervent efforts, he did not succeed in isolating the substance in the husk which beriberi sufferers were starved of.

Grijns returned to the Netherlands in 1917, and spent some time working with his former teacher Eijkman, by now professor of Health at Utrecht. Grijns's protective substance, which we now call vitamin B1 or thiamine, was eventually isolated in its pure form by the Dutch tropical medicine specialists Barend Jansen and Willem Donath. The term vitamin was already in full use by then. It had been coined in 1912 by the Polish biochemist Casimir Funk, who believed – incorrectly, as it turned out – he had isolated the anti-beriberi factor. He called the crucial substance a vitamin, short for vital amine.

Four years after his return to the Netherlands, Grijns was appointed professor of Animal Physiology at Wageningen. Here he concentrated on research on the relation between diet and fertility and milk yield in cows. Vitamins reared their heads here too: he discovered, for example, the importance of vitamin E for reproduction. Six PhD theses were written under his supervision.

TRAGIC

Grijns's story has a rather tragic ending. In 1929, precisely the year in which he was rector, Grijns missed out on the Nobel Prize for medicine. The Nobel committee decided in that year

that it was time to honour vitamin research. The prize went to Eijkman and the British biochemist Frederick Hopkins, who proved in 1910 that, apart from the known basic nutrients, milk contains small quantities of 'accessory substances' essential for survival. These were the substances that came to be known as vitamins.

For Eijkman, this recognition came just in time. He was already too ill to travel to Stockholm to receive the prize in person, and he died one year later. The archives of the Nobel Foundation reveal that Eijkman was nominated for the Nobel Prize in nine different years. And in both 1926 – the year vitamin B1 was isolated – and in 1927, he was nominated together with Grijns. But in 1929, when the prize finally went to vitamin research, Grijns's name was not among the nominees. Historians of science see it as a miscarriage of justice that Grijns missed out on the prestig-

GRIJNS'S BOOK WAS FISHED OUT OF THE BIN DURING THE MOVE FROM ZODIAC.

ious prize in this way, as we can read in the book *Beriberi, White Rice and Vitamin B* by British scientist Kenneth Carpenter. According to Carpenter, professor of Experimental Nutrition at Berkeley, Grijns was overlooked because not many people knew much about his work. Grijns published his articles in Dutch, and not in international scientific journals. The bitter pill for Grijns to swallow was that, in his acceptance speech, Eijkman did not give him the credit he was due.

SAVED FROM THE BIN

In an attempt to restore Grijns to his proper place in history, the book *Researches on Vitamins* was published on his retirement as professor. The book includes Grijns's series of four trailblazing articles on the beriberi research – this time in English. A number of scholars and prominent people from at home and abroad worked on this book.

There are, as far as we know, three copies of the book published in Grijns's honour on the Wageningen campus. One is in the library of

1901

Grijns published his findings in the *Medical Journal for the Dutch East Indies*

course, and another graces the bookshelf of the current professor of Human and Animal Physiology, Jaap Keijer. He says this copy was 'saved from the material that was due to be binned, for lack of space, when we moved from Zodiac onto campus.' The third and most special copy is in the keeping of professor of Experimental Zoology, Johan van Leeuwen. He was given it by former *Resource* editor Gert van Maanen, who fished it out of a bin during the same move. In the front of the book is a handwritten thank-you from Grijns: 'Most touched by the tremendous honour which made 28 June an unforgettable day for me, I hereby offer you my heartfelt thanks. Gerrit Grijns'.



▲ Grijns (centre front) posing with colleagues outside the Aula after delivering his valedictory lecture as professor.

FATHER OF NUTRITION SCIENCE

Five years after his departure from Wageningen, Grijns received the Swammerdam Medal. This prestigious distinction is awarded every ten years by the Society for the Promotion of the Natural, Medical and Health Sciences, which is linked to the University of Amsterdam. Grijns's forerunners include big names such as the German zoologists Ernst Haeckel and Max Weber, the Dutch biologist Hugo de Vries and the German embryologist and Nobel Prize winner (1935) Hans Spemann. The inscription on the medal calls Grijns the 'founder and father of the current science of foodstuffs'.

The name of this father of nutrition studies rings bells with very few people nowadays. But

if it's up to Professor Jaap Keijer, that will change. Behind the scenes, work is going on to set up a new collaborative venture between the Agrotechnology & Food Sciences Group and the Animal Sciences Group. In this new institute, chair groups from both departments are going to work together on healthier diets, better food products and functional health. No prizes for guessing the new institute's name. 🍌



▲ The portrait of Grijns that hangs on the wall in the Aula.

GERRIT GRIJNS (1865-1944)

Gerrit Grijns was born in Leerdam, went to secondary school in Delft and studied medicine at Utrecht. He got his doctorate in 1891, even before graduating in medicine, for a study of the physiology of the optic nerve. The work won him a grant from the Donders Foundation, named after a famous ophthalmologist, which enabled him to spend three months in Leipzig working for the famous German physiologist Carl Ludwig. In 1892, Grijns left for the Dutch East Indies as an army doctor. With a few breaks, he worked at the Medical Laboratory in Batavia (today's Jakarta) until 1917, the last five years of that period as director. The laboratory, now called the Eijkman Institute, was expanded under his leadership. Grijns became professor of Animal Physiology at Wageningen in 1921, and worked here until his retirement in 1935. The Human and Animal Physiology chair group still does research on vitamins and energy metabolism to this day.



▲ In 1941, three years before he died, Grijns celebrated 50 years as a doctor.

1921

The Agricultural College appointed Grijns as professor of Animal Physiology

1929

Grijns was rector magnificus for a year. Eijkman was awarded the Nobel Prize for Medicine and Physiology

1935

Grijns retired and the English version of his most important work was published

1944

Grijns died in Utrecht at the age of 79

AVOID CONTROVERSY IN ONLINE LECTURES?

Online lectures come across differently to live lectures and therefore need more nuances, said WUR spokesperson Simon Vink in response to the fuss about a video by emeritus professor Arnold van der Valk. A project developer saw the video as framing. Should online lectures really be different? Or should WUR be less afraid of controversy?

text Stijn van Gils illustration Henk van Ruitenbeek

Rik Leemans



Professor of Environmental Systems Analysis, involved in one massive online open course (MOOC)

‘You shouldn’t avoid controversy and you really don’t have to give every nuance. For example, I won’t be giving climate sceptics a voice in my lectures except to show how issues are framed. **A lecture should be about the facts, even if people might question those.** The content of a MOOC should be comparable to that of an ordinary lecture. After all, the participants should be acquiring the same knowledge and skills. To do that, a lecture should have a scientific balance. You need to give good insight into the material and to critically explore the methods. The format, though, can be different for offline and online lectures. In a lecture room, you can see from people’s faces whether they’ve understood. You don’t have that in MOOCs so you need a different approach in your lectures.’

Robert Schuwer



Lector in Open Educational Resources and MOOC expert, Fontys Hogescholen

‘There can be controversial topics in online lectures as well, but of course you need solid supporting arguments. If that is not the case, there is a design fault in the lecture. That is really no different online to offline. I don’t accept the argument that the viewers in a MOOC can’t respond immediately and you therefore need more nuance in an online lecture.’

The audience might not say anything in an ordinary lecture either. As a lecturer you have to deal with that too. Anyway, you can still give students an opportunity to respond in a MOOC, for example by setting up a forum, letting students write an essay or holding a webinar. The MOOC system WUR uses – EdX – offers such options. I don’t see that the public nature of MOOCs makes any difference. Students may already be making recordings of lectures that may equally become public. Do you want to ban that? Of course it depends what you are trying to achieve. **If you see a MOOC as a marketing instrument, it may be useful to avoid controversies.** But I don’t think a university should set out to avoid controversy.’

Ulrike Wild



Programme director of Online & Open Learning

‘The Van der Valk case resulted in a lot of fuss and trouble. I don’t feel any great need to comment on it in detail. In general, our MOOCs are extremely well set up in every respect. As the name suggests, MOOCs are open to a global audience. But there is no direct interaction of the kind you get in a lecture hall and you need to be aware of that. **You probably express things a little differently in the pub compared to Facebook.** I can’t immediately explain how to present controversial topics in a MOOC. We have MOOCs on a variety of themes and there are numerous ways in which you can approach a subject, even a controversial one. I do think it is important to consider beforehand which items could be controversial. That lets you take this into account more.’



Simon Vink



WUR spokesperson, gave the comment on behalf of WUR

'The discussion was mainly about a number of facts and less about bias in the presentation of the case. WUR's MOOCs can definitely be controversial, but the message and nuances should be presented properly. **In an ordinary lecture, you can play devil's advocate about an issue to get a reaction and then use that as a teacher.** In a MOOC, you don't have that direct interaction with the students so you can't use that instrument in the same way. But that is offset by other benefits. An online lecture is simply a different creature. Just like a comic book is a different creature to an ordinary book. So online lectures don't necessarily have to have more nuance but you do have to approach them differently.'

Marrit van den Berg



Associate professor of Development Economics

'A MOOC should be very to the point because you've only got a couple of minutes for a lecture. **As a result, MOOCs are likely to be less rather than more nuanced.** For the lecturer, the challenge is to still cover all the aspects in such a video

lecture. I have only worked on one MOOC so far so I don't yet have that much experience. I have never personally generated controversy in any of my lectures but I mostly teach methods and techniques. There *are* heated discussions in my discipline, for example about whether agriculture in Africa should become more large-scale in view of the need for food security. I sometimes make a provocative statement to encourage debate but then I try to make sure that all the different viewpoints are aired. It helps that I don't have such a strong opinion on this subject myself. That makes it easier for me to be even-handed regarding the different parties.'

Judith Groen



Second-year Nutrition and Health student, has taken one MOOC so far

'In the first year I did two modules with a MOOC, always in combination with ordinary lessons. MOOCs are very useful for "dry" subjects because it's easy to replay them. But if you only get those kinds of lectures, after a while you stop absorbing what is being said. So you shouldn't have too many MOOCs in a single term. **Controversial topics are better suited to an ordinary lecture.** Then you can discuss it at once with the lecturer and one another. That works much better.' ®

Aruban Master's student does deep-sea research

Expedition to the Caribbean

Monstrous giant woodlice, massive waves and algae that help make clouds. There was never a dull moment for Master's student Tatiana Becker on the research vessel the *Pelagia*. The expedition to the Saba Bank was no holiday cruise. 'Sometimes I had to work until deep in the night.'

text Tessa Louwerens photos Tatiana Becker and Stephan van Duin

She has not yet really recovered from the jetlag and sudden change in temperature. Tatiana Becker, a Master's student in Marine Resource Management, is just back from a two-week research expedition to the Saba Bank in the Caribbean. She was one of 20 lucky Dutch students who were allowed to take part in the NICO expedition (see inset).

Becker was born on Curacao and grew up on Aruba, where her family still live. She came to the Netherlands to do her degree and she was pleased to have this opportunity to return to her home region. 'I was so happy when I heard in December that I would be allowed to join. There were around 150 applications for 20 places.'

TERRA INCOGNITA

In mid-February, Becker boarded the research ship the *Pelagaia* in Philipsburg harbour in Sint Maarten. She felt quite nervous as she had never been so far out to sea for so long. 'The sea was pretty rough all the time and I was seasick at first, but I eventually got used to it. Later on I found the rocking quite calming and I slept well. I'm pleased that I now know I can cope with it. There was one researcher on board who always gets seasick. I'd find that awful.'

Once the nausea had passed, Becker was able to enjoy the azure water, the fantastic surroundings and the pleasant temperatures. But this was no holiday cruise, despite



▲ Tatiana Becker shows a woodlouse that has been fished from the depths.

the tropical setting. 'It was really hard work, especially as I was the only student on board. Normally there are two at the same time.' As a research student, she helped out with the deep sea studies. The Saba Bank is actually an underwater mountain hundreds of metres high that is primarily known for the coral reefs around its summit. But the deep waters around the foot of the mountain are largely terra incognita, explains Becker. It was precisely those depths – down as far as 1500 metres – that the researchers were trying to map. They did this for example by taking water samples with a seabed lander that had the appropriate name of Pumpy.

ALGAE MAKE CLOUDS

In the two weeks that Becker was on the ship, the researchers took water samples at various depths, analysing some while they were still on board. 'We were looking for example at different chemicals in the water that can influence climate change. Phytoplankton, such as algae,



▲ Researchers used seabed landers to film and catch sea creatures.

produce certain substances that are broken down by bacteria to make the gas dimethyl sulphide. This gas is involved in the formation of clouds and researchers suspect that it could help to combat climate change.'

Becker helped researchers from the Netherlands Institute for Sea Research (NIOZ) and Groningen University process the water samples. 'That's precision work because the samples have to be stored as soon as possible because the concentrations can change over time, for example due to temperature fluctuations. That was stressful early on in particular because I hadn't yet mastered the process.'

'Creatures swim in the depths that wouldn't look out of place in a horror film'

There were a few occasions then when I had to work until deep in the night.'

The researchers were also curious to know what was living in the depths. They fitted special underwater bait cameras to the frame of a seabed lander that they then sank to different depths. They filmed in the pitch dark using an infrared lamp. Becker: 'It is amazing to see what is attracted by the bait - the weirdest creatures that wouldn't look out of place in a horror film. We saw entire families of giant woodlice. The largest was almost half a metre long!'

Traps were also attached to the frame that let the researchers capture creatures for further study. This 'cabinet of curiosities' was then presented to NIOZ taxonomist Marc Lavaleye. 'He's a real walking encyclopaedia. He is already retired and has been on more than 60 expeditions. I found it interesting getting to know different disciplines and I learnt a huge amount in that short period. Until then I knew nothing for example about microbiology and how that plays a role in climate change.'

RETURNING TO ARUBA

Becker is now back in the Netherlands but she is not yet finished with the expedition. 'Lots of video images still need to be analysed to identify the different species. I'd like to help with that.' She has already booked her next plane ticket. 'I'll be going back that way in May for my

Master's thesis. I still have to decide what I'll be doing exactly. I think the climate is an important subject and I'm also particularly interested in applied research that leads to clear recommendations, for example on pollution or overfishing. Unfortunately I can't yet use the data from this NICO expedition because it'll take a while before it's all analysed.'

Looking to the future, Becker would like to return to Aruba. 'The Caribbean is close to my heart. Aruba lags behind other Caribbean islands in terms of research and there is a real lack of expertise. The focus is mainly on tourism but not on what that tourism is based on, namely marine life.' 🌐

See the video
at resource-online.nl



▲ Tatiana assisted the scientists with their work.

▲ A laboratory on board the *Pelagia*.



PHOTO: ARIEN SPEKSNIJDER

NICO EXPEDITION

Around 100 scientists from 20 Dutch universities and research institutes are involved in the Netherlands Initiative Changing Oceans (NICO). Working on board the *Pelagia*, the Netherlands Institute for Sea Research (NIOZ) research vessel, they are spending seven months researching such varied topics as the seabed, climate change, coral reefs and whales. The ship left its home port of Texel in December and sailed to the Caribbean via Gran Canaria. Afterwards, it will sail on to the Mississippi Delta, and then return for research in the North Sea and around the Azores. Different researchers and students are involved in each of the 12 stages of the expedition.



ROMAN BEHAVIOUR

Some ant species attack other closely related ant colonies and enslave their fellow ants there for life. German researchers have identified the genes responsible for this Roman behaviour. The genes code for a substance that masks the attackers. This 'cloak of invisibility' makes the attack more successful. Weirdos, those ants.

CYCLING

Hippocrates said it long ago: exercise is the best medicine. British scientists at the University of Birmingham have proven this for groups of seniors (55-79 years old) who have cycled as a sport all their lives. The cyclists' muscle mass and strength hardly goes down at all with the passing of the years. Their fat percentage remains constant and – what a bonus – so do their testosterone levels.

RUBIK

Students at MIT have built a robot which solves the famous Rubik cube in 0.38 seconds. The previous record was 0.64 seconds. The film is on YouTube (0.38 Rubik's Cube Solve). You can only really see it in very slow motion (x30). The current human record was set last October by SeungBeom Cho. The puzzle took him 4.59 seconds.

SUNSHINE

The American state of Florida wants to switch to year-round summer time. The federal government is going to apply to Congress for permission to do this. In practice it means Florida will be in a different time zone. The aim of the Sunshine Protection Act is to make life sunnier. It will mean that the US will soon have two sunshine states: California in the west and Florida in the east.

'More constructive' evaluation of lecturers

The feedback system in which students evaluate their modules will be updated next academic year. First-years will also get an explanation about the module evaluations. The idea behind the changes is to have students give more constructive comments about their lecturers from now on.

'At the moment students sometimes rant and rave at their lecturers,' says Jaap Kerr, a Student Council member representing student party Veste. According to him, assessments by students have become more negative since the implementation of the PaCE system, which was introduced in 2016 to replace EvaSys.

It has nine questions instead of 21 and can be filled in on your mobile as well the computer. The university hoped this would persuade more students to evaluate their teacher and module.

That is indeed the case. Now, 33 percent of students complete the survey on average compared with 25 percent in the old system. But there is a downside too. Because there are fewer questions, students have less room to vent their anger, says Kerr. 'For example, before they had specific questions about the standard of the lecturer's English. Now there is just one open question, which seems to invite students to make fiercely negative comments that the lecturers can't do

much with. That just demotivates them.'

That is why the Student Council wants first-year students to get a brief explanation of the system next year. They will be told, for instance, that comments about lecturers need to be constructive. The university likes the suggestion.

The university also wants to change the tone of the questions and give students more insight into what is done with their feedback. 'Now we only ask them what a lecturer could do better. We want to change these questions,' says WUR Dean of Education Arnold Bregt. A committee will now investigate what exactly needs to change. **SVG**



PHOTO: GUY ACKERMANS

It's our birthday!

The WUR centenary was officially launched on Thursday 8 March with speeches, performances, free beer and a laser show. At exactly 12 midnight, rector Arthur Mol climbed onto a platform and declared: 'it's our birthday!' The 'laser fireworks' that followed illustrated all the areas in which Wageningen has made its name. Images of education and

research on food, agriculture and how to look after Mother Earth were flashed up in dazzling colours.

RK

See the video and photo series
op resource-online.nl.

Housing shortage dominates election debate

There is an acute shortage of student accommodation in Wageningen and that was very clear during the election debate for students held in Orion on Tuesday 6 March. Local parties running in the municipal council elections on 21 March were going to debate three themes but the discussion kept coming back to housing.

If it was up to Lara Minnaard of the local party Stadspartij, students would be housed not just in Wageningen but also in the surrounding district. This is not desirable, she stressed during the debate, but the procedures required before new houses can be built are simply time-consuming. The socialist party SP agrees and wants to start negotiating with neighbouring municipalities. The thinking is that anything is better than commuting. The centrist liberal D66 and left-wing green

GroenLinks see it differently. 'All students who want to live in Wageningen should be able to live in Wageningen,' said D66's leading candidate Dennis Gudden. 'We have more than enough space.'

According to Gersom van der Elst of the Christian party ChristenUnie, it would be smart to combine some of the housing for the elderly with that for students. 'Students could then spend a few hours a week keeping the old people company, in exchange for a lower rent.' His standpoint drew fire from Mark Mekken, Connect Wageningen's seventh candidate. 'I was at the senior citizens' debate, and the elderly don't want that at all. Why does the ChristenUnie keep coming back to it?' Other parties came in for some sharp retorts too. 'How did you let the room shortage get so bad?' asked Melissa van der Ling, another Connect



PHOTO: SVEN MENSCHER

Members of the audience at the debate particularly wanted to hear what the local parties will do about the room shortage.

Wageningen candidate.

International students from EU countries get a vote on 21 March too. For them the Student Council is holding a meeting in English in Impulse on 19 March at 18:30. SvG

Student candidates introduce themselves in videos on resource-online.nl



MEANWHILE IN... THE US

'The gun culture shouldn't be underestimated'

The firearms debate in the United States has flared up again in the wake of the school shooting in Florida on 14 February. Increasing numbers of citizens are protesting against the widespread possession of weapons. A March for Our Lives is planned for 24 March. Will anything really change now? Antoni Malachowski doubts it.

"These shootings are terrible, sad and pointless. I think the root of the problem lies in the number of guns that are around and how easily you can purchase them. Shootings happen so regularly in the US that I got a bit desensitized about it: for me it feels like just another news item. However, I am impressed by the actions of students now, confronting politicians with reality. They make me feel that it shouldn't be such a political issue to protect the citizens of your country.



Antoni Malachowski is a Master's student of Biotechnology. He grew up in Michigan, United States.

But in the end, the issue is polarized too much by the party politics of the United States, so I have lost hope that anything will really change. Current lobbying practices like those used by the National Ri-



PHOTO: KMH PHOTOVIDEO/SHUTTERSTOCK.COM

fle Association are undemocratic. Then about President Trump: he suggests that teacher receive guns to stop attackers. This way he sidesteps seriously addressing the issue. He says so many careless things, it is unbecoming for a president.

What is currently less visible is the strong gun culture that is still alive in many parts of the United States. Among some groups of young men, it is perceived as cool to possess a gun and be able to handle it. This is clear in certain popular YouTube videos. In my home state of Michigan, a lot of people value deer hunting. In my secondary school, a boy once brought some hunting bullets and was showing off with them. Although he did get suspended, I find the incident illustrative of the gun culture. And then in some states, people are even prouder of their guns. I think the forces that want to keep guns around are still really strong.' TF

YOU ON CAMPUS

The frost is over and the skates have been put away. In the watery spring sunshine, the first students are sitting outside again, having lunch and chatting. Among them Gideon Koning (21). He and other members of Ichthus student association agreed to hold their meeting out of doors. The topic: the Holy Week activities Gideon is helping to organize.

Gideon is doing a BSc in Molecular Life Sciences, and is actively involved in the Christian student society Ichthus. He plays piano in a band there and spent a year on the board. Holy Week is the initiative of several Christian societies and the international church in Wageningen. In the week before Easter, participants will engage in dialogue with others, at lectures for instance, about faith and finding meaning in life. 'We think a lot about life,' says Gideon. 'That makes it interesting to enter into dialogue with people with different convictions.'

It is not just in Wageningen that Gideon is helping organize these activities; he is also going to Riga in Latvia for a week. There were not enough Christian students to organize the Holy Week there, so the local organization called on help from the

'It is nice to have some extra depth during your student days'

Netherlands and Romania. 'It is great to get involved in organizing things outside your studies,' says Gideon.

Gideon joined Ichthus for the social side of things, but also to be able to think about life together with others. 'It doesn't have to be all parties and drinking, it is also nice to have some extra depth during your student days.' During his year on the board, he felt very involved with the members. 'It is really lovely



PHOTO: ANNE VAN DER HEIJDEN

to see first-years blossoming in the society, and to see how everyone grows. I grew a lot myself in that time. At first I thought, "Can I really do all this?" And it turned out I could.' Gideon is getting married to his girlfriend Irma in October. 'I think that's a nice moment for it. We will start a new life together. Our faith is important to us and in Christian circles getting married young is quite usual.' **AvdH**

PARTIES

In the party mood? Wageningen Party Promotion (WUP) tells you where to find one. See too www.wageningenup.nl.



CAFÉ LOBURG - LOBURGLIVE ROCKS: RAW FLOWERS

Friday 16 March from 23:00 to 02:00

You will be able to listen to some great live music this Friday evening in Loburg. Raw Flowers, a band from the Achterhoek region, combines raw guitar sounds with punchy rock and roll.

LUCA - BIOTECHNO PARTY

Thursday 22 March from 22:00 to 03:00

Study associations Biologica and Codon are making sure that for once you don't have to go to Amsterdam for some great techno. Admission 3.50 euros for non-members, including free drink.

DE WILDE WERELD - OGDG: SWING INTO SPRING

Saturday 24 March from 21:30 to 02:00

OGDD will have you swinging to tropical and Western beats all evening. The party will start quite early – ideal for people who still want to be fit the next day. **AvdH**



PHOTO: SVEN MENSCHER

Cafe Luca was one of the spots for the Party of the Century on Friday 9 March.

Wageningen Master's students do internships and thesis research all around the world, getting to know their field and other cultures. Here they talk about their adventures.

'They are more easy-going about animal testing in Japan'

'I was curious about how it is to live in a country with a totally different culture. I thought Japan would be very nice so I decided to go to Kyoto. I found out what sort of research was being done at the university there and emailed the professor with the most interesting topic.

MICE

I am spending six months doing research on the Hes7 gene in mice. This is a gene that influences development processes in embryos. We track the activation of the gene using fluorescence. We introduced the fluorescence using a plasmid, a circular piece of DNA. They are more easy-going about animal testing in Japan; you don't have to get a special animal testing certificate. You just practise with your supervisor and once they are satisfied that you know what you are doing, you continue on your own.

The staff of the mice laboratory put my plasmid into pregnant females, but for the rest I do everything myself. I select the mice which have the plasmid, and therefore the fluorescence, and get them to mate with each other. Then I

collect up the tails of the embryos, treat them and look at them under a microscope.

WORKING SIX DAYS

Because I work with live mice instead of with cell lines, the waiting time is long. I hadn't given that any thought beforehand. After injecting my plasmid, it took three months until I had the first positive adult mouse in which to test whether the plasmid was doing what it was supposed to do. In those three months I actually didn't have much to do. Luckily there were a few small projects that I could help my supervisor with.

Working at the lab here is not very different to lab work in Wageningen. The biggest difference is the working hours. Here it is normal to work from about 10 until 7, and people work on Saturdays as well. There is also a very clear hierarchy. You can't address the professor by his first name.

TASTING SAKE

Although I work on Saturdays, I do have time to sample the culture in my spare time. I have vis-

THE WORKS



Who? Kate Ligthart, MSc student of Molecular Life Sciences
What? Internship at the Kageyama Laboratory
Where? Kyoto University, Japan

ited the tourist hot spots such as Tokyo, Hiroshima and lots of temples. I also belong to a traditional Japanese cooking club, and I often go to festivals and sake tastings. Sake is a typical Japanese alcoholic drink.

I eat out more here than I do at home because it is relatively cheap and there are lots of new things to try. It is much more normal to eat out here; every restaurant has a table or a bar for people who come on their own.' **GN**

Read more interviews
on resource-online.nl



Orion Irregular Opening Hours March and April 2018

	2018	The Building	Bike basement	The Spot	Restaurant
Good Friday	30 March	Closed	Closed	Closed	Closed
Saturday	31 March	Closed	Closed	Closed	Closed
Easter Sunday	1 April	Closed	Closed	Closed	Closed
Easter Monday	2 April	Closed	Closed	Closed	Closed
Monday	23 April	8 am - 6 pm	8 am - 8 pm	8 am - 8 pm	11.30 am - 1.30 pm
Tuesday	24 April	8 am - 6 pm	8 am - 8 pm	8 am - 8 pm	11.30 am - 1.30 pm
Wednesday	25 April	8 am - 6 pm	8 am - 8 pm	8 am - 8 pm	11.30 am - 1.30 pm
Thursday	26 April	8 am - 6 pm	8 am - 8 pm	8 am - 8 pm	11.30 am - 1.30 pm
Friday King's Day	27 April	Closed	Closed	Closed	Closed
Saturday	28 April	Closed	Closed	Closed	Closed
Sunday	29 April	Closed	Closed	Closed	Closed



Leeuwenborch Irregular Opening Hours March and April 2018

	2018	The Building	Coffee Bar/ Restaurant	The Library
Good Friday	30 March	7 am - 10.30 pm	Closed	Closed
Saturday	31 March	8 am - 5.30 pm	8 am - 5 pm	Closed
Easter Sunday	1 April	Closed	Closed	Closed
Easter Monday	2 April	Closed	Closed	Closed
Monday	23 April	7 am - 10.30 pm	8 am - 5 pm	8.30 am - 6 pm
Tuesday	24 April	7 am - 10.30 pm	8 am - 5 pm	8.30 am - 6 pm
Wednesday	25 April	7 am - 10.30 pm	8 am - 5 pm	8.30 am - 6 pm
Thursday	26 April	7 am - 10.30 pm	8 am - 5 pm	8.30 am - 6 pm
Friday King's Day	27 April	Closed	Closed	Closed
Saturday	28 April	8 am - 5.30 pm	Closed	Closed
Sunday	29 April	Closed	Closed	Closed

After 6 pm entrance is only possible after registration at the reception desk.



Forum - Irregular Opening Hours March and April 2018

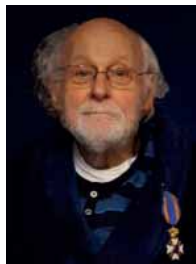
	2018	The Building	The Library	Student Desk	IT Service Point	WURshop	Restaurant	Grand Café	Wageningen in'to Languages
Good Friday	30 March	8 am - 11 pm	8.30 am - 5.30 pm	Closed	Closed	Closed	Closed	Closed	Closed
Saturday	31 March	10 am - 6 pm	10 am - 6 pm	Closed	Closed	Closed	Closed	Closed	Closed
Easter Sunday	1 April	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
Easter Monday	2 April	10 am - 6 pm	10 am - 6 pm	Closed	Closed	Closed	Closed	Closed	Closed
Monday	23 April	8 am - 11 pm	8 am - 10 pm	10 am - 5 pm	9 am - 10 pm	9 am - 4.30 pm	8 am - 7 pm	8 am - 5 pm	9 am - 5 pm
Tuesday	24 April	8 am - 11 pm	8 am - 10 pm	10 am - 5 pm	9 am - 10 pm	9 am - 4.30 pm	8 am - 7 pm	8 am - 5 pm	9 am - 5 pm
Wednesday	25 April	8 am - 11 pm	8 am - 10 pm	10 am - 5 pm	9 am - 10 pm	9 am - 4.30 pm	8 am - 7 pm	8 am - 5 pm	9 am - 5 pm
Thursday	26 April	8 am - 11 pm	8 am - 10 pm	10 am - 5 pm	9 am - 10 pm	9 am - 4.30 pm	8 am - 7 pm	8 am - 5 pm	9 am - 5 pm
Friday King's Day	27 April	10 am - 6 pm	10 am - 6 pm	Closed	Closed	Closed	Closed	Closed	Closed
Saturday	28 April	10 am - 6 pm	10 am - 6 pm	Closed	Closed	Closed	Closed	Closed	Closed
Sunday	29 April	10 am - 6 pm	10 am - 6 pm	Closed	Closed	Closed	Closed	Closed	Closed

During working hours, the building is open to the public. After working hours, entrance is only possible with a WUR card.



In memoriam

CEES VEEGER (1929-2018)



On Tuesday 13 February, Cees Veeger passed away at the age of 88, bringing to an end the colourful life of the first pro-

fessor of Biochemistry at WUR. Cees was a Knight of the Order of the Netherlands Lion, an honorary doctor of Poznań University and striking paterfamilias of four children, six grandchildren and two great-grandchildren. Cees contributed significantly to the development of biochemistry in the Netherlands. At Wageningen, he specialized in molecular enzymology and built up a group of eleven permanent faculty members. Cees studied complex enzyme systems: hydrogenases for alternative energy, nitrogenases for nitrogen fixation, PDC for energy management, RuBisCO for CO₂ sequestration and the P450 system for breaking down toxic aromatics. Cees was a teacher with remarkable ideas; he was the first to give evening lectures, for instance. Not only was he a striking personality, he was also impulsive. One of his favourite pastimes was picking an argument, something he continued even after his retirement. He wrote a lot of articles in the Wageningen university newspaper in which he attacked the head office. Cees was fond of culture, knew a lot about music and was very well read. He knew something about everything and let you know it too. Cees was an unforgettable character who defended his department in his own idiosyncratic way and made biochemistry in Wageningen great. Always recalcitrant, a genuine rogue.

Prof. Willem van Berkel and Prof. Dolf Weijers, on behalf of the Biochemistry chair group

CLAUS STORTENBEKER (1926-2018)



Emeritus professor Claus Willem Stortenbeker passed away on 17 February. He was the second professor of Nature Conservation at Wage-

ningen after M.F. Mörzer Bruyns. Both had previously been directors of institutes that were predecessors to Alterra, namely RIVON (RIN) and ITBON. Stortenbeker was a professor from 1979 to 1991. He was one of the first to realize that climate change should be taken into account when managing nature and natural resources. It is hard to imagine today, but you still had to fight for a topic like that back then. In 1989, he chaired one of the first international conferences on climate change and the impact on nature. The IPCC, now a household name, was founded that same year. One of his focal points was the notion that nature was of value not just for idealistic reasons but also because it served multiple functions that had economic benefits. Stortenbeker also managed to get a new chair established focusing on tropical nature conservation. His early efforts in that direction have now grown to become significant disciplines in their own right. What in his day was one Nature Conservation department has expanded and matured to become a number of successful chair groups.

On behalf of the Aquatic Ecology and Water Quality Management chair group, Jean Gardeniers and Marten Scheffer.

CLAUS STORTENBEKER II

On 17 February, one of the most remarkable people in nature conservation in the Netherlands passed away. Claus Stortenbeker studied Biology in Leiden. In the years that followed, he did research in Africa on the dynamics of locust populations that regularly caused major food shortages. In 1969, he was appointed director of the Arnhem branch of the new royal institute for nature conservation (RIN). Research at the new institute focused on such areas as the effects of pesticides on soil organisms, and hunting and the

damage caused by wild animals. This research did not always produce the answers politicians wanted, but Claus Stortenbeker was unequalled in his ability to withstand political pressure, using humour and showing great mettle if necessary. He made a significant contribution to nature conservation in the Netherlands as a leading member of the board of Natuurmonumenten (society for the preservation of nature in the Netherlands) and chair of the Brabant nature federation. He was a great supporter of the Ecological Main Structure and of an active nature policy aimed at developing and expanding nature areas. In 1979, he was appointed professor of Nature Conservation at the agricultural university. He was an engaging and keenly perceptive man who played a key administrative role in Wageningen. He retired in 1991. He was appointed Knight of the Order of the Netherlands Lion for his many services to society.

Frank Berendse, emeritus professor of Nature Conservation and Plant Ecology, and Rudy Rabbinge, university professor

agenda

Easter Monday, 2 April, 13:00-17:00

ANNE VD BAN TENNIS TOURNAMENT FOR ALL WUR STAFF AND STUDENTS

Walhalla and the tennis club NVLTB invite everyone at WUR to a benefit tournament for the Anne van den Ban fund. You play a few doubles or mixed doubles matches at beginners, intermediate or advanced level, with or without a partner. Cost: €10, students €4. Sign up by 30 March via nvlbt.nl. Location: NVLTB, Bornsesteeg 8.

Thursday 22 March, 22.00

SPRING FEVER PARTY

It's that season again when your nose tickles because spring is coming. Pollen is making your mucous membranes burn. Other symptoms: itchy feet, swinging hips and happy tunes in your ears. The best remedy is a good night's fun with the beats of DJ Ryzen.

SHOUTWAGENINGEN.NL

colophon

Resource is the magazine and news website for students and staff at Wageningen University & Research. Resource magazine comes out every fortnight on Thursday.

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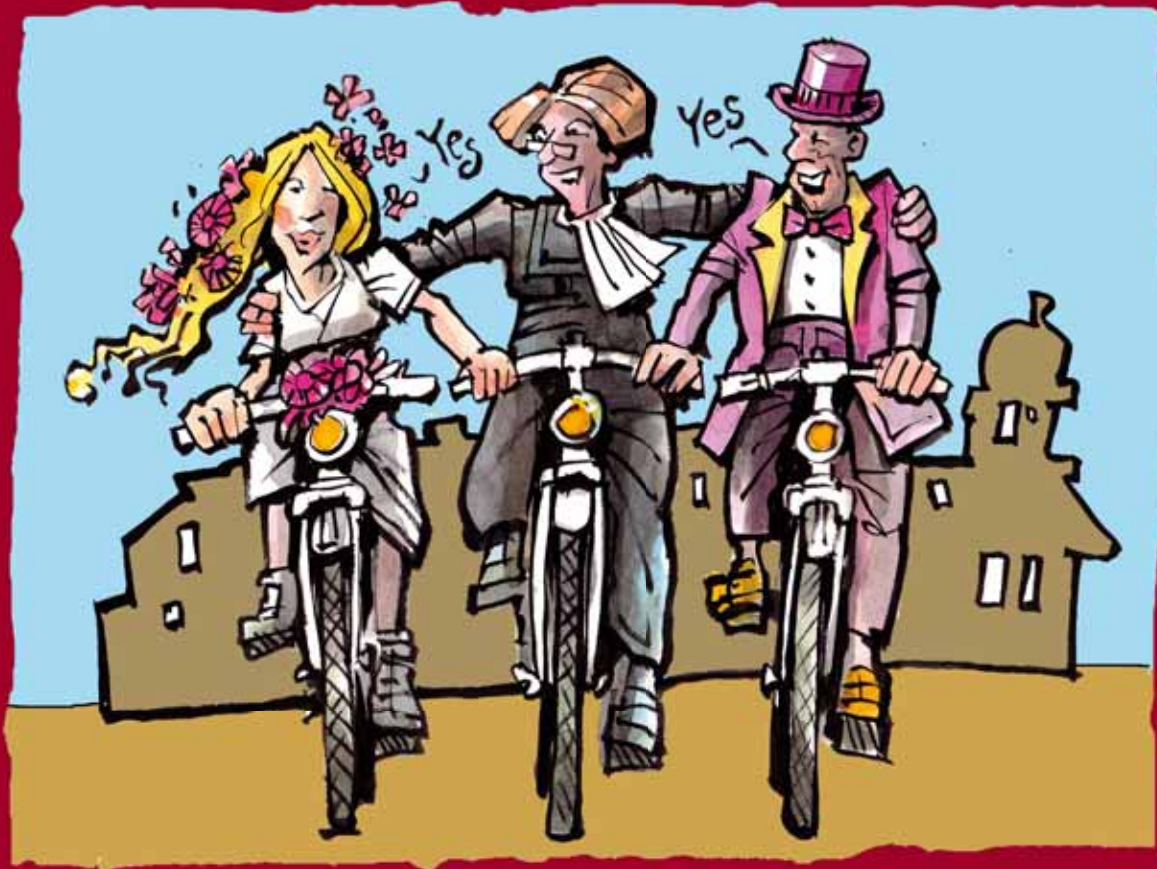
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>>TYPICAL DUTCH



A simple Dutch wedding

A good friend of mine got married on 31 January at 10 o'clock. I am happy for her and her new journey, but there are a few things that bother me. Why was the wedding ceremony held on a working day? And why was I not invited?

Though I know the answers to both questions, it is just perplexing if I compare my wedding with hers. First of all, my wedding ceremony was on a public holiday. It is a taboo in my country to get married on a weekday. There were about 500 guests, many of whom I hardly knew. And please note: my wedding was simple compared to the norm in Malaysia.

My friend and her fiancé had a 'simple wedding' too – by Dutch standards. They invited only their immediate family and therefore opted for the free wedding ceremony. This is a concept which I find ludicrous, but it is not unusual in the Netherlands. It is so common that in certain *gemeentes* the slot for the free wedding ceremony is fully booked for months.

The free wedding was originally initiated by the Dutch government to help poor couples. The intention is good, but many people who do not fit this category also make use of it. This situation confirms my stereotype of the Dutch as cheapskates. Though I bet my friend will answer otherwise and say she is just efficient, like all the Dutch.

By the way: Congratulations Anne! I wish you a happy married life! 📍 Mas Muniroh Binti Mohd Nadzir, a Malaysian PhD candidate in Plant Breeding

A simple wedding in Malaysia means 500 guests, for the Dutch it means immediate family only

Do you have a nice anecdote about your experience of going Dutch? Send it in! Describe an encounter with Dutch culture in detail and comment on it briefly. 300 words max. Send it to resource@wur.nl and earn twenty-five euros and Dutch candy.