

2022 — ISSUE 3

# MAGAZINE

of Heinrich Heine University Düsseldorf



## Expedition into the ice

HHU biologists in the Arctic

ARTS AND HUMANITIES

Annie Ernaux  
and Düsseldorf

LAW

Is Harry Potter  
a criminal?

MEDICINE

Aspirin – a good  
all-rounder

hhu.

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PHOTO OVIDIU POPA/ELLEN OLDENBURG

Ellen Oldenburg and Ovidiu Popa studied how climate change affects microbial life during their research trip to the Arctic.

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PHOTO BAYER AG – BAYER ARCHIVES, LEVERKÜSEN

Acetylsalicylic acid has been on the market as a drug for over 120 years – and is still the subject of research.

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# Editorial



Dear Reader,

Global climate change is on everyone's lips and its impact can be felt virtually all over the world. The consequences of climate change can be found even – and in particular – in the Arctic. Two scientists from HHU have travelled there, together with numerous other researchers, on the renowned research ship “Polarstern”. As biologists, one of their missions was to examine the impact of climate change on microbial life in the ice in this region of extremes. That sounds like a great travel adventure, but in reality it is all about serious research, which once again demonstrates the urgency of the issue and the need for decisive action to protect the climate. So do not be distracted by the fascinating and idyllic pictures of the title story.

The Magazine also reports on further research at HHU, for example a study on aspirin – a medication that virtually everyone is likely to have taken at some point in their lives. Moreover, the Magazine looks at the links between Annie Ernaux, the current holder of the Nobel Prize for Literature, and the University of Düsseldorf. An article on research at the Faculty of Business Administration and Economics explains how you can use self-control to manage your own behaviour better and e.g. learn to resist spontaneous temptations – research indicates that it is all a question of self-discipline. Certainly, this sounds easier than it is. And to bring things to a magical conclusion, we ask a surprising question: Is Harry Potter a criminal? It is fascinating that this question can be considered in a scientific and systematic way, and that you can learn something about criminal law in Germany in the process. Warning: You may never look at Harry Potter in the same way again once you have read this article.

On an internal note, the Magazine reports on a key personnel decision at HHU. The President, Professor Anja Steinbeck, has been re-confirmed in office for a second time and elected to lead the University until 2028. Congratulations!

I wish you an enjoyable read! Kind regards,

Professor Dr Stefan Marschall  
Vice President for International Relations and Science Communication

President of HHU

# Professor Dr Anja Steinbeck confirmed in office

Professor Dr Anja Steinbeck has been President of HHU since November 2014 – and is set to remain so in the long term: The election committee, which comprises the Senate and University Council of HHU, confirmed her in office for a third term in October 2022. Consequently, she will now also head the University of Düsseldorf from 2024 to 2028. This election took place relatively far in advance to ensure reasonable planning security both for the University and for the President herself.

Prior to this, the HHU Senate had called upon the current President to stand again and simultaneously announced its intention to dispense with a call for candidates. The University Council unanimously agreed with this initiative. Anne-José Paulsen, Chair of the University Council, explains the reasons: “Over the past eight years, we have experienced how successfully Professor Steinbeck has led Heinrich Heine University, modernising many challenging aspects and bringing about significant improvements. The decision taken by the election committee enables HHU to continue to benefit from this management excellence.”

Professor Dr Wolfram Knoefel, Chair of the HHU Senate, adds: “Cooperation between the bodies at our University has been characterised by a particularly strong spirit of trust in recent years. We have consistently

experienced fruitful and constructive dialogue with Professor Steinbeck that has resulted in the right ideas and definition of the right course for HHU. I am delighted at this excellent and foresighted election.”

## “Delighted to receive this confirmation”

In response to the decision taken by the HHU bodies, Anja Steinbeck says: “I am of course delighted to receive this confirmation of my work for HHU. The ongoing improvements to the research and study conditions at our University remain my most important task. I gratefully accept the result of the election.”

The election procedure: In accordance with the Higher Education Act of North Rhine-Westphalia (*Landeshochschulgesetz NRW*), the election committee comprises members of the University Council and the Senate. It elects the executives who manage the University – the President, as head of the academic side, the Chancellor, who is responsible for the administrative side, and the Vice Presidents, who have specific responsibilities. Collectively, these individuals form the Rectorate. A. Z.

Professor Dr Anja Steinbeck will remain HHU President until 2028; Anne-José Paulsen, Chair of the University Council, and Professor Dr Wolfram Trudo Knoefel, Chair of the Senate, congratulate her on her re-election.



PHOTO: JUDITH MICHAELIS

# Annie Ernaux – and her links with Düsseldorf

Annie Ernaux, the 2022 winner of the Nobel Prize for Literature, is well known at HHU – and not just because her translator, Sonja Finck, is a graduate of the Literary Translation study programme and frequently visits the University for teaching assignments and presentations. Ernaux herself also visited Düsseldorf in 2021. The Romance Languages and Literatures expert, Professor Dr Ursula Hennigfeld, acted as host and translator at the *Heine Haus* on that evening.

## What does Annie Ernaux stand for, what is her position in the French literary scene?

Annie Ernaux is the “Grand Dame” of French literature. Successful French authors who are also well known in Germany such as Didier Eribon (“Returning to Reims”) or Edouard Louis (“The End of Eddy”) describe her as their great role model. This is already an indication that her genre lies between sociology and literature.

## What issues does Annie Ernaux address in her texts?

In her works, she addresses the topic of social advancement and the search for personal identity beyond traditional social roles. She also breaks a number of taboos, e.g. by writing in a brutally honest way about rape, abortion and female sexuality.

## She is often described as an “ethnologist of herself” – what does that mean?

In the first instance, it means that she cannot easily be pigeonholed. In her works, she combines her personal life story with a brutally honest analysis of the social constraints to which all of us – and in particular women and working-class children – are subject. The author herself refers to this combination of autobiography and social portrait as “auto-sociobiography”.

## How did your links with Annie Ernaux come about?

Dr Selinde Böhm and Rudolf Müller from the *Heine Haus* asked me whether I would be interested in hosting and interpreting for an evening with Annie Ernaux – to which I of course immediately and enthusiastically said yes. I was highly impressed by her likeable, unpretentious and modest manner.

## What interests you about her work?

Annie Ernaux describes the price you have to pay for social advancement in a very moving and impressive way. Her



Professor Dr Ursula Hennigfeld (left) and Nobel Prize winner Annie Ernaux.

parents came from a working-class background and worked incredibly hard throughout their lives to give their daughter a good education. Yet, it was exactly this education that increasingly distanced Ernaux from her parents. Nevertheless, she writes about them in a very loving way and does not criticise or make fun of them. It is more the case that she dissects her own inner conflict and the feeling of not really belonging to the working class nor the middle class.

## What do your students think?

Ernaux's deliberately simple writing style is highly accessible for students in terms of language. Her key themes – the search for personal identity, protest against traditional social roles and the problems of social advancement – are of great interest to students as they remain relevant.

*Interview by Victoria Meinschäfer*

# Self-control: An opportunity to invest in yourself



BY CAROLIN GRAPE

Doing your tax return, starting a diet or revising for an upcoming exam: Are you one of those people who do necessary tasks straightaway or rather one of those who prefer to put unpleasant tasks off until “tomorrow”? And how do you handle temptation like a sweet treat or an evening beer? Can you resist or do you give in? It’s all a question of self-discipline or self-control – how research defines the ability to resist spontaneous impulses to ensure the achievement of long-term goals. But why are some people better at this than others? And how does self-control shape our day-to-day lives?

**H**annah Schildberg-Hörisch, Professor of Economics (Behavioural and Empirical Economics) at the Düsseldorf Institute of Competition Economics (DICE), is addressing these questions together with her co-authors. Among other things, she is researching questions in the areas of applied micro-economics, behavioural/education/labour economics and social inequality, which she tests in laboratory experiments and with survey data. The overarching aim of her research is to gain a better understanding of individual decisions as a prerequisite for the design of successful institutions and political measures.

“We understand self-control as the ability to resist a direct reward in favour of a benefit which lies further in the future. For example, if a person invests some of their money today (and does not spend it), they can look forward to a financial cushion in old age,” explains the expert.

It is possible to measure this ability. In the late Sixties, the psychologist Walter Mischel conducted the so-called marshmallow test with four-year-old children to investigate impulse control and delay of gratification. He offered the children sweets and presented them with the choice of either eating the sweet immediately or getting a second one later on if they could resist the temptation. Some children managed to wait, while others did not, i.e. there was a difference in their ability to delay gratification. In

2004, June Price Tangney, Roy F. Baumeister and A. L. Boone developed a recognised questionnaire that individuals can use as a self-assessment test of their self-control, the Self-Control Scale.

According to Schildberg-Hörisch, this starting point formed the basis for a comprehensive survey: “For the first time, we had the opportunity to ask questions about self-control in the nationwide, representative Socio-Economic Panel (SOEP).” The SOEP collects representative data about income, employment, education and health from private households and individuals in Germany on an annual basis.

## The ability is measurable

And it is exactly these areas that are of particular interest to the research team for their behavioural economics study. “We wanted to find out how self-control influences our level of education, success on the labour market, health and life satisfaction.” Hannah Schildberg-Hörisch explains how much: “Our study showed that our level of self-control influences our day-to-day decisions and key life outcomes: There is a strong positive correlation between greater self-control and higher life satisfaction.”





On average, people with greater self-control have significantly better mental/physical health and learning outcomes. They spend more years in education and have a greater likelihood of completing an advanced school-leaving qualification (A-Levels or equivalent) and a degree. They receive higher hourly wages on average and are unemployed less frequently. They also save more or own more residential property on average.

## Differentiation between correlation and causality

In this context, it is important to the economist to differentiate between correlation and causality: “Generally speaking, the predictive power of self-control with a view to life circumstances does not necessarily represent a cause-effect relationship. A causal chain does not necessarily exist. Through analysis of school reforms that introduced a

mandatory additional minimum school year in Germany, we can show that more education does not automatically lead to more self-control. So there is a lot in favour of the theory that more self-control results in more education and not the other way around.”

## Factors that influence self-control

But why are these character traits stronger in some people than others? As is so often the case, a person’s childhood determines a lot. “When parents have good self-discipline, they are more likely to pass this trait onto their children,” the expert says.

However, our self-control is not only determined by our predisposition, upbringing or socialisation. In the study, the researcher and her team were able to prove for the first time that when and where we grow up, i.e. the political and economic system, also plays a role and can influence individual personality: “It has been shown that people in the federal states of the former East Germany – insofar as they were born before the fall of the Berlin Wall – have more self-control than their West German neighbours. Self-control is particularly strong in places where many Stasi informers lived, i.e. where repression and surveillance were especially intense.” The results are more closely aligned among those born after reunification.

“We understand self-control as the ability to resist a direct reward in favour of a benefit which lies further in the future.”

Hannah Schildberg-Hörisch – behavioural economist



“There is a strong positive correlation between greater self-control and higher life satisfaction.”

Hannah Schildberg-Hörisch – behavioural economist

However, the research also shows that we are not entirely at the mercy of our genes, our parents and our geographical origin when it comes to self-control. We can still actively learn self-control as children and young people – programmes exist in which young people can practice self-restraint, learn how to control their impulses and consider the consequences of their actions, explains Hannah Schildberg-Hörisch. The following generally also applies: On average, the older we get, the more self-control we have.

economist surmises that this may apply not only to self-control, but also to other character traits.

In November, Professor Dr Hannah Schildberg-Hörisch was awarded the 2022 Reinhard Heynen & Emmi Heynen Prize by the *Gesellschaft von Freunden und Förderern der Heinrich-Heine-Universität Düsseldorf e.V.* (Society of Friends and Sponsors of Heinrich Heine University Düsseldorf) for her research.

## Greater self-control pays off

And there's good news for adults who wish they had more self-control. If someone has a self-control deficit, but is aware of it, they have already almost entirely cancelled out this disadvantage: “We see that awareness of our own self-control problems can often help minimise negative consequences. When you know that you have a self-control deficit, you can take anticipatory measures. For example, if you don't buy any sweets at the supermarket, you won't be able to succumb to temptation later on. Another example is that many people meet friends to exercise, knowing full well that they lack the motivation to do so alone.”

Overall, it can be said that greater self-control pays off, as does a realistic self-assessment. The behavioural



Professor Dr Hannah Schildberg-Hörisch

# Expedition

HHU biologists





# into the ice

on board the Polarstern







Dr Ovidiu Popa and Ellen Oldenburg  
on an ice floe near the Polarstern.

PHOTOS: OVIDIU POPA / ELLEN OLDENBURG



While Düsseldorf was melting in the summer heat and desperate for the weather to cool down, Dr Ovidiu Popa and Ellen Oldenburg from the Institute of Quantitative and Theoretical Biology (QTB) were setting out for the cold of the far north. The destination of their seven-week research trip: the Arctic. Their question: How do Arctic microbial ecosystems change over the annual cycle and how is climate change impacting the life of the microorganisms? The biologists have brought extensive samples and data back to Düsseldorf – as well as unforgettable impressions.

BY ARNE CLAUSSEN

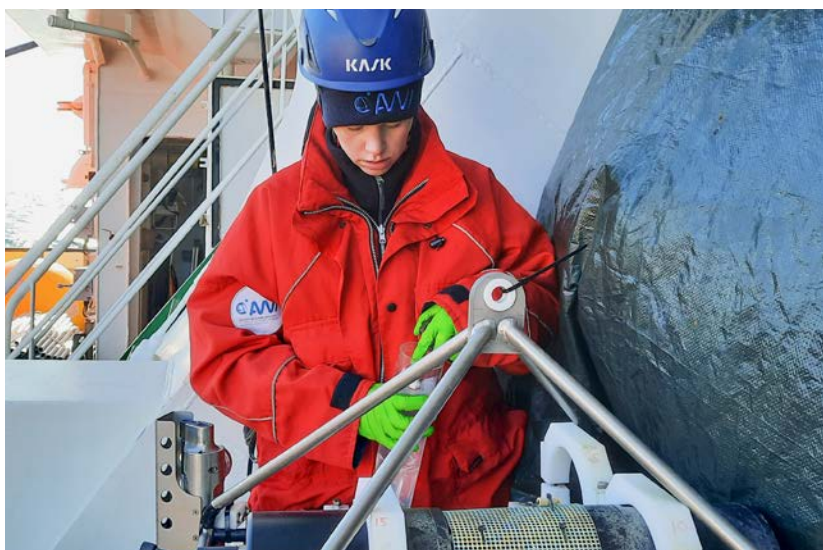
**T**rying on snowsuits and cold weather survival gear in the middle of summer? Ovidiu Popa could not even have dreamed of doing so just one week before the Polarstern set sail from Bremerhaven. The biologist from Düsseldorf ended up joining the long-planned research trip at very short notice as a colleague was unable to go. Consequently, on 28 June, he found himself standing next to his colleague from Düsseldorf, Ellen Oldenburg, at the railing of the German research icebreaker Polarstern with an overflowing kitbag. Ellen Oldenburg (PhD student at HHU) had already been preparing for the trip for a long time, which was part of a project funded by the German Research Foundation (DFG).

In Bremerhaven, the Polarstern was loaded with the expedition material needed by the various research teams. Popa: “The ship was virtually empty. Everything we and our colleagues needed was hoisted on board in containers and then stowed in the hold and laboratories.”

## Heading for the north

On 28 June, they finally set off for the Arctic, heading past Norway and Spitzbergen and reaching the expedition area above 80° north at the beginning of July. The ship cruised around this area until August, before returning to its home port via Greenland and Iceland. “It was an overwhelming feeling: On arriving in the Arctic, we were outside on deck in temperatures of four to five degrees Celsius, dressed warmly and covered in sun cream – the sun is really intense there – when we saw the pack ice for the first time,” says Ellen Oldenburg excitedly.

From that point on, there was no longer a regular daily routine for the researchers on board – alongside Oldenburg and Popa there were around 50 other researchers from various disciplines on the expedition – as the sun would not set for the next seven weeks: In the Arctic Circle, the sun shines 24 hours a day during the polar summer. Work was carried out when appropriate for a project: when the ship reached a certain position, when on-board procedures necessitated it or when fresh samples were brought on board. Oldenburg: “The CTD rosette water sampler, which was used to take samples at different depths, was usually lowered into the water between two and three o’clock in the morning when there wasn’t much other activity on the ship.”



Ellen Oldenburg on the deck of the Polarstern.



The research team taking water samples at an ice borehole.



By contrast, the 50-person crew of the Polarstern had a regular routine and worked in shifts to ensure that the ship was fully operational at all times, e.g. that the crane was manned or that researchers could be taken out onto the ice.

“Over 50 days at sea, on a full ship, always with the same people: Don’t you get cabin fever?” Popa and

Oldenburg both immediately shake their heads. “No – there was always something new to discover and lots of interesting people from a wide variety of backgrounds who you could learn a great deal from. We had a full research programme, but also lent colleagues a hand where needed.” And the food was excellent, as both report. “It was just the case that the fresh ingredients were all gone after a week.” There is an old sailor’s saying: Good food keeps the crew happy.

## Not much space for personal items

As for life on board: The researchers were accommodated in small two-person cabins with a wet room, bunk beds, lockers for their luggage/personal equipment and a small table. Oldenburg: “There wasn’t much space for personal items. We somehow had to find room for all our winter gear – above all the voluminous FXR suits to protect us from the cold and extend our survival time in the icy water.” Popa adds: “That’s when I found out it wasn’t so good to have such a full kitbag...”

The researchers slept when there was no work to do. Popa: “You quickly lose all sense of night and day in the Arctic when it’s light all the time. It’s not easy to go to sleep, but you are tired because of all the work there is to do.”



No-one went hungry. Whatever time it was, the researchers – who often worked at night – could always make themselves something to eat.

“It took me some time to get used to the Polarstern breaking through the ice,” says Ellen Oldenburg, “because it made the ship rock and I was initially worried that I would fall out of bed.” An icebreaker works by driving its specially shaped bow onto the ice and breaking it under its weight. The ice floe can sometimes break at the side, causing the ship to heel over.

Before researchers could go out onto the ice to take measurements or samples, the ice scientists needed to ensure that the floes were safe and mark the areas where the researchers could go to take their measurements. And then there was another really important job: polar bear watch. Popa: “On the one hand, it’s important to keep an eye on the ice floe where colleagues are to ensure they don’t suddenly find themselves drifting away. But polar bears are most important thing to watch out for!”

## Watch out for polar bears

And they certainly were around, as Ellen Oldenburg reports: “We saw four polar bears in total and once we saw a mother with her cub. One swam alongside the ship for quite a while. It’s impressive to see how gracefully these huge creatures move through the water.” And polar bears are curious – they like to check out what the people

“It took me some time to get used to the Polarstern breaking through the ice because it made the ship rock.”

Ellen Oldenburg – biologist

on the ice are doing. “One bear came very close to a group on the ice as they were about to head back to the ship,” remembers Ovidiu Popa. It is not possible to know in advance whether a direct encounter with a bear will actually be dangerous or not. “But no risks are taken! There are always armed guards out on the ice who can fire warning shots – with live ammunition in an emergency – to drive the bears away.”

Popa and Oldenburg were on the Polarstern to examine the Arctic microbial ecosystem over the annual cycle by means of water and ice samples. These samples were taken using so-called “remote access sampler” (RAS) buoys, which are sunk into the ocean to take water samples at regular intervals over a period of one year and record the physical parameters of the water. They



A spectacular and unusual sight: a fogbow. It was often misty during the voyage, meaning that it was not possible to conduct the flight operations with the ship’s helicopter as planned.



“The ecosystems of the Arctic are extremely sensitive. On the basis of the distribution of organisms found and the physical parameters measured in parallel, we want to develop models to enable us to assess the consequences of climate change more accurately.”

Professor Oliver Ebenhöh – Head of the Institute of Quantitative and Theoretical Biology

comprise a battery of bottles, each of which is opened after a defined time interval to collect water. The bottle is then closed again and the microorganisms it contains are stabilised using heavy metal salts.

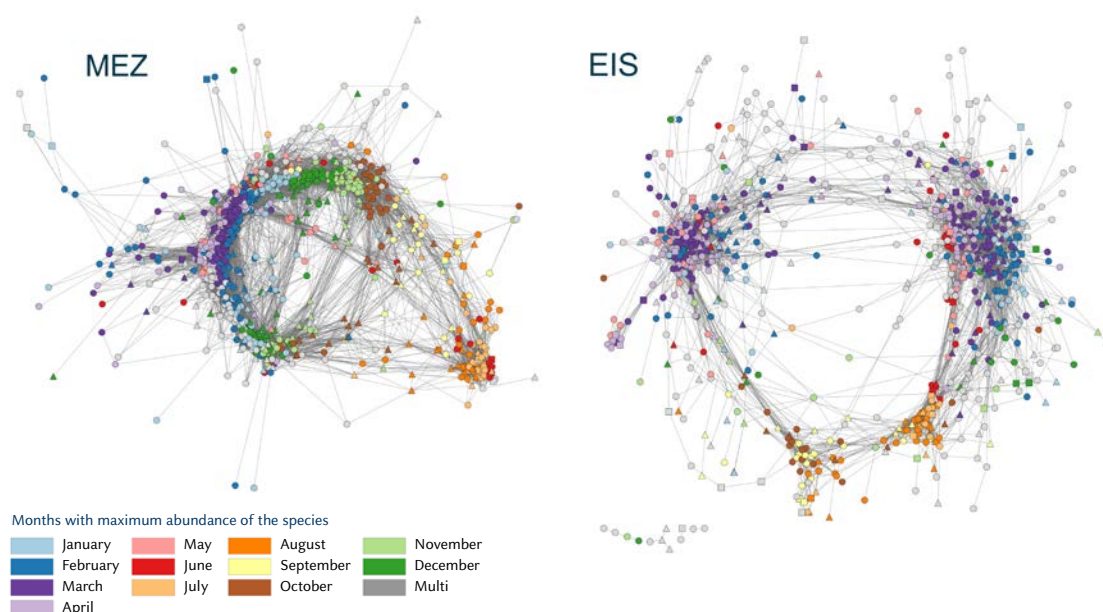
One year later, a research ship returns to the location where the RAS was submerged and lifts it back on board. “Ovidiu and I opened the individual bottles, retrieved the bags containing the samples inside and

stored them at 0°C on board. Back in the laboratory, the water they contain is then passed through several filters to collect microorganisms of various sizes,” explains Oldenburg. The researchers froze the majority of other filters containing organisms from CTD water samples or samples taken from under the ice and brought them back to Germany in a frozen state. At HHU and other research facilities, genetic analysis will now be carried out to identify the organisms that lived in the water samples.

## Genetic traces of microbes

“Usually, many thousands of microorganisms have left genetic traces in a sample,” says Popa, “and their number and composition vary depending on the time of year the sample was taken.” Ellen Oldenburg adds: “In the spring, as soon as the sun comes out and photosynthesis becomes possible, algae flourish. These “summer organisms” are then eaten by other organisms, which in turn become prey and food for further creatures. So the samples also reflect a developing food chain over the course of the year.”

The Arctic food chain stretches from the microorganisms – which form the essential foundations – all the way to large animals. Many birds, seals, walrus



Two marine prokaryotic networks. They show the presence of specific microorganisms at the same time. Each point in the network represents an isolated bacterium from an ocean sample taken at a depth of 50 metres. The points are linked where the bacteria were observed at the same time, over two years, in the same sample. The colour of the points represents the month in which the bacteria were present. There is an obvious difference between summer and winter months. It is clear to see that species in the so-called “marginal ice zone” (MEZ) have a more distinct annual cycle than organisms in areas with very thick ice coverage (EIS).





PHOTO CHRISTIAN R. ROHLFEDER









An RAS buoy, which was submerged a year ago, is lifted back on board by a crane.

and even whales crossed the path of the Polarstern during the voyage. “The birds that flew alongside the ship for long distances – far away from any land – were particularly fascinating,” reports Oldenburg.

## Life in and under the ice

Life can be found in the ice – through which small water channels flow – and in particular under the ice floes, where there are various zones distinguished by the salt content of the water. Directly underneath the ice is a layer of fresh water, which has formed from meltwater. As you go deeper, more and more seawater becomes mixed with this fresh water, increasing the salinity level, which in turn results in changes in the kinds of lifeforms found there. Popa: “When the sea is calm, this layering can be as much as two metres deep below the ice, but the layers do of course get churned up by strong currents.”

The researchers want to compare their measurements from summer 2022 with data from previous expeditions to estimate and model how climate change is impacting the Arctic. The majority of the comparison data was collected during the “MOSAiC” drift expedition undertaken by the Polarstern in 2019 and 2020. Then there are also the RAS data from buoys placed in previous years; all in all, reference material stretching back to 2016 is available.

So-called marine prokaryotic networks are one of the final results: They show the presence of specific microorganisms at the same time. Each data point in the two-dimensional diagrams represents an isolated bacterium from an ocean sample. If you compare the networks with each other you can for example see that species in the so-called “marginal ice zone” have a more distinct annual cycle than organisms in areas with very thick ice coverage.



Water samples from an RAS buoy being prepared for analysis.



A “LOKI” (Lightframe Onsite Keyspecies Investigation) being lowered into the water. This measuring device photographs microorganisms (zooplankton) underwater. 18 images per second are recorded as it is pulled out of the water. Additional sensors attached to the device measure the oxygen and salinity levels, temperature and pressure in parallel.

Other information including the season, location and physical parameters such as temperature and salinity level also flow into the models, which are the area of expertise of QTB in Düsseldorf. Head of Institute Professor Dr Oliver Ebenhöf: “The ecosystems of the Arctic are extremely sensitive. On the basis of the distribution of organisms found and the physical parameters measured

in parallel, we want to develop models to enable us to assess the consequences of climate change more accurately. Water temperature is of course a critical factor, but so is the salinity level of the ocean, which falls when the sea ice or large glaciers melt – as is the case in Greenland.”

## Tracking climate change

In addition to the biologists from Düsseldorf, representatives of many other disciplines were also on board. For example, seismographs were sunk at the northernmost point to enable geologists to examine “black smokers” – hydrothermal vents – on the deep ocean floor. These devices will also be left for a year and collected during a later expedition. Ellen Oldenburg adds: “The glaciologists, who wanted to examine the glaciers in Greenland in particular, were left disappointed. Unfortunately, the frequent mist prevented them from taking the helicopter flights they needed to access the glaciers, meaning that the research questions of these colleagues remained in part unanswered.”

“The ice, the fjords in Greenland – those were moments you only get to experience once in life. Then there was the absolutely clear air, the stillness – when the ship wasn’t on the move – and the feeling of timelessness that came from there being no day/night rhythm.”

Dr Ovidiu Popa – biologist



“And what are your lasting memories of the trip?” Oldenburg answers: “Definitely that moment when we first saw the edge of the ice – because it really was an edge: We travelled across a virtually ice-free, absolutely smooth sea and all of a sudden there was an almost completely unbroken sheet of ice in front of the bow.” Dr Popa adds: “The ice, the fjords in Greenland – those were moments you only get to experience once in life. Then there was the absolutely clear air, the stillness – when the ship wasn’t on the move – and the feeling of timelessness that came from there being no day/night rhythm.” Both HHU researchers are convinced: “Even though we primarily conduct theoretical work and work with models at the Institute, the experience we gained was extremely important. You only really get to understand how our working material – namely the data we analyse – is obtained, what potential for error exists and how much effort it actually takes to gather the data by going out and doing the work in practice.”

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### The Polarstern

The Alfred Wegener Institute (AWI) – Helmholtz Centre for Polar and Marine Research – in Bremerhaven operates the German research vessel. The 118-metre-long icebreaker with a displacement of over 17,000 gross tons has been in service since 1982, carrying out marine research across the world’s oceans. The majority of expeditions are to the polar regions and the vessel supplies the German Neumayer-Station III in the Antarctic. Captain of the summer mission was Moritz Langhinrichs, who is the third and youngest person to command the ship. He has been a member of the permanent crew since 2013 and held all leading deck positions – Second Officer, responsible for safety and navigation, First Officer, responsible for cargo, and Chief Mate – before assuming command of the ship in November 2019. One of the most spectacular voyages undertaken by the vessel was the MOSAiC expedition (“Multidisciplinary drifting Observatory for the Study of Arctic Climate”), a year-long, international expedition to the central Arctic from September 2019 to October 2020. The ship was frozen into the ice and drifted around 3,400 km through the central polar region with the current. Several different crews and research teams spent time on the ship during this period. Extensive reference data for the research project being conducted by the HHU working group were also gathered during this expedition.



PHOTO MARIO HOPPMANN

A hand holding a wand with a glowing yellow light trail and a black chain on the right side of the page.

Magical criminal law

# Is Harry Potter a criminal?

BY CAROLIN GRAPE

Virtually everyone is familiar with the Harry Potter books written by British author J. K. Rowling. She has created an extensive magical universe in the stories about the main character and his friends Ron Weasley and Hermione Granger and their battle against Lord Voldemort. But who would have thought that many legal details and issues can also be found in the seven fantasy novels? There is a Department of Magical Law Enforcement and a number of references to the structure and functionality of magical law, including the depiction of two criminal trials in the Wizengamot, the highest court in the wizarding community at the Ministry of Magic. This has aroused the interest of legal experts.



**A**nne Schneider – Professor of German, European and International Criminal Law – is one of them. And as she believes using Harry Potter is a good way to teach and learn about law, she offered a seminar on “Criminal Law and Harry Potter” in the last winter semester. Together with her students, she examined the magical (criminal) law outlined in the books and posed the question of whether and how Harry Potter’s actions can be reconciled with it. Or, as Anne Schneider put it in her summary presentation at a Citizens’ University event: “Is Harry a criminal? Criminal and criminal procedural law in the world of Harry Potter.”

## The rules of the Ministry of Magic

According to the legal expert, to answer this question we first need to clarify which laws this evaluation relates to: “As Harry belongs to the magical world and therefore falls under the responsibility of the Ministry of Magic, magical criminal law applies. This relates – compared with our Muggle world – most closely to British criminal law. Its scope, i.e. who it applies to, is however not clear from the books.” Much remains ambiguous, for example when young wizards and witches become responsible for their actions under law. It can only be derived that all witches and wizards who are aware of their magic powers are subject to the rules set out by the Ministry of Magic. And that there are several acts which explicitly violate magical law and are strictly forbidden.

These include the use of the three “Unforgivable Curses” – “Imperio”, “Crucio” and “Avada Kedavra”. The Imperius curse enables you to control a person’s actions. The Cruciatius curse causes a person excruciating pain. “Avada Kedavra” is the killing curse. Uttering this spell with a real desire to kill results in the victim (whether person or animal) dying immediately with no visible sign of injury. (The only person who has ever survived the killing curse is Harry Potter, who was protected by his mother’s love when Lord Voldemort tried to kill him).

These three curses are among the most serious crimes in the magical world. This is plausible for the legal expert: “Our criminal law also recognises various legally protected rights, including the right to life, freedom and physical integrity. And exactly these three things are violated by the three curses – the victims are subjected to external control, torture and death. The consequence in the magical world: Anyone who uses one of the three Unforgivable Curses is punished with a life sentence in the wizarding prison of Azkaban.”

“Our criminal law also recognises various legally protected rights, including the right to life, freedom and physical integrity.”

Professor Anne Schneider – legal expert

# “It looks bad for the magical legal system and its enforcement.”

Professor Anne Schneider – legal expert

Harry learns the Unforgivable Curses in book IV (Harry Potter and the Goblet of Fire) and is aware of the punishment. Nevertheless, he uses them in five cases: He uses the Cruciatus curse against Bellatrix Lestrange (The Order of the Phoenix), against Severus Snape (Harry Potter and the Half-Blood Prince) and against Amycus Carrow in the battle for Hogwarts when he spits on and insults Professor McGonagall (Harry Potter and the Deathly Hallows). He uses the Imperius curse twice against the goblin Bogrod in Gringotts bank and against the Death Eater Travers (Harry Potter and the Deathly Hallows).

## Forbidden: Use of the Unforgivable Curses

As a result, Harry should have long been incarcerated in Azkaban. So why hasn't he been punished? Are the Unforgivable Curses not really unforgivable after all? Whether mitigating circumstances can be taken into account depends on the conditions under which his actions occur, according to the criminal law expert: “Not all of these instances fall under magical criminal law.” From the books, it can be deduced that “the Unforgivable Curses are only really “unforgivable” when they are used against people.” So this excludes the use of the Imperius curse against the goblin Bogrod. “The curse must also be completed and have an effect in order to be relevant under criminal law – as such, the interrupted Cruciatus curse against Snape only counts to a limited extent,” says the expert.

That leaves the legal clarification of the question of whether Harry acted in self-defence. Anne Schneider concludes: “Harry used the Unforgivable Curses even though spells which are not punishable under law would also have had the same effect. So he did not act in self-defence nor can he be seen as not responsible for his actions in any way, meaning that he is potentially punishable under law.”

And what about the “right to resist” – could that ultimately legitimise Harry's behaviour? The internationally

recognised legal principle applies when the violence – assuming it is proportionate and supported by a majority – is exercised against a repressive system that violates human rights. The magical world could indeed be defined as such a system, according to Professor Schneider: “It looks bad for the magical legal system and its enforcement.” A closer examination, in particular of court proceedings and the detention conditions in Azkaban, reveals that there are no democratic elections, no separation of powers – the boundaries between the executive and the legislative are blurred – no defence, no hearing of evidence. There are human rights violations, what is legal and what is not depends on who is running the system, i.e. the Ministers for Magic Cornelius Fudge, Rufus Scrimgeour and Pius Thicknesse. The latter acts (under the influence of the Imperius curse) as Voldemort's puppet. In short, as the expert says: “There are massive deficits in the legal system in the magical world!”

However, bringing this system down is not always Harry's intention when using the Unforgivable Curses. And his use of the Cruciatus curse cannot be justified either by British magical criminal law or by the general principle of the right to resist – the use of violence is disproportionate.

The criminal law expert concludes: All in all, Harry Potter should have faced criminal charges. The answer to the question “is Harry Potter a criminal?” is therefore: “Yes!” Even though we sympathise with him as the main character and hero of the books in the battle against the Dark Lord, he is – just like the magical legal system – not without faults.

Using the right to resist as justification also presents a further problem: If Harry can claim to use the Imperius curse against Travers “for the common good”, who can stop Voldemort claiming the same right for his use of the Imperius curse to gain control of the Ministry? The failure of the Ministry to establish efficient legal structures makes it an easy target for anyone wishing to overthrow the existing legal order. This is another lesson we can draw from the Harry Potter series.





Professor Dr Karsten Schrör has been researching acetylsalicylic acid for many years

# A good all-rounder

BY VICTORIA MEINSCHÄFER

On 1 February 1899, the trade name “Aspirin” was filed in Germany, launching the new medicine, originally as a powder and later in tablet form, on the market. More than 120 years later, it is still available and well known worldwide. And still the subject of research: Aspirin. Emeritus Professor Dr Karsten Schrör has recently published a new edition of his comprehensive work on acetylsalicylic acid, the medication that can do so much.

“It is the best-known medication worldwide and has been the subject of research for many decades,” says pharmacologist Professor Schrör. “Yet, new applications are still being found and new clinical trials involving this medication are still being conducted.” When acetylsalicylic acid was launched under the trade name of Aspirin in 1899, it was marketed as a treatment for pain, fever and inflammation. “The unlimited availability of purely synthetic salicylic acid due to the significant advances in chemistry in the late 19<sup>th</sup> century and the positive results achieved with salicylic acid in treating painful inflammatory conditions such as rheumatism in everyday practice fuelled interest in chemical modifications to improve the effectiveness and tolerability of the medication,” says Schrör. In August 1897, Felix Hoffmann from Bayer succeeded in manufacturing stable acetylsalicylic acid from salicylic acid for the first time. At least as effective and with far fewer side effects, the product soon became an indispensable component of household medicine cupboards for treating fever, pain and flu-like symptoms.

At the beginning of the 1970s, Aspirin was well established and highly rated as a medication for the treatment of pain, inflammation and “flu-like” conditions.

In 1971, the British pharmacologist John R. Vane discovered that the different clinical effects of Aspirin may be explained by one common mode of action: Inhibition of the biosynthesis of prostaglandins. The formation of these products, which are produced naturally throughout the body and are key regulators of pain, fever and inflammatory processes, is suppressed by Aspirin. Together with the Swedes Sune Bergström and Bengt Samuelsson, Vane was awarded the Nobel Prize for Medicine in 1982 for his fundamental work on prostaglandins. Pharmacologically, the discovery of this mode of action initiated the development of new medications utilising the common mode of action of prostaglandin synthesis inhibition for the targeted treatment of inflammation and pain, of which Ibuprofen and Diclofenac are the best known today. The discovery of thromboxane as a further member of the prostaglandin “family” and thrombocytes (platelets) as a key site of synthesis opened up a new field of clinical application for Aspirin: inhibition of thromboxane synthesis and thromboxane-mediated thrombocyte functions, including inhibition of blood clotting. “This meant we could now use acetylsalicylic acid as a

A Persian poster for Bayer medication advertising Aspirin, Kresival, Resochin and the restorative remedy “Bayer Tonikum”.



IMAGES: BAYER AG – BAYER ARCHIVES, LEVERKUSEN



Aspirin packaging from various years (1899, 1934, 1949, 1958).

“blood thinner” and prophylaxis against heart attacks and ischaemic strokes – a completely new application area that also required different dosages.” An Aspirin dose of 0.5 – 1 g at a time is required to treat pain, but significantly less is needed to prevent the formation of blood clots (thrombi) as a prophylaxis against ischaemic heart attacks. “Here, around 100 milligrams per day is sufficient, but the medication must be taken regularly and over the long term,” says Schrör. “The problem is that this might also cause an increased risk of bleeding, in particular in the elderly. Consequently, taking Aspirin regularly in the long term as a prophylaxis against heart attacks and ischaemic strokes is currently recommended for the prevention of recurrent vascular occlusions, but not for primary prevention with a significantly lower risk of thrombotic vascular occlusions but an equally high risk of bleeding.”

Every year, billions of Aspirin tablets in various galenic forms leave the Bayer factory in Germany. While the majority of these are used to treat pain and headaches, low-dose Aspirin for thrombosis prophylaxis also accounts for a large number. And demand is likely to increase in the future as further application areas for Aspirin are found, which is expected due to the unique mode of action on one of the body’s most relevant defence systems – prostaglandins.

First and foremost in this context, prophylaxis of colorectal carcinomas should be mentioned. Although an initial – positive – clinical trial was already published in 1988, which was incidentally the same year as the first two major clinical prospective randomised trials of Aspirin as a primary and secondary preventive for heart attacks, the data on cancer prevention are ambiguous. “The study results and their evaluation are not consistent,” says Schrör. “Until 2016, the United States Preventive Services Task

Force (USPSTF) recommended taking Aspirin as a prophylaxis for colorectal carcinomas, although only for a selected group of people at a level of evidence “B”. However, this has since been retracted. In addition, meta-analyses of clinical trials indicated that clinically relevant effects required regular intake of Aspirin over about ten years. This long trial duration makes it difficult to evaluate the results.” By contrast, however, use of Aspirin as a prophylaxis against pre-eclampsia – one of the most feared and dangerous conditions for an expectant mother and her child – has produced positive results. Low-dose Aspirin is increasingly being added to international guidelines on the prevention of pre-eclampsia in high-risk pregnancies. “The definition of appropriate risk factors for identification of risk groups will help optimise the risk-benefit ratio,” says the pharmacologist.

## Effective against the coronavirus?

There is also the question of whether the unique combination of antiplatelet, anti-inflammatory and antiviral effects of Aspirin can also be used to treat the currently all-dominating COVID-19 pandemic. “Opinion is divided on this,” says Professor Schrör, “even though Aspirin in doses of 2 – 3 g per day for the short-term treatment of flu-like infections has been practised in Germany for many decades and all possible side effects of the substance are presumably known.” Aspirin as a co-medication for the standard treatment of COVID-19 would be of interest above all with regard to preventing/treating coagulation disorders and an increased thrombotic tendency, e.g. pulmonary embolisms. More than 300 studies relating to Aspirin and COVID-19 have been published worldwide to date according to the PubMed registry but the results are not consistent. This is probably due to the widely varying patient populations and study protocols including dose selection and co-treatments, as well as the severity of the disease. A large prospective clinical trial involving 40,000 people – RECOVERY II – with 15 treatment options including low-dose Aspirin (150 mg/day) was launched six months ago. However, the trial will not be completed until 2032.

Will that be the end of Aspirin research? “Not by a long shot and also not because the clinical view on drug selection is constantly changing – improving – in light of new findings from basic research,” says Schrör. Following three German editions and one Chinese edition, the third English edition of his seminal work on the topic has just been published.

→ **Karsten Schrör: Acetylsalicylic Acid, De Gruyter/düsseldorf university press, Berlin 2022, 630 pages**



Erkältung · Fieber  
Grippe.. da hilft  
**ASPIRIN**



*Wanda Gágner pinxit.*





## *Haus der Universität*

The *Haus der Universität* is a place of dialogue and exchange between science and society – in the heart of Düsseldorf. After extensive renovations, the van Meeteren Foundation kindly allowed Heinrich Heine University to use the building at Schadowplatz 14 as an event centre and, since 2013, as a venue for scientific conferences and for presenting university research and teaching

as well as academic culture. The *Haus der Universität* takes on a central function for Heinrich Heine University at the interface between science and public. It is part of the higher-level public engagement strategy being pursued by the university, which actively furthers the exchange between the city of Düsseldorf, its citizens as well as society as a whole.

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