University of Basel

UNI NOVA

University of Basel Research Magazine — N°139 / May 2022

Fear.

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bis am
04.06.2022
tierisch!
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What we are afraid of.

Some people encounter it only sporadically, while others find it accompanies them everywhere they go. For many people, it took on a new dimension during the pandemic of the last two years. That companion is fear. Fear of infection, fear for our families, for our own financial security, for the future. So, it was a natural choice to devote this issue to this emotion.

The articles were already planned when Russia invaded Ukraine in late February, toppling other worries with the sudden threat of a new, major war in Europe, one in which possible deployment of nuclear weapons looms large. If you live within a 50-kilometer radius of a nuclear power plant, maybe you, too, recently checked the supply of iodine tablets provided to you by the local authorities for use in the event of an emergency. Or perhaps you purchased some of your own.

The articles centered on the main topic of this issue were not written with the Ukraine war in mind, but many have gained renewed urgency in its wake. Together with Walter Leimgruber, who not only studies migration, but also serves as President of Switzerland's Federal Commission on Migration, we shed light on the conditions faced by children in cantonal immigrant detention centers. We present research on fear as a political tool, and we speak with psychologist Karina Wahl about our fears concerning a future flanked by climate crisis, a pandemic and war and what we can do to mitigate our persistent anxieties about what is to come. And while we are on the topic of future concerns – if you're worried about inflation, make sure to read Sarah Lein's essay on the subject.

Last but not least, during the editorial process, our team members discussed some of their own fears. The UNI NOVA team alone is affected by three phobias: a fear of snakes, of heights and of vomiting. So, for your benefit – and ours – the dossier contains tips to help those affected by such anxieties to cope better with their conditions. We hope that this proves to be an enjoyable issue and that you find a helpful tip or two among its pages.

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Angelika Jacobs

Noëmi Kern

IMPRESSUM

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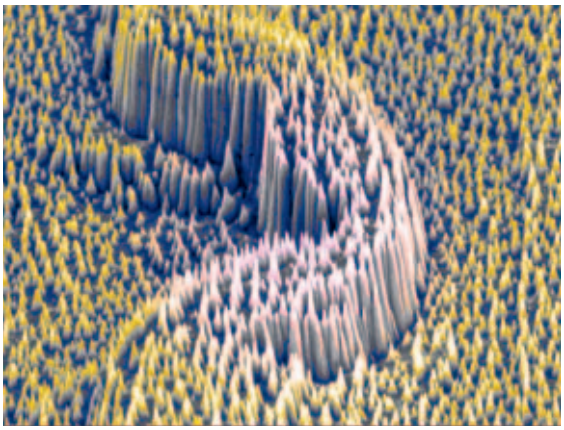
Nanostructures

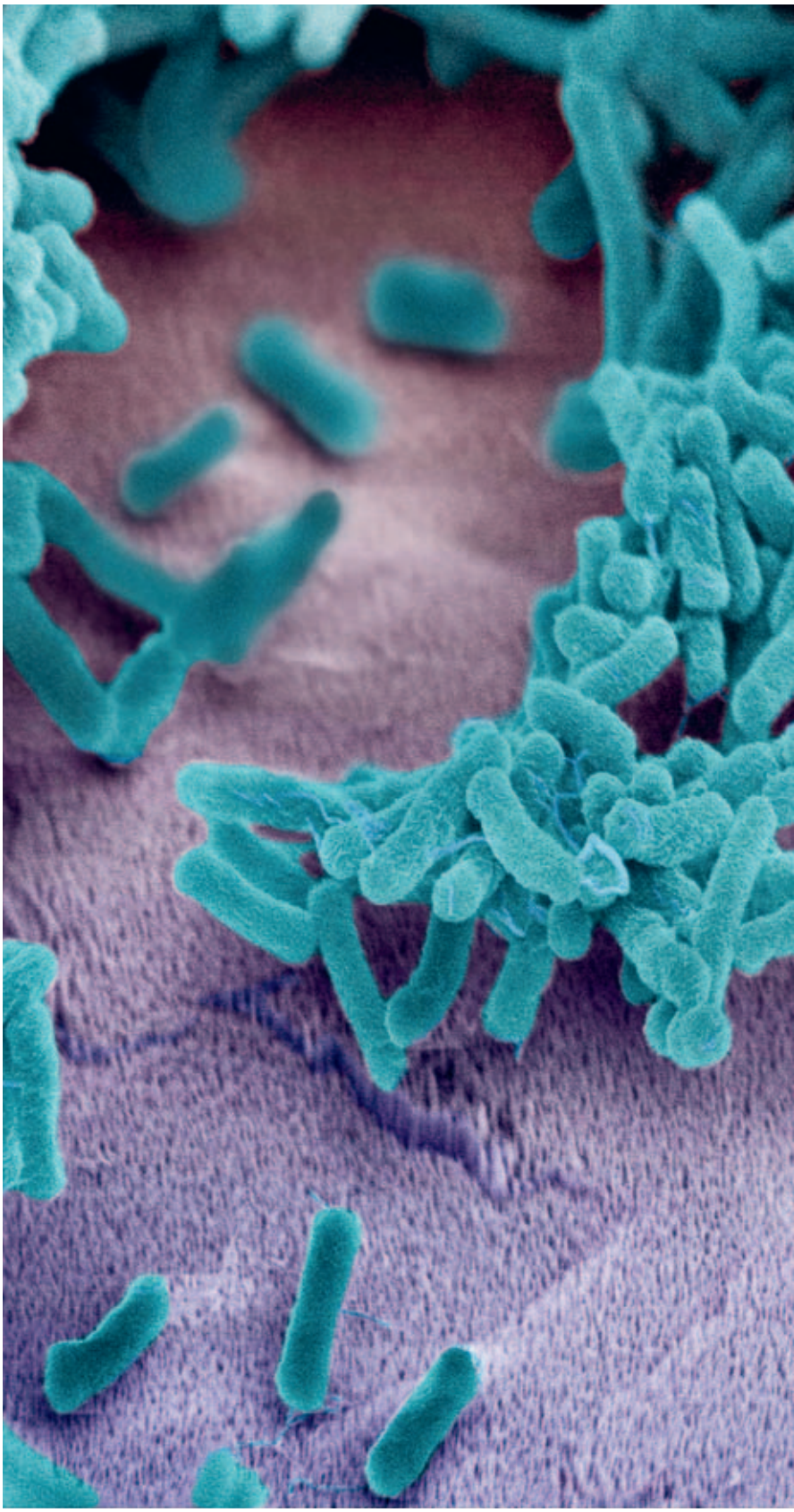
Dental implants like a cicada's wings.

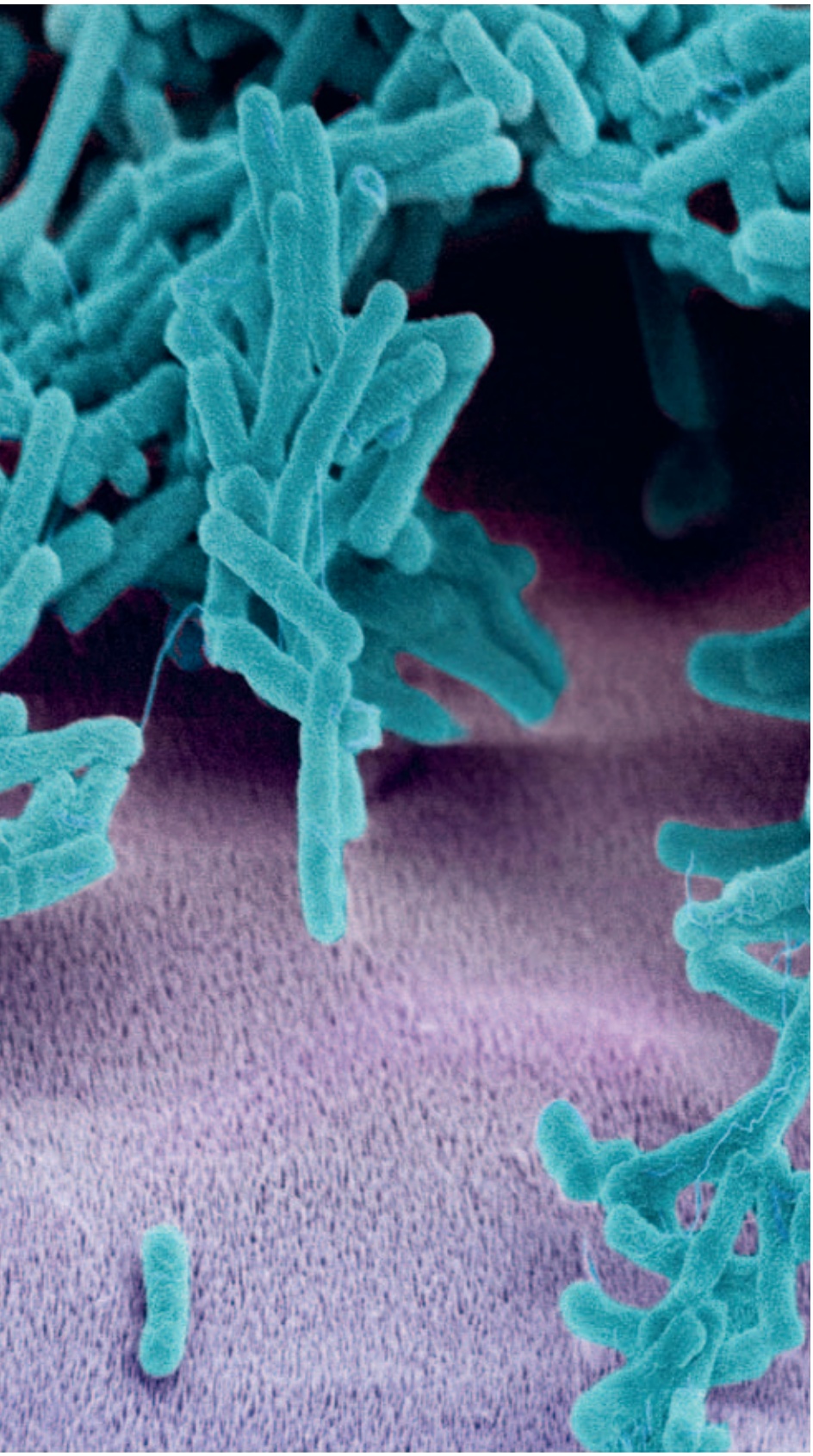


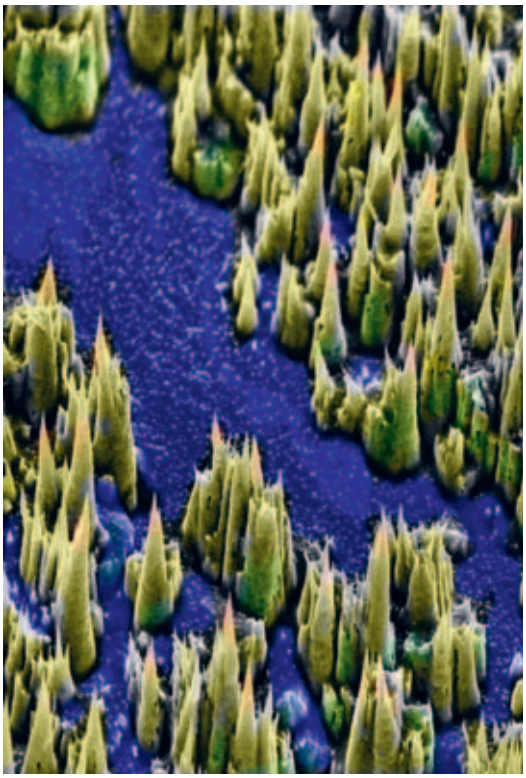
The oral cavity is populated by hundreds of different species of bacteria, some of which can attack the surface of dental implants, triggering inflammation and potentially leading to the loss of the implant. While antibiotics can help, more and more bacteria are developing resistance to these medications. One possible solution is being pursued by a team of researchers including Laurent Marot and Fabien Sanchez. The underlying idea is copied from nature — where it enables, for example, the wings of cicadas to remain naturally antibacterial. The surface of the wings is covered with a forest of nanoscale pillars that prevent bacteria from taking hold.

In the future, the same trick could also be used to keep dental implants free of germs. Working at the Department of Physics and the Swiss Nanoscience Institute (SNI) of the University of Basel, the team has developed a method for producing similar nanostructures on titanium surfaces. As part of a Nano Argovia project with the Department of Oral Surgery, University Center for Dental Medicine Basel (UZB), the University of Applied Sciences and Arts Northwestern Switzerland (FHNW) and the dental implant manufacturer Straumann AG, the team is testing different varieties of these titanium surfaces.

Under the scanning electron microscopes from the Nano Imaging Lab (see p. 34) these structures were revealed, which are reminiscent of a fakir's bed of nails. Although this "bed of nails" kills bacteria, the implant should still bind to the gums. With this in mind, the aim is to create a surface that is inhospitable to bacteria but inviting to tissue cells. Initial results are promising, but the team will need to further optimize the surface before they can test it on a prototype implant. ■







The images in the middle and below show spikes on titanium surfaces with Escherichia coli bacteria biofilms. The different dimensions of the spikes can be seen in the images above and to the left; the spikes follow the same original surface topography as seen in the image on the left. Images were produced by Daniel Mathys and Susanne Erpel, spike structures by Fabien Sanchez and Laurent Marot and bacteria culturing by Monika Astašov-Frauenhoffer.

“We always avoid making sacrifices any way we can.”

During the pandemic, we reigned in our lives for the common good. But we still insist on our dream beach vacations, although they are bad for the environment. Georg von Schnurbein explains the difference – why we do good and why a degree of egotism is required.

Interview: Noëmi Kern Photo: Andreas Zimmermann

UNI NOVA: Georg von Schnurbein, when is the last time you did someone a favor?

GEORG VON SCHNURBEIN: Probably this week. We are always doing favors for people. Our society wouldn’t function if we were to do only those tasks that were required of us.

UNI NOVA: Society would collapse?

VON SCHNURBEIN: Yes. That is a critical part of what makes us human: the fact that we are social beings capable of thinking beyond our nuclear family, our tribe. That is what gives us the ability to build complex structures such as societies or states in the first place. Ultimately, it is a trademark of civilization that I’m able to recognize the suffering of others and devise my own plan to ameliorate that suffering, although I would glean no immediate, personal benefit from my actions.

UNI NOVA: So, what do we gain from doing favors for others?

VON SCHNURBEIN: A favor is not something you see returns on right away. I don’t expect any immediate compensation, but I do expect that I will receive help in return should I need it at some point in the future. On a societal level, the term we use is generalized reciprocity. That means, for example, maybe I volunteer to spend time with older people at a nursing home, and in return, there are people whose job it is to clean the hiking trails I visit on the weekend.

UNI NOVA: So, I do expect a kind of remuneration for my actions.

VON SCHNURBEIN: These principles of reciprocity operate at a higher level. But if I have the feeling that I’m the only one helping out, I might begin to ask myself whether I really need to bother at all. Clubs work based on these reciprocal agreements: One member works as a volunteer coach for the youth group, so another member mans the hot dog stand at the annual party. Today, we often try to buy our way out of those agreements. People are willing to pay for sports classes, say at a gym, so they no longer have to spend time fulfilling the responsibilities associated with a club.

UNI NOVA: Societal values such as money, success and career do not go well with volunteerism. Time and energy are limited resources …

VON SCHNURBEIN: But the research shows that the people who are most likely to volunteer are the ones who have the least time on their hands. It’s not just about time; it’s a question of attitude, too. Volunteering is both a luxury and a shared resource. It is a shared resource because nobody can prevent you from profiting from the volunteer work of others. And it is a luxury because a person needs to have a certain level of personal security and

“Today, we talk about mindfulness, self-care and other things, but ultimately those practices are just the positive face of egotism.”

Georg von Schnurbein

stability to engage in it. If a person is out of work, why would they work for free? Voluntary labor is also influenced by the environment.

UNI NOVA: How so?

VON SCHNURBEIN: More voluntary work is done in rural settings than in the city because people there are subject to more social pressure. I have to do my part, otherwise I might be putting myself at a disadvantage in my community. In the city, many of those questions are solved financially or regulated by the state. The flip side is that social ties are reported to be weaker in cities because people lack those points of contact. True altruism or reciprocity ultimately promotes societal cohesion because it forces us to consider the life situations of others in our community. And that has always been a first step in the right direction. Volunteering often puts people in contact with members of other social groups that they do not normally interact with, and that fosters cohesion in society as well.

UNI NOVA: Statistically, women perform more care work, more informal voluntary work and donate more money than men do. Are women better people?

VON SCHNURBEIN: The statistics are still largely based on data from generations that adhered more strongly to traditional gender roles. The increasing flexibility of these roles also has implications for voluntary labor. In the future, we might see a dramatic rise in government subsidies for care work, and this would reduce informal, voluntary work in the sector. But I absolutely believe that women have a greater tendency toward social engagement than men do, or that they find other ways to express that. Maybe part of it is socialization. But there is no reason to say that one is fundamentally better than the other.

UNI NOVA: Do young people and older people show equal levels of social engagement?

VON SCHNURBEIN: The willingness to volunteer tends to manifest in waves throughout a person's life. Research shows that those who volunteer when they are younger are likely to volunteer again later in life, even if they stop doing so periodically. So, it is important to get people involved in volunteering early on. But society is changing. There is greater mobility, more individualism, and the nature of voluntary work has changed. I wouldn't say that we should expect a decline in volunteerism, but that that work will be more spontaneous and shorter-term – it will likely be more project-based. People no longer feel obligated to, say, be a cashier and stay in that same job for years on end. They are less tied to a particular organization than they are to a higher purpose. You can see that in the youth climate movement, for example. If one group isn't radical enough, they switch to another one – or they switch for the opposite reason. That certainly presents a challenge to existing organizations.

UNI NOVA: Many people volunteered during the pandemic. What can we learn from that as a society?

VON SCHNURBEIN: During the 2015 refugee crisis, we saw how incredibly important voluntary labor is in managing crisis situations. There is a high level of mobilization. But that cannot be sustained over several months. At the same time, it is extremely important to know that we have that potential.

UNI NOVA: Does increased prosperity make us less dependent on the help of others?

VON SCHNURBEIN: Of course. If my grocery store has a delivery service, I don't have to ask my neighbors whether they could do my shopping for me.

UNI NOVA: During the pandemic, we altered our behavior to serve the common good. Why don't we do the same when it comes to climate protection?

VON SCHNURBEIN: The difference is that with climate protection, we do not see the same obvious, immediate effects of our own actions. If I know that my neighbor cannot leave home because of the pandemic, I go grocery shopping for her. I can solve the problem with relatively little effort. The effect is immediate. But when I sacrifice my own pleasure or sense of abundance for the climate, I do not see CO_2 levels drop in real time. If I eat less meat, I do not see any fewer farm animals out in the pasture. Those efforts take place on a more abstract level. And that's what makes it so difficult.

UNI NOVA: Can you explain what you mean by that?

VON SCHNURBEIN: Prosocial behavior is an activity. But the things we need to do to protect the climate involve making sacrifices with no reward or gratitude for our efforts. And we always avoid making sacrifices any way we can.

UNI NOVA: We prioritize our own happiness. That is selfish.

VON SCHNURBEIN: But in order to survive, I have to prioritize my own well-being, too. Today, we talk about mindfulness, self-care and other things, but ultimately those practices are just the positive face of egotism. It means listening to my inner needs and checking in with myself. And I need to do that so I can make a positive impact on my environment. Love thy neighbor as thyself.

UNI NOVA: So, altruism requires a certain degree of self-interest?

VON SCHNURBEIN: Yes. It is not just about helping others; I have to focus on myself, too. Someone who volunteers but gets no

Georg von Schnurbein
has been Associate Professor of Foundation Management and Director of the Center of Philanthropy Studies (CEPS) at the University of Basel since 2014. His research focuses on different aspects of philanthropy, including foundations, volunteerism and nonprofit management, among other topics. Georg von Schnurbein was born in Regen, Germany, in 1977 and studied business administration and political science at the University of Bamberg, the University of Fribourg and the University of Bern. He earned his postdoctoral degree at the Vienna University of Economics and Business and joined the University of Basel in 2008.

sense of gratification from that work won't do it for long. The basic assumption that people volunteer and donate solely for the sake of others is a false premise.

UNI NOVA: Are you saying that donations are not altruistic?

VON SCHNURBEIN: Altruism, in the classical sense, involves a sacrifice: Someone is giving something away and compromising their own well-being as a result. When I volunteer, I am donating my time, time I could have spent on something else, and thus restricting my own freedom. When we make a donation, we are always donating a surplus. So, in my view, donations cannot be considered purely altruistic. I consider them to be an expression of reciprocity: We donate because we know that there are people who need our help or issues that require our support. At the same time, we expect to receive support when we ourselves need help.

UNI NOVA: What causes do we donate to?

VON SCHNURBEIN: Traditionally, in Switzerland, development organizations receive a vast amount of our donations. Currently, we are donating far more for climate change or environmental protection than we were ten or twenty years ago. Of course, there are some perennial frontrunners, like children's charities, cancer or, more recently, as I mentioned, environmental protection. That used to be maybe tenth on the list.

UNI NOVA: Aren't donations just a way for us to buy ourselves a clean conscience?

VON SCHNURBEIN: Donating money is not the same as buying indulgences from the church, because I am doing it of my own free will and choosing what causes I wish to support – and I generally feel good about doing it. So, I wouldn't call it a "get out of jail free" card. Indeed, donations are one of the most important expressions of social engagement. For many people, making a donation gives them an opportunity to get involved in charitable causes. In Switzerland, 35 percent of the population is involved in volunteer work while 77 percent make charitable donations. If we wanted to further emphasize that point, we could say that in Switzerland, there are more people donating money to charity than voting in elections. Donations also reflect societal changes. Charitable organizations don't wrench money out of our pockets to use for their personal whims and ideals; they ultimately respond to society's demands. ■

Fear.

It protects us from danger but can also paralyze us. Dealing with an uncomfortable yet important feeling that can set the pulse racing, cause goosebumps and make hands tremble.

The complexity of an emotion.

A psychiatrist and a neuroscientist approach fear from different angles. Both strive to create new therapies and promote a better understanding of the mechanisms underlying anxiety.

Text:
Fabienne Hübener

Undine Lang steps up to the lectern. The room is packed, and all eyes are on her. The professor of psychiatry has faced this situation dozens, if not hundreds, of times before. Still, before her lecture, her pulse quickens, and her hands begin to tremble. In situations such as these, she consciously calls to mind the methods she uses to stifle her stage fright: "I start by concentrating on maybe two or three people in the audience, and throughout my lecture, I'll focus mainly on them," explains the Head of University Psychiatric Clinics (UPK) Basel. "Then the feeling of fear quickly goes." But not every fear can be regulated so elegantly.

Fear is one of the first emotions that babies develop after birth. It may not be a good feeling, but it is crucial and protects us from potential danger. In time, children learn to differentiate between things that are truly dangerous and those they need not fear. If a fear of harmless situations or objects persists into adulthood and severely restricts a person's daily activities, it is referred to as an anxiety disorder. These include generalized anxiety disorder, in which those affected worry constantly for no apparent reason, phobias (see page 20) and panic disorder. Those with the latter live under the constant threat of being overwhelmed by severe panic attacks at any time.

"We might recognize certain circuits in the brain. But our findings up to this point are ultimately just highly simplified descriptions of the brain's activities."

Andreas Lüthi

A complex inner state

A racing pulse, trembling muscles and feeling sick – those are the palpable, physical symptoms of a brain producing the emotion of fear. In his book *Projections*, neuroscientist Karl Deisseroth from Stanford University describes fear as a complex inner state that can be deconstructed into its constituent connections between bundles of neurons in the brain. He believes that we will soon be able to decode the language of those neurons. Andreas Lüthi from the Friedrich Miescher Institute in Basel disagrees. He and his team use experiments on mice to decipher the mechanisms behind normal and pathological fear in the brain. "We are only at the very beginning," says the neuroscientist. "We might recognize certain circuits in the brain and know, for example, that the amygdala plays a key role in evaluating emotions related to specific situations. But our findings up to this

point, such as neuronal activation that correlates to a mouse's flight or freeze response, are ultimately just highly simplified descriptions of the brain's activities."

Lüthi and his team are studying what happens in a mouse's brain when it responds to fear, for example, when it is placed in a wide-open space without a place to hide. To observe the activity in the brain, the researchers use novel imaging methods that have revolutionized the field of neurological research over the past several years. Such innovations include a miniaturized microscope that is attached to the head of a free-roaming animal and can differentiate between individual neurons in the brain.

Circuits and probabilities

Of course, the mouse's fear cannot be mapped directly to activity in a single, isolated circuit; it is the product of interactions between multiple neuronal ensembles. If one group of neurons fires, this increases the probability that another group will be activated, too. "The neuronal activity that we have discovered is not purely a representation of motor activity; it is contingent upon the animal's expectations and the positive or negative evaluations that the animal associates with the situation," reports Lüthi. If the mouse remembers repeatedly finding food in a particular room, that decreases its natural fear of the unprotected space. The activation cascades proceed differently in this situation than if the mouse were to recall an encounter with an aggressive rival.

The human brain also produces expectations based on past experiences. The fear of seizing up before an examination committee or a large audience can be so paralyzing as to cause a student to quit their training and avoid public speaking at all costs.

When fear becomes unmanageable, people seek out help. Undine Lang sees many such cases at UPK Basel. "Normally, these anxiety disorders can be treated easily. If the patient does not have any other disorders, the success rate is between 80 and 90 percent," explains Lang. Yet pathological fear is often accompanied by comorbidities such as depression or secondary addictions. That makes the treatment more complicated. By the time patients arrive at UPK Basel, they usually have a long history of suffering. Many have tried unsuccessfully to regulate their anxieties with alcohol or narcotics. Psychotherapy, combined with medication as needed, is a far better treatment plan.

Focusing on strengths

In psychotherapy, patients and therapists work together to develop a strategy to stop anxiety in its tracks. "One way to achieve that is through acceptance and commitment therapy, or ACT, for short," explains Lang. In this therapy, patients learn to accept their anxiety and develop the psychological flexibility they need to better handle their condition. What values are important to the patient? What skills, talents and strengths can they build on to shift mental resources away from their anxieties? In the past, Lang recalls, therapy used to focus primarily on combating symptoms. In most cases, this proved a waste of time, as the anxiety did not subside. Today, the goal is to find ways for the patient to, for instance, meet with friends, go to the gym or travel despite their anxiety.

UPK Basel is also studying alternative therapy options to improve treatment for people with conditions involving severe anxieties. "For us, the key task is to scientifically test whether a novel therapy is actually effective," emphasizes Lang. Her list includes therapies employing psychedelic substances such as psilocybin and LSD, the potential of the gut-brain axis as well as movement and animal-assisted therapies and even digital therapies.

At the same time, basic researchers such as Andreas Lüthi are looking to lay the groundwork for new therapeutic approaches. In a 2021 article published in the journal *Nature Communications,* his team, together with a group of international colleagues, demonstrated how deactivation of a particular microcircuit buried deep within the brain allows mice to selectively unlearn the fear response. Someday, it may be possible to cure anxiety disorders using a similar approach. But for now, these discoveries are simply a first step in the right direction. ■

Undine Lang
is Professor of Psychiatry at the University of Basel and Director of the Clinic for Adults and the Private Clinic at University Psychiatric Clinics (UPK) Basel.

Andreas Lüthi
is Senior Group Leader at the Friedrich Miescher Institute for Biomedical Research.

Overcoming anxiety with broccoli monsters.

Text: Yvonne Vahlensieck

Up to a point, fear is a normal – and even beneficial – experience for children. But when fear takes the upper hand, it helps to make the causes of this anxiety tangible.

Creativity is key to Ina Blanc's counseling sessions. Children craft colorful flowers, paint pictures of frightening monsters and build sculptures. The goal is to render their fears tangible and develop effective coping strategies. Ina Blanc, a psychologist who specializes in working with children and adolescents, offers counseling and therapy at the Centre for Developmental and Personality Psychology (ZEPP) of the University of Basel.

Not every anxious child, however, needs to be taken directly to therapy. "Fear is a normal emotion with a key role to play in our survival," says Blanc. So, parents need not be alarmed. Research shows that typical fears accompany each stage of childhood development: Many preschool-aged children are afraid of the dark or being left alone. Once children reach school age, their fears shift to the social arena and their own performance: They worry, "Will they laugh at me in school?" or "Will I be as good as the other kids in gym class?" As teenagers, they begin to experience fears about the future, too. "Every stage of development is accompanied by new, unfamiliar things, and it's natural for that to be scary," says Blanc. "But development also means overcoming those fears and moving on. Achieving that builds a child's self-confidence."

Yet sometimes children require professional help. Perhaps the fear has become extreme and persistent. Perhaps it is beginning to cause problems in the family, or the child is suffering inordinately as a result. In such cases, psychologists can step in to offer assistance to children (and their parents), regardless of whether the child's fear is based on something real, like dogs, or imaginary foes, such as the monster under the bed.

Blanc begins her sessions by explaining how fear affects the body and how it can be exacerbated, sustained or overcome by thoughts and behavior. Children can then act as detectives, playfully investigating their dysfunctional thoughts and responses and identifying the physiological precursors of fear, such as a racing pulse or cold hands. "Then they have time to intervene and calm themselves down. Once the fear has progressed past a certain point, we tend to feel paralyzed."

The aim is to establish skills to empower the children to successfully manage the situations that arouse fear. In the long run, simply avoiding problematic situations amplifies that fear. If children shy away from speaking about their fears, Blanc allows them to draw those fears instead. She usually starts out with humorous, harmless illustrations of broccoli or spinach monsters. "The drawing turns the monster into something tangible and therefore malleable, something the children can change."

Then Blanc works together with the child to brainstorm ways to prevent fear from taking over, for example, deep breathing, relaxing music, cuddling with a stuffed toy or imagining pleasant things. Simple fears that do not conceal deeper problems can be managed using these and more advanced methods in just a few sessions.

But what causes some children to develop these types of anxieties while others voyage fearlessly through life? Blanc explains that researchers have identified different risk factors. On the one hand, genetic predisposition may be responsible for establishing an innately low arousal threshold in the brain's limbic system, which triggers fear responses. And on the other hand, parenting style can play a role as well. For example, overprotected children are more likely to develop anxiety disorders.

It is important for parents to encourage anxious children to take small steps and offer positive feedback when they succeed. Parents should remind children of how much they have already accomplished. "I would always advise families to communicate openly about their emotions." Parents should feel free to admit that they are scared sometimes, too – and then proceed to explain to their children how they overcome those fears. This teaches children that fear is not an insurmountable problem. After all, Blanc tell us, "There are no good and bad emotions, just good or bad ways to handle them." ■

A picture created at the start of a therapy session with a young child. Each of the flowers represents a skill or a strength that the child has.

Dreaded future.

Psychologist Karina Wahl studies rumination. We have plenty of reasons to worry about what the future will bring. A discussion about constructive ways to handle our fears about what is to come.

Interview: Angelika Jacobs

Karina Wahl is a research associate in the field of clinical psychology and epidemiology.

UNI NOVA: Karina Wahl, when you think about the pandemic, inflation, the climate crisis... what feelings do those things invoke?

KARINA WAHL: I try to avoid dwelling constantly on these types of things, but when I do think about them, I feel an oppressive sense of worry.

UNI NOVA: The acute phase of the pandemic may be over, but we are already experiencing the unmistakable consequences of climate change. Climate activist Greta Thunberg has said that "our house is on fire." What impact does that have on the human psyche?

WAHL: To answer that question, let me first give you some broader context. Researchers have been looking at the direct effects of climate change for a long time, but the indirect effects have only been studied for the past 10 or 15 years.

UNI NOVA: What do you mean by "indirect effects"?

WAHL: For example, in regions that are heavily impacted by climate change, we observe an increase in anxiety, depression, substance abuse and other mental disorders. Those are the direct effects of a changing environment on the human psyche. Indirect effects are the worries and fears that climate change activates even in individuals who are not currently experiencing as many of the direct effects. But this research is still in its infancy, and we have very little data to indicate how widespread this climate change anxiety is and what forms it might take.

UNI NOVA: How is this climate change anxiety expressed?

WAHL: Experts have not reached a final consensus on the issue. Climate change anxiety not only encompasses the more specific manifestations of anxiety; it also includes feelings such as anger, sadness, helplessness, frustration or even a sense of having been betrayed by governments that fail to act. There are a number of terms in circulation, such as "eco-anger," which describes the rage we feel about climate change, or "ecological grief," which refers to our despair at the loss of places we love as they are destroyed by changes in the environment.

UNI NOVA: Young people are leading the charge in the Fridays for Future movement. To what extent is this climate change anxiety present in society as a whole?

WAHL: That is a difficult question to answer, because past surveys on the topic focused mainly on young people. For example, British researchers published the findings of a global survey of young people in which around two thirds of respondents reported feeling worried or extremely worried about climate change. Only a third of those approached were either not worried or only a little worried. It is logical for young people in particular to be worried, because they will have to live with the consequences of climate change for longer.

UNI NOVA: The pandemic has caused public attention to temporarily shift away from the climate crisis. But the Covid-19 pandemic seems to have had a greater psychological impact on young people, too. Can we draw parallels between the two issues?

WAHL: I can only speculate on that point, but of course both involve an uncertain future. Older people have established solid careers and created a stable lifestyle for themselves while young people are still searching for their own path in life. Under those circumstances,

the chronic stress associated with the pandemic and the climate crisis constitute a huge psychological burden. An intolerance for uncertainty is at the core of many fears, although some individuals experience it to greater or lesser degrees.

UNI NOVA: Can you explain that in a bit more detail?

WAHL: It is normal for there to be a little uncertainty in life. Some people are not troubled by it or even perceive it as exciting or energizing, while others find uncertainty highly stressful. Possibly, they harbor the negative, distorted belief that they must eliminate every last bit of uncertainty before they will be able to lead a worry-free life. Uncertainties and the consequences they have on our individual lives play a major role in both climate change and the pandemic. Individuals for whom coping with uncertainty is extremely difficult may be particularly inclined to experience severe anxiety and worry related to both of these phenomena.

UNI NOVA: How does that affect people who have difficulty coping with insecurity?

WAHL: One typical response is to try and achieve a sense of security, whether or not such attempts actually prove effective. But this can even be counterproductive. If you're constantly seeking reassurance that nothing bad is going to happen, you may pass on your own insecurities to others. There is a phenomenon in which people escalate their problems through excessive discussion that experts in the field refer to as "co-rumination." This can ultimately increase their feelings of hopelessness. To put that in the context of our discussion on climate anxiety: Imagining worst case scenarios can be paralyzing.

"An intolerance for uncertainty is at the core of many fears."

Karina Wahl

UNI NOVA: What can we do to escape that trap?

WAHL: When our worrying gets out of hand, we need to ask ourselves: Are my concerns focused on an actual problem that is based in reality, or are they vague and abstract? If the former is true, the next step is to identify strategies to solve the problem that focus on mitigating whatever is causing us to worry in the first place. If the latter is true, the goal is to implement strategies for dealing with excessive worry.

UNI NOVA: Could you provide an example?

WAHL: Let's say I'm worried about whether or not I will graduate high school; this is a manageable problem. I can just calculate my grade point average to give me a realistic picture of my chances. And if they're less than ideal, I can work to improve them. Climate change, too, is a real problem. A constructive way to mitigate the causes of the problem might be, for example, to reduce my carbon footprint or participate in demonstrations to demand more ambitious climate policies. When we get involved, we meet others who share our views. Then we can join forces to nurture the sense that we can really make a difference. The key thing is to define our objective in terms of concrete steps and identify which problems can be solved and which cannot.

UNI NOVA: But in the case of climate change, it's hard for me, as a non-expert, to answer those questions – and many problems are too big for individuals to solve on their own.

WAHL: Exactly. Climate change anxiety also has this second component. Excessive worry over intractable problems requires a different kind of solution. One thing that can help is keeping a worry diary. Worrying can be like a habit – it happens automatically. So, the first step might be to identify the situations that spark the concern. Then you can learn different ways to manage those situations, for example by examining them more closely, noting your responses to them and working to gradually shift your focus toward the things you can change and accomplish. This helps turn abstract worries into concrete actions. Another strategy involves a radical acceptance of uncertainty.

UNI NOVA: Following the pandemic and the climate crisis, we're now faced with a war in Ukraine. How do you personally handle chronic uncertainty in life?

WAHL: I stay informed and discuss the issues with my husband, friends or colleagues. This helps me to limit how much I dwell on things. At the same time, it's important to accept that we'll never completely eradicate our uncertainties about the future. Or to put it differently I try to increase my tolerance for uncertainty. ■

Stronger than fear.

It is understandable to be afraid of a dangerous animal or a risky situation, but if this feeling manifests in moments where there is no clear and present danger, fear can become its own burden. Ways that can help.

Text: Niklas Bienbeck

Your pulse races, you tremble and become flushed. In extreme cases, you may have trouble breathing or even lose consciousness. "People with generalized anxiety disorders or panic attacks are often unable to identify their feelings – they surrender to them completely," explains psychologist Anja Zimmer. Specific phobias can trigger similar symptoms, but these are directed toward a concrete object or situation. Those affected generally know that their fear is irrational, yet they avoid these situations and withdraw from life. The core of any phobia is the fear of losing control.

The origins of the phobia

"Traumatic experiences or observations frequently result in the development of a phobia. We are particularly susceptible in early childhood. Children observe patterns of anxious behavior in their parents or other guardians," says Zimmer. But long periods of sustained stress can also increase the risk of developing a phobia. Genetic predisposition may also play a role in the inheritance of phobias. Research in this area is ongoing.

From social anxiety to specific phobias

Fears may also be explicitly related to social situations. Those with social anxiety disorder are afraid of embarrassing themselves when they are the center of attention. This turns public presentations and examinations as well as private parties and events into difficult, challenging situations.

Anja Zimmer
is a psychologist and doctoral researcher at the Faculty of Psychology of the University of Basel. Her research in the Division of Cognitive Neuroscience focuses on the use of virtual and augmented reality apps to treat phobias.

Agoraphobia is related to social anxiety. People with this phobia fear specific places or situations, such as vast, open spaces or crowds of people. "Those affected fear that they won't be able to escape in time in the event of an emergency, or that help will be too slow to arrive," says Zimmer. Agoraphobia often manifests together with panic attacks, which can be of varying intensity. Consequently, one can develop a "fear of fear" that may cause an attempt to avoid such situations whenever possible. Fear of the next panic attack can generate a vicious cycle.

Specific phobias are tied to concrete objects or situations. These include the fear of certain animals, natural disasters or situations that appear dangerous, such as looking down from high up. "Arachnophobia" (fear of spiders) and "ophidiophobia" (fear of snakes) number among the best-known animal-related phobias. Common situational phobias include the fear of heights ("acrophobia") or fear of confined spaces ("claustrophobia"). Fear of visiting the dentist ("dentophobia") and fear of flying ("aviophobia") are also commonly reported phobias. → p. 23

FIVE STRATEGIES FOR OVERCOMING FEAR.

1
Examining fears
In many cases, people are able to influence their own fear responses. Catastrophizing can put the body in a state of alarm. So, those affected should try to identify the true source of their fears and evaluate how realistic those fears actually are. This can help relativize anxieties and mitigate the physical reactions they provoke.

2
Practicing calmness
Protracted fear of a situation or object can cause people with anxiety to develop a "fear of fear" which exacerbates their anxiety disorder. Preventative meditation, mindfulness and relaxation techniques can help people recognize and accept their symptoms and thoughts and cultivate calmer responses to their fears.

3
Movement
Regular exercise can reduce the body's stress responses in the long term. Movement helps break down the hormones secreted during the fear response and releases endorphins.

4
Exposure
If the strategies listed above are unsuccessful, exposure therapy is often the only way to treat both specific phobias and social anxiety. It may also be part of the treatment for generalized anxiety, panic attacks or agoraphobia. Those affected work together with professionals to actively confront their fears in the places or situations that tend to provoke them. This way, they can learn that the situation or object in question is, in fact, harmless and boost their confidence at the same time. In the case of severe anxieties, it is recommended to slowly acclimate to the stress by gradually increasing the intensity of the exposure. In the future, new smartphone apps like the one developed by Anja Zimmer could offer people an easily accessible therapy option for treating specific phobias and social anxiety. There are already numerous apps on the market for other anxiety disorders, however, few of them are based on solid science or have been adequately tested.

5
Medication
Many anxiety disorders cannot be treated effectively without the use of medication. Most patients are prescribed antidepressants, but these have side effects. That is why, in recent years, researchers like Professor Undine Lang at the University Psychiatric Clinics (UPK) Basel have been studying new forms of therapy, such as treatments employing psychedelic substances, such as LSD.

"There are many different treatment options: Alongside long-term therapies, there are also numerous short-term alternatives that are very effective. The common factor is that they can all be very challenging. Apps are a great way for affected people to help themselves, particularly in the case of specific phobias, and they can always be combined with professional therapies," summarizes Anja Zimmer. ■

Call to prayer instead of church bells?

Foreign infiltration, Islamization, economic decline: Political actors use threatening scenarios to exert influence over people. By playing with our emotions, they leave the rational level behind.

Text: Noëmi Kern

Building minarets in Switzerland is banned under the country's constitution. In November 2009, the Swiss electorate voted on a people's initiative to introduce the ban – and 57.5% voted in favor. The campaign posters showed black minarets piercing the Swiss flag, with a woman dressed in a black veil in the foreground. It feels sinister – threatening, even. The words "stop" and "vote yes to ban minarets" show how people can ward off the threat. The message is short and clear. It's catchy and bold. It's designed to trigger our emotions.

This is important in politics: "Images and truncated messages often have much greater impact than, say, describing a risk using arguments that are comprehensible and verifiable," says Alexander Fischer, a philosopher at the University of Basel. One area of his research examines manipulation as a tool that allows the user to harness the power of fear – as happens in politics, for instance. Showing catastrophic future scenarios is a much-used political method of instilling fear into people. It is a lot more difficult for counter initiatives to succeed in putting forward a rational explanation of why a certain fear isn't real. "Making a convincing case for this is much more complex and often doesn't hit home," says Fischer.

Alexander Fischer explores the question of why people act the way they do. He is a research assistant in the Department of Philosophy at the University of Basel, where he studies manipulation, emotions and ethics. Fischer also is a trained psychotherapist.

Stronger than the monster

This is why many political campaigns point to threats and use them to stoke our fears. Speaking about the minaret ban, SVP politician Ulrich Schlüer (then a member of the National Council) told swissinfo.ch: "The minaret is a symbol of power. It's spearheading the Islamification of our politics. We're opposing this Islamification because it contravenes the principles of our constitution."

These kinds of statement target the affective level; their aim is not to encourage a rational discussion. "Fear is a difficult emotion. It's unpleasant, so we want to get rid of it," says Fischer. For political actors, a key mechanism of fear involves suggesting the monster they have invoked can be vanquished – and that if you just cast your vote in their favor, everything will be fine. It's a message that exerts a strong pull. "Playing with what are often abstract fears is a basic move for political actors, who are also responsible for allaying our fears regarding the political realm," says Fischer. This is why fear is a perpetual feature of politics.

The topics that regularly create a sense of threat in Switzerland change over time: nuclear power in the 1980s, then genetically modified corn in the early 2000s. On top of that, fears about Islamist terrorism, "over-foreignization," climate change, and relations with the EU have long been part of the political agenda. Most recently, the issue was fear that a police state would be installed during the pandemic. And a seemingly timeless topic in Switzerland is the threat of a decline in our wealth.

Playing with fire

Since we are finite, boundedly rational beings, we can be influenced. Politicians know that – and so does the advertising industry. Targeted manipulation

is about modulating our affective states so that a certain action, such as buying a certain product, ultimately promises pleasant or unpleasant feelings, and therefore seems more or less attractive than another. "When we manipulate someone, we push them in a direction, but we don't force them to do anything. They still have freedom of choice, even if that choice can be made a lot harder by modulating their affectivity," explains Fischer. "This is what makes manipulation as a way of exerting influence in our liberal system so immensely interesting." In a study of online advertising that he conducted with a colleague at Bern University of Applied Sciences, Fischer found that, although manipulation often exists at the edge of what is legitimate, it isn't fundamentally negative and also isn't perceived in that way.

A form of manipulation that we view as unproblematic does not bother us – as long as it doesn't cause us any damage and we manage to distance ourselves from the affective impulse if necessary. In those cases, we don't question the manipulation; in fact, we rarely even talk about it. Fischer thinks that we should still be careful because even partially bypassing our rationality can, under certain conditions, become possibly problematic.

Deception, however, is seen as unequivocally negative. It's often linked to manipulation and can go hand in hand with it. "If you realize that you've been manipulated because someone presented you with false information to trigger your emotions, you often feel outraged. And rightly so," says Fischer, noting that this type of manipulation is morally problematic. It can also cause lasting damage to the trust between people.

Unpredictable and individual

Fischer also thinks that using fear to influence others is problematic. It latches on to the irrational nature of people, who sometimes end up not even knowing why they're acting in a certain way. They are then also incapable of knowing whether something makes sense or not. If fear becomes self-sustaining, it will be very hard to control. "Fear is unpredictable and hard to manage. We can't really influence any degree of it – like, 'a bit of fear is okay,'" says Fischer. "It's an incredibly creative emotion. People are good at anxiously imagining scary things."

An alleged "Islamization of Switzerland" could therefore cause people to imagine various scenarios: Arabic becomes more common than Swiss German. Most women are veiled. Church towers are outnumbered by minarets, from which the muezzins loudly issue their call to prayer. Our legal system will soon be replaced by Sharia law. The creativity of our fears knows almost no bounds – and political influencers absolutely exploit this.

Not everyone imagines such concrete pictures, however. Fear can often be nebulous; it takes root as unpleasant background noise in our minds. We want to get rid of it. "Fear has a tendency to become individual, so we each react differently to it," says Fischer – who alongside his research also works as a psychotherapist. One person might react by becoming aggressive (fight), another might try to escape (flight), and another might be paralyzed by shock (freeze). The snag is that there's usually no direct exit from the scary situation – especially if the problems are in the future.

Distancing can help

The cause of someone's fear is, however, selective – and to a certain degree even random. Apparently, we are better at imagining what would happen if we had a few francs less in our bank accounts than if the glaciers all melted. This could be one reason why a CO_2 law was rejected in June 2021, but possible declines in our prosperity are a much-used (because promising) scenario on the political stage.

To ensure that we are not at the indiscriminate mercy of our emotions and those who seek to manipulate them, we must look more closely at where our fear comes from and whether it is appropriate. Fischer says that we should try and distance ourselves from a suggestion so that we can assess it with a critical eye. "This is useful if you want to check whether the fears that someone is trying to instill in you are justified and whether you want to be steered in a certain direction as a result." It's about taking a step back so that we can move from the affective level to a rational level. ■

"Fear is an incredibly creative emotion. People are good at anxiously imagining scary things."

Alexander Fischer

Displaced.

Text: Urs Hafner

Migration is a source of anxiety, both for the existing population and for the migrants themselves. Very little research has been done on the fears of children housed in cantonal repatriation facilities. Their plight is a desperate one, warns Walter Leimgruber.

The influx of immigrants into a country is a recipe for fear. On the one hand, the existing population is unsettled by the new arrivals. The phenomenon of xenophobia has been the object of countless studies in the social sciences. This "fear of foreigners" is magnified by economic crises, social change and political movements that exploit both the crises and the fears to their own ends.

Migrants, for their part, nurse fears of their own – the difference being that these fears are largely ignored by research in the social sciences. This is presumably because researchers prefer to focus on the familiar – the native population to which they belong. An understanding of the mental state of immigrants, however, is relevant if for no other reason than to find out how they are faring.

"Migrants basically fall between two stools. On the one hand, we have the researchers who are working to enlighten the population at large and dispel their fears, while on the other hand those same fears are being exploited by politicians. But no one seems to care about the fears of the migrants themselves," says Walter Leimgruber, Professor of Cultural Anthropology and European Ethnology at the University of Basel and President of Switzerland's Federal Commission on Migration (FCM). One exception is psychological trauma research, which specializes in a small minority of migrants.

Among the few social science research projects devoted to the mental and physical condition of immigrants is one being conducted by the Marie Meierhofer Institute for Children, commissioned by the FCM. Walter Leimgruber was involved in designing the study, and in the process visited a number of so-called repatriation centers, many of them housed in dilapidated buildings, containers or air raid shelters. The centers are home to individuals and families living under precarious conditions, some of whom have been there for up to five years or even longer. Their asylum applications have been rejected, but they refuse to leave – motivated by a lack of prospects in their country of origin, fear of criminal proceedings or persecution, psychological barriers or simply a lack of papers. Most hail from Eritrea, many from Tibet.

"The situation is a desperate one, particularly for children and young adults. They have no experience of a normal social environment. Entire families share a single room. Young people have to drop out of education. They see the police coming at night to round up people for deportation; they are exposed to violence and drugs. Parents lock them up for their own protection," Leimgruber recounts. "These children are terrified. The fear is destroying them. They live here in a kind of purgatory, a limbo-like no-man's land they find themselves in through no fault of their own."

Walter Leimgruber
is head of the Institute of Cultural Anthropology and European Ethnology at the University of Basel and president of the Federal Commission on Migration FCM. His research interests include migration and transnationality.

Each year, there are between 3,000 and 4,000 people in this situation, of which some 700 are children and teenagers. They receive 5 to 8 Swiss francs a day in emergency aid. In the Canton of Bern, Leimgruber went public with his concerns, prompting a "ill-tempered and aggrieved" response from the government according to the Swiss daily *Der Bund*. "The reaction made it clear I had struck a raw nerve. The people in charge are perfectly aware of what is going on," Leimgruber concludes.

It is a problem with no straightforward solution, Leimgruber emphasizes. "If we were simply to apply the hardship regulation to everyone in this situation, it would undermine the entire asylum process, to the detriment of all asylum seekers. But we have to get the children out of there," he argues. "As long as these families are living in Switzerland, the children must attend school and be able to move around freely."

Failure to do so risks a repeat of the Verdingkinder tragedy, this time without the foster placements. The upshot a few decades from now will be Switzerland once again appointing an independent expert committee, which this time will examine the children's fates and conclude that the authorities have failed in their moral duties. ■

Visions of the end-time.

Harrowing images of a divine judgment at the end of the world, as described in the New Testament, were commonplace during the Middle Ages. Yet, people at the time did not live in constant fear of punishment for sin and everlasting damnation.

Text: Christoph Dieffenbacher

It was the worst disaster that medieval people could imagine. The Revelation of St John describes it in particularly vivid detail. In the Last Days, cities will be destroyed by earthquakes, the seas will turn to blood and be set ablaze, a third of humanity will perish, and Christ will return to earth with fire and brimstone. The Last Day is also a day of judgment: the dead will rise from their graves and be judged by Christ according to their deeds. In Matthew's Gospel, Jesus separates the "righteous" from the "unrighteous." The fate of the wicked is eternal punishment in hell, while the just can look forward to everlasting life in the heavenly kingdom.

The ideas of a final battle between good and evil and a punitive judgment by God at the end of history probably go back to the Assyrian and Babylonian empires and ancient Egypt. However, it is difficult to think of a culture where they were as popular as in the Middle Ages. In medieval speculation about the end of the world, the dreaded Day of Judgment was envisaged not as an event far off in the future, but as something that could happen at any time, based on portents such as falling stars and people rising from the dead. Such fears became particularly acute during outbreaks of plague – in the 14th century, for example, when Europe lost a third of its population – and at times of war, when fears about the end of the world converged with fears of "the other."

Aden Kumler has been Professor of Early Art History since 2020. Her specialist research area is art and material culture in Europe in the period 500 until 1500. She is particularly interested, for example, in how the material conditions in which people live influence the ways they think, believe and act.

The damned and the saved

"Brutal violence, sickness and death were omnipresent during the Middle Ages," says Aden Kumler, Professor of Early Art History at the University of Basel since 2020. She is looking at how medieval artists used depictions of the apocalypse to motivate the faithful to lead lives pleasing to God. This was no easy task. How were artists to capture such a transformative event in images when it had not yet happened? How could the unknown be portrayed by means of the familiar?

According to Kumler, most medieval depictions of the Last Judgment employed an iconographic schema inspired by the New Testament. The divine judge sits enthroned at the center, surrounded by angels and/or the evangelist symbols. To his left, we see the damned descending into hell; to his right, the saved are shown ascending to heaven. This basic iconographic schema appears in a wide range of media, ranging from monumental sculptures of the Romanesque and Gothic periods to illuminated

"The dead man before God," *Grandes Heures de Rohan,* illumination, Paris ca. 1430.

manuscripts and murals in the high and late Middle Ages as well as late medieval altarpieces.

How fixed were the conventions specifying how the end of world had to look during the Middle Ages? Alongside traditional iconographic elements that took shape during the Middle Ages, Kumler argues, there were definitely opportunities for artists to experiment: "It is similar to the way that in jazz there are certain standards that include scope for improvisation." This is evident in the Gallus portal in Basel cathedral, for example, as well as in the west portal of the cathedral of St Lazare in Autun, both of which date from the 12th century. Here, the saved are shown lining up obediently while the damned mill around in confusion.

Bloodthirsty scenes

It is an open question to what extent learned discussion of the Last Days reached the general population at all – there are no statistics on that, of course. As Kumler notes, for much of the medieval period most people lived in the countryside, traveled very little, and could not read or write. For example, the fear that the world would come to an end around the year 1000 seems to have been confined to scholars; the bulk of the population knew nothing about it. They were equally oblivious of the debates among theologians concerning judgment at the death of each individual and the great general judgment at the end of the world.

Nevertheless: "depictions of the apocalypse above the portals of Romanesque churches must have been quite shocking for a simple peasant," Kumler suspects. These scenes are in fact often graphic and terrifying. Two giant hands reach down to grab a man's head; rows of people tumble into a bottomless abyss. In another image, the damned are tortured by devils and dragon-like demons even as they fall. Such demonic creatures appear captured in stone in many Romanesque carved capitals.

Gifts, pilgrimages, indulgences

Fear of catastrophe and the end of the world probably affected people to varying degrees. No one could be sure that they had performed enough good works during their lifetime to save their soul from hell and purgatory. "For all the horror," Kumler says, "the apocalyptic images also convey the message that you could prepare yourself for the Last Day and influence the judgment in your favor." Through compassionate deeds, such as giving food and clothing to the poor, going on pilgrimage, or paying for an indulgence, you could increase your chance of salvation and everlasting life in the hereafter. Admittedly, some of these measures were available only to a rich ruling elite and wealth and poverty were seen as divinely ordained by some medieval authorities.

Consequently, the state of fearful expectation that was encouraged to a greater or lesser extent by apocalyptic images also had its positive side, Kumler says. In the late Middle Ages, for example, works promoting the "ars moriendi" ("art of dying") became popular. These taught people how to prepare for their own deaths and how to die well. "In this way, the fear of death could be cultivated to some extent." And in the Middle Ages it was even possible to imagine that, in the end, all people would be saved and hell would turn out to be empty: a radical idea for the time. Kumler likes to quote the writer Julian of Norwich, who, around the year 1400, reported that while suffering from a severe illness she heard Jesus speak the comforting words, "All shall be well, and all shall be well, and all manner of things shall be well." ■

“Death will always arrive too soon.”

Many people have experienced the fear of death, but what if it is suddenly eclipsed by a fear of life? An interview with ethicist and theologian Georg Pfleiderer on death in the modern world, shame and what all that has to do with the crucifixion of Jesus Christ.

Text: Cornelia Niggli

Why are people scared of death?

“Anticipating death is part of what makes us human,” says Professor Georg Pfleiderer. Unlike other organisms, humans are conscious of the fact that life is finite. The fears associated with this knowledge are complex. On the one hand, we fear a painful death, and on the other, we are afraid of the absolute finality, the end of life and the nothingness that awaits us. “This fear is tightly bound up with the significance we attach to our possessions in life. By that I mean both material and immaterial possessions, such as the ideals by which we live and social resources such as interpersonal relationships or access to education. The loss of these types of possessions generally arouses fear,” adds the ethicist.

“We are incredibly afraid of losing face. That fear has likely never been so extreme as it is now in the Internet age.”

Georg Pfleiderer

According to Pfleiderer, fear of death is a phenomenon all humans share, but one which has become particularly acute in the modern era. He supports this assertion by quoting German sociologist Max Weber (1864–1920), who reflected: “The way we live today, there is scarcely a single commodity in our Western world so dear to us as our own life and experience. The world is constantly changing. With those changes come endless possibilities for novel experiences. Seen in that light, death will always arrive too soon.”

For modern humans – and even more for their postmodern counterparts – fear of missing out, or FOMO, is the source of both aspiration and anxiety. Weber believed that modern people no longer achieve a sense of full and final satisfaction in life as once described in ancient texts and biblical stories.

Has death become a taboo subject in the modern world?

“We don’t keep death under wraps,” says Pfleiderer in response. “We probably talk more about death and dying today than at any other point in history, at least in the media.” There used to be a common under-

Georg Pfleiderer has served as Professor of Systematic Theology and Ethics at the University of Basel since 1999. His most recent research projects focus on such topics as sin, shame and apocalyptic visions of the future.

standing that certain topics were not fit for discussion. We don't seem to have any taboos anymore." Death is omnipresent in news and entertainment. The idea of regulated assisted dying enjoys wide acceptance throughout Switzerland. On 15 May 2022, the Swiss public will vote on a petition to change organ donation from an opt-in to an opt-out process. "Of course, the level of personal involvement differs depending on whether we are talking about public discourse or individual experience," Pfleiderer adds. "For most people living in Western society today, death and dying have become far less common everyday experiences than they were for previous generations."

People living with this reality often value their own lives above all else. In spite of this, Switzerland's suicide rate is comparatively high. Does this present a contradiction? "When someone commits suicide, they enter a kind of unknown state characterized by nothing but an end of being. It is paradoxical, in a sense," agrees Pfleiderer. Why does our fear of life sometimes grow to exceed our fear of death? "One reason is certainly the immense value we place on leading an active, autonomous life. That desire can manifest as an intense need for control," he replies. "We have an enormous fear of losing control, of becoming dependent, of being 'useless' to society. Another reason is shame. We are incredibly afraid of losing face. That fear has likely never been so extreme as it is now in the Internet age." Information disseminates rapidly and it is a well-known fact that the Internet never forgets. This may well be implicated in the rising suicide rates among adolescents in the wake of nude photos spreading like wildfire online or as a result of cyberbullying.

Can personal faith help in situations when we feel afraid?

"According to our modern theological understanding, faith, at its core, refers to a trust and belief in God. Faith means that we are able to perceive our lives as meaningful, regardless of how they end; so, in a certain sense, our belief, our trust, is not contingent upon what comes after death, if there is indeed some kind of experiential afterlife waiting for us," clarifies Pfleiderer. To this end, faith means knowing that one's life is guided by God's hand and that God will lift us up in death.

"Faith as trust in God does not conflict with our own sense of autonomy," he adds. "On the contrary: Faith can be particularly helpful when we are faced with situations in which we experience shame or a loss of control or when we feel useless – and it can strengthen our self-confidence, too. It can be a source of immense power. We can see that in the work of many prominent believers – in the context of Christianity, we might consider St Paul, John Calvin, Dietrich Bonhoeffer or Florence Nightingale and Mother Teresa."

Was Jesus afraid of death?

"My God, my God, why have you forsaken me?" According to the apostles Matthew (27:46) and Mark (15:34), those were Jesus's last words before he died on the cross. That certainly sounds like crippling doubt. "He was undoubtedly scared of dying. The question is whether that fear was so powerful as to shake his faith in God," says Pfleiderer. His cry is a quote from Psalm 22 of the Old Testament. That is a matter of consensus in current research. But the psalm ends by praising God. For Jesus, faith seems to have conquered doubt in the end.

"On top of that, from a Christian theological perspective it is important for Jesus to have experienced that fear," he emphasizes. "If we imagine him as someone who never knew fear, he would not possess the power to redeem us, either." A biblical Jesus with no experience of the abject depths of human emotion loses his appeal, both as a figure with whom we can identify and as our savior. ■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Ice-cold electrons.

A new high-tech microscope recently took up residence at the Nano Imaging Lab of the Swiss Nanoscience Institute. Known as a scanning transmission electron microscope (STEM), the instrument allows researchers to study samples such as new materials with superconducting properties. A highly focused electron beam strikes the material, passes through it, and bounces off atomic nuclei or is deflected by atomic shells in the process. The resulting pattern of scattered electrons produces an image of the material in which it is possible to distinguish individual atoms.

Markus Dürrenberger (right) has been head of the Nano Imaging Lab for many years and is retiring in summer 2023.

Marcus Wyss (left) is taking over as the new head of the team.

Photo: Oliver Hochstrasser

1 With the new microscope, users can choose between two imaging modes: aiming the beam at the whole sample or focusing it and scanning the sample point by point, which takes significantly longer but produces a much clearer image. The resulting X-rays even provide information about the elements present at various points in the material.
2 The voltage source produces a voltage of 200 kilovolts, which is applied to an electron source (known as a field emission gun) at the top end of the microscope. This voltage draws the electrons out of a fine microcrystalline needle tip and accelerates them.
3 The area around the specimen is cooled using liquid nitrogen, which the staff of the Nano Imaging Lab top up at regular intervals using a special container and a funnel.
4 On a special mounting, the prepared sample is introduced via the open chamber door, which must be closed before the vacuum can be built up. A vacuum is needed because air would deflect the electron beam and disrupt the image.
5 High-resolution images of this kind allow researchers to examine, among other things, the results of newly developed methods for the manufacturing of nanowires for quantum computers.

Definitions of sex and gender.

In today's society, it is widely accepted that there are more facets to gender than just male and female. How is an individual's sex defined? Answers from the fields of evolutionary biology and gender research.

In biology, an individual's sex is defined according to its function in sexual reproduction – in particular, according to the reproductive cells (gametes) produced in the germ line: Females produce a comparatively small number of larger reproductive cells (eggs), whereas males produce numerous small, usually highly mobile reproductive cells (sperm). Sexual reproduction occurs through the fusion between egg and sperm cells.

In the overwhelming majority of animals, including humans, gametes are formed in dedicated reproductive glands, or gonads – ovaries in females, and testes in males. However, in many species, the differences between the two sexes go far beyond the presence of either ovaries or testes, and may, for example, be apparent in attributes such as body shape, coloration or behavior.

In other species, the distinction between the sexes is less clear-cut, and in many cases is not possible at all. For instance, most species of snails, many worms and most plants are hermaphroditic, meaning that a single individual produces both types of gamete. In the case of simultaneous hermaphrodites, an individual is both male and female at the same time, which can even lead to self-fertilization. Other species undergo a sex change: Clownfish, for example, always begin their lives as males, with only those that live long enough and occupy a dominant position in an anemone later becoming females.

Incidentally, in the animal kingdom there is no strong link between an individual's sex and its role in raising offspring. For example, many cichlid fishes incubate the fertilized eggs in their mouth and continue to offer their progeny refuge there after they hatch. Depending on the species, this practice – known as "mouthbrooding" – might be performed by females only, by both parents, or only by males. The males of many seahorse species, on the other hand, carry the fertilized eggs in a ventral brood pouch for incubation.

Walter Salzburger
is Professor of Zoology and Evolutionary Biology at the University of Basel. His research examines how animals evolve, adapt to their environment, and diversify. He is especially interested in cichlid fishes, which he studies in Lake Tanganyika in Africa.

Finally, the factors that determine gonad formation (and consequently an individual's sex) also vary widely in nature: In mammals, it is well known that the sex of an individual is determined by the constellation of the two sex chromosomes X and Y, with the combination XX yielding females and the combination XY yielding males. Birds too have specific sex chromosomes (W and Z), with females being determined by the combination WZ and males by ZZ. In reptiles, the ambient temperature an egg is exposed to often determines whether the individual later becomes a female or a male, while fish offer examples of virtually every sex determining mechanisms known to date – from individual sex-determining genes and chromosomal sections to ambient temperature or social behavior within the group.

The question of why sexual reproduction emerged in the first place has yet to be conclusively resolved. However, it is widely believed that the reshuffling of the genetic material from the two parents associated with sexual reproduction plays a key role. In any case, that so many species rely solely or primarily on sexual reproduction to reproduce, in spite of the efforts involved, leaves no doubt that it is – in evolutionary terms at least – a major success story. ■

Current gender research is concentrated in two different focal areas: One branch of gender studies centers primarily around the humanities and social sciences, while the other focuses on the natural sciences. These two approaches constantly interact and, in places, even merge. The first of these two approaches, upon which this essay is based, defines gender largely as a sociocultural phenomenon. Research in this area focuses on the dominant understanding of gender (gender identity, gendered bodies, sexuality) within its respective historical context and the associated gender norms. The research highlights both how they constantly change and how different the social division of labor and gender hierarchy associated with these norms are. In addition, it reveals significant differences in the social relevance of gender throughout history. In the early modern period, for instance, a person's status or class affiliation was more important than their gender.

Therefore, no single historical, prevailing idea of gender, gender roles or societal or domestic division of labor is inherently natural. Instead, these notions are contingent upon sociocultural factors – they are finite models, not suprahistorical phenomena. This is not to negate the existence of physical, biological differences between people of different sexes. Nevertheless, it is not the penis itself that is an expression of activity, male potency and superiority, while there is 'nothing there' in women and the female sexual organs are primarily passive or receptive. It is the people who place value on these respective body parts and associate with them different normative conceptions of gender and sexual practice. The logical consequence is that people assigned male at birth due to their physical characteristics are not, in fact, naturally more energetic, rational, aggressive, politically minded and superior to women, and people assigned female at birth are not intrinsically passive, emotional, peaceful and motherly. These are culturally attributed values that began to take shape and only became generalized in this form in the 18th and 19th centuries with the establishment of bourgeois capitalist society and its binary hierarchical heteropatriarchal gender system as the dominant conception of gender. The implication was that those assigned as having male or female bodies would be obligated to submit to the normative requirement to develop an intelligible, unambiguous and lifelong male or female gender identity and heterosexual orientation, an aggregation which would be referred to today as cisheterosexual gender identity. To this day, an individual who does not conform to these normative standards faces social discrimination and exclusion. This state of affairs is not natural in any sense – it is social and political, a fact that is also evident in the current intensifying debate about the increasing pluralization of gender and sexual lifestyles. This means: Gender today – according to the historicity and sociality of gender – must be understood as the factually lived diversity of genders, gendered bodies and sexualities. Achieving social and legal recognition of this reality must be a central to our current efforts to overcome all forms of discrimination. ■

Andrea Maihofer
joined the University of Basel in 2001 as Professor of Gender Studies. Hers was Switzerland's first professorship devoted solely to the field of gender studies and coincided with the launch of the Center for Gender Studies and the introduction of gender studies as an independent subject. Andrea Maihofer's research focuses on gender theory and transformation and the persistence of gender and gender roles, among other topics. She received emeritus status in 2020. One of her current fields of research is masculinity and right-wing populism. She is also writing a book about Virginia Woolf.

Bones, seeds and sediments.

Texts: Angelika Jacobs
Photos: Christian Flierl

Researchers perform a rescue mission on hands and knees with spades, sieves and their bare hands. At the future site of a new, large-scale building complex and parking garage located on Zürcherstrasse in the city of Windisch, Switzerland, the Canton Aargau Archaeology Department is working to preserve the remains of the Roman legion camp Vindonissa. There, they uncovered a first century cemetery, a street, the remains of a building, waste pits and latrines.

The team included researchers and students from a field course at the University of Basel. They searched the dig site for bones and plant material that might indicate which animals and crop plants were used by Vindonissa's residents. The researchers also gathered samples of the sediment in which these objects were buried. Materials from this location – alongside objects found at other dig sites – are sent to the Integrative Prehistory and Archaeological Science (IPAS) institute for further analysis. Findings from these analyses help shed more light on the nature of daily life in Vindonissa.

At a depth of around 1.3 meters, students retrieve sediment samples in white plastic boxes. These so-called oriented block samples are labeled and carefully packaged before being sent to the laboratory, where the researchers later impregnate them using artificial resin to harden and preserve the original structure of the sediment. Later on, they make thin slices from these samples for microscopic analysis.

Other soil samples are prepared at the dig site using sieves with finer and finer mesh sizes in what is known as the gold panning technique. This process removes the sediment from the plant or bone matter and allows researchers to separate the lighter, floating plant samples from dense material, such as bones, ceramic shards or gravel. A spatula is used to carefully collect samples from the sieves. (Pictured on the right.)

The researchers sort all animal and plant remains – from large animal bones all the way down to the tiniest seeds – and prepare them to be sent to the IPAS in Basel, where the material will be analyzed more closely. All materials remain the property of the canton of Aargau and will be returned afterwards.

At the IPAS, researchers study thin sections of the impregnated block samples under a microscope. The fabric and microstructure of the sediments as well as the composition of the deposits provide insights into events that took place at the Vindonissa camp, such as fires or less dramatic occurrences like the backfilling of pits or latrines or the use of constructed floors in a house. (Pictured on the left.)

The team's archaeobotanists use a binocular microscope to analyze seed material from different dig sites and compare the samples with a reference collection to identify the various plant species. This will help them draw conclusions about the agricultural practices at the camp.

IPAS researchers also manage an extensive collection of bones from animals of both large and small species for use as reference material. Fragments are often sufficient for researchers to identify the animal species from which the bones uncovered at a dig originated and determine which domesticated and wild animals were used by humans centuries ago.

The field course in archaeobiology and geoarchaeology was supervised by Sabine Deschler-Erb (pictured here), Örni Akeret, Simone Häberle and Christine Pümpin from the University of Basel. In this annual course, students learn the techniques and work processes employed during and after archaeological digs. The researchers at the IPAS analyze materials from a wide variety of archaeological sites in Switzerland and abroad.

The unassailable one.

Text: Irène Dietschi Photo: Matthew Lee

Was the SARS-CoV-2 pandemic a lucky break for the biophysicist Richard Neher? The 42-year-old German laughs from behind his FFP2 mask, his laughter echoing a little in the sun-drenched corner office of the brand-new Biozentrum building. From the eighth floor, the view of the city of Basel is magnificent, and the smell of new construction still hangs in the air. Neher sits relaxed at his desk, evidently enjoying the atmosphere of the functional room with its clear lines. Reflective cycling gear catches my eye on the coat stand.

"It was a double-edged sword, of course," he answers. "Obviously, our expertise was in demand. At the start of the pandemic, we were very well placed to study the virus and track its development because of Nextstrain." Nextstrain is an online platform that allows you to monitor the mutations and transmission chains of SARS-CoV-2 in real time. Neher had devised the program years earlier – together with Trevor Bedford in Seattle. When the coronavirus arrived, he quickly adapted it to SARS-CoV-2 – with the help of his former colleague Emma Hodcroft, who has since moved to the University of Bern, and the colleagues in Seattle.

The coronavirus has given Neher and his team considerable visibility, "which is something you really want as a scientist," he says. On the other hand, for two years the virus has dictated what he and his colleagues had to work on. At times, he felt as if someone else had taken control of his destiny.

Richard Neher is a biophysicist, specializing in the evolution of bacteria and viruses. Until the start of 2020, he studied these patterns using human immunodeficiency and influenza viruses, but then the coronavirus arrived. At the time of our conversation – it is 18 January, 2022 – he and his five-strong team are busy working on software tools "to capture the specific characteristics of the Omicron genome." The variant's many mutations are still presenting problems for the researchers to solve.

Since the start of the pandemic, Neher has been a member of the Swiss National COVID-19 Science Task Force. He has found interacting with colleagues from other scientific disciplines rewarding and exciting. However, he has steered clear of more general debates about, for example, measures to combat the coronavirus. "I have tried to focus my engagement on what I see as my core area of expertise," he says. Although it's important to speak out, "I don't like airing my views in public." The risk that you will be misquoted or pushed into a role you were not seeking is too great.

Neher's reticence was also noticed by the media. While other members of the task force were sometimes drawn into making political judgments, he stuck strictly to "technical advice." He would rather keep quiet than leave himself open to political attack. Consequently, Neher gained a reputation among science journalists as an extremely astute expert but also almost overly guarded – a person who could not be induced to go beyond the facts. No speculations, nothing personal, and definitely no emotions.

When he hears himself described in this way, Richard Neher laughs heartily and relaxes back even more in his chair. Gradually it dawns on me: This is someone who combines scientific expertise with a talent for managing his public image – and is secretly pleased about it. Not everyone needs to know that he has an adventurous side, for example – that he spent weeks traveling across South America when he was younger, or that he likes to go skiing and kayaking, when he has time. And what about the cycling gear on the coat rack? Is it his? "Yes, of course," he says. Cycling is something that he can just about fit in around his busy schedule. Supervising his research group takes priority, he makes clear.

Another thing that is not widely known about Richard Neher is that he comes from a famous scientific family. His father is the German biophysicist Erwin Neher, who received the Nobel Prize in Medicine in 1991. Together with Bert Sakman, he had discovered a way of directly evidencing ion channels in cell membranes. Richard's mother Eva-Maria Neher is also a well-known scientist, at least in Germany. A biochemist, in the mid-1990s she set up an "experimental laboratory for young people" in Göttingen, for which she has received numerous awards, including the Cross of Merit of the Federal Republic of Germany.

Richard Neher has two sisters and two brothers; he himself is the eldest child. "My siblings and I grew up with the sense that science was something 'normal'," he tells me. "Even when we were at elementary school, we had microscopes lying around the house and were shown what grows in pond water by our parents. Or we were busy having fun experimenting with various construction kits or getting creative about photovoltaics." His childhood home presaged his academic career in an almost organic way.

This also had its downside, however. "You want to get out from under your

During the pandemic, Richard Neher monitored the evolutionary changes in SARS-CoV-2 closely and provided commentary for the media. When doing so, he was careful to avoid being drawn into political or emotional statements – and thereby made himself immune to attack.

Richard Neher
was born in Göttingen in 1979 and studied physics and mathematics in Göttingen and Munich. He first became interested in evolutionary biology during his postdoc in California. In 2010, he moved to the Max Planck Institute for Developmental Biology in Tübingen. Since 2017, he has been an associate professor at the University of Basel's Biozentrum.

parents' shadow," he says. That is why at the start of his career he "deliberately avoided" biology – his father's turf – and studied mathematics and physics instead. He was interested in the big theoretical questions – what holds the world together at its core. It was only during his postdoc in Santa Barbara, California, that he discovered a passion for evolutionary biology.

In 2017, Richard Neher became an associate professor at the University of Basel's Biozentrum. He feels "settled" in the city – both in his private life, with his partner, and academically. "The Biozentrum is a really attractive research environment with great basic conditions: plenty of freedom, plenty of diversity, plenty of stimulation from colleagues in other disciplines," he says. Being so close to the University Hospital is also an advantage, as is the fact that ETH Zürich's Department of Biosystems will be moving to the campus shortly.

But what will his research group do now that the coronavirus has moved into the endemic phase? Neher shrugs and says that he'll come up with something new – not because the virus has become endemic but because "hundreds of groups all over the world have jumped on the subject and the whole thing is becoming routine." There is no need for him to put his energy into something so many other people are working on. He is not at all worried about finding a new subject – the main thing is that it has to be original, creative research. In biology there are a thousand unanswered questions: "And every answer throws up umpteen new ones." For Richard Neher, it's time to take back the reins. ■

The sounds of silence.

Much remains to be understood about how sounds are processed in the brain. In the University of Basel's Brain & Sound Lab, researchers are slowly coming closer to solving the puzzle.

Text: Yvonne Vahlensieck Photo: Christian Flierl

Complete silence is something we experience only very, very rarely in our lives," says neuroscientist Tania Barkat. Even if we're not aware of it, we are constantly surrounded by a soundscape of traffic noise, fragments of conversation, birdsong, humming refrigerators, beeping smartphones, and much more besides. Whatever the situation, however, our brains manage to filter out the information that matters to us.

How they do this is what Barkat and her team at the University of Basel's Brain & Sound Lab are interested in. "We know much less about hearing than we do about vision," she explains. "Eyesight can be corrected with a pair of glasses, but hearing is a much more complex affair." Barkat argues that it is important to find out more about this topic – not least in light of the problems we can expect as a result of the increasingly widespread use of earphones, often at excessive volumes. Or because abnormalities in the hearing process are potentially related to attention deficit disorders.

A challenging field

The complexity of auditory perception probably helps explain why only a small number of research groups have dared to tackle the problem until now. Moreover, experiments on how sound is processed in the brain pose considerable technical challenges: In mice, which feature in the majority of experiments, an important area of the brain devoted to hearing – the auditory cortex – is barely more than a cubic millimeter in size, and difficult to access. Nevertheless, over the last few years Barkat and her team have succeeded in overcoming these difficulties, gaining a trove of new insights into the world of hearing.

Among their findings is the fact that when a sound comes to an end, it is by no means followed by radio silence inside the brain. On the contrary: When a sound ends, the auditory cortex and other areas of the brain respond with heightened activity. This phenomenon was examined in detail for the first time by neuroscientist Magdalena Solyga in her doctoral dissertation. Her findings led her to conclude that the phenomenon, known as offset response, plays an important role in the hearing process.

For her experiments, Solyga taught mice to indicate that a sound was over by licking a reward tube. This was done over the course of a two-week training program in which the hungry animals were rewarded for the right reaction with a drop of soya milk. The experiments themselves consisted in placing the mice inside a soundproof box and playing back sounds of different frequencies and durations to them, while measuring the ensuing neural activity in various parts of the brain by means of electrodes.

Activity indicates silence

Solyga observed that neural activity shot up at the start of a sound before quickly dropping back to a low level of background activity. Only after the end of the sound, did activity once again increase for around 50 to 100 milliseconds. "In other words, neurons only signal the start and end of a constant sound," Solyga explains. Over time, this is likely to be more energy-efficient than if the neurons were to remain in a state of constant activity. To show that this offset response is in fact necessary, she selectively deactivated the neurons involved using a technique known as optogenetics. This is an approach that employs genetic manipulation to allow particular neurons to be selectively deactivated by a light pulse. The resulting series of tests demonstrated that mice without the offset signal found it difficult to correctly identify the end of a sound.

"This shows that the offset response is not just an artifact, but has a specific function," says Barkat, who believes that in humans it could play a significant role in understanding speech. "Spoken language also includes brief pauses, which have meaning – so we have to be able to recognize exactly when a sound is over." Likewise, in order to properly appreciate music, we need to be able to perceive even the tiniest of pauses.

Barkat hopes that these findings could one day play a part in improving the effectiveness of cochlear implants. These in-ear prostheses enable deaf people to understand spoken language – but are less effective in noisy environments or when listening to music, for example. "Perhaps the offset signal is lost with cochlear implants, and we could restore it with additional external stimulation."

Ultimate goal: the bigger picture

Applying research findings to humans is the ultimate goal – even if there is still a long way to go. "After all, we are not performing these experiments to find out how hearing works in mice," says Barkat. "But the questions we are interested in cannot be examined directly in the human brain." Mice, however, are excellently suited to this purpose. Even though they do not possess language and hear in a different frequency range to humans, their brain structures and the signaling pathways they use for hearing work in fundamentally the same way. Moreover, experiments with mice allow brain research to draw on a broad range of established techniques such as optogenetics.

Besides offset activity, Tania Barkat and her team use these methods to explore numerous other facets of hearing too: Another study looked at how the brain switches from passive hearing to active listening, for instance. A current project is examining why loud sounds are perceived as lasting longer than quiet ones. Meanwhile, experiments involving mice fitted with cochlear implants are testing the effect of these devices on processes in the brain.

"As different as all these research avenues may appear, they are ultimately all about the brain's plasticity," Barkat explains. "We examine all these processes individually under controlled conditions in the lab in an effort to understand them. Only then can we raise the complexity level and look at how the brain is able to continually adapt its hearing to different environments and tasks under more realistic conditions." ■

Stockpiling bacteria.

Our health is highly dependent on the presence of a diverse community of microorganisms in the body, but the diversity of this "microbiome" is in rapid decline. An international research consortium is therefore planning to build a vault for the long-term conservation of particularly valuable microbial communities.

Text:
Samuel Schlaefli

It sounds like something out of a James Bond film: In a decommissioned army bunker in a remote Swiss valley, millions of small containers of bacteria, viruses, fungi and archaea are stored at temperatures as low as –196°C, behind meter-thick walls and with strict security measures. Every day, new microorganisms from all over the world are added to the collection – a stool sample containing intestinal bacteria from the Maasai people in the Serengeti, for example, or a piece of fermented cabbage with bacteria from South Korea. Over time, this gives rise to an archive of microbial communities from around the world that are considered particularly worthy of conservation. This archive doesn't actually exist yet, but it is the long-term vision of an international initiative known as the Microbiota Vault. Working behind the scenes on this major project is a core team of 19 researchers from the USA and Europe, including pioneers in the field of microbiome research, with support from around 40 academics from four continents. Following a feasibility study that assessed Norway and Switzerland as potential locations for the construction of the microbiome vault, Switzerland was selected in summer 2021. This was coupled with the idea of using a decommissioned army bunker as the site for the vault.

A microcosm of species extinction

The human body is inhabited by around 40 billion microbial cells, including bacteria, viruses and fungi. Many of these cells form part of the intestinal flora, but dense colonies of microorganisms can also be found on the surface of the skin and the mucous membranes of body orifices. Everyone has their own individual microbiome, which varies depending on what we eat and the environment in which we live. "Today, we know from research that the microbiome assumes core functions relating to metabolism, the uptake of vitamins and the immune system, for example," says Adrian Egli, research group leader at the Department of Biomedicine of the University of Basel and Head of Clinical Bacteriology and Mycology (the study of fungi) at University Hospital Basel. Egli says that current studies also suggest a relationship with autoimmune diseases such as multiple sclerosis (MS), as well as metabolic diseases and excess weight. Even in the treatment of intestinal cancer using the latest drugs, it has become clear that treatment success is highly dependent on the microbial environment of the tumor. Researchers therefore hope that a better understanding of the microbiome will open up new treatment possibilities and that healthy microorganisms can be put to targeted use.

This is becoming less and less likely, however, as potentially valuable bacteria, fungi and viruses are lost on a daily basis. "The diversity of the microbiome is in rapid decline," says Egli. "This decline is probably something to do with our diet and lifestyle, environmental factors, the use of antibiotics, and climatic conditions." Analyses have shown that the

microbiome in the intestines of hunter-gatherers in the Amazon rainforest of Venezuela is twice as diverse as that of healthy people in cities in the USA.

This is where the Alpine vault comes into play. "What we have in mind is a kind of backup storage facility," says Egli, who is part of the Swiss research team that plans to lay the groundwork for construction of the Microbiota Vault over the course of a two-year pilot phase. "Otherwise, data analyses may one day show that, although a certain bacterium would have been useful for cancer treatment, it is no longer to be found anywhere in the world." Egli compares the project with the Global Seed Vault in Svalbard, where over a million seeds are kept in the permafrost of Spitzbergen in order to conserve global plant diversity for future generations and scientific research despite dramatic species extinction.

A wealth of data for bioinformatics

Work during the pilot phase is focusing on legal and technical aspects of the project. The diversity of intestinal flora is particularly high in the populations of rural areas of Africa, Asia and South America. Accordingly, the team wants to explore how difficult it is to bring stool samples from these countries for storage in Switzerland and the ethical challenges that this poses. There are also questions about the ideal forms of preservation and storage with a view to conserving the original microbiological diversity of a sample.

The precursor to the vault is currently found in Egli's laboratory at the University of Basel, where hundreds of stool samples are already stored in conventional laboratory freezers. By the end of the pilot phase, this collection is expected to grow to 2,000 samples. The focus is currently on samples taken from humans, but other microbial communities from foodstuffs, plants and animals will be added at a later stage. One unique feature of the project is that the genetic make-up of the microorganisms in each sample is deciphered using next-generation sequencing, producing data that allows the researchers to compare individual genetic features of microorganisms in the microbiome. One day, the aim is for this wealth of digital information to be made freely available to the global scientific community for further computer-based analyses.

Research infrastructure for future generations

Once the pilot phase is completed, the initiators anticipate investments of several million francs. "The construction process is anything but trivial," says Egli. "We're looking for a safe location where the vault can be supplied with power reliably. At the same time, the site must also be easily accessible for the transport of samples." The costs are currently being met by a number of universities and foundations, which are set to be joined by other globally active foundations when it comes to funding the construction and long-term operation of the facility. Egli expects that it will take at least 10 years for the microbe vault to enter routine operation. "My own microbiome research probably won't even benefit from it," he says – but that does nothing to dampen his motivation. Rather, he is fascinated by the opportunity to establish research infrastructure that will one day benefit generations of scientists. ■

More information about the project: microbiotavault.org

The precursor to the Microbiota Vault: Hundreds of stool samples are currently still being stored in conventional laboratory freezers at –80 degrees Celsius.

Princess rooms and car-themed palaces.

Text: Eva Mell

Gender researcher Dominique Grisard is interested in how the design of children's bedrooms perpetuates gender roles. She explains how much influence middle-class notions still have on today's parents.

A bulging belly: There's a baby on the way. An individual. What will its interests be? Will it one day spend its time watching insects in awe? Or lovingly changing diapers for its favorite doll? For now, the expectant parents have only a single clue to go on: It's a girl! And so they paint the unborn child's bedroom pink and hang mirrors and pictures of flowers on the wall. "These days, the nursery is often decorated with a gender-specific theme even before the child is born," says Dominique Grisard, who is researching children's bedrooms from 1880 to the present day for her project "Bedroom Cultures" at the University of Basel's Center for Gender Studies.

Children's rooms embody gender roles

The historian and gender researcher is exploring the question of how the gender order is reconstructed over and over again, and what part bedrooms – particularly those of children – play in this process. "From early childhood, the gender divide is systematically constructed by the interior design of bedrooms," she observes.

According to Grisard, over time children's bedrooms have become places in which individuality and identity are forged – including the development of gender identity. This is why, as she notes, parents ideally like to give each of their children a room of their own. "If that's not possible, they split the rooms according to gender," she explains, adding that "today it is almost a law of nature that boys and girls cannot share a room."

When Grisard visits homes in Switzerland for her research, it never fails to amaze her how much parents are prepared to sacrifice for their children. "In some homes, if there aren't enough rooms available, parents will give up their own bedroom and sleep in the living room," she recounts. As a result, mothers in particular have no private refuge in their own home.

Their daughters, meanwhile, live in princess rooms bedecked with mirrors, glitter and plush, while boys' rooms are mostly characterized by dark colors and toys of a technical nature. Grisard's research shows that from a very early age, the interior design of girls' bedrooms teaches them how important it is to look pretty in our society. Boys' rooms, meanwhile, tend to encourage activity or even aggressiveness.

Caring women and strong men

To understand how and why the interior design of children's bedrooms continues to perpetuate gender roles, Grisard also looks to the past – more specifically, the late 19th century. At that time, the bourgeoisie established gender roles that to this day still define what we think of as masculine and feminine: Middle-class women were expected to unconditionally devote themselves to the role of motherhood. According to the middle-class ideal, only a self-sacrificing mother and housewife could best provide for the needs of the nuclear family – consisting of a father, a mother and their children. Her job was to make the home an oasis of well-being, and to be loving and emotional. By contrast, the middle-class man, whose domain was the public sphere, was considered strong and rational.

Planned children in dream bedrooms

Over time, individual bedrooms eventually became "gendered," which exacerbated the differences between women and men, Grisard explains. The first step, however, was simply the separation between a parents' room and a shared nursery. The aim of this division was to allow middle-class parents to have sex in private out of sight of their children – besides distancing themselves from the working classes, in which an entire family often slept in a single room.

Since then, a great deal has changed in terms of family sleeping arrangements. While some parents give up their own room for their children, others allow their sons and daughters to sleep in a shared family bed. "Historically, this is a consequence of the exaltation of chil-

The Pink Project – Tess and Her Pink & Purple Things,
New York, USA, Light jet Print, 2006; Photo: Jeong Mee Yoon
The Blue Project – Jimin and His Blue Things,
Seoul, South Korea, Light jet Print, 2007; Photo: Jeong Mee Yoon

dren," explains Grisard. Over the course of the 20th century, the nuclear family shrank in size, as a majority of European families began to have only planned children, who were increasingly placed on a pedestal by their parents or guardians. Parents wanted to ensure that their offspring enjoyed every opportunity to fully express their own identity – while continuing to adhere to the gender differences that had become established in the middle classes.

The delicate, emotional girl sharing a room with the strong boy? As soon as they could afford to, parents were keen to avoid this scenario – and still are today. But are gender roles now really still the same as they were back then? "Today's parents want to let their daughter be a princess, with a room worthy of a king's daughter," Grisard observes. However, she emphasizes, "they also want their daughter to have every opportunity in life. There is a consensus in this regard that did not exist before."

Space explorer in pink

In other words, while the expectant parents are painting the walls of their unborn girl's bedroom pink, they also want their unique little individual to have the option of becoming a programmer or a space explorer, should she so choose. "We humans are contradictory beings, and we are influenced by a variety of discourses," Grisard remarks. But even though parents want to keep every door open for their child, the immediate effect of gender-specific design is to cement the middle-class gender order, she points out.

This effect is reinforced by the gender-specific marketing activities of toy manufacturers. The prevalence of their products in girls' and boys' rooms makes the idea of all-gender bedrooms more and more difficult to imagine. "A small minority of parents make an effort to avoid the stereotypes," Grisard says, but concludes that "there is much still to be done if we are to become a society that is not so intent on sorting children into pretty girls and active boys." ■

Molecular Biology

Exploring the cutting edge of art and science.

Swiss multimedia artist Michel Comte and the NCCR MSE (National Center of Competence in Research Molecular Systems Engineering) at the University of Basel and ETH Zurich collaborated to produce this exploration of the fascinating work taking place at the intersection of molecular biology and contemporary art. Groundbreaking developments in the field of bioengineering are rapidly changing the way we relate to the world around us, but the complexity of the science has created a vast communication gap between specialists and the general public. EL & Us – engineering life and us – is a bold, accessible visual invitation to join the discussion on the meaning and ethics of engineering organisms, a practice on the verge of changing not only how we treat disease, but how we understand life itself. Created within the framework of the NCCR MSE's interdisciplinary Art of Molecule initiative, this work contributes to the ongoing conversation about the project's research goals and the future of biological engineering. ■

Michel Comte: EL & Us
Steidl Verlag, Göttingen 2022
144 pages, EUR 58

Critical Urbanism

Visions of 21st century urbanism.

The rapidly changing and often paradoxical realities of life in urban spaces demand vast knowledge and expertise of city planners, scholars, politicians and activists alike. How can we nurture productive interchange in urban centers that are in equal parts globally networked, radically fragmented and fraught with rising inequality? The authors of this book, experts from the University of Basel's Critical Urbanism master's program, conceptualize urban studies as a practical, pedagogical approach for understanding and designing diverse 21st century cities. Through critical study of historical and contemporary inequalities, the authors derive new visions for the future of urban life.

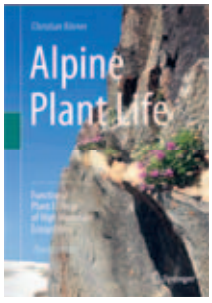
Kenny Cupers is Professor of Architectural History and Urban Studies at the University of Basel. Sophie Oldfield is Professor of Urban Studies at Cornell University. Manuel Herz is an architect and was previously an assistant professor at the University of Basel. Laura Nkula-Wenz is a lecturer in the Critical Urbanism program at the University of Basel. Emilio Distretti is a postdoctoral fellow at the University of Basel. Myriam Perret is an architect and research associate at the University of Basel. ■

Kenny R. Cupers (ed.):
What is Critical Urbanism.
Urban Research as Pedagogy
Park Books, Zurich 2022
192 pages, CHF 41

Botany

The definitive reference on alpine flora.

Christian Körner's fully revised, extended edition of this authoritative text, first published in 1999, is a comprehensive exploration of alpine plant life and the myriad biological and physical factors that contribute to its diverse and awe-inspiring forms. The book describes the characteristics of alpine plant physiology, reproduction and biogeography as well as plant interactions with soils, water, carbon, nutrients and changing climatic conditions in alpine ecosystems, drawing on examples from around the world, including the tropics. Color photography and diagrams, up-to-date insights based on current research and vivid, accessible descriptions make this incomparable classic an essential reference for field biologists and students of biology and ecology as well as citizen scientists and nature lovers the world over. ■



Christian Körner: Alpine Plant Life.
Functional Plant Ecology of
High Mountain Ecosystems
Springer Verlag,
Berlin Heidelberg 2021
500 pages, CHF 118 (hardcover) /
CHF 24.99 (softcover)

Is inflation here to stay?

After a long period of tranquility, inflation began to rise again last year. The reasons for this increase are manifold. What can halt this development.

Text: Sarah Lein

Sarah Lein
is Professor of Macroeconomics at the University of Basel. Her research focuses on the areas of monetary economics, economic cycles and international macroeconomics.

Time and time again, inflation is confused with high prices – but it actually refers to the rate at which the price level is increasing. For example, if a price goes up from CHF 10 to CHF 15 over a year and then stays put, the rate of inflation is 50 percent in the first year and 0 percent thereafter. Even if the higher price becomes permanent, the inflation is only temporary. In other words, high inflation means that prices are rising strongly and persistently over time.

Inflation is determined by three factors

First, there are what are known as "supply shocks," where prices are driven up by a shortage of certain goods, leading to higher inflation and a higher cost of living. Recent examples of this include the rise in oil prices in 2021, which has led to higher production and transport costs and therefore higher prices for goods. This trend has been further exacerbated by the war in Ukraine. Bottlenecks and disruption to supply chains have also resulted in price rises.

Second, there is a cyclical component. In an economic boom, demand rises faster than supply, causing prices to rise more quickly. Incidentally, the opposite effect is seen in recessions, where demand falls faster than the rate at which supply can be reduced. This results in an excess supply that leads to lower or even negative inflation (deflation).

The third factor are the inflation expectations of firms and households. These expectations are relevant because prices and wages are not typically adjusted day-to-day, but rather for longer periods of time – and the expectations also have an impact on prices and wages set for that time period. When companies come to set their prices, they look at factors such as expected changes in their production costs and in the prices charged by their competitors. Pay negotiations are also influenced by expectations of how sharply inflation will reduce purchasing power during the period wages will be set for. Expectations about inflation in the future thus influence prices and wages set today, which therefore determine inflation today.

What is the role of the central bank?

The role of the central bank is to ensure price stability. When prices increase in response to supply shocks caused by a pandemic or war, there is little that the central bank can do to directly address these shocks. The only way it can tackle the situation is by addressing cyclical components and expectations of inflation. When it comes to the former, the central bank can lower demand for goods and services (and therefore the economy as a whole) by raising interest rates, for example – but the underlying relationship is relatively complex and indirect. Higher interest rates make loans more expensive and therefore investments less attractive. When interest rates are higher, people also save more and therefore consume less. Furthermore, the domestic currency appreci-

ates, reducing demand for export goods. The dampening effect on demand should cause a decline in inflation, but the process is difficult to control. This is because demand doesn't always respond to the same extent to changes in interest rates. Furthermore, it often takes a long time for the impact of interest rate hikes to be reflected in demand and ultimately in inflation. Recent studies also show that demand would have to be squeezed fairly hard in order to bring inflation down.

In an open economy such as that of Switzerland, the exchange rate offers a more direct way of influencing inflation. Given that about a quarter of the goods and services consumed in Switzerland are imported, import prices make up a substantial proportion of all prices in households' consumption baskets. If the Swiss National Bank (SNB) allows the Swiss franc to appreciate vis-a-vis other currencies, there will be a relatively rapid and direct fall in the price of imported goods, thereby reducing inflation in Switzerland.

Probably the biggest influence that the central bank can have on inflation is via inflation expectations. As the central bank's aim is to keep inflation low (at a target value that it defines itself, between 0 percent and 2 percent in Switzerland), it must be able to convince firms and households that it actually does its job. Let us assume that everyone is convinced that the central bank will return inflation to the target value should it ever get too high. In that case, even if firms raise the prices of their products in response to recently higher energy costs, for example, they will refrain from making further preemptive price increases. This is because they expect inflation to fall again in the future. If all companies act accordingly, although there may temporarily be higher rates of inflation due to energy price increases, this situation will not be permanent. Indeed, inflation would return to the target value even if energy prices remained just as high but didn't continue to rise. As a negative counterexample, let us assume that the companies do not trust the central bank to do its job and that they instead expect higher inflation this year to result in higher inflation next year as well. They will preemptively build this expectation into their prices, so that the expectation of higher inflation practically becomes a self-fulfilling prophecy.

This shows how important it is for the central bank not only to pursue its objectives credibly and consistently, but also to make clear that it will – and does – take action when necessary. This credibility serves to anchor inflation expectations to the target value. Successful monetary policy is therefore manifested above all in stable and low inflation expectations. According to the (unfortunately rather sparse) data we can observe, so far, neither the euro area nor Switzerland have seen any significant increases in these expectations, which is a good sign. The USA, on the other hand, has recently seen some slight increases after a prolonged period of higher inflation – and these increases require firm action on the part of the central bank.

Is inflation coming back?

The danger of permanent inflation lurks not only in rising energy prices and shortages of goods due to bottlenecks in global value chains but also, above all, in an un-anchoring of inflation expectations – which can be shaken by prolonged periods of high inflation. Should that happen, even if a higher rate of inflation was actually due to temporary supply shocks, it could be seen as persistent and would have an impact on wage and price setting, therefore becoming a more permanent situation. Whether this happens or not depends on how credibly central banks pursue their objective of price stability and whether they also take action when they perceive this objective to be at risk. By doing so, it's possible to prevent ongoing inflation from becoming a self-fulfilling prophecy. ■

This article was written at the start of March 2022.

"Successful monetary policy is manifested above all in stable and low inflation expectations."

Sarah Lein

Official opening

New Swiss TPH headquarters inaugurated.

On 1 April, the Swiss Tropical and Public Health Institute (Swiss TPH) celebrated the official opening of the new building in Allschwil by the name of "Belo Horizonte" (Portuguese for "beautiful horizon"). Over recent months, the research groups, Administration and service departments, such as the Diagnostic Centre and the Swiss Centre for International Health (SCIH), have moved into the new building designed by the Basel architects Kunz & Mösch. The Centre for Tropical and Travel Medicine remains at the old location in Socinstrasse in Basel. Members of the governments of the two Basel half-cantons were joined by Martina Hirayama, State Secretary for Education, Research and Innovation, and other guests for a tour of the inner workings of "Belo Horizonte" and an opportunity to exchange ideas with representatives of Swiss TPH and the University of Basel. ■

The new "Belo Horizonte" building at the BaseLink innovation park in Allschwil, Basel-Landschaft.

Award

Brain research prize for Silvia Arber.

Silvia Arber studies the neural networks that control movement.

The neurobiologist Silvia Arber, who carries out research at the Biozentrum of the University of Basel and at the Friedrich Miescher Institute for Biomedical Research, is set to receive the prestigious Brain Prize from the Lundbeck Foundation alongside two other researchers. Arber will share the honor, which comes with prize money of just under CHF 1.4 million, with Ole Kiehn from the University of Copenhagen, Denmark, and Martyn Goulding from the Salk Institute of Biological Studies, USA. The jury's decision was motivated by the prizewinners' groundbreaking research into the neural networks that control movement. As the jury explains, the researchers' sophisticated experimental work has helped to improve our understanding of how intended movements are relayed from the complex networks in the brain stem to the nerve cells in the spinal cord, which control the activity of muscles in the fingers, arms and legs, for example. These insights provide a valuable basis for cell type-specific diagnosis and treatment for motor disturbances such as ALS, Parkinson's disease and spinal cord injuries. ■

Accreditation

Putting quality culture into practice.

This year, the university faces an institutional accreditation procedure by which the Swiss Confederation assesses quality assurance at universities and higher education institutions. Accreditation entitles a higher education institution to describe itself as a university and is also a requirement for receiving Federal funding. This procedure runs for several years and includes a self-evaluation report and an on-site visit by reviewers, which is set to take place in spring. The accreditation decision is then expected in September.

"The University of Basel sees the institutional accreditation process as a major opportunity for successful further development," says Andrea Schenker-Wicki, President of the University of Basel. She adds that the procedure provides valuable impetus for the application of a quality culture and for encouraging institutionalized dialogue on quality-related topics across all levels of the university. ■

unibas.ch/accreditation

Wage analysis

On course for equal pay.

At the University of Basel, there are unexplained pay differentials of 0.5% between the genders – to the disadvantage of women. This figure is the finding of a statistical wage analysis by the Competence Centre for Diversity and Inclusion at the University of St. Gallen. The unexplained pay gap between men and women is therefore significantly lower than the tolerance level of 5% defined by the Swiss Confederation.

Wages at the University of Basel meet the principle of "equal pay for equal work" enshrined in the Swiss Federal Constitution, and the university has therefore received the "We pay fair" seal of approval. The positive outcome of the wage analysis is largely due to the fair and nondiscriminatory wage system in place at the University of Basel. ■

Dr. Sarah Symanczik in FiBL's bright, new greenhouse for studying plant cultivation and soil fertility. In the image to the right, she is preparing soil samples for PCR sequencing.

Alumni careers: Sarah Symanczik

In the field for mission "soil fertility".

Text: Davina Benkert

What is it that makes good soil good? Biologist Sarah Symanczik is dedicated to finding the answer. She is currently conducting research into European wheat farming to determine what makes soil resistant to climate stress.

Dr. Sarah Symanczik studies how practitioners of organic farming can work with soil to increase yields and improve soil resistance to climate change. Symanczik, a biologist, laid the groundwork for this research in her dissertation, which she completed at the University of Basel's Institute of Botany. Her dissertation focused on whether inoculating soil with mycorrhizal fungi could increase plant growth and resistance to drought. Mycorrhizal fungi are microorganisms that enter into natural symbiotic associations with plants through interactions with their root systems in the soil. Their extensive underground fungal networks allow plants to absorb nutrients from the soil more efficiently. If soil is depleted, however there may be fewer mycorrhizal fungi present. As a result, plants grow more slowly and produce smaller yields.

From theory to practice

Symanczik's determination to use her research to help solve agricultural challenges motivated her to apply for a position at the Research Institute of Organic Agriculture (FiBL) in Frick, Switzerland after completing her doctorate in 2014. FiBL is one of the world's leading institutes in the field of organic agriculture. The institute focuses on interdisciplinary research and pursues joint initiatives together with farms and the food industry. "During my studies, I was always more interested in applied research than I was in basic research. FiBL has a strong focus on practical applications and implementation of research findings. Working here and contributing to the development and increased acceptance of organic farming methods is my dream job," explains an enthusiastic Symanczik.

In her first project following her dissertation, she studied whether it would be possible to increase the yield of date palms in Morocco by inoculating the soil with mycorrhizal fungi and fertilizing with compost. The trials were so successful, reports Symanczik with pride, that the date farmers who worked near to the test trees adopted the same methods for themselves.

As to the question of whether mycorrhizal fungi could help improve the yields of potatoes or wheat in Switzerland, Symanczik remains somewhat skeptical. The method is effective primarily for dry soils in regions that receive little precipitation, as soil fertility in these areas is normally lower. Most Swiss soils, in contrast, even those farmed using conventional methods, generally have a higher level of fertility. "The reason for that," says Symanczik, "is that many Swiss farmers employ agricultural practices that increase soil fertility. That means that farmers apply crop rotation to prevent soil depletion and organic fertilizers and compost on a regular basis."

Swiss soils under pressure

Yet the soil in Switzerland is facing increased stress due to climate change. "To protect the soil and the agricultural sector in Switzerland, we need to know our options for dealing with the effects of climate change. Wheat is one of the most critical staple foods in Europe, and it is of key importance for ensuring long-term food security," says Symanczik, explaining the motivation underlying her current research project, which is funded by the Swiss National Science Foundation. She and her team have joined with European partners to study how different types of soil used for wheat cultivation respond to climate stress, such as drought or increased atmospheric CO_2 concentrations, and investigate the behavior of soil microorganisms. In a test field in France, the researchers explore how the soil responds when the weather is drier than average or when atmospheric carbon dioxide rises. "We want to learn what soil properties and microorganisms help increase soil's resistance to stress and climate change. The goal is to protect agricultural yields in the long term so we can ensure a sufficient food supply." Symanczik believes using organic farming methods is one of the best ways to do that. ■

Letter from Perth

A new start with obstacles and opportunities.

Letizia Scholl and Basil Hatz (both 34) studied medicine together at the University of Basel and graduated in 2013. Having passed her board exam for anesthesiology, Letizia began working as an anesthesiology fellow at Fiona Stanley Hospital in Perth, Australia, in August 2021. Basil got his specialization in general surgery in spring 2021 and then accompanied Letizia "down under." He is now working in trauma surgery at Royal Perth Hospital in Perth.

My partner Letizia and I always loved the idea of traveling and discovering the world. When we were at medical school, we spent six weeks of our internship year on a placement in Brazil. The differences to the Swiss system made us want to go abroad once we were fully qualified. After taking our board exams – so we already had a fair bit of experience – we started planning. Colleagues had always spoken highly about Australia, saying it was a teaching paradise. So "Project Go Abroad" soon became "Project Australia."

We knew it would be difficult to find two jobs in the same city. So we agreed to go wherever one of us found a job first, even if it meant that the other would have a gap in their CV. In September 2020, Letizia got accepted for a fellowship in Perth, starting in August 2021. Still in Switzerland, we embarked on a seemingly never-ending odyssey through red tape and formalities. A month before we were supposed to leave, we had packed up everything but were still waiting for our visas. Our precious papers finally arrived just two weeks before our flight in July 2021.

Quarantine and culture shock

So there we were on the plane to Perth – two suitcases each and no idea what Australia would be like. Our welcome in Perth was not as warm as we had hoped: A police escort delivered us directly to the hotel where we would spend the next two weeks in quarantine.

Just before we had left, I'd seen a call for applications for a trauma surgery fellowship in Perth. So I spent my quarantine putting the lengthy application together. The application process was a nail-biting business that lasted several months. I was accepted, but the confirmation only came in December 2021 for a start in February 2022.

It was a bit of a culture shock transitioning from Switzerland, which was in the midst of another coronavirus wave, to Covid-free Western Australia where life was no different to pre-pandemic times. Still, we quickly adapted to our reclaimed freedom and the luxury of day-to-day normality: We explored Perth and set up our new life. Our reward for jumping through all the bureaucratic hoops was a small apartment with an ocean view just a few minutes' walk from the beach. Every day now is a delight!

Letizia's fellowship began in August 2021 at Fiona Stanley Hospital. The first few weeks were really tough: The combination of a new country, a new hospital, a foreign language, a different healthcare system and being away from home was very draining. Letizia started out as a general fellow for anesthesia. Then in November, she got the opportunity to do a fellowship in regional anesthesia. So now she's being trained by consultant anesthesiologists in regional techniques. The Australians are really proud of their education system and love teaching.

An enriching sabbatical

As for me, I'd thought a bit about how I could make best use of the time in our new home while I was between jobs. I spent the first month sorting out the practical things like fixing up our flat and registering our car. That left Letizia free to focus on the new challenges at the hospital. I was also looking for a job – no decision had been made on my fellowship application by that point – and I did some further

training online. Another project grew out of the question everyone kept asking me before I'd left: What would I do in Australia without a job? "I'm going to swim with dolphins," was my tongue-in-cheek reply. That gave me the idea of volunteering with animals.

I got my chance when we visited Caversham Wildlife Park, which is dedicated to preserving endangered species and looking after wild animals that have been orphaned or injured. While we were there, we learned that the park relies on help from volunteers. So from then on, I worked at Caversham Wildlife Park on Thursdays. Volunteering there was a real highlight of my sabbatical. Working in an entirely new area and experiencing things that had nothing to do with medicine really taught me a lot. Also, I'd never had much to do with animals before so being able to see these fascinating wild creatures up close and be partly responsible for their well-being was hands down one of the most enriching experiences of my life.

My traumatology fellowship began in February at Royal Perth Hospital. It's a leading trauma center in Western Australia – which means it treats any patient who has to be hospitalized for a severe traumatic injury. My Australian medical license hadn't been issued by the time of my induction, so I spent the first week as an observer and accompanied my colleagues on rounds, in the OR and in the emergency department. It was fascinating and really instructive; the perfect introduction without any of the pressure that I would have been under if my license had been issued on day one. The team was really open and welcoming from the start – once again, I was bowled over by how helpful the Australians are.

A lovely way to wrap up his time as a volunteer at Caversham Wildlife Park: Basil gives Letizia a peek behind the scenes.

Don't wait – just do it

After seven months in Australia, we've finally settled in and have made a great life for ourselves here. We've had a wonderful time so far – it's been exciting, and we've learned a lot. Now we're really looking forward to what's still to come. My position means that we can stay until at least January 2023. We deliberately chose not to commit to any jobs in Switzerland so that we could stay flexible in case other opportunities come up here in Australia. The question of whether we'll stay forever has presented itself a few times, because the working conditions for physicians and the quality of life are much better here than in Switzerland. But we're both very close to our friends and family, so we'll probably want to go back at some point.

Although the preparations for our trip were nerve-racking and made us doubt ourselves a fair bit, it was more than worth the effort. "Project Australia" is teaching us so much in every respect. Professionally and within our specialties, we're gaining new perspectives – in a positive as well as a negative sense. We've moved out of our comfort zone and are now living and working in a foreign language. Both of these things have broadened our horizons. I'm glad that I dared to have a gap in my medical CV because it gave me new experiences through the volunteering, and allowed me to take some time out and do things just for fun.

In short, we'd say this: If you're dreaming about doing something new and exciting, don't hesitate – just go ahead and do it. It's so worth it! ■

Dominique Brancher is Professor of General and Early French literature at the University of Basel. Her specialist area is the Renaissance. She believes in combining the study of languages and literature with an openness to historical and cultural anthropology. She is interested in the interplay between literature and other academic disciplines such as medicine, science and philosophy.

Photo: Andreas Zimmermann

Dominique Brancher

On the potential of unread books.

"Do you really have to take in every comma to call yourself a reader?"

In Japanese there is a beautiful, untranslatable word: *tsundoku*. It means to buy a book without reading it and to add it to the pile of other unread books. This is something I struggled with for a long time, until I came across Pierre Bayard's book *How to Talk About Books You Haven't Read*. This provocative work in praise of not reading seems to me to be based on a profound conception of reading. As a four-year-old, I boasted of having read my first novel, but now I was asking myself what is meant by "to read a book," which may seem self-evident but really is not. There are different categories of "unread" books: those that you do not know, those you have heard of, and those that you have read but then forgotten about again. And then there are those you have just flicked through. But do you have to take in every comma to call yourself a reader? This is the sorites paradox: How many grains of sand are needed to constitute a heap of sand? The boundary between reading and not reading turns out to be fluid, especially as it is possible to be cultured even if you do not read. It is enough to know what position these untouched books occupy in both the collective library – that of the culture we inhabit – and our inner library – that founded on our own experiences and beliefs.

When the anthropologist Laura Bohannan introduced *Hamlet* to the Tiv people of west Africa, the response was indignation and an unexpected reading of the text. How is the ghost of Hamlet's father able to walk? Is he a zombie? And why does Hamlet's mother wait for two months before marrying the brother (and murderer) of her dead husband?

In short, a work exists primarily as a mental image that we capture in words with the aim of sharing it with others, regardless of whether we have read the text. If we do not read it, we may even be better equipped to talk about it in our own words. In the process, not only the unread work but the non-reader themselves is changed. This is neither an outrage nor a betrayal of oneself or of culture; rather, it opens up huge possibilities for reinvention. The reader risks becoming a plagiarist, whereas the non-reader risks becoming a writer. I will leave you to draw your own conclusions about the way in which I have not read Bayard. As English writer Sydney Smith said, "I never read a book before reviewing it; it prejudices a man so." ■

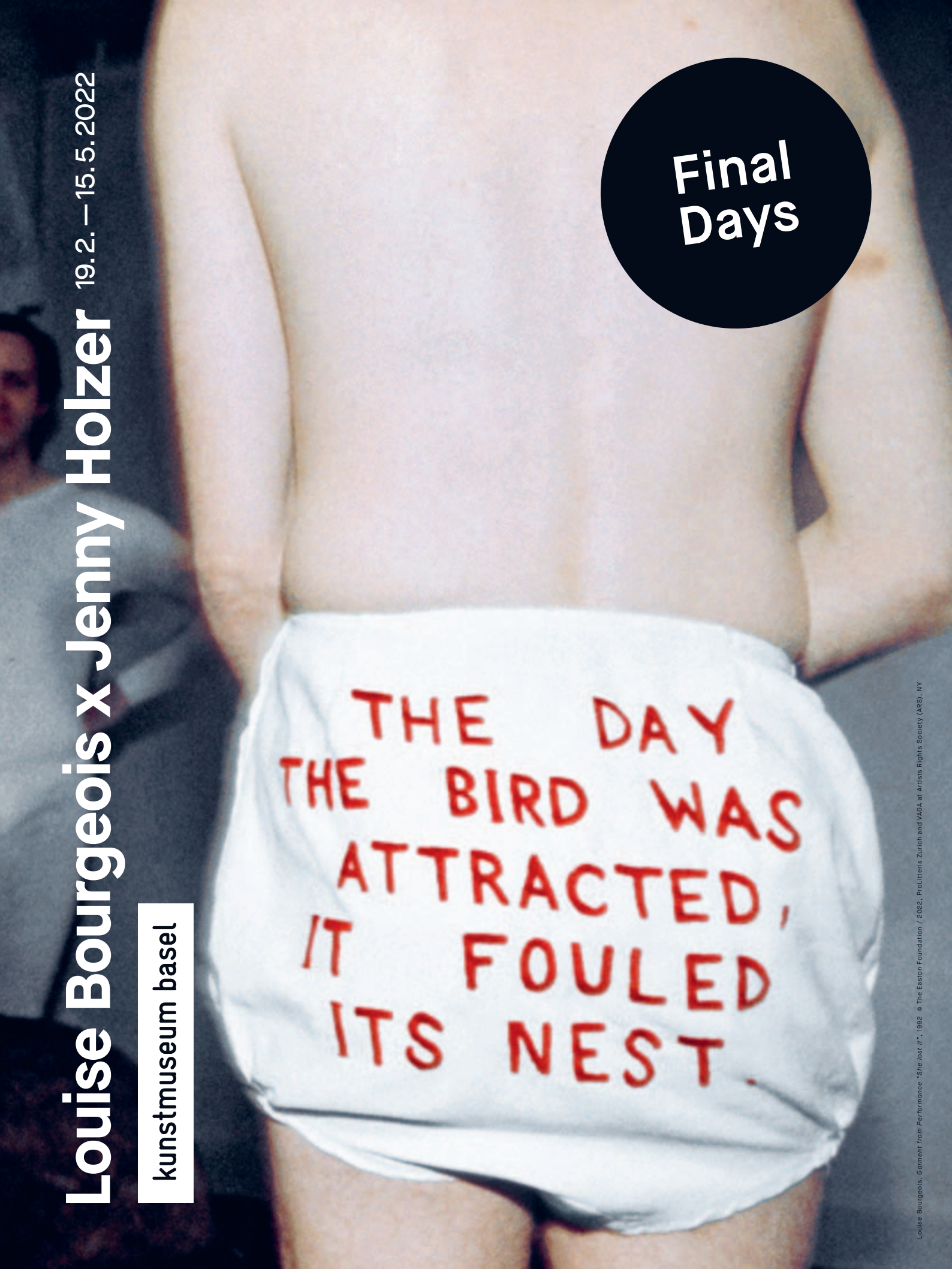
Photo ‹Der Spieler›: Ingo Höhn

Louise Bourgeois x Jenny Holzer

19.2.—15.5.2022

kunstmuseum basel

Final Days



Louise Bourgeois, *Garment from Performance "She lost it"*, 1992 © The Easton Foundation / 2022, ProLitteris Zurich and VAGA at Artists Rights Society (ARS), NY