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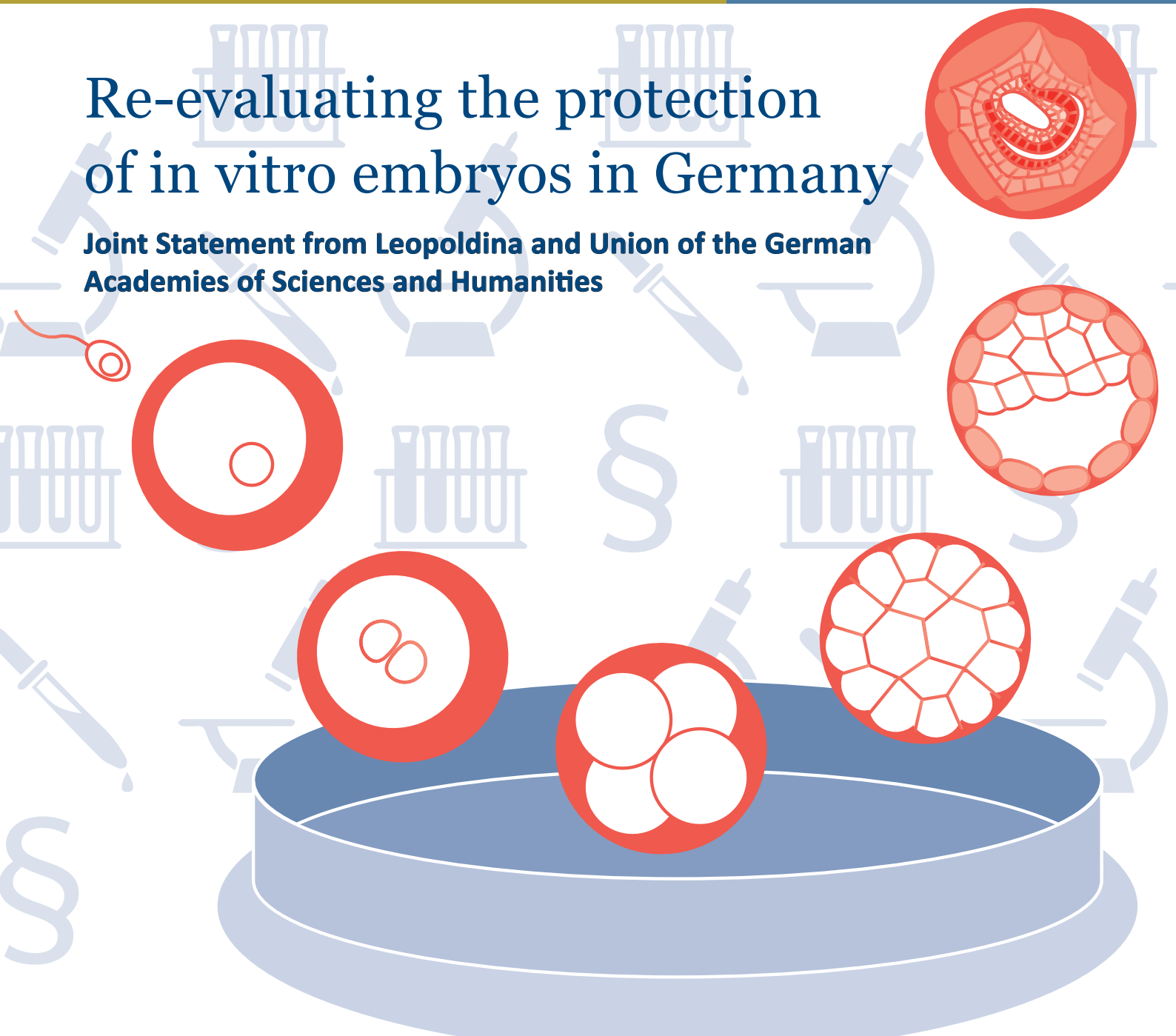
Deutsche Akademie der Naturforscher Leopoldina –
German National Academy of Sciences

Halle (Saale), 28 May 2021

Re-evaluating the protection of in vitro embryos in Germany

Joint Statement from Leopoldina and Union of the German Academies of Sciences and Humanities



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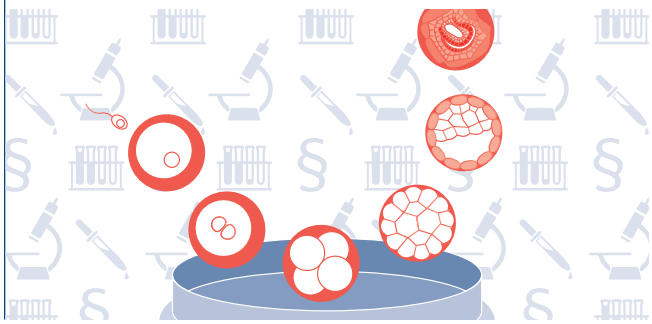

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Editorial

Dear Members and Friends of the Leopoldina,

Climate protection goals, biodiversity, and the safe use of health data during pandemics were the three issues highlighted to the G7 governments by the science academies of the G7 countries, including the Leopoldina, ahead of this year's G7 Summit. Discussions at the event, which is taking place in Carbis Bay in Cornwall/UK from 11 to 13 June, will undoubtedly largely centre around the COVID-19 pandemic and its consequences. Deliberations will nevertheless also focus on other current challenges, which must be addressed through international cooperation if there is to be any chance of success.

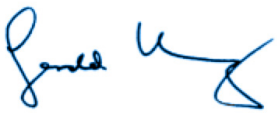
Prof. (ETHZ) Dr. Gerald Haug, President of the Leopoldina

Image: David Ausserhofer | Leopoldina

With this in mind, the advice given by the science academies for this year's G7 Summit includes possible courses of action for achieving the net-zero climate target. This is an important topic because steps towards reaching climate neutrality must be taken promptly and consistently. Further information on this, including numerous graphs and other diagrams, can be found in our recently published climate change fact sheet. Another pressing issue is the need for resolute action across all levels of society to protect biodiversity. The academies have also drawn on lessons learnt from the COVID-19 pandemic to emphasise the importance of establishing a trustworthy and equitable system for sharing health data worldwide (see page 4).

This year, the statements were prepared under the leadership of the Royal Society. Next year, it is once again the Leopoldina's turn to coordinate the advice given by the science academies prior to the G7 Summit. Preparations will begin in autumn to select the topics to be presented to summit participants in 2022. I am already looking forward to taking on this challenge together with our partner academies.

I hope you find this issue an interesting and inspiring read.



“It’s time for a turnaround in how we control access to health data”

Leopoldina member Roland Eils on a statement by the national science academies for the G7 Summit

Initial steps have been taken towards creating international standards and terminology for health data. According to the statement published by the national science academies for the G7 Summit, standards for sharing data in a trustworthy manner are also needed. *Image: pickup | Adobe Stock*

The G7 governments are meeting for their next summit in Carbis Bay/UK from 11 to 13 June. In the run-up to the event, the science academies of the G7 countries have published the statement “Data for international health emergencies: governance, operations and skills”. Bioinformatics and medical informatics specialist Roland Eils ML was one of the scientists involved. In this interview, he explains the importance of establishing a reliable system for sharing health data globally.

Data is the gold of the 21st century. Why does the healthcare industry need a system for sharing data internationally?

Roland Eils: The ongoing COVID-19 pandemic is a clear example of how important it is to collect and share health data both nationally and internationally. When introducing measures to fight the pandemic, many governments have been partially flying blind because data, such as information on the risk of infection from children or the emergence of clusters of infection, was either unavailable or was made available too late for sound decisions to be made. Had data relevant to pandemic preparedness and response been collected nationally and brought together internationally, decision-makers would have been able to control the pandemic more efficiently. It would also have been possible to provide better explanations of the measures needed.

The science academies of the G7 countries have been advocates of data sharing for many years. Why is it proving difficult to turn this vision into reality?

Eils: One problem is that, wherever possible, health data needs to be collected and stored in a way which is standardised in accordance with international criteria. Otherwise, every country, state or even every hospital could potentially treat data differently, which would prevent it from being compared. Having said that, we’re making good progress to overcome this and an increasing number of internationally accepted standards are being introduced. For example, we now have standards for describing disease types, collecting lab data or gathering genetic information.

So what is the root of the problem?

Eils: The greatest challenges are on the legal and regulatory front. It is essential to clarify who is making the health data available, who is authorised to process the data and which legal requirements must be observed to share the data internationally. Health data is primarily personal data of a very sensitive nature. This means that matters relating to data security, data protection and data sharing play a particularly important role when making health data available in a health data space. We need such action to be widely accepted by the population.

How can this be achieved?

Eils: Instead of putting institutions like hospitals, health insurance providers and other healthcare industry stakeholders at the centre of decisions concerning how health data is used, I believe it is crucial to place each and every citizen at the forefront. This would involve giving every individual digital access to their personal health data so that they can decide who should be given permission to access which data for which secondary purposes. Achieving this turnaround in how we control access to health data would mark an important step forward.

What are the key components of a reliable system for sharing data internationally?

Eils: Internationally recognised terminology is needed to describe disease patterns and laboratory findings in a uniform way. For instance, it is crucial that we can unambiguously state which disease a patient is suffering from or how a patient's blood glucose level was measured. There are already successful examples of systems used to standardise terminology, such as the International Statistical Classification of Diseases and Related Health Problems (ICD) and the Systematized Nomenclature of Medicine (SNOMED). Given the diverse nature of healthcare IT systems, we also need to agree on standards for describing data so as to enable interoperability as well as find a standardised, trustworthy way of sharing data in a health data space.

Are you hoping that the G7 Summit will help to drive this forward?

Eils: One of the recommendations in our statement calls for the establishment of an international commission, which could draw on the example of the COVID-19 pandemic to put forward a proposal detailing which data and which forms of data should be collated internationally for which purposes as well as how this should be done. It would be an important step in the right direction if the G7 countries could set the wheels in motion for this.

Roland Eils ML

The geneticist and bioinformatics and medical informatics specialist uses artificial intelligence and big data analytics in connection with data from genome research to research disease-related processes. He has been the Founding Director of the BIH Digital Health Center at the Berlin Institute of Health at Charité since 2018.

Foto: David Ausserhofer | BIH

In Germany, the development of digital health data is still not properly underway. How can the Leopoldina speed up this process?

Eils: In Germany, the attitude towards data protection is generally one of only seeing the downsides. As a result, the opportunities created by digital, interoperable and shared health data are not even being taken advantage of to a rudimentary extent. The Leopoldina could help improve the situation considerably by drawing up safeguards and guidelines for the trustworthy and safe use of health data. This would require discussions to take place across a wide range of disciplines. I can't imagine any organisation better placed than the Leopoldina to lead these discussions.

■ THE INTERVIEW WAS CONDUCTED BY BENJAMIN HAERDLE

▶ G7 statement „Data for international health emergencies"

G7 science academies present statements

Discussing biodiversity, climate change, and health data

In the run-up to the G7 Summit in Carbis Bay/UK from 11 to 13 June, the national academies of sciences in Germany, France, Italy, Japan, Canada, the USA and the UK have prepared a set of science-based recommendations on three topics for the leaders of the G7 countries.

The academies have proposed a decarbonisation road map for achieving the target of net-zero greenhouse gas emissions by the middle of the 21st century. Their proposal outlines the need to use all available low-emission and emission-free technologies, to invest more in research and development, and to create financial incentives for significantly reducing emissions. They also recommend that the G7 countries support middle and low-income countries to become climate neutral.

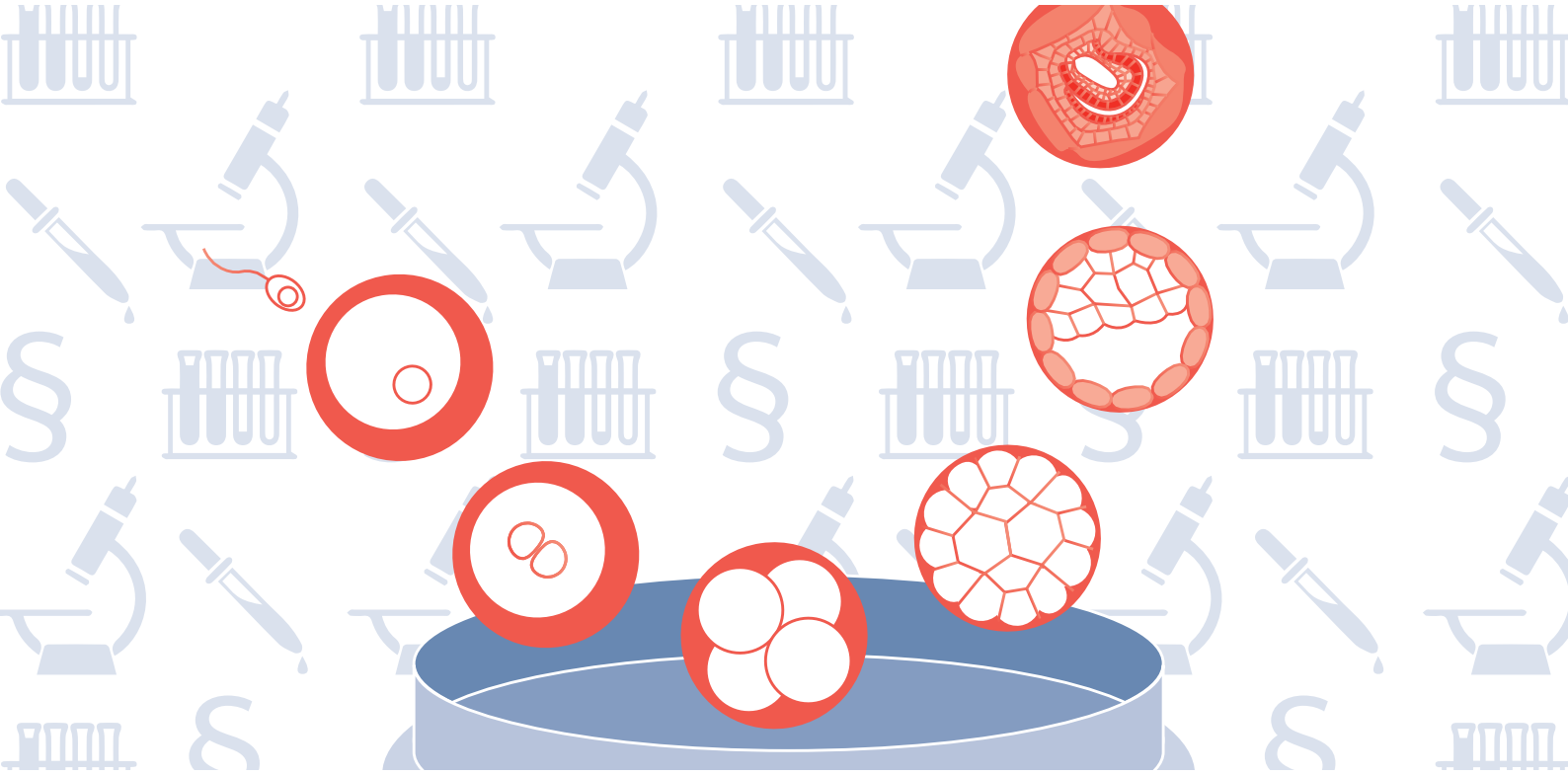
In the face of the global biodiversity crisis, the G7 academies are also calling for steps to be taken to halt and reverse the ongoing dramatic rate of species loss as quickly as possible. In their statement, they recommend that the many values of biodiversity be taken into account during political decision-making and advocate cross-sector solutions for protecting species. The academies also suggest developing an international monitoring network to keep track of progress both nationally and internationally.

The third statement recommends the development of a reliable system for the global sharing and use of health data, the development of secure and privacy-preserving technologies and infrastructures, and the promotion of skills in handling sensitive data (see the adjacent interview with Roland Eils ML). ■ CHW

▶ G7 statements 2021

“Striving to find an appropriate way to handle human embryos”

Guest article by Leopoldina member Jochen Taupitz and medical ethicist Claudia Wiesemann



The German National Academy of Sciences Leopoldina and the Union of the German Academies of Sciences and Humanities have published a joint statement on re-evaluating the protection of in vitro embryos in Germany..

Graphic: PINO NOA – Pia Bublies & Nora Coenenberg, Hamburg

The Leopoldina and the Union of the German Academies of Sciences and Humanities have published a statement on re-evaluating the protection of in vitro embryos in Germany. The science academies’ aim was to present comprehensive information and science-based recommendations on how to initiate the required re-evaluation of the legally permissible and ethically justifiable ways of handling early human embryos outside of the body in Germany.

BY JOCHEN TAUPITZ ML* AND CLAUDIA WIESEMANN*

The Embryo Protection Act (ESchG) entered into force more than 30 years ago. As part of its objective to prevent the misuse of reproductive medicine and human genetics, it prohibits any kind of research on embryos in vitro. However, before the ESchG came into effect, discussions on research policy emphasised how the prohibitions laid down in the act were not set in stone, but rather could be modified in line with changing social values and scientific progress. “In the long term, even laws can’t prevent changes in social values from prompting us to reassess the rejection of embryo research,” said Wolf-Michael Catenhusen, who chaired the Study Commission on Opportunities and Risks of Genetic Engineering at the time.

Renewed discussions on the permissibility of research on embryos for high-level research objectives are, in fact, long overdue. This is because there are numerous important scientific questions, which can only be answered by means of embryo research. In addition to resolving fundamental matters concerning embryonic development and the early stages of diseases, embryo research can also help to answer important questions in the area of reproductive medicine. It can be used to find better fertility treatments, to improve the survivability and healthy development of embryos and foetuses during pregnancy, and to help prevent premature births.

In Germany, a large number of embryos created during reproductive treatment are never used, mostly because the couple concerned have completed their family. To date, the only options are to discard these “surplus embryos” or – despite the current lack of precise legal guidelines – to donate them to other couples

wishing to start a family. In many countries, the third option is to use these embryos for high-level research objectives. However, this is currently not possible in Germany. As a result, German scientists are also largely unable to contribute to the development of international standards. Even in cases where the law in Germany does not stand in the way of scientific cooperation, the fear of criminal prosecution frequently deters scientists in Germany and abroad from even considering the idea of working together. This is causing significant harm to Germany as a research site.

> *"Renewed discussions on the permissibility of research on embryos for high-level research objectives are, in fact, long overdue."*

Opinions still vary widely on the appropriate way to handle human embryos outside of the body. Nevertheless, liberal societies are characterised by their tolerance of different ethical viewpoints and their desire to find political compromises. With this in mind, in vitro research (i.e. research conducted outside of the human body) on early embryos which were originally created for reproductive purposes, but are no longer needed for this should be allowed in accordance with international standards and within certain limits.

Research should only be permitted for high-level objectives, where fundamental research is used to gain scientific knowledge and to expand medical knowledge for the purpose of developing diagnostic, preventative or therapeutic procedures. Scientists should also be permitted to obtain human embryonic stem cells from surplus embryos to use for high-level research objectives. The high-calibre nature of each research project should be verified by a specially created committee.

The couples from which the embryos originate should be the ones to decide whether to make surplus embryos available for research purposes. To help them make an informed decision, couples should be given independent counselling beforehand.

A legal framework should also be established to regulate the use of surplus embryos in research projects. As part of this, a federal authority could work together with an ethics committee to decide on a case-by-case basis whether projects should be permitted. This would be comparable to how the Robert Koch Institute and the Central Ethics Committee for Stem Cell Research (ZES) provide permission as regulated for in the German Stem Cell Act (StZG). Here, the aim must be to ensure that the research projects are of a high calibre and that the embryo research can be monitored.

This could be modelled on the process followed by the Human Fertilisation and Embryology Authority (HFEA) in the United Kingdom. This would also create transparency, which would facilitate informed public discourse. This level of legal reform would give German scientists the opportunity to participate in international research projects in this field.

The new regulatory framework should also take into account current and unfolding scientific developments, such as the creation of embryo-like structures ("embryoids") or embryos created from gametes produced in vitro. To enable new developments to be responded to, statutory review and reporting periods should also be put in place.

* Jochen Taupitz is one of two spokespersons for the academies' working group "Design of contemporary embryo protection in Germany"; Claudia Wiesemann is one of the group's members.

Jochen Taupitz ML

Director of the Institute for German, European and International Medical Law, Public Health Law and Bioethics of the Universities of Heidelberg and Mannheim/Germany. His main areas of focus are medical and public health law. He values interdisciplinary studies and uses insight from Bioethics, Natural Sciences and Medicine. Image: private

Claudia Wiesemann

Medical ethicists, medical historian and head of the Department of Medical Ethics and History of Medicine at Goettingen University/Germany. She is currently working on the ethics of reproductive technology, the moral status of the child and child rights in medicine and is interested in bioethics and the life course. Image: Philip Bartz | Leopoldina

▶ Joint Statement „Neubewertung des Schutzes von In-vitro-Embryonen in Deutschland" (German only)

“I still need to get to know the Academy”

Leopoldina member Ruth Ley presents microbiome research at Class II Life Sciences symposium

The second virtual Life Science Symposium on 21 June is an opportunity for Class II to exchange views and to get to know the new members elected in 2020. Among them is Ruth Ley ML, who conducts research on the human microbiome.

You often hear that 90 percent of the cells in our bodies are bacteria. Is that true?
Ruth Ley: It‘s used as a catchy phrase. I think someone redid the math recently and revised the number. But even if it‘s just the same amount as our body cells, they have 150 times the number of genes that we have, even though they weigh only half a kilo to a kilo.

Now there is a lot of talk about how the microbiome influences our health. What is your research interest?
Ley: We are more interested in where it comes from. How microbiota have been carried by people as they spread around the globe and adapted to novel conditions.

How much of the microbiome is inherited and how much is acquired?
Ley: Definitely your mother and your father are important players, your close environment. Genetics have an influence on a specific suite of microbes. What we‘ve seen is that host genetics influence the relative abundance of some of these microbes, and we think they have particular role to play in the gut.

One of your interests is to look at how the microbiome influences obesity.
Ley: I was the first to point out that obese people have a different relative abundance of microbes. Now we are interested in a specific microbe that we see more of in lean people. We‘re doing studies in mice, and when we add these microbes to the mix, the mice move around more. I certainly wouldn‘t say that these microbes prevent obesity, but they might play a role in it.

Ruth Ley ML

The British developmental biologist and microbiologist first turned her attention to researching the microbiome at the Washington School of Medicine in Seattle/USA in 2004. She has been a director at the Max Planck Institute for Developmental Biology in Tübingen/ Germany since 2016.

Image: Jörg Abendroth | MPI for Developmental Biology

Could that lead to an anti-obesity pill?
Ley: I think that would be something that you take over and over again. It would never work alone, but maybe as part of a package together with nutrition and lifestyle. In the States now 42 percent of the population is obese. That’s a public health crisis. It would be great if the microbiome could be part of the solution.

How do antibiotics influence the microbiome?
Ley: If you take antibiotics once, it doesn’t really have a big longterm effect. But if you‘re doing it over and over again, I‘d be concerned. Another danger is that the microbiome might act as a reservoir for antibiotic resistance genes, and they might pass those genes to pathogens that come in.

When you received the Otter Bayer Prize last year, you said that you hope it helps to get microbiome research more into the mainstream of science. Is it still on the sidelines?
Ley: I think there is this pervasive attitude out there that the jury is still out. Is it really going to be useful in the medical sciences? Is it going to be incorporated into therapeutic approaches to disease? And I think we‘re at the very beginning of that.

What made you decide to go to Germany to do your research?
Ley: The stability of the research budget that you get at Max Planck. It gives you the possibility of freeing your mind from grant restraints. Just be able to start working on anything you want without asking permission, to figure out something hard that takes a long time. That‘s a bit of a tough sell to the NIH, for instance. So in that sense we‘re really privileged and I couldn’t turn it down.

What does the election into the Leopoldina mean for you?
Ley: Oh, that was a complete surprise, and I feel very honored. I still have to get to know the Academy.

That wasn’t made easier during the pandemic when you didn’t receive your acceptance documents in person and the symposium had to be postponed?
Ley: Yes, that‘s one thing Germans do really nicely, these events where everyone has a glass of wine and and you chat with people informally. So I am looking forward to meeting the people in the Leopoldina in person. Meeting people, cross-pollinating and chance encounters – that‘s what it‘s all about, even though scientists will probably still travel less than before when the pandemic is over.

■ THE INTERVIEW WAS CONDUCTED BY CHRISTOPH DROESSER

▶ Life Science Symposium

Best-in-class technologies as policy foundation

2021 Research Summit discusses guidelines for innovation policy

Gerald Haug, President of the Leopoldina (middle) and Andreas Barner, President of the Stifterverband, hosted the 7th German Research Summit in May. Screenshot: Leopoldina

For the next federal government, research policy and innovation policy will be two central areas to work on. This was the unanimous conclusion reached by the experts from science, business and politics at the seventh Research Summit which took place virtually on 19 May.

At the invitation of Stifterverband (the donors' association for the promotion of humanities and sciences in Germany), the Expert Commission on Research and Innovation, the Volkswagen Foundation and the Leopoldina, German Chancellor Angela Merkel and the directors of major German companies, economist Lars Feld ML, information scientist Sebastian Thrun ML and other top-ranking experts came together to discuss two questions: Should German research and innovation policy be directed more strategically in order to guide transformation processes towards particular targets? Which key technologies and infrastructure elements need to be reinforced in the future to ensure that Germany and Europe retain scope for manoeuvre in competition with the USA and China?

Participants were in close agreement that Germany cannot rest on the laurels of the last two decades where science and innovation are concerned. Instead, they felt that innovation policy after the national election needs to aim for more coordination between the departments involved and greater flexibility in the conditions surrounding the promotion of promising but risky projects. Serious challenges were seen in such areas as the transfer of research results into commercial application and the acceleration of authorisation processes.

Technological sovereignty as the guiding principle, which increasingly dominates the debate on innovation policy, was the subject of lively discussion at the Research Summit. The warning that it could be misused as an argument for supporting less promising areas of technology was countered with expressions of hope that it could act as a wake-up call and make Europe a leading innovator in key technologies once again. ■ ART

▶ German Research Summit (German only)

Agreement with Russian Academy

The Leopoldina renews Memorandum of Understanding

The Presidents of the Leopoldina and the Russian Academy of Sciences (RAN), Gerald Haug ML and Aleksander M. Sergeev, signed a new Memorandum of Understanding between their two national academies at a virtual meeting on 19 February. It replaces the previously valid Memorandum of 23 May 2011.

The RAN has been one of the Leopoldina's seven international strategic partners since 2011. Their cooperation has focused on supporting early-career researchers and providing policy advice for the G20 summits of heads of state and government. Between 2011 and 2014, the national academies organised the German-Russian Young Researchers Forum series of events at various locations in Russia and Germany. This was one of the most important event formats that have been initiated during the 2011/12 German-Russian Year of Education, Science and Innovation.

The new Memorandum aims to strengthen the partnership between the two academies. The objective is for their cooperation to be broadened so that it better reflects their respective portfolios and can cover new topics. Plans are also in place to establish a German-Russian Council of Young Researchers and Innovators, which will take the form of a bilateral young academy and serve as a central organisation for supporting early-career researchers. The Leopoldina and the RAN will also organise an annual German-Russian Science Day, which will be a high-level forum for interdisciplinary discussions. This is due to be launched in October 2021.

■ LB

▶ Strategic Partnership Russia

Science and media come together

SILBERSALZ Conference: Application for Science & Media Pitch is open until 21 June

Scientists wishing to present their projects at this year's SILBERSALZ Conference have until 21 June to apply. Submissions are being accepted for ongoing research projects in any scientific discipline. The organisers are particularly interested in topics of social relevance and in creative formats with the potential to communicate scientific knowledge in a way which is easily understood and appeals to a public audience.

To apply, applicants simply need to submit a brief project description, a project photo and a statement outlining why they wish to take part. The selected projects will be presented at the SILBERSALZ Conference Science & Media Pitch at the Leopoldina in Halle (Saale) from 16 to 18 September. They will then be discussed by an international audience from the worlds of science, media and industry. These discussions between researchers and media professionals will inspire new ideas for communicating science and help participants to forge new partnerships.

The conference is part of the SILBERSALZ Festival, which is taking place for the fourth time in Halle (Saale) from 15 to 19 September. This year, the Festival will explore what science can and should do to build peace and create a better society. As part of this, it will examine how injustices can be pointed out and overcome. Initiated by the Robert Bosch Stiftung and Documentary Campus e.V., the Leopoldina supports the event once again as partner. ■ VB

▶ SILBERSALZ Conference and Festival

Two Leopoldina members chair committee

Half of the members of the Joint Committee on the Handling of Security-Relevant Research were replaced in April. Representing the Leopoldina Presidium and the German Research Foundation Presidium, Thomas Lengauer ML and Britta Siegmund ML will take the chair for the next three years. For this new term of office, the committee aims to further promote the independent, responsible handling of security-relevant research risks by research institutions. To this end, the committee members intend to foster national and international exchange. ■ AKE

▶ Joint Committee on Dual Use

EASAC, FEAM

Decarbonisation of the health sector

The European Academy Networks EASAC and FEAM have published a commentary titled "Decarbonisation of the Health Sector". Despite contributing about five percent of global CO_2 emissions, the health sector was previously often neglected in discussions about decarbonisation.

EASAC and FEAM highlight that a concerted policy-making effort at European Union level is needed, in spite of some decarbonisation initiatives in the sector, in order to holistically implement climate change mitigation and climate adaptation strategies. Attention should also be paid to other sectors and global regions. ■ JMO

▶ Decarbonisation of the Health Sector

ALLEA, EASAC, FEAM

Personal health data for research

For researchers, it is vital to be able to access and share health data on a global level. This data transfer ensures sufficiently large sample sizes and enables researchers to compare the progression of diseases in different settings. Events such as Brexit and the implementation of the General Data Protection Regulation (GDPR) are increasingly introducing impediments to this transfer. Three European science academies networks are therefore calling on EU policy decision-makers and legislators to reduce such impediments to sharing personal health data with researchers outside of the European Economic Area (see page 4). ■ JMO

▶ Sharing of Personal Health Data for Research

Academies Research Initiative

Researching academies history in Europe

In June 2019, the national science academies of Germany, France, Italy, Austria, Sweden, the Czech Republic and the United Kingdom joined forces to form the "European Academies Research Initiative", with the aim of gaining new insights into the history of academies in Europe. The online workshop "The History of European Academies in the 20th Century" organised at the Italian Accademia dei Lincei on 27 May represented an important first step for the initiative. It gave an overview of the topic, including a presentation of the state of research as well as desiderata for future research, across the different countries. ■ RST

▶ The History of European Academies in 20th Century

Leopoldina mourns the loss of geologist Ilse Seibold

The researcher founded the Georg Uschmann Award for the History of Science together with her husband, Eugen Seibold

Ilse Seibold died on 18 March 2021 at the age of 95. Together with her husband, the geologist founded the Georg Uschmann Award for the History of Science, which is presented by the Leopoldina.

She was born on 8 May 1925 in Wrocław/Poland and attended school in Halle (Saale). After studying geology in the German cities of Bonn and Tübingen, Ilse Seibold earned her doctorate for her research on microfauna and stratigraphy in the Swabian Lower Lias alpha in 1951, working under Otto Schindewolf, himself a member of the Leopoldina since 1952 as well as a professor in Tübingen.

Ilse Seibold went on to work as a geologist for many years. In 1952, she married the marine geologist Eugen Seibold, founding father of one of the most prestigious marine geology institutes of the late 20th century in Europe and President of the German Research Foundation. From 1988 to 2005, Ilse Seibold headed the geology archive in Freiburg/Germany in an honorary capacity and published research on the lives and careers of eminent geologists and on the emergence of individual academic achievements. Through her work in the archive as well as her publications, she was able to introduce the wider public to these life stories and materials.

Ilse (right) and Eugen Seibold at Kiel University (CAU) in 2009. *Image: Heidemarie Kassens | Geomar*

She was recognised on several occasions, both for her academic achievements and for the work she undertook in an honorary capacity. In 2000, the German Geological Society appointed Ilse Seibold as an honorary member. She received the Abraham Gottlob Werner Medal from the Geological Society in 2008 for her outstanding commitment to the history of earth sciences in Germany.

In 1997, Ilse and Eugen Seibold founded the Georg Uschmann Award for the History of Science for the German National Academy of Sciences Leopoldina. It is awarded every other year on the occasion of the Annual Assembly and – at the request of the founders – has been conferred solely for outstanding dissertations since 2005. ■ SK

People

Awards and Honours

Asifa Akhtar ML, member of the Biochemistry and Biophysics Section, received the 2021 Leibniz Prize from the German Research Foundation (DFG).

Jutta Allmendinger ML, member of the Economics and Empirical Social Sciences Section, was recognised as one of "40 Over 40: Germany's Most Inspiring Women" by the online magazine "FemaleOneZero".

Elisabeth André ML, member of the Informatics Section, received the 2021 Leibniz Prize from the German Research Foundation (DFG).

Annette Beck-Sickinger ML, member of the Chemistry Section, was elected as member of the Göttingen Academy of Sciences and Humanities.

Jean-Michel Bismut ML, member of the Mathematics Section, was elected as member of the National Academy of Sciences (Washington, D.C./USA).

Donna G. Blackmond ML, member of the Chemistry Section, was elected as member of the National Academy of Sciences (Washington, D.C./USA).

Alessandra Buonanno ML, member of the Physics Section, was elected as member of the National Academy of Sciences (Washington, D.C./USA).

Alena Buyx ML, member of the Epistemology Section, received the 2021 National Prize from the Deutsche Nationalstiftung (German National Foundation) in Hamburg and was recognised as one of "40 Over 40: Germany's Most Inspiring Women" by the online magazine "FemaleOneZero".

Ulrich Christensen ML, member of the Earth Sciences Section, was elected as member of the National Academy of Sciences (Washington, D.C./USA).

Elena Conti ML, member of the Biochemistry and Biophysics section, was elected as Foreign Member of the Royal Society (London/UK).

Donald Bruce Dingwell ML, member of the Earth Sciences Section, was elected as Fellow of the Royal Society (London/UK).

Peter Falkai ML, member of the Neurosciences Section, took over the office of President of the European Psychiatric Association (EPA).

Claudia Felser ML, member of the Chemistry Section, was elected as member of the National Academy of Sciences (Washington, D.C./USA).

Usha Claire Goswami ML, member of the Psychology and Cognitive Sciences Section, was elected as Fellow of the Royal Society (London/UK).

Annette Grüters-Kieslich ML, member of the Gynaecology and Paediatrics Section, was elected as Vice-President of the European Federation of Academies of Sciences and Humanities ALLEA for the term 2021 to 2023.

Bill S. Hansson ML, member of the Organismic and Evolutionary Biology Section, was presented with the German Federal Cross of Merit, First Class.

Michael Hertl ML, member of the Internal Medicine and Dermatology Section, became President of the German Dermatological Society (DDG).

Regine Kahmann ML, member of the Genetics/Molecular Biology and Cell Biology Section, was elected as member of the National Academy of Sciences (Washington, D.C./USA).

Ursula Keller ML, member of the Physics Section, was elected as member of the National Academy of Sciences (Washington, D.C./USA).

László Lovász ML, member of the Mathematics Section, received the Abel Prize from the Norwegian Academy of Science and Letters (Oslo/Norway).

Rolf Müller ML, member of the Microbiology and Immunology Section, received the 2021 Leibniz Prize from the German Research Foundation (DFG).

Josef Pfeilschifter ML, member of the Physiology and Pharmacology/Toxicology Section, became the new Vice President of the German Association of University Professors and Lecturers (DHV).

Stefan Pfister ML, member of the Gynaecology and

Paediatrics Section, received the Léopold Griffuel Award from the Fondation ARC pour la Recherche sur le Cancer (Villejuif/France).

Peter Rehling ML, member of the Biochemistry and Biophysics Section, was elected as member of the Göttingen Academy of Sciences and Humanities.

Jürgen Ruland ML, member of the Microbiology and Immunology Section, received the 2021 Leibniz Prize from the German Research Foundation (DFG).

Bernard F. Schutz ML, member of the Physics section, was elected as Fellow of the Royal Society (London/UK).

Helmut Schwarz ML, member of the Chemistry Section, received the 2021 Leonardo da Vinci Award from the European Academy of Sciences (EURASC).

Volker Springel ML, member of the Physics Section, received the 2021 Leibniz Prize from the German Research Foundation (DFG).

Diethard Tautz ML, member of the Organismic and Evolutionary Biology Section, was presented with the German Federal Cross of Merit, First Class.

Susan Trumbore ML, member of the Agricultural and Nutritional Sciences Section, received the 2021 Vladimir Ivanovich Vernadsky Medal from the European Geosciences Union (EGU).

Joachim Trümper ML, member of the Physics Section, was awarded honorary membership of the German Physical Society (DPG) in 2020.

Viola Vogel ML, member of the Physics Section, was elected as member of the National Academy of Sciences (Washington, D.C./USA).

Claire Voisin ML, member of the Mathematics section was elected as Foreign Member of the Royal Society (London/UK).

Johann-Dietrich (Jan) Wörner ML, member of the Engineering Sciences Section, was elected as President of acatech – National Academy of Science and Engineering (Munich/Germany).

New Class I members

Members elected to the Leopoldina after March 2020 are expected to receive their certificates in 2022. The schedule will be announced at a later time. We ask for your understanding for the postponement due to the coronavirus pandemic.

Michael Black ML, Tübingen/Germany, Max Planck Institute for Intelligent Systems (Informatics Section)

Alessandra Buonanno ML, Potsdam/Germany, Albert Einstein Institute, Max Planck Institute for Gravitational Physics (Physics Section)

Susanne Crewell ML, Cologne/Germany, Institute of Geophysics and Meteorology, University of Cologne (Earth Sciences Section)

Camillo De Lellis ML, Princeton/USA, Institute for Advanced Study, School of Mathematics (Mathematics Section)

Joseph S. Francisco ML, Philadelphia/USA, Department of Earth and Environmental Science, University of Pennsylvania (Chemistry Section)

Hongjun Gao ML, Beijing/China, Institute of Physics, Chinese Academy of Sciences (Physics Section)

Frank Glorius ML, Münster/Germany, Organisch-Chemisches Institut, University of Münster (Chemistry Section)

Eva Grebel ML, Heidelberg/Germany, Astronomisches Rechen-Institut, Center for Astronomy of Heidelberg University (Physics Section)

Sami Haddadin ML, Munich/Germany, Munich School of Robotics and Machine Intelligence, Technical University of Munich (Engineering Sciences Section)

Bernt Schiele ML, Saarbrücken/Germany, Max Planck Institute for Informatics (Informatics Section)

Eva Viehmann ML, Garching/Germany, Department of Mathematics, Technical University of Munich (Mathematics Section)

Manfred Warmuth ML, Santa Cruz/USA, Google Brain Mountain View (Informatics Section)

Deceased members

- **Henning Beier** ML | 26 October 1940 to 11 April 2021 | Aachen/Germany | Anatomy and Anthropology Section

- **Marion de Jong** ML | 09 December 1960 to 16 May 2021 |Rotterdam/Netherlands | Radiology Section

- **Bernhard Fleckenstein** ML | 10 August 1944 to 4 May 2021 | Schlaifhausen-Wiesenthau/Germany | Microbiology and Immunology Section

- **Piet Hartman** ML | 11 April 1922 to 26 March 2021 | Zeist/Netherlands | Chemistry Section

- **Siegfried Hünig** ML | 3 April 1921 to 24 March 2021 | Würzburg/Germany | Chemistry Section

- **Margaret C. Morrison** ML | 19 May 1954 to 9 January 2021| Toronto/Canada | Epistemology Section

- **Luboš Perek** ML | 26 July 1919 to 17 September 2020 | Prague/Czech Republic | Physics Section

- **Michael Stolleis** ML | 20 July 1941 to 18 March 2021 | Frankfurt am Main/Germany | Cultural Sciences Section

- **Jānis Stradiņš** ML | 10 December 1933 to 29 November 2019 | Riga/Latvia | History of Science and Medicine Section

- **Rüdiger Thalmann** ML | 3 May 1929 to 25 August 2018 | St. Louis/USA | Ophthalmology, Oto-Rhino-Laryngology and Stomatology Section

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German National Academy of Sciences Leopoldina
Jägerberg 1
06108 Halle (Saale)
phone: +49-345/4 72 39 – 800
telefax: +49-345/4 72 39 – 809
e-mail: presse@leopoldina.org

Editing:
Caroline Wichmann (responsible for the content pursuant to § 55 Para. 2 RStV)
PD Dr. Stefan Artmann
Daniela Weber
Julia Klabuhn
Dr. Viktoria Bosak

Other editors of this issue:
PD Dr. Stefan Artmann, Head of Presidential Office (ART)
Dr. Viktoria Bosak, Trainee, Department Press and Public Relations (VB)
Lucian Brujan, Senior Officer, Department International Relations (LB)
Christoph Droesser, Freelance writer, San Francisco/USA (CDR)
Benjamin Haerdle, Freelance writer, Leipzig (BH)
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Dr. Sandra Kumm, Senior Scientific Coordinator, Presidential Office (SK)
Johanna Mogwitz, Project Assistant, Department International Relations (JMO)
Ronja Steffensky, Scientific Officer, Center for Science Studies (RST)
Daniela Weber, Editor Newsletter and Project Manager, Science Course for Journalists (DW)
Christian Weidlich, Senior Officer, Department International Relations (CHW)

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Abbreviations:
ML = Member of the Leopoldina

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Nationale Akademie der Wissenschaften