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Biodiversity in the Agricultural Landscape

**Joint statement by the Leopoldina, acatech and the
Union of the German Academies of Sciences and Humanities**

Table of contents

- ▶ 3 Editorial

- ▶ 4 Ad hoc statement:
Seizing the chance to contain the pandemic

- ▶ 4 Joint position paper: How should access to a
COVID-19 vaccine be regulated?

- ▶ 5 Discussion series “Leopoldina
International”: When COVID-19 meets
other infectious diseases

- ▶ 5 Declaration from leading science
organizations on the COVID-19 pandemic

- ▶ 6 Interview with former President Jörg Hacker
ML: “Vaccination is voluntary in Germany,
and it should remain that way”

- ▶ 7 Bonn Declaration: Freedom of scientific
research in the European Union

- ▶ 8 Katrin Böhning-Gaese ML on science
academies’ statement “Biodiversity and
management of agricultural landscapes”

- ▶ 9 Handling research risks more responsibly

- ▶ 10 Interview with Hans-Georg Dederer:
“There is no scientific justification for a
procedure-based regulatory approach”

- ▶ 12 Interview with Andreas Kablitz ML:
“Questioning the role of hermeneutics”

- ▶ 13 Funding for archive and library collections

- ▶ 13 Digital Leopoldina library launched

- ▶ 13 Third Europe debate: Is the financial
system crisis-proof?

- ▶ 14 News

- ▶ 15 People

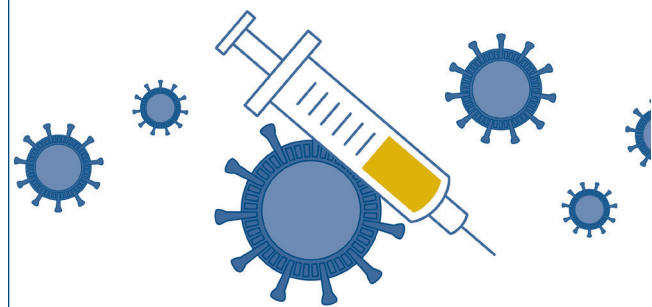
- ▶ 17 Imprint

▶ 4



Position paper: The Leopoldina, the German Ethics Council and the German Standing Committee on Vaccination publish COVID-19 vaccination framework

▶ 6



In conversation: Former President Jörg Hacker speaks on pandemics, COVID-19 and vaccines, plus research funding and the European Union

▶ 8



Statement: Recommendations from academies of sciences on “Biodiversity and management of agricultural landscapes”

The Leopoldina on Social Media



Editorial

Dear Members and Friends of the Leopoldina,

as in many other countries, daily life in Germany has once again been placed under severe restrictions in response to the COVID-19 pandemic. This is an important measure for mitigating the rate of infection. In October, the presidents of the German Research Foundation, the Fraunhofer Society, the Helmholtz Association, the Leibniz Association, the Max Planck Society and I released a joint declaration underscoring the gravity of the situation at hand.

Work at the Leopoldina has accelerated dramatically as a result of the pandemic, and the institution has seen a rise in public awareness. This has also helped publications dedicated to topics other than the coronavirus. For example, the October publication of “Biodiversity and Management of Agricultural Landscapes – Widespread action is now crucial”, a joint statement by the Leopoldina, acatech and the Union of the German Academies of Sciences and Humanities, enjoyed widespread attention (see page 8). The academies were praised for stating their positions so clearly and the paper is still quoted frequently in the media.



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

Image: David Ausserhofer

Unfortunately, the Academy’s Christmas lecture cannot take place this year. The Leopoldina has succeeded in moving many events to a digital platform. However in this particular case, we simply cannot imagine breaking away from tradition. So this event will take place again once a vaccine is available. The Leopoldina has issued a joint statement with Germany’s Standing Committee on Vaccination and the German Ethics Council on the distribution of the first vaccines starting in early 2021 (see page 4). I hope that by autumn 2021, effective vaccines will be sufficiently available and that enough of the population will be willing to undergo vaccination to bring the pandemic to a standstill. Then, we will again have the choice of whether to hold symposia and lectures in person or online.

I hope you will be able to enjoy the holiday season in these troubled times.

A handwritten signature in blue ink, which appears to read "Gerald Haug".

Seizing the chance to contain the pandemic

Despite the partial lockdown effective since early November, the coronavirus pandemic threatens to worsen further. In order to regain control of the infection scenario, the Leopoldina in its latest ad hoc statement recommends a two-stage procedure for the holidays and the turn of the year. Past experiences in other countries have shown that rapid, stringent measures implemented over a short period of time contribute significantly to reducing infection rates considerably and keeping them low. The experts point out that a more rigorous approach is advisable also from an economic perspective: Although a hard lockdown increases the loss of added value in the short term, it also shortens the period until the number of new infections has fallen to a level that allows relaxation.

Contacts in both the professional and private spheres would have to be reduced to the absolute minimum as early as 14 December. From 24 December until at least 10 January 2021, public life throughout Germany should be largely suspended, and a hard lockdown should apply. To this end, all stores other than those for daily needs should be closed and the Christmas break in educational institutions extended. For the resumption of instruction from 10 January 2021 onwards, wearing of mouth and nose protection in class should be obligatory for all age groups in all federal states.

A long-term political agreement is also needed on a clear, multi-stage system of rules that is standardized nationwide and takes effect above certain incidence thresholds. A standardized and comprehensible approach will make all measures taken more transparent, easy-to-understand, and manageable for citizens and companies. ■ JK

► 7th ad hoc statement on the coronavirus pandemic

How should access to a vaccine be regulated?

Joint position paper on COVID-19 vaccination



President of the Leopoldina Gerald Haug, Chair of the German Ethics Council Alena Buyx and Chairman of the Standing Committee on Vaccination Thomas Mertens presented the joint position paper at a Federal Press Conference.

Image: Christian Thiel | German Ethics Council

Even once COVID-19 vaccines receive authorization, all signs indicate that these will not be available in quantities sufficient for those who wish to be vaccinated. Thus, it is necessary to work according to a system of priorities which takes into consideration medical-epidemiological aspects of infection prevention as well as ethical, legal and practical elements.

On 9 November, the German Standing Committee on Vaccination, the German Ethics Council and the Leopoldina published a joint position paper on this topic. The authors pointed out that a system of prioritization would offer support in the decision of who should receive which vaccine first. In this system, also ethical, legal and practical considerations must play a decisive role. Ethical and legal principles on which such a prioritization scheme would be based include self-determination, non-maleficence and protection of integrity, justice, fundamental equality of rights, solidarity and urgency.

These ethical and legal principles are reflected in concrete vaccination goals: prevention of severe courses of COVID-19

and resulting deaths, protection of persons with an especially high work-related risk of exposure to SARS-CoV-2, maintenance of essential state functions and public life, prevention of transmission and protection in environments both with a high proportion of vulnerable individuals and with a high outbreak potential.

Since the vaccine will only be available in limited quantities to start, its distribution touches on relevant ethical values and values pertaining to basic rights, and therefore necessitates clear legal regulation. The vaccine's distribution must also be planned such that the set vaccination goals are met. The statement's authors rule out undifferentiated compulsory vaccination. They also stress the necessity of ongoing, transparent information and education of the public regarding both the efficacy of vaccination as well as any associated risks. ■ JK

► Joint position paper "How should access to a COVID-19 vaccine be regulated?"

When COVID-19 meets other infectious diseases

Continued international discussion series on the COVID-19 pandemic



The panel discussion included (from left to right): Vivian Upmann (TV journalist and moderator), Stefan H. E. Kaufmann ML (Max Planck Institute for Infection Biology, Berlin), Papa Salif Sow (Académie des Sciences et Techniques du Sénégal, Dakar), Quarraisha Abdool Karim (Center for the AIDS Programme of Research in South Africa, Durban), Peter Calverley (University of Liverpool) and Wondwossen Amogne (Addis Ababa University, Addis Abeba). Image: Jan Nissen | Leopoldina

The most recent event in the virtual English-language discussion series “Leopoldina International” investigated the question of why infection with SARS-CoV-2 and other pathogens in parallel poses a challenge for both the affected person and the healthcare systems.

What happens when COVID-19 and other infectious diseases such as HIV/AIDS, tuberculosis or malaria meet? This is a pressing question for many people who live in regions with high rates of infection in middle- and low-income countries. But even the people in high-income countries can be affected by multiple infectious diseases at once. The ongoing COVID-19 pandemic has shown how quickly infectious diseases can spread across the globe.

In November, the Leopoldina and its partner academies in Ethiopia, the United Kingdom, Senegal and South Africa organized the panel discussion “COVID-19 and Multimorbidity: How to Deal with Multiple Infectious Diseases in Parallel?” to shine light on the topic. The session focused on medical aspects, the development and distribution of vaccines

and how the healthcare sector handles infectious diseases.

In the course of the discussion, it quickly became clear that multimorbidity – the co-occurrence of two or more diseases – is in the field of infectious diseases a growing challenge for public health. But Stefan H. E. Kaufmann ML, spokesperson for the Leopoldina on this panel, remains optimistic. He commented that COVID-19 has led to accelerated research and development of medicinal intervention measures that are unprecedented. The rapid research conducted to find vaccines against COVID-19 is noteworthy and these developments should be applied in combating other major infectious diseases.

The discussion was the third in the “Leopoldina International“ virtual panel series. The objective of the events, organized in cooperation with the Leopoldina’s global partners, is to promote scientific dialogue among the international scientific community and with the public. ■ JN



Virtual panel discussion
„COVID-19 and
Multimorbidity“

COVID-19 pandemic: The situation is serious

Joint declaration from
leading science organizations

At the end of October, the Presidents of the German Research Foundation, the Fraunhofer Society, the Helmholtz Association, the Leibniz Association, the Max Planck Society and the German National Academy of Sciences Leopoldina published a joint declaration on the COVID-19 pandemic.

For some weeks now, a dramatic increase in coronavirus infections has been recorded in Europe, a trend which has also reached Germany. Referencing the exponential rate of infection, the six science organization leaders expressed the demand for clear decisions which can be enacted quickly and underscored the importance of reacting to climbing case numbers in a precise, fast and long-lasting manner. It is necessary to reduce contacts to a quarter of what they normally are – in every federal state, municipality and city in accordance with a uniform set of nationwide regulations. The earlier these measures are taken, the less time they will need to remain in place, thus also reducing the accompanying psychological, social and economic collateral damage.

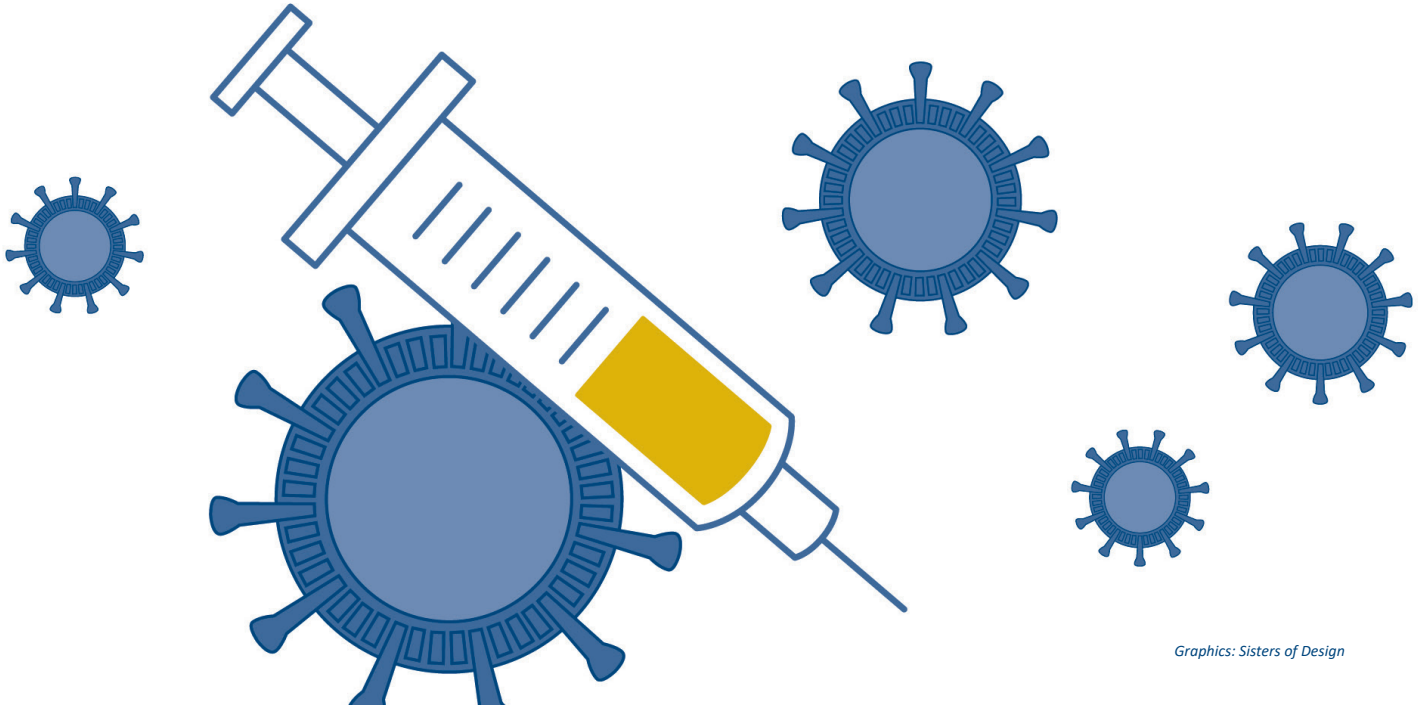
The goal is to lower the number of cases to a point where the health authorities will be able to fully trace contacts. Once this is made possible, restrictions can cautiously be lifted without the direct threat of a subsequent wave of the pandemic. Implementing nationwide measures to prevent infection, providing equal and comprehensive protection for high-risk groups, improving communication of the precautionary measures and enhancing health and safety plans are all critical steps in this process. ■ JK



Joint declaration
“Coronavirus-Pandemie:
Es ist ernst” (German only)

“Vaccination is voluntary in Germany, and it should remain that way”

Former President of the Leopoldina and microbiologist Jörg Hacker on the impact of the COVID-19 pandemic



Graphics: Sisters of Design

Infection biologist Jörg Hacker ML was President of the Leopoldina until the end of last February. His scientific interests lay in the field of infectious disease and the spread of pathogens. A conversation on his view of the COVID-19 pandemic, its impact on research and questions surrounding vaccine distribution.

What do you find to be the most fascinating aspect of the research into pathogens?

Jörg Hacker: I am no longer working in my own laboratory, but in general I find it interesting how pathogens can change genetically via mutation or gene transfer. And this intertwines with the defense mechanisms which we are capable of building up. You have the change seen in pathogens on the one hand and how host organisms adapt to this change on the other.

Are you surprised by the rapid spread of the coronavirus?

Hacker: No, because this genetic change in the coronavirus is taking place relatively quickly. In Denmark, a new version of the virus has recently been discovered in minks. This confirms that the viruses are very flexible and highly adaptable biological entities. It only took about a week for the pathogen which causes the swine flu to have spread across the entire world. The coronavirus moves about as quickly, so the spread we are seeing does not come as a surprise.

You are currently working on your new book “Pandemien – Corona und die neuen Infektionskrankheiten” (“Pandemics – The coronavirus and new infectious diseases”). What is different about new viruses like SARS-CoV-2?

Hacker: This virus is new, and we need to respond in new ways. Currently, there is no authorized vaccine against COVID-19; there are no effective medications. What we have is molecular biological knowledge, we are learning how

the virus is transmitted and we know what tests to use. These are all new findings about a new virus. While SARS and MERS viruses are related to the coronavirus, they are not identical.

For a vaccine to be effective a plan for vaccination is required. The Leopoldina, the German Ethics Council and the Standing Committee on Vaccination have published a joint position paper on this issue. What regulations must be enacted for widespread vaccination?

Hacker: There will not be a sufficient amount of vaccines immediately available for everyone who would like to be vaccinated. This is a worldwide event, so we are talking about a large quantity of doses. So these vaccinations must be prioritized. Medical care professionals and high-risk patients of a certain age or with chronic conditions must receive top priority. One thing is certain: vaccination is voluntary in Germany, and it should remain that way. But on the whole, we

must continue touting the benefits of vaccination for the broader society.

This requires widespread information and communication. The Leopoldina continually publishes ad hoc statements on the COVID-19 pandemic. Will the public pay more attention to science?

Hacker: I think that science plays a bigger role in society and receives more attention than it did ten years ago. I also believe that society increasingly accepts the function of science in adequately handling issues of urgent importance. And as the German National Academy of Sciences, the Leopoldina tries to contribute to this function, especially in cooperation with others. There are a great many opportunities for science to gain broader attention.



Jörg Hacker ML

From 2010 to 2020, Jörg Hacker was the 26th President of the Leopoldina and before that he was President of the Robert Koch Institute. From 1993 to 2008, he conducted research at the University of Würzburg's Institute for Molecular Infection Biology.

Image: David Ausserhofer | Leopoldina

On the other hand, the European Commission has cut funding for the scientific program "Horizon Europe" in favor of an economic rescue package in light of the pandemic ...

Hacker: Cutting research funding in times like these seems wrong. On the contrary: we need more money to flow

in. To successfully combat a pandemic requires fundamental research. We need to spread knowledge about the virus and the health impact of infection. And this is intermeshed with issues such as climate change. Cutting back on such areas of research now would be a fatal error. In fact, we need to devote just as much funding to them as we do to researching the coronavirus.

To what extent is climate research linked to the fight against this pandemic?

Hacker: On account of increased globalization, these areas have a greater impact on each other. We cannot write off issues related to climate change in favor of research on infectious pathogens or vice versa. The spread of infection must be viewed systemically. Transmission from animal hosts to humans to this degree is new. And this is linked to the climate. Vectors – living organisms which carry and transmit an infectious pathogen – reproduce at higher temperatures, propagating their populations. And quite a number of vectors are migrating northward from the Mediterranean Sea. This presents us with a new challenge.

What can we learn now about potential new pathogens in the future?

Hacker: We have to consider the societal impact. We have to investigate how each individual pathogen reproduces and what its life cycle looks like before we can make any decisions on a societal level. For instance, can schools and other educational institutions stay open, or will we have to re-close them? As a society that seeks to keep these and other institutions open, but which must also be protected, it is critical for us to contemplate modes of action together from an early stage. Because openness also extends to the public debate of values.

■ THE INTERVIEW WAS CONDUCTED
BY CHRISTINE WERNER



Topic in focus
"Pandemics: Emergence,
Spread, Containment"

Freedom of scientific research in the EU

Alliance of Science Organizations welcomes Bonn Declaration

Last year, the Alliance of Science Organizations in Germany took part in the celebrations surrounding the 70th anniversary of the German Basic Law. The Alliance, of which the Leopoldina is a member, organized a number of campaigns which raised awareness of the indispensability of scientific freedom in research and education. Of course, this is not only true in Germany. Thus, on 20 October, German Federal Minister of Education and Research Anja Karliczek presented her fellow Research Ministers from other European Union (EU) member states with the Declaration on Freedom of Scientific Research at a meeting in Bonn. Those member states which sign the Bonn Declaration are obliged to use the power of state institutions to safeguard scientists' endeavors while also protecting them from any state intervention in their freedom of scientific research.

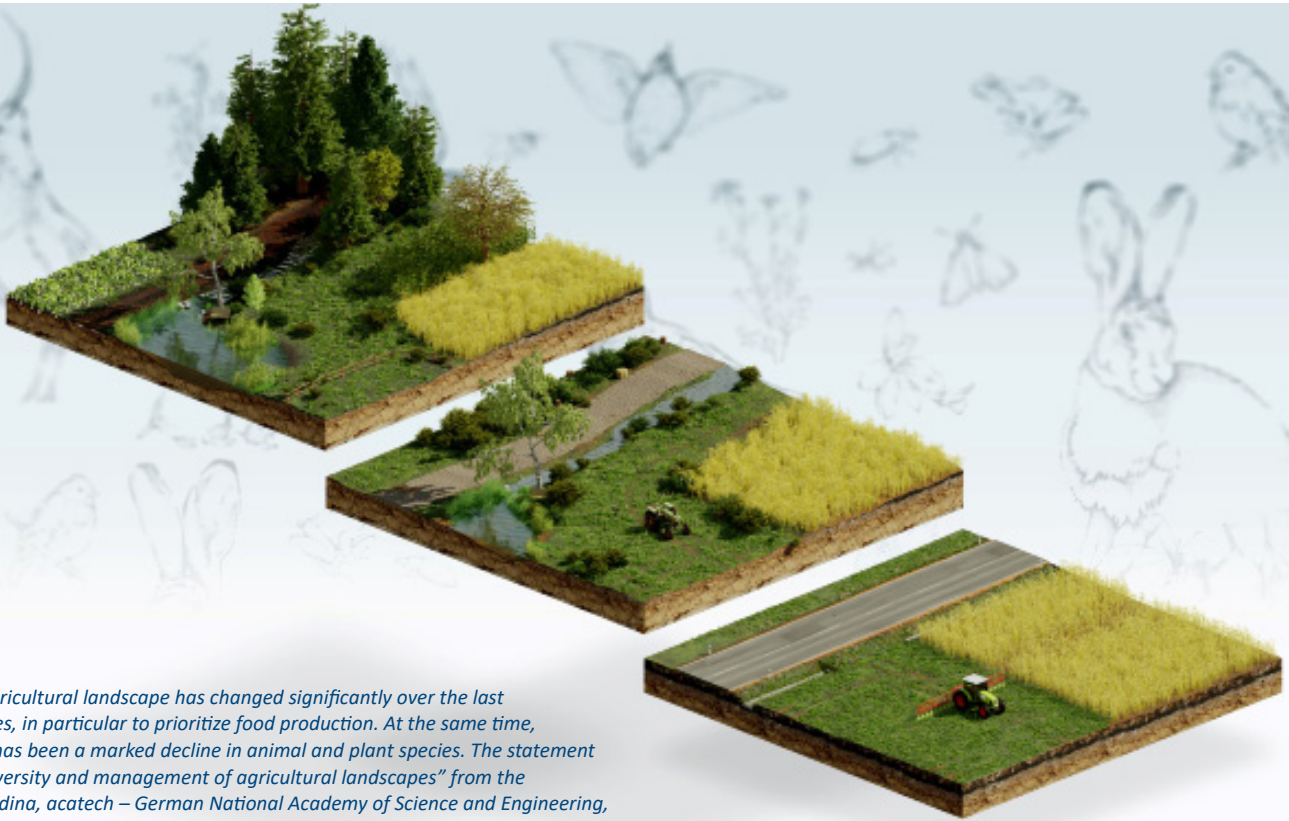
"In adopting this declaration, policymakers are fortifying and supporting the efforts of scientific organizations in the area of international academic freedom," said Peter-André Alt, President of the German Rectors' Conference (HRK), which is heading the Alliance this year. The Bonn Declaration would remain a mere declaration of intent were it not for the explicitly addressed relevance of the continuous monitoring of freedom of scientific research. "Academic freedom, our greatest asset, should not be restricted for political reasons." Alt therefore announced that the Alliance would take the responsible parties at their word, and insist on consequences if necessary. ■ ART



Bonn Declaration on
Freedom of Scientific
Research

“The situation is dramatic, and the need for action acute”

Leopoldina member Katrin Böhning-Gaese on biodiversity in agricultural landscapes



The agricultural landscape has changed significantly over the last decades, in particular to prioritize food production. At the same time, there has been a marked decline in animal and plant species. The statement “Biodiversity and management of agricultural landscapes” from the Leopoldina, acatech – German National Academy of Science and Engineering, and the Union of the German Academies of Sciences and Humanities, concludes that the decline in biodiversity is attributable to a combination of different factors.

Illustrations: Figures GmbH Berlin

The decline in biodiversity in agricultural landscapes in Germany has become increasingly apparent in recent years. A study by the Entomologischer Verein Krefeld (Krefeld Entomological Society, EVK) caused a stir in 2017. However, there has been scientific evidence for population decline in birds, select insect species and plants for decades.

BY KATRIN BÖHNING-GAESE ML*

Based on a brief statement published by the Leopoldina in 2018, a working group of representatives from biodiversity research, agricultural sciences, ethics and anthropology, law and other relevant research institutions has prepared a statement which summa-

rizes the biodiversity situation in agricultural landscapes, analyzes the causes and background circumstances related to the decline and sets out courses of action.

The causes of biodiversity decline in agricultural landscapes are numerous. They can be attributed to the increase in highly productive yet species-poor field crops, the loss of species-rich grassland, the preventative and often extensive application of plant protection products, intensive use of fertilizers, increases in field size, loss of structural diversity in the landscape, and the lack of networks connecting protected areas. The main driving factors for these causes are the intensification of land use and biological-technical innovations designed to achieve production targets.

The situation is dramatic, and the need for action acute. Nonetheless, measures to protect and promote biodiversity must take into account the economic, political, legal and societal aspects of agriculture. The situation calls for a systemic approach with various parallel solutions and a broad social shift toward sustainable agriculture which also incorporates the protection of biodiversity. The most important courses of action are:

■ Further development of agricultural and environmental policies at European and national levels: The most important starting point is to reform the subsidies paid under the European Union’s (EU) Common Agricultural Policy (CAP). Support should be focused on specific target-



Katrin Böhning-Gaese ML

Director of the Senckenberg Biodiversity and Climate Research Center and Professor at the Goethe University Frankfurt. The biologist's research focuses on the relationship between biodiversity and humans. In particular, she explores the impact of the climate and land-use change on ecological communities of animals and their ecosystem functions and services.

Image: Michael Frank

ted conservation measures, and subsidy payments to agriculture should be linked to actual quantifiable ecosystem services.

■ Adjustment of agricultural and environmental legislation: Drawing up an

EU agricultural directive would legally enshrine environmental protection regulations for farms and prevent unfair competition within the EU. There also should be greater consistency in the enforcement of existing legislation.

■ Development of plan-based, region-specific, collective approaches: Such adjustments to landscape planning must aim to adjust land use in close cooperation with all stakeholders. Perspectively, some areas should either cease to be used for farming, or be farmed much less intensively.

■ Responsibility of local authorities: As visible pioneers and disseminators, they should show stronger commitment to preserving, cultivating and increasing biological diversity on their land.

■ Influence of trade and markets: Products from regional biodiversity-friendly production should be labeled as such in trade. In addition, the infrastructure for the regional processing of agricultural products should be improved.

■ Support for farms: Biodiversity-friendly farming must be economically viable. Farms should be supported in implementing appropriate farming methods and be given greater support if they choose to invest in conservation measures. In addition to the ecological aspects of agricul-

ture, innovative concepts for integrated farming should be developed.

■ Changes to societal perception and appreciation: Awareness of the importance of biological diversity in agricultural landscapes should be increased and reflected by a shift in consumer behavior. It is particularly important to increase the willingness to buy biodiversity-friendly products and to reduce meat consumption.

■ Expansion of monitoring and research: Long-term, nationwide and standardized monitoring and research are necessary to review the effectiveness of the measures taken to protect biological diversity.

The statement is supported by the German National Academy of Sciences Leopoldina, acatech – German National Academy of Science and Engineering, and the Union of the German Academies of Sciences and Humanities.

* Katrin Böhning-Gaese is one of three spokespersons for the Academy's working group "Biodiversity in Agricultural Landscapes"

▶ Statement
"Biodiversity and
management of
agricultural landscapes"

Handling research risks more responsibly

Alliance of Science Organizations in Germany continues support of the Joint Committee

The ethical principles of security-relevant research are gaining recognition around the world. As a result, aspects of export control and research cooperation with international partners are receiving greater attention in German politics and research funding allocation. Security-relevant research risks continue to develop dynamically, for example through new synergies between different disciplines such as research into artificial intelligence, engineering sciences and molecular biology.

The Joint Committee (Gemeinsamer Ausschuss, GA) on the Handling of Security-Relevant Research from the

German Research Foundation (DFG) and the German National Academy of Sciences Leopoldina has now published its third progress report. It gives an overview of current international debates on select research areas, legal frameworks and requirements as well as the approaches certain publishers and journals take to handle security-relevant research. It also sheds light on the activities of the approximately 90 Committees for Ethics in Security-Relevant Research in Germany (Kommissionen für Ethik sicherheitsrelevanter Forschung, KEF) as well as the participation of the GA in public debates and its other activities.

The Alliance of Science Organizations in Germany was unanimous in its decision to continue its support of the DFG and Leopoldina Joint Committee. Supporting German research institutions in handling security-related research more responsibly will remain a priority in the future. For this purpose, regular surveys, KEF forums, specialist events and joint communication on the state of affairs in science, politics and society are planned.

■ JF

▶ Progress report
"Security-Relevant Research"

“There is no scientific justification for a procedure-based regulatory approach”

Hans-Georg Dederer provides a legal assessment of gene-edited crops



Worldwide, there are more than 100 known and potentially marketable gene-edited crops. These include varieties of corn which demonstrate high tolerance to drought.

Image: Samuel Zeller | Unsplash

One year ago, the Leopoldina, the Union of the German Academies of Sciences and Humanities and the German Research Foundation put forward recommendations for new European genetic engineering legislation. Hans-Georg Dederer, member of the joint working group, comments from a legal perspective on the current situation in the European Union (EU).

Bacteria-resistant rice, drought-tolerant corn and fungus-resistant varieties of grapes – the European Court of Justice (ECJ) has ruled that these gene-edited plants fall under the scope of EU genetic engineering legislation. This has raised concerns in the scientific community. Why is that?

Hans-Georg Dederer: As a result of the ECJ ruling, gene-edited crops have to be classified as “genetically modified

organisms” (GMOs). This means they can only be cultivated, sold and spread in accordance with the legislation governing genetic engineering. Before market approval is granted, field experiments are required to analyze how the plants interact with the environment. The open pasture land used for such experiments must be recorded in a public register. In the past, radical opponents of genetic engineering have periodically taken advantage of this and destroyed trial fields. This experience has discouraged scientists from carrying out field experiments with gene-edited plants.

Key trading partners such as the USA and Argentina have different legal approaches to dealing with gene-edited plants. How do they do it?

Dederer: In Argentina, regulation is not based exclusively on the process, but

more importantly on the degree of modification in the genetic material of the resulting plant. If just a single or a few base pairs have been altered and no recombinant DNA remains in the genome, the plant is not regulated as a GMO. In the USA, it also depends on the product or the products used in the cultivation, not on the procedure for breeding them as such.

The Leopoldina, the Union of the German Academies of Sciences and Humanities and the German Research Foundation (DFG) released a public statement in December 2019 in response to the ECJ ruling. What was the key message of the statement?

Dederer: The academies and the DFG argued that there is no scientific justification for a regulatory approach based on the procedure by which plants are bred

and their genomes edited. In many cases, genome editing techniques effect changes which could have occurred in nature or as a result of conventional breeding. This means that as far as potential risks are concerned, there is no reason to regulate such gene-edited plants more strictly than plants which are bred conventionally. This would be inconsistent.



Hans-Georg Dederer

Jurist Hans-Georg Dederer served a member of the working group “Risk Assessment and Regulation of Genome Edited Plants” of the Leopoldina, the Union of the German Academies of Sciences and Humanities and the German Research Foundation (DFG) from January to December 2019. He holds the Chair of Constitutional and Administrative Law, Public International Law, European and International Economic Law at the University of Passau.

Image: University of Passau

The statement demanded an amendment to the European genetic engineering legislation. What are the main changes which would need to be made?

Dederer: One option would be to revise the definition of a GMO in order to exclude gene-edited organisms from the application of genetic engineering legislation if they do not contain any foreign genetic information or if their genetic information undergoes an alteration which may also occur naturally or through conventional breeding methods. An official preliminary examination process could be used in individual cases to clarify whet-

her a GMO is present within the meaning of the amended regulation.

In the long term, it would be more consistent to draw up a new legal framework.

Dederer: I agree, there is no scientific justification for the current procedure-based regulatory approach. If we want to minimize the risks to human health and the environment, regulation should be based on the product. For this reason, we proposed a new legal framework for a product-based regulatory approach in the statement. In this case, regulation could depend on whether the plants bred display a novel trait, for example. Canada is an example of how this can work.

The Leopoldina and the DFG presented the statement to high-profile experts from the European Commission at an international conference in early October. How did they react?

Dederer: I had the impression they understood the views of the scientific community. However, the staff at the Commission and the Members of the Parliament pointed out that public opinion remains skeptical of genetic engineering. From a political perspective, this is certainly a valid argument but there is no legally justifiable grounds to continue to limit the freedom of scientific research to this extent. Currently, I see no evidence

to suggest politics is willing to increase its efforts to convince the public of the benefits of deregulating plant biotechnology.

Does this hesitancy cause problems with regard to climate change and biodiversity loss?

Dederer: Most people are aware that it is high time to push for greater sustainability in agriculture and to prepare it for the consequences of climate change. However, due to the ECJ ruling, science and small- and medium-sized plant breeders have already lost valuable time for developing the necessary plant innovations to achieve this.

The European Council has asked the European Commission to present a study on the status of innovative genetic engineering in EU legislation by April 2021. Will this herald a change in thinking?

Dederer: We can always hope. It is important that the Commission not merely present its survey results, but that it draws the conclusions from these results which are crucial from a scientific perspective, namely for starting a parliamentary, transparent legislative procedure at the EU level. Only then can we talk about a change in thinking.

■ THE INTERVIEW WAS CONDUCTED
BY BENJAMIN HAERDLE

Genetic modification

An organism is considered “genetically modified” if its genetic material has been altered in a way that does not occur naturally by cross-breeding or natural recombination. In its ruling from 25 July 2018, the European Court of Justice interpreted this definition from the European release directive as referring to organisms resulting from the application of genome editing processes. This means that organisms which are genetically altered using the genome editing method CRISPR-Cas, for example, are subject to the EU genetic engineering legislation. They are therefore governed by strict regulations on risk assessment and authorization. ■ BH

Statement

“Towards a scientifically justified, differentiated regulation of genome edited plants in the EU”

“Questioning the role of hermeneutics”

Class IV symposium addressing the conflict between hermeneutics and empiricism

The Class IV Leopoldina Symposium was prepared by Romance languages and literature scholar and Senator of the Cultural Sciences Section Andreas Kablitz ML. This year, the annual scientific meeting was organized as a two-part virtual colloquium. The first part held in early December focused on the scientific status of hermeneutics.

Could you please begin by briefly defining hermeneutics?

Andreas Kablitz: Hermeneutics is the teaching of comprehension, the art of explanation and interpretation of things. Traditionally, it has primarily been used for linguistic expressions because a lot of what we say requires particular explanation. Hermeneutic procedures are, however, in no way limited to this and can also be applied to images and, to a certain extent, music.

The first part of the colloquium focused on the scientific status of hermeneutics. Is this under any doubt?

Kablitz: Absolutely. Traditionally, hermeneutics is perceived as the counterpart to empiricism and mathematical processes. There is a great deal of skepticism concerning this, even in subjects with a huge hermeneutic tradition in which the method has been used since time immemorial.

Classic hermeneutic subjects include theology, law, philology and philosophy. Do these fields make use of different hermeneutic methods?

Kablitz: That’s an important point. The methods are determined by the specific matters of study. A fundamental issue encountered in law is the need to fit a particular case into a given body of law. In literary studies, the problem is almost reversed. Here, we need to make a literary work transparent in response to a general question. In theology, on the other hand, the teaching of interpreta-



Andreas Kablitz ML

The Romance languages and literature scholar is a Professor of Romance Philology and General and Comparative Literature in the Faculty of Arts and Humanities at the University of Cologne. He is also the Director of the Petrarch Institute in Cologne. The specialist in Italian and French literature from the medieval and early modern period has been a member of the Leopoldina since 2007 and is the Senator of the Cultural Sciences Section.

Image: Jens Schlüter | Leopoldina

tion originating from the application of hermeneutics to scripture was based on a desire to explore the full meaning of a revelation and this required the use of special methods.

You are also a literary scholar yourself and you wrote a detailed interpretation of Thomas Mann’s novel “The Magic Mountain” three years ago. Many people believe that the interpretation of novels and poems is more of an art than a science, don’t they?

Kablitz: This is suggested in the title of a famous work from the field of German language and literature, “The Art of Interpretation” by Emil Staiger. This text suggests that there is no real

difference between the subject matter of literature and how it is interpreted. However, since antiquity, there have traditionally also been very different viewpoints drawing on rational principles during the reflection on works of literature in Europe. This begins with language, which is not in itself irrational or arbitrary. There are limits to what can be interpreted.

Is there a common understanding of scholarliness, even among natural and social scientists who conduct empirical research?

Kablitz: This is the aim of the second colloquium. Doubt has frequently already been cast over the traditional conflict between empiricism and hermeneutics. The belief held in natural sciences and certain areas of social sciences that these fields are what science is all about is quite rightly a point of contention. In my opinion, science is about rationalizing phenomena. For instance, rationalization is important even when it comes to better understanding a poem. There are also questions surrounding the role of hermeneutics in supposedly purely empirical research. What, for example, are the origins of questions in the field of social sciences which can be answered using statistical surveys?

Despite all the different topics and methods of research, is there anything which unites all sciences? A common understanding made even more important by the threat currently posed by fake news?

Kablitz: This is precisely what keeps us going. But to achieve a common understanding, we must firstly recognize the varying nature of various scientific approaches and acknowledge their interdependence.

■ THE INTERVIEW WAS CONDUCTED BY
ADELHEID MÜLLER-LISSNER

Funding for archive and library collections

The collections in the Leopoldina archive and library date back to the 16th century. Their protection requires a great deal of effort. This year, 60,000 euros are being spent on this task.

The Leopoldina archive is currently home to around 1,000 linear meters of documents and the library to approximately 280,000 volumes of works, which are made available for research purposes. This “material memory” dates back to the start of the 16th century or, in other words, to before the Academy was founded. A lot of care goes into protecting the collections.

External experts compiled a detailed damage assessment to assist with this in 2018. Their recommendations are forming the foundation of the conservation and restoration work which will take place over the years and decades to come. The work began in 2019 using budgetary

funds. As was also the case for the 2018 expert assessment, funds to support this were awarded by the German Minister of State for Culture and the Media (BKM) in 2020 as part of the “Sonderprogramm zum Erhalt des schriftlichen Kulturguts in Deutschland” (“Special Program for the Preservation of Written Cultural Heritage in Germany”). The Friends of the Leopoldina Academy also contributed 15,000 euros to the project this year.

A total of 60,000 euros has been spent in 2020. This was used to retrieve around 50,000 volumes and have them conserved by the Center for Book Preservation (ZFB) in Leipzig/Germany. The work will continue over the next few years to ensure that the unique archive and library collections are fully conserved. ■ DYW

► Archive and library

Is the financial system crisis-proof?

Event by the Leopoldina and the Halle Institute for Economic Research



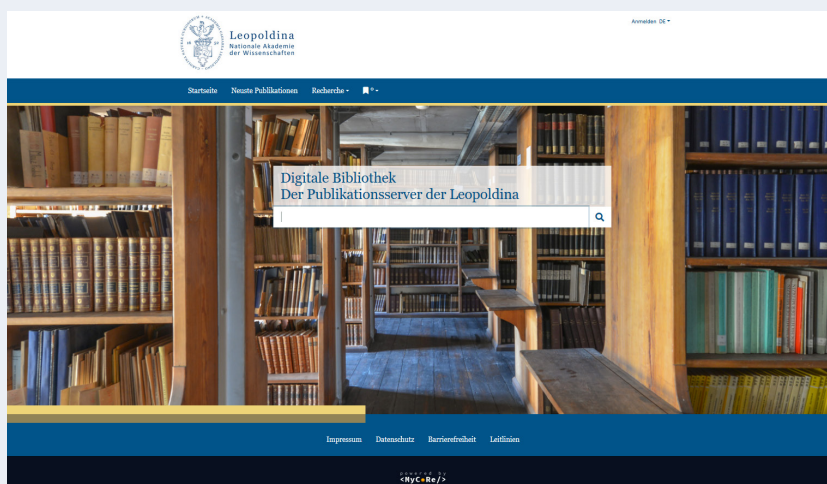
Illustration: Pixabay | Elionas2

European citizens are enduring low interest rates as a consequence of the 2008 financial crisis. The long-term viability of personal financial planning often depends on whether interest rates will rise again. Forecasts must be based on a realistic overall picture of the future of the financial system, which centers around banks and their regulation.

Will a banking union ever be fully achieved in Europe? How do different national interests feed into this? How is the COVID-19 pandemic affecting the European financial system? These topics will be discussed during the third of the Europe debates, a series of events organized by the German National Academy of Sciences Leopoldina and the Halle Institute for Economic Research (IWH) – Member of the Leibniz Association. The discussion “Finanzsystem in Europa” (“European Financial System”) on 4 February 2021 will be led by economist and chairman of the German Council of Economic Experts, Lars P. Feld ML from Freiburg/Germany, and IWH President Reint E. Gropp. ■ ART

► Europe debate
“Finanzsystem in Europa”
(event held in German)

DIGITAL LEOPOLDINA LIBRARY LAUNCHED



The Academy has launched its “Digitale Bibliothek | Der Dokumentenserver der Leopoldina” (“Digital Library | The Leopoldina Document Server”) to provide a further means of access to its online publications. The Digital Library includes search and research tools and provides permanent access to publications, making them easier to be referenced. Over the next few weeks, publications will be made accessible retrospectively for the period up until 2008. The Digital Library can be accessed on the Leopoldina website or directly at <https://levana.leopoldina.org>. ■ BK/Screenshots: Leopoldina



Image: AA+W | Adobe Stock

EASAC

Energy concept for hydrogen strategy

The hydrogen strategy presented by the European Commission in summer is the topic of a new EASAC Commentary. The European national science academies jointly welcome the adoption of the strategy to harness the potential of hydrogen through investment, regulation, market creation as well as research and innovation. The strategy highlights the urgent need to expand renewable energy so that there is a sufficient amount for producing low-carbon hydrogen. To achieve this, further plans are needed to supply renewable energy both within the EU and through imports. In addition to removing market barriers in Europe, the EU needs to develop partnerships with third countries worldwide. ■ JMO



Hydrogen and Synthetic Fuels

EASAC

Climate crisis requires systemic change

In a recent publication, the European Academies' Science Advisory Council (EASAC) comments on the transformative approach of the EU's Green Deal. It states that although scientific understanding of climate change has increased considerably over the past few decades, damaging factors are continuing to grow. EASAC outlines the scale of the problems humanity is facing to align human development with the capacity of our planet and argues that the gradual changes being made to our practices to date are insufficient. The academies call for a fundamental systemic change to the current economic and social systems. The EASAC website features various interviews with the authors. ■ JMO



Transformative Change & Post-COVID-19 Priorities

Junge Akademie

Plea for an agreement for doctoral students

In a statement, Die Junge Akademie criticizes the inconsistent forms of funding and employment for doctoral students and advocates the creation of a uniform collective agreement for doctoral students. The aim of this should be to guarantee equal pay by means of a full-time employment contract. This would replace a system in which there are huge differences in income, duration of employment and working conditions depending on the availability of internal and external funds. The statement also called for doctoral scholarships to be awarded in line with the collective agreement in order to compensate for disadvantages in terms of pay, pensions and social security. ■ VBP



Collective agreement for doctoral students

People

Awards and Honors

- **Ruedi Aebersold** ML, member of the Biochemistry and Biophysics Section, received the Marcel Benoist Swiss Science Prize from the Marcel Benoist Foundation.
- **Aleida Assmann** ML, member of the Cultural Sciences Section, was selected for the German Order Pour le Mérite for Sciences and Arts.
- **Katja Becker** ML, member of the Microbiology and Immunology Section, was elected by the Governing Board of the Global Research Council as its new Chair.
- **Donald B. Dingwell** ML, member of the Earth Sciences Section, was awarded the Harry H. Hess Medal from the American Geophysical Union (USA).
- **Martin Grötschel** ML, member of the Informatics Section, received the Cantor Medal 2021 from the German Mathematical Society (DMV).
- **Wolfgang Hackbusch** ML, member of the Mathematics Section, was awarded the Heinz Gumin Prize for Mathematics from the Carl Friedrich von Siemens Foundation (Munich/Germany).
- **Dieter Häussinger** ML, member of the Agricultural and Nutritional Sciences Section, received the Order of Merit of the State of North Rhine-Westphalia/Germany.
- **Ke Lu** ML, member of the Physics Section, was awarded the Future Science Prize (China).
- **Heike Riel** ML, member of the Engineering Sciences Section, was named Fellow of the American Physical Society (USA).
- **Brigitte Röder** ML, member of the Psychology and Cognitive Sciences Section, received the Wilhelm Wundt Medal from the German Psychological Society (Berlin/Germany).
- **Michael Sattler** ML, member of the Biochemistry and Biophysics section, was awarded the Erwin Schrödinger Prize from the Helmholtz Association of German Research Centers (Bonn/Germany).
- **Joachim Sauer** ML, member of the Chemistry Section, received the Bunsen Denkmünze 2020 medal from the Deutsche Bunsen-Gesellschaft für physikalische Chemie (German Bunsen Society for Physical Chemistry, DBG) (Frankfurt am Main/Germany).
- **Christoph M. Schmidt** ML, member of the Economics and Empirical Social Sciences Section, was appointed Academic Vice-President and member of the Executive Board of acatech – the German National Academy of Science and Engineering.
- **Bernhard Schölkopf** ML, member of the Informatics Section, was awarded the BBVA Foundation Frontiers of Knowledge Award from the BBVA Foundation (Spain) in the category of Information and Communication Technologies.
- **Helmut Schwarz** ML, member of the Chemistry Section, received the Goldene Medaille (Golden Medal) from the Humboldt-Gesellschaft (Humboldt Society).
- **Michael Tomasello** ML, member of the Psychology and Cognitive Sciences Section, was selected for the German Order Pour le Mérite for Sciences and Arts.
- **Jörg Vogel** ML, member of the Microbiology and Immunology Section, takes over as President of the European Academy of Microbiology (EAM) on 1 January 2021.

Deceased members

- **Heinz Bielka** ML | 19 March 1929 to 1 December 2020 | Berlin/Germany | Genetics/Molecular Biology and Cell Biology Section
- **François Diederich** ML | 9 July 1952 to 23 September 2020 | Zurich/Switzerland | Chemistry Section
- **Rudolf Kippenhahn** ML | 24 May 1926 to 15 November 2020 | Göttingen/Germany | Physics Section
- **Saburo Nagakura** ML | 3 October 1920 to 16 April 2020 | Kawasaki-shi/Japan | Physics Section
- **Theodor Nasemann** ML | 30 June 1923 to 12 Oc-

tober 2020 | Bernried/Germany | Internal Medicine and Dermatology Section

■ **Günther Schütz ML** | 1 May 1940 to 28 May 2020 | Heidelberg/Germany | Genetics/Molecular Biology and Cell Biology Section

■ **Dietmar Seyferth ML** | 11 January 1929 to 6 June 2020 | Lexington/USA | Chemistry Section

■ **Klaus Wolff ML** | 4 December 1935 to 20 December 2019 | Vienna/Austria | Internal Medicine and Dermatology Section

New Class III members

■ **Karl Bartz-Schmidt ML**, Tübingen/Germany, University Hospital Tübingen, Center for Ophthalmology (Ophthalmology, Oto-Rhino-Laryngology and Stomatology Section)

■ **Stephan Ehl ML**, Freiburg/Germany, Medical Center – University of Freiburg, Institute for Immunodeficiency (Gynaecology and Paediatrics Section)

■ **Sabine Eming ML**, Cologne/Germany, University Hospital Cologne, Department of Dermatology and Venereology (Internal Medicine and Dermatology Section)

■ **Tanja Fehm ML**, Düsseldorf/Germany, Düsseldorf University Hospital, Department of Gynaecology and Obstetrics (Gynaecology and Paediatrics Section)

■ **Uwe Haberkorn ML**, Heidelberg/Germany, Heidelberg University Hospital, Department of Nuclear Medicine (Radiology Section)

■ **Martin Kerschensteiner ML**, Planegg-Martinsried/Germany, Medical Center of the University of Munich, Institute of Clinical Neuroimmunology (Neurosciences Section)

■ **Stefan Pfister ML**, Heidelberg/Germany, Hopp Children's Cancer Center Heidelberg, German Cancer Research Center, Department of Pediatric Oncology, Hematology and Immunology (Gynaecology and Paediatrics Section)

■ **Stefan Schwarz ML**, Berlin/Germany, Freie Universität Berlin, Center for Infection Medicine, Institute of Microbiology and Epizootics (Veterinary Medicine Section)

■ **Christian Stief ML**, Munich/Germany, Medical Center of the University of Munich, Department of Urology (Surgery, Orthopaedics, Anaesthesiology Section)

■ **Robert Thimme ML**, Freiburg/Germany, Medical Center – University of Freiburg, Department of Medicine II: Gastroenterology, Hepatology, Endocrinology and Infectious Diseases (Internal Medicine and Dermatology Section)

■ **Michael Trauner ML**, Vienna/Austria, Department of Internal Medicine III at the Medical University of Vienna, Division of Gastroenterology and Hepatology (Internal Medicine and Dermatology Section)

■ **Wolfgang Wick ML**, Heidelberg/Germany, Heidelberg University Hospital, Department of Neurology (Neurosciences Section)

■ **Juliane Winkelmann ML**, Munich/Germany, Helmholtz Zentrum München, Institute of Neurogenomics (Neurosciences Section)

Imprint

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Abbreviations:

ML = Member of the Leopoldina