



Leopoldina  
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# Leopoldina news

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COVID-19 pandemic:  
clear and consistent  
action is needed – now!

**Ad hoc statement on the urgently  
needed measures to curb the  
fourth wave of infection**

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The Leopoldina on Social Media



# Editorial

Dear Members and Friends of the Leopoldina,

With the fourth wave of the pandemic upon us, in the second year of the COVID-19 pandemic, we are being urged to exercise caution more than ever. We have to prepare ourselves to having to live with the coronavirus and its variants interminably. In its most two recent ad hoc statements, the Leopoldina focusses on the urgently needed measures to curb the fourth wave of infection swiftly and efficiently (page 4). It also outlines possible courses of action for developing medication to reduce the risk of developing severe illness in the current and in future pandemics (page 6).

The 10th ad hoc statement on the COVID-19 pandemic published on 27 November urgently shows that social distancing is an indispensable tool to rapidly flatten the curve. Controlling infections in the medium- and long-term requires driving forward the vaccination campaign with determination now. One of the reasons why COVID-19 vaccines became available so quickly is the basic research carried out by Christoph Huber, physician and co-founder of Biontech. Christoph Huber has been honoured with the Carl-Friedrich-von-Weizsäcker-Prize awarded by the Leopoldina and Stifterverband (page 13).



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

*Image: David Ausserhofer | Leopoldina*

Although the coronavirus always seems to be at the forefront of our minds, we are in no position to neglect the important topic of climate change. The related challenges were discussed at some length during the recent German parliament election campaign. And the Leopoldina continues to be part of the conversation, most recently with a symposium on “Climate change and human rights” held in partnership with the Royal Society of Edinburgh/UK shortly before COP26 started. I sincerely hope that we can apply the lessons we have learnt from our pandemic response to the fight against climate change. Even as we put our all into our efforts to find the best path ahead, we must remember to take breaks along the way to allow us to recharge and regroup before we continue to forge ahead. Hopefully the upcoming festive season will provide the perfect opportunity to do just that.

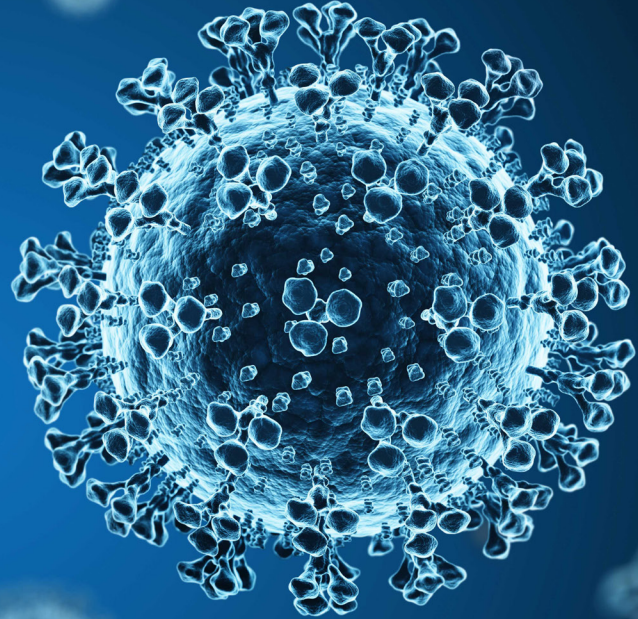
I hope you find this issue an interesting and inspiring read!

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



# COVID-19 pandemic: clear and consistent action is needed – now!

10th ad hoc statement of the Leopoldina focusses on urgently needed action



With its ad hoc statement, the Leopoldina aims to help curb the fourth wave of infection swiftly and efficiently.

Image: peterschreiber.media | AdobeStock

**The German National Academy of Sciences Leopoldina published the 10th ad hoc statement on the COVID-19 pandemic on 27 November. The publication focusses on the urgently needed measures to curb the fourth wave of infection as swiftly and efficiently as possible. The appearance of new virus variants – such as Omicron – which may be more infectious than previous ones, are making swift, consistent action even more a matter of urgency.**

In recent months the scientific community has been able to learn much more about SARS-CoV-2 and the medical, economic and social consequences of the pandemic. Unlike last winter, better tools to stop the virus from spreading are available now, such as rapid tests, FFP2 masks and – above all – vaccines. The spread of the highly contagious Delta variant, the insufficient

number of people vaccinated, a fall in immunity even after two vaccinations and the inadequate measures taken to curb the COVID-19 pandemic have all contributed to the coming winter once again

*“Swift and consistent measures based on harmonised criteria need to be taken.”*

10th ad hoc statement of the Leopoldina on the COVID-19 pandemic

becoming an immense societal challenge for Germany.

To stop the rise in number of COVID-19-related deaths as well as the lack of critical care beds for the most severely ill as hospitals are hitting the limits of their capacities, swift and consistent measu-

res based on harmonised criteria need to be taken. Against this background, the ad hoc statement “COVID-19 pandemic: clear and consistent action is needed – now!” focusses on the urgently needed measures to curb the fourth wave of infection swiftly and efficiently. The 10th ad hoc statement on the COVID-19 pandemic is part of a series of ad hoc statements published by the German National Academy of Sciences Leopoldina over the last two years containing recommendations concerning the medical, psychological, social, ethical, legal, pedagogical, economic, public health and educational policy aspects of the pandemic. ■ RED

Ad hoc statement  
“Coronavirus-Pandemie:  
Klare und konsequente  
Maßnahmen – sofort!”  
(German only)

# Leopoldina member Benjamin List receives Nobel Prize in Chemistry

Catalysis researcher has been honoured together with British scientist David W.C. MacMillan



Benjamin List is one of the directors of the Max Planck Institute for Coal Research.

Image: Frank Vinken | MPI for coal research

**Chemist and Leopoldina member Benjamin List has been awarded the 2021 Nobel Prize for Chemistry together with David W.C. MacMillan, a British scientist currently working in the USA. The two scientists have received this honour for their work to develop asymmetric organocatalysis, a technique that can be used to build molecules and is helping to make chemistry greener.**

Benjamin List has been one of the directors of the Max Planck Institute for Coal Research in Mülheim a. d. Ruhr since 2005. The fundamental findings that led to organocatalysis were made separately by List and David MacMillan, a British researcher based at the University of California in Irvine/USA, in the year 2000.

Benjamin List discovered that a protein element, the amino acid proline, could act as an efficient catalyst. Cata-

lysts have long been known for increasing the rate of chemical reactions and making them more efficient. Prior to the discoveries by List and MacMillan, there were only two types of catalysts: metal catalysts and enzymes.

*“We couldn’t be happier that a member of the Leopoldina has been rewarded for their ground-breaking research work.”*

Gerald Haug  
President of the Leopoldina

Organocatalysts have now been added as a third type, allowing for small organic molecules to be used as catalysts in chemical reactions for the first time. To-

day this technique is already widely used to produce various drugs as well as light-absorbing chemicals used in solar cells.

Benjamin List studied chemistry at the Freie Universität Berlin and received his PhD from the Goethe University Frankfurt am Main in 1997. From 1999 to 2003, he conducted research at the Scripps Research Institute in La Jolla/USA. He became a member of the Leopoldina in 2018.

President of the Leopoldina Gerald Haug congratulated List: “Ground-breaking scientific discoveries relating to asymmetric organocatalysis have been honoured with this year’s Nobel Prize in Chemistry. We couldn’t be happier that a member of the Leopoldina has been awarded this prestigious prize for their research work.”

■ AB

▶ Benjamin List



# “We need broad-spectrum antiviral drugs in the fight against pandemics”

Leopoldina members Helga Rübsamen-Schaeff and Ralf Bartenschlager on SARS-CoV-2 treatments



One of the objectives of research into drugs for viruses like SARS-CoV-2 is to develop medication that can be easily administered.

Illustration: Adobe Stock | cassis

The German National Academy of Sciences Leopoldina published its ad hoc statement on “Antiviral drugs against SARS-CoV-2” in November. Speakers of the working group Helga Rübsamen-Schaeff ML and Ralf Bartenschlager ML explain why the development of these drugs is so important, what they expect from policymakers and how industry and academia need to work together.

*The development of vaccines has always been at the heart of the pandemic response. Why do we also need antiviral drugs against SARS-CoV-2?*

**Helga Rübsamen-Schaeff:** Vaccination may be the first choice, but it is not enough to beat the pandemic alone. With the vaccine unable to provide every individual with the necessary protection, we need to complement it with medical treatments. Some cohorts, such as dialysis or cancer patients, tend to have a very weak

immune response, and there will always be breakthrough infections anyway. We need antiviral drugs for any such cases where people are at risk of becoming seriously ill.

*What are the requirements of such antiviral drugs?*

**Ralf Bartenschlager:** The drugs need to be readily available with minimal side effects and the administration route should be oral or inhalation. The medication also needs to have a high enough barrier to resistance to prevent the virus becoming resistant to the drug whilst the patient is being treated and to prevent resistant viruses from being transmitted. If these requirements are not fulfilled, there is no point in using the drug. Patients are not infected with SARS-CoV-2 for very long, which means that the treatment time is also relatively short compared to other, chronic viral illnesses that can take months or even years to treat.

*Can you give us a progress report on research and development work on antiviral drugs that are specifically effective against SARS-CoV-2?*

**Rübsamen-Schaeff:** US pharmaceutical company MSD recently announced that clinical trials have shown that its drug molnupiravir reduces the risk of serious illness or death caused by SARS-CoV-2 by 50%. The company is now planning to seek emergency use authorisation. Pfizer has also developed a drug that is 80 to 90% effective at preventing severe illness or death, with emergency use authorisation also expected to be sought. Unfortunately, we are not keeping up here in Germany. What we need is significantly more investment in drug development.

*We’re fighting SARS-CoV-2 now, but we can expect other pandemics to break out in the future. This is where broad-spectrum antiviral drugs come in.*



### **Ralf Bartenschlager ML**

*Head of the Molecular Virology Department at Heidelberg University and Division Head at the German Cancer Research Centre in Heidelberg. The virologist is conducting research into the interaction between viruses and their host cells.*

Image: Heidelberg University Hospital

#### *How exactly can they help us?*

**Bartenschlager:** We can safely say that another pandemic will strike, but we don't know what will cause it. What we do know is that certain groups of viruses – such as influenza viruses – have a very high potential of triggering a pandemic. Rather than planning to start the search for active substances from scratch every time, we should be trying to keep them as broad as possible in the first place so that they will work across a whole group of viruses, for instance. In the past, the strategy has always been to develop a drug that targets one very specific virus. Whilst that keeps the risk of side effects to a minimum, it doesn't allow for a more widespread impact. With a broad-spectrum drug, we could respond very quickly to the next pandemic, which may well be caused by flu viruses. At the very least, we would be able to treat the most severe cases without delay.

**Rübsamen-Schaeff:** The goal needs to be to develop several broad spectrum antiviral drugs which could then be tested on whatever specific virus appears and optimised later down the line. This is a preventive health measure that should

be funded by the government. Policymakers need to come to terms with the fact that the fight against a pandemic is also a matter of internal security.

#### *Are we seeing a greater focus on broad spectrum antiviral drugs already?*

**Bartenschlager:** This idea is nothing new in science, but it is yet to take hold at the policy level. As you can imagine, it is difficult to get research funding for something that I can't say for certain will actually ever be needed. That's why I see this as a sovereign task. The government needs to provide a financial incentive to encourage the right level of interest in industry and academia. Only then will it be possible to develop potential drugs to the phase I trial level.

**Rübsamen-Schaeff:** People are often under the impression that phase I involves a single trial, but several phase I trials are actually required to find out things like how a drug is metabolised and excreted and whether there are any interactions. All of these kinds of questions need answers if a drug is to be used to treat a novel virus. The government needs to offer funding if pharmaceutical and biotech companies are going to sit up and listen. For example, the US government allocated 3.2 billion US dollars to the research and development of treatments for COVID-19 this summer.

#### *When it comes to developing drugs, we need to see better cooperation between industry and the world of academia. But where do we start?*

**Rübsamen-Schaeff:** It would be useful if people with industry experience could go into universities and explain the process of developing a drug. Not many academic researchers have a full understanding of this specialist knowledge. We also need a decision-making body to determine, with input from industry representatives, which drug development projects the government should prioritise for funding, thereby guaranteeing production. I am sure that industry players would be willing to get involved in this process if universities were to take care of the groundwork and get drugs to the



### **Helga Rübsamen-Schaeff ML**

*Founding CEO of AiCuris Anti-infective Cures AG in Wuppertal and current Member of the Supervisory Board. The chemist and virologist headed up research into anti-infectives at Bayer AG in Leverkusen for many years.*

Image: Markus Scholz | Leopoldina

stage of being ready for human trials.

**Bartenschlager:** What we really need is a clear commitment from policymakers. Something along the lines of an investment in a virtual network made up of universities and research institutions since wide-ranging expertise and infrastructures are required when it comes to virus groups with pandemic potential. Industry partners would need to be connected to this network, with medicinal chemistry as a priority. When results from pilot and feasibility studies are made available, there is a need for clinical research centres that may be based at academic institutions or within businesses. By the time a substance is ready for testing in humans at the latest, the clinical trials infrastructure needs to be in place. As the pandemic has shown us, that infrastructure is still rather rudimentary here in Germany.

■ THE INTERVIEW WAS CONDUCTED BY BENJAMIN HAERDLÉ

Ad hoc statement  
“Antivirale Wirkstoffe  
gegen SARS-CoV-2”  
(German only)

# “National and international health policy must be closely interlinked”

New Leopoldina section and Annual Assembly 2022 on global health

It is not enough to look at health from a purely medical perspective given that it is determined by our physical, mental and social well-being. And health matters go beyond national borders in our closely interconnected world. The Leopoldina is acknowledging the increasing importance of international health policy by launching its new Global Health section.

BY LOTHAR H. WIELER ML\*

Health is increasingly becoming a global matter. This fact had already been established before the COVID-19 pandemic broke out, for instance when the World Health Organization listed air pollution and climate change, antimicrobial resistance, insufficient primary health care and fragile and vulnerable settings in its top ten threats to global health in 2019. The COVID-19 pandemic has highlighted just how important it is for national and international public health policy to be closely interlinked if there is to be any chance of avoiding and overcoming threats to our health.

The fact that the Leopoldina has created a Global Health section following the Presidium’s decision in September 2020 may appear to be a response to the pandemic. In actual fact, efforts to bring about this development pre-date COVID-19. There is so much more to global health, after all. The main objective on a national and international level is to reduce the social, economic and environmental risks to health and support a focus on health within our communities. On a national level, the entire population should have access to effective and affordable healthcare.

Health in All Policies (HiAP) is the best approach to achieving these goals. Since it falls to science to research the optimum conditions, this is an area to be

*“The main objective on a national and international level is to reduce the social, economic and environmental risks to health and support a focus on health within our communities.”*

Lothar H. Wieler  
President of the Robert Koch Institute

Image: J. Reetz, Brauer Photos | RKI



addressed by the Leopoldina’s new section. Thanks to its interdisciplinary approach, the Academy is perfectly placed to analyse complex problems at the intersection of different disciplines. As an institution committed to scientific research into the key societal issues of the future as well as the transfer of the results to politicians and the public, the Leopoldina is now primed to become a prominent voice in this area too.

The Academy is well positioned to have that level of influence thanks to its work on international boards, offering science-based advice at the annual G7 and G20 summits, for example. The importance of global health within national, European and global policy is on the up.

One of the objectives of the Global Health section is to find outstanding researchers working across multiple disciplines in Germany and further afield, and to get them involved in the Leopoldina’s work. The focus here will be on areas that do not already fall into the disciplines and sections covered by the Leopoldina, such as health economics, health informatics, environmental medicine, health

communication, nutritional medicine and medical ethics.

In light of this new section, it is only logical that the topic of global health will be put in the spotlight at the next Leopoldina Annual Assembly, which is scheduled to take place on 23 and 24 September 2022. The fundamental premise of that meeting dictates that the scientific programme should combine as many different disciplines as possible. The Annual Assembly will provide the perfect setting for an introduction to the topic and a fantastic opportunity to add to the scientific discourse.

\* Lothar H. Wieler is the President of the Robert Koch Institute and a member of the Leopoldina. He is the initiator and Acting Director of the new Global Health section, which put forward this topic for the Annual Assembly 2022 together with the Veterinary Medicine section.

▶ Annual Assembly 2022  
▶ Global Health section



# Senate elects Jutta Gärtner as new member of the Leopoldina Presidium

Board also decides on the topics for the Annual Assemblies in 2023 and 2024 at its meeting

**In the run-up to the Annual Assembly 2021, the Leopoldina Senate convened on 23 September for its next scheduled meeting. 30 attendees came together in person in Halle (Saale), whilst a further 40 joined in online.**

The Academy's Executive Board informed the senators and guests about current developments within the Leopoldina and about important topics in the areas of political and societal advice, international activities, as well as press and public relations.

In addition to discharging the Executive Board from responsibility for the 2020 financial year, the Senate welcomed a new Presidium Member as they elected Jutta Gärtner ML (Göttingen) as the new Secretary for Class III – Medici-



*Jutta Gärtner has been elected to the Presidium of the Leopoldina.*

*Image: Markus Scholz | Leopoldina*

ne. She replaces Hans-Peter Zenner ML (Tübingen), who decided to step down in February 2021.

Claus R. Bartram ML (Heidelberg) and Wolfgang Baumjohann ML (Graz/Austria) were re-elected for a second term in their positions as Secretary for

Class II – Life Sciences and Presidium Member for the adjunct territory of Austria respectively.

The board also decided on the topics for the Annual Assemblies in 2023 and 2024. Following a suggestion by Andreas Kablitz ML (Cologne), Konrad Samwer ML (Göttingen) and Andreas Voßkuhle ML (Freiburg), the topic for 2023 will be “The Law: Real Rules for the Real World” (working title).

The topic put forward by Thomas Carell ML (Munich) – “The Origin and Beginning of Life” (working title) – will be adopted for 2024. The meeting closed with the Senate unanimously approving the request to rename Section 24 – Epistemology. From now on, this section will be known as “Philosophy of Sciences”.

■ JB

## ANNUAL ASSEMBLY 2021 OF THE GERMAN NATIONAL ACADEMY OF SCIENCES IN PICTURES



*The decline of biodiversity is one of the greatest challenges facing our society in the 21st century. This is why “Biodiversity and the Future of Diversity” was chosen as the topic of this year’s Annual Assembly of the German National Academy of Sciences Leopoldina, which took place on 24 and 25 September in Halle (Saale). Topics covered by the scientists attending over the two days included the impact of human activity on biodiversity, suitable methods of gathering relevant data as well as measures to promote biodiversity. The biologist Ulf-Ingo Flüge ML, biologist Susanne Renner ML and zoologist Miguel Vences ML were responsible for the scientific coordination. Anja Karliczek, the German Federal Minister of Education and Research, and Dr. Reiner Haseloff, Minister-President of the State of Saxony-Anhalt, gave opening remarks.*

■ JK / *Images: Markus Scholz | Leopoldina*

▶ Annual Assembly 2021 and Evening lecture (German only)

# “The European rule of law is a major achievement for civilisation”

Leopoldina member Andreas Voßkuhle on this fundamental EU principal and its current crises



*Andreas Voßkuhle is Director of the Institute for Political Science and Philosophy of Law at the University of Freiburg. From March 2010 to June 2020, he served as President of the German Federal Constitutional Court (BVG) and President of the Second Senate. Previously, from April to May 2008, he served as Rector of the University of Freiburg, before being appointed as a judge and Vice President of the BVG. He has been a member of the Berlin-Brandenburg Academy of Sciences and Humanities since 2007; a member of the Senate of the Max Planck Society since 2012; and a member of the German National Academy of Sciences Leopoldina since 2018. His research interests include constitutional law, general administrative law, state theory and legal theory.*

*Image: Klaus Polkowski*

**Until June 2020, legal scholar Andreas Voßkuhle was President of the German Federal Constitutional Court. He was elected a member of the Leopoldina in 2018 and has been a member of Class IV – Humanities, Social and Behavioural Sciences, ever since. As part of the Class IV symposium at the beginning of November, he gave a public evening lecture entitled “Is the European Union based on the rule of law in crisis?!”**

*Professor Voßkuhle, why the double punctuation marks in the title of your lecture?*

**Andreas Voßkuhle:** We are currently observing several different developments in the European Union (EU). In some member states, we are seeing the erosion of guarantees under the rule of law; and yet the vast majority of the time the cooperation between the European courts

and the EU's rule of law framework are working well. It was this ambivalence that I wanted to capture with the two punctuation marks.

*What exactly is the idea behind a “European Union based on the rule of law”?*

**Voßkuhle:** The concept was the brainchild of Walter Hallstein, the first President of the Commission of the European Economic Community. He wanted to highlight the central role of the law in the European community and ensure that power, repression and war were no longer the deciding factors in conflicts. Instead the European project was built on treaties and sought to enshrine cooperation between the member states in law.

The direct application of European law and its precedence over national law were unusual for an organisation previously governed by international law.

What Europe has achieved is an enormous feat of civilisation.

*And all legal processes must be accessible in the EU's 24 official languages.*

**Voßkuhle:** Yes, multilingual legal communication is a key element of a European Union based on the rule of law. All texts must be translated into all languages of the member states and treaties must be reinterpreted time and again in light of different translations. This results in a very nuanced approach to law.

*In May 2020, Germany became embroiled in a very specific conflict surrounding a ruling by the German Federal Constitutional Court on the European Central Bank's (ECB's) public sector purchase programme (PSPP).*

**Voßkuhle:** Yes, for the first time in its history, the German Federal Constitution-



nal Court declared a European act of law and the underlying judgment of the European Court of Justice (ECJ) to be "ultra vires". The Second Senate maintained that the ECB's PSPP was no longer covered by the European integration agenda as founded in the treaties. The ruling came under strong criticism, especially on the European side, for endangering the unity of EU law. The Commission launched an infringement procedure against Germany. However many constitutional courts in the member states share the fundamental view of the German Federal Constitutional Court that EU law can only have absolute primacy in a European federal state.

#### *So no crisis then?*

**Voßkuhle:** Discussions about legal boundaries and interpretation of law is part and parcel of a vibrant European Union based on the rule of law. Unlike the constitutional crisis in Poland, the German Federal Constitutional Court also wanted to see more control from the ECJ, whereas the Polish government wants less control.

#### *What role does a European Union based on the rule of law play in addressing the constitutional crises in Poland and Hungary?*

**Voßkuhle:** The European Union is founded on a set of shared values laid out in Article 2 of the Treaty on European Union (TEU). One of the key values is the principle of the rule of law. Every member state agrees to abide by these values. Before being admitted, potential member states must prove that they comply with the EU's minimum constitutional standards. This often very lengthy process takes place prior to admission alongside the pre-accession strategy proposed by the Commission. However, even if members meet the criteria when first admitted, there is no knowing how the situation might change.

Moves in Poland to bring the judiciary under greater political control have taken everyone by surprise and the removal of power from Hungary's Constitutional Court and the restrictions placed on the media in the country could not have been

foreseen. Article 7 of the TEU does, in fact, make provision for sanctions in these situations, but such action requires unanimous support which does not currently exist. The ECJ has therefore been asked to rule on infringements to the principal of the rule of law, as it has done in various cases in the past.

#### *What role does politics have to play?*

**Voßkuhle:** Bringing individual procedures before the ECJ only tackles specific developments. The EU's judicial system is not entirely standardised and responsibility for its organisation lies primarily with the member states. Political support is therefore essential when tackling fundamental problems. The new rule of law mechanism, which opens up the possibility of suspending EU funds if a member state fails to comply with certain provisions of the rule of law, has the potential to secure this backing.

#### *What difference can the rule of law make to the current crises?*

**Voßkuhle:** Once a conflict has broken out, it becomes harder and harder to reach an agreement. Legal solutions are developed in advance during a time of consensus, meaning they are often much more effective. That's the fundamental idea behind a European Union based on the rule of law. And that's why it needs defending with every resource we have.

■ THE INTERVIEW WAS CONDUCTED BY  
ADELHEID MÜLLER-LISSNER

#### CLASS IV SYMPOSIUM

On 3 and 4 November, Class IV – Humanities, Social and Behavioural Sciences, gathered in Halle (Saale), for its symposium and to present its new members with their certificates. The focus of the symposium was hermeneutics and how this branch of knowledge interacts with other methodologies, especially empirical ones. The public evening lecture was given by legal scholar Andreas Voßkuhle ML.

▶ Public lecture on the European rule of law (German only)

#### Discussion paper

### A fresh start for energy and climate policy?

The energy transition is our chance to protect our climate and preserve our life-giving natural world. It is also the launchpad for a global technology revolution. But to embrace this transition, we first need to re-focus our climate and energy policy in line with our target of net zero greenhouse gas emissions. A discussion paper, published by Energy Systems of the Future – an initiative of the German Academies of Sciences – addresses exactly this issue. In it, the authors examine the key requirements for a future-proof energy policy and the measures that German government can take to keep its energy transition on track to meet the latest climate targets. ■ RED

▶ Discussion paper  
"Energiewende"  
(German only)

#### Science organisations

### Commitment to climate neutrality

Scientific institutions have a unique responsibility for promoting positive change. In recognition of this, the Alliance of Science Organisations has committed to ensuring that all its work and research processes are climate neutral by 2035 at the latest. This commitment requires structural changes to enable all institutions to play their part. The Alliance is therefore calling on all national and regional authorities to help it implement its plans, by putting the necessary legal and financial structures in place to open up the path to climate neutrality. ■ RED

▶ Statement "Commitment to climate neutrality" (German only)



# “Great demand for comprehensible scientific results”

Leopoldina Vice President Regina T. Riphahn on a survey amongst German parliament members

Unlike in other countries, in Germany there is not much data on which types of scientific expertise members of parliament rely on and how they go about using it. Experience from other countries has shown that this kind of information is instrumental in improving the dialogue between the worlds of science and politics. To address this gap in knowledge, a survey was conducted amongst members of the German parliament and their staff as part of the Leopoldina Evidence Initiative. And the results are now in.

BY REGINA T. RIPHAHN ML\*

The aim of the Leopoldina’s Evidence Initiative is to reinforce the science-based reasoning used to inform political decisions. For a clearer understanding of how science-based evidence feeds into political discussions, data on how information is collated and evaluated is key. The survey of members of the German parliament is designed to provide some transparency when it comes to the role of scientific evidence in the political decision-making process. The project also aims at identifying ways of better catering to the information requirements of members of parliament and making communications during the advisory process more professional.

The German National Academy of Sciences Leopoldina commissioned the ISG – Institute for Social Research to conduct the study at the start of 2021. The 709 members of the German parliament during the 19th legislative period (2017

and 2021) and their staff were surveyed over a period of five weeks.

The questions were focused on access to sources of information and the frequency with which scientific evidence is relied upon; occasions and areas that call for scientific evidence to be used; ways in which scientific evidence is presented; the value of scientific evidence and expectations of the world of science. Thanks to careful preparation and support from a wide range of sources including German parliament, a satisfactory response rate of 20% was achieved, with no issues relating to representation to report. The findings are presented in detail in the discussion paper on “Use of scientific evidence – expectations of expertise in science”.

The key conclusions include: Respondents reported relatively great trust in findings based on scientific methods. This also explains the relatively high value placed on scientific findings compared

to other sources of information, and the opinion that scientific knowledge should be taken into account sufficiently in the political decision-making process. Interestingly, the survey results did suggest that the longer someone

has been working in the German parliament the less value they place on scientific knowledge.

The demand for concise and clearly presented scientific results is high. Respondents believe they are well equipped to judge the credibility and reliability of scientific knowledge. A lack of time and specific usability of scientific findings provide a barrier to drawing on such scientific knowledge. The survey results varied



## Regina T. Riphahn ML

Regina T. Riphahn is a Professor of Statistics and Empirical Economics at the Friedrich-Alexander-Universität Erlangen-Nürnberg/Germany. Her main areas of research are social policy, job market research and demographic economics. Regina T. Riphahn has been Vice President of the Leopoldina since 2017.

Image: Markus Scholz | Leopoldina

slightly depending on the respondent’s gender and political party. To benefit from scientific knowledge, it needs to be kept concise and presented in an intelligible way.

Recommendations for specific and practical steps can be helpful. It could also be useful to focus on the scientific employees of members of German parliament. The results of the survey are going to be presented and discussed in greater depth during a workshop.

\* Regina T. Riphahn is an economist and representative of the Evidence Initiative.

*“The key conclusions include: Respondents reported relatively great trust in findings based on scientific methods.”*

Regina T. Riphahn  
Vice President of the Leopoldina

Discussion paper  
“Nutzen von wissenschaftlicher Evidenz”  
(German only)

## CHRISTIAN DUSTMANN RECEIVES THE CARL-FRIEDRICH-VON-WEIZSÄCKER-PRIZE 2020



In 2020, economist Christian Dustmann ML was honoured with the Carl-Friedrich-von-Weizsäcker-Prize for his research in the field of migration and the labour market. Unfortunately, the award ceremony for the 50,000 euro prize, which is awarded jointly by the German National Academy of Sciences Leopoldina and Stifterverband, had to be postponed due to the pandemic. However, the event finally took place in Halle (Saale), at the end of October this year. In his talk, the labour market and migration economist Christian Dustmann explored the different ways of researching immigration and its impact on the labour market, and also set out the resulting challenges. He was presented with his prize by fellow economist and Vice President of the Leopoldina, Regina T. Riphahn. Christian Dustmann is Professor of Economics at University College London (UCL) in the UK. His work provides an important scientific basis for public debates on migration and integration policy in Europe. The Carl-Friedrich-von-Weizsäcker-Prize is a prestigious German award for science-based policy advice.

■ AB / Image: Markus Scholz | Leopoldina

► Carl-Friedrich-von-Weizsäcker-Prize 2020

## Award for Immunologist Christoph Huber

Special edition of the Carl-Friedrich-von-Weizsäcker-Prize recognises contribution to the field of cancer immunotherapy

The German National Academy Leopoldina and Stifterverband have honoured haematologist, oncologist and immunologist Christoph Huber with a special edition of the Carl-Friedrich-von-Weizsäcker-Prize. They recognise his contribution in the field of cancer immunotherapy. His research provided an important foundation for the development of an mRNA vaccine against COVID-19.

The Carl-Friedrich-von-Weizsäcker-Prize is endowed with 50,000 euros and honours researchers who have made a valuable scientific contribution to resolving key societal challenges. It is awarded every two years, most recently in 2020 to economist Christian Dustmann (see earlier article). In 2021, a special edition of the prize will be awarded to Austrian immunologist Christoph Huber.

Huber was Head of the Department of Internal Medicine III (Haematology and Oncology) at the University of Mainz/Germany when, in 2008, he founded the Mainz-based company Biontech



Christoph Huber was Head of the Department of Internal Medicine III (Haematology and Oncology) at the Johannes Gutenberg University Mainz/Germany from 1990 until 2009 when he was appointed Professor emeritus.

Image: Peter Pulkowski

together with his colleagues Uğur Şahin and Özlem Türeci. The company specialises in personalized cancer immunotherapy and mRNA technology, but when the pandemic hit it switched its attention to developing a vaccine against COVID-19. The Biontech vaccine was the first to be

approved for use against COVID-19 and has proved an invaluable tool for pandemic containment.

In the field of cancer research, Christoph Huber has made many significant contributions to the advancement of immunotherapy for malignant diseases. He first started working in cancer immunotherapy back in the 1970s and has since become a world-renowned researcher in the field.

“Christoph Huber is a pioneer in the field of cancer immunology research, and was quick to recognise the potential of this technology. The fact that his research and visionary approach provided the foundation for the development of a novel COVID-19 vaccine at such speed, is testament to the significance of his work,” explains Gerald Haug, President of the Leopoldina.

■ RED

► Special edition  
Carl-Friedrich-von-Weizsäcker-Prize

# “German people tend to be more concerned”

Computer scientist and Leopoldina member Alexander Waibel joins the AI debate with KAST

**At the end of November, the Leopoldina and the Korean Academy of Science and Technology (KAST) organised a joint virtual discussion on the topic of research into and applications of artificial intelligence (AI) and its impact on society. In this interview, we find out more from Alexander Waibel ML who represented the Leopoldina at the discussion.**

*How does the attitude toward technology in South Korea differ from that in Germany?*

**Alexander Waibel:** Like people in other Asian countries, Koreans are very tech friendly and think less about technology’s negative consequences. Korea is particularly strong in implementing new technologies. For example, the country, which is about the size of Germany, has its own search engine, which is the market leader there; we don’t have that anywhere in the EU where everything is dominated by Google.

*In which field of artificial intelligence are you working?*

**Waibel:** I develop systems for automatic simultaneous translation. This is an area where the EU is leading the way, because we have 23 official languages. Until now, the common language of Europe has always been broken English. With our technology, everyone can speak in their native language, and everything is translated automatically.

*But now you have sold this technology, which was largely developed in Germany, to the American company Zoom?*

**Waibel:** This involved one of our spin-offs, the company Kites. By joining forces, we can scale our technology worldwide, making the dream of a world without language barriers a reality.

*What is the reason why these technologies are not also brought to the market in Germany?*

**Waibel:** In Europe we often trip ourselves up and don’t succeed in turning technology into products. In Germany, there is still a lack of willingness to take risks. Let me give you an example: the German name of the new Federal Agency for Disruptive Innovations in Leipzig literally translates to “Federal Agency for Leap Innovations.” But disruption also means breaking something. And that concept was deliberately left out. If we do innovative things, it has to help the traditional industries. In America and Asia they say: it doesn’t matter if the old industry dies, as long as a new, better one is created.



*Alexander Waibel is a member of the Leopoldina and Professor of Computer Science at Carnegie Mellon University/USA and the Karlsruhe Institute of Technology in Germany. His research interests are speech recognition and machine learning.*

*Image: Markus Scholz | Leopoldina*

*Other AI technologies are considerably more problematic than yours. How do you see the discussion on both sides of the Atlantic?*

**Waibel:** Of course it’s always the same old story; in Germany, people tend to be more concerned. In the U.S., the discussion is always more pragmatic, even when it comes to the negative consequences of technology. People are not so much afraid of machines taking control of us, but rather discuss the consequences for jobs, military applications and the

manipulation of people through social networks like Facebook.

*But hasn’t the European discussion in connection with the General Data Protection Regulation (GDPR) also fueled the critical debate in the U.S.?*

**Waibel:** Indeed some Americans think that the Europeans have more courage in their dealings with the large tech companies and are better at regulating them. But many people also think that Europe only ever criticizes, but never gets anything of its own off the ground. You can’t just always buy the things of others and then criticize them.

*What aspects of artificial intelligence are you personally concerned about?*

**Waibel:** It’s what I call the human illusion: AI systems pretend to be almost human beings, they create illusionary worlds that are more and more opaque to us. It starts with video games for children and continues with Facebook, Instagram and TikTok. At some point, people will only live in illusory worlds created by AIs. This leads to loneliness, but also to discord in society, because drama and extreme content sell better.

*What future AI trends are you working on?*

**Waibel:** We are trying to make machine learning more creative. Today, a machine still has to process huge amounts of data to be able to act intelligently at all. A human doesn’t have to do that. We are also learning incrementally; in almost all the world’s languages, there’s the expression “let’s sleep on it.” Because during sleep our brain processes new impressions and integrates them with the knowledge we already have, and the next morning we can solve the problem better. And this is something we are actually trying to build into our system.

■ THE INTERVIEW WAS CONDUCTED BY  
CHRISTOPH DRÖSSER



# International talks on climate protection and pandemics

Looking ahead to the G7 summit 2022 in Germany



US immunologist Anthony Fauci (top right) joined one of the central panel discussions at this year's Science and Technology in Society Forum. He and his fellow experts discussed their experiences of dealing with global pandemics.

Screenshot: STS forum

**Every first weekend in October since 2004, leading international experts from worlds of science, politics and industry have been meeting at the Science and Technology in Society Forum (STS forum) in Kyoto/Japan, to discuss the vital role science plays in the development of our society.**

Due to the COVID-19 pandemic, this year's STS forum took place virtually. The Leopoldina organised and moderated one of the event's central panel discussions entitled "Global Pandemic – Lessons Learned and Forecast", which featured Anthony Fauci, Director of the US National Institute of Allergy and Infectious Diseases, and longstanding adviser to multiple US Presidents, Victor J. Dzau, President of the US National Academy of Medicine, Yee Sin Leo, Executive Director of the National Centre for Infectious Diseases in Singapore, and Magdalena Skipper, the Editor-in-Chief of the journal Nature. The discussion focussed on what action must be taken to prevent future pandemics and respond to these events more effectively.

During the STS forum, the President of the Leopoldina, Gerald Haug ML, and the President of the Science Council of Japan, Takaaki Kajita, also organised a meeting of academy presidents from across the globe, in which they mainly discussed the impact of climate change on the oceans and polar regions.

For the Leopoldina, the STS forum provided preparation for its role advising the heads of state and government of the G7 nations ahead of the G7 summit in Germany next year. The Leopoldina is heading up the Science7 process, which will prepare the science-based statements for the summit.

The plan is to produce three statements, although the exact topics are still not confirmed. Given the ongoing impact of the pandemic and climate change, however, it's clear that global health and climate protection will be central themes.

■ RN

▶ STS forum discussion  
"Global Pandemic"

## Human Rights Committee Climate change and human rights

At the end of October, a virtual symposium entitled "Human Rights and Climate Change" was held to examine the impact of climate change on human rights and explore ways to strengthen the rights of those impacted by global warming. The event, which was organised as a joint venture between the Leopoldina Human Rights Committee and the Royal Society of Edinburgh/UK, took place in the run-up to the COP26 UN Climate Change Summit and was attended by scientists from Scotland and Germany, as well as David Boyd, the UN Special Rapporteur on human rights and the environment, and Dunja Mijatović, the Commissioner for Human Rights of the Council of Europe.

■ JN

▶ Symposium "Human Rights and Science"

## International discussion series The art of effective science communication

The communication of scientific information has been an ongoing theme throughout the COVID-19 pandemic, be it supporting political decision-making with evidence-based data or keeping the public abreast of the latest developments. The question is how to do this effectively both now and in future. On 7 October, the Leopoldina and the Academy of Science of South Africa addressed exactly this question during a virtual panel discussion entitled "Science Communication in Times of COVID-19 under the Spotlight", which covered a range of topics including handling of fake news and media attention.

■ JN

▶ Panel discussion  
"Science Communication"

# People

## Awards and Honours

■ **Elisabeth André** ML, member of the Informatics Section, received the ICMI Sustained Accomplishment Award at the International Conference on Multimodal Interfaces (ICMI).

■ **Patrick A. Baeuerle** ML, member of the Genetics/Molecular Biology and Cell Biology Section, was elected one of the 20 most influential R&D executives in the US in the field of drug development by US magazine Endpoints.

■ **Immanuel Felix Bloch** ML, member of the Physics Section, was awarded the Bavarian Maximilian Order for Science and Art.

■ **Thomas Boehm** ML, member of the Human Genetics and Molecular Medicine Section, received the Heinrich Wieland Prize from the Boehringer Ingelheim Foundation (Mainz/Germany).

■ **Antje Boetius** ML, member of the Earth Sciences Section, was awarded the prize from the Klüh Foundation for the Promotion of Innovation in Science and Research (Düsseldorf/Germany). She also received the Urania Medal from the cultural and educational association Urania Berlin and was elected as a foreign member of the Royal Swedish Academy of Sciences (Stockholm/Sweden).

■ **Alessandra Buonanno** ML, member of the Physics Section, was awarded the Balzan Prize from the International Balzan Prize Foundation (Milan/Italy).

■ **Patrick Cramer** ML, member of the Biochemistry and Biophysics Section, was honoured with the Gregori Aminoff Prize from the Royal Swedish Academy of Sciences (Stockholm/Sweden).

■ **Elena Conti** ML, member of the Biochemistry and Biophysics Section, was honoured with the Gregori Aminoff Prize from the Royal Swedish Academy of Sciences (Stockholm/Sweden).

■ **Andreas von Deimling** ML, member of the Pathology and Forensic Medicine Section, received the International Prize for Translational Neuroscience from the Gertrud Reemtsma Foundation (Cologne/Germany).

■ **Karl Deisseroth** ML, member of the Neurosciences

Section, was awarded the Albert Lasker Basic Medical Research Award from the Lasker Foundation (New York/USA).

■ **Donald Bruce Dingwell** ML, member of the Earth Sciences Section, was honoured with the Order of Newfoundland and Labrador (Canada).

■ **Christian Drost** ML, member of the Microbiology and Immunology Section, received the Urania Medal from the cultural and educational association Urania Berlin.

■ **Lars P. Feld** ML, member of the Economics and Empirical Social Sciences Section, was awarded the Gustav Stolper Prize from the Verein für Socialpolitik (a Berlin-based economic association).

■ **Ute Frevert** ML, member of the Cultural Sciences Section, was honoured with the Ernst Hellmut Vits Prize from the Universitätsgesellschaft Münster (Friends of Münster University).

■ **Bärbel Friedrich** ML, member of the Microbiology and Immunology Section, was awarded the Bavarian Maximilian Order for Science and Art.

■ **Raghavendra Gadagkar** ML, member of the Organismic and Evolutionary Biology Section, was recognised as a Distinguished Animal Behaviorist by the Animal Behavior Society (Glenview/USA).

■ **Jörg Hacker** ML, member of the Microbiology and Immunology Section, was awarded the Order of Merit of Saxony-Anhalt.

■ **F. Ulrich Hartl** ML, member of the Genetics/Molecular Biology and Cell Biology Section, was awarded the Bavarian Maximilian Order for Science and Art.

■ **Peter Hegemann** ML, member of the Biochemistry and Biophysics Section, was awarded the Albert Lasker Basic Medical Research Award from the Lasker Foundation (New York/USA).

■ **Dirk Helbing** ML, member of the Economics and Empirical Social Sciences Section, received the Friede Gard Prize from the Friede Gard Foundation (Allenbach/Germany).

■ **Brigitte M. Jockusch** ML, member of the Genetics/Molecular Biology and Cell Biology Section, was honoured with the Order of Merit of the Federal Republic of Germany (1st Class).

■ **Ulrich Konrad** ML, member of the Cultural Sciences Section, was awarded the Bavarian Maximilian Order for Science and Art.

■ **Roland Lill** ML, member of the Biochemistry and Biophysics Section, received the Von Behring Röntgen Research Prize from the Von Behring Röntgen Foundation (Marburg/Germany).

■ **Dieter Oesterhelt** ML, member of the Biochemistry and Biophysics Section, was awarded the Albert Lasker Basic Medical Research Award from the Lasker Foundation (New York/USA).

■ **Onno Oncken** ML, member of the Earth Sciences Section, was made a Fellow of the American Geophysical Union (AGU).

■ **Marina V. Rodnina** ML, member of the Biochemistry and Biophysics Section, received the Alfred Albrecht Kossel Prize from the German Chemical Society (GDCh).

■ **Joachim Sauer** ML, member of the Chemistry Section, was elected a member of the International Academy of Quantum Molecular Science (IAQM), and as a Foreign Member of the Accademia delle Scienze di Torino (Turin/Italy).

■ **Hans Joachim Schellnhuber** ML, member of the Physics Section, was appointed Chevalier of the French Legion of Honour.

■ **Martin Stratmann** ML, member of the Chemistry Section, was awarded the Bavarian Maximilian Order for Science and Art.

■ **Rüdiger Wehner** ML, member of the Organismic and Evolutionary Biology Section, was awarded the Bavarian Maximilian Order for Science and Art.

■ **Gerhard Weikum** ML, member of the Informatics Section, received the Konrad Zuse Medal from the German Informatics Society (Bonn/Germany).

■ **Lothar H. Wieler** ML, member of the Global Health Section, received the Cohn Medal from the German Society for Hygiene and Microbiology (DGHM).

■ **Martin Wikelski** ML, member of the Organismic and Evolutionary Biology Section, was honoured with the Order of Merit of Baden-Württemberg.

## Deceased members

■ **Jean Aubouin** ML | 5 May 1928 to 19 December 2020 | Nice/France | Earth Sciences Section

■ **Jean Civatte** ML | 14 March 1922 to 10 February 2020 | Paris/France | Internal Medicine and Dermatology Section

■ **Jack David Dunitz** ML | 29 March 1923 to 12 September 2021 | Zurich/Switzerland | Chemistry Section

■ **Robert M. Frank** ML | 21 May 1924 to 7 August 2020 | Strasbourg/France | Ophthalmology, Oto-Rhino-Laryngology and Stomatology Section

■ **Hanns Hippus** ML | 18 April 1925 to 21 August 2021 | Unterschhofen-Söchtenau/Germany | Neurosciences Section

■ **Werner Janssen** ML | 24 September 1924 to 1 October 2021 | Hamburg/Germany | Pathology and Forensic Medicine Section

■ **Gunther Neuhaus** ML | 19 September 1953 to 10 July 2021 | Freiburg im Breisgau/Germany | Genetics/Molecular Biology and Cell Biology Section

■ **Günter Pritschow** ML | 3 January 1939 to 14 June 2021 | Baden-Baden/Germany | Engineering Sciences Section

■ **Hans Slezak** ML | 24 August 1927 to 25 February 2020 | Vienna/Austria | Ophthalmology, Oto-Rhino-Laryngology and Stomatology Section

■ **Kurt Unger** ML | 20 September 1919 to 27 July 2021 | Quedlinburg/Germany | Biochemistry and Biophysics Section

■ **Hermann-Josef Wagner** ML | 3 January 1950 to November 2021 | Bochum/Germany | Engineering Sciences Section



## Imprint

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### Abbreviations:

ML = Member of the Leopoldina