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Einstein Foundation Award for Promoting Quality in Research

INTERNATIONAL RESEARCH AWARD — THE 2023 AWARDEES

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Einstein Foundation Award — The 2023 Awardees

Einstein Foundation Berlin awards €500,000 prize to foster research quality

The Einstein Foundation Berlin is to honor Belgian bioinformatician Yves Moreau, the Berkeley Initiative for Transparency in the Social Sciences, and the Responsible Research Assessment Initiative with this year's Einstein Foundation Award for Promoting Quality in Research 2023.

The recipient of the **Individual Award** is Yves Moreau from the University of Leuven. Moreau ranks among the most ardent advocates for ethical standards in the utilization of human DNA data in the age of artificial intelligence and big data. He designs algorithms that protect personal privacy during the analysis of genetic data. This year's **Institutional Award** recognizes the work of the Berkeley Initiative for Transparency in the Social Sciences (BITSS), which advocates for rigor, transparency, and reproducibility in social scientific research. The Institute achieves this through establishing open science practices, developing appropriate infrastructure, and conducting meta-research. The 2023 **Early Career Award** goes to the Responsible Research Assessment Initiative headed by Anne Gärtner (Dresden University of Technology). The project aims to identify, test, and establish novel criteria for the assessment of researchers and their output. Moving away from quantity of output and other unsuitable metrics, it will foreground quality of research by taking into account factors such as transparency, robustness, innovation, and cooperation.

The €500,000 Einstein Foundation Award for Promoting Quality in Research honors researchers and institutions whose work helps to fundamentally advance the quality and robustness of research findings. The award is bestowed jointly with the QUEST Center for Responsible Research at the Berlin Institute of Health (BIH). "The Einstein Foundation Award is the first of its kind in the world to recognize efforts to improve research quality. Now in its third year, the award shines a spotlight on individuals and projects that exhibit outstanding dedication, but also the courage to view research practice in a more critical light," explains Martin Rennert, Chair of the Einstein Foundation's Executive Board. "We want to recognize these efforts and harness them as a means to drive action in the public sphere. Ultimately, credible and transparent research bolsters confidence in scientific work as a whole — work which plays an increasingly important role in society and the political arena in terms of its ability to address key challenges." The award is presented in three categories to individual researchers, institutions, and early career researchers. Awardees are selected by a prestigious international jury of researchers from various disciplines."The jury has the difficult task of selecting winners from a very large number of outstanding nominees from around the world. This demonstrates to us that many individuals and organizations from a variety of scientific fields across the world are actively working to improve research quality," comments Ulrich Dirnagl, Founding Director of the QUEST Center at BIH. "The Einstein Foundation Award increases the visibility of these efforts, pays tribute to those leading the way, and encourages fellow researchers to adopt similar approaches in their work."

Jury member Michel Cosnard, computer scientist at the Université Nice-Sophia-Antipolis, believes that Yves Moreau is highly deserving of the award, which recognizes his unwavering dedication on both professional and ethical fronts. "Moreau links deep research in DNA analysis and artificial intelligence with ethics, integrity, and human rights. His work and achievements serve as a cornerstone to help us confront the difficult social questions that arise from rapid technological developments."

Fellow jury member and Stanford University economist Alvin Roth firmly endorses the chosen winner of the Institutional Award: "The Berkeley Initiative for Transparency in the Social Sciences plays an active, creative role in the 'credibility revolution' in science by promoting careful experimentation, and supporting efforts to make replication and verification commonplace."

The award is funded by the Damp Stiftung for a period of ten years. Additional resources are made available by the State of Berlin. The publisher Nature Portfolio, the Public Library of Science (PLOS), and the Max Planck Foundation are supporting the Einstein Foundation Berlin in promoting and implementing the award.

The deadline for international nominations and applications for the Einstein Foundation Award 2024 will be published in January at award.einsteinfoundation.de.

The 2023 award winners at a glance:

Individual Award I Yves Moreau, KU Leuven Bioinformatician Yves Moreau is a professor of engineering science at the University of Leuven, Belgium. Moreau is at the forefront of the development of artificial intelligence (AI) applications for the analysis of DNA in disease diagnosis and medication development. He engineers algorithms for use in large-scale data analyses that guarantee the protection of privacy. Moreau champions the implementation of robust ethical standards concerning the handling of sensitive data in science. He lectures in big data ethics at the University of Leuven. As a *concerned scientist,* he is regularly involved in public debates and is a vocal opponent of genetic surveillance technologies. He also offers his expertise to journalists, human rights activists, and other interested parties. Moreau aims to establish a strong ethical awareness among data scientists, which is essential in the age of AI, mass surveillance, and large language models such as ChatGPT. He aims to use the prize money of €200,000 for the *Individual Award* as a catalyst for advancing this cultural shift in the field of data science. → S. 4

Institutional Award I Berkeley Initiative for Transparency in the Social Sciences (BITSS) The Initiative advocates for ethical, transparent, and reproducible research in the social sciences in order to address the credibility crisis in the sciences and ensure that political decisions are based on robust data. BITSS develops the infrastructure required to support transparent social science research practice, such as the Preprint Server MetaArXiv and the Social Science Reproduction Platform (SSRP), which crowdsources attempts to assess and improve the reproducibility of social science research. The Initiative also conducts its own meta-research to validate scientific findings. BITSS has reached tens of thousands of social scientists across the world through its training and learning materials on Open Science practices. The Initiative was founded at the Center for Effective Global Action at the University of California in Berkeley in 2012 and has developed into one of the world's most active organizations in the field of Open Science in the social sciences. The winner of the *Institutional Award* receives €200,000. → S. 5

Early Career Award I Winner and shortlist The Responsible Research Assessment Initiative was selected from 160 nominees as the winner of this year's Early Career Award. Anne Gärtner (Dresden University of Technology) aims to develop novel criteria to assess research output that prioritize quality, transparency, and reproducibility over quantitative indicators. The criteria will then be tested and established in the behavioral, cognitive, and social sciences. The winner of the Early Career Award receives €100,000. → S. 7

The following four initiatives were shortlisted for the award:
1. The Global Analytical Robustness Initiative aims to improve the reliability and transparency of research in behavioral and social sciences by setting better analytical standards. The big team science project is headed by Barnabás Szászi of Eötvös Loránd University. → S. 9

2. Disentangling large-scale disease association data aims to increase the transparency and clarity of association data to create precise data-centric computational models that facilitate more targeted drug development and the use of proven drugs to treat complex diseases. Lead researcher: David B. Blumenthal, Friedrich-Alexander-Universität Erlangen-Nürnberg. → S. 9

3. FORRT Replications Team — Tracking and Mainstreaming Replications across the Social, Behavioral and Cognitive Sciences aims to boost the visibility of replication studies by making their results easier to find and analyze. Lead Researcher: Flavio Azevedo, University of Groningen. → S. 9

4. Scholars in the Global South: Between Precarity and Persecution aims to strengthen academic freedom and knowledge production in the Global South and create a platform that allows activists and scholars to engage in transparent interdisciplinary discussion. Lead researcher: Cynthia Farid, University Hong Kong. → S. 9

The Einstein Foundation Berlin is an independent, not-for-profit, science-led organization established as a foundation under civil law in 2009. It promotes international cutting-edge science and research across disciplines and institutions in and for Berlin. It has funded more than 200 researchers, including three Nobel laureates, over 70 projects, and seven Einstein Centers.

The Damp Stiftung was established by Dr. Walter Wübben, the former majority owner of the Klinikgruppe Damp, to fund medical research and teaching as well as social projects. Besides supporting the Einstein Foundation Award, the Damp Stiftung also provides funding for the Foundation's Einstein Strategic Professorships.

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2023 Individual Award Winner: Yves Moreau

When it comes to human DNA research, Einstein Foundation Award winner Yves Moreau is an advocate for ethical standards. By drawing attention to potential abuses, he hopes to foster a cultural change in science and engineering education, encouraging researchers to consider the consequences of their discoveries.

Belgian engineer Yves Moreau has spent decades leveraging massive data sets to study genetics and biology. But more recently, he has developed a reputation as an advocate for data privacy – taking on national governments and multinational corporations while highlighting the ways personal data can be used and abused.

Moreau, a professor at the University of Leuven, is a specialist in big data sets, particularly the combination of genetics and medicine. Using the DNA of hundreds of thousands of patients to pick out patterns, he's co-authored high-impact research on the detection and treatment of rare genetic disorders, often so-called "orphan" diseases that might otherwise remain untreated because they're too uncommon to interest large pharmaceutical companies. He's also developed ways to screen for genes that signal higher risk for diseases ranging from type 2 diabetes to Alzheimer's. The research demonstrates the value of collecting and analysing genetic data on a large scale.

At the same time, nearly two decades spent working closely with clinicians instilled a deep respect for medical ethics and patient privacy. Moreau adapted his algorithms to ethical rules his physician colleagues had already spent years discussing and developing, part of an effort to balance research needs with the privacy concerns of patients. He developed privacy-preserving platforms for data analysis to comply with legal frameworks put in place to prevent the abuse of genetic information. "Because of that exposure, I became interested in privacy issues," Moreau says. "But for most of my career, I was happy to live in a protected bubble and be an engineer working on solving tough math problems."

That changed in 2015, after a colleague sent him a news story about plans by the Kuwaiti government to create a DNA database of everyone in the country – from citizens to travellers passing through for a few days. "I thought, 'that sounds like a terrible idea,'" Moreau recalls. "It was just setting up surveillance for its own sake, for goals that were unclear." A database like that might be used to discriminate against people with pre-existing health conditions, for example, or simply violating their innate right to privacy. Moreau worked with Kuwaiti lawyers and other academics to call attention to the proposal. Within months, the country's parliament scrapped the law. His success came as a surprise. "I didn't think political pressure could have that kind of an impact," Moreau says.

His next project, begun in 2017, was a bigger challenge. Collaborating with the NGO Human Rights Watch, Moreau documented Chinese efforts to create a DNA database in the province of Xinjiang. Public procurement documents showed the government was buying large numbers of DNA sequencers, enough to capture DNA data on an industrial scale. Residents, meanwhile, had to provide DNA samples, fingerprints, and voice scans to get passports. "There was a clear plan to make a DNA database of Xinjiang," Moreau says. "All of the evidence could only be explained as a mass DNA sequencing program." Beyond violating the right to privacy, recognized as part of the United Nation's Universal Declaration on Human Rights, such data could for example be used to persecute people who had more children than the Chinese government allowed.

> ***"We have to decide as a society what level of surveillance we want to accept. The challenge is to mitigate risk and find a sweet spot between benefit and risk." (Yves Moreau)***

Moreau contacted gene sequencer manufacturers, asking them not to sell equipment to the Chinese government. His efforts brought the issue to the attention of lawmakers in the US and Europe. In 2019, Thermo Fisher – one of the world's largest manufacturers of genetic sequencing technology – announced that it would stop selling and servicing equipment to the police in Xinjiang.

More recently, Moreau has called attention to China's efforts to collect and process biometric data like facial scans and fingerprints on a mass scale, arguing that people in Xinjiang are not in a position to provide informed or voluntary consent to the use of their personal data. He successfully pressured scientific journals to reject or retract papers on facial recognition research based on Chinese government data or co-authored with Chinese government officials. "I wanted to use these cases to open up a discussion on mass surveillance, which is one of the core challenges of the 21st century," Moreau says.

Moreau's no privacy purist. His decades of work in the medical field show that DNA databanks can save lives. And he acknowledges that DNA data can play a part in tracking down criminals as well. But in his view democratic societies have to openly discuss the way data is used, and scientists must play a role in that discussion. "A lot of things are possible nowadays – and that leads to an understandable desire to collect as much data as possible," Moreau says.

"We have to decide as a society what level of surveillance we want to accept. The challenge is to mitigate risk and find a sweet spot between benefit and risk."

The stakes are high, in fields ranging from biometrics and facial recognition to artificial intelligence – all of which have the potential to rapidly change society in ways that will be difficult to reverse or predict. But too often researchers don't engage with the consequences of their discoveries. "Most scientists say, 'we are working for the advancement of science, and don't want to make moral judgments.' Science stops with the use of what they're doing," says Michel Cosnard, a computer scientist at Côte d'Azur University in France and Einstein Foundation jury member. "Moreau looks at the implications for society too. He's unique in that sense."

> ***"We are changing society, so we need to engage in social debates." (Yves Moreau)***

Moreau hopes for no less than a cultural transformation in science and engineering education. "In Europe, engineers have very little training in reflecting on our role in society," he says. "They solve problems, but don't ask questions. I'd like to foster a change in the tech community's culture – we are changing society, so we need to engage in social debates."

At the University of Leuven, Moreau teaches an ethics class to engineers – something he'd like to see more of at other institutions. For him, it's not enough to bring in a guest lecturer every once in a while, instead engineers themselves should engage, and not outsource ethics education and research. "When we delegate this work to outsiders, we create a perception this is secondary," Moreau says. "People with a tech background will be able to relate better to tech students."

Cosnard hopes that by recognizing Moreau, the Einstein Foundation will send a message to researchers everywhere. "It's a good time for such an award – to tell scientists 'hey, you cannot continue to be in your ivory tower,'" he says. "Look out the window. What you're doing has big implications for society."

2023 Institutional Award Winner: Portrait of The Berkeley Initiative for Transparency in the Social Sciences

The social sciences are driving the open science revolution full steam ahead. This year's institutional winner of the Einstein Foundation Award, the Berkeley Initiative for Transparency in the Social Sciences, has been a pioneer in the transformation towards more transparency, reproducibility and ethics in social science research, and plans to step up efforts in the future.

The open science movement has gained momentum over the last decade, but much attention has focused on application in the natural sciences and less on the social sciences. Just over 10 years ago, several investigations revealed that many experiments in the fields of psychology, economics, political science, and sociology were not reproducible, meaning their results could not be proved independently. On the other hand, there was a growing demand for policy based on evidence rather than on theories and unsupported assumptions. So, social science researchers were increasingly keen to close this gap and introduce more open scientific practices to improve their research.

The Berkeley Initiative for Transparency in the Social Sciences (BITSS), the winner of the Einstein Foundation's 2023 Institutional Award, is one of the foremost proponents of this transformation towards more transparency and reproducibility in the social sciences. Since its foundation in 2012, it has provided open science education and guidance for researchers, set up a sustainable and inclusive community to support transparent practices, and supported meta-science research into improving scientific credibility.

It all started when Edward Miguel, a development economist and a professor at the University of California, Berkeley, and co-founder of BITSS, was working in Sierra Leone about 20 years ago, right after the civil war had ended. He and his colleagues were researching the best ways to improve local governance in the region. "We decided to write a pre-analysis plan, a detailed document laying out the analysis we intended to do across all these dozens of measures that we would combine in the statistical analysis," said Miguel, who explained that they were worried their research may be misinterpreted or disregarded in the absence of positive results.

The use of a pre-analysis plan proved vital for validating the research and helped ensure the results were still published, despite the measures not showing positive effects in the region. When Miguel, who also leads the Center for Effective Global Action (CEGA) — a hub for research on global poverty headquartered at the University of California, Berkeley,

within which BITSS is based — presented this example at a political science conference in 2012 there was a lot of interest from other researchers who were eager to explore it for their own studies.

Miguel and colleagues then set up what would become the first BITSS annual meeting in Berkeley where social science researchers were invited to come and join the discussion. "By the end of that full day, we came up with the name for BITSS and understood that there were specific issues and policies and practices that could benefit social science across multiple fields."

Summarizing the findings of that meeting, Miguel and other attendees published a paper in 2014 in Science that outlined the goals they hoped to achieve at the newly founded BITSS. For example, bringing transparency to the fore by improving disclosure of research methods, encouraging the registering of trials in a formal registry before the intervention is carried out (preregistration) together with the submission of pre-analysis plans, as well as open science practices such as data and material sharing.

> ***"BITSS has been at the forefront of helping to spread good practices and one of the ways they do that is by promoting study replication, which is a good thing for science." (Alvin Roth)***

"Today, thousands of pre-analysis plans are written a year, not just in development economics, but in other fields," said Miguel. "That's one of our accomplishments, really advancing that agenda from being the first to do one of these plans in economics, up to the point where it's become standard practice within a decade."

Another crucial facet of BITSS's efforts to enhance the quality of social science research is its role in encouraging study replications to assess the validity of earlier study results. "In many social sciences, engaged researchers have been constructing what is sometimes called a credibility revolution. The idea is to make research more likely to be reliable, reproducible, scientific knowledge rather than just an artifact of the way a study was done or how the statistics were conducted," said jury member Alvin Roth, an economist and professor at Stanford University. "BITSS has been at the forefront of helping to spread good practices and one of the ways they do that is by promoting study replication, which is a good thing for science."

The Social Science Reproduction Platform, which was set up as part of the Accelerating Computational Reproducibility in Economics project led by BITSS, is helping to spread the word about study replications. To date, more than 580 users in 45 countries have logged more than 180 reproductions on the platform.

Step by step, BITSS is building a worldwide community of transparency in the social sciences. Since its initiation in 2012, the annual meeting has continued each year with presentations from hundreds of researchers across various disciplines covering topics related to open science practices and meta-science research. Training has been a strong focus from the beginning, and to this day, it has equipped thousands of researchers across five continents with transparent research methods.

> ***"Our feeling is that grassroots, groundup training and change of attitudes and norms is really going to transform the field, so we focus on young scholars and really get them excited about these ideas." (Edward Miguel)***

BITSS encourages social science researchers, faculty and graduate students around the world to become 'catalysts' and join a network of scientists championing research transparency, reproducibility and ethics. These individuals lead training sessions on open science at more than 100 institutions around the world – from Cairo to California.

"There's a whole range of training activities, in person, online, and the training courses done by the catalysts. That's a key pillar of BITSS, because our feeling is that grassroots, groundup training and change of attitudes and norms is really going to transform the field, so we focus on young scholars and really get them excited about these ideas," explained Miguel.

It can be hard to measure the impact of transparency and open science practices such as those encouraged by BITSS, but a recent article in *Nature Communications,* which Miguel co-authored, shows a significant rise in adoption of open science practices such as study preregistration, data or instrument sharing, from 25 per cent in 2009 to over 80 percent in 2020.

Despite significant improvements, there is still more to be done. Preregistrations of studies are now listed on an economics trial registry and forecasts of study impacts are filed on the Social Science Prediction Platform run by BITSS on a regular basis, but BITSS is working hard to make sure proposed trials are also completed and published to achieve wider transparency and open science goals. "There are still a lot of preregistrations where several years after the study was meant to take place results have never been made public. They haven't been published or been posted on the registry. There's still a lot of results that are disappearing," explained Miguel.

He and his team are now following up on some of the early work on pre-analysis plans. They plan to do a randomized controlled trial using different types of outreach methods to authors to try to understand motivations

behind publication of results. They hope to find out why registered projects may not have been completed and to incentivize and encourage people to make any results that were achieved public.

Looking at the future, the BITSS team plans to enhance its training efforts, foster community building, publish more working papers on the preprint server MetaArXiv it hosts, and carry out meta-science experiments to assess the best ways to practice open science. To enable more accurate meta-science, an "Impact Data and Evidence Aggregation Library database" is being built to document study designs, features of the interventions being evaluated, study data, and estimated impacts.

"Fourteen years ago, when we were starting to do this work, it was a very non-mainstream thing to do, but I think the work has become much more mainstream" said Miguel. This kind of recognition makes you appreciate that and the award funding will help us advance all these objectives."

Early Career Award Winner 2023: Portrait of the Responsible Research Assessment Initiative by Anne Gärtner

At Dresden University of Technology, Anne Gärtner aims to develop novel criteria to assess research output based on quality, transparency, and reproducibility.
Her ultimate goal: to reform the way senior-rank faculty members are appointed. Her proposal wins the 2023 Early Career Award.

A survey among 1,500 psychologists confirmed what Anne Gärtner had experienced firsthand: Appointment procedures at psychology departments hardly ever consider the quality of the research conducted by candidates.
The survey participants were asked about the assessment criteria taken into account by their respective universities when recruiting senior faculty. The number of peer-reviewed papers – i.e. papers reviewed by independent researchers – ranked first, closely followed by the number of lead-author publications and other quantitative criteria such as acquired third-party funding.

"Many of these quantitative metrics are only vague indicators loosely linked to of research quality, and they are one of the root causes for the massive replication crisis that we are seeing in the field of psychology and other academic disciplines," says Dr. Anne Gärtner, a psychologist and neuroscientist based at Dresden University of Technology. With her Responsible Research Assessment Initiative, which won the Einstein Foundation Berlin's 2023 Early Career Award, she is pushing for a paradigm shift in appointment procedures: away from the rigid focus on quantity and toward a stronger emphasis on quality when assessing research output.

> ***"We have to work at all levels to redefine incentives in order to reward – instead of penalizing – quality in research." (Anne Gärtner)***

To this end, Gärtner plans to develop a set of novel, more suitable criteria that integrate qualitative aspects such as integrity, robustness, transparency, cooperation, and innovation. "We have to work at all levels to redefine incentives in order to reward – instead of penalizing – quality in research," she says. "We will of course continue to count and evaluate the number of peer-reviewed papers, references, and data sets – but only after testing for quality."

But how can quality be measured? Gärtner wants to evaluate candidates' research output mainly in terms of methodological rigor using a scoring system. Do applicants pre-register their research papers, for example, and disclose their methodology before publication? Do the

formulated theories adhere to the rules of formal logic? Can their research be replicated and independently verified? Are all research data openly accessible?

Since 2020, Gärtner has been working with colleagues to develop assessment criteria that are responsive to such questions and help to shortlist candidates in appointment procedures (see preprint 1 & 2). She now wants to refine these criteria and apply them to two further stages of the selection process: the interview and the review phase, during which candidates undergo external evaluation.

"I will interview experts and status groups such as professors, doctoral and postdoctoral researchers, as well as administrative staff," explains Gärtner. The criteria will then be field-tested extensively, revised with the help of experts from the German Psychological Society (DGPs), and aligned with international frameworks such as the Coalition for Advancing Research Assessment (CoARA) or the San Francisco Declaration on Research Assessment (DORA). The ultimate goal is to establish criteria that are valid, robust, efficient, legally sound, and easy to implement – starting in psychology departments and then moving on to other disciplines within the behavioral, cognitive, and social sciences.

"I hope we will see appointment procedures reformed on this basis," says Gärtner. She has already set up a prototype of an online interface that appointment committees can use for future selection processes. The Initiative is extensively documenting its progress and will make these files, along with all data and materials, accessible online.

Anne Gärtner became adamant about advancing research quality after having experienced firsthand the pressure to publish as much and as fast as possible. Quality, she realized, is often not considered a priority. In her own research, she uses neurobiological methods and imaging techniques to explore how humans process and regulate their emotions. Beside her research, she strongly advocates for greater integrity and transparency in psychology. "I was often advised not to worry about issues such as integrity and transparency because it would hurt my academic career," she says. "The Einstein Foundation has now honored what I've been working to promote over the past years: a better way to assess and evaluate scientific research. And it feels good to finally receive recognition for these efforts."

While Gärtner's work is currently focused on the assessment of research output, her long-term plan is to develop a fuller set of metrics that also covers the remaining academic dimensions evaluated in appointment procedures: teaching quality, leadership skills, academic governance, and social impact. Gärtner hopes that the shift away from quantitative metrics in appointment procedures will become a blueprint for the entire academic system and help to overhaul the allocation of research funding, scholarships, and awards, among other things. Researchers will only be able to prioritize quality if the incentives prioritized by the system are changed.

"Young scientists in particular find themselves caught in a dilemma: They can either bow to the old system and publish as many papers as possible – or invest their time and effort in producing high-quality research, which in turn impacts the quantity of their output, and thus, their career," explains Gärtner. "I hope that our project contributes to a future where we'll see not just more research being published every year, but more high-quality and high-value research."

The Early Career Award Finalists 2023:

Improving analytical standards:
Global Analytical Robustness Initiative

Every study contains a multitude of potential results and conclusions. After all, researchers analyze empirical data in vastly different ways and thus arrive at different results. "There is a lack of analytical resilience in empirical research that slows down the knowledge process," says psychologist Barnabás Szászi from Eötvös Loránd University Budapest. To improve the situation, Szászi and colleagues from the University of Innsbruck, Stanford University, and Dartmouth College have founded the Global Analytical Robustness Initiative. It aims to improve analytical standards in the behavioral and social sciences and thus increase the reliability and transparency of research.

The team's plan is to have 100 studies examined by around 500 experts for analytical robustness and create an open database that makes transparent the correlation between the analytical paths taken in empirical work and the results presented in the research. This will enable researchers to identify and respond to problems and challenges. On this basis, the Global Analytical Robustness Initiative then aims to issue recommendations on how to increase analytical robustness and train scientists to use the most robust analytical methodologies. "In this way, we hope to strengthen the reliability of future empirical results and, ultimately, foster trust in science."

Treating diseases more precisely:
Disentangling large-scale disease association data

In order to identify therapies for complex diseases such as Alzheimer's, precision medicine consults databases such as OMIM and DisGeNET that document links between diseases and genes and genetic variations, symptoms and proven drugs. However, the definitions of diseases on which these databases are built are exclusively tied to the affected organs or symptoms. "So far, we have mostly treated diseases based on these definitions, instead of looking at the underlying molecular dysfunctions," says David B. Blumenthal, a bioinformatician at Friedrich-Alexander-Universität Erlangen-Nürnberg. With his project "Disentangling large-scale disease association data," Blumenthal wants to develop an optimization algorithm that searches the databases for molecular mechanisms and 'disentangles' their data to boost their usefulness.

Blumenthal plans to launch an open database that scientists from all over the world can consult to access high-precision data on the associations between diseases and genes, symptoms or drugs. These data can then be used to develop targeted and individualized drugs or test proven drugs for their efficacy in treating other diseases with the help of artificial intelligence-based models. "By sharing fine-grained disease association data with the scientific community, we hope to make a significant contribution to the development of new drugs."

Spreading reliable Science: FORRT Replications Team – Tracking and Mainstreaming Replications across the Social, Behavioral and Cognitive Sciences

It is not easy to track down replicated and thus independently verified research. The FORRT Replications Team wants to change that. Headed by political scientist and psychologist Flavio Azevedo, the project team behind Tracking and Mainstreaming Replications across the Social, Behavioral and Cognitive Sciences wants to record replication studies in an international database and make them easy to find for everyone. "We want to establish replication as the basis for reliable research in the social, behavioral, and cognitive sciences and also bring it to other fields that rely on scientific findings for their work," says Azevedo, who is based at the University of Groningen. With this approach, the project will also give teachers, developers, and policy advisers the option to draw on replicable research without too much effort.

Alongside the database, FORRT is planning to develop two easy-to-use apps to search, analyze, and visualize replication data by scientific discipline. Among other features, users will be able to upload a list of references and immediately learn which of the cited works have been replicated – and whether the initial results have been confirmed. "In a third step, we want to encourage as many scientists as possible to contribute data and train target groups in how to use our apps," says Azevedo. "In this way, we hope to help stop the dissemination of unsupported scientific statements."
forrt.org

Fostering Research in the Global South: Scholars in the Global South: Between Precarity and Persecution

In countries of the Global South, a significant amount of knowledge is produced outside the traditional universities, often by non-profit organizations, activists, and other policy stakeholders. The project Scholars in the Global South aims to strengthen knowledge production in the social sciences in these countries and create a platform that fosters transparent discourse and advances knowledge that is not easily or systematically accessible.

"Our network promotes research quality and equal access to knowledge in the historically disadvantaged Global South," says Dr. Cynthia Farid, the project's lead researcher based at the University of Hong Kong. Backed by legal

scholars from India, Colombia, and South Africa, she and her team also want to map how the countries of the Global South perform in terms of academic freedom and offer workshops to support social scientists who help to disseminate knowledge and methods, submit project applications, and conduct studies. The aim is to gradually create a network of like-minded social scientists that will give greater visibility to empirical research and academic voices from the Global South. "The project is really about lacing together formal and informal knowledge systems, and about the exciting opportunities that grow from such convergences and allow us to build an alternative future of knowledge."

Further information
award.einsteinfoundation.de