

**BERLIN
UNIVERSITY
ALLIANCE**

In collaboration with
TAGESSPIEGEL

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10 2025

beyond



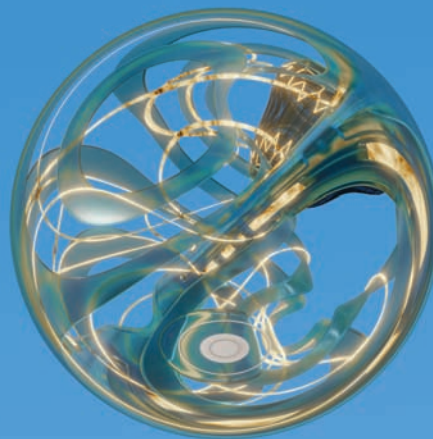
**FOR THE BIG
TRANSFORMATIONS
OF OUR TIME**



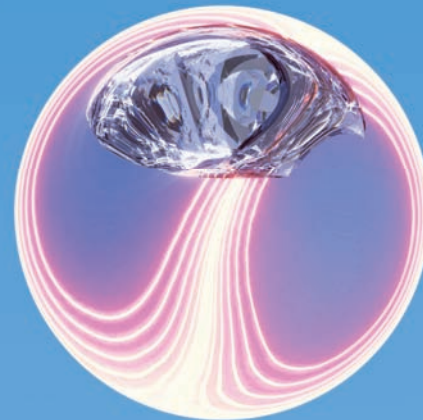
beyond boundaries

The **Berlin University Alliance** is the Excellence Alliance that includes **Freie Universität Berlin**, **Humboldt-Universität zu Berlin**, **Technische Universität Berlin** and **Charité – Universitätsmedizin Berlin**. Together, the four partners are shaping the Berlin research community beyond boundaries that otherwise divide disciplines, institutions and sectors of society. Through cutting-edge research, they are developing solutions to major transformations.

Artificial intelligence
used for global health



Diamond structures
for quantum
communication



Interventions
against loneliness
in young people



FIVE GRAND CHALLENGES, FIVE RESEARCH PROJECTS



Groundwater research in
Berlin-Brandenburg



Luminous indicator plants
in greenhouses

Find out
more:



Editorial

Research as Our Guide to the Big Questions of the Future

Dear Readers,

Our world is changing rapidly and who knows what the future holds. How are we supposed to deal with all of these transformations: climate change, new diseases, multiple wars, the polarization of society, the promise and threat of artificial intelligence...? What can we do about the apparent shift towards hatred influencing so many political events? What is next?

There are no simple answers to these questions. But there is research. It opens up ways for us to explore and shape the future and go beyond boundaries.

Research in Berlin has unique potential with three excellent universities and their centers for medicine, renowned research institutes, tens of thousands of researchers and hundreds of thousands of students. Their combined knowledge, skill and curiosity expand the realm of possibilities when it comes to tackling the big questions. The Berlin University Alliance quintessentially strengthens this potential by serving as an open knowledge laboratory. In fact, it is THE OPEN LAB, making research and science easily accessible to the public.

This magazine, produced in collaboration with Der Tagesspiegel newspaper, is your invitation to join THE OPEN LAB and discover how research in Berlin is shaping the future. This issue spotlights the Grand Challenge Initiatives – interdisciplinary research projects that seek answers to the most pressing questions of our time.

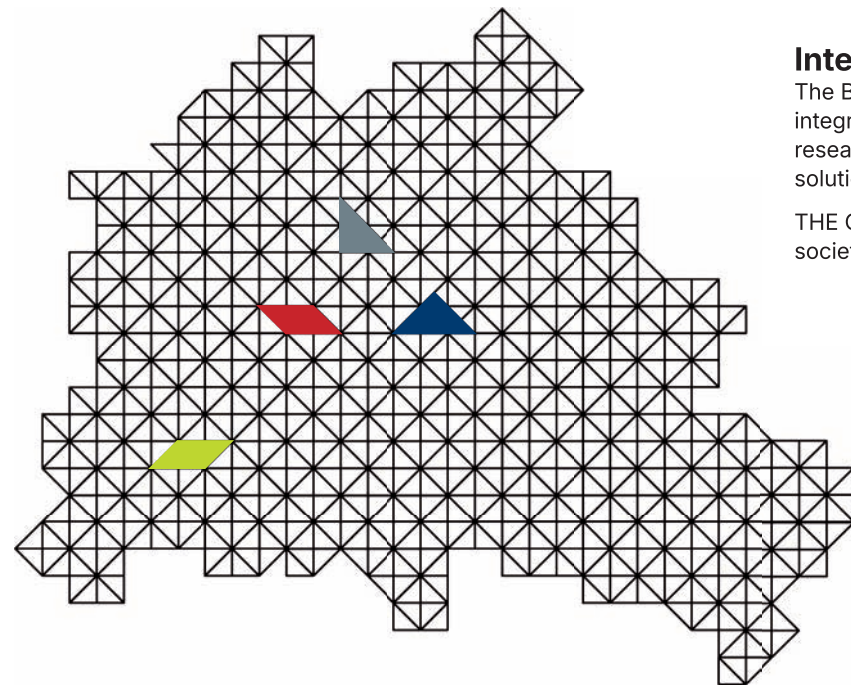
Prof. Dr. Günter M. Ziegler

Spokesperson for the Berlin University Alliance
on behalf of the Board of Directors



**Prof. Dr. Dr. h.c.
Günter M. Ziegler**
is President of
Freie Universität
Berlin since 2018
and Spokesperson
for the Berlin
University Alliance
since 2024.

Content



Freie
Universität
Berlin

Humboldt-
Universität
zu Berlin

Technische
Universität
Berlin

Charité –
Universitätsmedizin
Berlin

Interconnected

The Berlin University Alliance strengthens the city's integrated research environment and promotes cutting-edge research, which serves as a basis for developing viable solutions for the major transformations of our time.

THE OPEN LAB facilitates multilateral exchange with society at large.



"Strengthening society through cutting-edge research"

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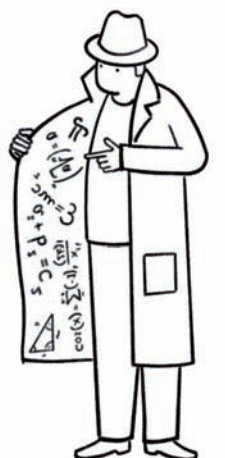
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"We want to use cutting-edge research to strengthen society in specific ways"



The Berlin University Alliance is entering its next phase of funding. **Günter M. Ziegler** and **Alexandra-Gwyn Paetz** reflect on the Excellence Alliance's ambition to strengthen Berlin's research for the future

Where do you see Berlin's potential as an epicenter of science?

Ziegler: The city is steeped in potential, so you'll find it anywhere you look really. But, of course, Berlin's three major universities together with Charité – Universitätsmedizin Berlin, its many other higher education institutions and unique pool of non-university research institutes are powerhouses of potential. Berlin is also home to world-class museums and collections, as well as science communication venues, such as Futurium, the Humboldt Forum and Urania Berlin. This mix results in an enormously rich scientific environment that extends far beyond the city limits. The more connected these players are, the more we can tap into that potential.

Paetz: Within the Berlin University Alliance (BUA) alone, we connect over 1,700 professors and nearly 107,000 students. These figures speak for the city's immense potential. The academic community here also has close ties to the city's society. Events such as the Long Night of Science and Berlin Science Week attract tens of thousands of visitors every year. This shows how deeply rooted science is in everyday life in Berlin, making Berlin a true science metropolis.

The BUA presents itself as THE OPEN LAB and focuses on dialog with a broad spectrum of the city's population. How is this interaction with Berliners going?

Paetz: We enable easy access to cutting-edge research for all citizens. In recent years, we have experimented with different kinds of formats. The "Open Space" salon series is a good example: Here, we present pressing topics such as trust in science to a wide audience for public debate – and not just in lecture halls, but also in a coffee bar for example. Another exciting format is our BUA Run Club for running enthusiasts. We also try to reach groups that might not otherwise have direct access to science – for

example, by sharing our knowledge at weekly outdoor markets. However, our understanding of exchange goes far beyond mere dialog. We support researchers in connecting with key figures in urban society and getting them involved so that their practical knowledge can be incorporated into the research process.

So it is a two-way street, so to speak ... ?

Ziegler: That's right! This kind of knowledge exchange is not about a famous professor explaining how the world works, but about a give and take in both directions. We create spaces for dialog with many different social actors from civil society, business, politics, and the arts. These spaces are not just for communicating results; they are also places where something new emerges from the exchange of ideas. We are convinced that jointly developed research approaches lead to more sustainable results and can ultimately provide solutions for many people.

The BUA aims to connect the Berlin research area and offer comprehensive research infrastructure and other support services for researchers. Is the Alliance already more than the sum of its parts?

Ziegler: So much more! Even more than we anticipated. One of Berlin's major successes is the establishment of BR50, a network of Berlin-based non-university research institutes that have joined forces thanks to the BUA's impetus. Cooperation within the Alliance is also becoming increasingly close. This includes sharing, operating, planning, and procuring research instruments, machines, computers, and data. Not just to save money, but because it improves the science.

Can you give an example of this kind of shared scientific equipment?

Ziegler: How about three examples? A few years ago, we purchased three

very expensive cryo-electron microscopes that researchers from all over Berlin can use. The Zuse Institute provides centralized computing capacity on a high-performance computer. And the Digital Network Collections provide an overview of all teaching and research collections in Berlin – from plants in the Botanical Museum to literary collections.

Paetz: We have made significant progress in building the trust needed for joint initiatives. The BUA Collaboration Platform serves as the key structural element for organizing BUA-wide access to resources for researchers. This collaborative tool is unique in the German academic system. But we want to do much more than just share resources: We want to work together to advance shared priorities in Berlin.

Have you noticed a shift in people's attitudes? Are they more open?

Paetz: Yes, absolutely – at all levels. Of course, it remains challenging to tackle projects together, but we are no longer talking about the "if", but rather discussing the "how". These discussions have also become more specific and goal-oriented because the established frameworks and communication channels have shortened the paths to the right contacts.

Ziegler: Looking at the statistics, the number of publications with co-authors from all four BUA institutions is also rising exponentially. A few years ago, there were only one or two joint publications a year, but now we have more than 50.

What if we look beyond Berlin? How is the BUA contributing to opening up Berlin's research to the international community?

Ziegler: I would say anywhere you look you'll see the BUA making and strengthening international ties. For example, if we look to Oxford: the BUA has initiated a strategic partnership with them. We have strong

Professor Günter M. Ziegler is President of Freie Universität Berlin since 2018 and spokesperson for the Berlin University Alliance since 2024. Together with the Board of Directors, he shapes the strategic direction of the Excellence Alliance and provides impetus for the further development of Berlin as a hub of research and innovation.

Dr. Alexandra-Gwyn Paetz has been Managing Director of the Berlin University Alliance since 2022. In addition to managing the Alliance, she was also responsible for the organizational structure of the Collaboration Platform, which functions as a public-law corporation. Paetz, having successfully established the Collaboration Platform assumed her new role at the Federal Ministry for Research, Technology, and Space on August 1.

connections with Cape Town but also in São Paulo. The BUA promotes Berlin around the world and is the central point of contact for Berlin-based research. As Henry Kissinger supposedly once asked, “Who do I call when I want to call Europe?” If you want to call Berlin’s knowledge and innovation hub, then you contact the Berlin University Alliance Head Office!

BUA funding prioritizes research on the major transformations we are currently facing, such as water management in times of climate change and issues of social cohesion. Is it science’s duty to provide solutions?

Ziegler: We certainly have a duty to develop and propose solutions, and we hold ourselves to this. However, it would be wrong to focus solely on what is immediately useful. In the long term, basic research produces findings that are also important for applied research and society.

Paetz: In Berlin, many research projects are characterized by their close connection to social issues such as climate, health, and social cohesion. The Clusters of Excellence and Collaborative Research Centers actively address such topics. At the same time, we know how important research is when it is driven by curiosity itself. It might not have an immediate benefit, but it can generate a crucial impetus that will lead to benefits in the future.

How can you tell if the projects supported by the BUA are really helping in the long run?

Ziegler: You can measure the long-term impact in three ways. First, you can look at whether the research results gained attention in professional circles. Second, you can gauge how effective the exchange with society, business, and politics was. And third, were sustainable networks established to continue the work in follow-up projects? What is clear is that these



major transformations cannot be resolved with just a few years of funding. **Paetz:** BUA projects often give rise to new research consortia that hold their own in competitive scientific circles. The BUA’s mission is to facilitate this networking and collaboration – both within the Alliance and beyond with strategic partners worldwide. We see sustainable benefits in particular when new, supporting structures and projects emerge from our collaborative efforts.

The new start-up factory UNITE aims to make Berlin-Brandenburg even more of a hotspot for start-ups in Europe. How important is networking between research and industry for the BUA?

Ziegler: We took a huge step forward when we merged the start-up advisory services of the three BUA universities with the Science & Startups project. UNITE, the new start-up factory for Berlin-Brandenburg, is building on this and now also connects non-university institutes, companies, and other players in the region. As a public-private partnership, UNITE supports young companies in the research sector, making Berlin-Brandenburg an attractive site for innovation. The BUA is thus pushing ahead with its ambition to develop Berlin into an integrated science hub – and that is exactly what we are doing with UNITE.

The BUA’s new Grand Challenge Initiative is dedicated to responsible

innovation processes. Why is that?

Ziegler: In these times of great change, it is extremely important to raise awareness of social issues and the ethical foundations of innovation. With the Grand Challenge Initiative – a BUA funding program for solutions to major societal challenges – we are supporting three projects that are focused on the trajectory of innovation development. A sense of responsibility is embedded in the projects from the outset. Research and innovation require responsibility to be integrated into their frameworks in order to guide us toward a sustainable future. That is also a lesson from history.

The BUA will be evaluated in November 2025, and decisions on continued funding until 2033 will be made in March 2026. What major innovations do you plan to introduce in the next funding phase?

Paetz: The BUA remains committed to major transformations. It will promote cutting-edge research, expand structural cooperation, and develop Berlin’s integrated research environment into a region that will have an impact beyond Germany and throughout Europe.

Ziegler: We want to take the next visionary step. Beyond an integrated research space, we aim to create a genuine knowledge and innovation space that significantly enhances the impact of research – for Berlin and beyond.

THE OPEN LAB sets new standards in the exchange between science and society.

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1 Guiding Change, Researching Transformations

The major transformations of our time raise fundamental questions that demand academic analysis – but the questions also need to be informed by social debate. They require political contextualization and technological solutions. Whether it is digitalization, artificial intelligence, climate change, or the restructuring of energy, transportation, and security systems, change requires collective responses. Researchers at the Berlin University Alliance

are therefore working across disciplinary and institutional boundaries on topics such as social cohesion, global health, and responsible innovation. In close cooperation with stakeholders from politics, civil society, and business, the Berlin ecosystem is developing sustainable solutions for the complex challenges of our present and future.



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What major issues does BUA address?

Social Cohesion

What holds our society together? How does social cohesion develop? With its Grand Challenge Initiative Social Cohesion, the Berlin University Alliance is seeking answers to these questions that impact society.

Global Health

Global Health is more than just an issue for the medical sciences – it reflects complex interrelationships between individual, societal, and planetary health. Researchers at the BUA are analyzing how these factors interact and influence each other.

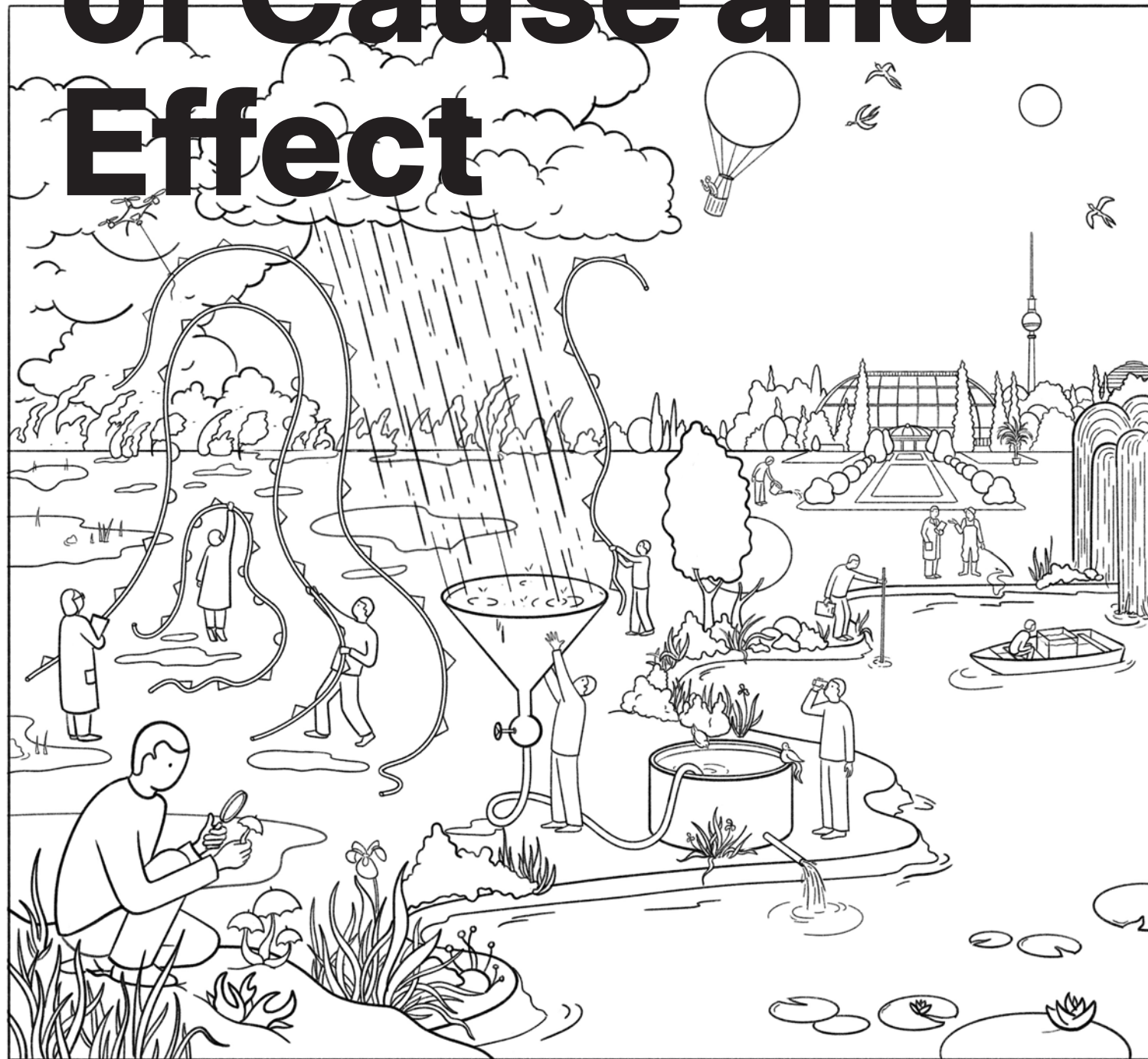
Responsible Innovation

How can transdisciplinary approaches and the early integration of practical knowledge be incorporated into research that leads to sustainable innovation? How can these processes be shaped in order to guarantee long-term goals?

Quantum Technology / Quantum Physics

Berlin is set to become a hotspot for quantum technology. The advances taking place here are key to economic innovation and promote scientific expertise in the field of quantum physics.

The Principle of Cause and Effect



Science is insurance for the future. The Berlin University Alliance brings together Berlin's research expertise and develops innovative solutions for the major transformations of our time – from sustainable water management, global health, and issues of social cohesion to quantum technologies and sustainable mobility solutions. As THE OPEN LAB, the Alliance aims to take citizens of Berlin on an evidence-based journey into the future.

T

The glass tank looks like a work of art, a light installation on a wooden pedestal on the banks of the Spree in Berlin-Friedrichshain. Bright green duckweed covers the murky water of the Spree inside it. One hundred kilometers upstream people from the Spreewald region launched the tank on the same river so that it would arrive in the heart of the capital. A Spreewald punt transported the swaying cargo from the Spreewald village of Raddusch to the center of Berlin.

The activity was part of the River Stories project by the AnthroScenes experimental laboratory, which was commissioned by the Berlin University Alliance (BUA) to develop new communication formats to promote dialog between science, art, and the public. The tank is designed to encourage people to reflect on the importance of water as a resource and imagine life with less of this vital resource.

Many people do not know that water scarcity is also a threat to the Berlin-Brandenburg region. Water levels have been falling in lakes throughout Brandenburg for years. Although it does not rain less, dry spells are becoming more frequent. In the drought years of 2018 and 2022 alone, groundwater recharge fell by 40 percent. At the same time, heavy rainfall and flooding are increasing. Sustainable water management in times of climate change is therefore one of the major research areas being pursued by the BUA – a “grand challenge” that will determine the

future and well-being of humanity, affecting us all.

“The world is facing profound challenges – from climate change and digital transformations to social inequalities,” says Professor Stephan Völker, Vice President for Research and Appointments at Technische Universität Berlin and member of the BUA Executive Board. “At the Berlin University Alliance, we believe that excellent research cannot be detached from these realities. After all, research that focuses on the needs and urgent issues of our time can show us ways in which we can work together to shape a more sustainable, fairer, and livable future.”

Since its foundation seven years ago, the BUA has been committed to its responsibility towards the future and has spurred on practical solution-oriented research. For the upcoming funding phase, which runs until 2033, research from Berlin will be channeled more strongly than before into responsible innovations, thereby making impact a core principle of BUA.

Research focus on the future: the five major topics of the BUA

To date, the BUA has shaped Berlin's research with five future-oriented Grand Challenge topics. For the first three – Social Cohesion, Global Health, and Responsible Innovation – it launched Grand Challenge initiatives with over 80 individual projects, known as Exploration Projects.

The two other topics, water and quantum technology, received support from the Einstein Foundation Berlin until the end of 2024 as large-scale, interdisciplinary Einstein Research Units (ERUs). Since 2019, the BUA has financed more than 160 projects in the five areas and initiated

around 340 academic collaborations.

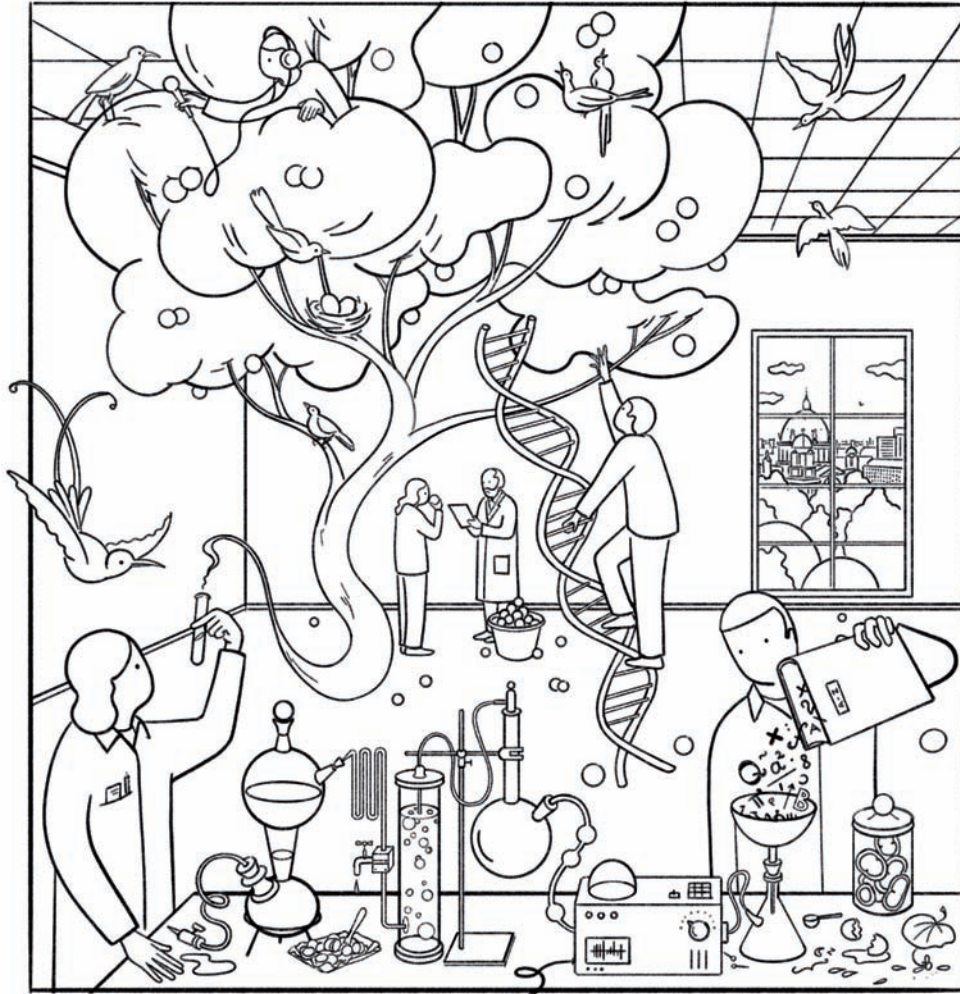
But have these projects been able to create added value for society? Did they identify possible paths for the future? The Grand Challenge Initiative on Global Health alone provides several compelling examples: As part of the GlobalResist project, a bio-reactor was developed that is designed to detect the development of dangerous antibiotic resistance at an early stage. It can help prevent resistance from developing before it can endanger many lives. Another project used neuro-urbanism methods to find out how the density of urban life affects the human psyche. Using eye tracking and skin conductance measurements in urban areas, the researchers were able to prove that heavy traffic and crowds increase stress levels in their test subjects. The results provide scientific evidence for future urban planning that takes psychological stress into account.

The first Grand Challenge Initiative on Social Cohesion has also led to several sustainable impacts. In the project Social Cohesion and Civil Society – Interaction Dynamics in Times of Disruption, researchers from seven disciplines investigated the influence of civil society actors on social cohesion.

One result of this work was a model that can describe cohesion and provide concrete insights into the extent to which events such as the war in Ukraine divide or unite societal forces. “Our findings show that acute crisis events can promote both integrative dynamics and longer-term polarization,” says Professor Christian von Scheve from the Institute of Sociology, Freie Universität Berlin.

Launched in 2024, the Coping with Affective Polarization Einstein Research Unit continues to expand

Everything is interconnected: research helps us to overcome the major challenges of our time.



on the now completed project and is currently investigating the phenomenon of “affective polarization,” i. e., the increasing role that emotions play in public discourse and their impact on social cohesion.

The researchers are planning to develop concrete strategies to counter divisive tendencies (see p. 13). “We want to identify the pressing challenges facing a free and democratic constitutional order and highlight different ways in which societies can respond to them,” says von Scheve, one of the two spokespeople for the ERU.

However, the impact of BUA-funded projects cannot be measured solely in terms of immediate results. “The value of temporary funding also lies in initiating new ways of thinking, developing innovative approaches, and building networks among stakeholders,” says Vice President of Techni-

sche Universität Berlin Stephan Völker. Many projects have acted as catalysts, triggering sustainable developments and mobilizing a critical mass of solution-oriented expertise in Berlin. The Grand Challenge Initiative on Global Health, which concluded in 2024, also led to a preparatory module for an Einstein Research Unit on the topic.

Practical applications meet research – sustainable solutions for water use

The Einstein Research Unit (ERU) Climate and Water under Change (CliWaC) struck at the heart of current debates. For three years, nearly 30 researchers from the fields of Earth sciences, forestry, law, hydrology, meteorology, political science, sociology, and anthropology researched changes in the regional water balance

in Berlin and Brandenburg against the backdrop of climate change. They analyzed three water systems: the Gross Glienicker and Sacrower lakes, the Spree river basin, and the Berlin urban area with its extreme precipitation. The aim was to examine the complex relationships between climate conditions and water resources and to develop measures with low conflict potential for a more sustainable use of water as a resource.

“Water management is a significant challenge, especially in a region like Berlin-Brandenburg, where urban and rural areas are closely intertwined,” says Professor Tobias Sauter, Geoscientist at Humboldt-Universität zu Berlin and co-director of CliWaC. Water demand is rising due to the growing population, while at the same time droughts, a decline in natural water reservoirs, and increasing land sealing are limiting the availability of water. “This requires sustainable solutions – CliWaC has addressed precisely this issue and combined scientific research with practical measures,” says Sauter.

The research team was able to provide politicians and urban planners with concrete, evidence-based ideas for future planning.

As a result of the project, the Berlin Heavy Rainfall Map was published, which allows climate-related risks to be assessed more transparently. Scientific studies also formed the basis for recommendations to transform Berlin into a “sponge city” that can better store rainwater. Other studies promoted ideas such as using more resistant crop varieties and implementing agroforestry systems in agriculture to save water and increase biodiversity.

Funding from the BUA has also acted as a catalyst here: the knowledge

Quanta and Emotions

With the Einstein Research Units, the BUA is setting strategic priorities for Berlin’s research community. In addition to forward-thinking research on water, these research units are focused on quantum computers and schisms in society.

Strategies against emotionally driven polarization

How can a society address the challenge when public discourse becomes inflamed over minor issues and fractures into ideological camps that radically reject dissenting perspectives? The Coping with Affective Polarization Einstein Research Unit investigates the phenomenon of emotion-driven division in society. This polarization has many negative effects on social cohesion: It hinders cooperation and a willingness to find compromises in everyday politics, weakens trust in the government, and promotes intolerance as well as verbal and political violence. All of this poses a threat to democracy.

The researchers at the Einstein Research Unit work both on a practical and theoretical level, supplementing established social science theories on social resilience and conflict resolution with new insights into affective polarization. The aim is to create a monitoring tool that can be used to track the development of affective polarization in Berlin and throughout Germany. The data collected will provide scientific evidence that will inform public debates and ground them in facts.

The researchers are also working on strategies to counteract affective polarization. These will be developed in the second part of the project in collaboration with representatives from civil society, such as the Federal Network for Civic Engagement and Climate Alliance Germany.

“This collaboration with networkers in civil society opens up new perspectives; it also provides insights into how new conflicts are reflected in civil society and what strategies local actors themselves are developing,” says Professor Christian von Scheve from the Institute of Sociology at Freie Universität Berlin and one of the two spokespersons for the project. In the end, they hope to find practical solutions that can be used in everyday life to mitigate or even prevent affective polarization.

Participating fields

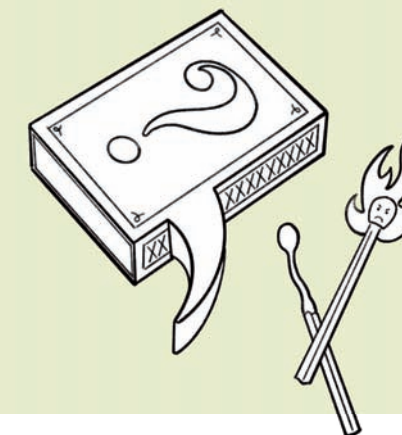
Psychology, political science, sociology, psychiatry, philosophy, communication studies

Participating institutions

Charité – Universitätsmedizin Berlin, Freie Universität Berlin, Humboldt-Universität zu Berlin

Duration

October 2024 to September 2027



The future of computing

What can quantum computers do that regular computers cannot? How revolutionary is their potential, for example, in areas such as quantum chemistry or high-energy physics? The Einstein Research Unit Perspectives of a Quantum Digital Transformation: Near-term Quantum Computational Devices and Quantum Processors brought together Berlin-based experts from theoretical and experimental physics, applied mathematics, computer science, and machine learning to discuss these questions. The project has achieved important results in quantum computing theory. “For example, it has been shown that quantum computers can solve important optimization problems in industry better than classical computers,” says Professor Jens Eisert from the Dahlem Center for Complex Quantum Systems at the Freie Universität Berlin, who was the spokesperson for the research unit.

In one experiment, quantum dots were created under controlled conditions that can generate indistinguishable photons with a GHz repetition rate. “This is an important ingredient for photonic quantum technologies, which enable quantum computing and communication using light, a particularly practical application of quantum technologies,” says Eisert. “New applications for quantum simulations on integrated optical chips have also been discovered.” The Einstein Research Unit has helped to establish a solid foundation for interdisciplinary quantum research in Berlin. In 2023, the Berlin Quantum initiative was launched with the aim of establishing Berlin as a leading global center for quantum research.

Participating fields

Theoretical and experimental physics, applied mathematics, computer science, machine learning

Participating institutions

Freie Universität Berlin, Humboldt-Universität zu Berlin, Technische Universität Berlin

Duration

October 2021 to September 2024

Protein & Mobility

With its Grand Challenge Initiative “Responsible Innovation in Times of Transformation,” the BUA is funding research projects that promote responsible innovation processes – for example, in the areas of nutrition and transportation.

Protein production without side effects

Protein is an essential part of a healthy human diet. We cannot live without it in fact. However, with a growing global population, climate change, and limited resources, a shift in protein production is needed. “Many agree that protein production and consumption need to be transformed, but there is currently no clarity or consensus on how this should be accomplished,” says Dr. Dagmara Weckowska, head of the Responsible and Sustainable Innovation research group at Freie Universität Berlin, which is leading the new BUA-funded project. Alternative proteins that mimic conventional animal products offer options for diversifying protein sources. For example, proteins can be derived from plants, fungi, algae, insects, or animal cells, or produced by microbes.

But which innovations are good for society, and how can we prevent them from having negative impacts on the environment and our health? The Responsible Innovation and Protein Transitions project examines these questions with the goal of developing transparent criteria for responsible innovation in this area. The project will engage with stakeholders from industry, politics, and civil society as an integral part of this work.

Together with researchers, they will evaluate innovations that are already underway and draft principles and strategies for responsible protein innovation. “The changes in protein production systems will determine the

food choices we make in the future,” says Weckowska. “It is important that we approach this change responsibly so that future protein production systems benefit society.”

Participating fields

Agricultural and food policy, innovation management, food processing technology, sociology of technology

Participating institutions

Freie Universität Berlin, Humboldt-Universität zu Berlin, Technische Universität Berlin

Duration

October 2024 to September 2026



Rethinking mobility – putting people first

How do we want to shape mobility in the future? What would it take to develop responsible mobility? The PureMobility project is planning the future of urban mobility according to the principle of responsibility. It will consume less space, energy, and resources and produce less air pollution. The mobility of the future will pave the way for more green spaces and a more livable urban environment. This vision could be made possible by public mobility services that rely on small, electric, self-driving vehicles, called pure mobility vehicles.

In traditional innovation processes, they start by developing new technology, and only later in the process do they consider questions about the social acceptance of their inventions. PureMobility is turning that approach on its head. “We have had many bad experiences in the past with technological developments where the potential consequences of the technology were not considered in a timely manner,” says philosopher Professor Sabine Ammon, project manager of PureMobility and head of the Institute Knowledge Dynamics and Sustainability at the Technische Universität Berlin. “Many innovations come to nothing because they were not sufficiently geared to social needs.”

The PureMobility project team plans to involve people early on, long before the technologies are developed. The interdisciplinary team is connecting with politicians, administrators, and transportation associations representing pedestrians, cyclists, and other road users. In this way, the researchers aim to lay the foundation for a responsible innovation process.

Participating fields

Geoinformatics, logistics, mechatronics, sustainability research, neuroscience

Participating institutions

Technische Universität Berlin, Charité – Universitätsmedizin Berlin, Humboldt-Universität zu Berlin

Duration

October 2024 to September 2026

gained and the partnerships formed during the CliWaC project has provided a solid foundation for advancing research on water in Berlin. This is happening, for example, at the Climate Change Center Berlin Brandenburg, which develops regional solutions for climate neutrality and adaptive approaches to the consequences of the climate crisis. The Einstein Center Climate Change, which is currently being set up, is another example. It aims to develop evidence-based consulting tools to better advise people on climate adaptation and greenhouse gas reduction.

Fluid communication – research flowing into society as a fundamental principle of BUA

CliWaC pursued an approach known in professional circles as transdisciplinarity. It expands the traditional, often one-sided transfer of expert knowledge from research to society by adding a component of mutual enrichment. Members of society do not just receive knowledge from researchers, they are also valuable sources of knowledge. They engage in the dialog surrounding these issues and are integral to creating solutions.

The CliWaC team was in close contact with local residents living near the waters being researched. Together with many other stakeholders, including local decision-makers, urban planning authorities, water supply companies, and environmental organizations, practical strategies were developed to keep rainwater in the region, for example.

Direct contact with members of the community revealed important relationships between them and their environment. A survey of residents living by a near-by lake revealed that

they would even spend their own money to preserve the lake. “The respondents were willing to invest more than € 200 per year to bring the water level back to what it was 20 years ago,” says Sauter.

“Sustainable solutions for the future must be found and implemented in a way that is harmonious with society,” agrees Stephan Völker from the BUA Executive Board. “Goal-oriented research means focusing on pressing issues, involving stakeholders, and making knowledge available for specific challenges. This is the only way to strengthen trust in science in the long term and thus contribute to transformation processes.”

The BUA is therefore committed to maintaining and strengthening the connection between research and society that has been established in the field of water. Under the motto

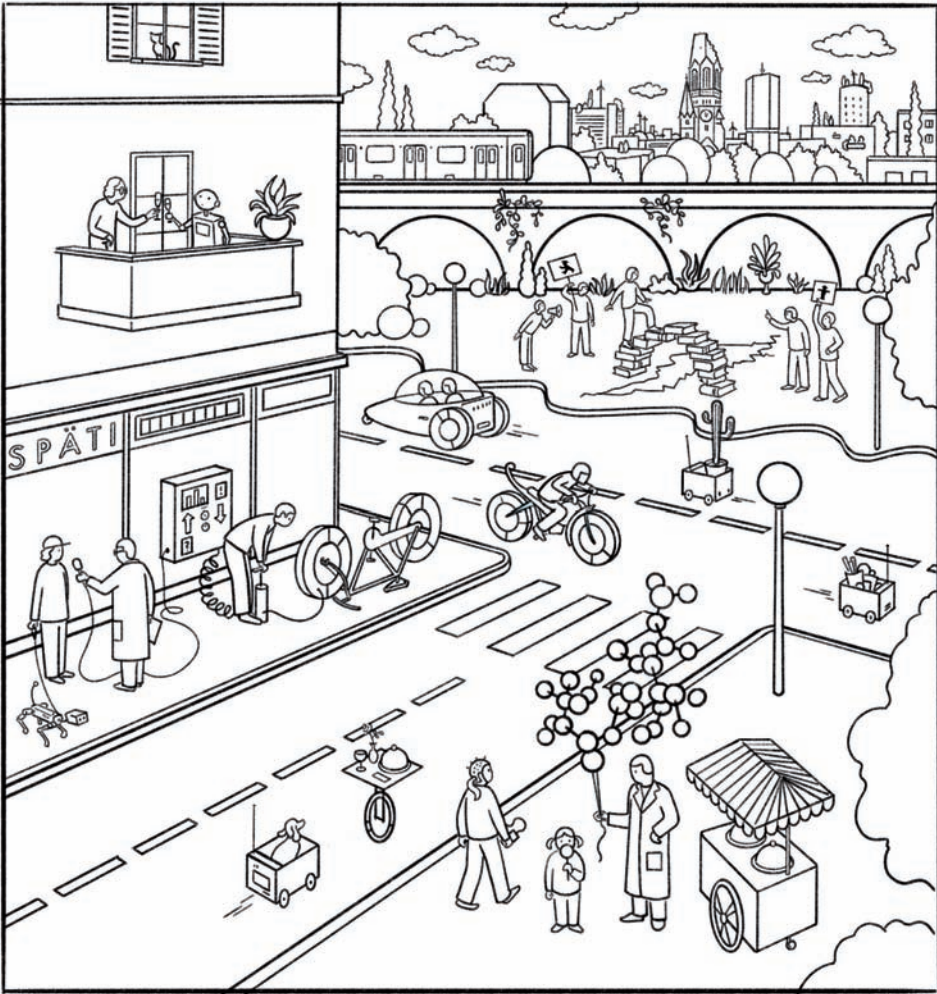
Water Knowledge, BUA’s Laboratory for Transdisciplinary Research (TD Lab) organizes regular networking meetings between researchers and actors involved with practical applications. Together, they discuss solutions to current challenges, such as the exchange of water-related data. This creates a connected community of experts focused on practical solutions.

BUA also keeps the topic of water research in the public eye. The On Water – Parcours event series will connect research with art and civil society, by organizing artistic performances, panel discussions, and hands-on activities up through 2026.

The exchange will take place at venues including Berlin museums and a boat on the River Spree.

“We also specifically involve politicians and business leaders for example by inviting Berlin-based start-ups to

Transformations are always present in everyday life – research helps implement solutions.



discuss the topic of water,” says Nina Samuel, who heads the BUA’s Fostering Knowledge Exchange program. One highlight will be the exhibition On Water – WasserWissen in Berlin in October at the Humboldt Lab, where 60 BUA researchers will present the research topic of water with multimedia exhibits and engage in dialog with visitors.

A demanding exchange with mutual benefits

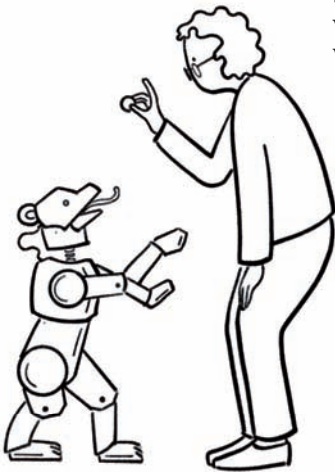
Close communication with society has become a central component of BUA’s identity. It is also reflected in the third Grand Challenge Initiative on Responsible Innovation in Times of Transformation, which was launched in 2024. Researchers from three main projects are working together with stakeholders from politics, administration, business, and civil society to develop a basis for responsible innovations in the areas of care, mobility, and nutrition (see p. 14). The decision to focus on this overarching theme was actually made through a participatory process: Berlin youth, students, and researchers submitted a total of 43 proposals, several of which have been incorporated into the new Grand Challenge.

“It’s about guiding, supporting, and driving forward the transformations that are currently underway through responsible innovation,” says Professor Martina Schraudner, head of Gender and Diversity in Technology and Product Development at the Technische Universität Berlin and member of the BUA’s Steering Committee for Fostering Knowledge Exchange. “Responsibility in research and innovation means addressing societal challenges while keeping ethical, social, and environmental considerations at the forefront.”

“This two-way exchange is much more demanding, but it also advances research much more quickly,” says Schraudner, who is also scientific director of the Fraunhofer Center for Responsible Research and Innovation. “This allows you to take really big steps, accelerate innovation processes, and make them sustainable.”

Digital assistants – evidence-based suggestions for shaping the future of care

A huge challenge facing our aging society is the increasing demand for care services coupled with a shortage of caregivers and resources. Technological innovations such as robots can help close gaps in the care system, relieve staff, and support people in need of care. “However, these technologies do not automatically deliver benefits – their use also brings challenges and risks,” says Professor Nancy Wunderlich, who holds the Chair of Digital Markets at the Technische Universität Berlin and heads the BUA-funded project CaringS – Digital Care in Ageing Societies: Designing Responsible Care Ecosystems.



In cooperation with a care provider for the elderly, CaringS is researching the advantages and risks of the latest technologies in this sector.

Many technologies are already in use or available, such as smart beds, robot pets, AI-supported voice assistants, and smart pill boxes. However, in practice, too much remains piecemeal and disconnected to fully exploit the potential. The interdisciplinary team at CaringS aims to deliver concrete, evidence-based proposals for the technologically supported care of the future – and to design a digital “care ecosystem” that enables the smooth exchange of information between people in need of care and the other stakeholders involved via digital interfaces, such as smartwatches.

CaringS connects with a wide range of relevant stakeholders: in addition to people in need of care, it also works with nursing staff, and managers of care facilities for the elderly. It also includes family associations, doctors, and medical health care facilities. The project will also address challenges in the care system, such as market pressure on care providers and the high burnout rate among nursing staff. “It is essential for us to consider the well-being of all stakeholder groups involved – and this can only be achieved with a transdisciplinary approach,” says Wunderlich.

CaringS demonstrates how science can contribute to actively shaping the future with responsible innovations through openness and exchange – and find effective answers to pressing questions. “Science has a responsibility to contribute to improving life,” says Stephan Völker from the Executive Board of the BUA. “Otherwise, it runs the risk of losing its relevance and failing to meet people’s needs.”

What are the advantages and risks of new technologies in elderly care? Science has a responsibility to contribute to improving life.

© BUA, source: BUA

The BUA in Figures

Who could top this? Here are **ten facts** that define the Berlin University Alliance and show its unique and unifying character

4

Partners
embedded in an internationally growing ecosystem, including BR50, the association of non-university research institutes in Berlin.

27

European Research Council Grants
(in 2023)

31

Collaborative Research Centres and Transregio Projects
(funded by the German Research Foundation)

BUA has a combined student body of over 106,500

(2024). Roughly one in four students is an international student. This puts Berlin well above the national average for German universities.



1

Excellence Alliance in Germany
The Berlin University Alliance is the first and so far only Excellence Alliance of Universities in Germany. Behind this initiative are the **Freie Universität Berlin, Humboldt-Universität zu Berlin, Technische Universität Berlin, and Charité – Universitätsmedizin Berlin**

31

Leibniz-Prizes
These prestigious academic awards have gone to 31 researchers at Berlin’s major universities from 1986 to 2024.

142

Spin-offs
Between 2020 and 2023, more than 250 start-up projects were launched and supported by the BUA partners.



The Berlin Science Survey
is a scientific study on the transformation of science cultures in Berlin’s research landscape.

More than 13,000

scientific staff
will be part of the BUA in 2024 (not counting professors).

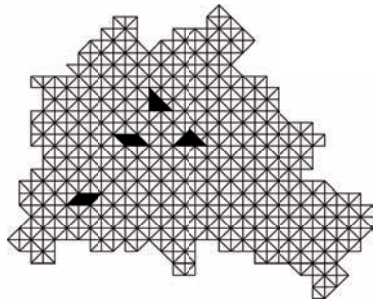
More than 1,750

professors
are part of BUA. Half of the newly appointed professors are women – more than the national average (2022).

685

million euros
in competitive third-party research funding from foundations, EU funding programs, etc.

Cutting-Edge Research in Berlin



Five Clusters of Excellence

that highlight the capital's role as a key player in the global academic discourse, featuring experts from the natural sciences, health sciences, social sciences, and beyond

MATH+:

How mathematics is changing our world

Thanks to the MATH+ research cluster and its predecessor MATHEON, Berlin has established itself as an international center for applied mathematics. The focus is on data-driven modeling, simulation, and optimization as the key to analyzing complex systems. Researchers use these tools to examine climate models, the spread of diseases, and molecular processes in solar cells and pharmaceuticals. In the new funding phase, MATH+ is specifically expanding classic modeling approaches to include AI methods and models of social behavior. The spectrum of topics ranges from fundamental mathematical research and algorithmic developments to the general shift toward using high-performance computers. Their work is always conducted as a collaboration between science, industry, and society. The cluster emphasizes interdisciplinarity, the promotion of young talent, and its strong theoretical core, thereby contributing to Berlin's position as an international leader in these fields. MATH+ is a Cluster of Excellence at the Freie Universität Berlin, Humboldt-Universität zu Berlin, and Technische Universität Berlin.

Partner institutions

Weierstrass Institute for Applied Analysis and Stochastics, Zuse Institute Berlin

ImmunoPreCept: New ways to a healthy life

Chronic diseases such as cancer and inflammation are on the rise worldwide – and yet treatments still often come too late. The ImmunoPreCept Cluster of Excellence focuses its research at an earlier stage, before symptoms develop. Researchers use an interdisciplinary approach to find ways to improve health, understand the causes of disease, and detect diseases early on. This confluence of research, medicine, and society aims to bring about a paradigm shift in disease prevention. The cluster wants to make it possible to promote resilience among the population, treat diseases earlier, and thus relieve pressure on healthcare systems in the long term. The ultimate goal is nothing less than fulfilling the promise of modern medicine: a longer, healthier life. ImmunoPreCept is a Cluster of Excellence at Charité – Universitätsmedizin Berlin and the Max Delbrück Center.

Partner institutions

Berlin Institute of Health at Charité – Universitätsmedizin Berlin, German Rheumatism Research Center, Max Planck Institute for Molecular Genetics, Museum of Natural History Berlin

CCE: Chirality as the key to green high-performance electronics

The Center for Chiral Electronics is a Cluster of Excellence that develops innovative concepts for efficient, ultra-fast electronics based on chiral materials that have so far not been used in electronics. With cutting-edge research from Halle, Berlin, and Regensburg, the CCE's aims to strengthen Europe's role in technology development and counteract rising global energy consumption.

Partner institutions

Max Planck Institute for Microstructure Physics, Technische Universität Dortmund

NeuroCure: Research for a healthy brain

Neurological and psychiatric disorders affect millions of people, both on a personal level and economically. Since 2007 the NeuroCure Cluster of Excellence at Charité – Universitätsmedizin Berlin has been researching brain functions and diseases such as Parkinson's, Alzheimer's, and stroke across all stages of life. Its work is defined by the close integration of laboratory research and clinical applications. With state-of-the-art infrastructure and innovative methods, NeuroCure strengthens Berlin's role as a magnet for cutting-edge neuroscience research – and opens up new treatment options for patients.

Partner institutions

German Center for Neurodegenerative Diseases Berlin, Leibniz Research Institute for Molecular Pharmacology, Max Delbrück Center, Max Planck Unit for the Science of Pathogens

SCRIPTS: The liberal order is under pressure

The SCRIPTS Cluster of Excellence at Freie Universität Berlin investigates why liberal social orders are under increasing pressure worldwide in the face of, e.g., authoritarian regimes, the rise of populism, and an increase in political violence. Researchers from various disciplines and international networks analyze the causes, dynamics, and consequences of these developments. SCRIPTS brings science and society into dialog, strengthens discourse on democratic resilience, and develops new perspectives for dealing with global crises.

Partner institutions

German Institute for Economic Research, German Institute of Global and Area Studies, Hertie School of Governance, Leibniz-Zentrum Moderner Orient, Berlin Social Science Center, Center for East European and International Studies

2 Teaching and Studying in the Excellence Alliance



The BUA is far more than just the sum of its parts. The four members of the Alliance are proud of their shared infrastructure and achievements, which would not have been possible individually. Berlin demonstrates that cutting-edge research cannot thrive if kept in isolation. Advances in science and knowledge need genuine cooperation like that between Freie

Universität Berlin, Humboldt-Universität zu Berlin, Technische Universität Berlin, and Charité – Universitätsmedizin Berlin. The Alliance embodies collaboration at all levels and wants it to be transparent, intensive, and down to Earth.

This closeness has given rise to pioneering projects and programs that inspire research and teaching. What unites them is the courage to think innovatively, to create spaces for experimentation, and to provide a platform for unusual ideas. This vibrant network generates ideas that spread far beyond Berlin.

How does the BUA contribute to advances in teaching?

Research projects for students

The Student Research Opportunity Program offers students the chance to conduct research while still studying. Students can work at top research labs or develop and carry out their own research projects. This allows them to try their hand at research and gain initial experience for their future careers.

Joint courses

In interdisciplinary modules, students can attend courses at any of the BUA partners and meet students from other programs. The main focus is on studying an overarching topic in an interdisciplinary learning environment.

E-Assessment Alliance

The EA2 project is driving forward the digitization of exams within the BUA with common standards, shared resources, and a regional exam network. The project seeks to improve quality, efficiency, and flexibility – and make Berlin a pioneer in the realm of e-assessments.

Print Your Brain

The anticipation stretches out for six months: What will it be like to hold your own brain in your hands, take it home with you, and put it on your desk? At the Center for Cognitive Neuroscience at Freie Universität Berlin, students from across all member institutions of the BUA can experience an unusual teaching research project

Brain from a 3D printer:
Computer science student Michael Migacev
is contributing to the project as a tutor.



Around 60 students have experienced this anticipation over the past two years – and at the end of their Print Your Brain course, they each received their very own brain, freshly printed from a 3D printer in their choice of white, gold, black, or purple.

This one-of-a-kind course at the Center for Cognitive Neuroscience Berlin was made possible with funding from the BUA. It started out as the StuROPx X-Student Research Group and will be continued as a teaching research project for students called “StuROPx X-Tutorial.” The idea came from Timo Torsten Schmidt, coordinator of the master’s program in cognitive neuroscience at Freie Universität Berlin. “During the coronavirus pandemic, I thought about what kind of project could bring the students together,” says Schmidt. He applied to the BUA with his idea, received funding, and was given the opportunity to offer this course to students from all four BUA institutions.

However, before students can hold a 3D-printed model of their brain in their hands, they must first exert their physical brains. This requires several steps, which Michael Migacev, a master’s student in computer science at Freie Universität Berlin, guides students through in the tutorial.

First, the students are placed in a magnetic resonance imaging (MRI) scanner, which takes images of their brains. The device is located in the Center for Cognitive Neuroscience Berlin, right next to the campus of Freie Universität Berlin. “It’s great that we have equipment like this here reserved for research purposes,” says Schmidt. The MRI scanner is used by scientists from across the Berlin University Alliance, for example, for studies on working memory or language processing.



Timo Torsten Schmidt
coordinates the
master’s program in
cognitive neuroscience
at Freie Universität
Berlin.

Second, the brain images must be converted into 3D models. Students learn how to do this in the course. Once the model is ready, it only takes 24 hours to print. However, anyone expecting their brain to reveal particularly interesting contours or protrusions that might indicate mathematical genius will be disappointed.

“There are visible differences between the brains, but they do not allow any conclusions to be drawn about performance or strengths and weaknesses,” says Schmidt. Thinking is a complex process in which the interaction between different areas of the brain plays a greater role than their anatomical form.

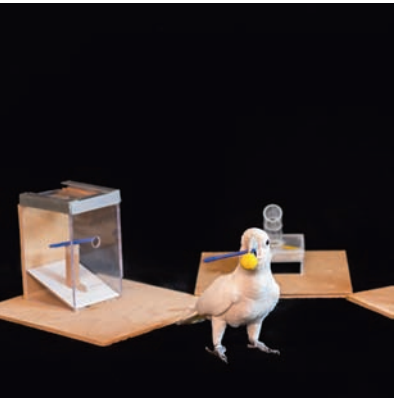
One conclusion is clear though: the course strengthens cooperation between the BUA partners. “It’s very interesting to work with students from different uni-

versities and disciplines – psychology, computer science, neuroscience,” says Schmidt. This is because each BUA institution has a different focus in neuroscience: The Bernstein Center at Technische Universität Berlin is dedicated to computational neuroscience; Humboldt-Universität zu Berlin offers a degree program in “Mind and Brain” that combines neuroscience and philosophy; Freie Universität Berlin focuses on empirical research into questions of cognition, and Charité – Universitätsmedizin Berlin concentrates on neurological and psychiatric diseases and their treatment.

In the current semester, students are working with Michael Migacev on an exhibition called “The Diverse Brain.” The plan is to present it at all four BUA institutions. Part of the display includes hollow brains that Migacev has printed out and equipped with LED lights inside. The lights are meant to indicate which brain areas are active, but they are certain to light up in the minds of visitors as well.

Digital Collections

Over the centuries, Berlin researchers have collected objects, models, and sculptures, which are scattered across archives and institutes. Yong-Mi Rauch, head of the Historical Collections Department at Humboldt-Universität zu Berlin, explains how she and her team are making these treasures accessible to everyone



Yong-Mi Rauch works high up on the sixth floor of the Jacob-und-Wilhelm-Grimm-Zentrum at Humboldt-Universität zu Berlin. Just outside her office door, there are several pieces of furniture that could have come from a museum: a majestic card catalog cabinet made of dark wood, as tall as a person, and an archive cabinet painted with an Eulenspiegel figure, which was once used by Theodor Fontane and his fellow writers in the “Tunnel über der Spree” literary society.

But the head of historical collections at Humboldt-Universität zu Berlin makes it clear right away: We’re not in a museum here. “Academic collections like ours serve other purposes. Even inconspicuous objects that would not be suitable for an exhibition can have great value for researchers.”

Over decades and centuries, researchers in Berlin have collected thousands upon thousands of objects, illustrations, specimens, documents, sculptures, and models, which are scattered throughout the city in storehouses, institutes, libraries, and archives. What do you do with this wealth of historical artefacts? “Researchers are constantly asking new questions about collections, and that means they need to be optimally cataloged and made digitally accessible,” says Rauch. And, of course, not just for members of the respective institute, but for everyone.

Thanks to funding from the BUA, this is now much easier than it was a few years ago. Rauch’s first step, back in 2021,



Further
information:
[berlin-university-
collections.de/en](https://berlin-university-collections.de/en)



Yong-Mi Rauch
heads the
Historical Collections
Department at
the Humboldt-
Universität zu Berlin
Library.

was to assemble a small team and conduct a feasibility study to determine what would need to be done to display the collections of all four BUA partners on a single platform. This platform is now available online and provides access to over 100 teaching and research collections held by the BUA institutions.

The online platform allows you to click on a specific field of research – for example, Earth sciences – and see right away what items the BUA partners have to offer, from the crystallographic teaching collection at Humboldt-Universität zu Berlin to the mineralogical collections at Technische Universität Berlin to the ore collection in the geochemistry department at Freie Universität Berlin.

However, the work of Yong-Mi Rauch and her team, which has secured BUA funding up to the end of 2027, does not consist solely of compiling this information. They also offer workshops and events to train people in how to manage and catalog collections; they also showcase projects related to the collections on the platform. “Our task is not to digitize the collection items themselves,” explains Rauch. That work is done by the individual institutes in a decentralized manner. “But we advise our colleagues on how best to prepare the objects or index cards for digitization and how to tag them with metadata.”

According to Rauch, the overarching goal of the project is to “better connect the collections with each other and provide a basic infrastructure that can be used by all universities in their teaching and research

© David Ausserhofer, Humboldt-Universität zu Berlin, Goffin Lab/Thomas Suchanek, Stefan Klenke

© private



The museum houses the world's largest collection of gallstones, compiled over more than thirty years by Navena Widulin.



Wax moulages realistically depict symptoms of disease and were mainly developed in dermatology and ophthalmology.

Not Just a Cabinet of Curiosities

The **Berlin Medical History Museum** at Charité – Universitätsmedizin Berlin is more than just an exhibition venue – it is a place of science. Its origins date back to the turn of the 20th century and Rudolf Virchow's Pathological Museum. The collection is still used today for research and teaching purposes and provides an impressive insight into 300 years of medical history.

Here is a glimpse behind the scenes



Navena Widulin has been preparing specimens at Charité since 1993 and is responsible for the pathological-anatomical collection of specimens and moulages at the Museum of Medical History since 1998.

Around 9,000 unrestored specimens are still stored in the museum's basement.

3 Exchange and Global Perspectives



The Berlin Medical History Museum is located on Charité's historic campus in the heart of Berlin. It is open from Tuesday to Sunday and offers tours on special topics as well as audio guides in multiple languages.

Behind the scenes, collections are also growing: a still life in Navena Widulin's workshop



The museum displays organs and anatomical regions, ranging from textbook examples of body parts to specimens exhibiting pathological conditions



Seen from space, even large cities appear tiny – yet their scientific influence extends far beyond city and national borders. Urban spaces, characterized by diversity and openness, provide fertile ground for research, teaching, and innovation. This is precisely where the Berlin University Alliance's impact is leaving its mark internationally. The University of Oxford brings a particularly valuable perspective to the table: As one of the world's most prestigious universities, it is part of a unique partnership with Berlin's Excellence Alliance. This European connection conveys a strong message, especially in challenging times. In addition, strategic links to vibrant research environments, such as in Singapore, and multiple partners from the Global South strengthen

scientific findings and scholarly breakthroughs. Researchers from around the world are regularly invited to participate in collaborative research endeavors and contribute their perspectives. BUA's international fellows demonstrate on a daily basis how global cooperation advances science.



© Getty Images

What strategic partnerships does BUA promote?

University of Oxford

The University of Oxford and the Berlin University Alliance have joined forces to tackle the challenges of our time. The research partnership is already generating knowledge with exciting and important benefits to society.

University of Melbourne

Joint research projects, promoting the careers of young researchers, and sharing knowledge: These are the goals that the Berlin University Alliance has set for its cooperation with the University of Melbourne.

University of Singapore

The project Ageing Well in the Urban Environment – Meeting the Health and Social Needs of Older Adults began in 2023 and has received three years of funding. The flagship project is being carried out between the National University of Singapore, Humboldt-Universität zu Berlin, and Charité – Universitätsmedizin Berlin. It aims to bolster international cooperation between the two research hubs, Berlin and Singapore.

"The political sphere can regain our trust"

Democracies around the world are under pressure. **Petra Schleiter**, political scientist at the University of Oxford, explains how democracies can become more resilient – and why the BUA is important for her work

Ms. Schleiter, you grew up in Frankfurt, but spent your entire academic career in the UK and have been teaching at the University of Oxford for many years. How does it feel to be spending a year at the Wissenschaftskolleg in Berlin?

It is a great privilege to be able to conduct research here. Berlin is an ideal location for my field of research, which is democracy studies: It is situated in the heart of Europe and connects East and West. Not only that, it is also great to have access to the excellent research infrastructure here. I can make contacts and exchange ideas in a way that would not be possible in Oxford or London, and there are many opportunities to do so, for example with the Humboldt Governance Lab, the Cluster of Excellence "Contestations of the Liberal Script," and the Hertie School. The fact that the BUA provides a formal framework for this is extremely valuable.

You are on the Advisory Board for the Oxford Berlin Research Partnership. How did the tightly knit collaboration between the University of Oxford and the BUA come about? In the wake of Brexit, we asked ourselves at Oxford: How can we maintain our valuable relationships with



Petra Schleiter
Professor of Comparative Politics at St. Hilda's College, University of Oxford, and fellow at the Wissenschaftskolleg Berlin in 2025.

universities on the continent? How can we create structures to ensure long-term cooperation? The Berlin University Alliance presented itself as a particularly appealing partner, as it allows us to collaborate with several universities at once and covers all subject areas. I serve as the representative for social sciences on the Advisory Board, while other colleagues represent the humanities, natural sciences, and medicine. Everyone is in close contact with their counterparts in Berlin.

Liberal democracies are under pressure worldwide. What does this mean for your work?

I have been setting up a Centre for Democratic Resilience in Oxford for a year now. Our aim is to understand the vulnerability of democracies and do what we can to make them more resilient. We address this issue on four levels: What are the social reasons for the erosion of trust in democracy? How can democratic processes and institutions become more resilient? How can international cooperation between democracies be strengthened? And finally, what is happening in countries that are already ruled by authoritarian regimes. This last question is particularly instructive because that is where the authoritarian script is developed and refined, which then gets applied to democracies. To answer these questions, we work closely with people involved in the practical aspects of these complex issues.

Have you already come up with any revelations? Why, for example, is trust in democracy eroding?

There are many factors involved. Many people feel that politicians do not represent their interests. This is particularly the case with young peo-

© John Cairns

ple and people affected by economic insecurity and inequality. These groups have a bleak outlook and feel that politicians are overwhelmed and incapable of solving pressing problems. For many people it is difficult to cope with the speed of social change and rapid shifts in the status quo, for example, with equity measures for women. As a result, they increasingly retreat into social bubbles and have little contact with people who hold opinions different to their own. People are becoming more polarized ...

... and research can provide some explanations as to why that is?

Yes, it can. We know a lot about how trust can be regained. There are numerous studies on promising methods of participatory politics that involve people more closely from across all corners of society and enable them to experience self-efficacy. However, with those methods it depends a great deal on precisely how you implement them.

Can you elaborate on what that kind of participatory politics might entail?

Innovations such as "citizens' assemblies" only make sense if they can make real decisions. What is the point of a citizens' assemblies merely drawing up recommendations on nutrition that have no practical impact as happened in Germany? People should be much more involved in decisions that directly affect their surroundings. But if you encourage people to become more engaged by talking about issues publicly, but then nothing changes as a result, all you get is hot air. And that ends up accelerating people's distrust of politics rather than counteracting it.

Is there anything we can do to improve the situation?

© SCRIPTS



Making a difference: Democratic decision-making means involving more people from all corners of society.

The Oxford Berlin Research Partnership

The University of Oxford and the Berlin University Alliance have joined forces to establish a research partnership. Together, they promote the best and most talented researchers in Europe and fund researchers at all stages. The partnership also supports small and large projects that cut across national borders and disciplinary boundaries. More than 1,000 researchers, early-career scientists, and students have participated in the programs to date and benefited from over one million euros in funding.

I was an expert witness at the Irish Citizens' Assembly. Citizens developed recommendations for constitutional amendments, two of which were then adopted by referendum: same-sex marriage and the right to abortion. The citizens were more progressive than the politicians on these issues. In California, collaborative governance mechanisms have been used to decide how to deal with water shortages in various regions and how water should be distributed. This contributed to the general public's acceptance of the decisions.

Are there any other examples?

One simple method is participatory budgeting: A portion of the budget of a municipality or state is set aside for the electorate to decide how it should be spent. It is important that this is organized in an inclusive manner, i.e., so that all groups are heard and those involved can weigh the pros and cons in a respectful atmosphere. Of course, it is a challenge to get people on board. But if these methods end up leading to concrete, positive outcomes, then these forms of civic participation actually open up great opportunities.

So, does that mean we can allow ourselves a bit of optimism?

I think so! Historically, there have been repeated setbacks for democracy and emancipation movements, but such setbacks can be overcome. There was a major crisis of democracy in the interwar period, for example, as a result of the economic crisis. In Germany, the response to this was fascism; in the US, it was the New Deal. The way people respond to crises is not predestined or written in stone. We should not underestimate the potential of political action to change the course of events, especially in hard times.

Global Experts in Berlin

Supported by the Berlin University Alliance, fellows from all over the world come to Berlin. It is our pleasure to introduce you to three of them here

Improving Women's Health

Andrew Sharott
University of Oxford



More Control for Parkinson's Patients

It is the waves that fascinate Andrew Sharott. The waves in the brain, which, as can be observed by electroencephalogram (EEG), show different oscillation patterns in Parkinson's patients than in healthy people. How can these currents be influenced using deep brain stimulation and how can this give patients more control over their movements again?

The neuroscientist is a professor at the University of Oxford and has been an Einstein BUA/Oxford Visiting Fellow since 2023. He receives funding from the Einstein Foundation to advance his research together with a small team in cooperation with the BUA. Specifically, Andrew Sharott is in Berlin several times a year for a few days and works closely with Andrea Kühn from Charité-Universitätsmedizin Berlin. The focus in Oxford is on researching brain waves in mice and rats – “the parts of the brain involved in Parkinson's are very similar to humans” – and in Berlin on the treatment of patients. The researchers are working together to give new hope to Parkinson's sufferers.

In Brazil, 60 percent of children are born by Caesarean section. In Germany it is about 30 percent, while in Scandinavia it is only 17 percent. What causes such stark differences? Simone Diniz, professor at the University of São Paulo, conducts research on sexual and reproductive health, gender-based violence, and innovations in maternal and child health.

From November 2024 to February 2025, she was Audre Lorde Visiting Professor at BUA and worked at the Institute for Gender in Medicine at Charité – Universitätsmedizin Berlin. Diniz's work has significantly promoted the exchange of knowledge between the Global South and North in her field. From her comparative perspective, she attributes the high rate of C-sections in her home country to the fact that many women there avoid vaginal births because they are treated with outdated methods and a lack of empathy.

There is much room for improvement in this area of women's health globally – and the solutions might even be simple and cost-effective. The technical term for such measures is “frugal innovation” – “I learned that here!” Diniz says.



Simone Diniz
Universidade de São Paulo

Angela Akorsu
University of Cape Coast, Ghana



Gender, technology, and the world of work

How do digital platforms influence the experiences of women and other marginalized groups in the workplace? This is one of the research questions being explored by Angela D. Akorsu, associate professor of labor economics and gender at the School for Development Studies, University of Cape Coast, Ghana. From April to October, she is Audre Lorde Visiting Professor at the Diversity and Gender Equality Network of the Berlin University Alliance.

At Freie Universität Berlin, Professor Akorsu teaches feminist African philosophy in the master's program Gender, Intersectionality, and Politics. She gave an inaugural lecture and is developing a concept for future cooperation with the BUA. “My focus is on women's work in the digital platform economy and the intersections between gender, technology, and work,” she says.

“This collaboration with the BUA is crucial for promoting knowledge exchange between researchers from the Global North and South, and is particularly valuable given the very different historical, socio-political, and economic contexts.”

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4 Exchange within THE OPEN LAB



Today, transfer is much more than the traditional “exploitation” of research – it is a lively, multidirectional exchange. Social perspectives, entrepreneurial impetus, and interdisciplinary expertise all feed back into the research process at this point. This is how you create innovation that not only has practical applications, but that also inspires. Berlin is the place where these conditions align, making it one of the strongest regions for research, according to the investment database report Start-up Detector. This potential is being harnessed through spin-offs and the innovate! lab, a non-profit initiative started within the Berlin University Alliance. Berlin is

where pioneering ideas meet structural support: Initial concepts are nurtured so that they can grow – from a mere hypothesis to a real-world application. Experimental, goal-oriented, forward-looking.

How does the BUA bring research to new levels?

Transfer to business and industry

Research can lay the foundation for sustainable solutions in many different areas. Methods and perspectives from the humanities and social sciences also drive innovation in business and industry in targeted and effective ways.

Exchange with society

Transdisciplinary research is a process that promotes close cooperation between science and society. It actively involves stakeholders from various communities in the production of knowledge based on scientific findings.

THE OPEN LAB

The BUA has a strong sense of social responsibility when it comes to the transfer of knowledge. The mission of the Alliance is to promote debates based in facts through science, thereby reinforcing the resilience of democratic structures.



The goal:
to implement
innovative
ideas quickly

Innovation Ecosystems

Linking business and industry with chemical research:
innovate! lab is paving the way



In the end, it went faster than expected!" With palpable enthusiasm, Dr. Alexandra-Gwyn Paetz, looks back on a significant moment: In March 2025, she signed an agreement to establish a subsidiary of the Berlin University Alliance: innovate! lab gGmbH. This is a milestone not only for the institutions involved, but also for Berlin as a city. The idea is to direct research in the future in a more targeted manner so that the findings can be put into practice rapidly and effectively.

This endeavor has been made possible by generous funding from the Joachim Herz Foundation, which is backing the project with five million euros. The focus is on two key objectives: First, removing systemic barriers to knowledge and technology transfer – in other words, the very obstacles that prevent scientific findings from being rapidly translated into marketable applications. Second, understanding complex innovation processes better, which in turn should help garnish active support for such efforts and make it easier to promote them more effectively.

Professor Juri Rappsilber from Technische Universität Berlin emphasizes: "With innovate! lab, we are creating a catalyst to transform excellent research into marketable solutions more quickly. This positions Berlin as a model region for innovation-driven, resilient economic development."

The subsidiary of the BUA will work to integrate research and application closely so that companies can benefit from new materials at an early stage. The formula behind it is simple, but effective: science push meets industry pull.

The new innovate! lab does not see itself as a think tank for theoretical reflection, but rather as a practical development environment with a clear focus on the needs of the economy. The business-to-business focus enables companies and industry partners to engage directly with research with less effort. Here, ideas are tested, developed, and adapted – all with a view to specific applications.

"A laboratory where innovative materials can be tested directly for production and use – this greatly increases efficiency and significantly accelerates innovation cycles," says Paetz. In the future, tailor-made transfer processes will not only help to generate ideas, but also to implement with precision.

With the founding of innovate! lab gGmbH, the Berlin University Alliance is sending a strong message: Berlin is an efficient, agile research hub that takes its social responsibility seriously. While the quest for knowledge itself remains a powerful goal of science, this approach underscores how research can also actively contribute to finding solutions to the major issues of our time.

www.joachim-herz-stiftung.de/en

When Nina Heine and Dr. Fabian Habicht present their start-up, they always have a glass container with them. It contains small, brown, dry chunks. "Feel free to unscrew the lid and smell it," says Heine before passing the jar around. She encourages the audience: "Many people find the smell quite pleasant!"

But not everyone is keen to smell for themselves. Instead, they quickly pass the container on without opening it, as if they might get dirty. They know what the dried bits are made of: feces.

The start-up founded by Heine and Habicht in 2023 with the provocative name Shit2Power, works with sewage sludge – the residue produced during wastewater treatment in sewage treatment plants. This sludge consists of, among other things, feces and microorganisms. Although often considered merely a waste product, it actually offers high energy potential and can be put to good use.

The Power of Sewage

Waste not, want not! Nina Heine and Fabian Habicht demonstrate how human waste can be converted into energy with their Berlin-based start-up



Spin-off
from BUA:
The start-up
by Fabian
Habicht and
Nina Heine

It all began in 2021, when Heine got talking to a farmer while working on an agricultural project. "He pointed out to me that we have a problem with sewage sludge disposal in Germany," says Heine. "The sludge is transported by truck from the sewage treatment plants to the disposal companies, up to 800 kilometers away."

This not only leads to unnecessary CO₂ emissions, but is also highly inefficient. As Nina Heine now knows, sewage sludge has an energy level comparable to that of brown coal. Would it not make more sense to use sewage sludge locally to generate energy? Municipalities could significantly reduce the high and rising costs of sewage sludge disposal and their own energy consumption. However, a shift like that requires innovative technology. Habicht, then a research assistant at Technische Universität Berlin, set about developing just that. An expert in process engineering and renewable energies, Habicht earned his doctorate in combustion technology at Technische Universität Berlin. He was also able to contribute his knowledge of fluid mechanics and thermodynamics to find a solution to the sewage sludge problem. He designed containers that can be docked onto sewage treatment equipment and in which the wet biomass is converted into energy.

Based on this idea, Heine and Habicht founded the now multi-award-winning start-up Shit2Power: A spin-off of the Berlin University Alliance. "The mentoring provided by experienced professors from Technische Universität Berlin and Humboldt-Universität zu Berlin, access to the start-up network, and practical access to laboratory facilities were extremely helpful during the start-up phase," says Habicht. "We want to transform wastewater treatment plants into energy-autonomous, resource-efficient power plants," says Heine. "Our goal is to close the water cycle, reduce emissions, and convert sewage sludge and other wet biomass waste into sustainable energy, benefiting both the environment and the local economy."

Incidentally, the conversion also produces a useful waste product: Decontaminated ash containing recoverable phosphorus. "We work with companies that develop high-quality phosphorus products from these ashes, in particular sustainable fertilizers," explains Habicht. His next goal: To develop scalable solutions that can be implemented throughout the EU.

www.shit2power.de/en



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ON WATER. WasserWissen in Berlin

Starting on October 9, 2025, the Humboldt Lab at the Humboldt Forum will be hosting a new exhibition dedicated to a highly topical issue: water. In times of climate change, extreme weather, and global resource scarcity, it presents research from the Berlin University Alliance that addresses this issue as an urgent scientific and societal challenge.

A sensory research trail takes visitors through urban puddles and river eddies, over artificial icebergs and on to distant stars. The stations are accompanied by an audio track in which scientists share their fascination with water and demonstrate how multifaceted and complex water knowledge is in Berlin.

"On Water" invites us to see water not only as a vital resource, but as an independent actor – unpredictable, challenging, and full of potential for new discoveries.

Exhibition at the Humboldt Forum, starting October 9, 2025

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Experience the unseen!

Science moves Berlin – often behind the scenes, but with a huge impact. The Berlin University Alliance brings cutting-edge research to the heart of the city through a wide range of events.

Whether at the BUA Open Spaces salon series, the BUA Run Club, or the Long Night of Science, research comes alive and can be experienced by everyone at the **THE OPEN LAB**.

Science at the weekly market

At both the Long Night of Science and Berlin Science Week last year, bold new research from the Berlin University Alliance blended with vendors' stalls of Berlin's market halls. Amid food trucks and vegetable stands, researchers provided insights into their work, from nanosatellites that predict natural disasters to mushrooms used as a sustainable building material.

The BUA Run Club

Berlin running and science enthusiasts regularly meet for the BUA Run Club. The Social Run always starts with a short presentation from a Berlin sports science expert, before the group weaves through the city in cooperation with adidas Runners. Whether you are a beginner or a pro, there's a pace for everyone.

BUA Open Spaces salon series

Science in dialog with society

THE OPEN LAB creates spaces for encounters between science, politics, business, culture, and the city. The BUA Open Spaces salon series is a format where researchers and diverse stakeholders engage in lively conversations on current social issues together with the audience. Launched in spring 2024, the series explores urgent matters, such as the future of democracy, which was the focus of the first installment.

© BUA/Peter Mäte

Thorsten Faas and Heike Klüver from the SCRIPTS Cluster of Excellence discussed populism, disinformation, and political participation with member of the German Bundestag Michael Roth. This was followed other events with discussions on ethics and responsibility in artificial intelligence with input from researchers and start-up entrepreneurs.

In charming ruins of the former Rudolf Virchow Lecture Hall at Charité – Universitätsmedizin Berlin, trust in science took center stage at the start of Berlin Science Week. Science journalist Sascha Karberg spoke in particular on the special role of the media in this context.

In the former Tempelhof airport air traffic control tower, materials researcher Claudia Mareis, architect Anupama Kundoo, and former Berlin Senate Building Director Regula Lüscher discussed materials of the future and sustainable urban development. The most recent evening was dedicated to global health. Christian Drosten, Sophie Gepp, and Karamba Diaby discussed pandemics, climate change, and Berlin's role in a connected world of health.

BUA Open Spaces invites everyone to engage in social debates and encourages an exchange of perspectives in an open forum, accessible for all.



Irene Tracey is the Vice-Chancellor of the University of Oxford. She is also Professor of Anaesthetic Neuroscience.

Oxford's enthusiasm for collaborating with Berlin stems from the city's position as a thriving academic center that brings together four academically outstanding institutions within the Berlin University Alliance. This alliance, consisting of Freie Universität Berlin, Humboldt-Universität zu Berlin, Technische Universität Berlin, and Charité – Universitätsmedizin Berlin, offers a comprehensive range of expertise that perfectly complements the strengths of the University of Oxford.

The breadth and depth of our collaboration is truly remarkable. We have pioneered all academic disciplines, from the arts and humanities to the social sciences, natural sciences, technology, and medicine. This holistic approach has enabled us to view complex global issues from different perspectives, leading to more sustainable and innovative solutions.

The figures speak volumes about the effects and impact of our partnership. Since its inception, more than 1,300 researchers have been involved in joint projects and contributed to a diverse academic exchange. In addition, more than 16 million euros in third-party funding was jointly acquired, which impressively demonstrates the quality and relevance of our research initiatives.

With regard to our future collaboration and the development of the Oxford-Berlin Research Partnership, I can only look to the future with optimism. Through our shared commitment to academic excellence, coupled with the remarkable strengths of our institutions, we are well positioned to meet the complex challenges of the 21st century.

Professor Irene Tracey
Vice-Chancellor of the University of Oxford

"The partnership between Oxford and Berlin is a joint success story"

As Vice-Chancellor of the University of Oxford, I am particularly delighted about the exceptional partnership between my university and the Berlin University Alliance, which has developed so well since 2017.

Oxford chose this strategic partnership because the alliance offers the perfect blend of academic excellence, cutting-edge research, and a vibrant ecosystem within the universities and beyond. The Oxford-Berlin Research Partnership is undoubtedly a joint success story, bringing together the brightest minds from both sides of the Channel to tackle some of the most pressing challenges of our time.

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#TheOpenLab

