

German Centre for Cardiovascular Research

Annual Report 2023/24





The DZHK is the largest research institution for cardiovascular diseases in Germany.

Our aim is to promote scientific innovation and translate it rapidly into clinical practice and thus into patient care, thereby improving the prevention, diagnosis, and treatment of cardiovascular diseases.

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The Board of Directors with DZHK Managing Director Katharina Eulenburg (centre left). Spokesperson of the Board of Directors Stefanie Dimmeler (centre right), Holger Gerhardt (left), Steffen Massberg (right).

Foreword

With this report, the German Centre for Cardiovascular Research (DZHK) presents its first biennial report, covering the years 2023 and 2024. It provides an overarching view of a formative period for the DZHK.

These two years were marked by the DZHK's first international review. Preparing for it required a comprehensive stocktake, the consolidation of numerous datasets and documents, and strategic considerations regarding the future direction of the DZHK. This process challenged the entire network while also providing important impetus for the DZHK's further development.

The results presented in this report show that the DZHK continued to strengthen its scientific performance during this phase. Advances in preclinical and clinical research, high visibility in international scientific journals, and the targeted expansion of translational structures underscore the network's strength.

The internationalisation of the DZHK was further advanced in 2023 and 2024. Through the International Cardiovascular Research Partnership Awards (p. 28), transnational research projects were initiated and continued together with international partner organisations. In addition, through the Global Cardiovascular Research Funders Forum (p. 30), the DZHK contributed to the development and implementation of joint funding initiatives for international clinical studies.

The Board of Directors would like to thank all scientists within the DZHK, the DZHK administrative office, the grants management team, the partner site managers, and the administrative departments at the partner sites for their commitment. We also extend our thanks to the federal states and the Federal Government for their reliable support of the DZHK's work.



Stefanie Dimmeler (Spokesperson)



Steffen Massberg



Holger Gerhardt

Research Achievements in Clinic & Laboratory

In 2023 and 2024, DZHK researchers achieved important scientific advances. Their findings were published in leading international journals and open up new avenues for the treatment of cardiovascular diseases. Here we present a selection of highlights as examples.

Preclinical research: New therapeutic approaches identified

Preventing long-term damage after myocardial infarction

A research team led by Philipp Wenzel at the DZHK Rhine-Main partner site identified a previously unknown signalling pathway in the coagulation system that plays a key role in scar formation after a myocardial infarction. When the researchers blocked this pathway in a model, there was significantly less subsequent damage, pumping function improved, and mortality fell. This discovery opens a promising new strategy to treat myocardial infarction in future with fewer long-term consequences.

Garlapati, V et al. **Targeting myeloid cell coagulation signaling blocks MAP kinase/TGF- β 1-driven fibrotic remodeling in ischemic heart failure.** *The Journal of Clinical Investigation*, 2023

Brown bears: a protective mechanism against thrombosis

An international team of researchers, led by Munich-based DZHK scientist Tobias Petzold, took an unusual approach to thrombosis prevention. They discovered that brown bears do not develop venous thromboses during hibernation, despite weeks of immobility. Analysis of blood samples revealed the underlying mechanism: a marked downregulation of the protein HSP47 in platelets reduces their interaction with immune cells, thereby lowering the

tendency to clot. As this protective mechanism was also demonstrated in people with spinal cord injury, it provides new starting points for thrombosis prevention in immobilised acute patients..

Thienel, M et al. **Immobility-associated thromboprotection is conserved across mammalian species from bear to human.** *Science*, 2023

Atrial fibrillation – a targeted pharmacological treatment approach

Cristina Molina and her team identified a targeted pharmacological treatment approach for atrial fibrillation. In a DZHK-funded project, she discovered that excessive levels of the protein phosphodiesterase 8B in the atria disrupt calcium influx, which is essential for a stable heart rhythm. This opens the possibility of treating atrial fibrillation in future with atrium-specific medication, rather than only with



general rhythm-control drugs.

Grammatika Pavlidou, N et al. **Phosphodiesterase 8 governs cAMP/PKA-dependent reduction of L-type calcium current in human atrial fibrillation: a novel arrhythmogenic mechanism.** *European Heart Journal*, 2023

Modifiable risk factors account for half of cardiovascular disease

The importance of modifiable risk factors was underscored by an international study by the Global Cardiovascular Risk Consortium, led by the DZHK and the Department of Cardiology at University Medical Center Hamburg-Eppendorf. DZHK scientists Christina Magnussen and Stefan Blankenberg contributed key data analyses and prevention approaches. The published work provides compelling evidence that overweight, high blood pressure, el-



evated cholesterol, smoking, and diabetes are responsible for more than half of all cardiovascular diseases worldwide. Consistent control of these factors could effectively prevent heart attacks and strokes.

Global Cardiovascular Risk Consortium et al. **Global effect of modifiable risk factors on cardiovascular disease and mortality.** *The New England Journal of Medicine*, 2023

Clinical trials: Improving patient care

Exercise training for patients with an artificial heart

The early clinical trial Ex-VAD-DZHK11, involving around 64 patients with a left ventricular assist device (LVAD), demonstrated that a structured exercise programme significantly improves quality of life and submaximal exercise capacity. The programme, carried out three times a week over three months, proved safe and feasible. Principal investigator Frank Edelmann of Charité – Universitätsmedizin Berlin and his colleagues expect structured exercise training to be included in future guidelines for LVAD patients.



Exercise Training in Patients with Left Ventricular Assist Device (Ex-VAD-DZHK11)

Feuerstein, A et al. **Supervised exercise training in patients with advanced heart failure and left ventricular assist device: A multicentre randomized controlled trial (Ex-VAD trial).** *European Journal of Heart Failure*, 2023

Catheter-based and surgical aortic valve replacement are equivalent

The DEDICATE-DZHK6 study provided landmark findings on aortic valve replacement. The study, led by Stefan Blankenberg at University Medical Center Hamburg-Eppendorf, showed that the catheter-based procedure (TAVI) is equivalent to surgical valve replacement even in younger, low-risk patients. In the one-year analysis, the catheter group experienced only half as many deaths and strokes as those undergoing surgical valve replacement. This means the minimally invasive catheter procedure could in future be considered as an alternative even for lower-risk patients—provided the intervention is carried out at experienced, interdisciplinary heart centres.



Randomized Trial of TAVI versus SAVR in Patients with Symptomatic Severe Aortic Valve Stenosis and Intermediate Risk of Mortality (DEDICATE-DZHK6)

Blankenberg, S et al. **Transcatheter or surgical treatment of aortic-valve stenosis.** *The New England Journal of Medicine*, 2024

Myocardial infarction risk in stroke patients

An important advance in stroke care was achieved with the PRAISE-DZHK19 study. Led by Matthias Endres, it clarified a previously unresolved question: elevated troponin levels after a stroke can indicate myocardial injury, but it was unclear whether this was due to stress reactions or a myocardial infarction. The study found that, in half of stroke patients with markedly elevated troponin, a myocardial infarction is indeed present—most often type 1, which requires immediate treatment. A troponin level more than five times the normal range could, in the future, help determine who should receive coronary angiography. The findings highlight the close link between heart and brain in stroke and form the basis for a planned treatment study.



Prediction of Acute Coronary Syndrome in Acute Ischemic Stroke (PRAISE-DZHK19 I DZNEB001)

Nolte, Christian H et al. **Type 1 myocardial infarction in patients with acute ischemic stroke.** *JAMA Neurology*, 2024

Telemedicine in COVID-19 care

The COVID-SMART study, led by Moritz Sinner at LMU Hospital, investigated the benefit of telemedical support for COVID-19 patients at increased risk. A total of 607 participants received either standard care or additional monitoring via smartwatch and access to a physician hotline. While there was no significant difference in hospital admissions, the telemedicine group used outpatient emergency services markedly less. The researchers see this as an indication that telemedicine is particularly useful in mild cases: it enables close monitoring, reduces unnecessary emergency department visits, and relieves pressure on the healthcare system – especially during pandemics.



Munich Remote SpO2 and Heart Rate Assessment in Covid-19 patients (COVID SMART vormalis MR SPOC)

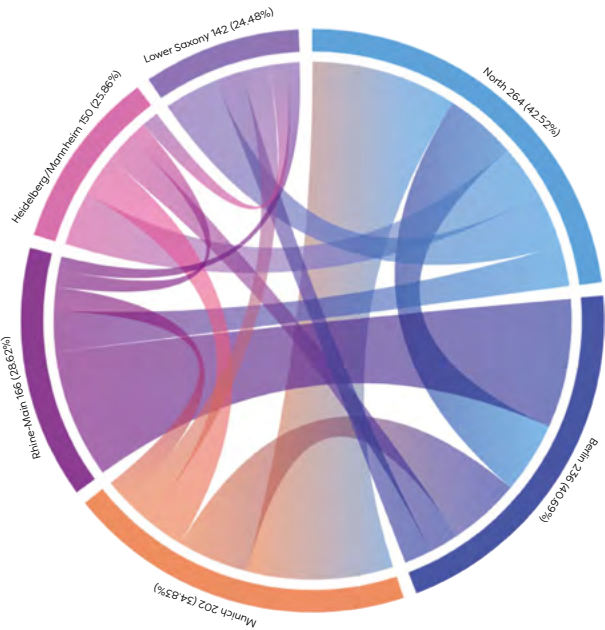
von Falkenhausen, A S et al. **Telemedical management of symptomatic COVID-19 outpatients.** *ERJ Open Research*, 2024

Publications & Awards

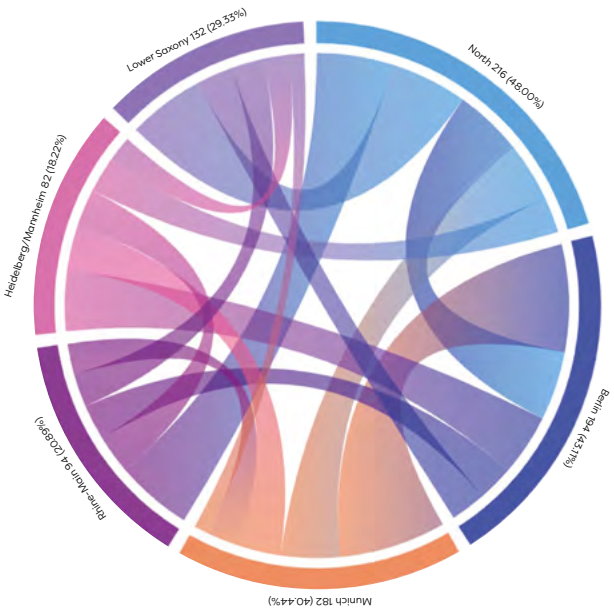
Publications

In 2023, the total number of publications with DZHK affiliation (i.e., naming the DZHK) increased slightly from the previous year to 1,661. In 2024, the total was 1,735. The number of publications in top-tier journals (with an impact factor > 10) was 381 in 2023 and 402 in 2024.

2023



2024



Number of publications produced in collaboration with other partner sites and the percentage share of the total number of publications with DZHK affiliation per partner site.

	2024	2023
Total publications	1,735	1,661
of which		
First authorship DZHK PI	60	42
Senior (last) authorship DZHK PI	244	251
First authorship Young DZHK	301	273
Senior (last) authorship Young DZHK	62	47
First authorship DZHK researchers	144	138
Senior (last) authorship DZHK researchers	361	369
Impact factor > 10	402	381
of which DZHK first author	143	104
DZHK senior (last) author	140	141
More than one DZHK partner site	174	149

All publications can be found on our website:

<https://dzhk.de/en/research/research-focus/publications/publications-2024>

<https://dzhk.de/en/research/research-focus/publications/publications-2023>

Paper of the Month 2023*

January

Mauersberger C et al. **Loss of soluble guanylyl cyclase in platelets contributes to atherosclerotic plaque formation and vascular inflammation.** *Nature Cardiovascular Research*, 2023

🏠 [Munich](#)

March

Hoffmann J et al. **The DZHK research platform: maximisation of scientific value by enabling access to health data and biological samples collected in cardiovascular clinical studies.** *Clinical Research in Cardiology*, 2023

🏠 [Göttingen](#), [Berlin](#), [Greifswald](#), [Hamburg/Kiel/Lübeck](#), [Munich](#), [Heidelberg/Mannheim](#), [Rhine-Main](#)

April

Thienel M et al. **Immobility-associated thromboprotection is conserved across mammalian species, from bears to humans.** *Science*, 2023

🏠 [Munich](#)

Nanadikar MS et al. **IDH3 γ functions as a redox switch regulating mitochondrial energy metabolism and contractility in the heart.** *Nature Communications*, 2023

🏠 [Göttingen](#)

May

Gatsiou A et al. **The RNA editor ADAR2 promotes immune cell trafficking by enhancing endothelial responses to interleukin-6 during sterile inflammation.** *Immunity*, 2023

🏠 [Heidelberg/Mannheim](#), [Rhine-Main](#)

June

Lehmann LH et al. **Cardiomuscular biomarkers in the diagnosis and prognostication of immune checkpoint inhibitor myocarditis.** *Circulation*, 2023

🏠 [Heidelberg/Mannheim](#)

July

Magnussen C et al. **Global effect of modifiable risk factors on cardiovascular disease and mortality.** *The New England Journal of Medicine*, 2023

🏠 [Hamburg/Kiel/Lübeck](#), [Greifswald](#), [Rhine-Main](#), [Munich](#)

August

Ziegler KA et al. **Immune-mediated denervation of the pineal gland underlies sleep disturbance in cardiac disease.** *Science*, 2023

🏠 [München](#), [Berlin](#)

September

Abplanalp WT et al. **Cell-intrinsic effects of clonal hematopoiesis in heart failure.** *Nature Cardiovascular Research*, 2023

🏠 [Rhine-Main](#)

October

Feuerstein A et al. **Supervised exercise training in patients with advanced heart failure and left ventricular assist device: a multicentre randomized controlled trial (Ex-VAD trial).** *European Journal of Heart Failure*, 2023

🏠 [Berlin](#), [Göttingen](#), [Greifswald](#), [Munich](#)

November

Bacmeister L et al. **High-sensitivity cardiac troponin I enhances preeclampsia prediction beyond maternal factors and the sFlt-1/PlGF ratio.** *Circulation*, 2023

🏠 [Hamburg/Kiel/Lübeck](#)

* There was no Paper of the Month in February or December 2023.

🏠 [Participating DZHK partner sites](#)

Paper of the Month 2024

January

Laurette P et al. **In vivo silencing of regulatory elements using a single AAV-CRISPRi vector.** *Circulation Research*, 2024

🏠 Heidelberg/Mannheim, Rhine-Main, Munich

February

Alogna A et al. **Lung-to-heart nano-in-micro peptide promotes cardiac recovery in a pig model of chronic heart failure.** *Journal of the American College of Cardiology*, 2024

🏠 Berlin

March

Trogisch FA et al. **Endothelial cells drive organ fibrosis in mice by inducing expression of the transcription factor SOX9.** *Science Translational Medicine*, 2024

🏠 Heidelberg/Mannheim, Rhine-Main

April

Blankenberg S et al. **Transcatheter or surgical treatment of aortic-valve stenosis.** *The New England Journal of Medicine*, 2024

🏠 Hamburg/Kiel/Lübeck, Heidelberg/Mannheim, Munich, Rhine-Main, Berlin

May

Pekayvaz K et al. **Multiomic analyses uncover immunological signatures in acute and chronic coronary syndromes.** *Nature Medicine*, 2024

🏠 Munich, Berlin

June

Lehmann DH et al. **Prediction of diagnosis and diastolic filling pressure by AI-enhanced cardiac MRI: a modelling study of hospital data.** *The Lancet Digital Health*, 2024

🏠 Heidelberg/Mannheim

July

Gaertner F et al. **Plasmacytoid dendritic cells control homeostasis of megakaryopoiesis.** *Nature*, 2024

🏠 Munich, Berlin

August

Cano E et al. **Intramyocardial sprouting tip cells specify coronary arterialization.** *Circulation Research*, 2024

🏠 Berlin

September

Paulke NJ et al. **Dysferlin enables tubular membrane proliferation in cardiac hypertrophy.** *Circulation Research*, 2024

🏠 Göttingen

October

Garlapati V et al. **Macrophage-expressed coagulation factor VII promotes adverse cardiac remodeling.** *Circulation Research*, 2024

🏠 Rhine-Main

November

Ruiz-Orera J et al. **Evolution of translational control and the emergence of genes and open reading frames in human and non-human primate hearts.** *Nature Cardiovascular Research*, 2024

🏠 Göttingen, Berlin

December

Elsherbiny NY et al. **RNF20-mediated transcriptional pausing and VEGFA splicing orchestrate vessel growth.** *Nature Cardiovascular Research*, 2024

🏠 Heidelberg/Mannheim

Awards, grants and appointments

During the reporting period, numerous DZHK members received prestigious awards or were admitted to renowned funding programmes. The following overview provides a selection.

Sofia-Iris Bibli

Hector Research Career Development Award, Hector Fellow Academy, 2023

Stefan Blankenberg

Paul Morawitz Prize, German Cardiac Society (DGK), 2023

Stefanie Dimmeler

Le Gros Clark Prize Lecture Award, Anatomical Society (UK), 2024

Sandy Engelhardt

CZS Breakthroughs, Carl Zeiss Foundation, 2023

Julien Gagneur

ERC Synergy Grant, European Research Council (ERC), 2023

Florian Gärtner

Heisenberg Professorship, German Research Foundation (DFG), 2023

Gerd Hasenfuß

Leopold Lichtwitz Medal, German Society of Internal Medicine (DGIM), 2024

Hugo A. Katus

Order of Merit of Baden-Württemberg (State of Baden-Württemberg), 2023; Carl Ludwig Medal of Honour, German Cardiac Society (DGK), 2023

Claudia Langenberg

Membership of EMBO, European Molecular Biology Organization, 2024

Steffen Massberg

Paul Morawitz Prize, German Cardiac Society (DGK), 2024

Alessandra Moretti

ERC Advanced Grant, European Research Council (ERC), 2023

Vasilis Ntziachristos

Membership of the Leopoldina, German National Academy of Sciences Leopoldina, 2024

Maik Pietzner

ERC Starting Grant, European Research Council (ERC), 2023

Michael Potente

Judah Folkman Award, North American Vascular Biology Organization (NAVBO), 2023; Membership of EMBO, European Molecular Biology Organization, 2023

Soni Savai Pullamsetti

Membership of the Leopoldina, German National Academy of Sciences Leopoldina, 2023

Julio Saez-Rodriguez

ERC Synergy Grant, European Research Council (ERC), 2023

Gabriele Schiattarella

Outstanding Achievement Award, European Society of Cardiology (ESC), 2024; Outstanding Investigator Award, International Society for Heart Research (ISHR), 2024

Heribert Schunkert

Bavarian Order of Merit, Free State of Bavaria, 2023

Samuel Sossalla

Outstanding Achievement Award, European Society of Cardiology (ESC), 2023

Sabine Steffens

Arthur Weber Prize, German Cardiac Society (DGK), 2023

Christian Weber

Reinhart Koselleck Funding, German Research Foundation (DFG), 2024; ERC Advanced Grant, European Research Council (ERC), 2024

Philipp Wild

CZS Breakthroughs, Carl Zeiss Foundation, 2023



Preclinical Research

In 2024, the DZHK made €2.2 million available for new preclinical projects (2023: €1.2 million). This corresponded to 4.8% of the total budget in 2024 (2023: 2.7%).

DZHK Innovation Cluster

The DZHK Innovation Clusters address highly topical scientific developments that are also associated with a high degree of medical urgency. This focus strengthens the DZHK's international visibility. The cross-site structure enables the pooling of the partner sites' complementary strengths in collaborative projects and the tackling of complex questions together.

Nucleic acid therapies

The "Nucleic Acid Therapies" Innovation Cluster was established in 2018 with a focus on gene therapy and subsequently expanded. The potential of RNA and oligonucleotide technologies led to the launch of an integrated programme for nucleic acid therapies in 2024. The aim is to open new avenues for gene and nucleic acid therapies in the cardiovascular field. This includes the development

of safe and efficient vectors as well as strategies to specifically influence the expression of nucleic acids or genes in cardiovascular cells.

Clonal haematopoiesis

The "Clonal Haematopoiesis" Innovation Cluster was established in 2019 and continued in 2024. It investigates the consequences of age-related somatic mutations in the blood-forming system and their relevance to cardiovascular disease. The aim is to understand the biological mechanisms of clonal haematopoiesis, to classify its role in inflammation, vascular changes, and organ function, and to identify reliable markers for risk groups. Building on this, new diagnostic approaches and targeted therapeutic strategies are to be developed to better prevent disease and complications in people with clonal haematopoiesis.

Heart-brain interactions

The “Brain Heart Interfaces” Innovation Cluster was launched in 2023. It deals with the reciprocal relationships between the heart and brain and their importance for key physiological processes. The focus is on the bidirectional communication between the two organs via the autonomic nervous system, neuronal networks, and hormonal signalling path-

ways. Current work by DZHK researchers shows that cardiac innervation influences, among other things, sleep disturbances, vascular inflammation, and ageing processes. The aim of the cluster is to investigate these relationships systematically, to better understand mechanisms of heart-brain interaction and to derive new therapeutic targets from them.

Innovation Clusters ongoing and completed during the reporting period

Innovation Cluster		
Innovation Cluster project title	Duration	Project leads
Innovative approaches to precision medicine: impact of clonal haematopoiesis on cardiovascular disease	01/10/2020 – 31/03/2024	Andreas Zeiher, Heribert Schunkert, Lukas Zanders, Florian Leuschner
Connectivity and functional mapping of cardiovascular brain circuits	01/10/2023 – 30/09/2026	Sarajo Mohanta
Importance of brain regions on heart failure progression	01/11/2023 – 31/01/2027	Karl Toischer, André Fischer
Takotsubo and stroke-heart syndrome: two sides of the same coin?	01/11/2023 – 30/11/2026	Thomas Stiermaier, Daniel Dürschmied, Xiaobo Zhou, Karen Gertz, Henrike Maatz, Bastian Bruns
Central serotonin in atherosclerosis	01/01/2024 – 30/06/2026	Johan Duchêne, Natalia Alenina
The neurovascular unit in the ageing heart	01/02/2024 – 28/02/2027	Sebastian Clauss, Stefanie Dimmeler, Julian Wagner, Philipp Wild, Eckhard Wolf
Towards cardiac-specific human rAAVs: Directed evolution and characterisation of novel AAV variants from failing hearts for GTMP development	01/01/2021 – 31/12/2025	Patrick Most, Dirk Grimm, Arne Hansen, Rabea Hinke
AAV-based epigenetic perturbation – from translational disease models to anti-arrhythmic strategies	01/11/2023 – 31/10/2026	Ralf Gilsbach, Laura Zelarayán-Behrend
Extracellular RNA and microvascular dysfunction drive sex differences in stroke-heart syndrome	01/12/2023 – 30/11/2026	Ran Xu, Sebastian Oeing, Oliver Müller
Cross-species optimisation of viral vector-based gene editing in the heart	01/01/2024 – 31/12/2026	Lars Steinmetz, Dirk Grimm, Christoph Dieterich
Targeted AAV vectors for efficient cardiovascular gene transfer	01/01/2024 – 31/12/2026	Oliver Müller, Dirk Grimm, Rabea Hinkel, Thomas Eschenhagen, Malte Spielmann

Translational Research Projects

Translational Research Projects (TRPs) aim to transfer scientific findings from basic research into clinical application – i.e., to decisively advance the translational process. This transition phase is considered particularly challenging, which is why the DZHK places a research focus on this area.

Eight TRPs were funded in the reporting years 2023 and 2024, and five were completed. Three of the completed TRPs reported promising results.

Project 1: CAR as a new therapeutic target in myocardial infarction

During a myocardial infarction, heart muscle cells die due to a lack of oxygen. This project investigated whether blocking the Coxsackie and Adenovirus Receptor (CAR) can protect heart muscle cells. Among other things, this receptor influences cell junctions in cardiac tissue. Previous studies showed that mice without CAR survive infarction better.

In the project, a set of newly developed, fully human antibodies was produced to selectively inhibit CAR. In parallel, modern experimental models were established, including human stem cells and

an isolated heart model. Initial results show that cells without CAR cope better with oxygen deprivation. However, the antibodies still need to be optimised to reliably produce the same effect.

The project confirms CAR as a promising therapeutic target in myocardial infarction. The antibodies and test systems now available enable the next steps towards developing a new treatment.

Project 2: Local inhibition of miR-29b to treat abdominal aortic aneurysms

Abdominal aortic aneurysms are dangerous because the main artery enlarges and can rupture suddenly. To date, there are no medicines to stop their growth. In this project, a novel therapy was tested for the first time in a large animal model. The idea: an inhibitor against a small RNA molecule called miR-29b is delivered locally directly into the affected vessel wall using special catheter balloons that release the agent during the procedure.

Studies in a pig model show that this local therapy can reliably halt aneurysm progression while sparing other organs. The results demonstrate the potential for a future minimally invasive treatment intended to protect patients from a dangerous

vessel rupture. A prototype drug-eluting balloon is already available and is being further developed in preparation for a clinical study.

Project 3: Early detection of dangerous plaques using a new catheter

In coronary artery disease, deposits form in the coronary arteries. Some plaques remain harmless, while others can rupture suddenly and trigger a myocardial infarction. Until now, it has been difficult to reliably identify these high-risk lesions in advance.

In this project, a novel catheter was developed that examines the vessel wall using both ultrasound and light at the same time. The combination of intravascular ultrasound and near-infrared fluorescence enables visualization of pathological changes that are not detectable with conventional imaging. A clinically used dye is employed that accumulates in unstable, inflamed plaques.

The catheter was successfully miniaturised and tested under realistic conditions in animal models. It can reliably identify areas with increased vessel-wall permeability and pronounced inflam-

Translational Research Projects (TRP) ongoing and completed during the reporting period

Translational Research Projects (TRP)			
No.	TRP project title	Duration	Project leads
1	CAR inhibitors to treat myocardial infarction	01/01/2019 – 31/12/2023	Michael Gotthardt
2	Local miR-29b inhibition using drug eluting balloons to block abdominal aortic aneurysm progression	01/08/2019 – 31/12/2023	Lars Maegdefessel
3	Detection of plaque vulnerability with a novel hybrid intravascular NIRF-IVUS imaging system	01/05/2020 – 31/08/2023	Michael Joner, Vassilis Ntzichristos
4	rAAV.MRTF-A-based vascular gene therapy in chronic hindlimb ischemia (GeneVaPad)	15/01/2021 – 30/06/2026	Christian Kupatt
5	Development and characterization of a pig model of TET2-mediated clonal hematopoiesis	01/07/2021 – 31/12/2024	Christian Schulz, Eckhard Wolf
6	Gene therapy of cardiac hypertrophy	01/09/2021 – 31/12/2026	Oliver Müller, Rabea Hinkel, Markus Hecker
7	Real-time MRI-guided targeted endomyocardial biopsy of radiofrequency ablation lesions in a porcine model	01/09/2019 – 31/12/2026	Christina Unterberg-Buchwald
8	Orthogonal testing of CD40-TRAF6 interaction inhibitors	01/05/2024 – 31/12/2024	Dorothee Atzler

mation—features that indicate an increased risk of rupture.

This represents an important step towards clinical application: the technology has the potential to

detect dangerous plaques at an early stage and provide targeted protection for patients.

Rauschendorfer P et al. **Intravascular ICG-enhanced NIRF-IVUS imaging to assess progressive atherosclerotic lesions in excised human coronary arteries.** *npj Cardiovascular Health*, 2024

TRP Starter Grants

TRP Starter Grants support researchers in further developing promising approaches into a TRP. They enable initial validations, proof-of-concept data, and the preparatory work required for a TRP application. In this way, TRP Starter Grants foster the potential of translational ideas at an early stage and prepare the transition into the DZHK's large TRPs.

With funding of up to €150,000 over a maximum of 18 months, the grants help prepare promising approaches for a subsequent TRP application. Eligible applicants include DZHK Principal Investigators, DZHK researchers, and members of the Young DZHK.

A total of ten TRP Starter Grants were running in 2023 and 2024.

TRP Starter Grants ongoing and completed during the reporting period

TRP Starter Grants		
TRP Starter Grant project title	Duration	Project lead(s)
Inhibition of ADAMTS7 by siRNA to prevent restenosis: first steps towards the preclinical study	01/03/2023 – 31/08/2024	Zouhair Aherrahrou
Cardiomyocyte-specific endogenous transcriptional restoration of KLF15 by nuclease-dead Cas9 as a novel therapeutic concept in heart failure	01/03/2023 – 30/11/2024	Laura Zelarayán-Behrend, Lorenz Lehmann, Rabea Hinkel
Development of a novel platelet inhibitor that blocks the CXCL12-CXCR4 axis to prevent and treat atherothrombosis	01/07/2023 – 31/12/2024	Philipp von Hundelshausen
New generation of nanodomain-specific beta-blockers for better heart failure therapy	01/10/2023 – 30/06/2025	Viacheslav Nikolaev
New treatment option for hypertrophic cardiomyopathy	01/01/2024 – 30/06/2025	Cordula Wolf
Development of a novel NIRF-IVUS intravascular imaging system for in vivo intracoronary imaging	01/04/2024 – 30/09/2025	Michael Joner, Vasilis Ntziachristos
Anti-androgenic strategies in porcine heart failure	01/12/2023 – 31/05/2026	Jörg Heineke, Constanze Schmidt
Induction of tolerance to pig cardiac allo- and xenografts by thymic co-transplantation	01/09/2024 – 28/02/2026	Sebastian Michel
Cost-effective assay to profile clonal haematopoiesis in patients with CVD risk or extant CVD	01/10/2024 – 30/06/2026	Wesley Abplanalp
Targeting PCSK6 to reduce cardiac fibrosis and prevent heart failure	01/08/2024 – 31/07/2026	Tim Christian Kuhn

Use & Access Projects

Data and samples are valuable research resources that the DZHK makes available for scientific purposes. To use them, researchers can submit applications that are evaluated by the Use and Access Committee (UAC), which may recommend funding to the Research Coordinating Committee (RCC).

All research projects approved and initiated in 2023 and 2024 using data and biospecimen from the DZHK Heart Bank can be found in the table below. In addition, the approved use projects are presented on the DZHK Heart Bank website with brief descriptions and the names of the responsible researchers.

Use & Access Projects ongoing and completed during the reporting period

Use & Access Projects		
Use & Access project title	Duration	Project lead(s)
Identification of circulatory proteins reflecting myocardial processes relevant to disease progression in heart failure	01/06/2022 – 31/05/2023	Jürgen Prochaska, Christoph Knosalla (partner)
The role of urinary Dickkopf-3 in cardiorenal syndrome	01/01/2022 – 31/12/2023	Manuel Wallbach
Cardiac disease causative mutations in the Eph/ephrin signalling pathway	01/11/2021 – 31/10/2023	Guillermo Luxán
Characterisation and risk stratification of patient subgroups in dilated cardiomyopathy by utilisation of an inflammatory 47-plex biomarker panel	01/01/2022 – 31/05/2023	Kristin Lehnert



Clinical Trials

Clinical trials play a central role in the DZHK's research strategy. For clinical trials that received a funding recommendation in 2024, the DZHK allocated €6.5 million (2023: €1.5 million). This corresponded to 14.2% of the total budget in 2024 (2023: 3.3%).

An essential component of translational research is early clinical trials. They form the first bridge between basic research and practical application and test whether a therapeutic or diagnostic procedure can, in principle, be used in patients. The DZHK therefore places particular emphasis on these early trial phases. Another focus is on guideline-relevant studies to translate innovative therapies and treatment strategies into medical practice. The results of such studies shape medical

treatment guidelines and contribute directly to improving patient care.

During the reporting period, the DZHK provided financial support for 22 clinical trials. Of these, 20 trials used the DZHK Clinical Research Platform for recruitment (see p. 19).

In addition, the DZHK has newly associated two studies, which, since 2023, have received non-financial support through the network without financial subsidy.

All studies ongoing during the reporting period are listed in a table on p. 19 and can be accessed at: <https://dzhk.de/en/research/clinical-research/dzhk-studies>

DZHK studies					
Study title	Condition / treatment / diagnostics	Duration	Study type	Responsible principal investigator	Planned / recruited participants
CIT-DZHK29	Myocardial injury in Takotsubo (broken-heart) syndrome	2023–2028	ECS	Bastian Bruns	205 / in planning
GECT-DZHK28	Heart valve replacement using autologous tissue	2022–2024	ECS	Boris Schmitt	7 / 2
CABA-HFPEF-DZHK27	Atrial fibrillation and heart failure	2022–2027	GRS	Abdul-Shokor Parwani, Paulus Kirchhof, Stefan Käöb, Roland Richard Tilz, Tim Friede, Burkert Pieske	1,548 / 389
TRINITY-DZHK26	Chronic myocarditis	2022–2027	ECS	Ulrich Grabmaier, Steffen Massberg	130 / 9
Reduce-MFA-DZHK25	Myocardial fibrosis	2021–2026	ECS	Miriam Puls, Elisabeth Zeisberg	Recruitment completed
TRICI-HF-DZHK24	Tricuspid regurgitation, TAVI	2021–2026	GRS	Jörg Hausleiter, Thomas Stocker, Daniel Braun, Steffen Massberg	360 / 287
CMR-ICD-DZHK23	MRI examination in heart failure	2020–2026	GRS	Ingo Eitel	760 / 318
EXAMINE-CAD-DZHK22	Impaired microcirculation	2020–2024	ECS	Ulf Landmesser, Barbara Stähli	Recruitment completed
TORCH-Plus-DZHK21**	Cardiomyopathies	2020–2027	Registry	Benjamin Meder	4,340 / 4,539***
BioVAT-HF-DZHK20	Artificial cardiac tissue in severe heart failure	2019–2028	ECS	Wolfram-Hubertus Zimmermann	53 / 19
METRIS-HF-DZHK18	Metformin treatment in heart failure	2018–2024	ECS	Wolfram Döhner, Tim Friede, Burkert Pieske	Recruitment completed
CLOSURE-AF-DZHK16	Stroke prevention by closure of the left atrial appendage	2017–2025	GRS	Ulf Landmesser, Leif-Hendrik Boldt, Ingo Eitel	Recruitment completed
SCREEN-AF-DZHK15	Early detection of atrial fibrillation	2017–2024	GRS	Rolf Wachter, Eva Hummers	Recruitment completed
CTSN-TVR-DZHK14	Tricuspid valve	2017–2024	GRS	Volkmar Falk	Recruitment completed
CAVA-ADHF-DZHK-10	Acute decompensated heart failure	2016–2023	ECS	Alexander Jobs, Holger Thiele*	Recruitment completed
SPIRIT-HF-DZHK8	Heart failure	2016–2025	GRS	Frank Edelmann (formerly Burkert Pieske)	Recruitment completed
DEDICATE-DZHK6	Aortic valve stenosis	2017–2027	GRS	Stefan Blankenberg, Moritz Seiffert	Recruitment completed
FAIR-HF2-DZHK5	Heart failure and iron supplementation	2016–2024	GRS	Mahir Karakas, Stefan Anker	Recruitment completed
VAD-DZHK3	Severe heart failure, heart transplantation	2013–2023	GRS	Volkmar Falk, Christoph Knosalla, Gerd Hasenfuß, Tim Friede	Recruitment completed
TransitionCHF-DZHK2	Heart failure	2013–2024	Cohort	Gerd Hasenfuß, Rolf Wachter*, Frank Edelmann	Recruitment completed

ECS: early clinical study

GRS: guideline-relevant study

* Former DZHK researchers who hold a study leadership role

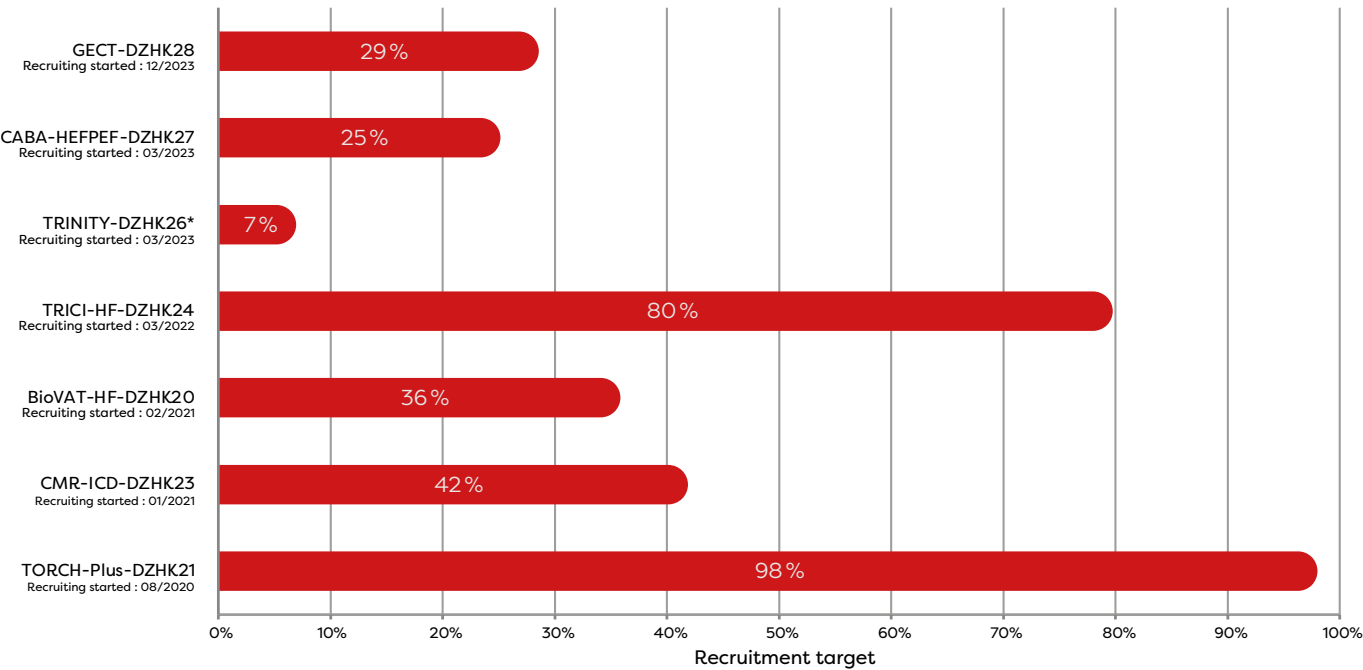
** TORCH-Plus-DZHK21 is based on the TORCH DZHK1 registry established in 2014–17

*** A further increase in participant numbers is planned

Recruitment

By 31 December 2024, a total of 15,021 patients had been recruited into DZHK studies, including 2,860 in 2023 and 2024. Over a period of eleven years, more than 20,000 participants in total have been enrolled (including studies that were partly funded and did not use the DZHK Clinical Research Platform).

Overview – recruitment status of patients in DZHK studies



* terminated early

Clinical Study Units (CSU)

In 2023 and 2024, one meeting per year took place with the personnel in the Clinical Study Units (CSU) financed through the Clinical Staff funding guideline, to exchange information on recruitment, study centres, and technical developments. In Berlin, two Clinical Study Units were merged into one, as the cardiology facilities of Charité and the German Heart Centre Berlin were combined to form the Deutsches Herzzentrum der Charité.

Funding initiative for non-university hospitals within the DZHK study network

In 2024, the DZHK launched a new funding initiative to integrate non-university hospitals into its study network. Eligible institutions can apply for funding of up to €30,000 for one year. The initiative aims to strengthen recruitment for cardiovas-

cular studies and to deepen cooperation with hospitals outside the university environment.

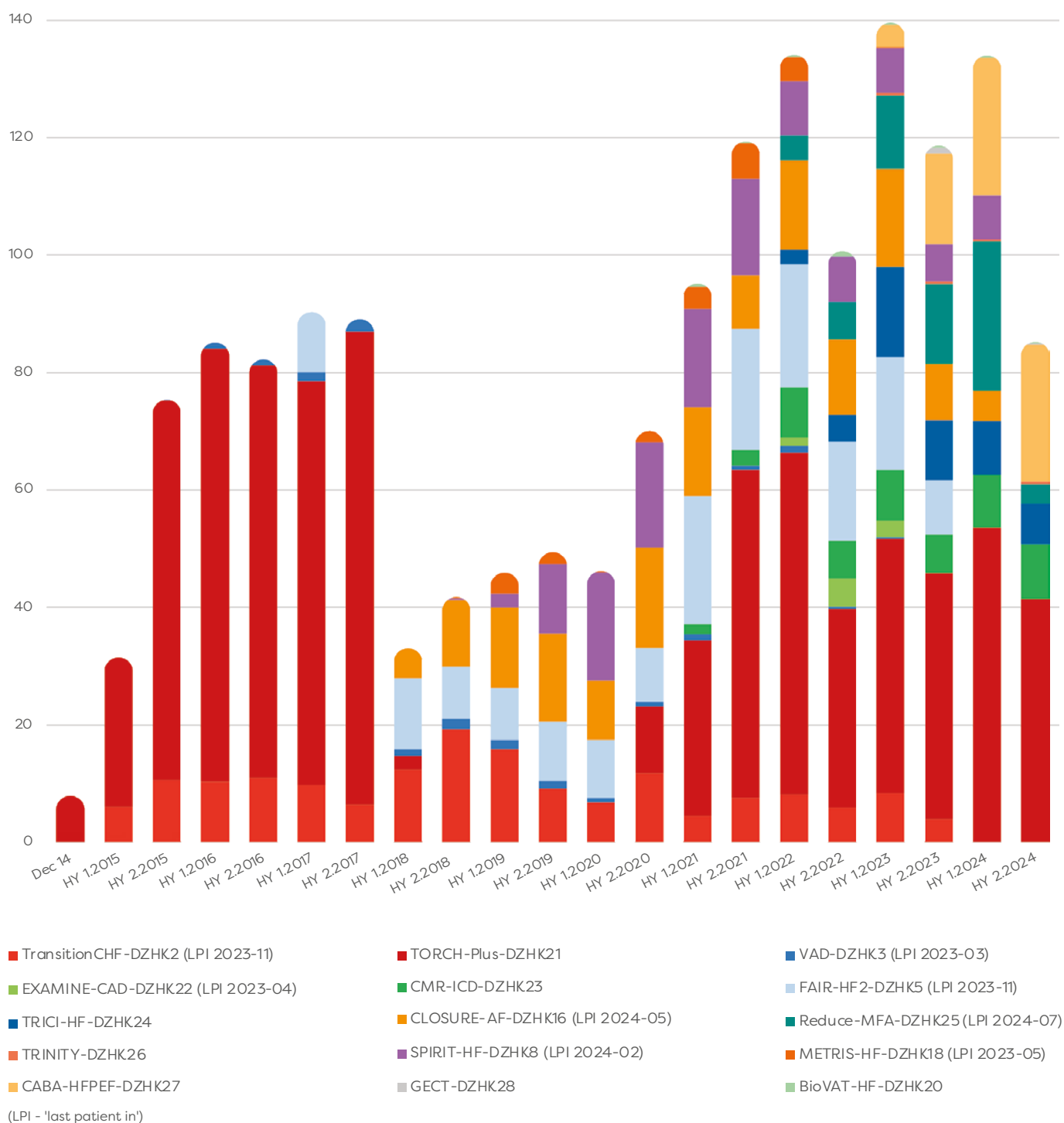
The funding is aimed at national non-university hospitals that to date have no, or only limited, infrastructure for clinical trials in cardiovascular research. With targeted support, these institutions are to expand their study capacities and actively contribute to widening the joint recruitment network. Funds can be used as needed for staffing costs—particularly for research nurses, study coordinators or, in justified exceptional cases, data managers.

During the reporting period, Evangelisches Krankenhaus Düsseldorf received a funding commitment of €30,000.

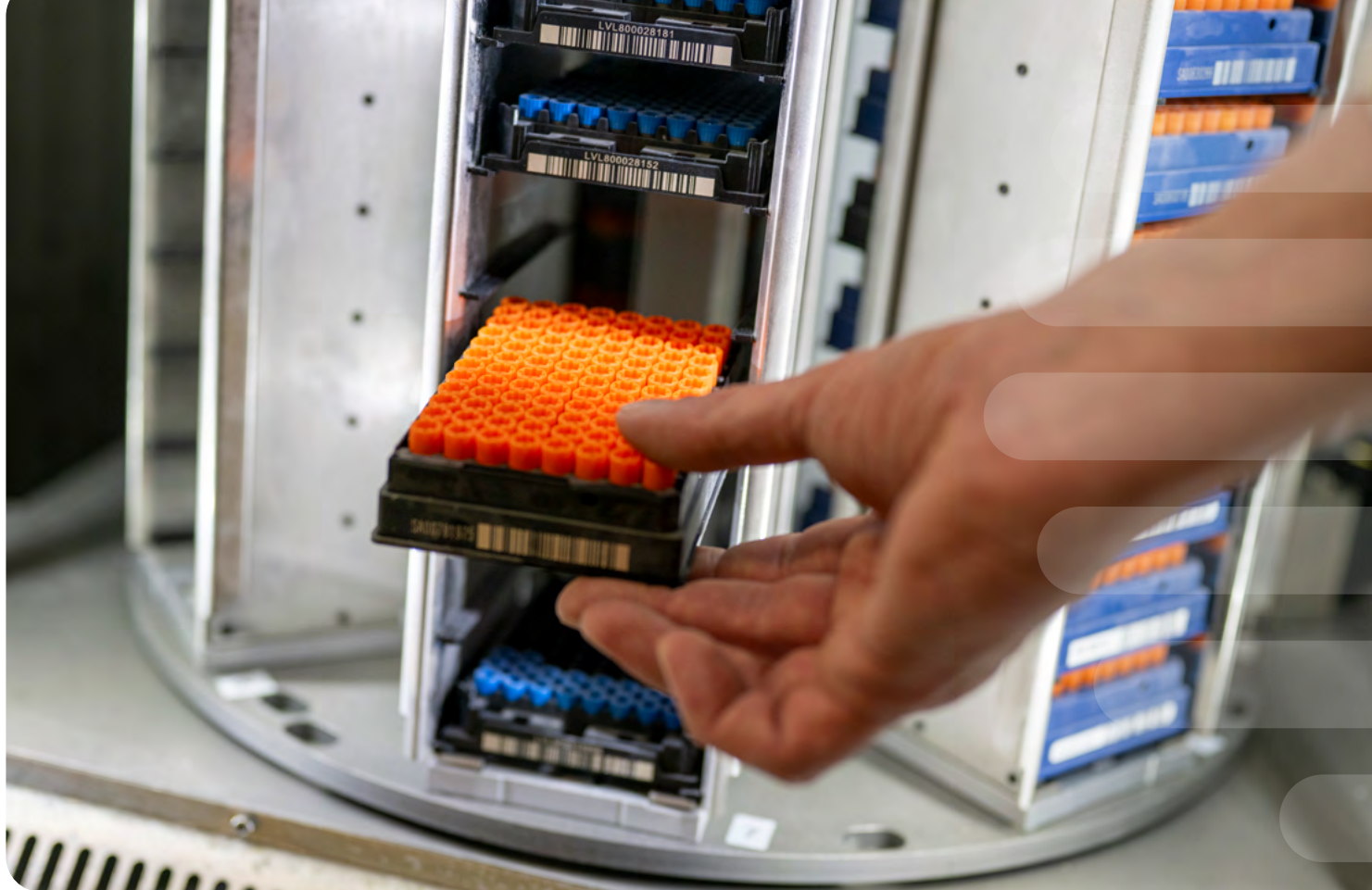


Clinical Staff in Berlin: In November 2023, staff from the DZHK Clinical Study Units met at the main office. They make a major contribution to ensuring that DZHK studies at the DZHK Clinical Study Units run smoothly throughout the entire course of the studies.

Overview – recruited patients in DZHK studies that recruited during the reporting period



Monthly averages per half-year (HY), as at 31/12/2024



Clinical Research Platform & DZHK Heart Bank

Together, the Clinical Research Platform and the DZHK Heart Bank form the foundation of the DZHK's research infrastructure. While the Clinical Research Platform centrally records, stores, and analyses all medical and study-related data, the DZHK Heart Bank collects the corresponding biospecimen such as blood, serum, or tissue. By uniquely linking the two systems, researchers can analyse clinical information and molecular data together.

Ten years of cooperative and sustainable research

The Clinical Research Platform is the organisational and technical backbone for all DZHK clinical studies. In 2023, it celebrated its tenth anniversary. The platform addresses a fundamental problem in clinical research: until now, data and samples from costly clinical studies have often been archived and frozen after a single use, rather than being made available for further scientific questions. The Clinical Research Platform was established as a decentralised, overarching structure of IT systems, standard operating procedures, decentralised biobanks, and a trust office, into which all DZHK studies feed their data via a web-based system.

The platform now comprises 27 cardiovascular DZHK studies, with medical history data, imaging data, and biospecimen from around 12,000 patients. In addition to the 17 clinical member institutions of the DZHK, around 80 further national institutions and about 35 European partners are involved in data collection. This makes the DZHK the largest cardiovascular study network in Germany.

In spring 2023, the concept of the DZHK Research Platform was successfully published in the journal *Clinical Research in Cardiology*. The publication documents the established model for the scientific community.

To date, 50 research groups from around the world have applied to use data and samples. A Use and Access Committee ensures that the scientifically most relevant research questions are prioritised.

The Clinical Research Platform is coordinated by an expert network covering ethics coordination, the trust office, a transfer office, data management, and systems for laboratory and imaging data management. Overall coordination lies with the DZHK head office.

Centralisation of the DZHK Heart Bank

The DZHK Heart Bank is the DZHK's biobank and comprises high-quality clinical data, imaging data, OMICs data, as well as liquid and tissue samples, along with associated information. Processing and storage follow standardised procedures. The sam-



ples and data largely originate from studies within the DZHK Clinical Research Platform and therefore form a key basis for reproducible research results. Since September 2024, the DZHK Heart Bank has been undergoing centralisation and further professionalisation. This major initiative marks an important milestone for the efficiency and quality of cardiovascular research within the DZHK.

To date, approximately 250,000 liquid samples and 6,000 tissue samples have been stored decentrally at the recruiting study centres. As part of the cooperation project running until August 2029, these valuable resources are now being consolidated at the Integrated Research Biobank (IRB) of University Medicine Greifswald. The centralisa-

tion phase runs from October 2024 to April 2026. During this period, all DZHK samples collected since 2015 are being inventoried and transported to the IRB.

The IRB brings more than 20 years of experience in collecting, processing, and distributing samples from clinical and epidemiological studies. It has state-of-the-art automated biobank modules with a total capacity of around three million cryovessels, as well as an automated nitrogen storage system and an automated workbench.

In addition to centralisation, development projects are planned to further strengthen the DZHK Heart Bank through additional analyses and the systematic processing of samples.





Standardised core dataset for clinical trials

Therapies can affect different organs, and diseases can lead to comorbidities: the German Centers for Health Research (DZG) have developed a joint core dataset for clinical trials to enable cross-disease research. This makes it possible to compare patient cohorts and identify correlations, for example, between cardiovascular disease and diabetes.

The dataset comprises 28 mandatory fields and 100 extended fields for cross-disease questions. Since 2024, the dataset has been used in all DZG studies. The DZHK core dataset remains manda-

tory for clinical trials within the DZHK and will be expanded by 50 items.

Within the DZHK, the CIT-DZHK29 study is the first to implement the dataset. In this study, Norbert Frey and Bastian Bruns at Heidelberg University Hospital are investigating whether administering the immunosuppressive medicine ciclosporin A (CsA) can reduce myocardial damage and inflammation in patients with Takotsubo (broken-heart) syndrome and improve cardiac function. Recruitment began in February 2025.



At GAIN in San Francisco, the then Federal Minister of Education and Research, Bettina Stark-Watzinger, visited the DZG stand. From left to right: Maja Marcus (postdoc, Harvard Medical School), Bettina Stark-Watzinger, Astrid Glaser (German Center for Diabetes Research) and Timo Jäger (German Center for Infection Research).

German Centers for Health Research (DZG)

Common diseases such as diabetes, infectious diseases, cancer, cardiovascular, lung, neurodegenerative and mental illnesses, as well as diseases in children and adolescents, affect many people. With the German Centers for Health Research (DZG), the Federal Ministry of Research, Technology and Space (former Federal Ministry of Education and Research) has established strong research structures to improve the detection, treatment, and prevention of these diseases. To this end, the DZG bring together hospitals, universities, and non-university research institutions from across Germany and have worked across centres from the outset. The DZHK is one of eight DZG.

In 2023 and 2024, the eight centres further expanded their collaboration. Monthly meetings of the managing directors, quarterly meetings of the boards, and semi-annual consultations with the Federal Government and the federal states ensure strategic coordination.

Cross-cutting working groups focus on key topics such as biobanks, research IT, global health, patient involvement, support for early-career researchers, public relations, or regulatory issues relating to clinical trials.



The joint programme “DZG Innovation Fund” strengthens translational research by supporting cross-disease research ideas. 2023/24 on the topic of “Microbiome”, 2025/26 on the topic of “Inter-organ Metabolomics” (see p. 30).

2023 and 2024, there was a particular focus on events supporting career development and networking, especially for early-career researchers (see p. 35).

- Two “DZG Science & Career Days” (2023 in Berlin, 2024 in Potsdam-Rehbrücke)
- Six “Lunchtime Career Talks” on a wide range of career paths in health research
- The “DZG Training Programme Translational Research”, launched for the first time in 2024, which links workshops on translational health research (from the laboratory to the clinic) with a mentoring programme

- Three regional DZG Days in Munich (2023 and 2024) and in Heidelberg–Mannheim (2024)
- Two “Joint DZG Symposia” in Dresden (2023 and 2024)

A highlight was the joint appearance of all DZG at the GAIN annual conference – 2023 in Boston and 2024 in San Francisco. Outside Europe, GAIN is the largest networking event for science careers in Germany.

The DZG also set shared priorities in science communication: the high-quality research magazine SYNERGIE was published in four issues on the topics “Organ cross-talk”, “Blood”, “Exposome”, and “Intelligent Medicine”. In addition, the DZG maintained an active presence on their website and on social media (Facebook, Instagram, LinkedIn, and X).

Research Collaborations with Other Partners

International Cardiovascular Research Partnership Awards – ICRPA 2024

The joint funding scheme with the British Heart Foundation (BHF) and the Dutch Heart Foundation (DHF) was renamed International Cardiovascular Research Partnership Awards – ICRPA 2024 in 2024.

During the reporting period, eleven research projects were funded, having previously been recommended by an international selection panel and confirmed by the DZHK Research Coordinating Committee (RCC).

Three ICRPA projects were successfully completed. The research findings provide important new insights:

Project 1: Cells and signalling pathways that remodel the heart in disease

This international project systematically mapped the diversity of cell types in the human heart for the first time. State-of-the-art single-cell and spatial transcriptomics methods were used to determine precisely which cells occur where in the heart and how they communicate with one another.

The researchers created a comprehensive atlas of the healthy adult heart and compared it with

International Cardiovascular Research Partnership Awards (ICRPA) projects ongoing and completed during the reporting period

ICRPA Projects				
No.	Project title	Duration	Project lead(s)	International collaboration partners
1	Spatially resolved cellular and molecular drivers of cardiac remodeling in healthy and failing human hearts	01/06/2019 – 31/05/2023	Norbert Hübner, Thomas Eschenhagen	Michela Nosedà (Imperial College London)
2	Genetic discovery-based targeting of the vascular interface in atherosclerosis	01/09/2019 – 31/08/2023	Jeanette Erdmann [†] , Zouhair Aherrahrou, Heribert Schunkert, Christian Weber	Hugh Watkins (University of Oxford)
3	DNA damage in cytoskeletal protein mutation-induced Atrial Fibrillation: a guide to novel treatment and screening targets (DZHK-BHF Cooperation)	01/01/2021 – 31/12/2024	Niels Voigt	Bianca J.J.M. Brundel (Amsterdam University Medical Center)
4	The Genomic basis of Unexplained Cardiac Arrest: The GenUCA Investigators	01/10/2021 – 30/09/2025	Ibrahim Akin, Stefan Käb	Elijah R. Behr (St George's University of London), Connie R. Bezzina (Amsterdam University Medical Center)
5	Exploiting endothelial long non-coding RNAs to promote regenerative angiogenesis in the damaged myocardium	01/05/2022 – 30/04/2026	Ralf Brandes	Reinier A. Boon (Amsterdam University Medical Center), Andrew H. Baker (University of Edinburgh)
6	Quantitative-imaging in cardiac transthyretin amyloidosis (I-CARE)	01/12/2021 – 30/11/2026	Fabian aus dem Siepen	Marc Dweck (University of Edinburgh), Riemer Slart (University Medical Center Groningen)
7	Translational proteomics for cardiovascular diseases: from population prediction to clinical and therapeutic applications	01/04/2023 – 31/03/2027	Claudia Langenberg	Adam Butterworth (University of Cambridge)
8	Pulmonary hypertension induced Right heart failure: Occurrence of genetic variations and disturbed BMP and TGF β signalling explaining impaired mechanotransduction and heterogeneous adaptation to pressure overload	01/05/2023 – 30/04/2027	Soni Pullamsetti, Gabriele Schiattarella	Andrew Swift (University of Sheffield), Frances S. de Man (Amsterdam University Medical Center)
9	Intercellular communication pathways in atherosclerosis and plaque destabilisation	01/10/2023 – 30/09/2027	Lars Maegdefessel	Marit Westerterp (University Medical Center Groningen), Jason Tarkin (University of Cambridge)
10	Discovering the microvascular landscape from a platelet perspective mapping a blood-bone marrow-heart axis to identify therapeutic targets for heart failure	01/04/2024 – 31/03/2028	Tobias Petzold	Mairi Brittan (University of Edinburgh), Judith Cosemans (Maastricht University)
11	Understanding the mechano-signalling role of the Z-disc in the pathogenesis of hypertrophic cardiomyopathy	01/09/2024 – 31/08/2028	Claudia Crocini	Katja Gehmlich (University of Birmingham), Diederik Kuster (Amsterdam University Medical Center)

tissue from patients with dilated and hypertrophic cardiomyopathy. The analysis showed that cardiomyocytes and other cardiac tissue cells change differently depending on the genetic cause of the disease. In other words, there are both shared and disease-specific mechanisms of cardiac remodeling.

The atlas provides new insights into the function of the cardiac conduction system and the epicardium, including previously unknown signalling molecules and potential drug targets. The data are publicly available and are intended to help improve understanding of heart disease and tailor treatments to individual patients.

Key initial findings were published in top-tier journals, including Nature, Science, and Circulation. The project, therefore, makes a visible contribution to understanding heart failure and lays a foundation for more targeted diagnostic and therapeutic approaches.

Project 2: Understanding genetic drivers of atherosclerosis in the vessel wall

Coronary artery disease develops because of deposits in blood vessels. For a long time, it was difficult to decipher why certain genes increase risk. This project investigated how genetic variants affect the innermost layer of blood vessels and thereby influence inflammation, blood pressure regulation, and remodelling processes.

To this end, the partner teams linked large genetic datasets with molecular analyses in vascular cells. The results show that many risk variants act directly in the vessel wall, altering the activity of endothelial and smooth muscle cells—including the transition to an inflammatory or growth-active state.

The researchers identified several genes that were investigated in a targeted way and functionally validated. These include SVEP1, which promotes inflammation, as well as FES and GUCY1A1, which are involved in blood pressure regulation. Using newly developed analytical tools, additional disease

mechanisms could also be revealed and potential drug targets derived.

Results from the collaboration were published in leading journals, including Nature Genetics, Circulation, Nature Cardiovascular Research, and Nature Communications. The datasets and tools generated in the project will help to better understand genetic risk and to derive new therapeutic approaches in the future.

Project 3: Better understanding and treating genetically determined atrial fibrillation

A small proportion of people with atrial fibrillation have an inherited alteration in proteins that stabilise the internal scaffold of cardiomyocytes. These mutations cause the cells to incur DNA damage under stress. This activates repair processes that consume energy and ultimately impair cell function. The result is an electrical imbalance in the atria that promotes atrial fibrillation.

The international project investigated this mechanism in several models—from human stem-cell-derived cardiac tissue to animal models and patient-derived tissue. It showed that genetic changes in such structural proteins disrupt calcium handling and weaken the electrical stability of atrial cells. The researchers identified signalling pathways that can be targeted.

A compound from the class of NAD⁺ precursors showed a protective effect on cardiomyocytes in experiments. Building on this, a clinical study was launched to assess whether atrial fibrillation can be prevented in at-risk individuals. In addition, the first specialist clinic for genetic atrial fibrillation was established in the Netherlands to provide better counselling and treatment for those affected.

Results from the project have already been published in respected journals such as Basic Research in Cardiology, Cardiovascular Research, and Circulation. The findings open new diagnostic and therapeutic approaches for patients with inherited atrial fibrillation.

Global Cardiovascular Research Funders Forum (GCRFF)

The Global Cardiovascular Research Funders Forum (GCRFF) is an international partnership of twelve leading cardiovascular research funding organisations from ten countries. Together, GCRFF members invest more than US\$600 million annually in cardiovascular research.

The forum aims to facilitate international collaboration among cardiovascular researchers and to align research funding strategically. By joining forces, it seeks to advance global clinical trials and accelerate scientific progress. During the reporting period, a multi-stage evaluation process was underway for initial international study concepts with a DZHK-funded component.

In addition to the DZHK, members include, among others, the British Heart Foundation, the American Heart Association, the National Heart, Lung and Blood Institute (USA), and heart foundations from Australia, Denmark, France, Canada, New Zealand, the Netherlands, and Switzerland.

DZG Innovation Fund (DZGIF)

With the DZG Innovation Fund (DZGIF), the German Centres for Health Research (DZG) have established a joint research funding programme that enables cross-disease collaboration. The pro-

gramme supports innovative research projects involving scientists from at least three DZG. Each call round focuses on an agreed research topic that is relevant to several DZG.

Within the second call round 2023/24 on the topic of “Microbiome”, two projects with DZHK participation were funded:

- The project “Understanding the role of the gut microbiome as a mediator of organ protection by SGLT-2 inhibitors”, led by Till Strowig (DZIF) and Mathias Heikenwälder (DZL), together with Katharina Sewald (DZL) and Dominik Müller (DZHK), investigates how the gut microbiome contributes to organ protection by SGLT-2 inhibitors.
- In the second funded project, “Endothelial modifier of myelopoiesis and inflammatory vascular endothelial phenotypes in cardiometabolic disease”, Triantafyllos Chavakis (DZD), together with Christoph Reinhardt and Daniela Krause (both DZHK), is exploring how the modification of myelopoiesis and inflammatory vascular endothelial phenotypes are linked in cardiometabolic diseases.

A call for proposals for the third call round on the topic of “Inter-organ Metabolomics” was published in 2024. Funding decisions are expected in 2025.



The winners of the Oral Sessions at the Young DZHK Retreat in Frankfurt 2024. From left to right: Emmanouil Solominidis (Frankfurt), Erik Asmus (Berlin), and Marin Kuntic (Mainz).

Promoting Young Talent

Supporting early-career researchers is a key priority for the DZHK: ten funding lines are designed to support clinicians and basic scientists on their path to translational research. In 2024, €3.1 million (2023: €2.5 million) was made available for the excellence, training and mentoring programme. This corresponded to 6.8% of the total budget in 2024 (2023: 5.5%).

Around two-thirds of the approximately 2,300 scientists in the DZHK belong to the Young DZHK. With more than 1,500 early-career researchers from partner institutions, it is the largest network within the DZHK. Early-career researchers actively help shape the DZHK's development: the Young DZHK Postdoc Committee comprises 14 early-career scientists—two from each of the seven partner sites. The committee's spokesperson is a voting member of the RCC, which decides on the DZHK's strategic direction. Since 2018, Nadya Al-Wakeel-Marquard

initially held this role as co-spokesperson and, from 2019, as spokesperson. Sonia Singh took over the role in 2023, having previously served as co-spokesperson since 2022. Since 2023, the role has been carried out by Simone-Franziska Glaser and Michael Molitor as co-spokespersons.

The Young DZHK Retreat is normally held immediately before the DZHK Retreat. As the DZHK Retreat did not take place in 2023, the Postdoc Committee organised the annual event for early-career researchers for the first time as a stand-alone meeting. Around 100 early-career scientists met in Potsdam. At the Young DZHK Retreat 2024 in Frankfurt am Main, the winners of the oral presentation and poster prizes received prize money for the first time. This was made possible by a donation (see also pp. 36–37).

Excellence funding

Excellence funding is the cornerstone of the DZHK's support for early-career researchers. In 2023, the DZHK consolidated its funding programmes for scientific career development in clinical research: the previous Rotation Grant and the Clinician Scientist Programme were merged into the new Clinician Scientist Fellowship, which enables doctors to enter clinical research in a targeted way. In the reporting year, one fellowship was recommended for funding.

Support for women was also restructured. Since 2023, the call has been issued once a year to harmonise procedures and increase planning certainty for applicants.

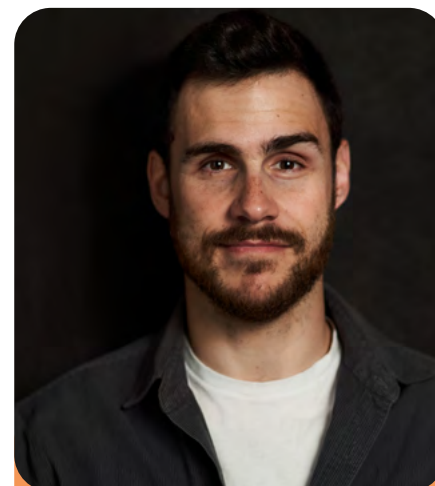
Another important element of excellence funding is the DZHK Junior Research Groups. Until 2023, applications were reserved for applicants external to the DZHK. Since then, researchers affiliated with a DZHK institution and holding DZHK status have also been able to apply.

Two junior research groups started in 2023: **Claudia Crocini** at Charité – Universitätsmedizin Berlin is investigating differences between female and male hearts at the cellular level. Molecular biologist **Pieterjan Dierickx** from the Max Planck Institute for Heart and Lung Research in Bad Nauheim is studying how disruptions to the body clock affect the heart and circulation. The DZHK funds both junior research groups for six years.

Alexander Bartelt of the Technical University of Munich completed his junior research group in 2024, which had started in 2018. He investigated a mechanism in brown fat cells that plays a key role in adapting to altered metabolic conditions. The switch that activates this mechanism is also present in the heart. Bartelt studied its role in healthy and diseased hearts.



Claudia Crocini leads a DZHK Junior Research Group at Charité – Universitätsmedizin Berlin that investigates the differences between female and male hearts at the cellular level.



Pieterjan Dierickx, together with his DZHK Junior Research Group, investigates how the internal body clock and the cardiovascular system are connected.

Energy for the heart – how metabolism protects the heart

Interview with Alexander Bartelt

Alexander Bartelt led a DZHK Junior Research Group at Ludwig Maximilian University Munich from 2018 to 2024 and is now the holder of the Else Kröner Fresenius Chair of Translational Nutritional Medicine at the Technical University of Munich.



What was the focus of your DZHK Junior Research Group, and what was the central question driving you?

Our heart works day and night for a lifetime. This high metabolic activity produces, like any highly demanding work, metabolic waste products. But the heart has no time to take a break to break down this waste and regenerate. That is where our project came in: how are ubiquitinated proteins—in other words, proteins that need to be disposed of—broken down in cardiomyocytes, and how does this affect metabolism and heart function?

What new insights were you able to gain?

To our great surprise, the heart is enormously resilient. Our work in a mouse model focused on the transcription factor Nfe2l1, a gene switch that controls the proteasome. It is particularly active in the heart; however, a young and healthy heart can tolerate its loss well. An important finding is that, with ageing, the heart becomes sensitive to the accumulation of protein waste, which restricts cardiomyocyte function.

How can your findings be translated into clinical application—where do you see the greatest translational potential?

In our project, we study both animal models and human cells. The loss of proteostasis—i.e. the way cells organise their protein balance—only occurs in advanced age. We are currently working on an application that stimulates the cells' recycling activity. It is still too early to define a therapeutic target, but the idea is to support the healing of the heart in patients with impaired cardiac function or to slow chronic disease markedly, using this approach.

Which questions would you like to pursue in your future research, and what role does the DZHK network play in this?

Prevention is the best medicine, and that is why we are interested in the molecular changes in the heart during exercise training. Compared with pathological changes, the positive effects of exercise are only understood superficially. There is enormous potential for new discoveries here. However, metabolic adaptation is complex and not confined to cardiomyocytes. Blood vessels, adipose tissue, and the immune system are important components that significantly influence cardiac function. The DZHK plays an important role for us here because its broad scientific and medical expertise enables us to answer questions we would never ask without it.



In February 2024, the mentoring cohort 2023/2024 came together for a workshop at the German Primate Center in Göttingen.

Mentoring

In June 2023, 14 mentees from the 10th cohort began the DZHK Mentoring Programme and attended the first workshop. Since 2023, the programme has been advertised on a two-year cycle. In the years between calls, the DZHK, together with the

other DZG, offers a supplementary continuing professional development programme with a focus on “Translational Research”, aimed at early-career scientists from the German Centres for Health Research (DZG) (see p. 35).

Collaborations

Young DZHK meets Young DGK

The successful cooperation series between Young DZHK and Young DGK (German Cardiac Society) continued in 2023 and 2024 with six events covering a broad range of topics. The meetings provided young scientists with an important platform for professional exchange and networking in key areas of cardiovascular research.

The combination of in-person and online formats, as well as strategic integration into established scientific congresses, has proven to be a successful concept for strengthening support for early-career researchers in cardiovascular research.

Support for early-career researchers within the DZG

Training and networking highly qualified early-career scientists is an important foundation for con-

ducting successful research in the future. For this reason, the DZG are particularly engaged in this area. The Early-Career Support Working Group organises an annual “DZG Science & Career Day”, which promotes the interdisciplinary network of clinicians and medical scientists across all DZG. In addition, the quarterly online “DZG Lunchtime Career Talks” highlight the diversity of career paths. For the first time, the DZG have been offering the “DZG Training Programme Translational Research” since 2024, linking workshops on translational health research (from the laboratory to the clinic) with a mentoring programme. A highlight was the joint appearance of all DZG at the GAIN annual conference—2023 in Boston and 2024 in San Francisco. Outside Europe, GAIN is the largest networking event for science careers in Germany (see p. 27).



Science Communication & Public Relations

Scientific exchange

DZHK Retreat 2023 & 2024

The 9th Young DZHK Retreat took place from 13 to 15 September 2023 as a one-off and, exceptionally, without the traditionally subsequent DZHK Retreat. The reason was the evaluation in 2023/24. At the meeting in Potsdam, around 100 early-career researchers took the opportunity to present their research work and network in a relaxed atmosphere. The keynote lectures were delivered by Monika Gladka (Amsterdam University Medical Center) and Carolin Lerchenmüller (Heidelberg University Hospital). The three-day event – one day longer than the previous year – gave the young researchers more time, in particular for networking.

In 2024, both formats once again took place as back-to-back events. From 11 to 13 September 2024, around 230 researchers from the DZHK net-



Joint dragon-boat trip during the Young DZHK Retreat 2023 in Potsdam: alongside intensive professional exchange, the retreat also provided space for personal interaction and networking.



work came together in Frankfurt am Main for the DZHK's annual scientific meeting. Almost 100 participants belonged to Young DZHK, the network for early-career researchers in the DZHK. The keynote lectures were given by Tomasz Guzik (University of Glasgow, UK) and Alexandra Lansky (Yale School of Medicine, New Haven, USA). Both are members of the DZHK Scientific Advisory Board (SAB). For the first time, there was a session entitled "From bench to industry", in which six DZHK researchers presented their biotechnology start-ups and discussed scientific spin-offs. The DZHK Retreat and the Young DZHK Retreat took place for the tenth time, and the anniversary was celebrated with around 180 guests aboard a restaurant boat.



In Frankfurt, the DZHK celebrated a double anniversary in 2024: the 10th DZHK Retreat and Young DZHK Retreat.



SCIENCE ON FRIDAY

Science on Friday

The webinar series “Science on Friday” has become an established format within the DZHK. On up to eight dates per year, the one-hour online format on a Friday afternoon provides a platform for scientific exchange and fosters networking within the DZHK. Promotion on social media has also led to steadily growing interest beyond the DZHK. The series, therefore, also increases the DZHK’s visibility within the scientific community.

In 2023 and 2024, the programme covered a broad range of topics:

- Vascular function, 6 December 2024, Chairs: Ingrid Fleming (Frankfurt), Gergana Dobрева (Heidelberg)
- Sex and gender in cardiovascular disease, 22 November 2024, Chairs: Daniel Andergassen (Munich), David M. Leistner (Frankfurt), Sophie Van Linthout (Berlin)
- Tissue engineering for repair of the cardiovascular system, 25 October 2024, Chairs: Alessandra Moretti (Munich), Wolfram-Hubertus Zimmermann (Göttingen)
- Immunothrombosis – presented by the Young DZHK, 3 May 2024, Chairs: Simone-Franziska Glaser (Frankfurt), Michael Molitor (Mainz)
- Metabolic control of cardiovascular function, 19 January 2024, Chairs: Gabriele G. Schiattarella (Berlin), Sofia Iris Bibli (Heidelberg/Mannheim)
- Neuro-cardiovascular interface, 24 November 2023, Chairs: Matthias Endres (Berlin), Sabine Steffens (Munich)
- Oligonucleotide therapeutics, 27 October 2023, Chairs: Rabea Hinkel (Göttingen), Stefan Engelhardt (Munich)
- SPECIAL Oral presentation winners of the Young DZHK Retreat 2023, 6 October 2023, Chairs: Sonia Singh (Hamburg), Simone-Franziska Glaser (Frankfurt)
- Digital cardiology, 22 September 2023, Chairs: Sandy Engelhardt (Heidelberg), Anja Hennemuth (Berlin)
- SPECIAL DZHK evaluation 2024 – current status and strategic planning, 30 June 2023, Executive Board
- Spatial transcriptomics in cardiovascular research – presented by the Young DZHK in collaboration with Lars Maegdefessel, 26 May 2023, Chairs: Simone-Franziska Glaser (Frankfurt), Lars Maegdefessel (Munich)
- Women in the DZHK: 2022 appointed PIs give insight into their research, part 2, 31 March 2023, Chairs: Stefanie Dimmeler (Frankfurt), Jeanette Erdmann† (Lübeck)
- Women in the DZHK: 2022 appointed PIs give insight into their research, part 1, 17 February 2023, Chairs: Stefanie Dimmeler (Frankfurt), Elisabeth Zeisberg (Göttingen)



Informal meet & greet of DZHK researchers on the fringes of the DGK annual conference in Mannheim.

Annual meetings of the German Cardiac Society (DGK)

At the 89th and 90th annual meetings of the German Cardiac Society (DGK), the DZHK contributed each time with its own DZHK session and a workshop for early-career researchers in cooperation

with the DGK (see p. 35). In addition, DZHK researchers came together for a Meet & Greet on the fringes of the meeting. The informal get-together with 50 to 70 participants has developed into a popular networking event since its launch in 2022.

Public relations

The DZHK's new look

In 2023, the DZHK initiated a comprehensive corporate design relaunch to modernise the research centre's visual identity. In addition to a facelift of the logo, the redesign included a modern typeface and an updated colour palette. The aim of the design changes was to improve readability and achieve more striking brand recognition for the DZHK.

Initial implementations were already carried out in 2024 with the relaunch of the website, the redesign of a patient brochure, and various graphics and promotional materials. The gradual implementation of the new corporate design will continue over the coming years: further revisions of communication materials and the development of new imagery are planned and are to be completed by 2026.

Website and social media

Compared with 2022, tracked user numbers for the entire website fell by 20% in 2023 to around 317,000 (2022: ~400,000). In 2024, user numbers fell again to around 225,000. The decline has two main causes: first, interest in COVID-related topics has decreased—topics that had largely driven the strong growth in visitors in previous years. Second, the tracking environment has become more restrictive. In addition, the website relaunch in mid-2024 caused temporary accessibility and indexing issues, resulting in below-average visitor numbers for a time.

In both reporting years, more than 90% of visitors reached the DZHK website via search engines (almost exclusively via Google). The pages on myocarditis, cardiac arrhythmias, and sudden cardiac death attracted particularly high interest, as did

the news on the trigger of the autoimmune disease APS. The proportion of visitors accessing the site via mobile devices fell slightly, to 68%, at the end of 2024.

The DZHK's social media presence also grew continuously during the reporting period. On Facebook, the number of fans rose to 3,195 by the end of 2024—an increase of around 15% compared with 2022 (2,772). On Instagram, the DZHK now has 2,119 followers, up 37% from 2022. On the business network LinkedIn, the DZHK had more than 3,800 followers at the end of 2024.

Together with other German Centers for Health Research (DZG), the DZHK organised a series of events during the reporting period and presented its research to a broad audience in the DZG research magazine SYNERGIE (see p. 27).

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Forschen für ein
gesundes Herz

Schnelleinstieg für

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Aktuelles

National Heart Alliance

The National Heart Alliance (NHA) is a broad coalition involving, alongside Germany's leading specialist societies in cardiology, the German Heart Foundation and the DZHK. Its overarching aim is to effectively reduce cardiovascular disease in Germany through improved prevention, earlier diagnosis, modern care, and faster transfer of research findings into practice. The NHA also seeks to have political impact by strengthening awareness, prioritisation, and funding in the field of cardiovascular health. Executive Board member Steffen Massberg represents the DZHK on the NHA Steering Committee.

One focus of the NHA is early-detection programmes that enable timely therapy for patients with cardiovascular disease. Since 2024, the NHA has supported the study "Vroni im Norden", a pilot project to detect familial hypercholesterolaemia (FH) in children. It builds on experience from the VRONI study launched in Bavaria in 2022 and the

Fr1dolin study in Lower Saxony. FH is a genetically determined disorder of cholesterol metabolism with severe consequences: affected individuals are far more likely to suffer strokes or myocardial infarctions at a young age or to develop aortic stenosis. Nevertheless, the condition is still hardly diagnosed in Germany. As part of the study, LDL cholesterol is routinely measured during U9 to J1 preventive health checks. If values are elevated, genetic testing follows; if suspicion is confirmed, drug therapy is initiated. The project could be pioneering for nationwide FH early detection and shows how systematic screening can prevent severe cardiovascular disease.

In addition, in 2024, the National Heart Alliance drafted a bill to strengthen heart health (Healthy Heart Act – GHG). It contains important proposals to improve early detection of risk factors and prevention in Germany.



Facts & Figures

Evaluation of the DZHK

Twelve years after its founding, the DZHK’s excellence was confirmed in 2024 through a comprehensive external evaluation. On 14 and 15 March 2024, representatives of the Federal Ministry of Research, Technology and Space (BMFTR, former Federal Ministry of Education and Research BMBF) and 13 national and international reviewers met with DZHK representatives in Berlin. The evaluation also involved the chairs of the internationally constituted Scientific Advisory Board (SAB).

The basis for the review was an extensive evaluation report submitted to the Federal Ministry of Research, Technology and Space (BMFTR, former Federal Ministry of Education and Research BMBF) in November 2023. The evaluation assessed the

structures, funding instruments, and scientific excellence established over more than a decade.

Building on the excellent assessment, the DZHK is now looking ahead to its future strategic orientation: with the momentum provided by the review, we have defined six focus topics that we will re-search together.

After 2014 (interim review), 2016 (review of all German Centers for Health Research by the German Science and Humanities Council), and 2020 (internal review), this was the fourth review of the DZHK. The assessment procedure envisaged by the Federal Ministry of Research, Technology and Space (BMFTR, former Federal Ministry of Education and Research BMBF) and the federal states is scheduled, as an internal review, for 2028.

Finance and staff

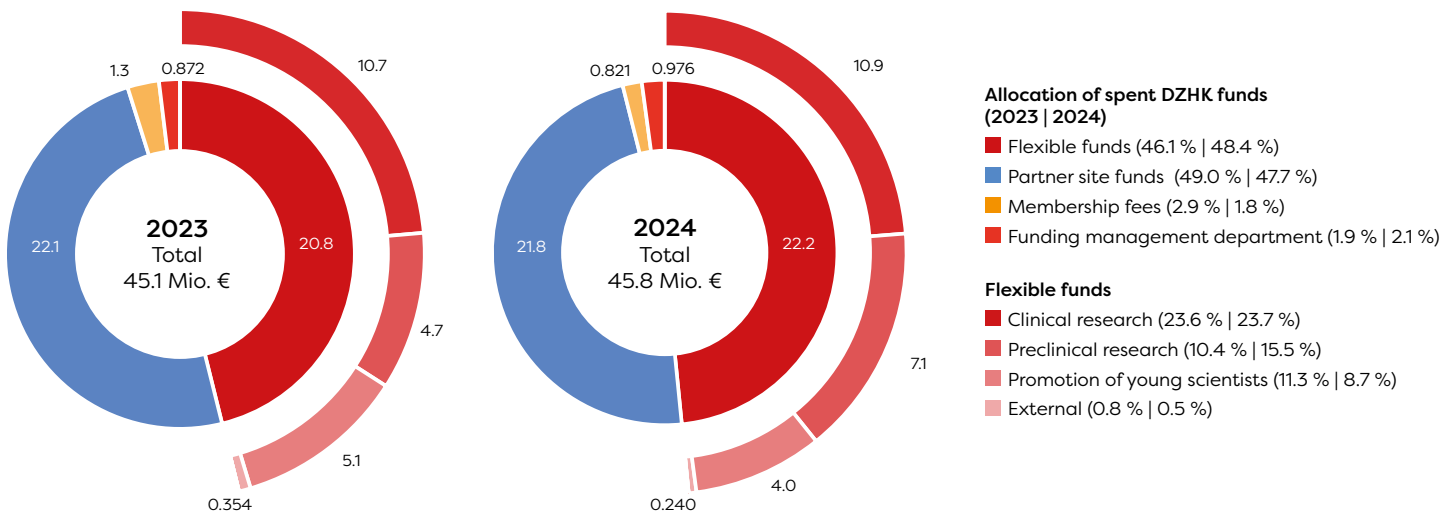
In 2024, the DZHK had around €46 million available as its full annual funding allocation in new funds (2023: €44.8 million). Around 90% of the funds come from the budget of the Federal Ministry of Research, Technology and Space (BMFTR, former Federal Ministry of Education and Research BMBF); around 10% come from the federal states in which the DZHK member institutions are located. In addition, €3.8 million in self-managed funds that had not been spent in 2023 were carried over into 2024.

The annual budget, therefore, totalled €49.8 million in 2024 (2023: €48.7 million, including a €3.9 million carry-over from 2022). Of the annual budget, €45.8 million was drawn down in 2024 (2023: €45.1 million).

Due to its funding structure, the DZHK was again subject in 2023/2024 to the qualified budgetary freeze stipulated in the federal budget laws for 2023 and 2024, amounting to 25% of operating expenditure.

The DZHK pursues the strategic objective of using around 50% of its budget as flexible funds. This target was reached for the first time in 2017—also in the reporting years 2023 and 2024, the DZHK used half of the funds spent to support research projects that had to succeed in competitive procedures. In 2024, flexible funds amounted to €22.2 million, corresponding to 48.4% (2023: €20.8 million, corresponding to 46.8%), and flowed primarily into excellence funding, Translational Research Projects, and clinical studies.

In million euros



Budget of the association management

The total budget of the association management of DZHK e. V. amounted to €1.43 million in 2024 (2023: €1.39 million). This budget was financed entirely through membership contributions of €1.36 million and a carry-over of €67,487 from 2021.

Expenditure amounted to €1.29 million (2023: €1.22 million). Other income amounted to approximately €14,773 (including reimbursements from health insurers). This resulted in a surplus of €153,817.

Staff

As of 31 December 2024, the DZHK funded 598 individuals (“heads”) (2023: 623). This corresponds to 409.03 full-time equivalents (2023: 391.42). This includes 19 staff in the association management department (2023: 19) and 14 staff in the funding management department (2023: 13).

A vibrant network

The DZHK is far more than a funding organisation: over 13 years, a vibrant cross-site network has developed, bringing together 2,353 scientists and research-active physicians across all career stages

	2023	2024
Number of employees (as of 31 December)	623	598
of whom male	203	203
of whom female	420	395
Number of scientists and clinicians	336	351
of whom male	156	151
of whom female	180	200
Including:		
DZHK professorships and junior group leaders	21	19
of whom male	17	16
of whom female	4	3
Senior scientists and postdocs	234	246
of whom male	106	101
of whom female	128	145
Doctoral researchers	81	86
of whom male	33	34
of whom female	48	52
Number of non-scientific staff and others (heads)	287*	247*
of whom male	47	52
of whom female	240	195

* excluding staff of DZHK association management and funding management department (FMM)

(as of 31 December 2024). They work across institutes and contribute perspectives from a range of disciplines—from molecular biology and bioinformatics to imaging and cardiac genetics—to joint cardiovascular research.

In 2024, the network included 677 researchers with DZHK researcher status (2023: 655) and 1,526 early-career researchers with Young DZHK status (2023: 1,450). Of particular importance for the research profile are the Principal Investigators (PIs), whose respective specialisms decisively shape the DZHK’s scientific direction. In 2024, this comprised 150 researchers (2023: 147).

New PIs and DZHK professorships

In 2023 and 2024, 26 PIs were newly appointed, 15 of whom are women. They bring outstanding expertise into the DZHK, including in AI-supported diagnostics, single-cell genomics, and the heart-lung axis. In total, the DZHK had 150 PIs at the end of the reporting period, with a female proportion of 33% (as of 31 December 2024). At least one third of PIs at the DZHK’s seven partner sites are intended to be women.

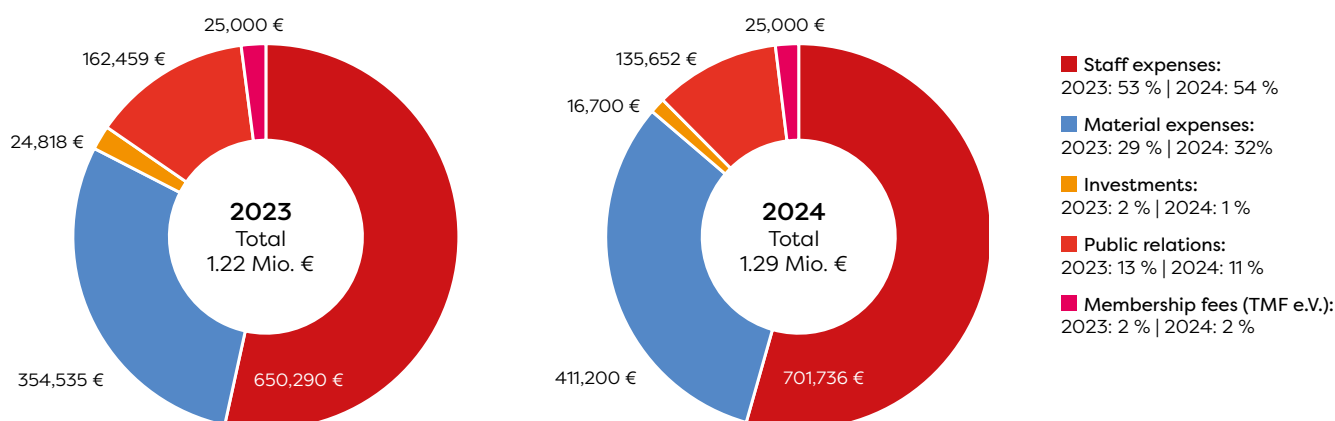
PIs provide important scientific impetus within the DZHK but are generally not funded directly by the DZHK. DZHK professorships differ: they are funded from partner site budgets of the DZHK and strongly shape the scientific profile of the respective partner site.

In Munich, **Donato Santovito** was appointed to the DZHK Professorship for Vascular Immunotherapy and conducts research at LMU Hospital. At the Hamburg/Kiel/Lübeck site, **Daniela Panáková** took up the DZHK Professorship for Cardiac Genetics of Congenital Structural Heart Disease; she conducts research at University Hospital Schleswig-Holstein, Kiel campus, and at the Faculty of Medicine at Kiel University. Her professorship is enabled by an earmarked donation from the association “Kinderherzen wollen leben” e. V. At the end of the reporting period, there were 15 DZHK professorships (as of 31 December 2024).

All DZHK professorships at:

<https://dzhk.de/en/research/scientific-groups/dzhk-professorships>

STAFF EXPENDITURES, MATERIAL EXPENSES AND INVESTMENTS OF THE ASSOCIATION MANAGEMENT



The first DZHK professorship in Germany was awarded in 2012 to Jeanette Erdmann[†] at the Lübeck partner site. Jeanette Erdmann died unexpectedly in 2023. She was an internationally recognised human geneticist with a DZHK professorship in cardiovascular genetics at the University of Lübeck. She was also founding director of the Institute for Cardiac Genetics there. Jeanette Erdmann accompanied the DZHK from the very beginning; her death is a great loss.

Obituary dated 11 July 2023 at <https://dzhk.de/newsroom>
 Nachruf auf DZHK-Professorin Jeanette Erdmann

Newly appointed PIs in the reporting period 2023-2024

Berlin

Daria Bunina (Max Delbrück Center)
Claudia Crocini (Deutsches Herzzentrum der Charité)
Frank Edelmann (Deutsches Herzzentrum der Charité)
Jana Grune (Deutsches Herzzentrum der Charité)
Anja Hennemuth (Deutsches Herzzentrum der Charité)
Jan Philipp Junker (Max Delbrück Center)
Claudia Langenberg (Deutsches Herzzentrum der Charité)
Gabriele G. Schiattarella (Deutsches Herzzentrum der Charité, Max Delbrück Center)
Sophie Van Linthout (Deutsches Herzzentrum der Charité)

Greifswald

Christian Templin (University Medicine Greifswald)

Hamburg/Kiel/Lübeck

Friederike Cuello (University Medical Center Hamburg-Eppendorf)
Maïke Frye (University Medical Center Hamburg-Eppendorf)
Kristina Kusche-Vihrog (University of Lübeck / UKSH, Lübeck campus)
Simon Pecha (University Medical Center Hamburg-Eppendorf)
Gregor Warnecke (Kiel University / UKSH, Kiel campus)

Munich

Dorothee Atzler (LMU Hospital; until 2023: University Hospital Munich)
Isabel Deisenhofer (TUM University Hospital German Heart Centre; until 07/2024: German Heart Centre Munich)
Konstantinos Rizas (LMU Hospital; until 2023: University Hospital Munich)
Hendrik Sager (TUM University Hospital German Heart Centre; until 07/2024: German Heart Centre Munich)
Donato Santovito (LMU Hospital; until 2023: University Hospital Munich)

Lower Saxony (until 06/2023: Göttingen)

Christine von Arnim (University Medical Center Göttingen)

Laura Zelarayán-Behrend (University Medical Center Göttingen)

Rhine-Main

Elisa Araldi (University Medical Center, Johannes Gutenberg University Mainz)

David Leistner (University Hospital Frankfurt)

Philipp Lurtz (University Medical Center, Johannes Gutenberg University Mainz)

Soni Pullamsetti (Max Planck Institute for Heart and Lung Research)

Science Management

At the seven DZHK partner sites and the Berlin administrative office, a team of 54 staff (as at 31 December 2024) ensures that excellent cardiovascular research can build on reliable structures. In association management, 19 staff covered the areas “Preclinical Research”, “Clinical Trials”, “Clinical Research Platform”, “Support for Early-Career Researchers”, “Scientific Exchange & Public Relations” (see the respective chapters), as well as strategic processes and committees. A further 21 staff worked in partner site management in Göttingen, Hamburg, Munich, and elsewhere. They coordinated site-specific activities there, including applications and reports, partner site retreats, and PI meetings.

In funding management (FMM), 14 staff ensured compliance checks under grants law for all DZHK funding applications, verification of use of funds, and financial controlling. In 2024, a total of 448 ongoing projects were funded (2023: 486). The cu-

mulative total number of DZHK projects to date is 2,237.

Grant Management System

In June 2024, the starting signal was given for the DZHK Grant Management System (GMS), paving the way for all DZHK funding applications to be prepared and submitted exclusively electronically—via a central platform. Reviews of applications have also been coordinated via the GMS since summer 2024. At launch, around 2,300 authorised users could activate their personal access. The GMS also facilitates statistical analyses, for example, of funding success rates or the ratio of clinician versus basic-science applicants.

With the Grant Management System, the DZHK aims to streamline the application process, improve data quality and traceability, and make communication between applicants and administrators more transparent.

Partner Sites

During the reporting period, DZHK research took place at 31 partner institutions across seven partner sites throughout Germany. Each partner site is represented in key committees by partner site spokespersons and is coordinated by a partner site management team.

Current overview of partner site spokespersons and partner site management:

<https://dzhk.de/en/the-dzhk/about-us/partner-sites>

Good ideas need good places: even excellent research cannot realise its full potential without the right environment. New or expanded research buildings provide the best conditions for medical progress. During the reporting period, four DZHK partner sites were planning, constructing, or opening buildings.



New building for the Deutsches Herzzentrum der Charité in Berlin: groundbreaking in April 2024

Across 17 floors and a usable area of around 30,000 m², the new DHZC building will comprise 20 state-of-the-art operating theatres, hybrid operating theatres and cardiac catheter laboratories, as well as 320 patient beds..

© wörner traxler richter planungsgesellschaft mbH



New building for the Imaging Innovation Center in Berlin: topping-out ceremony in July 2024

A new building with around 3,000 m² is being constructed at the Max Delbrück Center on the Berlin-Buch campus. Researchers in imaging will work under one roof with data and AI experts.

© Silvio Schwartz, Max Delbrück Center

New HI-TAC building in Mannheim: decision in June 2023

The six-storey new HI-TAC building in Mannheim was approved in June 2023. It is being built as part of the newly founded Helmholtz Institute for Translational AngioCardioScience (HI-TAC), which strengthens heart and vascular research between Berlin, Heidelberg and Mannheim. The research alliance is supported by the Max Delbrück Center in Berlin and Heidelberg University with its two medical faculties in Mannheim and Heidelberg.

New William B. Kannel Center for Community Medicine in Greifswald: topping-out ceremony in July 2024

The new centre at Greifswald University Medicine will further advance epidemiology, prevention, and health services research on a usable area of almost 7,500 m².



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New Heart & Brain Center in Göttingen: opened in August 2024

Since 2024, research groups from cardiovascular and neuroscience have been working under one roof at University Medical Center Göttingen in the newly built Heart & Brain Center (HBCG) on almost 3,500 m².



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■ DZHK PARTNER SITE **BERLIN**

Partner site spokesperson	From 07/2024: Michael Gotthardt, Max Delbrück Center Until 06/2024: Holger Gerhardt, Max Delbrück Center
Deputy spokespersons	Sabine Klaassen, Charité – Universitätsmedizin Berlin Frank Edelmann, Charité – Universitätsmedizin Berlin
Young DZHK spokespersons	From 05/2024: Anna Feuerstein, Charité – Universitätsmedizin Berlin Until 09/2023: Nadya Al-Wakeel-Marquard, Charité – Universitätsmedizin Berlin Djawid Hashemi, Charité – Universitätsmedizin Berlin
Partner site management	Friederike Krupp (partner site manager), Charité – Universitätsmedizin Berlin Mariam Abou-Saleh (Partner site administrator), Charité – Universitätsmedizin Berlin
Partner institutions	Charité – Universitätsmedizin Berlin (including the Deutsches Herzzentrum der Charité, DHZC) German Institute of Human Nutrition (DIfE) Max Delbrück Center for Molecular Medicine in the Helmholtz Association (Max Delbrück Center) Robert Koch Institute (RKI)

■ DZHK PARTNER SITE **GREIFSWALD**

Partner site spokesperson	Marcus Dörr, Greifswald University Medicine
Deputy spokespersons	Stephan B. Felix, Greifswald University Medicine Jens Fielitz, Greifswald University Medicine
Young DZHK spokespersons	Marcus Vollmer, Greifswald University Medicine
Partner site management	Stefan Groß (partner site manager), Greifswald University Medicine From 09/2024: Maria Wölk, University Medicine Greifswald Until 08/2024: Susanne Lange, Kornelia Sadewasser (partner site administrators), Greifswald University Medicine
Partner institutions	Greifswald University Medicine

■ DZHK PARTNER SITE **HAMBURG/KIEL/LÜBECK**

Partner site spokesperson	Stefan Blankenberg, University Medical Center Hamburg-Eppendorf
Deputy spokespersons	Derk Frank, Kiel University / UKSH, Kiel campus Inke König, University of Lübeck / UKSH, Lübeck campus
Young DZHK spokespersons	Sonia Singh, University Medical Center Hamburg-Eppendorf Tobias Reinberger, University of Lübeck / UKSH, Lübeck campus
Partner site management	Doreen Stimpel (partner site manager), University Medical Center Hamburg-Eppendorf From 01/2024: Nadine Piela (administrative assistant), University Medical Center Hamburg-Eppendorf
Partner institutions	University Medical Center Hamburg-Eppendorf Kiel University / UKSH, Kiel campus University of Lübeck / UKSH, Lübeck campus Asklepios Klinik St. Georg

■ DZHK PARTNER SITE **HEIDELBERG/MANNHEIM**

Partner site spokesperson	From 07/2024: Norbert Frey, Heidelberg University Hospital Until 06/2024: Johannes Backs, Heidelberg University Hospital
Deputy spokespersons	Jörg Heineke, University Medical Centre Mannheim From 07/2024: Johannes Backs, Heidelberg University Hospital Until 06/2024: Norbert Frey, Heidelberg University Hospital
Young DZHK spokespersons	Christina Mertens, Heidelberg University Hospital From 12/2023: Florian Constanty, Heidelberg University Hospital Until 12/2023: Marten von den Hoogenhof, Heidelberg University Hospital
Partner site management	Tanja Weis (partner site manager), Heidelberg University Hospital Denise Kampffmeyer (project manager), Heidelberg University Hospital Chiara Windsor (project manager), Heidelberg University Hospital From 12/2024: Kevin Schlegel (project coordinator finances), Heidelberg University Hospital Until 07/2024: Melissa Schank (project coordinator finances), Heidelberg University Hospital Sabine Lazdins and Vanessa Mohr (project assistants), Heidelberg University Hospital
Partner institutions	Heidelberg University Heidelberg University Hospital University Medical Center Mannheim German Cancer Research Center (DKFZ) European Molecular Biology Laboratory (EMBL)

■ DZHK PARTNER SITE **MUNICH**

Partner site spokesperson	Christian Weber, LMU Hospital
Deputy spokespersons	Stefan Engelhardt, LMU Hospital
Young DZHK spokespersons	Leo Nicolai, LMU Hospital From 07/2023: Laura Parma, LMU Hospital Until 06/2023: Anne Dueck, Technical University of Munich
Partner site management	Sandra Rauser (partner site manager), LMU Hospital
Partner institutions	Technical University of Munich TUM University Hospital LMU Munich LMU Hospital (until 2023: University Hospital Munich) TUM University Hospital German Heart Center (until 07/2024: German Heart Centre Munich) Helmholtz Munich – German Research Center for Environmental Health Max Planck Institute of Biochemistry

■ DZHK PARTNER SITE **LOWER SAXONY (until 06/2023: GÖTTINGEN)**

Partner site spokesperson	Wolfram-Hubertus Zimmermann, University Medical Center Göttingen
Deputy spokespersons	Rabea Hinkel, German Primate Center Elisabeth Zeisberg, University Medical Center Göttingen
Young DZHK spokespersons	From 10/2024: Laura Priesmeier, University Medical Center Göttingen Until 10/2024: Monika Sadlonova, University Medical Center Göttingen From 11/2023: Gesine Dittrich, University Medical Center Göttingen Until 06/2023: Matthias Mietsch, German Primate Center
Partner site management	Axel Kaul (partner site manager), University Medical Center Göttingen From 08/2024: Melanie Ohm (partner site coordinator, parental leave cover), University Medical Center Göttingen From 07/2023: Annika Brien (partner site coordinator), University Medical Center Göttingen Until 06/2023: Vanessa Kruse (partner site coordinator), University Medical Center Göttingen Sylvia Vann (administrative assistant), University Medical Center Göttingen Marie Ernst (support to administrative assistant), University Medical Center Göttingen
Partner institutions	Georg-August University of Göttingen University Medical Center Göttingen Max Planck Institute for Dynamics and Self-Organization Max Planck Institute for Multidisciplinary Sciences German Primate Center GmbH, Leibniz Institute for Primate Research

■ DZHK PARTNER SITE RHINE-MAIN

Partner site spokesperson	From 07/2024: Ralf Brandes, University Hospital Frankfurt Until 07/2024: Andreas Zeiher, University Hospital Frankfurt
Deputy spokespersons	From 07/2024: David M. Leistner, University Hospital Frankfurt Until 07/2024: Ralf Brandes, University Hospital Frankfurt Philipp Wild, University Medical Center of Johannes Gutenberg University Mainz
Young DZHK spokespersons	Simone-Franziska Glaser, University Hospital Frankfurt Michael Molitor, University Medical Center of Johannes Gutenberg University Mainz
Partner site management	From 04/2024: Sascha Schmitt (partner site manager), Goethe University Frankfurt Until 12/2023: Katharina Schulenburg (partner site manager), Goethe University Frankfurt Linda Sulzmann (administrative assistant), Goethe University Frankfurt
Partner institutions	Goethe University Frankfurt Max Planck Institute for Heart and Lung Research, Bad Nauheim Kerckhoff Clinic, Bad Nauheim University Medical Center of Johannes Gutenberg University Mainz

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Gender note:

In this publication, for reasons of readability and limited space, female forms are not always stated separately. Naturally, these terms then refer to both women and men.

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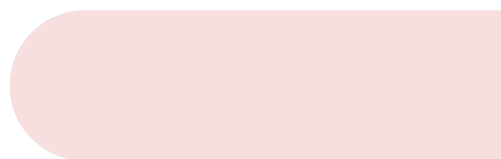
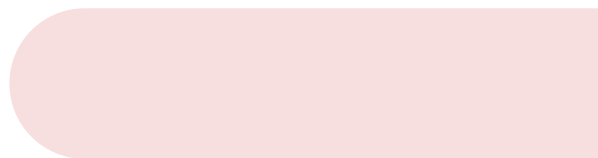
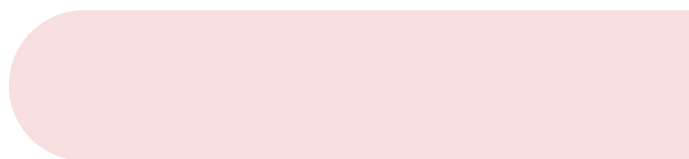
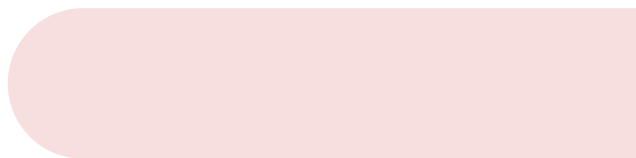
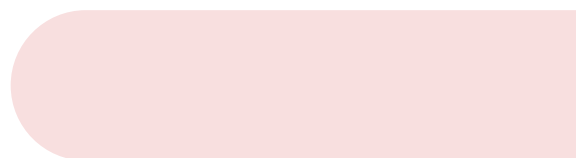


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