The BIH from A to Z
The mission of the Berlin Institute of Health at Charité – or the BIH, for short – is turning research into health. Our aim is to use scientific discoveries to improve human health. To that end we are developing new methods to better prevent diseases and to more precisely and effectively treat them.

This booklet lists, in alphabetical order, what we need to achieve these goals. From A to Z, it provides a good overview of the BIH, but of course not a complete one. If you would like to learn more about our institute, we invite you to take a look around our website at bihealth.org.

Your BIH Board of Directors
Christopher Baum and Michael Frieser
A for Academy

In the BIH Biomedical Innovation Academy (BIA), the BIH fosters the careers of young translational-ly minded physicians. They can devote 50 percent of their time during their residency training to research. Clinician scientists are thus the ones who drive translational medicine forward. As physicians, they know what patients are suffering from; and in the lab, they can investigate the underlying problem. The BIA funds 50 percent of their salary, while also providing mentoring and expertise.
B for Berlin

Berlin offers the ideal environment for the BIH. Whether it’s through Charité as Europe’s largest university hospital, through the Berlin University Alliance between the city’s three universities and the over 50 non-university research institutions making up the BR50 initiative, through the numerous healthcare enterprises ranging from small start-ups to international pharmaceutical companies, or through the proximity to health and research policymakers, the BIH is located in an ecosystem that ideally enables the translation of scientific discoveries into clinical practice.
C for Charité

Charité – Universitätsmedizin Berlin, as it is officially called, has been repeatedly voted the leading university hospital in Germany and one of the best of its kind worldwide. We are proud to be able to advance translational medicine here at Charité, which boasts more than 20,000 employees and experts in approximately 100 departments and institutes. As its third pillar, we bridge the gap between clinical care and research and teaching, ultimately turning research into health.
D for Diagnostics

Diagnosis precedes therapy. In other words, the more precisely we understand what is going wrong, the better we can help the patient. To this end BIH scientists are busy developing new microscopy methods, discovering new biomarkers in the blood, conducting genomic analyses and elucidating the totality of all proteins in a cell, the proteome. They peer into individual cells and consider the human being as a whole. The result is an effective personalized therapy that helps the patient return to good health.
E for Entrepreneur

In order to turn research into health, good ideas hatched in the lab must ultimately be transformed into a business model. This requires the scientist or physician to think like an entrepreneur. Since such knowledge is not acquired at medical school, Charité BIH Innovation, our joint technology transfer office, helps young inventors patent their ideas, find a licensee or start a company. With the help of SPARK-BIH and the BIH Digital Health Accelerator, several successful start-ups have already been able to bring their ideas to market and create new jobs.
F for FAIR Data

FAIR data are those that are Findable, Accessible, Interoperable and Reusable. These principles for research data are designed to ensure that other scientists can easily find and access the data, while also being able to combine them with their own data and reuse them in different contexts. This is the only way that data from laboratory studies, clinical observations and computational analyses can best contribute to finding the cause of diseases as well as new therapeutic options and preventive strategies.
G for Gene Therapy

Some diseases are caused by a single error in the genetic code. In cystic fibrosis, for example, a faulty segment of DNA results in an abnormally thick mucus in the lungs and intestines. Scientists at the BIH are working on a gene therapy to remedy this problem. They plan to replace the defective segment by inserting a «good« copy of the segment directly into the cells. To develop the therapy, scientists are producing lung organoids from the stem cells of patients. However, it will be some time before the technology is ready for use in humans.
H for Health

The Berlin Institute of Health at Charité has health in its name: Our goal is to bring scientific discoveries from the lab to clinical practice, so as to help sick people get well and make sure healthy people stay that way. We chose an English name to ensure that people everywhere understand what the BIH is all about. The researchers and clinical experts at the BIH work with colleagues from all over the world, because science and medicine are international – and because health is important to everyone.
Every day, huge amounts of data are generated in the healthcare system – by different sources like blood pressure readings, X-rays, fever curves and gene sequences. All these data tell us something about the health of the individual patient, but only when evaluated together do they provide a meaningful picture. Also, comparing data from different patients promises new insights. Germany’s Medical Informatics Initiative aims to better link health and research data to reap the greatest benefit while adhering to strict data protection standards. Computer scientists at the BIH are playing a leading role in these efforts.
J for Johanna Quandt Professorships

The letter J stands for our Johanna Quandt Professorships. Together with Stiftung Charité and the Private Excellence Initiative Johanna Quandt, the BIH has launched the BIH Johanna Quandt Professorships (W2 temporary professorships with a genuine tenure track). The professorships specifically target female scientists and are open to all topics in translational and systems medicine. Six outstanding female scientists have so far been awarded a Johanna Quandt Professorship at the BIH, thus helping them successfully establish themselves in the scientific community.
Clinical studies test the efficacy of new therapeutic procedures directly on patients and are thus an essential part of translational medicine. The joint Clinical Study Center provides support to clinical studies at the BIH and Charité, with the aim of accelerating clinical innovation and improving study quality. On the one hand it serves as a catalyst for clinical research and therapeutic development at the BIH and Charité, while at the same time creating the ecosystem necessary to translate innovative ideas into high-quality clinical studies including those needed to conduct the studies.
Machine Learning

Machine learning – the »artificial« buildup of knowledge from experience and the discovery of patterns in data – has become an important tool in biomedical research. Such »artificial intelligence« is often superior to human intelligence, especially when it involves analyzing large amounts of data. Today, for example, computer algorithms can examine X-rays for tumors faster and often more reliably than physicians. They can also detect anomalies in thousands of gene sequences in a matter of seconds, and develop recommendations for the best course of action during surgery. Yet they can do all this only if they have been »fed« with information about the best practices of human doctors and researchers beforehand.
Dedicated to studying the molecular mechanisms of health and disease, the Berlin-based Max Delbrück Center for Molecular Medicine in the Helmholtz Association is a Privileged Partner of the BIH and one of its founding institutions. Together, we are pursuing the goal of moving laboratory findings into clinical practice. As partners, we drive forward translational research projects on topics such as the role of blood vessels in various diseases, the influence on the immune system, and single cell technologies for personalized medicine.
N for Medical Needs

The demand for new therapies is determined not only by observations in everyday clinical practice. It is also important to ask citizens what they think are the greatest unmet medical needs facing society. We did just that in 2022 in a representative survey conducted in collaboration with Civey, a public opinion research institute. The survey found that the majority of the population believes cancer is the greatest threat, and that people are placing their hopes in gene and immunotherapies. At the BIH, scientists are researching new cancer therapies as well as novel approaches to personalized medicine.
O for Open Access

Research findings must be published so that other scientists can learn about them, understand them and review them. But most scientific journals charge hefty fees for subscriptions or for single copies of an article. Charité and the BIH support free and open access to scientific results and have signed the 2018 Berlin Declaration. This document states that scientific and scholarly information should be made comprehensively and freely accessible. Only in this way can research findings be quickly put into practice to benefit patients.
P for Patient Orientation

Every research project in translational medicine – the mission of the BIH – revolves around how it will benefit patients. Patients are also involved in the project planning from the very beginning so that we can better understand their needs. By patient and stakeholder engagement (PSE) in health research, we mean the active participation of patients. This does not refer to the inclusion of subjects in studies, but rather that the research process is planned and designed in consultation with patients.
The BIH QUEST Center, whose name stands for Quality, Ethics, Open Science and Translation, strives to increase the value of biomedical research. Its staff members develop new approaches to ensure that biomedical research is conducted in a trustworthy manner, provides useful results and meets ethical standards. Only robust research findings can be translated into clinical practice for the benefit of patients. To this end, it is also necessary to rethink current structures and initiate a cultural change in biomedicine.
Regenerative therapies aim to restore disrupted bodily functions. This is done by activating the body’s self-healing and repair processes or by introducing biological substitutes such as living cells. Scientists at the BIH Center for Regenerative Therapies (BCRT) are committed to using such novel treatment approaches to find effective and long-lasting treatments and cures for diseases of the immune, musculoskeletal and cardiovascular systems.
S for Stem Cells

Stem cells are the all-rounders of the cellular world. As the body’s backup reserve, they provide life-long replenishment when cells are lost – whether it occurs in the blood, in the mucous membranes or due to injury. Today, scientists can create stem cells by reprogramming normal skin cells, using them to grow all kinds of cells and even entire tissues, so-called organoids. These can be used to study diseases, and they can serve as replacement tissue for therapeutic purposes. The »single cell« research groups that the BIH has set up jointly with the Max Delbrück Center and Charité are, among other things, investigating stem cells.
T for Translation

At the BIH, we strive to translate scientific discoveries into new and improved therapies, diagnostic approaches, and prevention strategies. Conversely, our scientists also translate day-to-day clinical observations made by their medical colleagues into new research projects, such as when an existing therapy is not effective or has too many side effects. In other words, translation goes both ways: from bench to bedside and back to the bench. In each case, the goal is to keep people healthy or to help them get well again – in keeping with our mission of turning research into health.
U for Core Unit

The staff of the Core Units enable all scientists to conduct research using state-of-the-art technologies. They sequence genes, analyze proteins, perform microscopy procedures and store samples in the biobank. The Core Units offer the latest generation technologies as services, give advice on projects, let scientists use their equipment independently, and train new colleagues. They also provide support with their expertise, especially when it comes to evaluating the vast quantities of data that are generated in today’s research projects.
V for Validation

Before a new medical product receives approval, the inventor must prove that it can be produced with consistent quality in a scalable and reproducible way. This process, known as validation, is complex, lengthy and often expensive. So colleagues from Charité BIH Innovation, our joint technology transfer office, step in and provide support. The SPARK-BIH program helps inventors of innovative pharmaceuticals, diagnostics or medical devices at the BIH, the Max Delbrück Center and Charité, while the BIH Digital Health Accelerator offers guidance and advice on digital health solutions. This not only includes financial support, but also mentoring assistance that provides networking opportunities with industry partners and potential investors. This is how ideas become innovations.
Biomedical science is increasingly networked and international. This became particularly evident during the COVID pandemic, when new scientific findings were rapidly posted to preprint servers to give the international scientific community immediate access to them. That's because highly complex issues require interaction between different disciplines, facilities, and resources. So, BIH scientists collaborate with colleagues across Berlin, Germany, Europe and beyond. After all, health is important everywhere around the world.
XY for Excellence in Gender-Specific Medicine

Women and men get sick differently. They suffer from different diseases, react differently to drugs and often show different symptoms. Despite this fact, the majority of animals used in laboratory studies are male, while clinical studies are largely composed of male subjects. As a result, many drugs have more and different side effects in women, and the symptoms women experience are often not interpreted correctly. To help remedy this situation, the BIH presents the Excellence Award for Sex and Gender Aspects in Health Research every other year. It honors research projects that take into account differences between the sexes.
Can cells be used to heal people? Yes, they can – even in different fields of medicine. In cancer immunotherapy, for example, patients are treated with their own immune cells that have been genetically engineered to attack the tumor. Other immune cells can help transplant recipients avoid rejecting the new organ. Stem cells, on the other hand, can help people suffering from osteoarthritis to preserve the damaged joint, or they can be grown into replacement tissues to treat diseases like liver disorders. These are just some of the exciting projects that BIH scientists are working on.
Turning Research into Health.