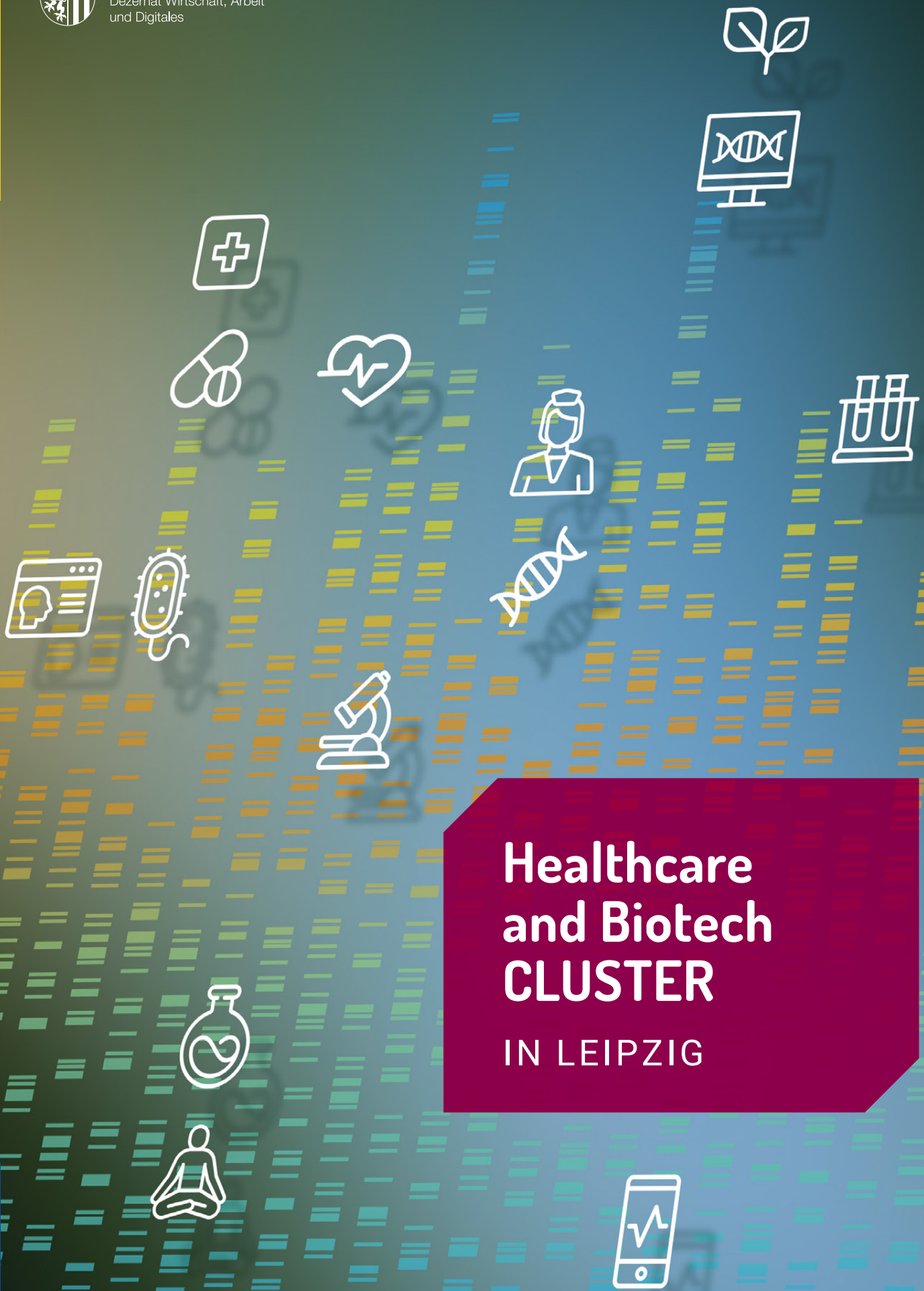
Stadt Leipzig
Dezernat Wirtschaft, Arbeit
und Digitales



Healthcare and Biotech CLUSTER

IN LEIPZIG

LEIPZIG: CENTER OF INNOVATION

Discovering opportunities. Shaping the future.

CONTENTS

Welcome to Leipzig. Explore and experience one of Germany's most dynamic cities. Leipzig is located at the heart of a metropolitan region with more than 2.25 million residents and has firmly established itself as an important location for commerce, science, and culture.

Growing City

Leipzig has cemented its position as Saxony's largest city and one of the eight largest cities in Germany. The city's population has been growing consistently since the beginning of the 21st century. Leipzig's successful growth has made it a particular draw for young families, who are enticed by its modern workplaces and its attractive living and cultural spaces.

A recent study by the Berlin Institute for Population and Development classifies Leipzig as the fastest-growing city in Germany. Leipzig's population has the potential to increase by 16 percent by the year 2035; no other major German city is growing as rapidly.

Attractive Job Market

Leipzig is one of the most popular college towns in Germany – students come to learn, to live, and to stay. The city's university and various colleges all have an excellent reputation; around 40,000 students attend these institutions to lay the foundation for their future careers. For companies, this creative environment offers ideal opportunities to attract young academic talent at an early stage. Specialized professionals and skilled workers contribute equally to the expansion in employment in Leipzig.

Employees subject to social insurance contributions

+44 %

2005
192,033

2019
273,527

40,000
students

attend the city's university and colleges

Residents

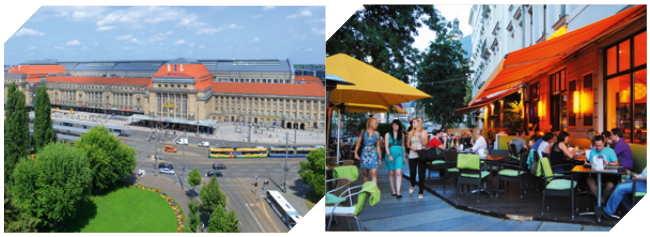
+23 %

2005
489,335

2019
601,668

Attractive Quality of Life

Companies, residents, and visitors find that Leipzig offers the quality of life they expect from an international, cosmopolitan city. Living, sightseeing, shopping, dining, culture, entertainment, and recreation: Leipzig has it all. Its excellent quality of life and unparalleled charm make it one of Europe's most attractive cities.

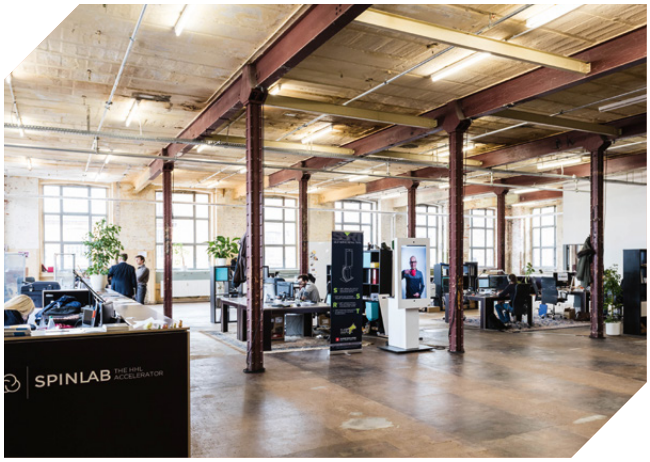


Advantageous Location

A network of rapid transportation connections – road, rail, and air – crisscrosses the heart of Europe in Leipzig. Direct transportation lines lead to all major domestic, European, and global markets and economic centers, which are directly accessible 24 hours a day, 7 days a week – thanks in large part to *Leipzig/Halle Airport*, which has become Germany's second-largest cargo hub.

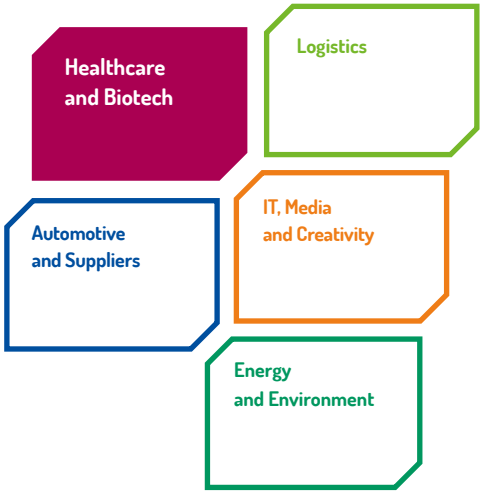
Fertile Ground for Start-Ups

Leipzig offers ideal conditions to provide rapid market access for innovative products and ideas. The city is where good business sense meets a creative atmosphere, and word got around: Within just a few short years, an inspiring start-up scene sprang up here, rooted in bold beginnings. New ideas and technologies flourish in Leipzig, and there is a powerful drive behind these burgeoning start-ups. They include successful business initiatives like *"SpinLab – The HHL Accelerator,"* the *"Social Impact Lab,"* numerous incubators and about 20 co-working spaces covering an impressive 50,000 square meters, as well as innovative event formats and competitions.



Ambitious Cluster Policy

Leipzig is focused on the targeted networking of science and business in five promising, future-proof clusters. The city's cluster policy ramps up cooperation between companies, accelerators, business associations and networks and the city's university, colleges, and renowned research institutions. It unlocks potential for innovation, enhances competitiveness over the long term, and helps Leipzig's innovators boost their productivity, sales dynamics, and growth potential.



Top Competitive Rankings

#1 most attractive city center in Germany

Leipzig took the top spot out of 121 cities in a study by IFH Köln.

2nd place in City Ranking for Sustainability

In terms of population and employment growth, Leipzig is number two out of the 30 largest German cities.

(Source: Hamburg Institute of International Economics (HWWI) and Berenberg Bank, 11/2019)

TOP-10 LOCATION IN EUROPE

Leipzig was named a top location in the category "Skilled Professionals and Quality of Life." The city moved up to seventh place in this category in the "European Cities of the Future" ranking.

(Source: Financial Times fDi Magazine, 2020/21)

DIGITAL HUB AND DISRUPTIVE INNOVATION

Leipzig is – alongside Dresden – one of Germany's twelve centers of digital innovation. Additionally, Leipzig has been the headquarters of the Federal Agency for Disruptive Innovation, SPRIN-D, since October 2019.

Most Satisfied Office Tenants

Leipzig earned top marks for its portfolio of office space, as well as for the costs and architecture of the buildings.

(Source: Study by SEB Asset Management)

European City of the Year 2019

The Academy of Urbanism (London) named Leipzig its European City of the Year 2019 in recognition of its dedication to sustainable urban development.

HEALTHCARE AND BIOTECH CLUSTER

Creating Healthy Growth

Healthcare and biotech are the most important growth sectors in Leipzig. The cluster brings together a broad, diverse spectrum of highly capable stakeholders in business and science and provides ideal conditions to allow companies and investors to grow and reach their full potential.

With 25 internationally renowned research institutes and clinics and approximately 2,600 companies, the cluster covers the entire value chain: from research and development to production and marketing, all the way to logistics and service.

In Leipzig, research is conducted on key technologies in the healthcare, biotech, and medical technology industries, and these technologies are developed into market-ready products that are distributed around the globe. The focus here is on personalized medicine and diagnostics, robotics and lab automation, and biomedicine. Leipzig is also a global leader in the development, production, and logistics of innovative cell therapies.

At the BioCity Campus, start-ups and established companies alike will find attractive spaces and facilities in an innovative environment near the city center. Support from the city and a range of industry and start-up networks ensure that companies can flourish unimpeded. Leipzig University and two other colleges educate the next generation of academics, providing them with consistently high-quality practical training.

45,544
people are employed in this cluster.

In that sense, the Leipzig economic region offers companies of all sizes an immense degree of potential for research and development.

MILESTONES
in the development of the Healthcare and Biotech Cluster

2000
Biotechnology Offensive Saxony

2003
Inauguration of BIO CITY LEIPZIG as the center of the BioCity Campus

2004
Founding of the Max Planck Institute for Human Cognitive and Brain Sciences

2005
Founding of the Fraunhofer Institute for Cell Therapy and Immunology (IZI)

Founding of the Innovation Center Computer Assisted Surgery (ICCAS)

2008
Founding of the German Biomass Research Center (DBFZ)

2009
Start of the LIFE Health Study with the establishment of the biobank

Founding of the industry association biosaxony e. V.

10 GOOD REASONS TO CHOOSE LEIPZIG

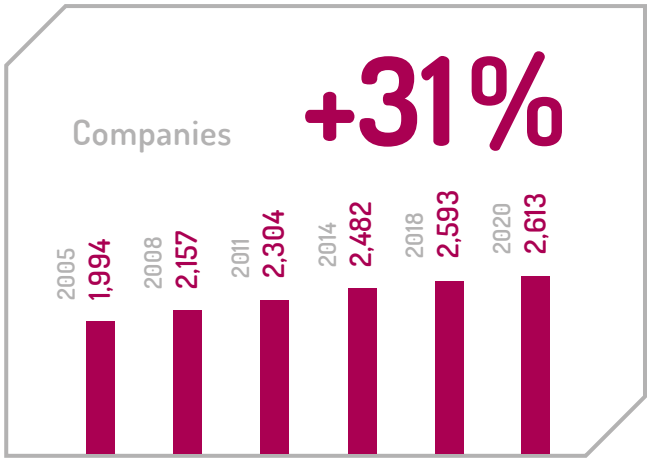
Transfer-Oriented Research Institutes: 25 cooperating institutes with excellent international reputations facilitate the transfer of knowledge and generate synergy in research and development.

First-Rate Clinical Research: From the *university hospital* to the *cardiac center*, Leipzig's hospitals and clinics conduct research into an extensive range of medical conditions.

Attractive lab/office spaces and land for development: The *BioCity Campus* features exclusive spaces for companies in the life sciences industry – start-ups, small and medium-sized companies, and major corporations alike.

Highly Qualified Professionals and Specialists: One university, two colleges, and an extensive healthcare sector ensure a consistent supply of qualified young talent along the entire value chain.

Attractive Support Packages for SMEs: A broad spectrum of local and regional funding programs provide targeted financial support for small and medium-sized companies.



Active Life Sciences Start-Up Scene: Leipzig offers ideal conditions for start-ups and investors to cultivate their innovative projects, supported by strong networks and successful start-up initiatives.

Location for Future Medicine: An innovative spirit and extensive expertise – Leipzig provides companies with the ideal conditions to revolutionize medicine with AI, big data, and similar technologies.

Center for European Bio-Logistics: Located at the heart of Europe, Leipzig is a cutting-edge cargo hub that guarantees a smooth, rapid delivery chain 24/7, particularly for personalized cell therapy and diagnostic services.

Excellent Location for Clinical Studies: Thanks to its highly modern research infrastructure, Leipzig is an internationally renowned location for both interventional and observational clinical studies.

International Trade Fair and Conference Location: From research conferences and symposia to industry trade fairs – Leipzig underscores its significance in the healthcare sector with high-profile, internationally renowned events.

2010
Founding of the integrated research and treatment center IFB Adiposity Diseases

Inauguration of the BioCube Leipzig

Founding of the Leipzig University Cancer Center (UCCL)

2015
Founding of the Leipzig Heart Institute (LHI)

2017
Organization and hosting of German Biotechnology Days

2018
Launch of the program "Smart Medical Information Technology for Health Care" (SMITH)

Founding of the Helmholtz Institute for Metabolic, Obesity and Vascular Research (HI-MAG)

2019
Creation of the investment fund "Smart City Ventures" for healthcare start-ups

Launch of the medical technology accelerator program "The Medical Forge"

HEALTHCARE

Innovation for Patients

Care, research, product development: Leipzig is a top location for the healthcare and life sciences sectors in central Germany. This sub-industry is represented by approximately 500 companies generating a total of 1.1 billion euros in annual sales revenue.

The healthcare region of Leipzig boasts numerous renowned facilities offering inpatient and outpatient medical care in areas such as acute treatment, rehabilitation, and long-term care. Eight hospitals with more than 4,000 beds, over 1,400 doctors, and approximately 7,400 additional staff ensure the highest standard of clinical care for patients.

Additionally, cutting-edge research institutions such as the *Leipzig Heart Institute* and the *Innovation Center Computer Assisted Surgery (ICCAS)* contribute to the city's prominence in the field. As internationally renowned drivers of innovation and sought-after partners, they provide companies with ideal conditions for developing, testing, and marketing innovative products and solutions.

The innovative trends in the industry are also reflected in the various stakeholders' fields of specialization. For companies, research centers, clinics, and networks, issues such as e-health, big data, and digital networking play a vital role in the Leipzig healthcare sector.

43,054
employees subject to social insurance contributions

79 %
share of sales revenue in the Healthcare and Biotechnology Cluster

500 companies

STAKEHOLDERS

LEIPZIG HEART INSTITUTE

A Heart for High-Performance Medicine

The Leipzig Heart Institute (LHI) is a cutting-edge research center. It works in close interdisciplinary cooperation with the *Leipzig Heart Center* to conduct high-caliber research in the field of cardiovascular medicine.

With ultra-modern operating theaters, affiliated research facilities and specialized laboratories, and microscopy rooms, the Leipzig Heart Institute offers an ideal research environment for vital, high-quality scientific work.

The focus of the institute's research is on the development of new therapies in cardiovascular surgery, interventional cardiology, and electrophysiology, as well as their clinical applications.

The LHI's latest groundbreaking research projects include the internationally renowned CULPRIT-SHOCK study, which revolutionized the treatment of heart attacks around the world, as well as the registry study SAFER, which produced the most comprehensive collection of data on all atrial fibrillation ablations in Germany.

www.leipzig-heart.de

Prof. Dr. Dr. med. Andreas Bollmann
Director of Leipzig Heart Digital

3 QUESTIONS FOR
Director Prof. Dr. Dr. med. Andreas Bollmann

Prof. Bollmann, what is Leipzig Heart Digital's mission?

Research is becoming increasingly digital – and cardiovascular medicine is no exception. We see enormous potential in this shift, and we want to use it to improve medical care for the population, whether by digitalizing clinical processes or collecting, processing, and analyzing patient data.

How will that process look in detail?

Our fields of business span from big data to mobile health: We conduct research to improve patient care based on larger collections of data, and we work with regional partners to develop high-quality apps and wearables that facilitate mobile medical care for patients. We also believe that cooperation with our local and national partners is a very important part of this process.

Who are these partners?

Locally, we work with *Leipzig University*, the *biosaxony* cluster network, and the start-up *accelerator SpinLab*. But we also have a strong national network, including the *Helios hospital* group, the *Health Innovation Hub* operated by the Federal Ministry of Health, and *InGef* in Berlin. In addition, we work with a range of different national and international pharmaceutical and medical technology companies.

IRDC

Support for Surgeries

Making medicine more professional, efficient, and better – that is the goal of the International Reference and Development Center for Surgical Technology (or IRDC for short). Founded in 2008, the Leipzig-based company currently employs 11 people who develop systems to automate medical and surgical treatments. Its high-tech products, such as General Operation Manager® and Surgical Procedure Manager®, are in high demand and are distributed by medical technology companies around the globe.

In addition to product development, IRDC is dedicated to fostering knowledge transfer and demonstrating high-level practical applications. Every year, more than 500 surgeons, surgical nurses, and technicians participate in the *IRDC Academy* – the training segment of the company – to learn the latest methods and prepare to apply them in integrated operating theaters. The IRDC has firmly and successfully established itself in the field, as evidenced in particular by the prestigious awards it has received, such as “Ort der Ideen 2012” (2012 Place of Ideas) and the “Deutsche KlinikAward 2019” (2019 German Hospital Award) in the category “Marketing.”

www.irdc-leipzig.de

ICCAS

Smart IT Solution for Biomedicine

The Innovation Center for Computer Assisted Surgery (ICCAS) is one of the most important interdisciplinary research institutes for biomedical technology in Germany. It was founded in 2005 as part of the “Entrepreneurial Regions” funding initiative launched by the *Federal Ministry of Education and Research (BMBF)* and today employs more than 80 people.

As a sought-after partner for small and medium-sized companies, the ICCAS bridges the gap between clinical requirements and the commercial implementation of groundbreaking biomedical technologies. The institute’s objective is to develop solutions to improve diagnosis, decisions on therapy, surgical interventions, and non-invasive therapies. Its research also covers artificial intelligence, robotics, and 5G communication technologies.

The ICCAS has already achieved great things in a number of areas. One milestone is the successful spin-off of *Phacon GmbH*, which offers surgical training models around the world. Another is the development of the “oncoflow” information system, one of the first systems that allows oncologists, radiologists, and surgeons to collaborate on interdisciplinary planning of tumor treatments. This system earned the ICCAS the “Innovationspreis-IT” (IT Innovation Award) Best of 2014 in the category Health IT.

www.iccas.de

GESUNDHEITSFOREN LEIPZIG

Software Developers and Networkers

"Gesundheitsforen Leipzig" (Leipzig Health Forums) was founded in 2009 as a spin-off of *Leipzig University*. Today, it is a sought-after specialized provider of analytical software. The company's interdisciplinary teams develop and implement practical, future-proof solutions for the management of health insurance companies, hospitals, and pharmaceutical companies.

The Leipzig-based company is also active as a clinical research organization (CRO). It primarily manages clinical studies, from initial planning to execution and assessment, including project and data management. A milestone in Gesundheitsforen Leipzig's history was when the company was commissioned with implementing the transplant registry, which was enacted by law in 2016 and is intended to improve care in the transplant sector over the long term.

With its extensive network, Gesundheitsforen Leipzig is also a highly sought-after partner among the various stakeholders in the healthcare sector. Its numerous events on a range of specific subjects provide an ideal platform for discussing the latest developments and sharing expertise.

www.gesundheitsforen.net

WIG2 INSTITUT

Analytics and Research in Healthcare

The WIG2 Institute specializes in linking and analyzing health data and using those insights to create transparency in the healthcare system. Founded in Leipzig in 2014, this independent research institute focuses on conducting healthcare system research and carrying out medical economic projects based on electronically available data – despite the fact that the volumes of data are enormous and come from numerous different sources.

As a scientific service provider, the WIG2 Institute collaborates with a broad spectrum of project partners – from government institutions on the state and federal level to health insurance companies, established healthcare companies, and even start-ups. The insights gained from research projects can make financing mechanisms in healthcare more efficient, prove the benefits of new healthcare technologies, or evaluate models of care, for instance.

Alongside a range of specialized events, the institute also organizes regular innovative event formats and launched the *"Zentrum für Innovation und Netzwerk im Gesundheitswesen"* (Center for Innovation and Networks in Healthcare, or ZING for short).

www.wig2.de

> "Leipzig has grown into a highly innovative region – and that holds true for the local healthcare and medical research sector, as well."
>
> **Dr. Dennis Häckl**
> CEO

BIOTECHNOLOGY

Always an Innovative Step Ahead

Biotechnology is one of the most important drivers of innovation in the Leipzig healthcare industry. Thanks to its highly dynamic start-up sector, the industry is in a state of constant growth. More than 40 percent of the new companies founded in the Leipzig biotechnology and medical technology sector are ten years old or younger.

With approximately 60 biotech companies, Leipzig also currently has the highest number of these companies in central Germany. Renowned research institutions like the *Fraunhofer Institute for Cell Therapy and Immunology (IZI)* and the *Helmholtz Center for Environmental Research (UFZ)* help to boost the biotech industry.

Focus on Biomedicine

The focus is on biomedicine: Approximately 80 percent of companies and 50 percent of research institutions work in what is known as “red” biotechnology, where the primary focus is on cell therapy. In fact, two of the eight cell therapies approved for use in Germany were developed in Leipzig.

Leading Research Landscape

When it comes to research, institutes and companies alike focus on studying diseases like cancer and related diagnostic procedures. Facilities such as the *University Cancer Center Leipzig (UCCL)* boast cutting-edge infrastructure in this area. However, newer companies also place a high emphasis on research. In 2017, for example, more than 30 percent of the companies in the industry invested more than 30 percent of their sales revenue into research and development.

18 %

18% share of sales revenue in the Healthcare and Biotech Cluster

1,003

employees subject to social insurance contributions

Broad Spectrum

Beyond biomedicine, other biotech sectors in Leipzig also offer companies immense potential for growth. The *German Biomass Research Center (DBFZ),* the *Helmholtz Center for Environmental Research (UFZ),* and the *German Center for Integrative Biodiversity Research (iDiv)* are excellent partners with exceptional expertise, research capability, and networks in "brown" biotechnology (environment). The same holds true for *c-LEcta GmbH*, an internationally successful representative of "white" biotechnology (industry).

Ideal Conditions

Additionally, companies and investors will find ideal conditions for founding new ventures or establishing branch offices in Leipzig's biotech sector. Alongside a strong network of businesses and scientific institutions and a range of certification institutions in the area, Leipzig's *BioCity Campus* offers modern laboratory and office spaces and land for development.

Excellent Prospects

According to a recent regional development study by KPMG*, the biotech companies surveyed were optimistic about the future. Seventy-eight percent of them expect to increase their workforce by 2025, and three quarters are planning investments totaling 36 million euros for the same time period.

Over 60
companies

* Study on the development of the Leipzig region in the healthcare, biotech, and medical technology sectors, December 2019.

FRAUNHOFER IZI

Applied Biomedical Research

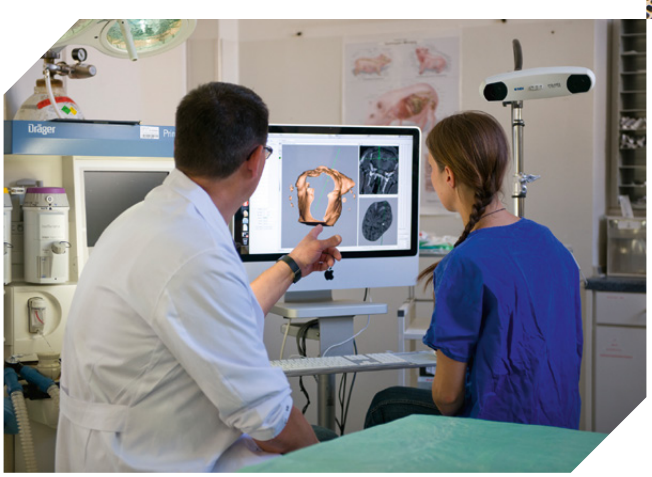
> Medicine and research have long played an essential role in Leipzig. The Fraunhofer IZI complements the sector's existing portfolio, particularly in the area of applied biomedical research.

Prof. Dr. Dr. Ulrike Köhl
Institute Director

The Fraunhofer Institute for Cell Therapy and Immunology (IZI) investigates and develops solutions to specialized problems at the interfaces of medicine, life sciences, and engineering. Founded in Leipzig in 2005, the institute focuses on conducting contract research; its clients include companies, hospitals, diagnostic laboratories, and research institutes operating in the fields of biotechnology, pharmaceuticals and medical engineering.

The Cell and Gene Therapy, Drugs, and Diagnostics and Biosystems Engineering business units at Fraunhofer IZI develop, optimize, and validate methods, materials, and products for these sectors. The focus of its research lies in immunological oncology, infectious disease, and other immunological diseases.

www.izi.fraunhofer.de



CO.DON

3 QUESTIONS FOR
Executive Member of the Board Tilmann Bur

Tilmann Bur
Executive Member of the Board

Mr. Bur, you are the Executive Member of the Board at CO.DON AG. What is your company's mission?

CO.DON AG is one of the world's leading commercial manufacturers of natural, minimally invasive cell and tissue transplants for medical applications. We develop, produce, and distribute autologous cell therapies for repairing damage to cartilage in joints after traumatic or degenerative defects. Our company currently employs around 100 people working at our headquarters in Berlin, our production site in Teltow, Brandenburg, and our branches in Switzerland, the Netherlands, and the United Kingdom. We plan to expand to further markets in the near future.

In November 2020, we will be relocating our headquarters to Leipzig, where a cutting-edge new production facility with equipment from the Italian COMECER Group is currently in development. The facility was planned, implemented, and delivered in December 2018; in January 2020, we were granted authorization to manufacture our own products and contract orders by the senior federal authority, the *Paul Ehrlich Institute (PEI)* and the *State Administration of Saxony.*

What results do you expect from your investment in Leipzig?

In Leipzig, we and our partners set up one of the world's largest and most modern facilities for the production of human cells on an industrial scale. In the first stage of expansion, it will manufacture a production volume of approximately 4,500 cell transplants annually. As part of our efforts to boost production capacity, we plan to relocate our primary production facility to Leipzig. This new location will take on the role of a contract manufacturing organization (CMO) alongside its primary focus on manufacturing our own product. A CMO is a production facility that cultivates cells for other companies. The goal is to manufacture cell-based intermediate products in high-volume commercial production as well as in small batches for applications such as clinical research.

What does your product portfolio currently offer?

We produce an advanced therapy medicinal product (or ATMP for short), which is a personalized cell therapy product created

from the patient's own cells and used for the minimally invasive treatment of damaged cartilage in the knee joint. It only contains the patient's own cartilage cells; production is entirely autologous, meaning that the products are produced without pool plasma or animal-based carrier substances. Our product received EU-wide approval in July 2017.

www.codon.de

C-LECTA

Recipe for Success: Enzyme Engineering

c-LEcta is a fully integrated industrial biotechnology company founded in 2004 as a spin-off of *Leipzig University.* Since then, the company has grown into a leading provider of high-caliber biotech products for industrial applications, primarily in the food-and-beverage and pharmaceutical industries.

c-LEcta's core competency lies in enzyme and microbial strain engineering; this involves producing high-quality bioengineering tools from enzymes and microorganisms and developing them into cost-effective, sustainable production processes. c-LEcta's bioengineering expertise is in high demand: The company supplies its diverse portfolio of products to more than 200 customers around the world. Its export ratio is more than 80 percent.

www.c-lecta.com

3 QUESTIONS FOR
CEO Dr. Marc Struhalla

Dr. Struhalla, what makes c-LEcta so successful?

Our biotech products allow our customers to tap new markets and to better penetrate the markets in which they already have a presence – regardless of whether the products were developed in-house or in close cooperation with the industry. The decisive factors here are cutting-edge expertise from highly trained employees, and regular dialog with the rest of the industry to exchange experiences. Thanks to the Leipzig Biotech Cluster, we have both of those factors right here in the city.

Where do you still see potential for growth?

We want c-LEcta to grow into a global leader in providing innovative biotech products in the food-and-beverage and pharmaceutical industries, while maintaining our focus on human health and sustainable industrial production.

c-LEcta has close ties to Leipzig. Why is that?

We are a spin-off of *Leipzig University*, so we have had deep roots in the region from the very beginning. Leipzig offers a range of important benefits: The quality of life, recreational opportunities, and international flair make it much easier for us to attract experienced talent. And thanks to the city's good funding programs, we feel like we are in very good hands here in Leipzig.

Dr. Marc Struhalla
CEO

HAEMA

Care is in Their Blood

Haema is the largest independent blood donation service in Germany. The company operates in many regions throughout the country, providing a wide range of blood products and delivering comprehensive services in transfusion medicine.

With over one million blood and plasma donations annually, Haema makes a major contribution to supplying Germany with blood products. The donations are used to produce two types of blood products: products in finished dosage form for use in patient care and blood plasma as a raw material for the pharmaceutical industry, and products used in manufacturing vital medicinal compounds.

Haema AG employs more than 1,200 people at its headquarters in Leipzig and at 41 donation centers in Bavaria, Berlin, Brandenburg, Mecklenburg-Western Pomerania, North Rhine-Westphalia, Saxony, Saxony-Anhalt, Schleswig-Holstein, and Thuringia.

www.haema.de

VITA 34

Keeper of the Stem Cells

Vita 34 AG is a pioneer among private European cord blood banks; it is also the largest stem cell bank in the German-speaking world and specializes in producing stem cell transplants from cord blood. The Leipzig-based company was founded in 1997, and today, it is a full-service provider. Its portfolio ranges from the extraction, preparation, and cryo-preservation of blood and tissue containing stem cells to the professional dispensation of stem cell transplants.

Currently, the company stores more than 230,000 stem cell deposits from children in Germany and other European countries at its facility in Leipzig. Stem cell deposits previously made at Vita 34 have already been accessed 42 times for use in treatments, isolated cases, and studies.

Through its subsidiaries and sales partners, the company operates in more than 20 countries in Europe and around the globe. From its headquarters in Leipzig, Vita 34 and its partners work with more than 2,000 maternity facilities and over 15,000 gynecologists.

www.vita34.de

MEDICAL TECHNOLOGY

Future-Proof and Dynamic

In the Healthcare and Biotech Cluster, 42 percent of the Leipzig-based companies and 68 percent of the research institutions are active in medical technology – a key technology in Germany. The face of the industry is shaped by small and medium-sized companies.

A strong network of partners in science, research, and business come together with regional users in Leipzig's medical technology sector. This relationship blossoms into the transfer of technology and the rapid implementation of research findings to create market-ready products.

Companies benefit from the many facilities dedicated to researching and preventing lifestyle diseases, such as the *Leipzig Research Center for Civilization Diseases (LIFE),* the *IFB Adiposity Diseases,* and the *Leipzig Heart Institute.*

Local companies specialize in the development and manufacturing of medical devices used in diagnostics and sensor applications. As part of the Leipzig Digital Hub Strategy, the city is also focused on supporting digital healthcare. Not only will start-ups in this field find an active, well-connected scene; they will also receive professional support in the field of e-health from the *SpinLab accelerator,* as well as from the *biosaxony accelerator* in the field of smart medical products.

The resulting synergies offer enormous potential for companies and research institutions alike. Business analysts also highlight the future-proof fields of miniaturization and materials research as major strengths for the city.

77 M
in sales revenue

1,487
employees subject to social insurance contributions

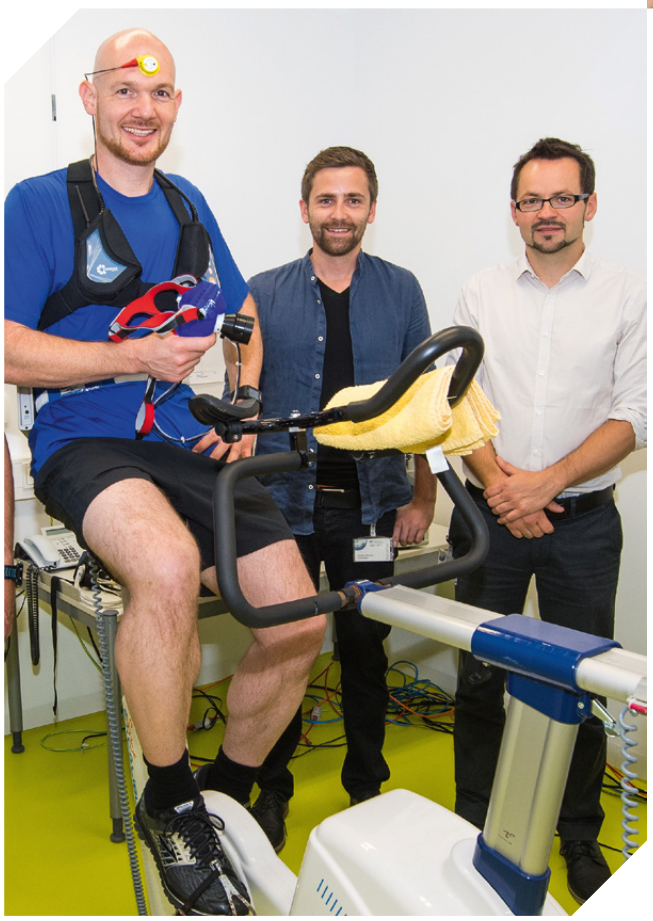
22 companies

STAKEHOLDERS

CORTEX

High-Performance Success

In medicine, sports, and fitness, CORTEX Biophysik GmbH drives mobile and portable cardiopulmonary diagnostics to the highest levels of performance. The company was founded in Leipzig in 1991, and since then, it has grown into a leading manufacturer of spiroergometry systems. Today, it is a global market leader in mobile spiroergometry.



Astronaut Alexander Gerst during his training with TU Dresden's MetabolicSpace at the ESA European Astronaut Centre (from L to R: Dr. Alexander Gerst, Christian Schunk, Dr. Tino Schmiel) © ESA/DLR

CORTEX products measure the body's performance capacity and determine its underlying limitations. They are used successfully in a wide range of applications around the world, for diverse groups of subjects: in foundational research, routine cardiological diagnostics, high-performance sports, and fitness centers. In 2018, a CORTEX device was even used in the International Space Station (ISS).

Leipzig was an intuitive choice for the company's two founders, and today, they are all the more certain that it was the right decision. From the very beginning, CORTEX profited from its close cooperation with the Leipzig University of Applied Sciences (HTWK) and Leipzig University. The city's good infrastructure also provided the company with everything it needed to service the global market.

CORTEX was able to grow to its current size thanks to the many years of financial support it received from the "Sächsischer Beteiligungsfonds," a state-owned investment fund. Today, CORTEX employs about 40 people, who are responsible for developing all the company's hardware and software, as well as manufacturing and distributing the systems.

www.cortex-medical.com

FISCHER ANALYSEN INSTRUMENTE

Living and Breathing Success

Fischer ANalysen Instrumente GmbH (FAN) has won the Innovation Award from both the city of Leipzig and the state of Saxony – it is one of the world's most innovative companies in the field of 13C and H2 breath gas analysis. Founded in 1991, the company develops and produces cutting-edge medical products with support from local, national, and international partners; these products are distributed internationally, both by FAN directly and by its sales partners.

Highly sought-after medical technology "Made by FAN" includes breath test devices for the diagnosis of Helicobacter pylori infections. These devices also make it easy to test liver function, pancreas function, and gastric emptying time.

Additionally, the company's portfolio includes a breath test device to measure the hydrogen content of breath. The H2 breath test helps diagnose lactose, fructose, and sugar-substitute intolerances and bacterial dysbiosis, as well as to assess gastrointestinal motility. FAN also specializes in 15N analyzers and research equipment such as thermoluminescence dosimeters.

www.fan-gmbh.de

SONOVUM

3 QUESTIONS FOR
CEO Bertram König

Mr. König, what is Sonovum GmbH's mission?

Sonovum GmbH focuses on foundational research and product development concentrated on the brain. This includes non-invasive procedures for diagnosing and monitoring brain states and changes in the brain. Our multidisciplinary team of physicists, mathematicians, medical professionals, and specialists from other disciplines is working to further refine the innovative technique of acoustocerebrography (ACG) alongside other procedures. Within the next few years, our goal is to develop our products and services into customized solutions for everyday clinical and out-of-hospital applications.

Your company is located in BIO CITY LEIPZIG.
What factors influenced the decision to settle in Leipzig?

The *BIO CITY* location provides an enormous range of benefits for us, as we can take advantage of the extensive synergy available here. It puts us in close proximity to the expertise of renowned research partners – from the *Fraunhofer IZI* and the *Max Planck Institute for Human Cognitive and Brain Sciences* to the *University of Leipzig Medical Center (UKL).* We also have the opportunity for in-depth networking with other start-ups and SMEs.

Have you received further support in addition to these factors?

Yes, we received extensive support from the major institutions previously mentioned, without which the progress we made in our research – particularly at the beginning – would not have been possible. We also tapped into local networks, including *AGIL* with its ProSafeMed project, *futureSAX* and *biosaxony*, and the *ultrasound task force*.

www.sonovum.de

Bertram König
CEO

VIVOSENSMEDICAL

> We translate medical expertise into market-relevant medical products for reliable, personalized diagnostics.

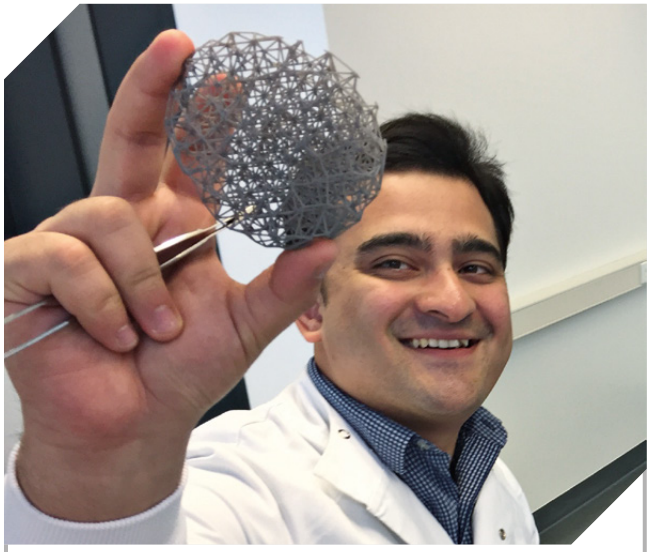
Individual diagnostics for better therapies: VivoSens-Medical is a Leipzig-based medical technology company that develops diagnostic tools for indications such as autoimmune diseases, chronobiology, and women's health.

Product development at VivoSensMedical is based on investigating core body temperature as a biomarker. "We use body-related data to gain new medical insights for a variety of indications," explains Sebastian Alexander, co-founder and CEO of VivoSensMedical GmbH. "We translate those insights into medical algorithms and precise sensor-based medical devices for individualized diagnostics."

The spin-off of *Leipzig University* was founded in 2011 and rose to prominence with its "OvulaRing." This unique biosensor for mapping and diagnosing the female menstrual cycle launched in 2014 after two years of development work and is distributed throughout Germany today.

The company attracted its start-up capital over the course of three financing rounds from private investors, as well as in the form of subsidies from the city, state, and federal government and the EU, and from the first successful medical technology crowdfunding campaign in Germany. Today, VivoSensMedical employs more than 10 people and is part of an industry network consisting of numerous stakeholders.

www.vivosensmedical.com



BELLASENO

3D-Printed Breast Implants

BellaSeno is an up-and-coming company founded in 2015 and specializing in pre-clinical medical products. Since 2017, it has been part of *BIO CITY LEIPZIG*, where it is developing innovative bio-compatible breast implants made from biodegradable plastic. Once implanted, they serve as a scaffolding around which the body can regenerate its own tissue. When the process is complete, the porous, absorbable, elastic polymer scaffold completely dissolves.

The result is a reconstructed breast composed of natural tissue, without any remaining foreign material. "Because the patient's own fat is used for the treatment," says co-founder and Chief Technology Officer Dr. Mohit P. Chhaya, "we avoid the risks that arise with the use of conventional breast implants."

The Senella® technology was developed in close co-operation with the *Fraunhofer IZI*. The first clinical studies began in 2020, and the company – which currently employs a high-caliber international team of 12 people – expects to receive approval for the innovative implants in 2023. After that, the implants will be manufactured in Leipzig and distributed around the world.

Unlike conventional implants, BellaSeno scaffolds will be manufactured fully automatically. Algorithms draft the customized shape, which is then printed in perfectly tailored detail by 3D printers.

www.bellaseno.com

BIOCITY CAMPUS LEIPZIG

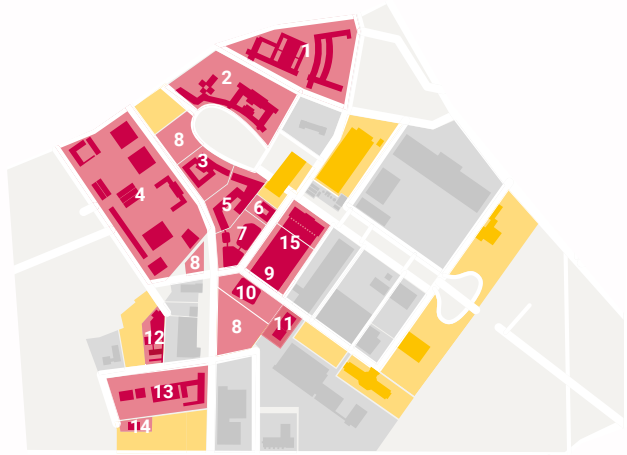
The Perfect Space for Development

The BioCity Campus Leipzig provides new perspectives and spaces for innovation, exclusively for companies in the biotech, medical technology, and life sciences industries. Start-ups and established stakeholders alike will find more than 100,000 square meters of attractive lab and office spaces and land for development in this exclusive innovation park.

The BioCity Campus is home to a broad spectrum of biotechnology and biomedical stakeholders, all of whom benefit equally from the expertise and modern infrastructure of neighboring research institutions, as well as from a diverse range of partnerships with local companies.

> “The synergy in the scientific community on the BioCity Campus was one reason why we opted for Leipzig.”

Dr. Marc Struhalla
CEO and founder of c-LEcta



BioCity Campus Leipzig

Areas with buildings

Land available for development

1 University of Leipzig Medical Center
2 German National Library
3 Max Planck Institute
4 Veterinary Medical Hospital
5 BIO CITY LEIPZIG
6 BioCube Leipzig
7 Fraunhofer IZI
8 Life Science Space in use by the State of Saxony
9 Innovation Center
10 German Centre for Integrative Biodiversity Research (iDiv)
11 Orthopädie- & Reha-Technik-Wolf (orthopedic and rehabilitative technology)
12 Eurofins Food Testing Institute
13 Haema AG
14 Analysen Service GmbH
15 Messehalle 12

BioCity Campus in Figures

Over **100,000 m²**
of lab/office space and
land for development

42
biotech and biomed companies

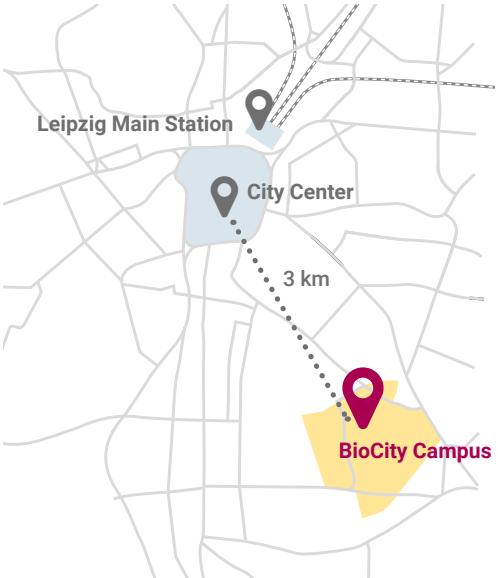
4
neighboring research institutions

11 min. into the city by bicycle

8 min. into the city
by public transportation

This unique commercial park is located just a few minutes' walk from the center of the city, and it offers excellent conditions for employees – thanks to the nearby day care center, elementary school, numerous parking spaces, supermarket, and attractive residential spaces.

www.biocity-campus.com



BIO CITY LEIPZIG

BIO CITY LEIPZIG is the ideal location to bring biotech companies to life. It is one of the most modern biotechnology and biomedicine centers in Germany and numbers among the top 15 best biotech incubators in Europe.

Its more than 15,000 square meters of cutting-edge laboratory and office space offer excellent technical infrastructure and close proximity to more than 30 biotech and bioscience companies with a total of 500 employees. Workshops and seminars in the conference rooms provide opportunities for local companies to network with research institutions.

Benefits for Newcomers

- Flexible layouts for individual rental spaces
- BSL-1/BSL-2 laboratory spaces
- Central building management system
- Emergency backup power supply

BioCube Leipzig

BioCube Leipzig offers even more space for newly relocated organizations and companies moving beyond the start-up phase that want to continue growing in BIO CITY LEIPZIG.

Its five floors host S1- and S2-standard laboratories as well as modern office, production, and warehouse spaces, creating excellent opportunities for partnerships in research and development and allowing young, innovative companies in particular to benefit from synergies across the entire BioCity Campus.

Benefits for Newcomers

- Approx. 6,400 m² total space
- 5 floors
- Individual spaces starting at 350 m²

Messehalle 12

This legendary, landmarked building with its impressive portico under a monumental star-capped spire was one of the most recognizable symbols of the old Leipzig Expo Center. A very well-equipped office and technology center is planned as part of the renovation of the southwestern section of the building complex, and the renovation process is already well underway.

Starting in 2024, Messehalle 12 will offer new expansion options for the neighboring BIO CITY LEIPZIG and BioCube facilities, as well as providing attractive new spaces for additional companies to successfully establish themselves in the life science cluster.

Benefits for Newcomers

- Approx. 17,800 m² total space (planned)
- Approx. 5,000 m² lab space
- 4 floors
- Individual spaces starting at 300 m² (planned)

> “The move to BIO CITY LEIPZIG was a very important step on our path to success.”

Dr. Wolfgang Knirsch
CEO, Vita 34 AG

biosaxony

Saxony's Cluster for Biotechnology and Medical Technology

biosaxony is the biotechnology and medical technology association for the entire state of Saxony. Its members include more than 100 companies, scientific institutions, stakeholders and suppliers to the industry. The association's objective is to pool the strengths of all member companies and to represent their interests in the political and public spheres.

biosaxony's responsibilities include initiating projects between businesses and scientific institutions, brokering services and expertise, and mapping regional competencies. This allows biosaxony to support the value-generating expansion of intersectional technologies and to bolster Saxony as an economic region.

Another of the network's primary objectives is to support young, innovative companies. biosaxony is committed to the development of new ideas and the expansion of a sustainable transfer of technology – the annual "bionection" partnering conference is a good example here.

In addition to its Dresden branch, biosaxony maintains an on-site presence at the *BioCity Campus* in Leipzig, where it serves as a point of contact, networking partner, and supporter.

www.biosaxony.com

8 GOOD REASONS TO CHOOSE BIOSAXONY

1. Over 100 international members from industry, research, and the public sector
2. Platform for exchanging expertise and experiences with national and international network partners
3. Consulting from product development to market launch
4. Support for technology transfer
5. Initiation of collaborative projects
6. Access to the latest industry information
7. Political and societal lobbying work
8. Discounted participation in shared stands at trade fairs and conference

UNIVERSITY, COLLEGES, AND INSTITUTIONS

Education and Research

UNIVERSITÄT LEIPZIG

Leipzig University

With 14 departments and 150 courses of study, “Alma Mater Lipsiensis” – Leipzig University, founded in 1409 – is a traditional comprehensive university with a broad curriculum ranging from biotechnology to digital humanities. The university’s research and educational programs are of the highest caliber. Today, more than 30,000 students study under 465 professors at this popular academic institution.

› **Career Service Team**
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solvejg.rhinow@zv.uni-leipzig.de

www.uni-leipzig.de

COURSES OF STUDY IN THE STEM AND HEALTH FIELDS

› **Medicine**

› **Life Sciences**

› **Veterinary Medicine**

› **Sports Sciences**

› **Chemistry and Minerology**

› **Geosciences oder Geography**

› **Mathematics and Information Technology**

In the Healthcare and Biotech Cluster:

32 courses of study

11,397 students

HTWK
Hochschule für Technik, Wirtschaft und Kultur Leipzig

Leipzig University of Applied Sciences (HTWK)

Leipzig University of Applied Sciences (HTWK) was founded in 1992. It carries on the long tradition of educational institutions for technology and engineering, as well as the tradition of lyceums for librarians, booksellers, and museologists in Leipzig. With approximately 6,200 students, it is one of Germany's largest universities of applied sciences.

COURSES OF STUDY IN THE STEM AND HEALTH FIELDS

- **Information Technology and Media**
- **Architecture and Social Sciences**
- **Digital Transformation**
- **Engineering**
- **Economics and Industrial Engineering**
- **Career Office**
  Marion Görner
  +49 341 3076-7049
  career.office@htwk-leipzig.de

www.htwk-leipzig.de

In the Healthcare and Biotech Cluster:

5 departments

21 courses of study

4,435 students

HHL LEIPZIG GRADUATE SCHOOL OF MANAGEMENT

HHL Leipzig Graduate School of Management

What do you need to found or run a company? Moving away from the short-term goal of maximizing profits and focusing on responsibility and sustainability: That's the "Leipzig leadership model." HHL Leipzig Graduate School of Management has an excellent reputation throughout Europe as a private business school that produces top managers and entrepreneurs. It offers its 680 students exceptional career opportunities.

IMPORTANT ACADEMIC CHAIRS

- **Economics and Information Systems**
  Prof. Pierfrancesco La Mura, Ph.D.
- **IT-Based Logistics**
  Prof. Dr. Iris Hausladen
- **Entrepreneurship & Technology Transfer**
  Jun.-Prof. Dr. Vivek Velamuri
- **Deutsche Post Chair of Marketing, esp. E-Commerce and Cross-Media Management**
  Prof. Dr. Manfred Kirchgeorg
- **Center for Health Care Management and Regulation**
  Prof. Dr. Dr. Wilfried von Eiff

www.hhl.de

Courses of Study in the STEM and Health Fields

252 students

APPLIED RESEARCH

Flagship Projects in Leipzig

Enormous synergy is generated by close cooperation and targeted knowledge transfer between research and industry, and the broad spectrum of collaboration projects in the Leipzig Healthcare and Biotech Cluster is proof of just how effective partnerships between research institutions, hospitals, and companies can be. In the following, we will present four of these flagship projects in greater detail.

KIKS

Artificial Intelligence for Clinical Studies

Proving that medical products are safe and effective requires increasingly large and complex sets of data. The goal of KIKS is to use artificial intelligence to automate the procurement and analysis of medical data and, consequently, to drive digitalization and advancement in the healthcare sector.

To that end, the KIKS Consortium is developing AIQNET, a digital ecosystem for medical data that will facilitate access to data and AI technologies for a range of healthcare user groups and drive the creation of new business sectors and services in the future.

THE DATA IN BRIEF

16 sponsored partners

>40 associated partners

15 M euros of project volume

Additional partners welcome

› **Consortium Coordination**
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www.raylytic.com
www.aiqnet.org

MOMENTUM

5G Technology in Emergency Care

When an ambulance is on the way, every minute counts. This is where the MOMENTUM research project comes in; it gets its name from the German for “mobile medical technology for integrated accident and emergency care.”

The goal is to develop innovative technology that connects the point of care and the hospital in real time via the 5G mobile network. With this technology, the various medical devices in the ambulance would be able to communicate with one another and transmit all patient data from the site of the accident to the emergency room in an instant.

THE DATA IN BRIEF

14 partners

6.2 M euros of funding volume

Funding body: Federal Ministry of Education and Research (BMBF)

› **Consortium Coordination**
ICCAS-Forschungszentrum
Prof. Dr. Thomas Neumuth
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www.iccas.de/projekte/momentum/

SMITH

Innovative IT Solutions Improve Medical Care

The large volumes of data in clinical information systems offer enormous potential for the healthcare sector of tomorrow.

Smart Medical Technology for Healthcare – or SMITH for short – makes even closer collaboration between the research and medical care sector possible. Seven out of the ten university hospitals participating in the consortium are establishing infrastructure to make data from routine medical care available for use in medical research. This will significantly improve diagnosis, prevention, and therapy for patients.

SMITH is one of four consortiums funded by the *Federal Ministry of Education and Research (BMBF)* as part of its *Medical Informatics Initiative (MII)*.

THE DATA IN BRIEF

19 partners from science and industry
10 German university hospitals
200 project employees
45 M euros of total funding volume (2018 - 2021)

› **Consortium Coordination**
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www.smith.care

SAXOCELL

Bolstering the Body's Own Healing Abilities with Living Drugs

The human body contains cells with exceptional self-healing properties. The SaxoCell Cluster for the Future sponsored by the Federal Ministry of Education and Research (BMBF) aims to develop new production methods and applications for innovative, personalized cell and gene therapies.

SaxoCell plans to bring together gene and cell therapy, artificial intelligence, automation, and regulatory sectors from science and industry to establish a one-of-a-kind value chain in Saxony – meaning that these "living drugs" could soon be used to deliver more affordable therapies for patients.

In fall 2020, SaxoCell is applying for the first implementation phase of the Cluster4Future tender, which offers funding of 15 million euros over the course of 3 years.

› **Consortium Representatives**
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www.saxocell.de

> From analytics to zoonotic diseases: We are happy to provide you with active, reliable support and expertise for any innovative project or investment you choose to pursue in Leipzig.

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SOURCES:

Federal Employment Agency, last updated: December 31st of every year

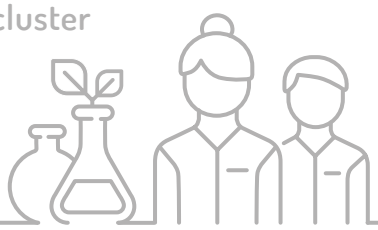
https://statistik.leipzig.de/statdist/table.aspx?cat=2&rub=1

Amt für Statistik und Wahlen (Office of Statistics and Elections), calculations from the Economic Development Office.

City of Leipzig

+31 %
employees subject to social insurance contributions since 2005

45,544
employees subject to social insurance contributions in the cluster



+112,000
residents since 2005

2,613
companies in the cluster

5.9 %
share of Leipzig's economy generated by cluster

40,000
students at the university and 8 colleges

23
networks and regular meet-ups

Rich cultural life
of a major metropolitan city

Healthcare and Biotech Cluster