



*Tradition and Innovation*

**Saxony-Anhalt**

**Medical Technology,  
Red Biotechnology  
and the Pharmaceutical  
Industry in  
Saxony-Anhalt**



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The health sector, in particular the areas of medical technology, red biotechnology and the pharmaceutical industry, is one of the key areas and future-oriented technologies in Saxony-Anhalt. We possess internationally prestigious research institutes, academic educational institutions and innovative research companies which display an exceptional degree of competence within these fields.

Our networks provide an example of the innovative strength inherent in these areas. Both already established and future participants can depend on impressive, long-term experience in the establishment of an innovative growth industry.

The developing reputation of the location is furthered by the intention of extending it to form a centre of innovation and competence with an international flavour.

The three fields of medical technology, red biotechnology and the pharmaceutical industry are exemplary for Saxony-Anhalt's innovative strength within the health sector. Within the area of medical technology, almost 200 patents, more than 120 jobs and over 150 new and improved products have been created during the last four years. Research into active substances is a further branch with growth potential in Saxony-Anhalt; between 2003 and 2005, innovative biotechnological companies succeeded in generating an average increase of almost 10 per cent in the volume of their workforce within the area of neuro- and protein-biotechnology. The corresponding figure in the pharmaceutical industry almost attained a remarkable 30 per cent. Pharmaceutical finished products have also become Saxony-Anhalt's major exports within the area of finished commodities.

The State Government commenced its biotechnology offensive in 2002. The aim is to harness the growth potential of this branch for the general economic development of Saxony-Anhalt.



Research and development, education and qualification and also the establishment of businesses play a prominent role here in addition to conventional location factors. The cited results of efforts on the part of the variety of networks, companies and research institutions demonstrate that the concentration on the strengths of these areas produces tangible success.

This brochure highlights the areas of medical technology, red biotechnology and the pharmaceutical industry within the health sector and exemplifies our efforts in the development of innovation and competence with international vibrancy.

Dr. Reiner Haseloff  
Minister for Economics and Labour  
in Saxony-Anhalt



## Medical Technology, Red Biotechnology and the Pharmaceutical Industry: An Overview

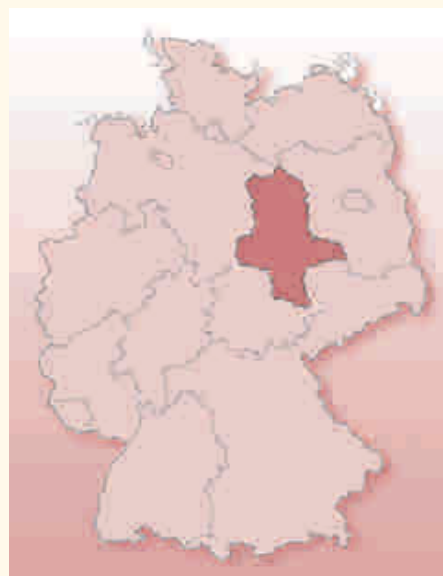
During the past few years, the fields of medical technology, red biotechnology and pharmaceuticals in Saxony-Anhalt have experienced dynamic development. The individual locations within the State are on an equal standing to similar institutions in other regions in Germany. In particular, the field of life sciences and the pharmaceutical industry have boosted their images and, contrary to the general trend in Germany, both strengthened their position and experienced further development. The support and policies of the State relating to research have played an essential role here. An example is the excellence initiative supported by the research network in neuro- and biological sciences.

Innovative companies and service providers within the field of medical technology have been able to take advantage of scientific competences within the area of brain science and establish themselves in Saxony-Anhalt. The focal point for these companies has been the development and manufacture of technical equipment and technically-related approaches. A selective list of products and services developed includes: neuro medical diagnostics and therapy, technical engineering developments in medical systems including soft- and hardware solutions and new measurement technology based on biochemical detection methods. Regional and locally situated networks offer ideal structures within which the synergies between business and science can be utilised and the time frame between the initial concept and the marketable product retained (time to market). This is also borne out by the results from commitments on the part of many actors: to date, 154 improved and new products and technologies have been launched on the market within the area of medical technology, 195 patents and utility patents registered and 125 jobs created within the last few years.

The field of red biotechnology focuses on the areas of neuro sciences and protein research. The primary concern in recent years has been to support already existing firms, networks and value creation chains in their further development. The results have been impressive: for example, the numbers of employees within the area of red biotechnology have increased by ca. 10 per cent between 2003 and 2005. As the provision of capital resources is an essential criterion for success, this development has also been actively supported through the provision of risk capital on the part of the VC company IBG Beteiligungsgesellschaft Sachsen-Anhalt mbH. To date, numerous companies within the fields of life science, agrobiotechnology and medical technology have been supported with the aid of a total investment volume in excess of EUR 65 million.

The pharmaceutical industry is a major pillar within the health market and a major employer in Saxony-Anhalt with continuing growth rates in turnover and employment figures. The workforce within this sector grew by almost 30 per cent between 2003 and 2005. In addition to the production locations of globally operating corporations, it is small and medium-sized businesses which have made a substantial contribution to this increase. Pharmaceutical products have become the "export hit" among the final goods manufactured in Saxony-Anhalt and provide evidence of the competitive strength and quality of products from the region.

Between the areas of medical technology, red biotechnology and the pharmaceutical industry, additional synergies have already been transformed into marketable products by research networks. The network PharmaMD® is a prime example of cooperation between the pharmaceutical industry and biotechnological companies in research into active substances. The IMTM GmbH has out-licensed a product development to the pharmaceutical company Serumwerk Bernburg AG. In this case, it is the transfer of know-how and market access which form the vital supporting pillars of cooperation. Common projects have also been set up between the KeyNeurotek AG, IMTM GmbH and the network for neuromedical technology InnoMed e.V. There are future plans to intensify cooperation between the areas of medical technology, red biotechnology and the pharmaceutical industry to provide a further boost for the competitiveness of companies and scientific research institutes within the State.



## The State of Saxony-Anhalt



**COVILEX®  
Response- and Stimulation-Line  
for fMRT and MEG**

The COVILEX GmbH (Ltd.) is an enterprise especially for optic-mechatronic system integration, their skills and experience are equipment for fMRT and MEG and psychology/forensik.

For fMRT and MEG offers the COVILEX GmbH (Ltd.) the **COVILEX®** Response- and Stimulation-Line, a modular system.

Star products are the super clearly MRT- projection over 7m distance, a MRT-/MEG- endoscope over up to 12m distance, the Online-Date-Ready-Eye-Tracker-Software and new sensible buttons or joysticks with analog out information over button- movement for fMRT/MEG integrated in response systems. Also see many other star products of the **COVILEX®** Business-Line.

COVILEX EDV- VIDEO- Beratungs- und Vertriebs- GmbH,  
Basedowstr. 24, D-39104 Magdeburg, Phone +49/391/4010465  
fax: +49/391/4010412

**Cryo-therm  
medical GmbH**



Cryo-therm medical GmbH was established in 2005. The aim and purpose of Cryo-therm is to develop new, innovative products in medical technology, take them up to production stage and market them independently. We are concerned with thermic therapy and since Kneipp it has been well known that heat and cold can affect the vascular behaviour of arteries and veins. CRYO-THERM T-LAX® medicpro makes use of this effect. This kind of technology is new and targeted towards achieving results. T-LAX® medicpro has been devised for ongoing use in clinics and surgeries. The development of CRYO-THERM T-LAX® medicpro was very time-consuming and complicated. It is always a great challenge to get established with a new concept and a new therapy between existing "classical" methods. We are proud to have got this product up to production stage and to have marketed it successfully. We shall continue to make every effort to establish this product and work on the numerous feasible extensions to it. Get an idea of what CRYO-THERM T-LAX® medicpro is like.

Try it out! We are sure that you will soon decide to take it. If any questions should arise, you can contact us at any time.

[www.cryo-therm.de](http://www.cryo-therm.de)

**Endocrine  
Technologies GmbH**



Extreme fluctuations in blood sugar levels constitute a high risk for diabetics and other patients in medical crisis situations. Crisis situations in particular place high demands from a medical point of view, which are difficult or even impossible to control using standard insulin therapy procedures. At coronary care units, preparing for operations on diabetics after severe infarctions and adjusting the blood glucose level to an acceptable extent is extremely staff-, time- and cost-intensive at present.

Automating these life-saving measures is one of the areas in which Endocrine Technologies GmbH is seeking and developing solutions. It has so far succeeded in taking the automation process a big step forward. A semi-automatic procedure enables controlled blood sugar settings to be made precisely over a period of time, that are stable and in particular safe for the patient.

[www.optifastzentrum.de](http://www.optifastzentrum.de)



**Competent in the field  
of sterilisation**

At HA2 Medizintechnik GmbH in a workshop area of 4000 m<sup>2</sup>, the goods to be sterilised are:

- preconditioned
- sterilised
- postconditioned

All processes are carried out in adherence to the standards of DIN EN 550. Up to 6 sterilisation chambers are available, providing an annual capacity of over 60 000 palettes. Become one of our customers and experience our excellent cost-performance ratio, the low residual gas rate and our prompt service.

[www.ha2-medizintechnik.de](http://www.ha2-medizintechnik.de)

**Hasomed GmbH  
Your partner for  
technical innovation  
in medicine**



The general managers of HASOMED GmbH have been working within the field of neurological rehabilitation for over 20 years. RehaCom, a system for computer-aided cognitive rehabilitation, is currently the market leader in Europe. Over 20 methods for the treatment of brain disorders are available in 13 languages. This system which was developed in rehabilitation clinics is utilised by neuropsychologists, ergotherapists and also affected patients at home. RehaMove facilitates stationary movement training for the motoric rehabilitation of the extremities with functional electro-stimulation (FES) and the RehaBike enables mobile cycling training. The administrative program "Elefant" for psychotherapeutic and medical practices was developed in cooperation with practices and has been certified by the German National Association of Statutory Health Insurance Physicians. The HASOMED GmbH was established in 1992 in Kronberg/Taunus and has been based in Magdeburg since 1995. During the past few years, the HASOMED GmbH has constantly achieved positive operating profits and an annual increase in revenue.

[www.hasomed.de](http://www.hasomed.de)

**Haynl-Elektronik  
GmbH**



Haynl-Elektronik GmbH is a German medical technology company with a high degree of competence in the development of future-oriented and technologically sophisticated medical products. The realisation of ideas originating from customers and employees is carried out swiftly and efficiently from the conception phase up to serial production. Both patients and therapists can benefit straightaway from the latest findings of medical research and science.

Company products include electro-therapy and diagnosis equipment, home training apparatus and products for sport medicine.

Pocket PCs form the basis of the new generation of therapeutic equipment. These have been amalgamated with conventional therapeutic systems, producing a technology platform which is experiencing ongoing further development.

[www.haynl.com](http://www.haynl.com)

## ik-med Ltd.

ik-med Ltd. functions as a service partner and coordinator between doctors, clinics, patients and cost centres.



### Philosophy - Our idea

- Efficiency and raising the quality of medical services by using modern information and communication technologies
- Taking the burden off the administrative sector
- More time for essential medical tasks
- Tele-monitoring, especially for patients with diabetes, asthma and heart weaknesses, opens up new ways of assisting and monitoring treatment, more transparency in quality and costs as well as saving time and travel.

### Portfolio - Our services

- Implementing tele-monitoring systems
- Document-archiving and correspondence
- Network development and technical support
- Advice, information and training

[www.ik-med.de](http://www.ik-med.de)

## INB Vision AG New dimension in vision technologies



From a comprehensive portfolio of patents and software modules INB offers efficient vision technologies similar to human sight for emerging markets.

### Our 3-D vision technologies

- provide solutions for no-contact in-line and off-line inspections in industrial and medical applications
- Examples: 3-D positioning of patients, mobile 3-D vision for dermatology

### Our electronic image correction

- aims at multimedia products, highly developed optical instruments and 3-D displays, including medical applications
- is implementable in efficient system-on-chip concepts, such as for rear projection TVs or biochip readers

### Future innovation potential

- Development of intelligent tools for diagnostic and therapeutic support

[www.inb-vision.com](http://www.inb-vision.com)

## MR confon GmbH

Communications and noise-cancellation systems for (functional) magnetic resonance imaging



### Better understanding between doctor and patient

We develop and market high-end audio products for functional and conventional magnetic resonance imaging. Our products are highly suitable both for everyday routine and for complex functional measurements. This means that we can provide the functionality for auditory measurements, and can ensure pleasanter routine examinations with better images, lower costs and more satisfied patients. More than 100 tomographs have been retrofitted worldwide with our technology. Meanwhile almost all leading research laboratories rely exclusively on our unique audio technology.

MR confon GmbH emerged from the Leibniz Institute for Neurobiology in Magdeburg six years ago. The lead that we have taken is based on close cooperation with the institute. All our products are subjected to the most intensive test sequences in various tomographs - including the Magdeburg seven Tesla device. This ensures optimum sound-protection with unique tolerability.

[www.mr-confon.de](http://www.mr-confon.de)

## NovaVision AG See better again



NovaVision is a worldwide leader in the rehabilitation of neurologically related visual malfunctions. We are developing and marketing a computerised sight therapy - Visual Restitution Therapy (VRT) - with the aim of improving and restoring the sight of patients with neurologically-related visual malfunctions after apoplectic fits, skull/brain trauma and brain operations.

VRT sight therapy works without medicines or drugs and without direct medical intervention, even if the cause of the visual malfunctions occurred many years ago.

It has already been used for more than 1,000 patients in Germany and tested in numerous clinical studies. The studies show that more than 65% of patients have achieved measurable improvements in their vision so that they have recovered a significant portion of their previous quality of life.

[www.novavision.de](http://www.novavision.de)

## Novoplast Schlauchtechnik GmbH



### Flexible. Precise. Innovative.

We are the right place to come if you are looking for medical hoses.

We manufacture hoses from high-quality chemical materials, such as polyurethane, polyamide, polyethylene, soft PVC, pebax and other thermoplastic materials.

Possible thicknesses lie within the range of 0.6 mm to 12.0 mm.

These are manufactured as monolumen-, multilumen- and multilayer hoses.

Radio-opaque design, either completely x-ray contrastive or with x-ray contrast strips, is possible.

We would be pleased to develop tailor-made hoses for you.

We can adjust to ideas on materials, designs, measurements etc.

[www.schlauchtechnik.de](http://www.schlauchtechnik.de)

## Primed Halberstadt Medizintechnik GmbH

### Life in experienced hands



Primed Halberstadt Medizintechnik GmbH

has been manufacturing medical products for companies worldwide for over 25 years.

More than 200 employees in polymer processing, tool manufacture and development are working in cooperation with customers to bring new specialised products onto the market, accompanying all stages from the initial concept up to serial production.

Special know-how within the areas of injection-moulding, extrusion and blow-moulding technology has made the company Primed Halberstadt Medizintechnik GmbH indispensable within the circle of medical technology manufacturers.

Come and experience our working methods personally. Should we have awoken your interest, we would be pleased to welcome you to in-depth discussions.

[www.primed-halberstadt.de](http://www.primed-halberstadt.de)

**seleon gmbh****Turning your ideas  
into market-ready products**

seleon designs, develops and manufactures devices, hardware components, assemblies and software for medical technology and life science industries.

We carry out or support the entire product development process - from conception to market launch. Our range of services includes electronics, sensor technologies, precision mechanics, software development, prototypes, manufacturing, design, industrial property rights, clinical studies and trials and international regulatory affairs and approvals.

seleon developed a world-wide new method for breathing support without mask: a high-flow ventilation method TNI®. It is for many patients a comfortable alternative to other therapy methods, as CPAP, because it is an open system that uses a small nasal applicator, instead of a mask or closed nasal prongs.

seleon is ISO 9001:2000 and ISO 13485:2003 certified according to medical product laws.

[www.seleon.de](http://www.seleon.de)



Based on the motto "Competence reorganised", SHP-Steriltechnik AG was established in Magdeburg at the beginning of the year as a complete supplier in the steam sterilisation sector.

Based on appropriately relevant EU norms and certificates we are developing steam sterilisers in cooperation with an European associate both for the medical sector and for laboratories.

SHP-Steriltechnik AG is responsible for worldwide marketing, comprehensive and extensive service, support and advice from purchasing individual autoclaves to planning a complete sterilisation centre.

Together with our production partner we are able to offer top quality and functionality at a fair price.

[www.shp-steriltechnik.de](http://www.shp-steriltechnik.de)

**SONOTEC  
Ultraschallsensorik  
Halle GmbH****Solutions with ultrasound**

**A high degree of patient safety during transfusions and dialysis through ultrasound sensors.**

SONOTEC was established in 1991. We are a growing technological firm which considers itself as a solution specialist in ultrasound measurement and sensory technologies. SONOTEC develops and produces sensory solutions which can be utilised in fields such as pharmaceuticals, medicinal technology and the chemical sector. An example is the air bubble detector which is able to detect the presence of air and gas bubbles through the walls of tubes transporting fluids. These sensors can be employed in medical technology to monitor the transport of body fluids in dialysis and detect errors. Air bubble detectors are additionally utilised in the transfusion of blood and nutrients and injections. With the aid of ultrasound technology, we are able to create solutions for measurement technology such as measurement procedures, measuring devices, sensors, ultrasound transformers and transceivers. High precision and quality are employed across the board in the development and production of all our sensor products.

[www.sonotec.de](http://www.sonotec.de)

**SYMACON E+A GmbH****Electronic development  
that benefits the patient**

SYMACON-EA GmbH has been developing and manufacturing customer-specific electronics for more than twenty years. The main emphasis is on recording, evaluating and processing readings and controlling sequences of events.

The individual solutions comprise

- complete system solutions
- individual pieces of equipment and assemblies
- interfaces and communication solutions

As well as developing and manufacturing automatic testing stations for the automobile industry and monitoring systems for the German rail system, Deutsche Bahn AG, the company is increasingly concentrating on developing and manufacturing medical equipment:

- inhalation and nebulisation devices
- ventilation filters
- mobile long-term data loggers
- biofeedback devices
- use of transponders in sheltered accommodation

[www.Symacon.de](http://www.Symacon.de)

**Tyco Healthcare  
Deutschland GmbH****Made in Germany -  
high-quality ECG electrodes  
from Halberstadt since 1990**

Tyco Healthcare is a complete supplier for practically all areas of clinical application. The product portfolio comprises approximately 45,000 products and ranges from the cannula and the respirator to the urine drainage bag and the suture clip instrument. ECG electrodes have been produced in Halberstadt for the world market since 1990. The department for research and development on site guarantees a continuous flow of new and innovative products for use in clinics and surgeries. Tyco not only offers electrodes for patient monitoring, but also consumables for monitoring, such as pulse oximetry sensors, medical recording papers, gels, batteries, defibrillation electrodes, ultrasound and obstetric products. Our team of medical product advisers is in direct contact with the users and offers a direct service between manufacturer and client.

[www.tycohealth.de](http://www.tycohealth.de)

**Virtual Reality Systems  
GmbH****We open up the third dimension. Please step inside!**

VRSystems GmbH develops special applications within the field of virtual reality. Our major business areas include:

- simulation
- image processing
- visualisation
- modelling

Within the field of neuro medical research institutions, VRSystems GmbH is the technical partner for the fostering of the implementation of state-of-the-art patient care technologies. We have excellent connections with hospitals and institutes throughout the whole of Germany via InnoMed network. We are concerned with the development and introduction of new methods and specialise in virtual reality, telehealth, VR simulation and human-computer interaction.

VRSystems GmbH is actively working in these areas with market leaders and experts within the field of technical VR. Modern technologies such as virtual reality, multimedia, computer-generated attendants and personal robots are utilised to treat patients suffering from psychiatric and physical disorders. VRSystems - specialised in the opening of the third dimension. Come with us and step inside!

[www.vrsystems.de](http://www.vrsystems.de)

## IMTM GmbH

### Immune Technologies and Medicine



IMTM is developing new kinds of drugs for the bio-pharmaceutical market, especially in the area of chronic inflammatory diseases and offers pre-clinical and clinical services for the pharmaceutical industry.

IMTM is divided into three business units to reflect its areas of operation: IMTM Immunopharm, IMTM Services and IMTM Foramed.

Its primary activity is centred on the development of new kinds of drugs for treating chronic inflammatory diseases and autoimmune diseases in **IMTM Immunopharm**. To this end IMTM is pursuing two development strategies: Peptidase Targeted Immunoregulation, PETIR™ and Thiol- active Cytoprotection, ThioTec™. IMTM Immunopharm is supported in this by highly specialised laboratory sectors for preclinical and clinical development in IMTM Services, along with the opportunity for large-animal experiments in IMTM Foramed.

[www.imtm.de](http://www.imtm.de)

## KeyNeurotek AG

### Research and technology in the service of health



KeyNeurotek was established in 2000 from the well-known Magdeburg research environment and currently employs 25 personnel. The main focus is developing new pharmaceuticals for treating brain and autoimmune illnesses and, associated with this, establishing and marketing a diversified clinical and pre-clinical R&D pipeline. Sirenade AG in Munich-Martinsried was taken over in 2005 in the course of rigorous business development.

Our company is a worldwide leader in screening platforms for functional ex vivo and in vivo studies (TELOMICS™). Based on technological and pharmacological know-how we are concentrating on new products for skull-brain trauma, stroke and Alzheimer patients in which we are benefiting from a close co-operative network of well-known national and international associates. Apart from this KeyNeurotek is a member of Saxony-Anhalt combines such as PharmaMD®, InnoMed and BIO Mitteldeutschland. In 2002 and 2004 we won the innovation prize for the State of Saxony-Anhalt and in 2006 we won the German Industry Innovation Prize.

[www.keyneurotek.de](http://www.keyneurotek.de)

## MOLISA GmbH

### High-tech chemistry to target microbial structures for the design of novel antibiotics



Molecular Links Sachsen-Anhalt - MOLISA GmbH - unites the most up-to-date synthesis technology with wide-ranging microbiological and biochemical expertise for the structure based design of new kinds of substances for treating infectious diseases. The focus is on infections with parasitic or bacterial pathogens, which a priori or by developing resistance are impossible or difficult to treat, such as tuberculosis and the various forms of leishmaniasis and trypanosomiasis.

The programme qualifies MOLISA GmbH as a partner for the pharmaceutical industry in the early phases of finding appropriate active substances. It also supports the activities of non-profit-making organisations, which have committed themselves to solve existent or foreseeable problems of local or global significance.

[www.molisa.biz](http://www.molisa.biz)

NanoDel Technologies GmbH  
Development of ZNS therapeutic agents to cross the blood-brain barrier with the help of a novel drug delivery technology



NanoDel Technologies GmbH is a bio-pharmaceutical company, which is using its nanotechnology to develop drugs which cross the blood-brain barrier in order to combat brain tumours and other diseases of the central nervous system. NanoDel was established in November 2003 and currently employs 15 staff.

95% of all drugs that might be of significance for treating CNS illnesses, do not cross the blood-brain barrier in therapeutically effective doses. To overcome this limitation NanoDel has developed carrier substances based on polymer nanoparticles, which facilitate the transmission of pharmaceutical substances across the blood-brain barrier and into the brain. The active substance is fixed on the particle surface or incorporated in the nanoparticles (100 nm). These particles, on which the effective substances are loaded, are coated with a tenside (polysorbate 80) and can then pass through the blood-brain barrier. As soon as they arrive in the brain the polybutyl-cyanoacrylate (tissue adhesive) particles dissolve and release the effective substance.

[www.nanodeltech.com](http://www.nanodeltech.com)

## novosom AG®



### SMARTICLES® - CAGICLES® - MICROMETHASON

Enabling of development and commercialisation of novel oligonucleotide therapeutics

Novosom AG is a biopharmaceutical company that is moving towards the clinic. The company has solved the major obstacle towards oligonucleotide therapeutics with the discovery of the Smarticles technology: Delivery of the therapeutic principle towards the cell interior. As such, Smarticles is establishing itself as an enabling technology for oligonucleotide systemic therapies. Novosom and its partners, develop unique oligonucleotide therapeutics in inflammation, autoimmune, oncology and liver diseases.

Oligonucleotide therapies comprise of antisense, decoy and RNAi type of drugs which inhibit production of targeted proteins with absolute specificity. They are the next major product generating engine of the pharmaceutical industry and are able to circumvent a number of unsolved issues which other therapeutics have to face.

[www.novosom.com](http://www.novosom.com)

## OntoChem GmbH



### Terabyte server Chemical ontology

OntoChem has a wide expertise in chemo- and bioinformatics and is developing products in the spheres of pharmaceuticals, cosmetics and nutraceuticals.

The company, which was founded in September 2005, has developed a *chemoinformatics Toolbox*, which helps to equip molecules with certain desired characteristics, or propose new applications for already familiar molecules. The strategy of OntoChem differs from classical methods of drug research by applying semantic and ontological methods of knowledge generation, in combination with "state-of-the-art" 2D and 3D substance to sign. The application of these technologies has already led to us producing our own portfolio of patented drug candidates, which are sold to pharmaceutical companies for example. OntoChem was the winner of the business plan competition for the state of Saxony-Anhalt in 2006.

[www.ontochem.com](http://www.ontochem.com)

## Probiodrug AG

### From Science to Therapy



Probiodrug's core competence is to elicit physiological functions and structures of catalytic active proteins. Such biomolecules, called enzymes, are key players for the regulation of many physiological pathways. Inhibition of enzymes can be used to prevent viral infection, modulate the action of peptide hormones, etc. Consequently, many enzymes serve already as important targets for drug development.

Probiodrug has demonstrated a unique level of experience in designing chemical compounds as potential enzyme inhibitor-based drugs to treat several disorders. The pioneering work of Probiodrug has shown that inhibiting the proteolytic enzyme DP4 can revolutionise diabetes therapy. The first drug based on Probiodrug's technologies has reached the market October 2006.

Probiodrug's biological expertise and its small molecule development technologies now open up new gates for treating age-related conditions such as Neurodegeneration, Autoimmune Disorders and Cardiovascular disorders.

[www.probiodrug.de](http://www.probiodrug.de)

## Scanbec GmbH

### FastScan® Rapid test systems



Scanbec GmbH develops and produces innovative molecular biological detection systems for microorganisms within the area of life science and is an accredited laboratory providing the services of micro- and molecular biological analysis.

FastScan®, a detector technology developed in our company, possesses great flexibility, enabling microorganisms and their activities to be detected swiftly and simply at a favourable price.

FastScan® technology can be employed within the areas of foodstuff and medical diagnosis and in the analysis of drinking and processing water.

The FastScan® product palette for microbial diagnosis currently offers a variety of 20 swift tests for the detection of bacteria and yeast which are relevant within the fields of medicinal and food technology.

Scanbec was established in 2003 and is located in the Weinberg campus in Halle/S.

[www.scanbec.com](http://www.scanbec.com)

## Scil Proteins GmbH

### Protein Production and Scil Proteins Services



The biotechnological company Scil Proteins GmbH based in Halle (Saale) is specialised in the development and manufacture of recombinant proteins and biotherapeutic agents.

The internationally renowned business unit Scil Proteins Services develops protein manufacturing processes and produces recombinant proteins with microbial expression systems.

Services offered include genetic cloning and the development of cell lines in addition to fermentation, in-vitro protein folding, cleaning and protein analytics including in-process control. Our customers are pharmaceutical and biotechnological companies from Europe, the USA and Japan. Scil Proteins also develops biotherapeutic agents and chromatography media on the basis of its own Affilin™ technology.

[www.scilproteins.com](http://www.scilproteins.com)

## SkinSysTec GmbH

### SAVING SKIN



SkinSysTec GmbH is a bio-medical service company in the area of computerised, multiple and direct immune fluorescence analysis of skin and blood samples.

For our service we make use of a unique and new technological process: MELC (Multi-Epitope-Ligand-Cartography).

MELC technology enables us to visualise, identify, characterise, localise and observe up to a hundred proteins in an intact tissue sample; investigations that previously required several thousand experiments can now be carried out on one sample and in a single step!

Our service:

- individual patient diagnosis of benign and malignant skin infections that are difficult to categorise
- investigating active substances for the pharmaceutical industry
- researching in the dermatology sector
- investigating active substances for the cosmetics industry in the dermatology sector

[www.skisystec.de](http://www.skisystec.de)

## FAN gGmbH Magdeburg

### Preclinical CNS drug discovery services Stroke, Alzheimer Disease, Stem cells



FAN GmbH - Research Institute for Applied Neurosciences, founded in 1996, is a research-oriented non-profit company. As a specialised preclinical and clinical contract research organization FAN is focused on drug screening for diseases of the central nervous system. It is engaged in target discovery, especially in the fields of stroke, ischemia and Alzheimer's disease. FAN and its local partners of the Magdeburg neuroscience centre assist pharmaceutical and biotech companies in selecting appropriate and modern test models.

The company's internationally renowned expertise in the fields of stroke protection, stem cell repair, memory improvement and clinical fMRI is offered to life science companies to set up faster and more flexible discovery programmes for future markets.

[www.fan-neuroscience.com](http://www.fan-neuroscience.com)



## Bayer Bitterfeld GmbH

### ASPIRIN® - a well-known product comes from Saxony-Anhalt

Since 30 August 1995 Bayer has been concentrating production in Europe of the world-famous painkiller on a new site in Bitterfeld. Bayer Bitterfeld GmbH was established in 1991. Since this time very modern chemical plants and one of the most modern pharmaceutical plants in the world have been set up to manufacture Aspirin®, Alka-Seltzer® and Talcid®. Bitterfeld is currently supplying 50 countries with its well-known products. Tablet manufacture is being carried out in accordance with the "Good Manufacturing Practices" published by the WHO. Since the second development stage in 2004 the pharmaceutical plant has included a technology centre. This enables small production volumes to be manufactured. The integrated college of technology allows processes to be translated into production standards. The new products Aspirin® Complex for treating chills and Aspirin® Protect for blood dilution complete the range.



Bayer Bitterfeld

**Worldwide scientific studies prove that Aspirin® has a future.** More than 100 studies prove that Aspirin substantially reduces the risk of suffering a heart attack or a stroke or even dying as a result. It is just as successful in reducing the frequency of acute or even longer-term complications following operations on the circulatory system, such as during or after bypass operations and operations with the cardiac catheter. It also reduces the risk of thrombosis that arises after every operation.

More than 30 billion tablets have been manufactured in Bitterfeld since it started operations in 1995. Since it was granted a wholesale licence Bayer Bitterfeld GmbH also handles the wholesale of OTC products from Bayer productions and other manufacturers for countries in Eastern Europe. In addition to this Bayer Bitterfeld GmbH offers free and fully developed factory space to interested investors wishing to locate.

[www.bitterfeld.bayer.de](http://www.bitterfeld.bayer.de)



## IDT Impfstoffwerk Dessau-Tornau GmbH

### A company with many years of tradition

IDT stands for more than 80 years of tradition in the development, production and marketing of drugs, especially immunobiological products.



We develop, produce and market high-quality animal vaccines and veterinary drugs in Germany and export them to many countries throughout the world. Our position in the animal health sector is characterised by a large number of vaccines for maintaining the health of useful animals and pets, such as pigs, cattle, poultry, rabbits and pigeons and selected pharmaceuticals for controlling reproduction or parasite prophylactics.

The outstanding production conditions and highly qualified personnel have made IDT a sought-after and recognised associate for the contract production of vaccines and pharmaceuticals.

In the vaccines sector numerous innovative and forward-looking human vaccines are being developed for customer order, and clinical prototypes are being manufactured to combat diseases such as AIDS, malaria, smallpox etc.

The pharmaceuticals division is developing and producing for customer order almost all parenteral administrative forms and various special products. Production and analytical capacities allow an adapted service from galenic development to commissioning.

An approximate total of 520 highly qualified personnel achieved sales of around EUR 61 mill. in 2005.

[www.idt-direct.de](http://www.idt-direct.de)





## Salutas Pharma GmbH a company of Hexal AG

### “Salutas Pharma GmbH really gets active substances into shape”

Salutas Pharma GmbH, a Sandoz company, is one of the most modern pharmaceutical production and logistics centres in Europe and, with 1,200 employees and a turnover of EUR 591 mill. (2005), it represents an important economic factor and employer for the state of Saxony-Anhalt.



Salutas manufactures approximately 9,000 different end products, based on approx. 300 pharmaceutical active substances. In 2005 the production of tablets, film tablets and capsules was increased to approximately 7.7 billions.

The basis for this impressive performance is the continuing expansion of the company since the takeover of the pharmaceutical division of Fahlberg-List GmbH by HEXAL in 1992. The volume of investment at Barleben is currently EUR 350 mill. With approx. 22,300 sqm of cleanroom space for production alone and the most modern plant the factory has the necessary equipment for manufacturing solid peroral administrative forms as well as semi-solid and highly effective drugs manufactured by special production methods.

Alongside production the Barleben factory has highly efficient logistics, with more than 143,000 container spaces and 49,000 pallet spaces. In 2005 more than 265 mill. drug packages were delivered worldwide.

To ensure the high quality of the products, analysis, quality control and microbiology are also carried out in-house.

[www.salutas.com](http://www.salutas.com)



## Serumwerk Bernburg AG Trust and Performance

Serumwerk Bernburg AG is an internationally acknowledged manufacturer and supplier of medicinal and medical products for human and veterinary medicine as well as of polymeric active ingredients.



The company was founded in 1954 and became one of the largest manufacturers of infusion solutions and veterinary pharmaceuticals in East Germany. Serumwerk Bernburg was privatized, becoming a public limited company in 1992. The capital was acquired by a management buy-out. This brave step towards independence received the staff's wholehearted support. The management has not let its employees down.

Serumwerk Bernburg AG is now an association of four companies, operating successfully in the German market and in Europe, Asia and Latin America.

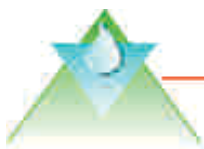
Our drugs meet the highest standards of efficacy and pharmaceutical quality. In order to maintain these standards, we are continually investing in the development of methods for manufacturing quality products and in carrying out innovative projects. They are the basis for our company's positive sustained growth.

### Strategy

The impetus to develop new products and processes arises from various directions, as a result of the many years we have worked in confidence with scientists, doctors and veterinarians. These ideas have led to marketable products due to the interaction between employees on the innovationside and those involved in galenic development and manufacture.

[www.serumwerk.com](http://www.serumwerk.com)





**DIMETHAID GMBH**

*WE HELP WOUNDS TO HEAL*

Dimethaid GmbH is pharmaceutical company in Wanzleben engaged in the development and production of chlorite-based drugs. The company is the sole manufacturer worldwide of the compound **OXO-K993 (TCDO)**. Two drug products are manufactured from OXO-K993:

**Oxovasin™** - topical product for the treatment of impaired wound healing, marketed in Germany as well as under the name **Oxoferin™** in several countries outside Germany

**Immunokine™** (WF10 solution) - intravenous applicable solution, marketed in Thailand for the treatment of tissue damages caused by irradiation in cancer patients. WF10 is currently under clinical investigation in several countries. In Germany, a clinical study is running in patients with inoperable pancreatic cancer.

[www.dimethaid.de](http://www.dimethaid.de)

## Dr. Ponsold GmbH

### Tradition meets innovation



Animal health is close to our hearts. We were already interested in the adequate supply of animals with minerals, vitamins and trace elements when the company was founded in May 1946.

When Dr. Ponsold GmbH was re-established in 1992 we continued this tradition and, with the licensing of Ponsocol®, the first and so far only probiotic animal drug in Germany, we took an innovative step into the future in 2001. Ponsocol® serves as a prophylaxis for diarrhoea in newborn calves and contains E. coli Stamm Nissle 1917 as an active substance.

The application of Ponsocol® as a prophylaxis and therapy for diarrhoea in other species is currently being investigated in clinical studies. It is planned to extend the licence.

[www.dr-ponsold-gmbh.de](http://www.dr-ponsold-gmbh.de)

## Heppe Medical Chitosan GmbH



Heppe Medical Chitosan GmbH refines raw materials into high-purity structuring and bonding materials and produces chitin, chitosan and their derivatives for them to be further processed into the widest possible range of products in the cosmetics and pharmaceuticals industry. We have made it our task, along with high-quality products, to provide our customers with tailor-made and excellent provisions, together with an advice service. An extensive store of experience is a guarantee for the manufacture of top-quality products based on chitin and chitosan - Made in Germany

Areas of operation:

- the manufacture of chitin, chitosan and derivatives along with associated products as a raw material for the pharmaceutical and cosmetics industry
- up-scaling of manufacturing processes based on biopolymers
- contract production, custom synthesis, sponsored research
- development of products with chitin or chitosan for pharmaceuticals and cosmetics industry

[www.medical-chitosan.com](http://www.medical-chitosan.com)

## HPP - Hommel Pharmaceuticals Production GmbH



Your partner for the sterile filtration of pharmaceutical active substances

Our speciality is the sterile filtration of pharmaceutical active substances - especially of steroids, which we offer you as a service for your products. Our supply programme includes steroids in all common pharmacopoeian qualities. Also sterile micronised on request.

Compared with radiation and heating our process provides a decisive advantage for your customers.

The health risk from dead germs is ruled out, because with sterile filtration the germs are completely removed from the active substance. An active substance that has been refined by this procedure has no allergic potential. The germs are removed by filters, which in the final stage have a maximum pore width of 0.2 µm (0.0002 mm). For this process the substances to be sterilised must be dissolved in a suitable solvent, the solution is pumped through the filters, and finally the solvent is removed from the sterile solution leaving the sterile end product. This is immediately bottled in sterile containers.

[www.hommel-pharmaceuticals.com](http://www.hommel-pharmaceuticals.com)

## Oncotec Pharma Produktion GmbH



### Your contract manufacturer for cytostatic parentals

Oncotec Pharma Produktion GmbH is a group-independent company founded in 1997. As a pure CMO we provide state-of-the-art technology and know-how for the aseptic filling of ready-to-use glass syringes from 0.2 to 10ml and glass vials from 2 up to 200 ml with optional freeze drying. The basis for our work is an established Quality Assurance System that guarantees cGMP standards on all processes. Supporting services offered by us include: process validation/optimisation; CTD-documentation; development and optimisation of lyophilisation programs; development and validation of analytic methods; labelling; packaging; stability testing according to ICH guidelines and production of clinic batches. The combination of a flexible team showing excellent expertise in manufacturing cytostatic parentals with the latest technology and the absolute dedication to fulfil the customer's needs makes us a valuable and competitive partner in the growing market of oncology products.

[www.oncotec.de](http://www.oncotec.de)

## PKH Halle GmbH

### Pharmazeutische Kontroll-und Herstellungs-labor GmbH



We are a young company possessing competence and traditionally-based experience within the fields of skin, eyes and nose. Know-how plus GMP-oriented manufacture guarantee the fulfilment of your high quality standards.

We concentrate on the manufacture, control and marketing of fluid, sterile and semi-solid pharmaceutical and cosmetic products for human use. Among other products, we also produce samples for clinical tests and offer an individually tailored laboratory and microbiology service.

Our proximity to the Martin Luther University Halle-Wittenberg is a contributory factor to the positive development of PKH GmbH; this has in particular led to a beneficial cooperation with the University's Pharmaceutical Institute.

[www.apomix.de](http://www.apomix.de)

## Rodleben Pharma GmbH

**Production of drugs and effective substances since 1992 under the motto "Back to life"**



Small but perfectly formed - that's what an outsider would probably say. Rodleben Pharma GmbH is a pharmaceutical company, which is situated on land largely covered with pine trees. The industrial buildings fit in consensually in the green environment. The range covers antirheumatics, antihistamines and psychotropic drugs. The substance Trapidil is the most effective component of the cardiovascular drug that we have ourselves developed, Rocornal. It has been processed for many years in Italy, Japan and Germany by customers of Rodleben Pharma GmbH.

From the very beginning it has been the explicit objective to market effective substances and all drugs of the highest quality. The management and staff always meet this responsibility in their respective departments.

Rodleben Pharma GmbH, Am Wäldchen 19, 06862 Dessau,  
Tel.: +49 (0) 3 49 01 - 8 92 01 Fax: +49 (0) 3 49 01- 8 92 13.





## Martin Luther University Halle-Wittenberg

### Future with Tradition

The Martin Luther University Halle-Wittenberg is both the largest and oldest educational institution within Saxony-Anhalt and also one of the oldest universities within all German-speaking countries. In 2006 around 19.000 students are studying at the university.



The exploratory focus on research within the areas of red biotechnology and pharmacy is particularly oriented towards protein biotechnology with the associated project "Creation of value through proteins as active agents and tools" and the development of modern drug delivery systems. The chief strengths of this cooperation project are the synergy effects resulting from the combination of scientific expertise on the part of both industrial and academic associated partners.

Within this project, new therapeutically active enzymes are being investigated; for example, foundations have been laid for a technology which will transport enzymes through the body on the basis of a heat-resistant protein.

Research competence is focussed on the area of molecular biology, protein folding and the analysis of proteins. Alongside the institutes, there is a DFG Deutsche Forschungsgemeinschaft - German Research Foundation Graduate College: (1026) "Conformational Transitions in Macromolecular Interactions". Since 2006, a biotechnology project (Prof. Dr. Rainer Rudolph) has received national support through the national competition "InnoProfile".

Numerous international research projects are also ongoing, for example the DFG Research Centre SFB 610 "Protein States with cell biological and medicinal relevance".

The following institutes possess research competence within the field of red biotechnology and pharmacy: Biochemistry/Biotechnology, Biology, Chemistry, Pharmacy and the Faculty of Medicine.

[www.uni-halle.de](http://www.uni-halle.de)

## Otto von Guericke University Magdeburg

### Research and impulses for the economy

The Otto von Guericke University in Magdeburg views itself as a profile university. Traditional areas are engineering, natural sciences and medicine.



Economic studies, social sciences and the humanities are seen as essential disciplines for a modern university in an information-based society. The university sets itself the task as a bridge between Western and Eastern Europe of the rigorous internationalisation of research and tuition.

12,500 students are studying 65 courses in nine faculties. The range of courses available is constantly being adjusted to meet the requirements of an increasingly networked work and research environment. Currently, the range of courses is being converted to bachelor and master degrees within the framework of the Bologna process.

The breadth of university research is reflected in research activities concentrated within the areas of immunology, non-linear systems, new materials, processes and products, the visual arts and social transformation. The excellence research subjects neurosciences, dynamic systems and automotive engineering have attained national and international reputation.

This permits the university to achieve its potentials for the long-term support of economic and social development in Saxony-Anhalt. The close proximity to the Max Planck and Fraunhofer Institutes, the Leibniz Institute for Neurobiology and other research partners in the regional capital provides opportunities for research cooperation.

The Centre for Neuroscientific Innovation and Technology (ZENIT) as an independent institute within the university facilitates the transfer of fundamental knowledge, primarily from medical and medical-technical research into utilisable product development. This all helps to strengthen companies' powers of innovation and secure the flood of information into the economy stemming from intensive research findings, thereby benefiting both partners.

[www.uni-magdeburg.de](http://www.uni-magdeburg.de)



## Excellence Network Molecular Biosciences

### Structures and Mechanisms of Biological Information Processing

The Federal State of Saxony-Anhalt is committed to the promotion of the molecular biosciences at the Martin-Luther-University of Halle-Wittenberg, and has therefore invested in the research programme "Structures and Mechanisms of Biological Information Processing". Both pure and applied research is supported, as well as the training of a new generation of research scientists. The network focuses on protein-based biological communication in plants and animals. Through characterisation of such processes, the Network seeks to attain a better understanding of the causes of disease and accelerate the transfer of results in medicine, plant cultivation and environmental studies.



Participating institutions include the departments of Biochemistry/Biotechnology, Biology, Physics and the Medical Faculty, as well as the Max-Planck Research Group for the Enzymology of Protein Folding, the Leibniz-Institute of Plant Biochemistry and the Leibniz Institute for Plant Genetics and Crop Plant Research (IPK) in Gatersleben. Members of the Network are also involved in the DFG-funded Collaborative Research Centres SFB 610 "Protein States with cell biological and medicinal relevance" (Leipzig-Halle) and SFB 648 "Molecular mechanisms of information processing in plants".

Further initiatives within Halle are closely associated with the Excellence Network: the "Mitteldeutsche Zentrum for Structure and Dynamics of Proteins", the DFG priority program SPP 1152 "Evolution of Metabolic Diversity", the DFG Graduate Program GRK 1026 "Conformational Transitions in Macromolecular Interactions" and the economically oriented State-funded Consortium in Protein Technology "Creating value using proteins as therapeutics and diagnostics".

#### The Network incorporates:

1. Flexible Research Clusters
2. An International Graduate Program "Plant protein complexes - structure, function and evolution"
3. Three Junior Research Groups

[www.exzellenznetzwerk-biowissenschaften.uni-halle.de](http://www.exzellenznetzwerk-biowissenschaften.uni-halle.de)





## Red Biotechnology at the Anhalt University of Applied Sciences (FH)



The Anhalt University of Applied Sciences with its three sites Bernburg, Dessau and Köthen has for many years displayed great competence within the areas of classical biotechnology. In the recent past, a supplementary main research area concerned with inflammation, allergies and cancer was established which primarily utilises modern strategies of red biotechnology and genetic technology.

Work is in progress on such areas as the identification, characterisation and genetic production of allergenic acting substances and the isolation of natural immune-modulating and antitumoural agents from micro and macroalgae.

Supplementing this research, a new project is investigating the elucidation of the ever-increasing discovery of regulatory coherences between proteinases, proteinase inhibitors and proteinase-activated receptors (PARs) and cytokines in connection with the above-mentioned diseases with the target of developing new therapeutic approaches.

This provides a solid basis within the field of red biotechnology covering the aspects of the primary causes of disease, the establishment of tests for the identification of active agents and the provision of sources for active agents.

The newly established "Centre of Life Sciences" has provided ideal conditions for research into medical applications; in this centre, valuable resources are bundled and extended, and both university-internal and -external cooperation is encouraged. This permits above all small and medium-sized companies to take advantage of complex research capacities on a high level.

A selection of the established tools utilised includes: above all, various bioassays (agar diffusion tests, cyto toxicity assays, NO Assays, proliferation and enzyme assays), sequence analysis and the quantitative determination of nucleic acids (real-time PCR) and a broad spectrum of cloning and heterological expression.

[www.hs-anhalt.de](http://www.hs-anhalt.de)

## University of Applied Sciences Magdeburg Stendal (FH)

### Studying in a green environment + applied and transfer-orientated research = strong demand



The University of Applied Sciences is home to over 5,000 students on its Magdeburg campus and approximately a further 1,300 on the site at Stendal.

These students come from all parts of Germany, numerous other European countries and also from other continents. This is a success story which only began in Magdeburg as recently as 1991. One of the most attractive and modern university campuses was completed in 2000. The history of the university is also characterised by an exceedingly positive development in student numbers. There is an enormous demand for university places here; this development has continued throughout 2006.

One of the additional challenges for the university has been the cultivation of an extensive network of international relations; the resulting success of this cultivation is impressive. We do not limit ourselves to contacts with other western countries, but are also conscious of our special geographical position acting as a bridge spanning the development of a wide-ranging cooperation network throughout Central and Eastern European countries which has in the meantime also spread into Arabic countries and as far as China.

The university sees itself as an economic and social partner with an academic staff of over 200 in a variety of faculties, modern laboratories and equipment and highly qualified students and graduates at its disposal. The university has utilised its cooperation with associations, multipliers and transfer institutions to make these resources available to small and medium-sized businesses and this has strengthened the rate of innovation for these companies. This demand-oriented approach in research is designed to find solutions for problems within the regional economic and social situation.

Faculties :

**Stendal:** applied human sciences and economics

**Magdeburg:** civil engineering, engineering and industrial design, communication, media, social and health studies and water and recycling management

[www.hs-magdeburg.de](http://www.hs-magdeburg.de)



## Fraunhofer Institute for Factory operation and automation IFF

The Fraunhofer IFF is your associate in Saxony-Anhalt for applied research and development



The Fraunhofer Institute for Factory Operation and Automation IFF is researching and developing in the primary sectors of virtual development and training, logistics systems and networks, automation and production and plant management. Our customers for contract research include the public sector, international industrial companies, the service sector and small and medium-sized companies.

In the area of medical technology Fraunhofer IFF has developed a measuring system to record exactly the movement involved in human walking. If there are any malfunctions in movement the system supports the diagnosis and records the progress of therapy. On the other hand the recording of movement is used for active therapy of walking malfunctions by means of bio-feedback and functional electro-stimulation.

Together with surgeons from the Magdeburg University Clinic our researchers are developing a virtual-reality based OP training for endoscopic intervention, the core of which is an authentic OP simulation. Virtual models and 3-D environments are also used for training technical assistants. In the area of automation we are developing robotic systems, which carry out time- and labour-intensive tasks in life science laboratories fully automatically: equipment for automated tissue-screening and for preparing samples for microbial analyses, to enable bacteria and moulds to be quickly identified.

The Fraunhofer IFF is integrated into national and international research and commercial networks and cooperates closely with the Otto von Guericke University Magdeburg and other advanced learning and research institutes in the region. The Fraunhofer scientists make their know-how available in interdisciplinary project teams to develop innovative products in the area of medical technology and to strengthen Magdeburg's position as an international scientific centre.

[www.iff.fraunhofer.de](http://www.iff.fraunhofer.de)

## Gesellschaft zur Förderung von Medizin-, Bio- und Umwelttechnologien e.V.



The GMBU e.V. [Association for the promotion of medical, biological and environmental technologies] operates in the area of applied industrial research with three independent specialised sections in Saxony-Anhalt, Thuringia and Saxony. The organisation functions as a centre for the transfer of competence and expertise between applied research and small and medium-sized companies in the areas of medical, biological and environmental technologies.

### Environmental biotechnology (Halle/Saale)

The main emphasis of this specialised section lies in basic engineering and the testing of plants up to pilot standard. In the innovative field of "Alternative separation processes and reactions" the application of microwaves and ultrasound offers an alternative access for revising established procedures in chemical and environmental protection technology. In the innovative field of "Biosensors / Microbiology" the development of new kinds of analytical and diagnostic strategies plays an outstanding role in the use of biological and biomimetic receptors.

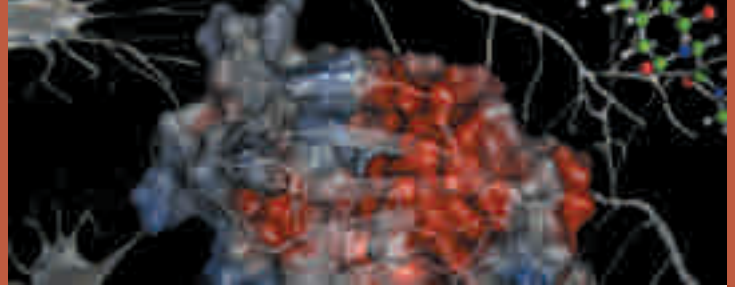
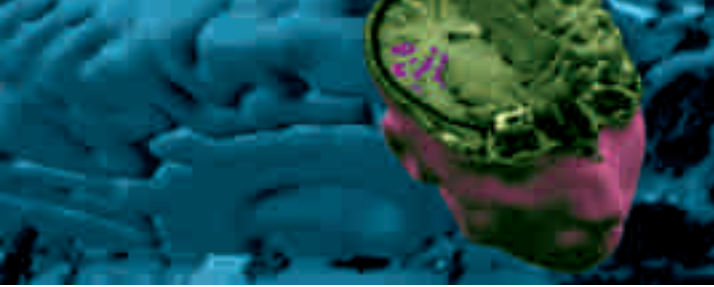
### Photonics and Sensorics (Jena)

The technical section carries out applied research and development in the areas of remission and fluorescence spectroscopy for medical applications and fluorescence detection and spectral imaging for bio- and genetic technologies. The development of optical and opto-chemical sensors for environmental and process monitoring is of considerable importance.

### Functional layers (Dresden)

The working party's range of services includes nanosol coatings for functionalising textiles, paper and medical products. The embedding of bioactive substances, biomolecules and micro-organisms in nano-structured anorganic metallic oxide gels (biocers) and studies of relevant coatings and bulk products are also important parts of the research and development work.

[www.gmbu.de](http://www.gmbu.de)



## Leibniz Institute for Neurobiology (IfN) Centre for research into learning and memory

### Learning and memory are central research topics in the IfN Magdeburg



Within the framework of multidisciplinary fundamental research, a multitude of problems concerning all functional organisational levels of the brain and behaviour are being investigated, ranging from the molecular interior of an individual cell to the human being as a whole.

This research field is one of the major challenges of brain sciences and demands not only complex methodical approaches but also excellent facilities, e.g. Europe's first 7 Tesla whole body tomographer. 140 committed scientists and other personnel have received highest national and international accolades.

The IfN is described in several expert reports as a "unique institute shining brightly within the scientific landscape" or as an institute with a "leading position among the Leibniz institutions". Currently, the IfN has opened up parts of its infrastructure for commercial utilisation via its friends association and the InnoMed e.V. - please ask us for more details.

[www.ifn-magdeburg.de](http://www.ifn-magdeburg.de)

## Max Planck Research Centre for the Enzymology of Protein Folding

The Research Centre for the Enzymology of Protein Folding was established in June 1996 under the direction of Gunter S. Fischer.



Proteins are the workbenches for living processes, under the participation of which metabolic reactions, conversions of forms of energy, defence against disease and many other phenomena of life function with high efficiency and unique precision. Biocatalysators help to function at the right time and at the right place.

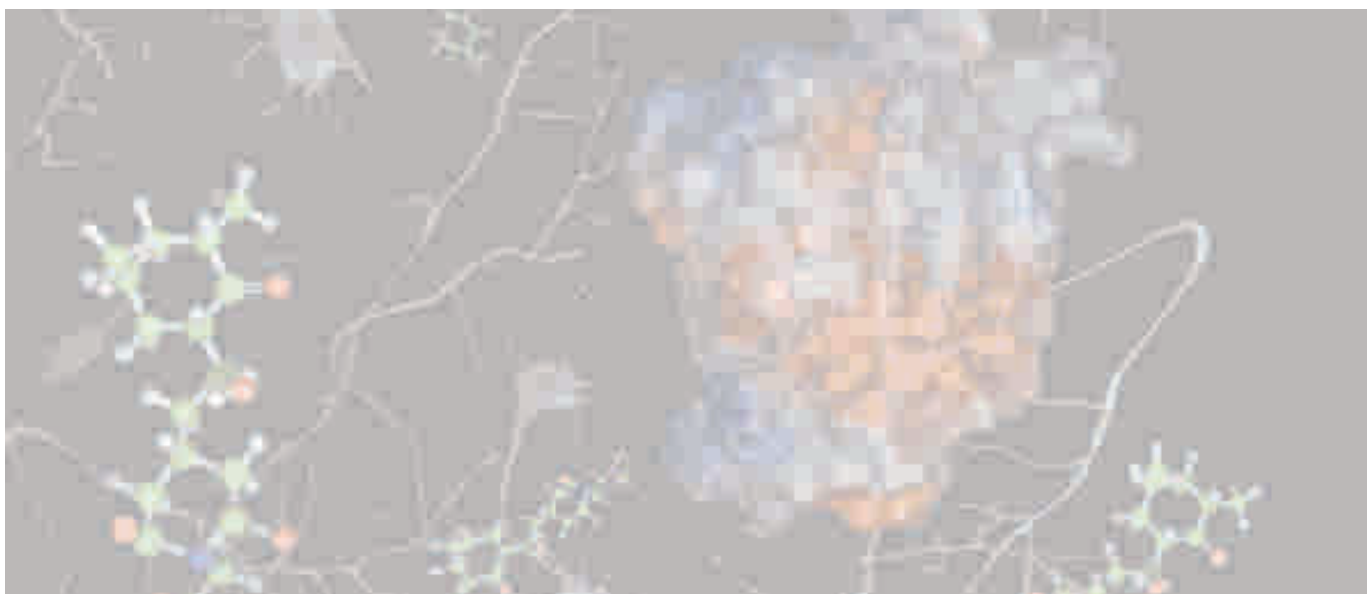
The scientists at the research centre are investigating to what extent proteins assist one another to achieve a correct, functional structure and whether interstages in the folding make a necessary contribution to the smooth operation of cellular events.

The scientists are working on the following research topics:

- the dynamic of conformation changes in polypeptide chains
- catalytic mechanisms and the biological function of fold-assisting enzymes (chaperones)
- chemosynthesis of modified proteins
- neuronal effects of chaperone enzymes
- cell cycle - integrated chaperone enzymes

In the biochemistry course at the Martin Luther University Halle-Wittenberg, members of the research centre represent the subject areas of protein chemistry, molecular biology, NMR spectroscopy and spectroscopic methods in biochemistry in lectures, seminars and practical training.

[www.enzyme-halle.mpg.de](http://www.enzyme-halle.mpg.de)



## Max Planck Institute for Dynamics of Complex Technical Systems Magdeburg

The Max Planck Institute Magdeburg is dedicated to the engineering sciences and bridges the gap between basic research and industrial application.



The main research activities of the Max Planck Institute for Dynamics of Complex Technical Systems Magdeburg focus - within a highly interdisciplinary research concept - on the analysis, synthesis, design and control of processes in chemical and bioengineering.

From this engineering point of view the Bioprocess Engineering group focuses on an important aspect of red biotechnology: virus vaccine production. Effective vaccines from low cost production with high dose numbers in short reaction time frames are needed today to cope with the threat of pandemics as well as to guarantee regular vaccination schedules recommended by doctors and advisory committees.

Therefore, optimisation of existing production processes but also a better understanding of biological fundamentals is indispensable. Extensive analytical data are collected from production in vessel 1 to 15 L scale. Different purification methods of inactivated virus material are compared. The trend to use disposables and sophisticated cultivation strategies as well as defined, non-animal derived media is followed. With the collected data mathematical models are developed, which serve as an additional tool to optimise these highly complex processes.

Further research activities at the institute focus on pharmaceutical aspects. The Systems Biology group develops and uses new mathematical models to describe cellular processes such as signal transduction or liver cell metabolism. This knowledge has great impact on the development of novel therapeutics by computer simulation (in silico) studies.

The research group Physical and Chemical Foundations of Process Engineering investigates several separation and reaction processes in detail. Data and parameters that are related to the chemical and bioengineering processes investigated at the MPI are collected and analysed. As an example the separation of chiral compounds which are essential in pharmaceutical industry can be named.

[www.mpi-magdeburg.mpg.de](http://www.mpi-magdeburg.mpg.de)





## INNO-Life

### Modern innovation and new business centre in Schönebeck-Bad Salzelmen

INNO-LIFE

In the ambience of the Schönebeck-Bad Salzelmen spa garden area the INNO-LIFE Innovation and New Business Centre has been created in an atmosphere of peace and relaxation as a source of development for medical engineering and technology, and associated specialisms.

A place of activity has arisen in a representative, fully restored historical building, that has nevertheless been equipped with the most modern infrastructure. Alongside the offices and in an outstanding location stands an auditorium for company presentations, special conferences and conventions. The working atmosphere is distinguished by the unique flair of a peaceful, relaxed health resort in the oldest saline spa in Germany. INNO-LIFE is located in a central position in Germany with outstanding connections to the A14, the A2 and the A9.

The favourable conditions form a basis for creative, interdisciplinary, fruitful and collaborative research and development. This takes place in close collaboration with relevant institutes from the Magdeburg Otto von Guericke University, especially with the Centre for Neuroscientific Innovation and Technology (ZENIT GmbH) as well as other universities and polytechnics.

With INNO-LIFE and its associates you will find a central place of activity for creative and effective interdisciplinary collaboration.

[www.inno-life.de](http://www.inno-life.de)



## Technology and Start-up Centre Dessau



The TGZ which originated in Dessau is, together with the Anhalt University of Applied Sciences and the already existing TGZ locations in Bernburg, Bitterfeld and Köthen, an integrative element of the Innovation and Research Centre Anhalt; which is in turn in content and organisation integrated in the innovations location network within the framework of the regional innovation strategy of Halle, Leipzig and Dessau. With this strategy, the region of Anhalt wishes to emphasise its position as a vital pillar in the innovative potential of Central Germany with its capacities and possibilities. The individual quality of the Innovation and Research Centre Anhalt is that - in correspondence to its structure - the University of Applied Sciences Anhalt has an influence on the specific features of the individual locations of this regional network and also represents the "centrality" of the network existing between the various sites and companies in the area. The institution has at the same time a direct presence in the scientific technology centres. Further synergies for science, innovation and research in the city will be created through the relocation of the Federal Environment Agency Dessau. The establishment and research focus in the TGZ in Dessau will be targeted around the following categories:

- innovation in civil engineering - mechanical engineering
- medical technology - air and aerospace technology
- architecture - landscape and garden architecture
- innovative facade engineering - technologically-oriented processes

Through the integration of existing transfer institutions for the encouragement of science, innovation and technology in the location of Dessau, existing innovative potential can be integrated and strengthened.

[www.dessau.de](http://www.dessau.de)





## Technology Park weinberg campus Second largest technology park of East Germany

On the one hand the **technology park weinberg campus** accommodates about 70 companies, which have mostly settled in the technology and new business centres, or in the bio-centre; on the other hand however it is also home to the scientific departments of the Martin Luther University, important institutes of the Max Planck, Fraunhofer, Helmholtz and Leibniz societies, plus the nationally important university hospital with more than 3,000 employees. A further 3,000 jobs are available in the rest of the technology park. EUR 735 mill. has been invested in the area since 1994.



Future investors can also find land for new building and existing buildings earmarked for redevelopment in the technology park on an area of approximately 30 hectares from EUR 31 sqm.

The new centre for bio-nano-technology with a main useful area of 5,400 sqm; incl. cleanroom technology in accordance with the GMP guideline ensures high-quality research standards.

In realising this project the City of Halle is positioned to react to the demand from research- and technology-orientated companies and divisions, and also from scientific institutes. Companies and research facilities in the areas of biotechnology, genetic engineering, medical technology, material technology, process technology, environmental technology and bioinformatics are particularly addressed.

[www.weinbergcampus.halle.de](http://www.weinbergcampus.halle.de)  
[www.tgz-halle.de](http://www.tgz-halle.de)

## ZENIT Centre for Neuroscientific Innovation and Technology

ZENIT [Centre for Neuroscientific Innovation and Technology] facilitates top-level neuroscientific research in Saxony-Anhalt via infrastructure and research areas.



ZENIT came into being in 1998 with the aim of using the renowned neuroscientific location of Magdeburg for transferring its pure research knowledge into usable product developments. ZENIT is an independent institution of the University, which together with a public sponsor, the City of Magdeburg, was established to let research space to commercial research companies, institutes and the university. Its location, directly on the site of the Otto von Guericke University clinic, provides it with the best possible conditions for technology transfer.

The aims of ZENIT are on the one hand scientific and on the other, commercial. They are intended to make the location in Magdeburg more attractive and so strengthen it. Support for spin-offs and newly established operations is the declared aim of the centre. As well as the provision of high-quality research areas, support and advice is also offered, especially on establishing contacts with scientific, commercial and business-promotion facilities in the companies' start-up phase. Start-ups are offered highly modern laboratories, special laboratory areas and offices on approx. 8,500 sqm of usable space. Resource can also be made to the most up-to-date telecommunications, EDP and other services.

The successful work of the last eight years is most strikingly reflected in the building of the ZENIT II research complex. The extension had become necessary because the space available in ZENIT I could no longer satisfy demand. For the neuroscientific location of Magdeburg building the research complex ZENIT II and rigorous pursuance of the professional interface function between commerce and academia means perceptibly strengthening a forward-looking commercial sector.

[www.zenit-magdeburg.de](http://www.zenit-magdeburg.de)



## NEMO - Network CellTech Bioreactor

Network management: TGZ Halle GmbH



The NEMO network "CellTech BioReactor", which arose from the "Network Management East - NEMO" promotion programme sponsored by the Federal Ministry for Trade and Industry is developing a new generation of bioreactors, for example patient-specific cytototherapy or the toxicological testing of substances.

After a successful first stage the "CellTech BioReactor" network is entering the second phase with its associates. The combine, which was started in July 2005, is now also receiving help from the state of Saxony-Anhalt - along with its support from the NEMO-programme - with its endeavour to develop miniaturised bioreactors for multiple cellular applications.

The next stages, as well as completing work on the basic structure, will include process monitoring and developing control and sensor technology, before a prototype is produced, which will then be tested. The associates involved are anticipating marketable results in approximately two years. The network is being coordinated by TGZ Technologie- und Gründerzentrum Halle GmbH.

[www.celltech-bioreaktor.de](http://www.celltech-bioreaktor.de)

## InnoMed e.V. - Network for neuromedical technology

**generate - initiate -  
coordinate - inform**



InnoMed, the network for neuromedical technology in the commercial region of Magdeburg, has developed from the environment of the Otto von Guericke University, Magdeburg, the Leibniz Institute for Neurobiology and the Centre for Neuroscientific Innovation and Technology (ZENIT).

The association links the high scientific confidence in Magdeburg in the area of the neurosciences with modern developments in medical technology by its industrial associates. The network bundles together the interests, resources and the know-how of its members and collaborators and by acting as a bi-directional agency offers them the opportunity to push on speedily with new developments in the combine and to present themselves jointly at a high level.

The main emphasis lies in the sectors of neuromedical technology, neuro technology/pharmacology and qualification.

[www.innomed-magdeburg.de](http://www.innomed-magdeburg.de)

## PharmaMD®

**Pharmaceuticals  
from Saxony-Anhalt**



As part of the initiative of the Federal Ministry for Education and Research "Innovative Regional Centres of Growth" innovative, biotechnologically orientated research and development companies and established small and medium-sized pharmaceutical companies from the Magdeburg region merged together in 2001 for the first time to form the "Pharma MD®" combine. The associates of PharmaMD® are IMTM GmbH, KeyNeurotek AG, FAN gGmbH, Serumwerk Bernburg AG, esparma GmbH Osterweddingen and university research groups in Halle and Magdeburg.

The aim of the pharmaceutical combine is the development, manufacture and marketing of new pharmaceutical products for treating widespread and so far only inadequately treatable diseases.

Pharma MD® has the following development platforms: Thiol-active cytoprotective agents and the combination of peptidase effectors. During the second phase a total of four product sectors were identified with a high market potential.

[www.pharmamd.de](http://www.pharmamd.de)

## MICROMED

**Network for innovative high-precision  
manufacture of components and  
elements for medical technology**



We have the following technological packages available:

- the development, testing and manufacture of electronic control elements
- the development, manufacture and marketing of medical technology products
- the development and manufacture of appliances and special machinery
- the development and manufacture of cutting, reshaping and follow-on tools and
- the manufacture of precision parts for machinery and plant construction
- the development and manufacture of plant parts

We are constructing with the network a competent centre for:

- the development and presentation of innovative machine tool and process technologies for the complete processing of high-precision components
- the development and manufacture of adaptations, including the associated electronic control, handling, monitoring and measuring modules
- the pilot production of new products and materials with the emphasis on medical technology

[www.micromed-sbk.de](http://www.micromed-sbk.de)





## Education and Further Training

### Medical Technology, Red Biotechnology and the Pharmaceutical Industry

In Saxony-Anhalt, there is great potential within the area of the education and qualification of employees within the fields of medical technology, red biotechnology and pharmaceuticals which can play a vital role in the competitive capacity of companies.

#### Investment in the future

The Martin Luther University Halle-Wittenberg can look back on a long tradition of academic education in classical diploma study courses such as biology, agriculture and biochemistry. At the Anhalt University of Applied Science (FH) in Köthen, there is a similar long tradition in the training of graduate engineers for (bio-) processing engineering. At the Otto von Guericke University in Magdeburg, the study course in bio-system technology has been offered since 2004, a course which aims to integrate biological, engineering and system technology sciences and the associated strong interdisciplinary mentality and operating principles of its graduates - the complete system of the cell is the focal point.

#### Innovations in education

In addition to the classical diploma study courses offered by universities and universities of applied sciences, bachelor and master degree courses are increasingly being introduced. The subject areas covered range from biomedical engineering (Anhalt University of Applied Sciences and MLU Halle-Wittenberg), molecular biotechnology and bio-processing engineering and pharmaceutical technology as a bachelor course and medical systems engineering (M.Sc.) at the Otto von Guericke University in Magdeburg with a particular focus on medical- and biotechnology and medical computer sciences.

#### Bundling of competence

The "Centre of Life Sciences" at the Anhalt University of Applied Sciences, established in September 2005, represents a centre of research and education which bundles the wide variety of research activities within the field of pharmaceutical and biotechnology. Within this centre, research groups from the HS Anhalt within the academic areas of biochemistry, bio-analysis, agricultural biotechnology, biotechnology, food biotechnology, bio-processing technology, food technology and nutrition are cooperating with the aim of creating synergies. An important aspect of all direct study courses is the integrated practical phases available. The "Centre of Life Sciences" offers research services within the fields of red biotechnology and pharmaceuticals, the major area of environmental and pharmaceutical biotechnology and also within the subject area of food biotechnology / nutrition.

#### Strengthening the potential of skilled personnel: non-academic training

In close cooperation with businesses, the company BIO Mitteldeutschland and the European Association for Vocational and Social Education r.s., the State of Saxony-Anhalt has been supporting an initiative for the vocational training of biological and chemical laboratory technicians and the qualification of employees in the biofuel manufacturing industry. 20 trainee biological and chemical laboratory technicians began their training course in September 2006; this is intended to meet the demand for non-academic skilled personnel in existing firms.

The aim is the long-term guarantee of training courses for non-academic skilled personnel for biotechnologically oriented companies and research institutes within Saxony-Anhalt. In addition, the network InnoMed e.V. has held numerous qualification courses within the area of medical technology in order to tailor the core competence of employees within this sector to the needs of regional companies and research institutions.

### Internationality is an obligation

The shift in the focus of academic education in recent years has also had an initial impact on other institutions, as confirmed for example by the commitment of numerous non-university research institutions. Since October 2005, 16 young scientists have been studying in Halle at the *International Max Planck Research School for Science and Technology of Nano-structure* which was created by the Max Planck and Fraunhofer institutes and the Martin Luther University Halle-Wittenberg.

### It is never too early to start - school education

The Werner von Siemens Gymnasium (grammar school) in Magdeburg and the Georg Cantor Gymnasium in Halle have been designated as scholastic centres for mathematics and natural sciences. As an example, the Werner von Siemens Gymnasium begins as early as the fifth grade to prepare mathematically, scientifically and technically gifted and keen pupils for university entrance. Participation in benchmarking tests among German schools with specialised areas, additional working groups in microscopy and microbiology and close cooperation with the Leibniz Institute for Neurobiology and the universities in the region are targeted at strengthening the interest and abilities in these subject areas.

### Green Laboratory Gatersleben

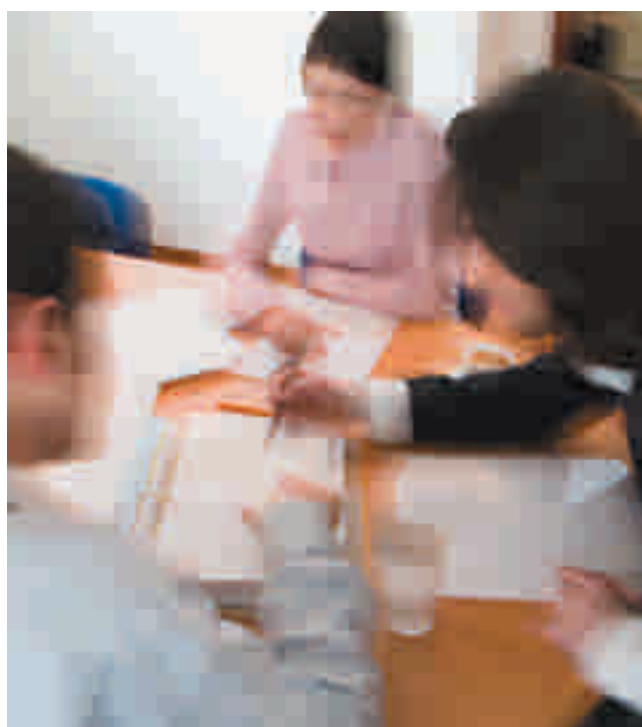
In addition, the recently opened Green Laboratory in Gatersleben provides school pupils with a modern experimental education and ideal conditions for the preparation of educational competitions (such as "*Jugend forscht*" [youth research] or the "Biology Olympics"). Up to 24 pupils are able to conduct experiments in the Green Laboratory. Regular further training courses for teachers are planned; the laboratory also aims to reach the general public with a variety of events and holds information functions on the subject of future-oriented life sciences. The Green Laboratory is funded by the association for the support of the school laboratory "Grünes Labor Gatersleben" e. V. and was initiated by the BIO Mitteldeutschland GmbH, the regional district of Aschersleben-Staßfurt, the association for economic promotion in Aschersleben-Staßfurt and the association InnoPlanta.

**Table 1**

Students and graduates in 2005 in a variety of study subjects at universities and universities of applied sciences in Saxony-Anhalt

Subject	Students	Graduates*
Biochemistry	440	69
Biology	857	77
Biotechnology	506	52
Chemistry	295	15
Pharmaceuticals	627	95
Physics	467	38
<b>Total</b>	<b>3192</b>	<b>346</b>

**Source:** © Statistical Regional Authority Saxony-Anhalt, Halle (Saale), 2006  
\*includes examinations passed in the examination categories doctorate, diploma (university and FH), teacher training courses, Master and Bachelor degrees.





BETEILIGUNGSGESELLSCHAFT SACHSEN-ANHALT mbH

## IBG Beteiligungsgesellschaft Sachsen-Anhalt mbH

The provision of capital is an essential factor as far as establishing, locating and developing a company is concerned. IBG Beteiligungsgesellschaft Sachsen-Anhalt mbH makes risk capital available to technology-orientated, innovative companies.

The investments are mainly concentrated on the following technologies:

- life science, agriculture and medical technology
- chemical industry and nanotechnology
- engineering and electro technology
- renewable energies
- service and materials technologies
- software / new media

So far we have about 70 innovative firms in the portfolio with a total volume currently of EUR 140 mill. (of which EUR 65.8 mill. is in life science, agriculture and medical technology). Overall the financing has created or consolidated more than 3,500 jobs. In collaboration with other financial partners this is contributing to a competitive economic structure in the region.

[www.ibg-vc.de](http://www.ibg-vc.de)



## Investitionsbank Sachsen-Anhalt

Investitionsbank Sachsen-Anhalt [Saxony-Anhalt Investment Bank] is the sponsoring bank in Saxony-Anhalt and your competent partner in all questions of regional, national and EU development programmes in our region.

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- commercial projects, such as support for companies, especially new businesses and small and medium-sized companies
- technology and innovation
- infrastructure
- agricultural and rural initiatives
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We at the IB offer a broad product range. In close collaboration with our partners, the regional government, regional industry and chambers of commerce, banks, savings banks etc, we provide you as an investor with an all-round service from advice on all aspects to financing facilities as a supplement to those provided by your regular bankers.

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At present eleven employees, specialists from many different sectors, make up the young and efficient core team of CFH.

CFH maintains a temporary collaborative partnership. That is why we place great emphasis on an intensive dialogue with the shareholders of the companies in which we invest.

We focus throughout Germany on companies with strong growth that are geared towards technology or have an established market position.

[www.cfh.de](http://www.cfh.de)

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## Other BMD Publications:

- Biotechnology: Saxony-Anhalt's Initiative and Implementation Strategy
- Plant Biotechnology. Tradition - Expertise - Innovation
- Protein Biotechnology. Tradition - Expertise - Innovation
- PharmaMD® - Drugs from Saxony-Anhalt. Tradition and Future
- Biotechnology: Report 2003-2005 (German)

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## Imprint

Editors: Marketing Agency of the State Saxony-Anhalt  
© 2006 BIO Mitteldeutschland GmbH  
Design/Print: 2D-Grafik-Design/Halberstädter Druckhaus GmbH



*Tradition and Innovation*

## Saxony-Anhalt

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