



Spot on Biotechnology Business 2021/2022





From Mind to Market:
Biotechnology Company Directory 2021/2022
North Rhine-Westphalia



Editorial

Dear Reader,

Over the last one and a half years, we have witnessed a historical, global race to counter the common threat of an evolving new corona virus. Decades of foundational research and innovation in the biotechnology sector enabled the development of safe and effective vaccines and diagnostics in record time and, subsequently, countless lives have been saved.

However, our changing world will require us to keep pushing the technological frontier not only in medicine and health. Decreasing availability of resources and climate change will force us to apply biotechnological innovations – increasingly in combination with new digital capabilities – to the challenges ahead. For example, biotechnology will be indispensable for implementing closed-loop processes and to biologize industry. The sector is uniquely positioned to contribute substantially to climate protection and to securing the supply of food and raw materials.

In the German State of North Rhine-Westphalia (NRW) we have long recognized the importance of the sector to build a sustainable future. We are the proud home to many highly innovative companies in biotechnology and the life sciences. A vibrant mix of excellent research universities and institutes, such as Max Planck and Fraunhofer, is complemented by a sizable community of spin-offs and SMEs, as well as large pharmaceutical and life sciences companies. Together with a well-educated workforce, the biotechnology ecosystem in NRW is a leading cluster for technological innovation in Europe.

To build on our strengths and foster future innovation, we established a series of measures over the last few years to further



support the translation of new ideas into applications. New start-up centers at selected universities, the expansion of (digital) infrastructures, and targeted funding for entrepreneurs, have contributed to make NRW the leader in Germany with regards to the number of start-ups founded.

Given all those efforts, I am pleased to see that the biotechnology ecosystem in NRW is growing steadily and outperforming growth in other sectors on a regular basis. For example, the number of biotechnology companies in NRW doubled in the last 10 years, and those companies generate 40% of all revenues generated in the sector in Germany.

BIO.NRW – North Rhine-Westphalia's biotechnology hub and your access point

to the ecosystem – has been successfully supporting entrepreneurs and young companies with targeted networking activities, access to funding resources, and in establishing international contacts since 2008. As the pandemic has so clearly shown, we will urgently need further technological advances in biotechnology to master the challenges ahead, and we will need to collaborate to meet those challenges as efficiently as possible.

I am confident that NRW and its growing biotechnology sector will continue to make important contributions to enable both a sustainable and prosperous future!

A handwritten signature in blue ink, appearing to read 'Andreas Pinkwart', written over a light blue circular scribble.

Prof Dr Andreas Pinkwart

Minister of Economic Affairs, Innovation, Digitalization and Energy of the State of North Rhine-Westphalia



Greeting

Dear Reader,

We look back on a busy year for biotechnology! An industry that previously received little and sometimes public attention is now getting a boost. The coronavirus pandemic catapulted biotechnology into the limelight. Nowadays, almost everyone is familiar with vocabulary such as vector vaccine or mRNA.

What gave the German biotech industry its sudden positive image was its ability to provide solutions during the pandemic within a very short period of time. The first vaccines approved for use in the EU were developed by German biotechnology companies. PCR and rapid tests are also a biotechnology product. In both instances, it is remarkable how quickly the industry reacted. The first diagnostics were available shortly after the outbreak of the pandemic and the first vaccine was developed and approved for use in less than 12 months.

This success is also reflected in the figures. The industry's turnover is at a record high. Here in NRW, this is tangible. Turnover in the industry increased by 37% compared to the previous year. A considerable contribution was made by Qiagen, a company that developed a corona test at the very beginning of the pandemic. The company's share price increased sharply at this point in time and recently the company was admitted to the German leading index DAX. The state of NRW is also one of the leaders when it comes to vaccine development with the company Janssen. In addition, many other companies have developed components for vaccine production and for virus research, for example. During the crisis, the flexibility and creativity of biotechnology companies became evident, with companies using

platform technologies, for example, to react quickly and find appropriate solutions.

And after the crisis? The visibility of the industry in the public eye has increased and people have experienced first-hand that biotechnology is capable of delivering solutions for acute problems. It now has an image as a technology that can make a difference and change things. How are things going to progress? Biotechnology is an interdisciplinary technology with applications in different sectors, where it can either complement or replace processes. The SARS-CoV-2 diagnostics and vaccine development are only two examples. Biotechnology can also be used to produce detergents, plastics, cosmetics, and even

clothing. And new applications are already emerging, such as clean meat. The potential of biotechnology as a solution provider is not yet exhausted and it can contribute to bringing about change in various areas, including nutrition and climate protection.

Biotechnology has captured the attention of policy makers, the public, and investors. This should facilitate access to capital and accelerate technology transfer in the long term. We are confident that the industry will continue to grow and that it will maintain its positive course.

Your BIO.NRW Team



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About BIO.NRW

BIO.NRW - Business for Biotech

Biotechnology offers decisive approaches to solving the global challenges of our time. In order to drive the sustainable development of biotechnology in North Rhine-Westphalia (NRW), the players involved should be as well connected as possible. The BIO.NRW network acts on behalf of the state government, connecting entrepreneurs, scientists, investors, and the public. In addition, the network promotes cooperation at the state level as well as on a national and international level. BIO.NRW engages in location-based marketing, offers networking events, and supports young companies and start-ups in a variety of ways.

A particular strength of NRW is the many companies that are active in pharmaceutical biotechnology. With its focus area BIO.NRW.red, BIO.NRW covers a range of topics specifically tailored to the pharmaceutical biotechnology sector. Structural change and climate targets are catalyzing a shift in industry towards sustainable management and production. BIO.NRW addresses the topic of bioeconomy in its new focus area BIO.NRW.eco. In doing so, BIO.NRW is further developing the strengths of North Rhine-Westphalia as a location for research and innovation and promoting the growth of the biotechnology business landscape.

Keeping a close eye on the NRW biotechnology scene

The biotech sector in North Rhine-Westphalia has developed rapidly over the past ten years, which is partly due to a number of advantageous location factors. BIO.NRW provides information on the prospects, strengths, and potential of NRW as a location for biotech-

nology and how the associated sectors are developing here. This includes the annually updated key figures that feature in this brochure. In addition, BIO.NRW provides an overview of current R&D activities in industry and academia. All this information is also available to everyone free of charge on the [BIO.NRW homepage](#). Information about industry-relevant [news](#) and [events](#) are presented here. The BIO.NRW online databases provide a list of [companies](#) and [scientific institutions](#) that are active in the life sciences sector.

Special service: the COVID-19 information and contact platform

The BIO.NRW website offers a [platform](#) to all companies and scientists in NRW with up-to-date information on the COVID-19 pandemic. This includes funding programs and resources from the state, federal government, and EU as well as relevant reports from industry and science. In addition, we also offer the possibility of individual cooperation and contact enquiries.

Supporting young professionals is our business

One of BIO.NRW's main concerns is to support young professionals in biotechnology. BIO.NRW organizes various [events](#) where young professionals and founders can get in touch with industry representatives. One example is the BIO.NRW Breakfast Club. In addition, BIO.NRW is represented with joint exhibition stands at all major national and international trade fairs in the sector, giving SMEs and start-ups the opportunity to draw attention to their activities and make contact with potential business partners. BIO.NRW also arranges individual cooperation partners

on request. The Business Angel Network BIO.NRW helps with the financing and promotion of biotech start-ups. In addition, a forum that brings together institutional investors, private investors, business angels, and developers provides [information](#) on the current biotech scene in NRW. During workshops, BIO.NRW provides information on special funding measures tailored to the life sciences sectors. Funding opportunities from the EU, the federal government, and the state of NRW are also presented in these workshops.

We aim to support technology transfer

NRW is one of the most innovative regions in Germany. It is particularly important to bring new technologies to market and to put them into application.

Supporting technology transfer is one of BIO.NRW's key tasks. BIO.NRW initiates cooperation between the players in the value chain in order to turn ideas and scientific findings into forward-looking processes and marketable products more effectively. In addition, BIO.NRW organizes events, working platforms, and meetings that promote dialogue between companies, researchers, investors, and decision-makers in order to intensify cooperation.

Thematic focus area BIO.NRW.red

[BIO.NRW.red](#) is the thematic focus area for "red" pharmaceutical biotechnology in the BIO.NRW network. As a traditionally strong hub for the chemical and pharmaceutical industries with solid industrial infrastructures, North Rhine-Westphalia is an ideal incubator for the development and expansion of new biotechnological applications.

Most biotech companies in NRW are traditionally active in the pharmaceutical sector. Internationally renowned companies such as Bayer, Johnson & Johnson, UCB, Grünenthal, Henkel, and Evonik are testament to the hugely important role played by NRW in this environment. In addition, the state is also home to a large number of young businesses like Qiagen and Miltenyi and start-up companies such as AiCuris, Priavoid, and Abalos Therapeutics GmbH. These are just a few examples of the great diversity NRW has to offer.

The COVID-19 pandemic would be unmanageable without medical biotechnology. By supporting the development of drugs, vaccines, and test systems, medical biotechnology in North Rhine-Westphalia is once again demonstrating its great potential.

Throughout Germany, medical biotechnology is crucial to innovations in the pharmaceutical industry. This is the case, for example, with the development of recombinant antibodies and completely new antibody formats called antibody derivatives. These kinds of pharmaceuticals provide important innovative therapies for diseases that, up to now, could either barely be treated or not at all¹.

The sales of biopharmaceuticals (pharmacy and hospital market) increased by 14 % in 2020 compared to the previous year, amounting to € 14.6 billion. Its share of sales of the total pharmaceutical market (€ 47.5 billion) stands at 30.8 %, an increase of 14 % compared to 2019 (total market growth: 7.8 %)¹.

In 2020, 56 drugs with a new active ingredient, a biosimilar active ingredient, or a new combination of known active ingredients were approved in the EU. Of these new approvals, 25 alone were biopharmaceuticals, representing 45 % of all new approvals. Since 2005, the biopharmaceutical pipeline has more than doubled. In 2005, 256 clinical candidates were documented, a figure which rose to 657

(clinical phases I to III) by the end of 2020¹. A 10-year comparison for the years 2010 and 2020 (published at the end of June 2021 in the biotech report “*Medizinische Biotechnologie in Deutschland 2021*”) shows the growing importance of biopharmaceuticals for patients and for Germany as a pharmaceutical location. The number of approved biopharmaceutical products rose from 198 in 2009 to 339 in 2020. The biopharmaceutical pipeline (including vaccines) also grew significantly by 27 % (from 516 to 657). The positive employment trend has continued, with a 5.4 % increase in the number of employees in the sector and biopharmaceutical sales almost tripling during this 10-year period¹.

Due to this hugely significant development and market potential, the establishment of [BIO.NRW.red](#) as a thematic focus area was a logical and suitable step. Launched in 2010 as a strategic initiative by BIO.NRW, it has served as a platform for interdisciplinary exchange between experts from the pharmaceutical industry, biomedical research, health care, medicine, and pharmaceutical biotechnology ever since. [BIO.NRW.red](#) is now a stable and enduring network in NRW, with significant growth potential for experts from a wide variety of cross-sectional areas, such as medical diagnostics, drug development, regenerative medicine, and gene therapy.

Thematic focus area [BIO.NRW.eco](#)

Like other regions, North Rhine-Westphalia is faced with global societal challenges such as climate change, dwindling resources, a loss of biodiversity, urbanization, demographic change, and structural change. Solutions to these challenges are complex and require a comprehensive approach supported by society, the business world, and policymakers at state level. The bioeconomy can play a role in addressing some of these issues, as North Rhine-Westphalia offers good conditions for the establishment of a bioeconomy model

region, such as a supply of biogenic raw materials, existing industrial value chains, a large quantitative and qualitative selection of side and waste streams, good infrastructure, and a highly innovative academic landscape. The fact that the European bioeconomy sector was worth € 2.4 trillion in 2018²⁰ serves to underline North Rhine-Westphalia's potential.

The bioeconomy refers to the knowledge-based production and use of renewable resources to provide products, processes, and services in all economic sectors within the framework of a sustainable economic system. To achieve this, the bioeconomy often, but not exclusively, uses biotechnological methods and processes.

To ensure that biotechnological methods and processes are used in the sense of a bioeconomy, a wide variety of actors from different value chains and often from different industries and economic sectors must work together. However, in most cases, cooperation is not sufficient to create a legal framework supported by policymakers or to garner acceptance within society for innovative processes, products, and services. To ensure successful networking, [BIO.NRW.eco](#) supports actors from science, industry, politics, and society in collaborating to establish a sustainable economic system based on the model of the bioeconomy. [BIO.NRW.eco](#) organizes networking events and webinars on various different topics, provides information on funding opportunities for bioeconomy, and supports start-ups.

Spot on Biotechnology Business

Biotech Landscape in NRW

North Rhine-Westphalia (NRW) lies at the heart of Europe. This becomes particularly clear when you take into account the fact that 160 million people live within a day's journey of its state capital, Düsseldorf. With almost 18 million inhabitants, NRW is Germany's most populous federal state². In total, 10 million people live in the Rhine-Ruhr region, Germany's largest and densest metropolitan area³. This population density is also reflected in the state's infrastructure: NRW has six international airports, Germany's densest rail network, and the world's largest inland port (the Port of Duisburg)⁹. It therefore comes as no surprise that NRW is an attractive location for businesses. And the numbers back this up: almost one-fifth of Germany's gross domestic product is generated in NRW⁴ and one-fifth of foreign companies are based in NRW (Figure 1)⁵. This puts NRW at the top of the ranking of German federal states. If classified as an independent exporting nation, NRW would rank between the Netherlands and Saudi Arabia⁴.

Traditionally, NRW is Germany's most important location for the chemical and pharmaceutical industry. The headquarters

of many large companies and major brands are based here, including Bayer, Evonik, Henkel, Grüenthal, Johnson & Johnson, and UCB. On top of this, NRW has now become one of the top locations for the life sciences industry.

In the last 25 years, about 500 life sciences companies have settled in NRW⁶, 112 of which are dedicated biotechnology companies (Figure 2). NRW has therefore also developed into a hotspot for the biotechnology industry. Innovative technologies are applied to major industry branches that serve health/medicine, chemicals, food, and environment biotechnology, thus ensuring that the biotechnology sector is growing rapidly. Among the major business areas covered are industrial, nano- and pharmaceutical biotechnology, and there is also a focus on enabling technologies and supporting services. Biotechnology in NRW now represents an active, multicentric network, which is setting the pace for the powerful pulse of the state's life sciences business.

Stimuli for Start-Up's

Numerous successful start-ups and spin-off companies are able to flourish alongside

the strong chemical and pharmaceutical industries in NRW. This entrepreneurial excellence is supported by Europe's densest network of excellent academic institutions. It is therefore not surprising that many of today's successful biotechnology companies started out as university spin-offs. In order to promote start-ups from universities, the Ministry of Economic Affairs, Innovation, Digitalization and Energy of the State of North Rhine-Westphalia has launched the [Excellence Start-up Center.NRW](#). The initiative is intended to strengthen the start-up culture and thus improve technology transfer. Six universities will receive funding of € 150 million over five years. There is also a rich and robust funding environment to support and promote the industry, including venture capitalists and business development organizations.

Many start-ups also benefit from technology or incubator centers, of which there are about 60 in NRW¹⁰. Incubators act as a catalyst for economic development and promote technology transfer all the way from mind to market. They promote business start-ups and subsequently support the start-ups to ensure their survival and growth. Specific services provided by the centers include renting affordable laboratory and office space, arranging business contacts, providing advice on financing options, and advising on starting or relocating a business.

At the time of writing, 144 biotechnology and life science companies were incubated by 21 technology centers (page 15).

The technology park BioCampus Cologne deserves special mention, as it is one of the largest of its kind in Germany. Across a total area of more than 25 hectares, it houses more than 23,000 square meters

- 17.9 million inhabitants⁴
- NRW generates 20.9 % (€ 697 billion) of the German GDP⁴
- NRW generates 5.2 % of the European GDP (EU-27)^{4,27}
- 20,000 international companies are located in NRW⁵
- 21.4 % of foreign direct investment flow into Germany ends up in NRW⁷
- 397,324 million Euro trading volume in 2020 (summing in- and exports)⁸
- 6 international airports⁹
- 6,000 km rail network⁹
- The Duisburg inland port handles 110 million tonnes of goods annually⁹

Fig. 1: NRW at a glance

of office and laboratory space, including state-of-the-art S1 and S2 laboratories and industrial production facilities.

The success of the favorable conditions for start-ups is also backed up by figures: 19 % of all German start-ups are based in NRW, which is the highest rate in Germany¹¹.

One of NRW’s current success stories is the start-up NUMAFERM. Founded in 2017, NUMAFERM has won several awards for the development of a platform technology for the biotechnological production of peptides of any length. The process is cheaper and more environmentally friendly than comparable chemical syntheses. Another example of a successful start-up from NRW is Acus Laboratories. Using a unique forward genetic screening technology, Acus Laboratories can validate and predict drug targets as well as drug resistance. Founded in 2018, the company has since expanded its business to China. The depletion of resources and climate change call for more sustainable production processes. The start-up b.fab, founded in 2018, has dedicated itself to this goal by using CO₂ as a raw material and converting it into higher value products using a combination of biotechnology and electrochemistry. These are just a few examples of NRW’s versatile start-up scene.

Academic Biotech Landscape

North Rhine-Westphalia offers the most extensive network of academic institutions in Germany. Six of the ten largest German universities (by number of students) are located in NRW¹². More than a quarter of all students in Germany are enrolled at a higher education institution in NRW¹³. In the academic year 2019/20, 40 % of the students in NRW studied one of the STEM subjects (natural sciences, technology, engineering, mathematics)¹⁴. In the field of biotechnology, students have the opportunity to specialize in cell biology, (bio)

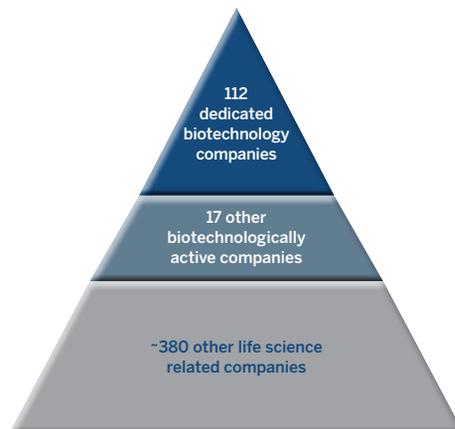


Fig. 2: Life science company landscape in North Rhine-Westphalia

medicine, biochemistry, genomics, proteomics, metabolomics, molecular biology, systems and synthetic biology, analytics/microsystems, bioinformatics, and process engineering.

RWTH Aachen University and the University of Bonn were awarded the rare “elite university” label as part of the Excellence Strategy in 2019. In addition, 14 Clusters of Excellence in Germany are funded in North Rhine-Westphalia¹⁵. Among them are five that deal with topics in the field of the bioeconomy or life sciences. In addition to the highest density of universities in Germany, the four major German research organizations – the Fraunhofer-Gesellschaft, the Helmholtz Association, the Leibniz Association, and the Max Planck Society – operate several facilities with life sciences activities in the state.

The coronavirus pandemic has also influenced science in NRW. In addition to vaccine and treatment development, scientific institutions are primarily concerned with topics such as the course of the disease and the pandemic, long COVID, and the prevention of future pandemics.

The VIRAL network is the new Virus Alliance NRW, which emerged in 2021. This is a

Tab. 1: Number of dedicated biotech companies

Business Year	NRW dedicated biotech companies	Germany (active companies)
2008	61	501
2009	68	531
2010	71	538
2011	77	552
2012	84	565
2013	87	570
2014	89	579
2015	95	590
2016	109	623
2017	108	647
2018	102	679
2019	106	n.d.
2020	112	736

2008 - 2014 and 2018 - 2020 based on survey by BIOCUM AG; 2015 - 2017 based on survey by BIO Deutschland

Biotechnology Map of North Rhine-Westphalia

Life Science Technology Parks and Incubators



Name		City	Life Science companies	Homepage
1	ZBMT - Zentrum für Bio-Medizintechnik	Aachen	12	www.agit.de
2	TZA -Technologiezentrum am Europaplatz Aachen	Aachen	3	www.tza-aachen.de
3	INCA Technologiezentrum GmbH	Ascheberg	2	www.inca-technologiezentrum.de
4	its-Internationales Technologie- und Service-Center Baesweiler	Baesweiler	6	www.its-center.de
5	Technologiepark Bergisch-Gladbach	Bergisch-Gladbach	1	www.tbq.de
6	Technologiezentrum Bielefeld	Bielefeld	1	www.technologiezentrum-bielefeld.de
7	BMZ - BioMedizinZentrum Bochum	Bochum	5	www.bmz-bochum.de
8	TZR - Technologiezentrum Ruhr	Bochum	1	www.chip-tzr.de
9	Bio-Security	Bönen	10	www.bio-security.de
10	BMZ - BioMedizinZentrum Dortmund	Dortmund	22	www.bmz-do.de
11	Zentrum für Mikro- und Nanotechnologie	Dortmund	1	www.mst-factory.de
12	LSC - Life Science Center Düsseldorf	Düsseldorf	14	www.ditec-dus.de
13	TPH - Technologie Park Herzogenrath	Herzogenrath	4	www.tph.de
14	BioCampus Cologne Grundbesitz GmbH & Co. KG	Cologne	18	www.biocampuscologne.de
15	RTZ - Rechtsrheinisches Technologie- und Gründerzentrum Köln GmbH	Cologne	19	www.rtz.de
16	Creative Campus Monheim	Monheim	9	www.cc-monheim.de
17	Technologieförderung Münster GmbH	Münster	6	www.technologieforderung-muenster.de
18	CeNTech - Center for Nanotechnology	Münster	7	www.centech.de
19	Gründer- und Technologiezentrum Rheinbach	Rheinbach	not specified	www.wfeg-rheinbach.de
20	Forschungs- und Entwicklungs-Zentrum Witten GmbH	Witten	1	www.fez.de
21	Technologiezentrum Wuppertal W-tec GmbH	Wuppertal	1	www.w-tec.de
Total: 21			144	

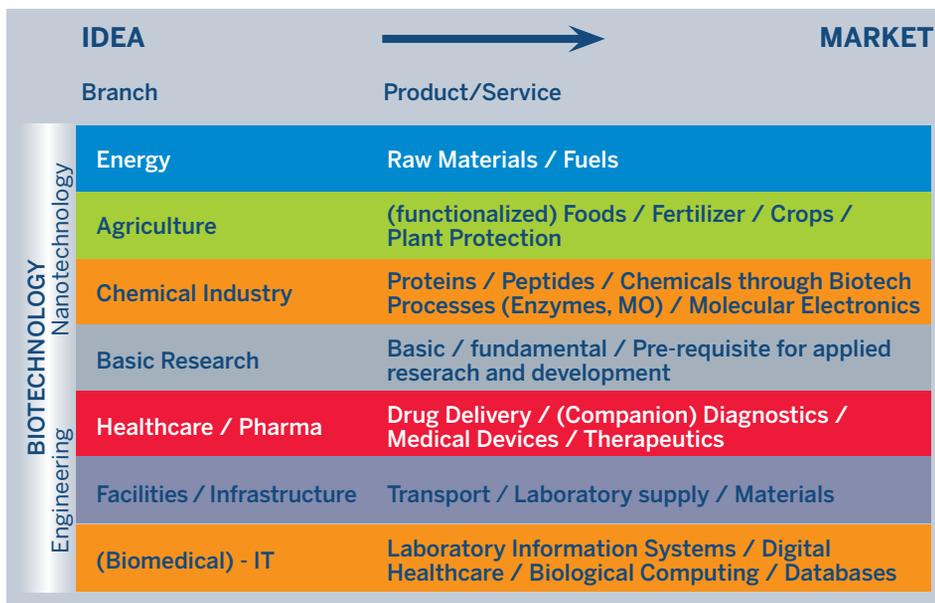


Fig. 3: Biotechnology is a strongly linked industry

location-independent network of scientific institutions working in the field of infectious medicine in North Rhine-Westphalia. It aims to pool scientific expertise on the current COVID-19 pandemic in NRW. The focus is on topics such as immunity, epidemiology, virus stability, and inactivation. The Alliance re-

ceived funding of € 900,000 from the state of NRW. The network aims to strengthen scientific cooperation between the university hospitals in Essen, Bonn, Bochum, Cologne, and Münster as well as the University of Witten-Herdecke. The network is coordinated by the office at Düsseldorf University Hospital.¹⁶

The COVIMMUNE consortium investigates the connection between the immune response and the clinical course of COVID-19 as well as possible long-term effects. The consortium involves experts from the fields of virology, medicine, immunology, bioinformatics, and systems biology from the University of Bonn and the University Hospital Bonn.

In order to investigate the mutability of the virus' genetic information, genome researchers throughout Germany have joined forces to form the German COVID-19 Omics Initiative (DeCOI). Sequencing is used to determine changes in the viral genome in order to draw conclusions about the origin of viral mutations. Metagenome analyses in patients should also provide information on which infections occur in connection with SARS-CoV-2. In NRW, DeCOI is supported by scientists from the university hospitals in Düsseldorf and Bonn and the universities in Aachen, Cologne, and Bonn.

Scientists at the University of Münster and University Hospital Münster are investigating the origin of new types of viruses. Within the framework of the National Research Platform for Zoonoses, diseases that are transmissible between humans and animals are being investigated. The research platform aims

	NRW *	Germany *	Percentage of NRW relative to Germany
Number of employees	5,440	27,200	20.0 %
Turnover € bn	2,63	6,710	39.2 %
R&D expenditure € Mio	339	2,140	15.8 %
Biotechnology active companies	112	736	15.2%

* data according to survey by BIOCUM AG

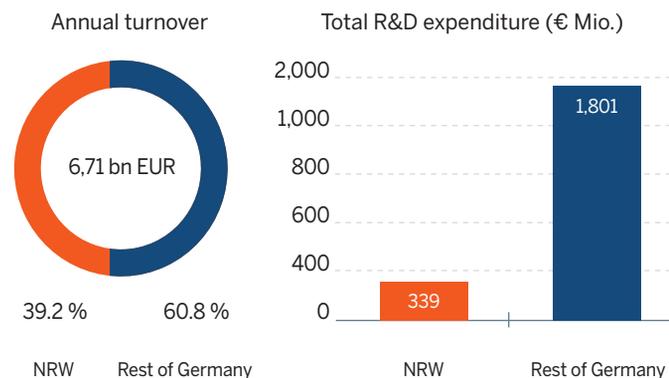


Fig. 4: Key biotechnology facts; NRW and Germany

to improve the prevention, diagnosis, and therapy of zoonoses.

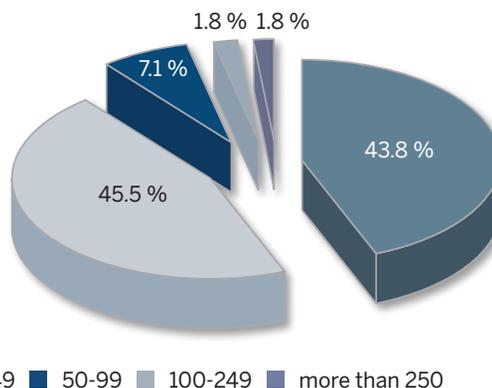
BIO.NRW provides detailed information and further developments of the academic life sciences landscape in NRW in its [Spot on Biotechnology Science](#) compendium. The brochure presents a total of 227 profiles of research institutes, centers, and facilities in NRW.

Biotech Business Landscape

In North Rhine-Westphalia, the biotechnology sector is a dynamic branch of the economy that has seen rapid development over the last 10 years. The number of biotechnology companies has almost doubled during this time (Table 1). NRW's advantageous industrial location promotes the establishment of companies. Five companies were newly established in NRW in 2020: Cherrykukess GmbH, Proteona Antibody Protection (PAP) GmbH, QLi5 Therapeutics GmbH, betaSENSE GmbH, and PROSION GmbH.

The dynamism of the sector was also reflected in the acquisitions. RheinCell Therapeutics GmbH was acquired by the US company Catalent Pharma Solutions and Xell AG by Satorius AG. Both companies hope the acquisitions will bring further growth and new opportunities.^{17,18} Evonik Industries AG has added biotechnologically derived cellulose to its biomaterials portfolio with the acquisition of JeNaCell. This is intended to drive growth in the Nutrition & Care Division.¹⁹

Biotechnology has developed into a cross-sectional technology that is linked to various other industries, such as the chemical industry (Figure 3), and therefore also has a share in the economic success of other industries. For example, according to a report, the total turnover of the European bioeconomy industry in 2018 was more than € 2.4 trillion and a total of 18.4 million people were employed in bio-based industries²⁰. The bioeconomy routinely uses biotechnological processes



■ below 10 ■ 10-49 ■ 50-99 ■ 100-249 ■ more than 250

Fig. 5: Size of dedicated biotechnology companies by number of employees

to generate products from (renewable) raw materials. This example underlines the importance of biotechnology for the overall economy. In addition, other technologies are also applied within biotechnology, for example nanotechnology and engineering technology. All this makes biotechnology a complex industry that cannot be easily separated from other more “static” industries, and value chains cannot always be clearly assigned to one sector. To focus solely on dedicated biotech companies is to underes-

timate the biotech industry’s influence on the economy as a whole.

In order to monitor the biotech industry sector, BIOCUM AG annually carries out a statistical analysis of the German core biotech companies. This provides a more sophisticated view of the biotechnology landscape in Germany.

The framework of the analysis is also set by the OECD definition of a dedicated biotech company and biotech-associated companies (see page 80). Based on this

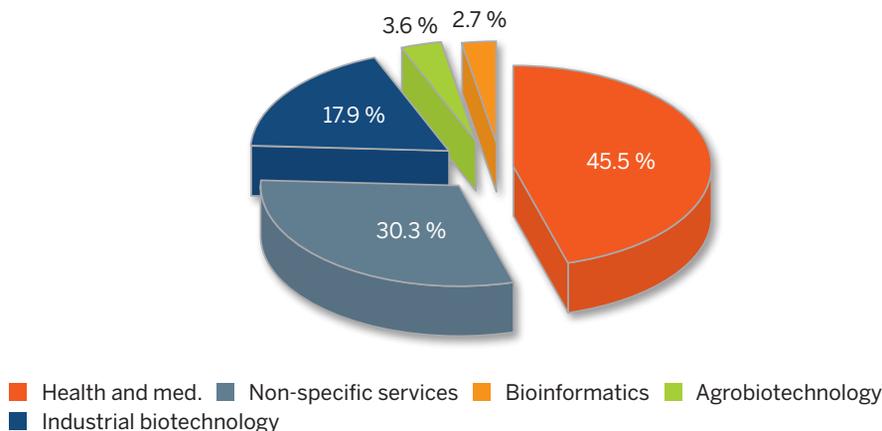


Fig. 6: Areas of activity (for definitions see page 80)

Indication	Number of Products
Neoplasms / cancer / oncology	29
Infectious and parasitic diseases	13
Diseases of the nervous system	11
Skin and subcutaneous tissue	2
Musculoskeletal system and connective tissue	2
Respiratory	2
Digestive system	2
Other	2
Symptoms, signs abnormal clinical and laboratory findings, not elsewhere classified	1
Mental and behavioural disorders	1
Endocrine, nutritional and metabolic diseases	1
Diseases of the blood and blood-forming organs; immune disorders	1
Total	67

Fig. 7: Drug development pipelines by Indication

definition, 112 dedicated biotech companies were operating in NRW in 2020. This means that 15 % of all German biotech companies are located in NRW (Figure 4)²¹.

The business figures of the 112 NRW biotech companies are compared against the 736 German biotech companies²¹.

In 2020, they generated a turnover of approximately € 2.6 billion, which corresponds to 39.2 % of annual turnover in the German

biotech industry (Figure 4). The biotech industry in NRW is therefore largely responsible for the economic impact of Germany's biotech business as a whole.

It is noteworthy that the sales of the NRW biotech industry increased by 37% compared to the previous year. This is an extraordinary growth, which can also be observed in the entire German biotech industry and can be attributed to the demand for biotechno-

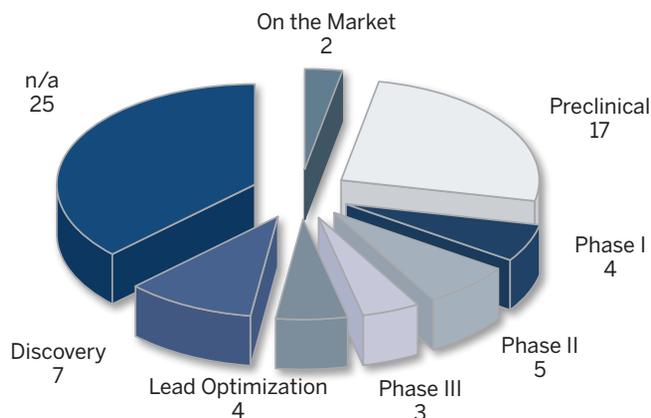


Fig. 8: Drug development pipelines by phase

logical products during the Corona crisis. The Hilden-based company Qiagen alone recorded a year-on-year increase in sales of 22.5%.²² Due to its positive development, the company is going to be included in Germany's leading stock market index DAX in 2021, making it one of the 40 largest German stock corporations. Qiagen was founded in 1984 as a spin-off from the University of Düsseldorf and is now Germany's largest biotech company.

In NRW, 5,440 people (of about 27,200 nationwide) were employed by dedicated biotech companies in 2020²¹. The employee structure shows that the biotech sector in NRW consists mainly of SMEs. A total of 98 % of the companies employ less than 250 people (Figure 5)²¹.

Together, NRW biotech firms are investing the highest amounts nationwide in the R&D of innovative products. In total, 12.8 % of NRW's annual turnover in biotechnology (€ 339 million) was reinvested in R&D projects. The proportional expenditure in R&D of the NRW biotech companies is therefore four times higher than the mean of all businesses in Germany (3.2 % in 2019)²³.

The development of these key business figures underlines the consistent level of investments made by the dedicated biotech companies in NRW, which in turn will help to advance the future market position of biotech in NRW.

The activities of the dedicated biotech companies were complemented by 17 other companies with a biotechnological commitment – mostly global players in the fields of pharmaceuticals, chemicals, or seed production. Since these companies are active in many diverse areas, their biotech-related business figures cannot be calculated exactly and are not included in the statistics. Nevertheless, it should not be overlooked that due to these companies and their biotechnological activities, the economic importance of biotechnol-

ogy in NRW is greater than the key figures suggest. Examples include Bayer AG and Evonik Industries AG, whose turnover in 2020 alone was € 41.4 billion²⁴ and € 12.2 billion²⁵, respectively. Even if only part of the turnover can be attributed to NRW locations and not all products are manufactured using biotechnological processes, these two examples clearly illustrate the significance of biotechnologically active companies for the economy in NRW.

The classification of NRW biotech companies by area of activity shows that 30.3 % of biotech companies are active in multiple branches (Figure 6). These biotech companies with “non-specific business activities” also include service providers and suppliers for the biotechnological sector. In total, 17.9 % of the biotech companies are active in industrial biotechnology. The classification includes firms that develop enzymes, biomaterials, or bioprocesses. However, the majority of NRW biotech companies (45.5 %) are active in the fields of health and medicine, including veterinary medicine¹⁸. At the time of writing for this brochure, ac-

ording to information in the Biotechgate database, companies in the health and medicine sectors had built up a drug pipeline of 67 products and product candidates (Figure 7). The classification of the candidates according to indications shows that a large proportion of the candidates are being developed in the categories “oncology”, “infectiology/parasitology”, and “neurology”. Overall, almost 80 % of the product candidates fall into these three categories. The “oncology” category has been the focus of product development for candidates for several years. The differentiation of drug candidates by phase shows that approximately 25 % of the candidates are in the preclinical studies phase and almost 18 % are in clinical study phases 1 to 3 (Figure 8)⁶.

The companies listed in this brochure form the innovative core of biotechnological research and development. However, capital is needed to drive developments forward. Start-ups and SMEs in particular are innovative drivers of the industry that need support through funding and investment. In 2020, Neracare received VC funds

of € 7.9 million and Biofrontera received a capital increase of € 8 million²¹.

Of course, the total amount of non-public investment in biotech companies in NRW was significantly higher than these figures show. For example, Emergence Therapeutics, evorion biotechnologies, and Noscendo all received an undisclosed amount of capital²¹. In addition to the large community of business angels based in NRW, numerous (institutional) investors have settled on the Rhineland in recent years. These investors strongly support young biotech companies. Investment activities in life sciences companies are also supported by the state, for example through the “[BIO.NRW Business Angel Zirkel](#)” and the annual “[Business Angel Congress](#)”.



During the pandemic: NRW's biotech scene proves innovative strength

With the onset of the pandemic, biotechnology has become a word that many people understand. Whereas previously the image was mainly negative due to topics such as genetic engineering in the agricultural sector, people have now become increasingly aware that biotechnology can save lives.

The fact that we are no longer in lockdown is partly due to developments in biotechnology. The swift development of rapid and PCR tests made it possible to implement a large-scale testing infrastructure. This helps to ensure that public life is not brought to a standstill and that many leisure activities can be pursued once again. Biotech companies in NRW are involved in testing activities. Qiagen, headquartered in Hilden in NRW, was one of the first companies to launch a SARS-CoV-2 test. The diagnostics business has grown enormously since the beginning of the coronavirus crisis due to the extensive testing activities and it continues to grow. Other companies include BioEcho Life Sciences, who developed a rapid extraction protocol for the isolation of SARS-CoV-2-RNA, and Biocheck, who offer a SARS-CoV-2 antibody test.

The crisis has clearly shown how efficient and innovative the German biotechnology scene is. This is clearly reflected in the fact that German biotech companies developed the first vaccines approved for use. Immunization of the population is crucial in fighting the pandemic. Here in NRW, biotech companies are developing vaccines. One example is Janssen and their vaccine, which has already been approved for use and is being administered. Many other companies offer components for vaccine development and production as well as for coronavirus research. This includes, for example, the provision of adenoviral vectors by CEVEC

Pharmaceuticals or the provision of lipids by specialty chemicals company Evonik Industries. Page 22-23 provides an overview of the companies in NRW working on SARS-CoV-2.

What still has to be done?

To fully defeat the disease, treatment is necessary. To date, however, there is still no specific cure for the treatment of SARS-CoV-2 infections. Current treatments concentrate on the symptoms of the disease and can only be used in certain stages of the disease. In addition, the long-term effects are difficult to treat. Two drugs are currently approved for use in the EU for the treatment of COVID-19 patients: remdesivir und dexamethasone. Remdesivir is an antiviral drug and is recommended for use in the early phases of the disease. Dexamethasone is a cortisone derivative that weakens the immune response. It is suitable for patients on oxygen who have had the disease for longer than seven days. In addition, hundreds of drugs are currently being tested that have either been approved for the treatment of other diseases or have been newly developed. New treatments for COVID-19 are also being developed in NRW²⁶.

DiosCURE is a company developing antiviral nanobodies that bind to the spike proteins of the virus and thus prevent them from entering cells. Unlike ordinary antibodies, these smaller antibodies are easier to produce and store. A drug containing the nanobodies DIOS-202 and DIOS-203 is expected to undergo clinical trials by the end of 2021²⁶.

AiCuris is developing a treatment to fight COVID-19 via the body's own immune defence system. Originally developed for the

treatment of hepatitis B, a parapoxvirus-based compound showed antiviral activity against several viruses, including SARS-CoV-2, in preclinical studies. The stimulating immunomodulator will now be tested on asymptomatic coronavirus patients²⁶.

Innovative companies around the world are working on different therapeutic approaches. It is expected that more drugs will be approved for use in the coming months.²⁶

NRW against COVID-19



The Netherlands

Weser

● Bielefeld

• Plasmid Factory

● Münster

• Biocheck

Ems

Rhine

Lippe

● Dortmund

• Lead Discovery

Ruhr

NUMAFERM •

Düsseldorf

● Wuppertal

• Janssen

• attlyoid

• AiCuris Anti-infective Cures

• Qiagen

Cube Biotech •

• ARTES Biotechnology

• Bayer

CEVEC Pharmaceuticals •

Taconic Biosciences •

AYOXXA Biosystems •

Cologne

• Miltenyi Biotec

• Syntab Therapeutics

• Proteona

● Aachen

Rhine

Germany

Belgium



DRUG DEVELOPMENT

AiCuris Anti-infective Cures	Wuppertal	Examination of proprietary substances for effectiveness against COVID-19 and providing support in diagnostics
Lead Discovery Center	Dortmund	Development of novel vaccination methods against SARS-CoV-2 and identification of inhibitors and therapeutics
Miltenyi Biotec	Bergisch Gladbach	Antibody-based therapy development
Proteona Antibody Protection	Cologne	Development of antibody therapy against COVID-19 using proteogenomic single cell sequencing
Syntab Therapeutics	Würselen	Development of an antiviral agent



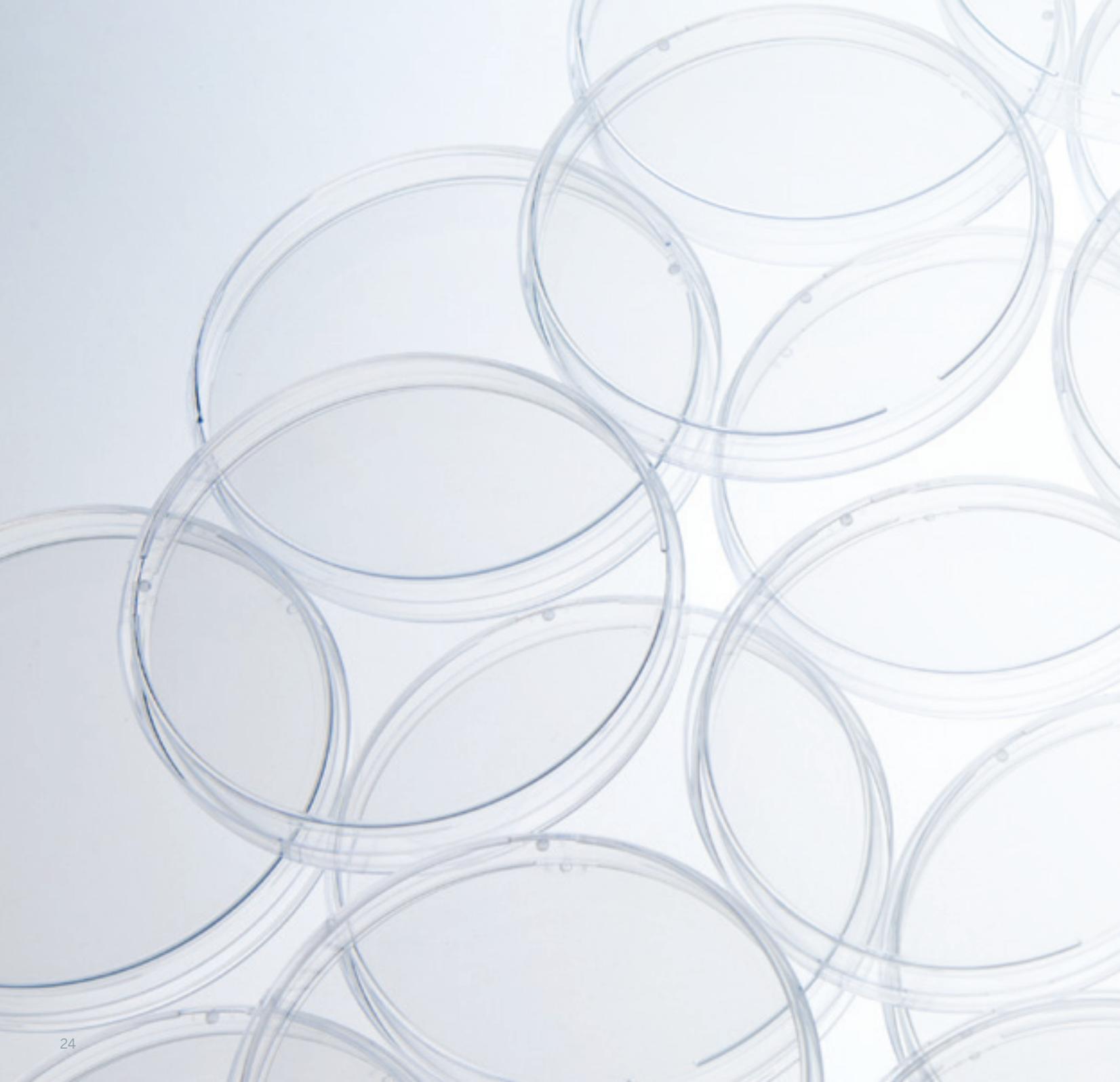
SUPPORTING ACTIONS

attyloid	Düsseldorf	Platform technology for SARS-CoV-2 analysis
AYOXXA Biosystems	Cologne	LUNARIS™ Platform for cytokinin monitoring of severe COVID-19 cases
Bayer	Leverkusen	Global commitment to fight the pandemic including donation of protective equipment, disinfectants and medicines as well as support of research projects
Biocheck	Münster	Development of a SARS-CoV-2 antibody test
CEVEC Pharmaceuticals	Cologne	Adenoviral vectors for vaccine production
Cube Biotech	Monheim	Recombinant production of the trimeric SARS-CoV-2 spike protein
NUMAFERM	Düsseldorf	Production of a SARS-CoV-2 inhibitor as part of a global collaboration for the development of a single-domain antibody against SARS-CoV-2 lead by the Austral University of Chile
Plasmid Factory	Bielefeld	Production of plasmid DNA as a key substrate for the production of Covid-19 mRNA vaccines
Qiagen	Hilden	Test kits and reagents for the detection of SARS-CoV-2
Taconic Biosciences	Cologne	Mouse models for research on SARS-CoV-2



VACCINE DEVELOPMENT

ARTES Biotechnology	Langenfeld	Development of SARS-CoV-2 vaccine candidates based on virus-like particle based platform technologies
Janssen	Neuss	Vector vaccine development



Networks and Competence Clusters in NRW

Industrial Biotechnology – CLIB

CLIB (Cluster Industrial Biotechnology) is an international open innovation cluster of large companies, SMEs, academic institutes, and universities, as well as other stakeholders active in biotechnology, and the circular bioeconomy as a whole. The cluster comprises about 100 members with a share of about 25 % international members. The overall goal of CLIB is to network stakeholders along and across value chains and to identify new opportunities for innovation, projects, and business. Through this, the cluster develops cross-sectoral biotechnological solutions for sustainable processes and products. Pertinent project areas are identified by the CLIB team in conjunction with members in an iterative process. CLIB is a non-profit association, with its members shaping the cluster's interests and activities. CLIB organizes a number of events throughout the year: the annual CLIB international confer-

ence (CIC), the CLIB Networking Day (CND) exclusively for its members, forum events, topic-specific workshops, dedicated small partnering meetings and visits to partners, sites, or meetings in Germany and abroad.

An NRW-based project is dedicated to improving identification and production of high performance ingredients (HiPerIn2.0) for markets like adhesives, personal care, textiles, or food and feed. This action is funded by the Ministry of Economic Affairs, Innovation, Digitalization and Energy of the State of North Rhine-Westphalia. Together with partners in Germany, Flanders, and the Netherlands, CLIB established the BioInnovation Growth mega-Cluster (BIG-Cluster), which aims at developing novel cross-border value chains based lignocellulose or C1 gases, and develops a cross-border education initiative. Within BIG-Cluster, CLIB is coordinating three ongoing projects: In ALIGN, the consortium aims at producing new low- and high-value aromatics based on lignocellulose. In BioCConversion, the part-

ners will develop a biotechnological process for CO/CO₂ gas conversion. In CROSSBEE, a cross-border bioeconomy education will be established. All three projects are funded by the German Federal Ministry of Education and Research (BMBF). Furthermore, CLIB is active in several Horizon 2020 projects, as well as in the INTERREG Deutschland-Nederland programme.

BioRegions in NRW

The biotechnology landscape in North Rhine-Westphalia is diverse and dense. Regional networks and initiatives have developed to support the industry. The various BioRegions that have emerged in this way are committed to business start-ups and technology transfer in biotechnology, network the sector and initiate cooperation between industry and science. The focus is on regional priorities and competencies. As the state organization, BIO.NRW acts as the umbrella organization for the BioRegions in NRW and through supra-regional cooperation the interests of the state are supported statewide. The BioRegions and networks with their different focuses and priorities are presented below and on the following pages.

Name	BioIndustry e.V.
Address Postal Code/City	Otto-Hahn-Str. 15 44227 Dortmund
Fon	+49 238 3919 224
E-Mail Internet	info@bioindustry.de www.bioindustry.de

BioIndustry

BioIndustry e.V. is a regional life science cluster that has been committed to strong interdisciplinary networking between science and companies, especially in the Ruhr area, but also in eastern Westphalia, since 2000. This region offers a unique density of economic and scientific competence. The focus of BioIndustry's activities is the promotion of biotechnology in all its facets in science, research and application with

the aim of generating product and process innovations through interdisciplinary transfer work. Accordingly, the actors of the association are biotechnological companies, universities, colleges, technology centers, service providers and municipal business development agencies.

Name	Gesellschaft für Bioanalytik Münster e.V.
Address Postal Code/City	Mendelstraße 17 48149 Münster
Fon	+49 251 384 503 30
Fax	+49 251 384 503 31
E-Mail Internet	info@bioanalytik-muenster.de www.bioanalytik-muenster.de



bioanalytik-muenster
TECHNOLOGY FOR THE LIFE SCIENCES

The region Münster has, due to its long tradition in excellent analytic and bio-medical research, an international reputation in innovative nanoanalytics. The region's focus on nano-bioanalytics is a consequence of the international top research in the field of nanoanalytic and life science of the University of Münster, the Münster University of Applied Sciences and more

than 30 companies in the region. On this basis and the long lasting experience of connecting partners from different life science technology fields as well as the expertise to develop regional innovation strategies for new technologies in the health care sector, Bioanalytik Münster increasingly focusses, as a local network of the region, on the topic "New technologies for the health care sector".



BioCologne is the network to support bioengineering and bioscience in the region of Cologne. Companies, research institutions, investors, banks, consultancies, and technology parks are engaged to promote the region as a science location. BioCologne facilitates the transfer of

ideas, knowledge, and technologies from the life-science field into practice. Thereby they promote start-ups in close collaboration with RTZ Köln GmbH.

BioCologne is national and international interlaced and offers synergies and international cooperation. BioCologne works for fairs, congresses, working groups, and questions regarding business routines close together with BioRiver Life Science im Rheinland e.V.

Name	BioCologne c/o RTZ Köln GmbH
Address Postal Code/City	Gottfried-Hagen-Str. 60-62 51105 Cologne
Contact Person	André van Hall
Fon	+49 221 839 110
E-Mail Internet	contact@biocologne.de www.biocologne.de



BioRiver is the industry association for life sciences and biotechnology in the metropolitan area Rhineland. BioRiver's chairman Boris Stoffel, executive board member of Miltenyi Biotec, together with executives of world market leaders Bayer, Qiagen, Lonza and innovative firms of all sizes, excellent academia and stakeholders of the industry drive BioRiver's business.

Member groups, networking events and seminars support the direct and equal exchange between experts of all levels. The start-up competition BioRiver Boost! is our platform for young entrepreneurs and their companies' development. We are happy to be a requested contact for the state ministries. Our member firms are active in the following fields: innovative products, technologies and services for research, development and production in biotechnology, life sciences and pharma.

Name	BioRiver – Life Science im Rheinland e.V.
Address Postal Code/City	Merowingerplatz 1 40225 Düsseldorf
Contact Person	Dr. Frauke Hangen
Fon Fax	+49 211 316 0610 +49 211 160 1953
E-Mail Internet	bioriver@bioriver.de www.bioriver.de



MedLife e.V. is the competence network of life sciences in the technology region Aachen. The aim is to strengthen our region as an innovation location for the healthcare industry, medical technology and biotechnology. MedLife promotes the dialogue between science, industry and facilitates interdisciplinary networking in the

life sciences. In the BioRegion, innovations and competencies in the fields of biology and biotechnology are not only contributed by the research institutes of the RWTH Aachen University and the FH-Aachen, but are also enriched by the diverse expertise of the research centers DWI, Fraunhofer Institutes and the FZ-Jülich.

Our industrial players produce innovative products for biochemistry, chemistry and medicine and act as suppliers for biotechnological and pharmaceutical production.

Name	MedLife e.V
Address Postal Code/City	Aachener - und - Münchener - Allee 9 52074 Aachen
Fon	+49 241 47 583 486
E-Mail Internet	info@medlife-ev.de www.medlife-ev.de



From Mind to Market

This chapter provides an overview of the dedicated biotech companies and the biotechnologically active companies in North Rhine-Westphalia.

For simplicity, the companies are grouped into six areas according to their main activity:

- Non-specific Services
- Health and Medicine (including Animal Health)
- Industrial Biotechnology
- Agri/Agrobiotechnology
- Bioinformatics
- Other biotechnologically companies

For a more comprehensive directory containing all life science and life science-related companies in NRW, please visit our company database at <https://bio.nrw.de/firmendatenbank/>.

BIO.NRW invites you to discover the North Rhine-Westphalian biotechnology community!



Biotechnology Map of North Rhine-Westphalia

Dedicated and other biotechnologically active companies



Dedicated companies¹

Aachen Proteineers GmbH	Baesweiler	DiosCURE Therapeutics SE	Bonn
Abalos Therapeutics GmbH	Essen p. 47	Dynavax GmbH	Düsseldorf
Acus Laboratories GmbH	Köln p. 35	Emergence Therapeutics AG	Duisburg
Adhesys Medical GmbH	Aachen p. 47	Enzymaster Deutschland GmbH	Düsseldorf p. 62
AgroProtect GmbH	Aachen p. 69	EVORION Biotechnologies GmbH	Münster p. 38
AiCuris Anti-infective Cures AG	Wuppertal p. 47	Evotec	Köln p. 52
Algiax Pharmaceuticals GmbH	Erkrath p. 48	evox technologies GmbH	Monheim am Rhein p. 62
Alvotech Germany GmbH	Jülich	Formo GmbH	Rheinbach p. 63
aReNA Biotech GmbH	Jülich	GEN-IAL GmbH	Troisdorf p. 63
arrows biomedical Deutschland GmbH	Münsterl p. 48	IFM Therapeutics GmbH	Bonn
ARTES Biotechnology GmbH	Langenfeld p. 35	IIT - Institut für Innovationstransfer	Bielefeld p. 39
attylويد GmbH	Düsseldorfl p. 48	IMAX Discovery GmbH	Dortmund p. 63
AYOXXA Biosystems GmbH	Köln p. 35	IMD Natural Solutions GmbH	Dortmund
b.fab GmbH	Dortmund p. 61	ImmunoQure AG	Düsseldorf p. 52
BBT Biotech GmbH	Baesweiler p. 36	InfanDx AG	Köln p. 53
beniag GmbH	Jülich p. 36	innoVitro GmbH	Jülich p. 53
betasense	Münster p. 49	Isoloid GmbH	Düsseldorf p. 39
Bex-Biotech GmbH & Ko.KG	Bönen p. 69	Lead Discovery Center GmbH	Dortmund p. 53
BIBITEC GmbH & coKG	Bielefeld p. 36	LenioBio GmbH	Düsseldorf p. 39
BioCheck GmbH	Münster p. 49	Life & Brain GmbH	Bonn p. 54
BioEcho Life Sciences GmbH	Köln p. 37	Lonza Cologne GmbH	Köln p. 40
Biofidus AG	Bielefeld p. 37	m2p-labs GmbH	Baesweiler p. 64
Biofrontera AG	Leverkusen p. 49	Matricel GmbH	Herzogenrath p. 54
BioSolveIT GmbH	Sankt Augustin p. 71	MBBL Dr. Bartling GmbH	Bielefeld
bitop AG	Dortmund p. 61	Miltenyi Biomedicine GmbH	Bergisch Gladbach
Black Drop Biodrucker GmbH	Aachen p. 50	MILTENYI Biotec GmbH	Bergisch Gladbach p. 40
BluCon Biotech GmbH	Köln	MLM Medical Labs GmbH	Mönchengladbach p. 54
BSV Bioscience GmbH	Baesweiler p. 61	Morphoplant GmbH	Bochum p. 55
Carpegen GmbH	Münster p. 50	Mukocell GmbH	Dortmund p. 55
CellAct Pharma GmbH	Dortmund p. 50	multiBIND biotec GmbH	Köln p. 64
CellSystems Biotechnologie Vertrieb GmbH	Troisdorf	Myriad International GmbH	Köln p. 55
Cevec Pharmaceuticals GmbH	Köln p. 51	NEO New Oncology GmbH	Köln
Charles River Laboratories Germany GmbH	Erkrath p. 37	Neracare GmbH	Köln
Chembiotech - DNA Technologies, Materials and Reagents	Münster	NEUWAY Pharma GmbH	Bonn p. 56
Cherrykukess	Düsseldorf	Noscendo GmbH	Duisburg p. 71
Chimera Biotec GmbH	Dortmund p. 38	NUMAFERM GmbH	Düsseldorf p. 64
Cilian AG	Münster p. 51	OligoScience Biotechnology GmbH	Bönen p. 65
CIRES cell & immune research services	Bochum	Oncimmune Germany GmbH	Dortmund p. 56
Creative-Therapeutics GmbH	Wuppertal p. 51	OneWorld Diagnostics GmbH	Düsseldorf
Cube Biotech GmbH	Monheim p. 38	PAIA Biotech GmbH	Köln p. 40
Cygenia GmbH	Aachen p. 52	PAION AG	Aachen p. 56
Cysal GmbH	Münster p. 62	Phytowelt GreenTechnologies GmbH	Nettetal p. 65
Cytecs GmbH	Münster	PL BioScience GmbH	Aachen p. 41
		PlasmidFactory GmbH & Co. KG	Bielefeld p. 41

Priavoid GmbH	Jülich	p. 57	Octapharma GmbH	Langenfeld	
PROSION GmbH	Köln		PerkinElmer chemagen Technologie GmbH	Baesweiler	p. 75
Protagen Protein Services	Dortmund	p. 41	PHARMA WALDHOF GmbH	Düsseldorf	p. 75
Proteona Antibody Protection (PAP) GmbH	Köln		Syngenta Seeds GmbH	Bad Salzuflen	p. 76
Proteona GmbH	Köln	p. 42	Taros Chemicals GmbH & Co. KG	Dortmund	p. 76
QIAGEN	Hilden	p. 57	UCB GmbH	Monheim	p. 76
QITHERA GmbH	Düsseldorf	p. 57	W. von Borries-Eckendorf GmbH & Co. KG	Leopoldshöhe	p. 77
QLi5 Therapeutics GmbH	Dortmund				
RHEINCELL Therapeutics GmbH	Langenfeld	p. 58			
Ridom GmbH	Münster	p. 71			
Saaten-Union BIOTEC GmbH	Leopoldshöhe	p. 69			
SenseUp GmbH	Jülich	p. 65			
Senzyme GmbH	Troisdorf	p. 66			
Serengen GmbH	Dortmund	p. 42			
SeSaM-Biotech GmbH	Aachen	p. 66			
Singleron BioTechnologies GmbH	Köln	p. 42			
Soluvantis GmbH	Bochum	p. 58			
Squarix GmbH	Marl	p. 43			
Syntab Therapeutics GmbH	Würselen	p. 58			
Taconic Biosciences GmbH	Leverkusen				
Transimmune AG	Düsseldorf	p. 59			
TunaTech GmbH	Düsseldorf				
UGiSense AG	Dortmund	p. 59			
vivo Science GmbH	Gronau	p. 43			
WeissBioTech GmbH	Ascheberg				
XanTec bioanalytics GmbH	Düsseldorf	p. 43			
Xell AG	Bielefeld	p. 45			

Other biotechnologically active companies¹

BASF Personal Care and Nutrition GmbH	Monheim	
Baxter Oncology GmbH	Halle/Westfalen	
Bayer AG	Leverkusen	p. 73
BAYER CropScience AG	Monheim	
Bayer Pharma AG	Wuppertal	
Cellex Cell Professionals GmbH	Köln	p. 73
Deutsche Saatenveredlung	Lippstadt	p. 73
Evonik Industries AG	Essen	p. 74
Evonik Operations GmbH	Halle/Westfalen	
German Seed Alliance GmbH	Köln	p. 74
Grünenthal GmbH	Aachen	p. 74
Henkel AG & Co. KGaA	Düsseldorf	p. 75
MEDIWISS Analytik GmbH	Moers	

¹ Including companies that were established in NRW after 2020 and company sites that are not headquarters and thereby not included in the key figures of 2020. OECD definition on page 80





Non-specific services



Acus Laboratories GmbH was founded in 2018 as a spin-off company from the Max Planck Institute for Biology of Ageing in Cologne. Based on unique forward genetic screening technologies. Acus offers services for deconvolution and validation of molecular drug target structures, identification of off-targets, and drug resistance

prediction to pharmaceutical industry and biotech partners.

Acus mid-term vision is to uncover novel drug target structures that initiate collaborative 'first-in-class' drug development projects.

Name	Acus Laboratories GmbH
Address	Joseph-Stelzmann-Straße 9b
Postal Code/City	50931 Köln
Fon	+49 22137970-920
E-Mail	info@acuslabs.com
Internet	www.acuslabs.com
Employees	<10
Founded (year)	2018



ARTES Biotechnology is an independent technology provider for the pharmaceutical industry. Our business focus is on:

- vaccine development (VLP technology)
- process development of biopharmaceuticals
- transfer of biosimilar processes

Our technologies have resulted in innovative products marketed worldwide. WHO recom-

mendation, international registration, EMA resp. FDA approval and GRAS certification are achieved in international collaborations. Expression platforms include high yield yeasts and E. coli system for efficient protein production. Our unique chimeric virus like particle (VLP) platform METAVAX® is best suited for the development of highly immunogenic vaccines in human and animal health.

Our proprietary technologies ensure freedom-to-operate and reliable, competitive production of innovative targets marketed worldwide.

Name	ARTES Biotechnology GmbH
Address	Elisabeth-Selbert-Str. 9
Postal Code/City	40764 Langenfeld
Fon	+49 2173 27587-0
Fax	+49 2173 27587-77
E-Mail	info@artes-biotechnology.com
Internet	www.artes-biotechnology.com
Employees	22
Founded (year)	2002



Biosystems

AYOXXA Biosystems GmbH is an international life science company based in Cologne. With LUNARIS™, its proprietary innovative beads-on-a-chip multiplexing platform for advanced protein analysis, the Company is paving the way for translating knowledge generated in basic research to clinical studies.

With its advantages in terms of quality, flexibility, robustness and efficiency, LUNARIS™ enables fully scalable quantitative validation of up to 12 biomarkers in minute amounts of biological samples. AYOXXA is commercializing a growing portfolio of standardized ready-to-use detection kits, with a focus on the biology of inflammation, immune-oncology and ophthalmology.

Name	AYOXXA Biosystems GmbH
Address	Nattermannallee 1
Postal Code/City	50829 Köln
Fon	+49 221 222529-0
Fax	+49 221 222529-11
E-Mail	info@ayoxxa.com
Internet	www.ayoxxa.com
Employees	35
Founded (year)	2010

Name	BBT Biotech GmbH
Address	Arnold-Sommerfeld-Ring 28
Postal Code/City	52499 Baesweiler
Fon	+49 2401 93 310-0
Fax	+49 2401 93 310-90
E-Mail	office@bbt-biotech.de
Internet	www.bbt-biotech.de
Employees	30
Founded (year)	1999



BBT Biotech GmbH produces freeze-dried viable bacteria (probiotics like lactobacilli, bifidobacteria, yeasts) and metabolites not only in bulk but also in finished dosage forms to the pharmaceutical and health-food industry.

The fermenter capacity is up to 18.000 l. The downstream process is based on sepa-

rators, filtration systems, chromatography and freeze dryers. On the basis of individual needs BBT Biotech GmbH also offers active pharmaceutical ingredients like thrombolytics (streptokinase, urokinase), fertility hormones (HCG, HMG, FSH), inhibitors (Aprotinin, UTI) and others (Hyaluronidase, Corticotrophin).

In addition we are offering a full service to our customer:

- early development
- manufacturing of the API under GMP conditions
- inclusive dossier writing in eCTD format.

Name	beniag GmbH
Address	Huthmacherstrasse 20
Postal Code/City	52428 Jülich
Fon	+49 2461 616 734 +49 1578 0393 499
Fax	+49 2461 613 907
E-Mail	info@beniag.com
Internet	www.beniag.com
Employees	< 10
Founded (year)	2013



beniag is a biotechnology company providing unique and highly efficient solutions to incorporate molecules into living cells and tissue in vitro. Based on membrane fusion as a completely novel and patented transfer mechanism, beniag liposomes offer an outstanding opportunity for customers to incorporate any type of molecule or

aggregate with extremely high efficiency within a few minutes. The unique transfer mechanism allows manipulation of basically every mammalian cell type and incorporates molecules directly into the cytosol, to guarantee their immediate bioactivity.

beniag focusses on production and development of customer oriented solutions with cooperation partners distributing the product line "Fuse-It" worldwide.

Name	BIBITEC GmbH & Co. KG
Address	Universitätsstr. 25
Postal Code/City	33615 Bielefeld
Fon	+49 521 106 6326
Fax	+49 521 106 156233
Internet	www.bibitec.de
Employees	12
Founded (year)	2001



BIBITEC Gesellschaft für Prozessentwicklung mbH & Co KG, a 100 % subsidiary of Nordmark Arzneimittel GmbH, is offering an all-in-one solution for mammalian cell culture technology.

Together with qualified partners, BIBITEC is able to cover the entire value chain from cell line and process development, analytics, GMP production of API and finished drug product up to regulatory affairs

and market production. Our value added services also include pharmaceutical development, ICH conform stability and viral safety studies.

Our project manager is your primary contact and is responsible for steering the entire process. With our customized project support BIBITEC is the partner of choice for biotech companies with individual needs.



BioEcho Life Sciences provides a new generation of technologies and kits for genomic research and molecular diagnostics. BioEcho develops single-step technologies for accelerated and simplified DNA and RNA purification and assay processes. One of

the products allows 96 viral RNA & DNA isolation within 5-minutes for diagnostics of viral infections which is widely used in Covid-19 testing. We apply our technologies in the development of more convenient Liquid Biopsy procedures (isolation of circulating nucleic acids) and streamlined molecular diagnostics (including pathogen detection, oncology, human genetics and Point-of-Care applications) and selected customization projects.

Name	BioEcho Life Sciences GmbH
Address	Nattermannallee 1
Postal Code/City	50829 Köln
Fon	+49 221 9988 97-0
Fax	+49 221 9988 97-29
E-Mail	contact@bioecho.de
Internet	www.bioecho.de
Employees	47
Founded (year)	2016



Biofidus is an analytical company located in Bielefeld, Germany. Its services include a wide variety of bioanalytical methods such as spectroscopic, chromatographic, and mass spectrometric assays focused on characterization of proteins as well as small molecules. Biofidus is specialized in the characterization of biopharmaceuti-

icals or biosimilars, including but not limited to monoclonal antibodies, Fc-fusion proteins, erythropoietin, and ADCs.

Additionally, Biofidus offers spent media analysis for fermentation and cell culture technology, which includes the analysis of amino acids, metabolites, and vitamins in culture media. The analytical service also includes the development of custom tailored and novel client-specific assays.

Name	Biofidus AG
Address	Morgenbreede 1
Postal Code/City	33615 Bielefeld
Fon	+49 521 89 739 060
E-Mail	info@biofidus.de
Internet	www.biofidus.de
Employees	15
Founded (year)	2015



With more than 50 years of experience and proven regulatory expertise, the Charles River Biologics group can address challenging projects for biotechnology and pharmaceutical companies worldwide.

Offering a variety of services such as contamination and impurity testing, protein characterization, bioassays, viral clearance studies and stability and lot release

programs, we support clients throughout the biologic development cycle, from the establishment and characterization of cell banks through preclinical and clinical studies to marketed products.

Whether clients need stand-alone services, a unique package of testing, or insourced support, our Biologics group can create a custom solution to suit their needs.

Name	Charles River Laboratories Germany GmbH
Address	Max-Planck-Str. 15A
Postal Code/City	40699 Erkrath
Fon	+49 211 9255-300
Fax	+49 211 9255-333
E-Mail	askcharlesriver@crl.com
Internet	www.criver.com
Founded (year)	1993

Name	Chimera Biotec GmbH
Address Postal Code/City	Emil-Figge-Str. 76a 44227 Dortmund
Fon	+49 231 9742-840
Fax	+49 231 9742-844
E-Mail Internet	info@chimera-biotec.com www.chimera-biotec.com
Employees Founded (year)	20 2000



Chimera Biotec is your GLP-certified CRO for ultra sensitive and technically demanding immunoassays since 2000. For over 20 years, Chimera Biotec has provided large-molecule GLP/GCP-compliant bioanalytical support for all phases of drug development in accordance with guidelines (FDA, EMA, ICH10).

We provide bioanalytical support on several platforms, including ELISA, MSD™, Simoa® and Imperacer®, our proprietary Immuno-PCR technology. Chimera has the expertise and technical capabilities to identify the ideal platform technology based on and run according to your pharmacological and regulatory requirements. Our services include assay development, method validation, technology evaluation and bioanalytical support for quantifying large molecule targets in virtually any biological matrix.

Name	Cube Biotech GmbH
Address Postal Code/City	Alfred-Nobel-Str. 10 40789 Monheim
Fon	+49 2173 99373-0
Fax	+49 2173 99373-99
E-Mail Internet	contact@cube-biotech.com www.cube-biotech.com
Employees Founded (year)	27 2012



The Cube Biotech team serves the biotech and pharmaceutical community with its expertise on expression, purification, stabilization and functional/structural characterization of proteins. Our projects focus on the pharmaceutically relevant class of membrane proteins. Both products and services are offered: A broad range of products for the affinity chromatography of proteins and stabilization of proteins are

manufactured in house at high quality. The product offering is complemented by reagents such as detergents, cell-free expression lysates, nanodisc scaffold proteins, and patented membrane protein crystallization plates. Some particularly relevant membrane proteins (GPCRs) are available as fully characterized preparations.

Our services cover the expression, purification, stabilization and crystallization of soluble and membrane proteins for applications like cryo electron microscopy, antibody generation, crystallization and assays.

Name	evorion® biotechnologies GmbH
Address Postal Code/City	Mendelstrasse 17 48149 Münster
Fon	+49 251 287 693-39
E-Mail Internet	info@evorion.de www.evorion.de
Employees Founded (year)	24 2017



evorion biotechnologies has developed its innovative CellCity System that enables multi-modal analysis of thousands of cell-cell interactions in a 3D microenvironment at single-cell resolution and offers custom development services to access evorion's unique, proprietary functional phenomics workflow. For the first time, researchers can connect a single cell's dynamic and

functional phenotype with underlying multi-omics data, enabling novel insights into cell-cell interactions that will boost translational research.

We aim to improve human health by answering unresolved questions with high-end tools and services that reveal novel single-cell mechanistic insights in the field of cell-based therapies, oncology, infectious disease, immunology, and regenerative medicine. Partnering with academia and industry, we enable the research breakthroughs today that will translate to the therapies of tomorrow.



The Institut für Innovationstransfer GB Biotech (IIT Biotech) offers integrated genomic services. Since some years the main provided service is the “next generation sequencing”.

The high-throughput techniques performed by Illumina HiSeq and MiSeq or by IonTorrent PGM can be offered combined with a powerful lab & bioinformatic pipeline providing full service tasks like genomic assembly, gap closure and annotation.

Furthermore we offer individual solutions for the bioinformatic evaluation of project data. This includes construction of draft-genomics, storage/care of genome projects, analysis in resequencing and metagenomics and development/customization of analysis-software.

Name	IIT BioTech - Institut für Innovationstransfer an der Universität Bielefeld GmbH
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Postal Code/City	33615 Bielefeld
Fon	+49 521 106 8756
Fax	+49 521 106 89041
E-Mail	service@iit-biotech.de
Internet	www.iit-biotech.de
Employees	14
Founded (year)	1995

ISOLOID

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High-purity samples of amyloid proteins and peptides are a key prerequisite for research and development on many severe diseases, such as Alzheimer’s, Parkinson’s and Diabetes mellitus type 2. However, the biotechnological production of these proteins turned out to be challenging

due to harmful effects on the producing organisms.

Based on an innovative and proprietary technology Isoloid GmbH overcame this challenge to offer high purity protein samples and labeled derivatives to your lab.

As a joint spin-off from Heinrich-Heine-University Düsseldorf and Forschungszentrum Jülich we build on a strong expertise and plenty years of experience in structural biology and biophysics to promote your research project.

Name	Isoloid GmbH
Address	Erkrather Str. 401
Postal Code/City	40231 Düsseldorf
Fon	+49 211-81 15143
E-Mail	info@isoloid.de
Internet	www.isoloid.de
Employees	<10
Founded (year)	2015



LenioBio is a life science biotech offering a novel protein expression technology. We enable the discovery, development, and large-scale manufacturing of difficult-to-express proteins. We have developed a eukaryotic cell-free protein technology, AliCE, that is scalable and will change the way proteins are produced today; across all industries. We believe that every person deserves an equal

chance to lead a healthy life. This begins with access to effective and affordable medicines wherever they are needed. Born from our dream to produce enough Ebola vaccines quickly after the 2015 Ebola pandemic, when 1,000 people were dying every month. Manufacturing of 3000 doses of the ZMapp vaccine in plants would have required 40,000m² of greenhouse and taken 90 days. LenioBio has one goal. To simplify manufacturing and speed up the delivery of drugs to the patient. Our technology has the potential to level the playing field. Any biotech company with great purpose, regardless of its size or location, can now soon bring its product to the market.

Name	LenioBio GmbH
Address	Erkratherstr 401
Postal Code/City	40231 Düsseldorf
Fon	+49 211 890940300
E-Mail	info@leniobio.com
Internet	www.leniobio.com
Employees	31
Founded (year)	2016

Name	Lonza Cologne GmbH
Address	Nattermannallee 1
Postal Code/City	50829 Köln
Fon	+49 221 99199-190
E-Mail	info.cologne@lonza.com
Internet	www.bioscience.lonza.com
Employees	113
Founded (year)	1998

Lonza

GmbH offers customized services, e.g. transfection services, proliferating cell services and cell modification services.

The Lonza Cologne site develops, manufactures and markets a comprehensive product portfolio of life-science research tools around cultured cells, including non-viral gene transfer products for primary cells and hard-to-transfect cell lines.

These products support scientists worldwide, enabling more efficient identification of new targets for pharmaceuticals and therapies. Additionally Lonza Cologne

Name	Miltenyi Biotec B.V. & Co. KG
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Postal Code/City	51429 Bergisch Gladbach
Fon	+49 2204 8306-0
Fax	+49 2204 85197
E-Mail	macsde@miltenyi.com
Internet	www.miltenyibiotec.com
Employees	4,000
Founded (year)	1989



Miltenyi Biotec

Miltenyi Biotec develops products and services that advance biomedical research and cell therapy. Our technologies inspire scientists in basic and translational research, and support clinical applications. Our integrated solutions enable sample preparation, cell separation, cell sorting, flow cytometry, cell culture, and molecular analysis.

Over 30,000 scientific publications and the manufacture of more than 50,000 cell products for clinical use demonstrate the profound trust scientists and clinicians have in MACS® Technology.

Miltenyi Biotec has been at the forefront of immunology, stem cell biology, cancer research, and neuroscience, as well as the clinical areas of hematology, graft engineering, and apheresis, for nearly 30 years. About 4,000 employees in 28 countries are passionate about our cell and gene therapy solutions.

Name	PAIA Biotech GmbH
Address	Gottfried Hagen Str. 60-62
Postal Code/City	51105 Köln
Fon	+49 221 1686 2380
E-Mail	info@paiabio.com
Internet	www.paiabio.com
Employees	10
Founded (year)	2014



PAIA Biotech GmbH offers assays for the rapid quantification of antibodies and proteins as well as glycosylation assays based on its proprietary technology. This technology uses proprietary 384-well microplates that drastically simplify the workflow of bead-based immunoassay with fluores-

cence detection. The assays are amenable to automation and run on fluorescence plate readers or microscopes. PAIA Biotech focuses on products for screening applications with limited sample volume and high throughput requirements, e.g. in early cell line development.

In addition to off-the-shelf products PAIA Biotech GmbH also offers custom assay development.

PAIA Biotech GmbH was founded in 2014 and is based at the RTZ in Cologne.



PL BioScience is an ambitious and dynamic life science company committed to cell expansion in animal-free conditions. The company has developed a platform of novel cell culture supplements derived from human platelets. The platform includes several innovations, e.g. a patent-

protected 3D cell culture system and virus-inactivated solutions. The tailored cell culture supplements cover all needs of cell expansion in academic research, pre-clinical research and cellular therapy. The broad product portfolio ensures seamless transitions from bench to bedside to enable cellular therapeutics for patients in need.

Name	PL BioScience GmbH
Address Postal Code/City	Dennewartstraße 25-27 52068 Aachen
Fon	+49 241 95719-100
Fax	+49 241 95719-109
E-Mail	info@pl-bioscience.com
Internet	www.pl-bioscience.com
Founded (year)	2015



The better way to DNA – PlasmidFactory is the leading contract manufacturer of plasmid and minicircle DNA and the driving force in the development of non-viral vectors for gene therapy and genetic vaccination. PlasmidFactory's research, development and the complete service are located in Biele-

feld, Germany. PlasmidFactory's individual manufacturing service is frequently used by researchers from the fields of transfection and drug delivery, virus production, nano-biotechnology, gene therapy, cell or tumor therapy, and RNA or DNA vaccination. All products are offered in several quality grades: Research Grade and ccc Grade qualities for research purposes and pre-clinical applications, High Quality Grade as starting material for e.g. GMP production of RNA, viral vectors and CAR-T cells. In Stock products e.g. reporter genes and AAV Helper & Packaging vectors are also provided.

Name	PlasmidFactory GmbH & Co. KG
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Internet	www.plasmidfactory.com
Employees	30
Founded (year)	2000

PROTAGEN *Protein Services*

Protagen Protein Services (PPS) is a world leading CRO and recognized expert in analytical services in protein science and gene therapy products. More than 20 years of market experience and the comprehensive spectrum of validated analytical methods ensure the highest quality for customers in the pharmaceutical, biotech and life science industry. The company is an excellent partner for the biopharmaceutical industry worldwide to

benefit from the most advanced, integrated and complete analytic services capabilities and platforms in biopharmaceutical development, from clone selection through drug approval to commercialization. In working together with their pharmaceutical partners, the PPS teams generate best-in-class analytical data packages and provide scientific, technical and regulatory support to advance, de-risk and accelerate all stages of biopharmaceutical development by all-in-one-hand service with complete documentation and outstanding project management to gain market success.

Name	Protagen Protein Services GmbH
Address Postal Code/City	Otto-Hahn-Straße 15 44227 Dortmund
Fon	+49 231 9742-6100
E-Mail	contact@ProtagenProteinServices.com
Internet	www.ProtagenProteinServices.com
Employees	180
Founded (year)	1997

Name	Proteona GmbH
Address	
Postal Code/City	50931 Köln
E-Mail	info@proteona.com
Internet	https://proteona.com
Employees	10-20
Founded (year)	2017



Proteona is a biomedical company in Germany, Singapore and the US that is pioneering the use of single cell proteogenomics to improve clinical outcomes in cancer. Using a combination of innovative single cell assays and AI-assisted bioinformatics, Proteona provides a comprehensive sample to answer service that enables users to phenotype cells using standard protein markers and gain a deeper understanding of cell activity

based upon their gene expression profiles. Proteona is leading an international alliance to develop neutralizing antibodies against coronaviruses including SARS-CoV-2. In addition, Proteona supports partners developing COVID-19 therapies and vaccines with single cell immune profiling services.

Name	Serengen GmbH
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Fax	+49 231 999 50 999
E-Mail	info@serengen.com
Internet	www.serengen.com
Employees	3
Founded (year)	2019



Unbiased screening of chemical compounds remains the most valuable approach to identifying hits in drug discovery. However, as it is resource and time intensive, it is currently only used for selected projects in large companies.

Our unique DNA-encoded library (DEL) technology is the fastest and most eco-

nomical method for hit identification, allowing invaluable serendipity. For the first time, unbiased sampling of chemical space for hit identification becomes affordable for any drug discovery project in any organisation.

Our breakthrough technology removes the existing limitations of DNA-compatible chemistry. Our DELs consist exclusively of biologically relevant, druglike molecules. Consequently, our hits can be fed directly into your drug discovery process without the need for expensive transformation of DEL hits into tractable hits.

Name	Singleron Biotechnologies GmbH
Address	Gottfried-Hagen-Straße 60
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Fon	+49 221 16824777
E-Mail	info@singleronbio.com
Internet	www.singleronbio.com
Employees	over 400
Founded (year)	2018



Singleron Biotechnologies, an innovative, fast-growing company, is dedicated to applying groundbreaking single cell analyses to clinical research, diagnostics, and drug development. The company was incorporated in January 2018 in China and the US and opened its European branch in Cologne, Germany in early 2021. More than 400 single cell sequencing experts

worldwide work together to accelerate research and clinical progress with their advanced and proprietary multi-omics single cell technologies. Their focus on clinical applications addresses the need of researchers to translate the deep insight of diseases into guidance for medical practice.

Singleron offers a one-stop shop solution for high-throughput single cell analysis comprising consumables, instruments and software as well as sequencing services with extensive bioinformatic analysis.



Squarix GmbH is a privately-held primary manufacturer of high purity Discovery Chemicals and Immunoreagents. Since 1992, Squarix produces a broad product line of compounds that include innovative building blocks, reactive intermediates, natural products and derivatives, screening

compounds for drug discovery industry and reagents for life science applications comprising antibodies, metabolic intermediates, fluorescent dyes & probes and different affinity matrices for proteins and cells. Moreover, Squarix is a custom producer of polyclonal and monoclonal antibodies for biomedical research and offers all type of immunoanalytical services in the field of antibody technology.

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Fon	+49 2365-20400-0
Fax	+49 2365-20400-60
E-Mail	info@squarix.de
Internet	www.squarix.de
Employees	9
Founded (year)	1992



vivo Science is a GLP/GMP certified service company for the pharmaceutical industry (CRO) offering in vivo toxicology studies and is specialized in the testing of immunotoxicity (ICH-S8) and immunogenicity (ICH-S6) of new drug candidates, especially if derived

from biotechnology. By merging with the international Texcell Group with subsidiaries in Europe, Asia and North America, vivo Science has expanded its portfolio and now acts as a full service provider in the preclinical testing of biologics, pharmaceuticals, medical devices and chemicals as well as in GMP cell banking and viral safety.

In addition, vivo Science can include immunological tests into standard toxicity studies. vivo Science will provide GLP/GMP compliant, validated study protocols and will assist you in setting up a customized test program for your special requirements.

Name	vivo Science GmbH
Address	Fabrikstr. 3
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Fax	+49 2562 8170-19
E-Mail	info@vivoscience.de
Internet	www.vivoscience.de
Employees	17
Founded (year)	2001



Nanobiotech company having more than 20 years experience in surface derivatisation with bioinert and biofunctional nanocoatings. Manufactures SPR or other biosensor chips, coated slides for protein, cell and DNA based assays. Custom coating of many materials, including glasses, metals and plastic, also for biomedical

devices. The hydrogel nanolayers exhibit an excellent haemo- and tissue compatibility and can be derivatized with growth or adhesion factors.

As complement to the biochip product line, XanTec offers SPR biosensors, which allow highly sensitive real-time and label-free detection of biomolecular interactions at the molecular level. These instruments can analyze binding constants / kinetics and allow rapid concentration determination, drug screening, epitope mapping, or adhesion studies with cells or viruses.

Name	XanTec bioanalytics GmbH
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Fax	+49 211 9936-4746
E-Mail	info@xantec.com
Internet	www.xantec.com
Employees	12
Founded (year)	1997

Name	Xell AG
Address	Alte Verler Strasse 1
Postal Code/City	33689 Bielefeld
Fon	+49 521 96989-200
Fax	+49 521 96989-201
E-Mail	info@xell.de
Internet	www.xell.de
Employees	45
Founded (year)	2009



Xell is now part of Sartorius

Xell is an innovative partner for the biotech and pharma industry, providing efficient solutions in cell culture technology.

Xell offers culture media and feeds for all commonly used cell types (CHO, HEK, Hybridoma etc.) and applications (biopharma and viral vector-based production). Our chemically defined products are animal component

free and GMP compliant. Reliable analytical services (e.g. amino acids, vitamins or polyamines) are served for various matrices with unmatched timelines for the biopharma, biotech, feed & food and R&D industries. We also offer cell and process services at BSL-1 and BSL-2 labs to optimize production processes. Since 2019, Xell has extended its capabilities for large-scale production of liquid (up to 240,000 L/a) and powder (up to 144,000 kg/a by 2021) media and related solutions at its own facility. We are also happy to announce that Xell AG is now part of Sartorius AG. The whole Xell Team is very much looking forward to the new opportunities.

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Merowingerplatz 1
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phone: +49 (0) 211 942 150 49
mail: info@bioclustermanagement.de
web: www.bioclustermanagement.de



Health and Medicine (including Animal Health)



Abalos Therapeutics has harnessed the unique immune stimulation of the arenavirus to develop a novel anti-cancer approach that provides the full breadth of the immune system's power specifically against cancer cells. Through viral replication within cancer cells, Abalos' arenavirus-based drug candidates are designed to awake precise

innate and adaptive immune responses and activate all relevant immune cell types against primary tumors and metastases. Led by experienced biotech entrepreneurs and immunology pioneers, Abalos' goal is to achieve a quantum leap in immunology.

Name	Abalos Therapeutics GmbH
Address Postal Code/City	Merowingerplatz 1 A 40225 Düsseldorf
Fon E-Mail Internet	+49 211 540104-0 info@abalos-tx.com www.abalos-tx.com
Employees Founded (year)	12 2019



Adhesys Medical GmbH develops fully synthetic, biodegradable surgical adhesives. The first product FLIX® is designed for dermal use, to close a great variety of topical wounds, and has received its CE-mark in January 2018. Based on its unique polyurethane platform technology Adhesys develops further products for use inside the human body: either as an adhesive, to seal

areas of leakage or re-attach tissue, or as a hemostat, to stop bleeding. The company was founded in 2013 in Aachen, Germany. In February 2014, the founders closed a 7-digit seed investment round with S-UBG, KfW and a group of private investors. In April 2014 the team won the Rice Business Plan Competition in Houston, Texas and expanded to the United States. In April 2017 the company was acquired by the pharmaceutical company Grünenthal and operates now as a whollyowned subsidiary with offices in Aachen, Germany and Boston, United States.

Name	Adhesys Medical GmbH
Address Postal Code/City	Zieglerstraße 6 52078 Aachen
Fon E-Mail Internet	+49 241 41250320 info.eu@adhesys-medical.com www.adhesys-medical.com
Employees Founded (year)	25 2013



AiCuris is a pharmaceutical company specializing in the discovery, research and development of novel, resistance-breaking antiviral and antibacterial agents for the treatment of serious and potentially life-threatening infectious diseases. We are one of the few European biotech companies which has brought a drug with "blockbuster" potential to the market (Prevymis® 2017/18).

Selected AiCuris' Programs:

- Letemvir/Prevymis® (licensed to MSD): HCMV, marketed (for bone marrow transplant), Ph 3 (for solid organ transplant)
- Pritelivir: HSV resistant, Phase 3
- AIC649: Hepatitis B Virus, SARS-CoV-2 treatment (pandemic preparedness), Phase 1 (in patients)
- Artily sine: Several approaches in the field of bacteriology incl. AMR and diabetic foot infections
- PREP Program: Pandemic & Resistance Emergency Preparedness

Name	AiCuris Anti-infective Cures AG
Address Postal Code/City	Friedrich-Ebert-Str. 475 42117 Wuppertal
Fon E-Mail Internet	+49 202 31763-0 info@aicuris.com www.aicuris.com
Employees Founded (year)	70 2006

Name	Algiax Pharmaceuticals GmbH
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Fax	+49 211 617851-50
E-Mail	info@algiax.com
Internet	www.algiax.com
Employees	6
Founded (year)	2011



Algiax Pharmaceuticals is a clinical-stage biotechnology company established in 2011. It is dedicated to the discovery and development of innovative products to treat diseases with a high unmet medical need. Algiax' lead candidate AP-325 is a small-molecule GABAA receptor modulator in clinical development as a therapy for neuropathic pain. The comprehensive

Phase I program has been finalized in >100 subjects and showed a good safety and tolerability profile in healthy volunteers. Our phase II clinical trial (CURE Study) is up and running. The objective of this study is to show proof-of-concept in patients with post-operative neuropathic pain and results are expected for 2022. Next to AP-325 Algiax has discovered novel GABAA receptor modulator compounds called Thioacrylamide (ThAc) derivatives. The company is advancing a selection of ThAc derivatives from its discovery to preclinical characterization.

Name	arrows biomedical Deutschland GmbH
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Fon	+49 251 534064-00
Fax	+49 251 534064-01
E-Mail	raem@arrows-biomedical.com
Internet	www.arrows-biomedical.com
Employees	10
Founded (year)	2005



arrows biomedical Deutschland carries out contract research and clinical routine analyses, and also pursues its own R&D projects. The firm's areas of focus are primarily in the fields of molecular oncology and neurodegenerative disease. Its portfolio of molecular analytics includes RNA/DNA. Services like RNA/DNA isolation,

microarrays (GenExpression, Array-CGH, ChIP on chip, DNA-Methylation-Microarrays), PCR (RT-qPCR, Dpca) and bioinformatics. In the area of medical diagnostics, the portfolio includes routine analysis (testing for all clinical relevant biomarkers and the complete range of blood analysis), flow cytometry (NAVIOS), HPLC analysis, diagnostic microarrays, detection of freely circulating tumor cells, and chemosensitive analysis. Furthermore, FISH analysis, general microscopy with the Zeiss axio imager M2 in combination with the MetaSystems Software and Pyro-, NGS and Sanger sequencing.

Name	attyloid GmbH
Address Postal Code/City	Merowingerplatz 1A 40225 Düsseldorf
Fon	+49 211 81 10377
E-Mail	info@attyloid.com
Internet	www.attyloid.com
Employees	<10
Founded (year)	2018



attyloid is a biotech spin-off built on strong scientific expertise in protein misfolding and aggregation. We have developed an ultra-sensitive quantitative technology platform with value-adding potential as biomarker of CNS diseases and drug effect assaying, development and QC of biologicals, and counting of viral particles. attyloid is granting access to its proprie-

tary technology as clinical and pre-clinical drug development tool, particularly as biomarker assay for de-risked pharmaceutical drug development. Furthermore, various iterations and custom-made modifications of sFIDA allow the generation of added value in each, and across all, of these R&D work packages.

In this manner, attyloid enables its collaboration partners to generate higher-quality biologicals with increased reproducibility, saving time and costs for the R&D partner.



the development of blood tests for early detection.

betaSENSE develops innovative tests for the early detection of neurodegenerative diseases such as Alzheimer's, Parkinson's and ALS from body fluids. The focus is on

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Fax	+49 234 32 14238
E-Mail	info@beta-sense.de
Internet	www.beta-sense.de
Employees Founded (year)	30 2020



Biocheck GmbH offers a broad range of different Polycheck® test panels which can be performed manually or fully automated matching with central Laboratory Information Systems (LIS). Evaluation and calculation is done by picture scanning and by Biocheck Imaging Software.

The Polycheck® Platform Technology was introduced by Biocheck GmbH as a tool for medical in vitro diagnosis of allergies and autoimmune diseases. The solid phase immunoassay technology is a multiparameter test device for serological quantitative screening of disorder-specific immunoglobulins using monoclonal detection antibodies.

Name	BioCheck GmbH
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Internet	www.polycheck.de
Employees Founded (year)	27 1999



skin cancers and their precursors. Ameluz® has been marketed in the EU since 2012 and in the US since May 2016. In addition, the company markets the prescription medication Xepi™ for the treatment of impetigo in the United States. In the EU, the company also sells the dermocosmetics series Belixos®, which offers specialized care for damaged or diseased skin. Biofrontera is the first German founder-led pharmaceutical company to receive a centralized European and a US approval for a drug developed in-house. Biofrontera is listed on the Frankfurt Stock Exchange (Prime Standard) and on the US NASDAQ.

Biofrontera AG is a biopharmaceutical company specializing in the development and sale of dermatological drugs and medical cosmetics. Biofrontera develops and markets innovative products for the care, protection and treatment of the skin. The company's lead product is the combination of Ameluz®, a topical prescription drug, and medical device BF-RhodLED® for the photodynamic therapy of certain superficial

Name	Biofrontera AG
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Fon	+49 214 87632-0
Fax	+49 214 87632-90
E-Mail	info@biofrontera.com
Internet	www.biofrontera.com www.biofrontera-us.com
Employees Founded (year)	154 1997

Name	Black Drop Biodrucker GmbH
Address	Gasborn 41
Postal Code/City	52062 Aachen
Fon	+49 173 2618 104
E-Mail	bioprinting@black-drop.de
Internet	www.thebioprinting.com
Employees	6
Founded (year)	2017



Black Drop Biodrucker GmbH is a leading bioprinting company focused on 3D-printing of living cells. Bioprinting is a biomedical key technology that has the potential to improve medical patient treatment in multiple ways. Bioprinted tissue

analogues, such as skin, liver, or heart muscle patches offer an ideal platform for drug and toxicity screening. In the future bioprinted tissue implants could be used to maintain, restore, or substitute the function of damaged tissues. As experts in 3D-bioprinting we provide our clients with outstanding bioprinting hard- and software, highly biofunctional bioinks, and bioprinted in-vitro models.

Besides our compact 3D-bioprinter series, Black Drop SuperFill, we construct individualized bioprinting systems and develop tailored organ models.

Name	Carpegen GmbH
Address	Mendelstr. 11
Postal Code/City	48149 Münster
Fon	+49 251 980-2320
Fax	+49 251 980-2321
E-Mail	info@carpegen.de
Internet	www.carpegen.de
Employees	10
Founded (year)	2001



Carpegen is a provider of high quality molecular diagnostics. The company focuses on developing real-time PCR assays and point-of-care (POC) diagnostics for the diagnosis of specific infections and the detection of genetic biomarkers. Carpegen has developed Carpegen® Perio Diagnostics, a powerful real-time PCR based system

that sets new standards in microbiological periodontal diagnostics. A main objective of Carpegen's research program is to develop and out-license POC/PCR systems for diverse applications in human and veterinary medicine, as well as in food/beverage and environmental analytics. Recently, Carpegen and collaborators received a new grant funding of the German government for the development of rapid molecular diagnostics of common infections in small animals. Since 2020, Carpegen offers sensitive and specific real-time PCR diagnostics for the detection of the coronavirus disease 2019 (COVID-19).

Name	CellAct Pharma GmbH
Address	Otto-Hahn-Str. 15
Postal Code/City	44227 Dortmund
Fon	+49 231 9742-6350
Fax	+49 231 9742-6355
E-Mail	info@cellact.eu
Internet	www.cellact.eu
Employees	7
Founded (year)	2007



CellAct's small molecule compound, named CAP7.1, targets Topoisomerase II and has shown efficacy and tolerability in various advanced cancer disease in phase I and II clinical studies.

CAP7.1 received orphan drug status for biliary tract cancers from the EMA. CAP7.1 was acquired by MundiPharma for

over >\$250 million after a randomized, multi-center, phase II proof-of-concept study in adults with end-stage biliary tract cancer in 2017.



CEVEC Pharmaceuticals is a leading provider of high-performance cell technology for the manufacturing of advanced biotherapeutics. With the ELEVECTA® Technology, CEVEC offers a unique solution for large-scale production of AAV vectors using helper virus-free producer cell lines with all necessary components stably integrated into the cell. The technology is based on

suspension cells and does not require any expensive transfection reagents or cGMP plasmids. CEVEC's CAP® Technology based on human suspension cells is the ideal production platform for RCA-free Adenoviral vectors, Lentiviral vectors, viral vaccines and exosomes. With the CAP-Go® Technology CEVEC provides a solution for the production of complex recombinant and highly glycosylated protein molecules, including laminins, coagulation factors and plasma proteins.

Name	CEVEC Pharmaceuticals GmbH
Address Postal Code/City	Gottfried-Hagen-Str. 60-62 51105 Köln
Fon	+49 221 46020-800
Fax	+49 221 46020-801
E-Mail	info@cevec.com
Internet	www.cevec.com
Founded (year)	2003



Cilian AG is a biotechnology company developing and marketing a novel expression system. The company uses a species of Ciliates, a eukaryotic single-cell organism, for the production of vaccines, monoclonal antibodies and therapeutic enzymes.

Name	Cilian AG
Address Postal Code/City	Johann-Krane-Weg 42 48149 Münster
Fon	+49 251 6203-114
Fax	+49 251 6203-116
E-Mail	info@cilian.de
Internet	www.cilian.de
Employees	29
Founded (year)	2001



CreativeTherapeutics GmbH (CT) is a privately-held biotechnology company designing innovative, tailored cancer therapeutics causing genomic and metabolic instability resulting in epigenetic changes leading to activation of the immunesystem.

CT offers collaboration to advance its lead asset CT913 through IND enabling studies to pave the way for Phase I in cancer patients.

Currently there are no approved targeted therapies of this type with such a multifaceted mode of action.

Recognizing the science-based chance to realize the vision for a much more selective and well tolerated anticancer principle CT was founded and started to realize its mission.

Name	Creative Therapeutics GmbH
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Fon	+49 178 7272118
E-Mail	zeiler@creative-therapeutics.com
Internet	www.creative-therapeutics.com
Employees	2
Founded (year)	2009

Name	Cygenia GmbH
Address	Am Alten Kalkwerk 14
Postal Code/City	52078 Aachen
Fon	+49 241 53108060
Fax	+49 241 53108069
E-Mail	w.wagner@cygenia.com
Internet	www.cygenia.com
Founded (year)	2014



Cygenia is the first company to provide service on epigenetic biomarkers. Epigenetics is a new area of research that holds great potential for cellular analysis.

We have established biomarkers to characterize cell culture with regard to replicative senescence, pluripotency, cellular composition, or classification of mesenchymal stromal cells. In addition,

we provide biomarkers to determine the state of aging in blood samples of mice and men.

We are experts in project design and advice you to find the best suitable biomarker for your project. We address particularly scientists and clinicians.

Name	Evotec SE - Cologne Site
Address	Nattermannallee 1, Building S20
Postal Code/City	50829 Köln
Fon	+49 221 998818-0
E-Mail	info@evotec.com
Internet	www.evotec.com
Employees	>3,900
Founded (year)	1993



Evotec is a life science company with a unique business model focused on delivering highly effective new therapeutics to the patients. The Company leverages its multimodality platform, the "Data-driven R&D Autobahn to Cures", for proprietary projects and within a network of partners

including Pharma, Biotech, academics, and other healthcare stakeholders. Evotec operates worldwide and is headquartered in Hamburg, Germany.

Evotec's Cologne site leverages induced pluripotent stem cell (iPSC) technology for neural and cardiac drug development. This includes bulk production of differentiated cells, assay development and customised services in the context of safety / toxicology studies, *in vitro* disease modelling and drug discovery screening.

Name	ImmunoQure AG
Address	Königsallee 90
Postal Code/City	40212 Düsseldorf
E-Mail	info@immunoqure.com
Internet	www.immunoqure.com
Founded (year)	2011



ImmunoQure AG is a young biotech company focusing on the research and development of human-derived autoantibodies for the treatment of common human diseases.

Through our unique access to ultra-rare APECED/APS-1 patient populations, we are able to identify patients harboring autoantibodies against naturally occur-

ring self-proteins. The autoantibodies have been optimized by the human immune system for functionality and are outstanding modulators of key proteins involved in e.g., inflammation and autoimmune disorders.

ImmunoQure has established a strategic partnership with Servier Laboratoires, Paris France for the development and commercialization of autoantibodies targeting Interferon-alpha for the treatment of certain human diseases.



Develops first diagnostic test to detect perinatal asphyxia (PA, oxygen deficit during birth) and related braininjury. PA is very prevalent in childbirth world-wide with 0.5-4 % of births affected, but 5-10% of newborns being at risk while initially being largely asymptomatic, but still develop later e.g. cerebral palsy/spasticism,etc. Available and reimbursed therapy under-

pins the high medical need, but treatment needs to start within 6 h after delivery. InfanDx conducted 2 clinical studies and currently miniaturizes the system to a blood based point-of-care test.

Technology origin is metabolomics research. Product-pipeline holds further patent backed applications. InfanDx seeks partnerships such as

- pharma-partnering, („companion diagnostic“, therapy monitoring)
- manufacturer of point-of-care devices
- marketing co-operations

Name	InfanDx AG
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Fax	+49 221 2927-1490
E-Mail	info@infandx.de
Internet	www.infandx.de
Employees	< 10
Founded (year)	2010



innoVitro is a Contract Research Organisation based in Jülich, Germany, with core competences in measurement and analysis of cellular forces - specifically cardiac contraction of human iPSC-derived cardiomyocytes. innoVitro's FLEXcyte service is an animal-free high throughput tool for cardiac risk assessment of new drug candidates to ad-

dress preclinical safety, toxicity, and efficacy concerns, but is also engaged for cell culture medium development, isogenic cell line comparison and cell line characterization.

Key feature of the FLEXcyte technology is a hyperelastic silicone membrane that substitutes rigid glass or plastic culture surfaces for the cells in a 96-well high throughput format. Membrane and human iPSC-derived cardiomyocytes form a physiological biohybrid construct that reacts like an adult human heart tissue upon compound treatment, demonstrating unprecedented physiological relevance.

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E-Mail	info@innovitro.de
Internet	www.innovitro.de
Employees	4
Founded (year)	2018



The Lead Discovery Center GmbH (LDC) was founded in 2008 and is a professional drug discovery company with all required infrastructure, core competencies and disciplines operating in a fully integrated way at highest industrial standards. LDC is working closely together with a broad academic and industrial network, e.g. the Max

Planck Society, universities, pharmaceutical companies, and the Technology Transfer Fund KHAN-1.

LDC functions as facilitator to translate basic research results into professional drug discovery projects. LDC is working on a broad portfolio of early stage drug discovery projects. The indications include cancer and metabolic syndromes, neurodegenerative diseases, inflammatory disorders and infections, as well as other conditions with high, unmet clinical needs.

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E-Mail	info@lead-discovery.de
Internet	www.lead-discovery.de
Employees	95
Founded (year)	2008

Name	Life & Brain GmbH
Address	Venusberg-Campus 1
Postal Code/City	Gebäude 76 53127 Bonn
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Fax	+49 228 6885-101
E-Mail	info@lifeandbrain.com
Internet	www.lifeandbrain.com
Employees	35
Founded (year)	2002



LIFE&BRAIN is a biomedical enterprise serving as commercial hub of the University of Bonn Medical Center. Integrating a unique set of expertise, we aim at delivering future-oriented services and products for disease-related research and the development of novel therapies with a focus on neurological and neuropsychiatric diseases.

Within our business divisions Cellomics, Genomics and Electrophysiology Services we provide human stem cell-based cell culture systems and services for neurological disease modelling and compound development, genome and gene expression analysis, electro-physiology services to characterize small molecules in target engagement, efficacy and potency in human and rodent models.

Name	Matricel GmbH
Address	Kaiserstr. 100
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Fon	+49 2407 5644-0
E-Mail	info@matricel.com
Internet	www.matricel.com
Employees	40
Founded (year)	2001



Matricel GmbH develops and produces innovative medical class III collagen implants and biomatrices for applications in medicine and biotechnology.

Matricel's proprietary technologies are the key to successfully produce biocompatible and biodegradable matrices in a wide range of modifications suitable for the cultivation with human cells in tissue

engineering and regenerative medicine. The products serve different medical fields like ACI-Maix and Cartimaix for tissue engineering of articular cartilage and other orthopedic applications and Remaix as a dental membrane for guided bone regeneration.

Matricel's product Optimaix is dedicated for research in 3D cell culture. Matricel has a promising product pipeline in further medical fields like dermal and nerve regeneration with customized scaffolds.

Name	MLM Medical Labs GmbH
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Fon	+49 2161 4642100
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Internet	www.mlm-labs.com
Employees	150
Founded (year)	1993



MLM Medical Labs is a leading specialty and central laboratory with comprehensive research services and diagnostic capabilities in Europe and North America. Offering standard and fully customizable analytical services across a variety of therapeutic areas, the team of over 150 employees adds value and expertise at every stage of the drug development

process, from nonclinical and preclinical through phase IV clinical trials. Over the last three decades MLM has supported over 2000 clinical trials worldwide. Core service areas include central lab services such as safety and biomarker testing in Europe & US, kit building and sample logistics, as well as pharmacology and efficacy studies for preclinical research and histopathology services. All services are complemented by a superior IT infrastructure, global project management and high quality standards.



MorphoPlant GmbH is a bio-/ medtec company headquartered at the BioMedizin-Zentrum in Bochum and focused on the integration of biotech functionalities into medical devices. Laboratories equipped with state-of-the-art technology for recombinant protein

production, protein chemistry, molecular and cell biology, isotope protein labeling/ monitoring and optical biosensor technology are available to our experienced and multidisciplinary R&D team. MorphoPlant's proprietary technologies provide our customers with ultrahydrophilic and osteophilic long-term storable metal implant surfaces and solutions for biocoating of a variety of implant materials with recombinant growth factors (bone/ vascular). Our outstanding expertise in surface functionalization, protein adsorption, kinetics monitoring and animal testing is also available for contract research.

Name	MorphoPlant GmbH
Address	Universitätsstr. 136
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E-Mail	info@morphoplant.de
Internet	www.morphoplant.de
Employees	14
Founded (year)	2002



MukoCell GmbH, a pharmaceutical company with headquarters in Dortmund / Germany, has developed an innovative and gentle method for the surgical repair of urethral strictures. Using an autologous cell transplant (Mukocell®), the patient's own cells are used for treating the patient's urological disease. The replacement tissue

emerged from the company's own research and development and is the first tissue engineering product in the urology field worldwide that is based on the patient's own cells.

Name	MukoCell GmbH
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Fax	+49 231 97 42 93 71
E-Mail	info@mukocell.com
Internet	www.mukocell.com
Employees	5
Founded (year)	2013



Myriad International GmbH in Cologne is part of the Myriad Genetics group of companies, a global leader in molecular diagnostics. We develop and distribute molecular pathological in-vitro-diagnostic tests with the aim of improving individual

therapy selection for oncological diseases through precise diagnostics.

Our team is highly committed to the development of diagnostic tests, using advanced technologies, to provide patients with personalized medicine and support.

Name	Myriad International GmbH
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Postal Code/City	Geb. S19 50829 Köln
Fon	+49 221 669561-00
Fax	+49 221 669561-99
E-Mail	info@myriad-international.de
Internet	www.myriadgenetics.eu www.endopredict.eu
Employees	25
Founded (year)	2010

Name	NEUWAY Pharma GmbH
Address Postal Code/City	Ludwig-Erhard-Allee 2 53175 Bonn
Fon	+49 228 522798-0
Fax	+49 228 522798-99
E-Mail	info@neuway-pharma.com
Internet	www.neuway-pharma.com
Employees	23
Founded (year)	2014



NEUWAY Pharma is committed to bringing transformative neuropharmaceuticals across the blood-brain barrier through its proprietary, virus-free EnPC® protein particle technology. The company aims to be a partner of choice in particular for antibody

and mRNA drug developers stymied by the hurdles of delivering these and other drug modalities into the brain and CNS tissue. Operating as a drug developer and a delivery expert, NEUWAY will demonstrate the value of its technology through its internal orphan neurological disease pipeline and partnered programs.

Name	Oncimmune Germany GmbH
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E-Mail	info.do@oncimmune.com
Internet	www.oncimmune.com
Founded (year)	1997



Our intimate understanding of the human immune system enables us to harness its sophisticated response to disease to detect cancer earlier and to support the development of better therapies.

The key to improving cancer survival is early detection and optimal selection for therapy. As a company, we are driven by our passion to improve cancer survival and to give people extra time. Oncimmune's

immuno-diagnostic test, EarlyCDT, can detect and help identify cancer on average four years earlier than standard clinical diagnosis.

The unique combination of our core technology and understanding of the immune system, powers our ImmunoINSIGHTS service; a proprietary platform that enables life-science organisations to optimise drug development and delivery, leading to more effective, targeted as well as safer treatments for patients.

Name	Paion AG
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Fon	+49 241 4453-152
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E-Mail	info@paion.com
Internet	www.paion.com
Employees	50
Founded (year)	2000



PAION AG is a publicly listed specialty pharmaceutical with innovative drugs. PAION's lead compound is remimazolam, a sedative/anesthetic.

In addition, PAION markets two intensive care products in selected European countries. Angiotensin II (GIAPREZA®), a vasoconstrictor indicated for the treat-

ment of refractory hypotension in adults with septic or other distributive shock, and eravacycline (XERAVA®), a novel fluorocycline antibiotic indicated for the treatment of complicated intra-abdominal infections in adults.

PAION's mission is to be a leading specialty pharmaceutical company in the fields of anesthesia and critical care by bringing novel products to market to benefit patients, doctors and other stakeholders in healthcare.



Priavoid is developing disease-modifying therapies for patients with severe neurological disorders like Alzheimer's dementia (AD).

The proprietary development candidates are based exclusively on D-enantiomeric amino acids (D-peptides) and therefore suitable for oral drug administration as capsules or tablets. Priavoid's most advanced compound PRI-002 for the treatment of

AD acts via a novel mechanism of action. Aβ peptides play a crucial role in AD. Aβ monomers can assemble to form toxic oligomers that replicate in a prion-like manner. PRI-002 is the first drug substance that acts as an anti-prionic in animals and is safe in humans.

The new mechanistic principle of direct dissolution of toxic oligomers can be applied to other neurodegenerative diseases. Priavoid advances several programs at different stages of pharmaceutical development.

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Employees Founded (year)	7 2017



QIAGEN is the leading global provider of Sample to Insight solutions that enable customers to gain valuable molecular insights from samples containing the building blocks of life. Our sample technologies isolate and process DNA, RNA, and proteins from blood, tissue and other materials. As-

say technologies make these biomolecules visible and ready for analysis. Bioinformatics software and knowledge bases interpret data to report relevant, actionable insights. Automation solutions tie these together in seamless and cost-effective workflows.

QIAGEN provides solutions to more than 500,000 customers around the world in Molecular Diagnostics (human healthcare) and Life Sciences (academia, pharma R&D and industrial applications, primarily forensics). Further information can be found at <http://www.qiagen.com>.

Name	QIAGEN GmbH
Address Postal Code/City	Qiagen Str. 1 40724 Hilden
Fon	+49 2103 29-0
Fax	+49 2103 29-22000
E-Mail Internet	pr@qiagen.com www.qiagen.com
Employees Founded (year)	5,900 worldwide 1984



Qithera, Germany, is a "Business Angel Boost" that was founded by Prof. Edgar Dahl (RWTH Aachen University) together with experienced biotech experts of the BIO.NRW network.

The company is developing innovative drugs to suppress tumor progression and metastasis with the goal to improve

survival of cancer patients. Qithera's R&D is based on new molecular findings from RWTH research and is implemented in close collaboration with the Hospital of RWTH Aachen University.

By addressing internally validated target molecules that are known to abrogate aggressive characteristics of cancer (stem) cells, Qithera is currently characterizing pharmacologically active compounds that suppress tumor spreading. The first indication of choice is a clinical important subset of bladder cancer whose disease management has been stagnant for decades.

Name	Qithera GmbH
Address Postal Code/City	Talstraße 14 52525 Heinsberg
E-Mail Internet	info@qithera.com www.qithera.com
Founded (year)	2012

Name	RheinCell Therapeutics GmbH
Address	Berghausener Str. 98
Postal Code/City	40764 Langenfeld
Fon	+49 2173 32820
Fax	+49 2173 3282015
E-Mail	contact@rheincell.de
Internet	www.rheincell.de
Employees	22
Founded (year)	2017



RheinCell Therapeutics GmbH specializes in the GMP-compliant manufacturing of human induced pluripotent stem cells (iPSCs) as fully characterized starting materials for a new generation of “off the shelf” regenerative therapies. A core product offering is a library of distinct HLA-homozygous iPSC lines produced from rigorously selected,

patient-consented cord blood units. As such, each cell line potentially matches thousands to millions of recipients and permits allogeneic cell therapies through significantly reduced immunogenicity.

With state-of-the-art cell culture and processing facilities, RheinCell also offers expert services along the complete iPSC workflow. iPSC experts and production engineers develop and implement protocols for cell differentiation, rigorously characterize and release-test generated cell lines, and establish cell banks in RheinCell's high-security storage facilities.

Name	Soluventis Nanotherapeutics GmbH
Address	Universitätsstrasse 136
Postal Code/City	44799 Bochum
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E-Mail	soeren.schreiber@soluventis.de
Internet	www.soluventis.com
Founded (year)	2018



The Soluventis-platform is a powerful drug delivery system, an entirely new type of Nanocarrier characterized by high efficacy and a good safety profile.

The Soluventis Nanocarrier shields transported siRNA or other oligonucleotides from blood and immune system and reaches reliably target organs including poorly vascularized tumor tissue. The ac-

tive substance is loaded into the liver and into tumors in comparable concentrations.

The targeting of metastases is excellent. The frozen ready-to-use Nanocarrier has a long shelf life in ampoules whereas in the organism it is completely eliminated within two days.

Soluventis has a portfolio of oncologic siRNAs and has experience with different drug candidates of customers. This novel drug delivery system opens the door to therapeutic oligonucleotides and we are facing the first clinical studies.

Name	Syntab Therapeutics GmbH
Address	St.-Jobser-Straße 56
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E-Mail	info@syntab-therapeutics.com
Internet	www.syntab-therapeutics.com
Founded (year)	2010



Syntab Therapeutics is committed to the exploration und development of innovative drugs against severe diseases such as cancer. Syntab's Immune System Engagers (ISERs) exhibit all desirable properties of conventional antibodies while, at the same time, being significantly smaller, chemically accessible molecules.

The company strives for the early out-licensing of product candidates. Syntab's platform technology enables the chemical synthesis of highly effective drugs for immuno-oncology. The flexibility of the technology is based on the application of highly specific binders against cell surface proteins. Furthermore, the technology has the potential to vary the number and specific properties of binders and effectors within the ISER molecules. The effector part activates the patients' immune system with strong efficacy.



TRANSIMMUNE

Transimmune AG is developing novel immunotherapies based on its unique understanding of the physiologic processes underlying the activation of antigen presenting cells. This understanding derives from nearly 30 years of research into the mechanism of action behind Extracorporeal Photopheresis (ECP), arguably the first FDA-approved cellular immunotherapy. ECP is a highly successful im-

munological treatment used for many years, mainly in cutaneous T cell lymphoma (CTCL), graft versus host disease (GVHD) and organ transplant rejection. Transimmune has created two core technologies; Transimmunization and Transtolerization. These involve protocols for manipulating the immune system that have been reduced to practice through our mouse-to-man development platform, generating compelling preclinical proof-of-concept data. These technologies have the potential to significantly enhance current ECP practice as well as drive its application more broadly into numerous other indications.

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Internet	www.transimmune.com
Founded (year)	2012

UGISense

UGISense AG is a mostly virtual biotech company developing Ugimers™, a new type of antisense drugs.

Ugimers™ solve the challenging problems that antisense products have faced: delivery, stability and toxicity.

Their basic structure is a fully artificial peptidic backbone that provides Ugimers™ with stable properties. In addition, this

structure also allows for a rational design with regard to modifications, e.g. amphiphilic- and customizable PK-properties in addition to homing tags/peptides. Through these capacities, Ugimers™ can address the specific requirements of envisaged targets.

UGISense has established projects in the fields of oncology, metabolic diseases, muscular dystrophies and peripheral neuropathies.

In comparison to competitor molecules, Ugimers™ have shown up to 10fold efficacy in tissue. IP protection is strong and durable.

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Internet	www.ugisense.com
Employees	2
Founded (year)	2016



Industrial Biotechnology



b.fab turns CO₂ into value-added products. We are specialized in C1 Bioeconomy and use CO₂ as our feedstock. In a first step, we efficiently convert CO₂ into formate with an electrolyzer. In a second step, formate is used in a bioprocess which converts

formate into value-added chemicals, feed proteins and biofuels. We apply Synthetic Biology to engineer microbial cell factories for production of specific products. Our technology platform is built on anaerobic and aerobic microbial cells to provide flexibility in the process design and adaptation to specific product requirements. b.fab offers pathway design, strain engineering, process development and technology licenses to its customers from the chemical, cosmetic, feed and energy industry. b.fab is strongly dedicated to establish the C1 Bioeconomy in the coming years.

Name	b.fab GmbH
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Employees	5
Founded (year)	2018

bitop

Extremolytes for life

bitop is a global market leader and expert in the biotechnological production and development of extremolytes.

Extremolytes are natural molecules, which protect biological structures. They are found inside of extremophilic plants and microorganisms. Protected by extremolytes,

these fascinating living beings can thrive in the harshest habitats one can imagine: salt lakes, deserts, hot springs, the arctic ice or deep sea.

With more than 25 years of experience and passion in the manufacturing of 100% natural, pure and GMO-free extremolytes, bitop is a reliable partner for the pharma, consumer healthcare, cosmetics and life science industry. We develop unique, extremolyte-based medical products and concepts for human and animal health and offer our raw material as multifunctional cosmetic active ingredients to our worldwide customers.

Name	bitop AG
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Internet	www.bitop.de
Employees	70
Founded (year)	1993



BSV BioScience GmbH was founded in Oct. 2007 in Baesweiler, near the historical city of Aachen. Since June 2010, the company manufactures and markets biological pharmaceutical active ingredients for different therapeutic areas.

One of our key strengths is based on the production of fertility hormones, being sup-

plied either as API or finished injectables, in co-operation with an also GMP approved German license manufacturer. Our main products are:

- Human Chorionic Gonadotrophin (HCG),
- Human Menopausal Gonadotrophin (HMG),
- Follicle Stimulating Hormone (FSH),
- Urokinase (UK), Streptokinase and Ulinastatin (UTI).

BSV BioScience GmbH is focused on different R&D activities, continuously pursuing improvements in the field of API's and finished dosage forms.

Name	BSV Bioscience GmbH
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E-Mail	office@bsvbio.de
Internet	www.bsvbio.de
Employees	40
Founded (year)	2007

Name	Cysal GmbH
Address	Mendelstraße 11
Postal Code/City	48149 Münster
Fon	+49 251 980 2490
Fax	+49 251 980 2499
E-Mail	info@cysal.de
Internet	www.cysal.de
Employees	5
Founded (year)	2012



The innovative biotechnology company Cysal GmbH was founded as a spin-out of the University of Münster, Germany.

Cysal focuses on the production of novel biomaterials in the area of biopolymers, peptides, amino acids, and dipeptides on an industrial scale at unprecedented low-cost, and also develops application fields

for these biomaterials to serve humans and animals. Cysal's business strategy aims at out-licensing its technology platform to interested companies and/or offering its raw materials for incorporation into consumer products for various markets.

The main target markets are those for energy food additives and sport nutrition, cosmetics and skin care, dental hygiene, clinical nutrition, immunomodulation, impotence and infertility, as well as in the area of animal feed production, especially for aquaculture.

Name	Enzymaster Deutschland GmbH
Address	Neusser Str. 39
Postal Code/City	40219 Düsseldorf
Fon	+49 211 15821610
Fax	+49 211 15821612
E-Mail	info@enzymaster.de
Internet	www.enzymaster.de
Employees	6
Founded (year)	2018



Enzymaster provides a one-stop solution for the development and commercialization of innovative and sustainable enzyme catalysis technologies. With our proprietary BioEngine® platform and long-term experience, we offer R&D services combined with establishment of complete technology transfer packages, and manu-

facturing collaborations to fine chemical, pharmaceutical, and other industries. Our portfolio includes enzyme panel screening, smart enzyme engineering, process development, enzyme preparation by fermentation, and biocatalytic manufacturing.

Enzymaster Deutschland GmbH, a subsidiary of Enzymaster (Ningbo) Bio-Engineering Co. Ltd., represents your partner in the international market for enzyme applications and products manufactured by biocatalytic processes. Green Magic Happens Here!

Name	evoxx technologies GmbH
Address	Alfred-Nobel-Str. 10
Postal Code/City	40789 Monheim am Rhein
Fon	+49 2173 4099 40
Fax	+49 2173 4099 440
E-Mail	contact@evoxx.com
Internet	www.evoxx.com
Employees	25
Founded (year)	2006



evoxx technologies GmbH, a German Industrial Biotechnology Company, is focusing on the development and production of industrial enzymes. As European subsidiary of the global enzyme manufacturer Advanced Enzymes Technologies Ltd. a comprehensive product portfolio of enzymatic solutions for human nutrition, animal nutrition, bio-processing and

pharma industries is offered. Product development is based on the proprietary technology platform covering the whole value chain from early enzyme and process development to industrial scale production and product deregulation.

evoxx industrial partners and customers benefit from the unique metagenomics libraries, the enzyme development skills and tech-transfer and production capabilities. evoxx is located on the Creative Campus in Monheim am Rhein.

Formo

In 2019 the startup was founded by Dr. Britta Winterberg and Raffael Wohlgensinger to create a more sustainable and ethical food system. Formo, formerly known as LegenDairy Foods, is Europe's first cellular agriculture company developing animal-free dairy products using bio-identical bovine proteins derived from precision fermentation. While the company is initially

focusing on creating real European cheese without the cow, Formo's integrated technology platform has the potential to revolutionize the food system as a whole. For instance, this technology has the potential to reduce the greenhouse gas emissions of cheese production by 85-97%.

Name	Formo (LegenDairy Foods GmbH)
Address Postal Code/City	Marie-Curie-Str. 1 53359 Rheinbach
Fon E-Mail Internet	+49 2226 872980 britta@formo.bio www.formo.bio
Employees Founded (year)	20 2019



GEN-IAL GmbH is a specialist laboratory for DNA based food and feed analyses. GEN-IAL offers services and kits for GMO-, allergene- and animal identity analyses as well as bacteria- and yeast detection and differentiation. We offer training in PCR, contract research, several kits for DNA-extraction, PCR-kits for beer/wine spoilage bacteria and yeast, pathogenes, geneti-

cally modified organism (GMO), allergenes, plant and animal-identity. The laboratory is accredited (DIN EN ISO/IEC 17025) and official cross checking laboratory. We are member in the German official working group for method development for GMO detection and quantification. We are an approved laboratory for the German VLOG (Verband Lebensmittel ohne Gentechnik e.V.) for GMO-free labeling.

New: Capturing of microorganism by polymer technology.

Name	GEN-IAL GmbH
Address Postal Code/City	Heuserweg 13-15 53842 Troisdorf
Fon Fax E-Mail Internet	+49 2241 252-2980 +49 2241 252-2989 info@gen-ial.de www.gen-ial.de
Employees Founded (year)	10 1998



IMAX Discovery is a research driven company, creating new product innovation through the generation and development of novel and natural ingredients for the food, beverage, perfume and cosmetic industries. IMAX Discovery offers its clients and partners integrated solutions for the entire flavour, fragrance and cosmetic

discovery process starting from target identification and validation up to the selection and development of new bioactive compounds by providing services, tools and integrated solutions tailored to the client's and partner's specific needs. Using its strong technology platforms and expertise around taste, olfactory receptors and natural products, IMAX Discovery also generates proprietary product pipelines of natural product based on novel taste and fragrance modulators. IMAX Discovery is a subsidiary of Axxam SpA in Milan, Italy.

Name	IMAX Discovery GmbH
Address Postal Code/City	Otto-Hahn-Str. 15 44227 Dortmund
Fon E-Mail Internet	+49 160 90890824 info@imax-discovery.com www.imaxdiscovery.com
Founded (year)	2010

Name	m2p-labs GmbH m2p-labs (part of Beckman Coulter Life Sciences)
Address	Arnold-Sommerfeld-Ring 2
Postal Code/City	52499 Baesweiler
Fon	+49 2401 805-330
Fax	+49 2401 805-333
E-Mail	m2pinfo@beckman.com
Internet	m2p-labs.com/beckman. com
Employees	60
Founded (year)	2005



BioLector microbioreactors based on the micro cultivation technology of m2p-labs (now part of Beckman Coulter Life Sciences) enhance high-throughput bioprocessing with or without O₂, and are fast, easy and fit in any lab. The new BioLector XT microbioreactor enables real-time evaluation of biomass, fluorescence, pH, DO, and other

key cultivation parameters for aerobes and anaerobes to quickly provide deep insights into your bioprocess development. Building on trusted BioLector Pro technology, the BioLector XT microbioreactor is based on a standard ANSI/SLAS (SBS) microtiter plate (MTP) format, and operates with online, pre-calibrated optical sensors. The optional microfluidic module supports simultaneous pH control and feeding and eliminates manual liquid handling.

Name	multiBIND biotec GmbH
Address	Gottfried-Hagen-Str. 60-62
Postal Code/City	51105 Köln
Fon	+49 221 2780-211
Fax	+49 221 2780-213
E-Mail	info@multibind.de
Internet	www.multibind.de
Employees	3
Founded (year)	2005



multiBIND develops innovative disinfection and decontamination solutions for research and healthcare. Core technology are two patent pending solution systems to generate new disinfectants and decontamination agents with high antimicrobial activity efficacy especially against all viruses includ-

ing coronavirus. Currently bioDECONT® is the only agent that in addition to the effective killing of microorganisms also accomplishes safe and complete elimination of genetic material (DNA/RNA) to avoid cross-contaminations in PCR analysis and DNA testing. Besides its high antimicrobial activity and decontamination properties, bioDECONT® is nontoxic for humans, non-corrosive and free of alcohols or other hazardous chemicals. multiBIND pursues a partnering strategy and respective products are on the markets of the EU, USA and China.

Name	NUMAFERM GmbH
Address	Merowingerplatz 1a
Postal Code/City	40225 Düsseldorf
Fon	+49 211 976 319 46
E-Mail	info@numaferm.com
Internet	www.numaferm.com
Employees	30
Founded (year)	2017



Numaferm changes the world of biomanufacturing. With the high-titer peptide and protein production platform Numatech™ the major existing challenges are overcome: long development times, high development costs and low product purities. As service provider (CRO/CDMO) we support our partners from the discovery

to commercial supply. This enables their innovations – in time, at quality, at scale and at competitive costs. Our mission is to unlock the power of peptides and proteins – in a sustainable way. Numaferm is a VC-backed company located in Duesseldorf, Germany, with a facility of 500 m² and a team of 30 experts.



OligoScience Biotechnology - Healthy Life Inspired by Nature

OligoScience Biotechnology GmbH was founded in 2017 with the vision to improve the health of humans and animals by producing human milk oligosaccharides (HMOs) which support the immune sys-

tem and a healthy intestinal flora. Based on innovative and proprietary technologies, OligoScience aims to become one of the world's leading providers of functional HMOs with strategic partners. The business goal is, thus, the development of efficient production processes for specific HMOs in a large scale with appropriate cost for the use as bioactive, functional natural products.

Name	OligoScience Biotechnology GmbH
Address	Siemensstraße 42
Postal Code/City	59199 Bönen
Fon	+49 2383 919-293
E-Mail	info@oligoscience.de
Internet	www.oligoscience.de
Employees	11
Founded (year)	2017



Phytowelt operates industrial plant biotechnology to help unleashing the potential of plants. It is a leading provider for the identification and expression of genes encoding plant enzymes. These enzymes offer new possibilities for industrial fermentation, targeting fatty acids, terpenoids and plant P450 enzymes. Additionally,

Phytowelt offers solutions in plant breeding to improve plants by protoplast fusion, genome editing and double haploid production. Like this for example biomass and secondary metabolite production can be optimized.

A big poplar collection for biomass production combined with a unique fermentation process for terpenes in E.coli, especially carotenoids, is a big success factor and USP for Phytowelt. The raspberry flavour, R-Alpha-Ionone is Phytowelt's first fermentatively produced product and on the market available product.

Name	Phytowelt GreenTechnologies GmbH
Address	Kölsumer Weg 33
Postal Code/City	41334 Nettetal
Fon	+49 221 669 639-03
Fax	+49 221 669 578-361
E-Mail	contact@phytowelt.com
Internet	www.phytowelt.com
Employees	30
Founded (year)	1998



SenseUp develops biotechnological production processes for small molecules, proteins and nucleic acids using its patented and awarded natural-evolution technology. In cooperation with global players in the field of animal-free protein, biobased fine-chemicals and RNA-pharmaceuticals, we conceptualize, develop and establish new fermentative production processes,

from strain-development to upscale-support at our customer's site.

Name	SenseUP Biotechnology GmbH
Address	Campus
Postal Code/City	Forschungszentrum 52428 Jülich
Fon	+49 2461 615529
E-Mail	info@senseup.de
Internet	www.senseup-biotech.com
Employees	14
Founded (year)	2017

Name	Senzyme GmbH
Address	Gierlichsstr. 6
Postal Code/City	53840 Troisdorf
Fon	+49 2241 9715-2000
Fax	+49 2241 9715-2499
E-Mail	info@senzyme.de
Internet	www.senzyme.de
Employees	42
Founded (year)	2000



tous fungi, where the company has a many years experience and substantial Know How.

Senzyme GmbH develops and produces technical enzymes and functional feed materials for the bioenergy and animal nutrition markets.

The production process is based on solid-state-fermentation using filamen-

Name	SeSaM-Biotech GmbH
Address	Forckenbeckstraße 50
Postal Code/City	52074 Aachen
Fon	+49 241 93856979
E-Mail	info@sesam-biotech.com
Internet	www.sesam-biotech.com
Founded (year)	2008



SeSaM-Biotech is dedicated to the directed evolution of enzymes. With our comprehensive KnowVolution strategy we help companies from biotech and pharma with their enzyme developments. We provide the best combination of top-of-the-line

mutagenesis technologies and rational design by computational modelling and simulation to successfully increase your enzyme's performance.

SeSaM-Biotech tunes enzyme properties like activity, thermal resilience, protease resistance, solvent/pH stability, and substrate/product inhibition. The track record of 10 years of successful protein engineering includes enzymes of all classes for the biotechnological sectors pharma, chemistry, cosmetics, flavors, nutrients, feed, laundry, food/beverages, biofuel, textiles and paper.





Agrobiotechnology

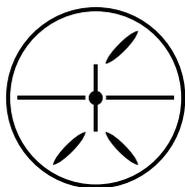


It is estimated that plant pathogens are responsible of world-wide losses in the range of billions of euros per year. Therefore, there is a strong need to provide effective, broad range and environmentally friendly approaches to ensure protection of plants-

from pathogens. We developed a platform based on antibody fusions which ensures plant protection from fungal and bacterial infections. This alternative approach for controlling plant pathogens and parasites aims at minimising the costs for cultivation of crops thereby reducing the toxic effects of pesticides and toxins for human beings.

AgroProtect GmbH offers its technology know-how and the generation of pathogen resistant plants.

Name	AgroProtect GmbH
Address	Pfarrer-Holzberg-Straße 20
Postal Code/City	52511 Geilenkirchen
Fon	+49 2451 914 8783
Fax	+49 2451 914 8784
E-Mail	info@agroprotect.de
Internet	www.agroprotect.de
Founded (year)	2010



Bex-Bio-Tec is engaged in plant-system-diagnostics. With our specialized approach, we help to find the most efficient, sustainable and individual solutions to finally enhance yields in agriculture. Plant performance is tremendously influenced by plant

varieties, location-specific parameters (soil, temperature, water), fertilizers, and other plant-treatments. Even though we cannot control the weather, we facilitate solving problems in agriculture of today and, especially, tomorrow. Our scientific approach reproducibly identifies influences on growth, yield, fruit quality and stress-tolerance. Consequently, we can assess and improve efficacy by identifying “horses for courses”.

With our unique laboratory test system, we can provide data in exceptionally short time and even detect on a molecular level what happens in the plant.

Name	Bex-Biotec GmbH&Co.KG
Address	Siemensstr. 42
Postal Code/City	59199 Bönen
Fon	+49 2383 919270
E-Mail	info@bex-biotec.com
Internet	www.bex-biotec.com
Employees	3
Founded (year)	2018



Saaten-Union Biotec offers services and contract research in the field of plant breeding. The development of new varieties of cereals, rapeseed and other crops is strongly build upon innovation.

Application of tissue culture technologies (doubled haploids, embryo rescue) and molecular marker applications are routinely used in a wide range of crops and for a significant number of breeding traits. Saaten-Union Biotec takes part in various scientific research and development projects to follow the latest scientific developments and to constantly optimize our service.

Name	Saaten-Union BIOTEC GmbH
Address	Hovedisser Str. 94
Postal Code/City	33818 Leopoldshöhe
Fon	+49 5208 95971-0
Fax	+49 5208 95971-96
E-Mail	service@saaten-union-biotec.de
Internet	www.saaten-union-biotec.de
Employees	80
Founded (year)	1984



Bioinformatics



BioSolveIT visualizes drug discovery. Our fast and easy-to-use software enables every chemist to advance their research. Perceptive visualization helps you to understand computational results at a glance. We believe in full transparency, and all the science behind our software is published. Our trusted platforms SeeSAR and in-finiSee support you in structure-based and ligand-based drug discovery and inspire

you with new, vivid ideas. We are passionate about the needs of our customers and live this through the discovery services we offer. Working together with users in this way helps us to stay at the forefront of current research, addressing the questions that chemists are interested in right now. We aspire to develop software that is indispensable to drug discovery and, more importantly, software that is a pleasure to use every day.

Name	BioSolveIT
Address	An der Ziegelei 79
Postal Code/City	53757 Sankt Augustin
Fon	+49 2241 25250
Fax	+49 2241 25255-25
E-Mail	contact@biosolveit.de
Internet	www.biosolveit.de
Employees	20
Founded (year)	2001



In order to successfully treat the infected patient, you have to recognise and diagnose most reliably the infecting microbe.

Noscendo GmbH, a Duisburg (Germany) based molecular diagnostics company,

changes the way infection causative microbes are identified. Introducing a paradigm shift using proprietary algorithms and software harnessing next generation sequencing of cell free nucleic acids isolated from patient samples Noscendo brings the concept of liquid biopsy into the field of infectious diseases.

Noscendo's software solution is capable of differentiating infection from non-infectious signals and thereby aiding intensive care clinicians in their daily task to find the right decisions, enabling a targeted and successful treatment in an actionable timeframe.

Name	Noscendo GmbH
Address	Königstr. 34
Postal Code/City	47198 Duisburg
Fon	+49 2066 50687 80
E-Mail	info@noscendo.com
Internet	www.noscendo.com
Employees	<10
Founded (year)	2017



The Ridom GmbH (Münster, Germany) was founded January 2003. The company develops software for DNA re-sequencing analysis for physicians and epidemiologists on routine basis. The company has in the meantime by its software products a well-recognized name in the field of sequence based microbial typing; e.g., every European National Health System

Authority (e.g., RKI, RIVM, HPA, Serum Statens) has bought in the last 10 years and is using since then at least one software product from Ridom. Ridom has pioneered typing efforts with a software tool for Staphylococcus aureus. The company has developed and maintains the worldwide largest sequence-based microbial typing database (Ridom SpaServer). The SPA typing software Ridom StaphType is currently used by approximately 400 users in 36 different countries worldwide. The new Ridom SeqSphere+ software provides a bacterial typing solution for any bacteria, any study type, any lab.

Name	Ridom GmbH
Address	Mendelstr. 11
Postal Code/City	48149 Münster
Fon	+49 251 490931-50
Fax	+49 251 490931-51
E-Mail	info@ridom.de
Internet	www.ridom.de
Employees	4
Founded (year)	2003



Other Biotechnologically Active Companies



Bayer is a global enterprise with core competencies in the life science fields of health care and nutrition. Its products and services are designed to benefit people by supporting efforts to overcome the major challenges presented by a growing and aging global population. At the same time, the Group aims to increase its earning

power and create value through innovation and growth. Bayer is committed to the principles of sustainable development, and the Bayer brand stands for trust, reliability and quality throughout the world.

In fiscal 2020, the Group employed around 100,000 people and had sales of 41.4 billion euros. Capital expenditures amounted to 3.138 billion euros, R&D expenses to 4.884 billion euros. For more information, go to www.bayer.com.

Name	Bayer AG
Address Postal Code/City	Kaiser-Wilhelm-Allee 1 51368 Leverkusen
Fon Internet	+49 214 30-1 www.bayer.com
Employees	100,000



MANY TASKS. ONE NAME: CELLEX CELL PROFESSIONALS

Cellex offers a broad spectrum of services for clinical as well as for research institutions in the field of cellular therapies. In Cellex apheresis centers, haematopoietic blood stem cells, lymphocytes, erythrocytes and granulocytes are collected for patients all over the world.

We also operate a database for lymphocyte donations, which can be requested for research purposes. In our state-of-the-art GMP facility, cellular components can be separated and frozen, genetically modified and analyzed. We are active in the research and development of cancer therapeutics. We take care of fast and safe cell transports to worldwide destinations. In addition Cellex develops and validates software programs.

Cellex Foundation supports medical research and treatment and human appreciation.

Name	Cellex Cell Professionals GmbH
Address Postal Code/City	Im Mediapark 6B 50670 Köln
E-Mail Internet	info@cellex.me www.cellex.me
Employees Founded (year)	261 2001 Dresden 2009 Köln



Deutsche Saatveredelung AG is an international plant breeding company with headquarters in Germany. The main focus is on research and development in breeding and seed production for different crop plant species.

Our major products include rapeseed, wheat, barley, corn/maize, pasture and

turf grasses, and different intercrop species. Breeding is run on nine breeding stations in Europe and two in Canada. We are dedicated to our purpose: Innovation for your growth. Seed of new varieties is produced and processed mostly in Europe and sold world-wide.

In the framework of several cooperations in breeding, production, marketing and sales DSV is partner of several competitive enterprises on the national and international level. Presently, DSV Group employs around 600 people and has a turnover of around EUR 200 million.

Name	Deutsche Saatveredelung AG (DSV)
Address Postal Code/City	Weissenburger Straße 5 59557 Lippstadt
Fon Fax E-Mail Internet	+49 2941 296-0 +49 2941 296-100 info@dsv-saaten.de www.dsv-seeds.com
Employees Founded (year)	600 1923

Name	Evonik Industries AG
Address Postal Code/City	Rellinghauser Str. 1-11 45128 Essen
Fon	+49 201 177 01
Fax	+49 201 177 3475
E-Mail Internet	bioeconomy@evonik.com www.evonik.com
Employees Founded (year)	33,000 2007



Evonik, the creative industrial group from Germany, is one of the world leaders in specialty chemicals. Profitable growth and a sustained increase in the value of the company form the heart of Evonik's corporate strategy. Its activities focus on the key megatrends health, nutrition, resource efficiency and globalization. Evonik benefits specifically from its inno-

vative prowess and integrated technology platforms.

Evonik is active in over 100 countries around the world. In fiscal 2015 more than 33,000 employees generated sales of around €13.5 billion and an operating profit (adjusted EBITDA) of about €2.4 billion.

Evonik innovates and serves the bioeconomy markets. Products are i. a. Biolys®, DYNACOLL® Terra, DYNAPOL® Terra, RESOMER®, ThreAMINO®, TrypAMINO®, and VESTAMID® Terra.

Name	German Seed Alliance GmbH
Address Postal Code/City	Aachener Str. 1053-1055 50858 Köln
Fon	+49 221 162 506-0
Fax	+49 221 162 506-29
E-Mail Internet	info@german-seed-alliance.de www.german-seed-alliance.de
Employees Founded (year)	45 2008



German Seed Alliance GmbH is an alliance of five leading German plant breeding companies in international agriculture: Deutsche Saatveredelung, Norddeutsche Pflanzenzucht, Nordsaat Saat-zucht, Saat-zucht Streng-Engelen and SaKa. The company and its shareholders are internationally experienced enterprises in the field of plant research and development, breeding, seed

production and distribution. The main focus is on oilseed rape, potatoes, corn, sunflower, grasses, peas and cereals (especially wheat, barley, rye, oat and triticale).

German Seed Alliance is involved in research programs of the group and is partner of the national and international scientific community in plant research and biotechnology. New varieties are developed and high quality seeds are produced for different climate regions. In sales the first focus is on Russian Federation, with innovative solutions and wide range of seed products combined with professional service and individual consultancy.

Name	Grünenthal GmbH
Address Postal Code/City	Zieglerstr. 6 52099 Aachen
Fon	+49 241 569-0
E-Mail Internet	info@grunenthal.com www.grunenthal.com
Employees Founded (year)	4,500 worldwide 1946



Grünenthal is a global leader in pain management and related diseases. As a science-based, fully-integrated pharmaceutical company, we have a long track record of bringing innovative treatments and state-of-the-art technologies to patients worldwide. Our purpose is to change lives for the better – and innovation is our passion. We are focus-

ing all of our activities and efforts on working towards our vision of a world free of pain.

Grünenthal is headquartered in Aachen, Germany, and has affiliates in 29 countries across Europe, Latin America and the US. Our products are available in around 100 countries. In 2020, Grünenthal employed around 4,500 people and achieved sales of € 1.3 bn.

Follow us on:

LinkedIn: Grunenthal Group

Instagram: grunenthal



Henkel operates globally with a well-balanced and diversified portfolio. The company holds leading positions with its three business units in both industrial and consumer businesses thanks to strong brands, innovations and technologies.

For more than 140 years, Henkel has been taking a visionary approach to supporting environmental and social progress. We've integrated these criteria into our innovation

process, because we recognize the potential impact of our products and technologies being used millions of times around the world every day. Henkel Adhesive Technologies is the global leader in the adhesives market – across all industry segments worldwide.

In its Laundry & Home Care and Beauty Care businesses, Henkel holds leading positions in many markets and categories around the world. Henkel employs more than 52,000 people globally and reported sales of more than 20,0 bn euros in fiscal year 2019. Henkel's preferred shares are listed in the German stock index DAX.

Name	Henkel AG & Co. KGaA
Address Postal Code/City	Henkelstr. 67 40191 Düsseldorf
Fon	+49 211 7979 630
Fax	+49 211 7982 245
Internet	www.henkel.com
Employees	52,000
Founded (year)	1876



PerkinElmer chemagen Technologie GmbH is a key player in the field of automated nucleic acid isolation with vast experience in the field of DNA and RNA isolation for human genetics, HLA typing, blood banking, and pathogen detection. chemagen's technology for the purification of genomic

DNA, cfDNA, RNA, and viral nucleic acids is based on the use of proprietary M-PVA Magnetic Beads in combination with our high-performance instruments.

chemagen has developed numerous kits for the isolation of nucleic acids from various sample materials such as blood, serum or plasma, tissue, saliva, buccal swabs, amniotic fluid or stool samples. PerkinElmer chemagen routinely develops customized solutions addressing any specific requirements for DNA or RNA purification in close coordination with clients. IVD versions of instruments and kits are available.

Name	PerkinElmer chemagen Technologie GmbH
Address Postal Code/City	Arnold-Sommerfeld-Ring 2 52499 Baesweiler
Fon	+49 2401 805500
Fax	+49 2401 805519
E-Mail	support.chemagen@perkinelmer.com
Internet	www.chemagen.com
Employees	>60
Founded (year)	1997



Since more than 70 years, Pharma Waldhof GmbH is experienced in Nucleic Acid Biochemistry and Co-Enzymes. Our success is based on delivering quality value added products in various segments like Pharma APIs and Intermediates, Cosmetics- and Cell Culture Media Ingredients, and Diagnostics. Pharma Waldhof belongs to the multinational Aceto Group.

Pharma Waldhof maintains manufacturing and technical collaboration with selected and world-renowned biotechnology companies and research institutions as well, qualifying us to flexibly respond to specific customer demands and developments.

Name	Pharma Waldhof GmbH
Address Postal Code/City	Hansaallee 159 40549 Düsseldorf
Fon	+49 211 52602-0
Fax	+49 211 52602-60
E-Mail	info@pharmawaldhof.de
Internet	www.pharmawaldhof.de
Employees	13
Founded (year)	1974

Name	Syngenta Seeds GmbH
Address	Zum Knipkenbach 20
Postal Code/City	32107 Bad Salzuflen
Fon	+49 5222 5308-0
E-Mail	internet.marketing@syngenta.com
Internet	www.syngenta.de
Employees	150
Founded (year)	2000



Syngenta is a leading agriculture company helping to improve global food security by enabling millions of farmers to make better use of available resources.

Through world class science and innovative crop solutions, our 28,000 people in over 90 countries are working to transform how crops are grown. We are committed to rescuing land from degradation,

enhancing biodiversity and revitalizing rural communities.

To learn more visit www.syngenta.com and www.goodgrowthplan.com. Follow us on Twitter® at www.twitter.com/Syngenta.

Name	Taros Chemicals GmbH & Co. KG
Address	Emil-Figge-Str. 76a
Postal Code/City	44227 Dortmund
Fon	+49 231 226198-11
Fax	+49 231 226198-19
E-Mail	info@taros.de
Internet	www.tarosdiscovery.com
Employees	65
Founded (year)	1999



Taros, a privately owned chemistry CRO and custom synthesis company has been serving pharmaceutical, biotech and chemical companies since 1999. Within our drug discovery division, our mission is to deliver chemistry enabling clinical candidates for our clients. Taros has a strong scientific track

record on many biomolecular targets in all main therapeutic areas and thereby adding considerable value to collaborations from target validation and hit identification to lead optimization. Taros' chemical services include custom synthesis, process chemistry, medicinal chemistry, computational chemistry and molecular design, as well as compound library design and production. As a one-stop shop we support our customers with scale-up of fine and specialty chemicals to first kg quantities, cost reduction of existing syntheses and streamlining chemical processes.

Name	UCB Pharma GmbH UCB Biosciences GmbH
Address	Alfred-Nobel-Str. 10
Postal Code/City	40789 Monheim
Fon	+49 2173 4848-48
Fax	+49 2173 4848-41
E-Mail	ucbcares.de@ucb.com
Internet	www.ucb.com; www.ucb.de
Founded (year)	1928 (Belgium)



UCB is a global biopharmaceutical company with around 7,500 people worldwide. We focus on neurology and immunology disorders – putting patients at the center of our world. UCB is connecting science in new ways, notably chemistry and biology, so that they can leverage the potential of these two disciplines, as well as illuminate the biological pathways involved in severe

diseases. The complexities of severe diseases are beyond the expertise and resources of a single organisation.

Developing and commercialising innovative therapies is often the result of strong partnerships. That is why we value partnering with leading academic, biotech and pharma companies to bring new solutions for patients. There is no such thing as an “average patient”. We are seeking to embed the real needs of specific patient populations in our science and innovation process.



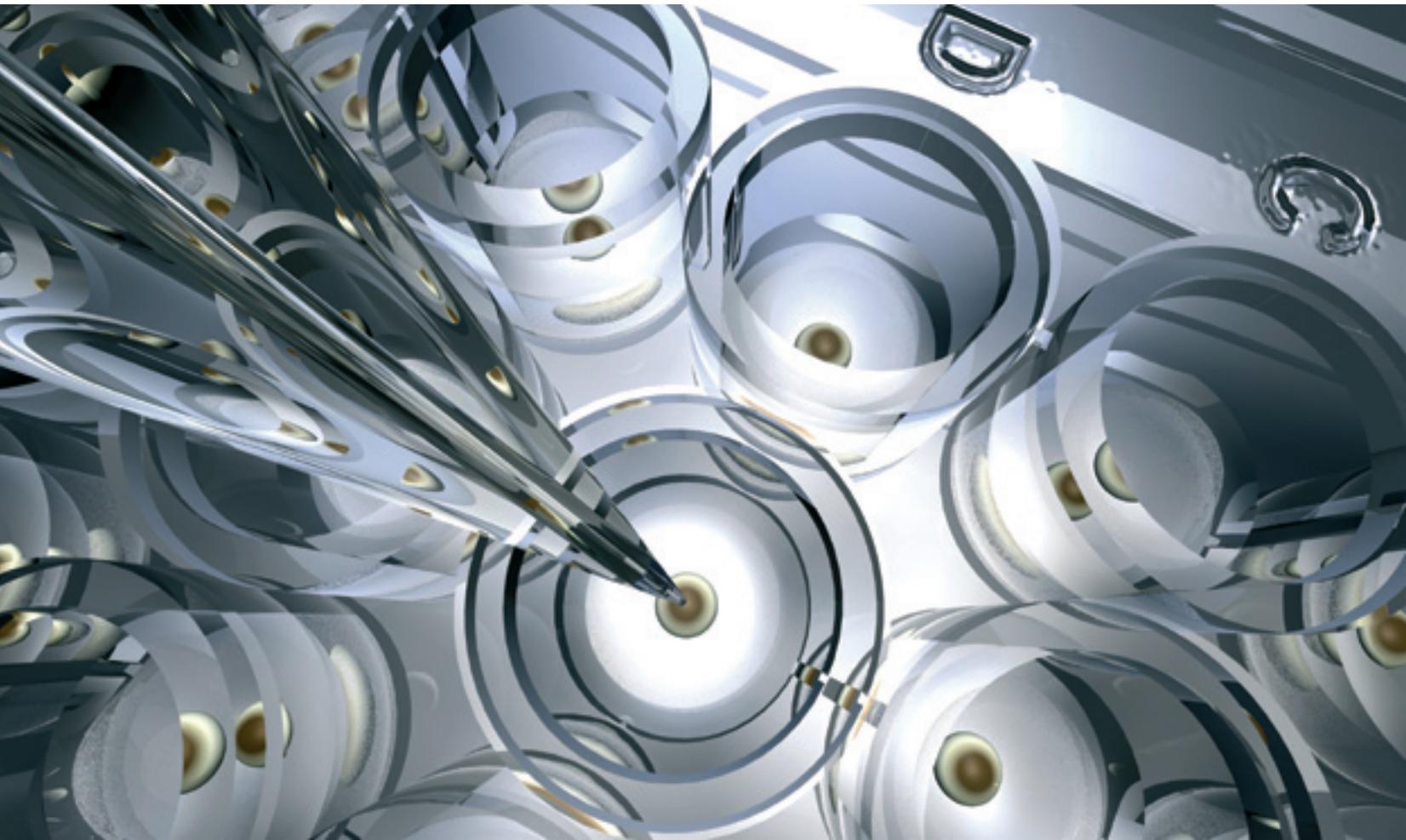
W. von Borries-Eckendorf is a medium-sized family-owned company, founded in 1849 by Wilhelm von Borries (1805-1890), a prominent farmer and talented plant breeder. Starting with the "Eckendorfer" fodder beet,

WvB is nowadays well known for strong breeding programs in oilseed rape, barley and high yielding wheat varieties.

The company based in Lippe is founding member of the Rapool Ring GmbH and the Saaten-Union Biotec GmbH.

Along with other breeding companies, Eckendorf is significantly involved in one of the largest distributors in the German sector of seed, the Saaten-Union GmbH.

Name	W. von Borries-Eckendorf GmbH & Co. KG Pflanzenzuchtbetrieb
Address	Hovedisser Strasse 94
Postal Code/City	33818 Leopoldshöhe
Fon	+49 5208 9125-30
Fax	+49 5208 9125-49
E-Mail	info@wvb-eckendorf.de
Internet	www.wvb-eckendorf.de
Employees	40
Founded (year)	1849



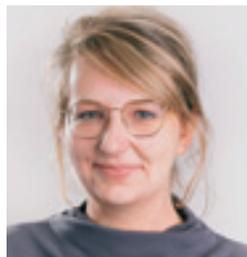
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Key topics
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Key topics
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Spot on Biotechnology Business



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Key topics
Bioeconomy
Biotech Databases



Denmark

Kiel

Hamburg

Schwerin

Bremen

Berlin

Poland

Netherlands

Magdeburg

Potsdam

Hannover

Düsseldorf

Dresden

Erfurt

Belgium

Frankfurt

Czech Republic

Luxembourg

Mainz

Saarbrücken

France

Stuttgart

München

Austria

Switzerland

Glossary

Organisation for Economic Co-operation and Development (OECD)

The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation.

The OECD Biotechnology Statistics, which brings together the latest available economic and activity data on biotechnology and innovation, is collected by OECD member and non-member countries.

The report builds on the extensive work of the OECD and national experts to improve the comparability of biotechnology statistics.

www.oecd.org

OECD Definitions

Biotechnology company

... is defined as a application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services.

Dedicated biotechnology companies

... are defined as biotechnology active firms whose predominant activities involve the application of biotechnology techniques to produce goods or services and/or the performance of biotechnology R&D.

Other biotechnologically active companies

... firms that apply biotechnology techniques for the purpose of implementing new or sig-

nificantly improved products or processes. This definition excludes end users that innovate simply by using biotechnology products as intermediate inputs (for instance, detergent manufacturers that change a formulation to include enzymes produced by other firms via biotechnology techniques).

Business Areas of Activity

– Health/Medicine (including animal health)

Development of therapeutics and/or diagnostics for the field of human medicine, drug delivery, human tissue replacement.

– Agri/Agrobiotechnology

Biotech focussed on genetically modified plants, animals or microorganisms, as well as non-genetically modified plants grown using biotechnological procedures for use in agriculture or forestry.

– Industrial biotechnology

Biotechnological products and processes for the handling of waste or sewage, for chemical synthesis, for the extraction of raw materials and energy, etc.

– Non-specific application

Equipment or reagents based on biotechnological principles for research or provision of services in this field (“ancillary industry”).

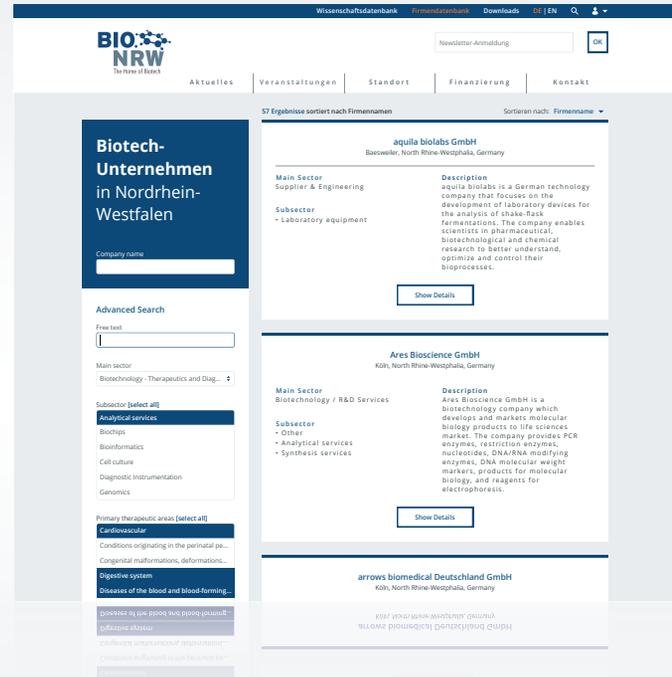
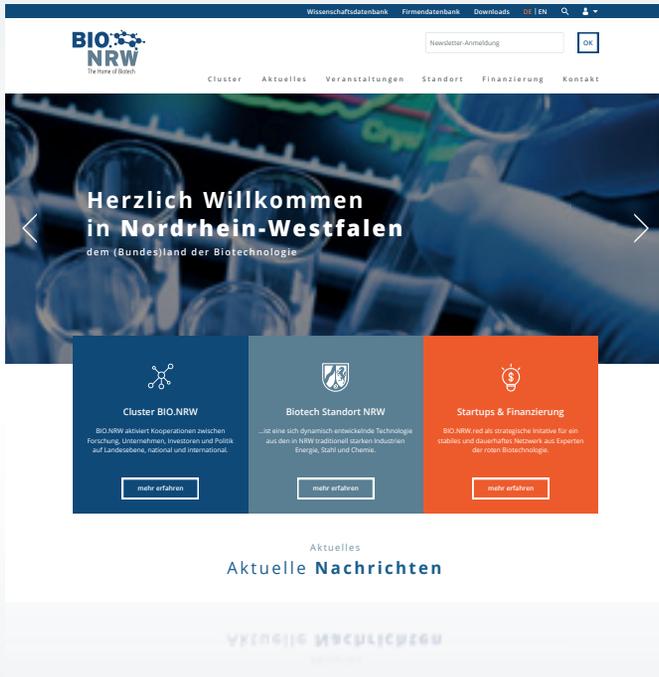
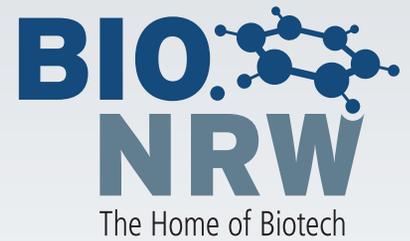
Source: biotechnologie.de

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All links were accessed on 18 October 2021.

www.bio.nrw.de company database



Innovative biotech companies in North Rhine-Westphalia. BIO.NRW offers free of charge a well-organized and comprehensive database of life science and biotech companies resident in North Rhine-Westphalia. The database currently includes 450 company profiles, contact details and a summary of products, services and technologies and is updated frequently several times per year.

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Excellence NRW
Cluster North Rhine-Westphalia





**Online
Company
Database**
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