RESEARCH LOCATION AUSTRIA

Life Sciences

Austria*

*Strong Location for Healthy Profits – Pharma, Biotech & Medical Engineering

All of Europe by Air in Only 3 Hours

Austria's central geographical position makes it the pre-eminent business interface between East and West.

Dynamic Business Location

The life sciences location of Austria stands out in international comparison. Companies profit from a favorable business environment, qualified specialized staff and a modern infrastructure.

Austria ranks among the most prosperous and innovative countries in the European Union. According to Eurostat's Prosperity Index, Austria is rated second in the EU behind Luxembourg. The dynamic business location stands out thanks to its modern infrastructure, high quality technologies, well trained and highly motivated specialized personnel. It also offers a high level of reliability with respect to the energy supply in addition to political, social and economic stability. In addition, Austria is considered to be the ideal East-West business interface in a central geographical location.

Companies in the pharmaceutical, biotechnology and medical engineering sectors will find good conditions in Austria. In particular, these research-intensive firms benefit from Austria's research promotion programs at the cutting edge of the EU. In spite of this good positioning, we are continually working on creating an even more favorable business environment for companies. In this spirit we would like to warmly welcome you to Austria.

Reinhold Mitterlehner
Vice Chancellor and Federal Minister
of Science, Research and Economy

Contents

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Good Reasons for Research Location Austria

Life sciences companies continuously invest in the attractive Red-White-Red business location.

Innovative diversity. Multinationals such as Boehringer Ingelheim, Baxter/Baxalta, Ottobock and Novartis have set up R&D competence centers in Austria and are continuously investing to expand these facilities. Austria has emerged as a highly sought-after innovative business location in Europe, particularly in the core areas of modern biotechnologies, medical engineering and cancer research. Universities, universities of applied sciences, non-university research facilities, innovative spin-offs, SMEs and industry clusters ensure optimal conditions for companies in Austria enabling them to develop new products and services for the international as well as the Austrian healthcare sector.

All advantages at a glance. In any case, one thing is certain: outstanding research is only possible if conditions are favorable.

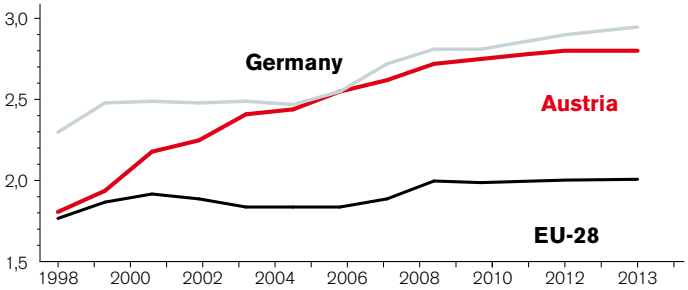
- Customized funding and financing of application-oriented and basic research
- Twelve percent research premium from 2016 and other attractive tax advantages
- A dense network of competence centers and industry clusters linking the scientific and business communities
- An international research elite as well as soundly-trained specialized employees in life sciences
- The geographical proximity to South East and Eastern Europe
- Outstanding living and working conditions

Global Competence in Life Sciences

Research area	Cancer research	Vaccine/Immunology	Medical engineering
	• Lung cancer • Breast cancer • Prostate cancer • Multiple myelom	• Immune therapy • Multi-resistant germs	• Electromechanical products e.g. prosthetics • Software for medicine, telemedicine and e-health

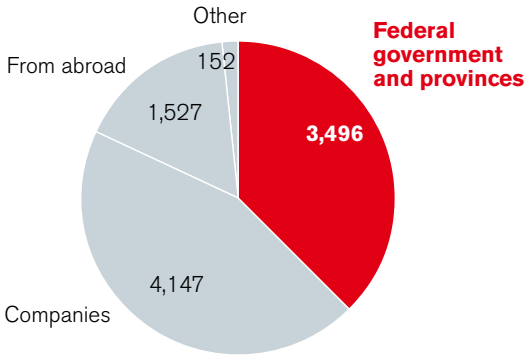
The big players	Company	Research institutes
	• Boehringer Ingelheim • Baxter/Baxalta/Pfizer • Novartis/Sandoz • Ottobock • MED-EL	• CeMM – Research Center for Molecular Medicine • IMBA – Institute of Molecular Biotechnology • IMP – Institute for Molecular Pathology • Ludwig Boltzmann Society • MFLP – Max F. Perutz Laboratories • Oncotyrol

Development of R&D spending in Austria, Germany and the EU-28
% of GDP



Sources: Eurostat, Austrian Statistical Office, * from 2012 preliminary figure

Austrian investments in R&D
EUR million, estimates for 2014
Total R&D spending: EUR 9,322 million



Source: Austrian Statistical Office, 2014

Top-Notch Life Sciences

The priorities are vaccine research, immunology, cancer research and medical engineering.

Diversified and networked. The life sciences sector in Austria is wide ranging and diversified. More than 720 companies in the fields of biotechnology, pharmaceuticals and medical engineering generate 5.4 percent of the country's gross domestic product (GDP) and employ a workforce of 50,000 people. One distinguishing feature is the high level of networking among producers, suppliers and service providers. Foreign companies also rely on the research competence of the Alpine Republic. For example, Sandoz, a subsidiary of Novartis Group of Switzerland, has located its global competence center for biotechnology in Tyrol. Baxalta's Austrian facility is the company's largest outside of the USA, and the most important research facility for biosciences in the group.

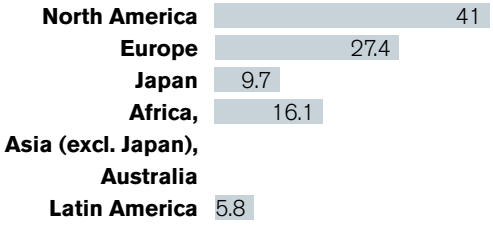
Biotech is booming. 288 companies operate in the fields of pharmaceuticals and biotechnology. This sector is characterized by an impressive intensity of research. The approximately 100 specialized biotech firms invested the equivalent of 70 percent of their total revenue in research in 2012. Primary areas of research include the efforts to win the battle against cancer and infectious diseases. The biotech sector has become an important economic factor, generating revenue of more than EUR 10.3 billion in Austria in 2012. Companies such as Boehringer Ingelheim, Eli Lilly, Takeda and Sanochemia account for the lion's share. About one quarter of these firms operate in the core business of "red" and "white" biotechnologies. Vienna is the country's biotech stronghold, with the Austrian capital home to every second biotech firm.

Pharmaceutical industry in Europe
In EUR million

	1990	2000	2012	2013
Production	63,010	125,301	213,0003	217,500
R&D expenditures	7,766	17,849	30,035	30,630
R&D jobs (units)	76,126	88,397	115,196	115,000

Source: The European Federation of Pharmaceutical Industries and Associations (EFPIA), 2014

Global pharmaceuticals market
Revenue in 2013, in percent



Source: IMS Health (MIDAS), 2013

Revolutionary medical engineering. A total of 435 companies in Austria are involved in a spectrum of research areas, with a particular focus on electromechanical medical technology and software development. Firms producing high quality medical products include the German optics company Carl Zeiss and MED-EL, the specialist for hearing implants. The Viennese facility of the medical technology company Ottobock headquartered in Germany specializes in the development of high-tech prostheses. The German company Fresenius Medical Care, global market leader for dialysis therapies and products, opened its R&D center in Austria. Total revenue in the sector was close to EUR 7.4 billion in 2012. Austria's exceptionally good health care system, world-renowned clinics and excellent research facilities comprise outstanding business location advantages for the medical engineering sector.

World-class cancer research. For decades, finding a cure for cancer has been one of the main goals of research, also in Austria. For example, the Oncotyrol competence center in Innsbruck is working with Austrian and international partners to transfer its research findings in the field of personalized cancer medicine from the laboratory to the sickbeds of patients. Boehringer Ingelheim, one of the world's top 20 pharmaceutical companies, operates three large research and development centers around the world, one of which is located in Vienna: its center for cancer and basic research at the Research Institute for Molecular Pathology (IMP).

Excellent infrastructure: The Vienna Biocenter (VBC) has established itself as a first-class hub for life sciences in Central Europe. IMP is one of four institutes for applied research at VBC, which is also home to a university of applied sciences and twelve companies. 1,400 researchers and 700 students from 40 nations combine to forge a dynamic and creative environment. A key success factor is the modern infrastructure of the Campus Support Facility, which is jointly used by neighboring residents.

Labor productivity 2013 in EU comparison
GDP per person employed in PPS, EU-27=100

Luxembourg	163.9
Ireland	135.5
Belgium	127.3
France	116.0
Austria	**113.3**
Denmark	111.0
Italy	108.8
Netherlands	108.8
Euro area	108.6
Germany	107.0
EU-27	100.0
United Kingdom	99.4
Poland	74.3
Czech Republic	71.9

Source: EU Commission, Eurostat, September 2014

Commitment to the company
10 = Motivation of employees is high

Switzerland	1	7.94
Denmark	2	7.87
Malaysia	3	7.68
Austria	**5**	**7.59**
Japan	6	7.56
Germany	9	7.49
Netherlands	17	6.62
USA	18	6.56
United Kingdom	25	6.30
Czech Republic	39	5.42
Italy	45	4.92
France	46	4.77
Poland	51	4.35
Hungary	52	4.34

Source: World Competitiveness Yearbook 2014

More Funding and Tax Advantages

Whoever carries out research pays lower taxes. Companies will soon profit twelve percent research premium and numerous funding programs.

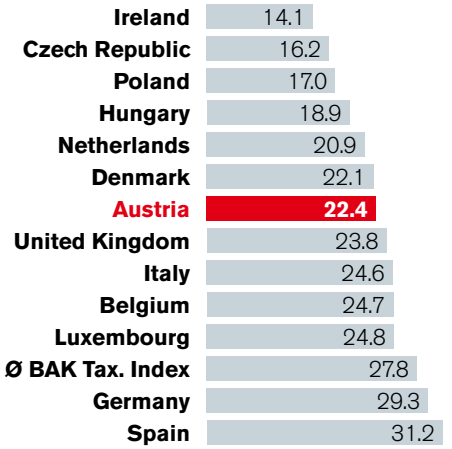
Research and even more research. Conducting world-class R&D poses major financial challenges to companies and research facilities, also in the field of life sciences. For this reason, Austria has reduced the investment risk. Companies benefit from a business environment tailored to their needs and conducive to corporate innovation thanks to the research premium on expenditures for a company's own R&D as well as contract research. It will be raised to twelve percent in 2016.

Tax advantages. Moreover, the Austrian tax system is extremely attractive for companies, featuring the tax-exempt apprenticeship allowance, tax loss carryforwards and the possibility to transfer hidden reserves. The corporate income tax rate is at 25 percent, whereas the net worth tax and trade tax are not levied in Austria.

Funding:
→ www.ffg.at
→ www.awsg.at
→ www.fwf.ac.at
→ www.bmwfw.gv.at
→ www.bmvit.gv.at
→ www.foerderkompass.at
→ www.bestofbiotech.at

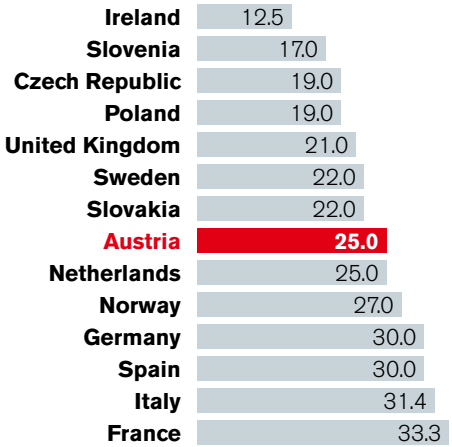
Broad-based research funding. Customized R&D research programs from the Austrian Research Promotion Agency (FFG), Austria Wirtschaftsservice (aws) and the Austrian Science Fund (FWF) are available to companies. Life science startups launched by creative minds are also supported by the Best of Biotech (BOB) business plan competition. In addition, Austria's highly developed export promotion system strongly stimulates the country's economy.

BAK Taxation Index 2013 for companies
Effective average tax burden
in percent



Source: BAK Basel Economics and Center for European Economic Research, 2014

Corporation tax rates *) 2015
Taxes on undistributed profits
in percent



Source: Deloitte Resources
*) incl. surcharges and local/state taxes

AFFiRiS

"Austria's research promotion and funding landscape is optimally structured, and is, above all, unbureaucratic. Company founders are advised quickly, competently and in a solution-oriented manner by the funding agencies – an important pre-requisite to being able to quickly establish a start-up."

Walter Schmidt, CEO of the Viennese vaccine developer AFFiRiS

Lukas Huber, CSO at Oncotyrol and Head of the Division of Cell Biology at the Medical University of Innsbruck

Competence Through Cooperation

Oncotyrol is the European research center for incurable bone marrow cancer.

Oncotyrol is one of 50 competence centers providing companies with a decisive competitive edge. The Center for Personalized Cancer Therapy cooperates with 40 international corporate partners in the field of oncological research, ranging from multinationals such as Novartis, Janssen, AbbVie, Roche, Amgen and Fresenius Biotech to startups, all working towards a common goal i.e. to develop new biomarkers, measuring methods and therapeutic approaches. One practical example: on the basis of its leadership in the EU-project OPTATIO, Oncotyrol is increasingly becoming the center for transnational research of multiple myeloma, an incurable bone marrow cancer.

More than 50 competence centers. One of the most successful Austrian funding initiatives is COMET (Competence Centers for Excellent Technologies), designed to promote the cooperation between industry and science.

COMET Competence Centers – Research partners for companies

- acib – industrial biotechnology
- acmit – medical robotics
- Oncotyrol – cancer research
- RCPE – pharmaceutical process and product development

Why is Austria a good location for companies operating in the field of life sciences?

"In Austria the life sciences scene offers optimally educated personnel. This is complemented by targeted research promotion programs such as COMET and the advantage of a research premium. Other vital pre-requisites for clinical research are the outstanding health care system and the broad spectrum of patients undergoing treatment."

→ www.ffg.at
→ www.acmit.at
→ www.acib.at
→ www.oncotyrol.at
→ www.rcpe.at

Partnerships Pay Off

Competence centers make R&D less risky and expensive.

Johannes Khinast and Thomas Klein, RCPE

What makes the competence center RCPE so unique in Europe?

"Our focus is on the further development of personalized medicine, ongoing production processes and process monitoring. As a trendsetter in the field of process and product optimization, we are a sought-after partner for major players in the pharmaceutical industry such as Baxalta, Boehringer Ingelheim, G.L. Pharma, GSK, Hermes, Merck,Novartis, Pfizer, Roche and VTU. There is hardly a single pharmaceutical company in the top ten with which we do not cooperate. In addition, we work closely with more than 20 renowned international scientific partners such as Cambridge University and Rutgers University in the USA. This approach has clear-cut advantages. We carry out business-related research, exploit synergies derived from partnerships with excellent key researchers and have access to a state-of-the-art laboratory infrastructure. There is no comparable center anywhere else in Europe."

To what extent does the cooperation with RCPE pay off for companies such as Baxalta, GlaxoSmithKline and Roche?

"The trend towards personalized medicine is omnipresent in the pharmaceutical industry. This requires the development and use of new processes. Major players know that they need a strong innovation center on their side in order to be competitive. Cooperating with us means that R&D is less of a risk and less expensive. Whoever develops new drugs requires an average of ten to twelve years and upwards of one to two billion dollars. For this reason research partnerships have long been the key to success in the pharmaceutical industry. Success in enhancing the efficiency of research work is based on bundling scientific resources. After only six years the center already has more than 100 partners around the world, establishing itself as a unique European point of contact in the field of pharmaceutical process and product development."

International hotspot RCPE. Johannes Khinast and Thomas Klein, Managing Directors of the Research Center Pharmaceutical Engineering GmbH (RCPE) founded in 2008 within the context of the COMET program, are proud that the competence center is an international hotspot today for pharmaceutical process and product development.

Clusters as Innovation Drivers

Well-networked companies operating in Austria generate synergies and serve as a driving force for new developments.

More than 60 industry clusters. Some 60 industry clusters consisting of 7,000 firms and 825,000 employees located in all nine federal provinces strengthen Austria's innovative prowess. These cluster players feature a high level of internationality and a high research ratio averaging 7.5 percent. Specialized companies, from SMEs and spin-offs to international R&D headquarters, cooperate intensively with each other as well as with research institutes and talented scientists.

The Life Sciences Austria cluster serves as the international bridgehead for regional areas of focus:

- Vienna – LISAvienna
- Tyrol – Life Sciences Tyrol
- Styria – Human.Technology.Styria
- Upper Austria – Health Technology Cluster
- Lower Austria – Technopol Krems

LISAvienna – Connecting Life Sciences. Vienna not only offers the best quality of life around the world, but has also established itself as an international location for life sciences. About 380 companies in this sector operate mainly in the fields of biotechnology, pharmaceuticals and medical technology, including well-known multinationals such as Baxalta, Boehringer Ingelheim, Novartis and Ottobock. They generated revenue surpassing EUR 9 billion in 2012, employing a workforce of 21,000 people. They are complemented by 14,000 highly qualified specialized staff at 25 research facilities in the Austrian capital. LISAvienna supports innovative companies to develop new products, services and processes and launch them on the marketplace. The platform networks companies, linking them with development partners and key customers.

→ www.inits.at/startups/acticell
→ www.blueskyvaccines.com
→ www.cvtec.at
→ www.haplogen-genomics.com
→ www.mark53.com
→ www.mitibio.com

Numerous promising life sciences startups have decided in favor of Austria as a business location. In 2013/14, LISAvienna provided professional support to the following firms, amongst others: Acticell GmbH, Blue Sky Vaccines KG, CVTec Cerebrovascular Technologies GmbH, Haplogen Genomics GmbH, MARK53 GmbH, MITI Biosystems GmbH.

Life Sciences Tyrol. 63 innovative companies boasting more than 23,000 qualified employees and offering product and service solutions in life sciences are linked via this cluster in the west of Austria. Entrepreneurial success is ensured based on the good cooperation with international universities such as the Munich University of Technology and non-university research institutes such as Oncotyrol, the Competence Center for Personalized Cancer Medicine and Bioindustry Park Canavese.

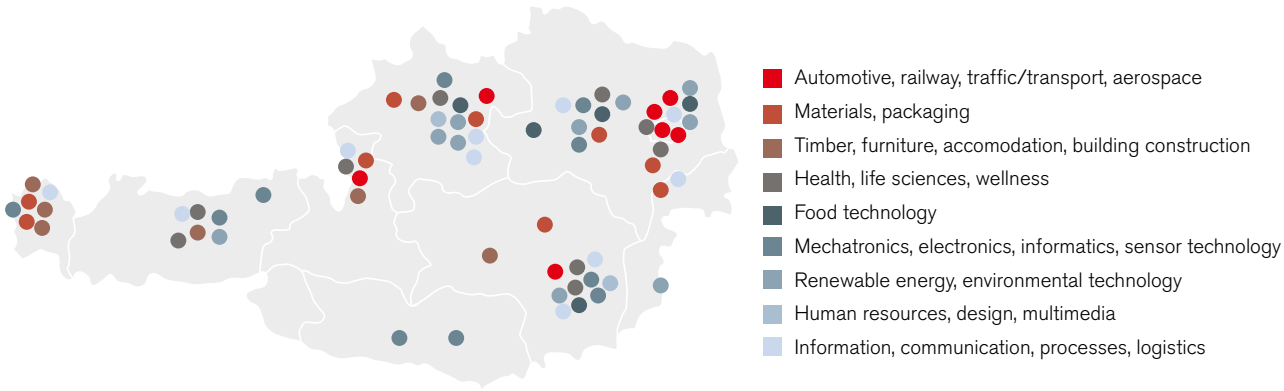
Human.Technology.Styria. The focus in Styria is on "white biotechnology". Some 80 partner organizations of the human technology cluster focus on three areas of competence: pharmaceutical process and production technologies, biomedical sensor technologies and biomechanics as well as biobanking and biomarker technologies. The partners have won international recognition, including the "International Innovation Prize 2014" for the "Enzyme Google". A patent application was filed for the "Catalophor system" developed by acib and described in the scientific journal "Nature Communications".

Technopol Krems. This Lower Austrian hotspot for medical biotechnology not only carries out cancer research but groundbreaking research on blood purification procedures, artificial cartilage and the healing of chronic injuries. The focus is on biomedicine (tissue engineering, cell therapies, extracorporeal blood purification) and health sciences.

Health Technology Cluster Upper Austria. This network in the healthcare sector encompassing 217 members and 37,500 employees supports companies in the fields of medical and health technology.

→ www.lifescienceaustria.at
→ www.lisavienna.at
→ www.gesundheits-cluster.at
→ www.standort-tirol.at/cluster
→ www.humantechnology.at
→ www.ecoplus.at

Clusters and networks
in the Austrian provinces and supraregional initiatives



Source: Cluster Platform Austria 2014

Hans Dietl is the Managing Director of Ottobock in Austria and CTO of the Ottobock Group.

A Good Location for International Companies

Multinational companies are impressed by the favorable conditions offered by the Austrian business location in the heart of Europe.

The business location Austria enjoys strong interest from international companies which conduct research, manufacture products and organize clinical studies with domestic partners in Austria. Many have set up their headquarters in Austria to coordinate their activities in Central and Eastern Europe. The list of multinationals based in Austria reads like the Who's Who of the global life sciences industry.

- **Baxter/Baxalta** (May 2015) operates its largest facility outside of the USA and its largest research site for its business area Baxalta Bioscience. Its focus is on the development and production of biotechnological and biopharmaceutical therapeutics.
- **Pfizer** acquired the approved vaccines NeisVac-C® and FSME-IMMUN® from Baxter International in October 2014 as well as part of the Baxter vaccine production site in Austria (Orth an der Donau).
- **Boehringer-Ingelheim** coordinates its activities in 30 countries via the Regional Center Vienna, selecting Vienna as its center for cancer research.
- **Sandoz** has located its global competence center for biotechnology, produces generic drugs and conducts research on injectable generics for cancer therapy in Austria.
- **Eli Lilly** uses Austria as a regional platform for international research.
- **Merck** and **Takeda** have production sites in Austria.
- Clinical research is organized and financed in Austria by **Pfizer, Janssen, Eli Lilly, Bayer, Sanofi-Aventis and GlaxoSmithKline**, to name a few.
- Siemens develops e.g. dose-reducing processes in diagnostics and imaging.
- **GE Healthcare** and **Agfa Healthcare** develop imaging procedures.
- **Ottobock** produces high-tech prostheses in Vienna for the global market. For years the Viennese facility of the German medical technology company has served as its think tank. Successful revolutionary products have been developed for Ottobock in Austria, such as the electronically controlled prosthetic leg C-Leg and the Michelangelo Hand, a next generation prosthetic hand.

→ www.baxter.at
→ www.ottobock.at
→ www.gehealthcare.com
→ www.boehringer-ingelheim.at
→ www.sandoz.at
→ www.lilly.at
→ www.takeda.at
→ www.pfizer.at
→ www.bayer.at
→ www.sanofi.at
→ www.siemens.at
→ www.agfahealthcare.com

Pfizer

Robin Rumler,
Managing Director of Pfizer
Austria

Hotspot for vaccines. *"Pfizer conducts research and develops modern drugs for people in all phases of life. Austria offers ideal conditions for the research and production of vaccines. In 2014 Pfizer acquired the approved vaccines of Baxter International as well as part of the Baxter production facility in Orth an der Donau (Lower Austria) where these vaccines are manufactured. This acquisition adds value to our existing product portfolio of innovative vaccines and expands our product range.",* says Robin Rumler, Managing Director Pfizer Austria.

R&D focus: The R&D priorities at Pfizer are in the fields of vaccines, neurosciences, cardiovascular and metabolic diseases, oncology, inflammatory diseases, immunology and rare diseases. Pfizer's business operations in Austria are structured in two segments: prescription drugs and non-prescription drugs. The product portfolio encompasses innovative originator drugs and patent-free products including generic drugs.

Partnerships: Pfizer Corporation Austria is an important partner of medical research and development in Austria. At present some 20 studies are being conducted in Austria using new pharmaceutical ingredients developed by Pfizer, for example at all medical universities and other hospitals and at specialist surgeries.

→ www.pfizer.at

Bionorica

Michael Popp, CEO
of Bionorica Research

Unique expertise. *"Innsbruck offers an excellent framework for R&D to Bionorica, Germany's leading producer of herbal medicinal product. Austria's expertise in researching medicinal plants is unique because there are several university chairs here for pharmacognosy, among other reasons. This expertise makes a decisive contribution to our success in combination with perfect scientific networking and intelligent funding measures."*

R&D focus. Research into medicinal plants, especially analytics and the new and further development of extraction processes

Top-level research. An exclusive partnership with the Austrian Drug Screening Institute, Innsbruck

Partnerships. 30 Austrian institutes e.g. University of Innsbruck, Wien, Graz, Medical University of Innsbruck, Vienna University of Veterinary Medicine, University of Vienna, Cluster Life Sciences Tyrol, Oncotyrol - Center for Personalized Cancer Medicine

R&D staff: 22

→ www.bionorica.at

Hotspot for the Startup Scene

International researchers select Austria as the location for establishing their new companies.

The Austrian biotech scene is extremely vibrant and has gained international recognition. The American magazine Forbes ranks Austria among the top five European hotspots for startups. More than half of all Austrian life sciences companies have been established over the last two decades, many as spin-offs from academic institutions.

- **MED-EL:** founded in 1986, spin-off of the Vienna University of Technology, develops high-tech cochlear implants.
- **Guger Technologies:** 1999, spin-off of the Graz University of Technology, works on brain-computer interfaces.
- **AFFiRiS:** 2003, research on vaccines against Alzheimer's, Parkinson's, atherosclerosis, MSA, diabetes.
- **Apeiron:** 2005, spin-off of the Institute of Molecular Biotechnology, conducts research e.g. on childhood cancer.
- **Nabriva:** founded 2006, spin-off of Sandoz, develops new types of antibiotics.
- **Marinomed:** established 2006, spin-off of the University of Veterinary Medicine, carries out research on therapies against viral infections of the respiratory system.
- **Haplogen:** founded 2010, spin-off of the Center for Molecular Medicine, works on drugs against viral infections.

→ www.affiris.com
→ www.apeiron-biologics.com
→ www.medel.com/at
→ www.gtec.at
→ www.nabriva.com
→ www.marinomed.com
→ www.haplogen.com
→ www.pioneers.io/festival
→ www.awsg.at
→ www.ffg.at

Initiatives and funding for young, dynamic startups

Pioneers Festival. One of the annual largest technology and entrepreneur-oriented events worldwide and a coveted meeting point for startups, investors and executives.

aws Start-up Center. Customized support package from a single source.

FFG Start-up Funding. Project financing covers up to 70 percent of costs.

Austria is a good hotbed for international researchers who dare to take the exciting step forward to launch a startup on the basis of their brilliant ideas. Innovative strength and entrepreneurial thinking are supported by the favorable business environment prevailing in Austria. Young companies benefit from these conditions and start their promising path to the future from Austria.

Crystalline Mirror Solutions. The company was established in 2012 by Markus Aspelmeyer and his American colleague Garrett Cole as a spin-off of the University of Vienna and the Vienna Center for Quantum Science and Technology. The researchers developed mirrors for precise optical measuring devices. The crystal coating for these mirrors could be the way to build the most precise clocks ever made. The invention may not only be applied in basic research but also in satellites and creating a more efficient Internet infrastructure.

Vira Therapeutics. A team led by the Innsbruck-based professor of medicine Dorothee von Laer has developed a method to combat malignant tumors on the basis of a highly potent cancer-destroying virus. In order to commercially realize this development, the researcher founded Vira Therapeutics GmbH, a spin-off of the Medical University of Innsbruck. Research focuses on so-called oncolytic viruses (virus VSV-GP), which only attack cancer cells without harming healthy cells.

Lacerta Technologies. The company, a spin-off of Semmelweis University of Budapest, Hungary and set up by Zsombor Lacza, established its headquarters in Lower Austria. Lacerta Technologies develops products for regenerative medicine, for example bone grafts, exploiting the principle of stem cells for the quicker integration of the transplant. Applications include sports surgery and dentistry.

Hookipa Biotech AG. The startup company Hookipa Biotech AG focuses on developing next-generation vaccines with a special efficacy profile. The firm was established in Vienna in 2011. *"Austria today is internationally known for its many young, ambitious companies, especially in the vaccine segment"*, says CEO Katherine Cohen. The original idea of Hookipa is to commercialize new types of vaccines, as Cohen explains. *"Most conventional vaccines are aimed to trigger the production of antibodies. Increasing attempts are being made to stimulate the T-cell response of the body's immune system."*

→ wwww.crystallinemirrors.com
→ www.viratherapeutics.com
→ www.lacertatechnologies.com
→ www.hookipabiotech.com

Top-Level Personnel Move Ideas Ahead

The business community always finds the best staff thanks to Austria's practice-oriented education and training network and the Red-White-Red Card.

Specialized staff? No problem at all. In order to bring innovations to market, one does not only need good ideas derived from research and development work but also highly qualified specialized personnel to practically translate these ideas into reality. Austria offers both. This is due to the long tradition of application-oriented education and training – whether in the numerous technical colleges (HTL), 22 public universities and twelve private ones as well as 21 universities of applied sciences offering more than 550 different courses of study.

Bundled competence. Companies highly value the high quality of Austrian universities and cooperate in the field of life sciences with the Medical University of Innsbruck, the University of Vienna with 24 departments in the field of life sciences, the Veterinary University of Vienna and the University of Natural Resources and Life Sciences Vienna, amongst others. Moreover, the Vienna University of Technology and Graz University of Technology also carry out top-level research in medical engineering, bioinformatics and technical biosciences.

Furthermore, additional important partners in the form of non-university facilities such as CeMM, IMBA, IMP, Max F. Perutz Laboratories, Gregor Mendel Institute, JOANNEUM RESEARCH, the Austrian Institute of Technology AIT, the Christian Doppler Research Association and the Ludwig Boltzmann Society are available to life sciences companies in Austria.

A new home. Highly qualified specialists are internationally mobile in a global society, proving to be a major advantage for companies. With the Red-White-Red Card it is now easier to employ highly qualified individuals such as technicians or top researchers from non-EU member states or university graduates from non-EU countries. Attractive career opportunities in interesting firms or at renowned universities are thus open to high potentials from abroad. Austria also stands out thanks to its high quality of life, good working conditions, political and social stability as well as an unmatched diversity in its natural environment and cultural offerings.

ottobock.

"Austria, and Vienna in particular, provides an interesting environment for innovations. The good links to universities and the necessary proximity to research institutions and clinics make the business location attractive, not only for companies such as Ottobock but also for high potentials."

Hans Dietl, Managing Director of the medical technology company Ottobock

Jan-Michael Peters, Scientific Director of the Research Institute of Molecular Pathology (IMP) in Vienna

World-Class Researchers Talk about Austria

Scientists need the right environment in order to pursue a career in R&D. Many find just the right place for themselves in Austria.

Effective magnet. Jan-Michael Peters, renowned cell and molecular biologist from Germany, is the Scientific Director of the Research Institute of Molecular Pathology (IMP) in Vienna and Wittgenstein Prize Winner 2011.

Why are you doing research in Austria?

"Simply speaking, the Vienna-based Research Institute of Molecular Pathology (IMP) offers optimal working conditions, state-of-the-art equipment and a creative, international environment. As the father of two children I have also come to appreciate the high quality of life in Vienna and its surroundings."

What does Austria as a research location offer an international life sciences company?

"This can be summarized briefly: excellent graduates of numerous universities, life sciences research at a world class level, and natural economic and political stability. In addition, the central location in Europe not only attracts exciting companies but young academic talents from South East and Eastern Europe."

What role does internationality play in the success of a researcher?

"It is absolutely crucial. This is because our know-how and the development of new technologies have an impact far beyond a country's borders. Outstanding achievements in research are inconceivable today without international experience and networking. The EU project 'MitoSys' involving thirteen institutions from six countries is a good example for this. In this way we bundle European competence in the field of cell cycle research, transforming it into an extremely high performance initiative."

How important are prominent researchers for the image of Austria as a research location and as a means of luring R&D companies and investors?

"In research just like in business or culture there are also 'crowd pullers' i.e. top names serving as driving forces to attract other interesting researchers, institutes and companies. One such example is IMP. After its founding 25 years ago, it sowed the seed for the Vienna Biocenter, where more than 1,000 scientists now work at academic institutes and biotech companies to conduct research in life sciences."

Basic Research from Austria Saves Lives

Viennese researchers created the basis for producing the anti-EBOLA drug ZMAPP.

Herta Steinkellner, University of Natural Resources and Life Sciences Vienna

In the meantime Vienna has emerged as one of the most interesting and promising research locations in life sciences. Basic research on the threshold to industry like the kind carried out by Herta Steinkellner and her team create the best possible conditions for this.

The spectre of epidemics looms like a nightmare for mankind, and poses a major challenge to science. The anti-Ebola drug ZMAPP is a major milestone in the fight to contain the devastating epidemic. Herta Steinkellner of the University of Natural Resources and Life Sciences Vienna developed a key prerequisite for producing the active ingredient in this drug, namely the genetically modified plants enabling the antibodies to mature.

Tobacco plant as the basis. More specifically, Herta Steinkellner of the University of Natural Resources and Life Sciences Vienna and her team produced so-called monoclonal antibodies in a genetically modified version of the tobacco plant "Nicotiana benthamiana". Glycosylation is the key process needed to make the antibodies particularly effective. This means sugar residues are affixed to the protein scaffold of an antibody. Switching off two genes of the plant enables the antibodies to be provided with a special sugar structure enhancing the effects of the antibodies. In this way the researchers succeeded in developing a production system surpassing all previous approaches.

The "production system" based on the tobacco plant can be applied to a series of therapies, also to combat cancer. The American company Mapp Biopharmaceuticals which develops ZMAPP is using the research findings from Vienna in order to produce the antibodies in its Ebola drug.

International partnerships. Steinkellner heads the Laura Bassi Center of Expertise PlantBioP (Plant Produced Biopharmaceuticals) at the University of Natural Resources and Life Sciences Vienna. She published the research findings underlying the production of ZMAPP together with her colleagues in 2008 and 2011 in the Proceedings of the National Academy of Sciences (PNAS) in the USA.

Sandoz is the project partner of the Christian Doppler Laboratory in Salzburg, and is currently testing three biosimilars developed by the company: Bionocrit, Rituximab and Pegfilgrastim. Biosimilars are protein-based generic drugs, similar to generic drugs from small molecule active ingredients.

Novartis Relies on Austria

Austria is the source of the innovative strength in the future-oriented field of biosimilars.

Hubert Hirzinger,
CFO of Novartis Austria

Novartis has set up its competence center for biotechnology in Austria. What makes Austria so attractive as a business location?

"Austria is a hotspot for research and development at Novartis. Close to 800 employees conduct research at the three production sites of Sandoz, the generics division of Novartis, which are located in Kundl, Schaftenau and Unterach, as well as at Novartis Pharma in Vienna. However, the commitment to R&D is not limited to these locations. Novartis Pharma is a major partner of Austrian hospitals and research institutes, and is currently involved in about 50 clinical studies. Since Novartis was founded in 1996, cumulative investments in Austria have amounted to more than EUR 2 billion. Kundl is the last remaining fully integrated producer of antibiotics in the Western world. Thanks to massive investments in research and development, we have turned the Kundl and Schaftenau facilities into global competence centers for biotechnology, where biosimilars for the global market are developed and manufactured along with other products. This is a promising field of the future in which Sandoz is the world market leader, and the innovative strength comes from Austria."

Business meets science

Sandoz cooperates with universities of applied sciences, universities and non-university research facilities. The Christian Doppler Laboratory for Biosimilar Characterization opened in October 2013 at the University of Salzburg collaborates with Sandoz on the characterization of successor products to biotechnologically produced drugs. Various testing procedures have helped demonstrate that biosimilars are just as safe and effective as the respective reference product. The focus is on quality, safety and effectiveness.

Sandoz became the world's first company to formally register a biosimilar for approval, namely the human growth hormone Omnitrope® (active ingredient Somatotropin). Today Sandoz is the world market leader in this field, which aims to produce the "drugs of the future". Two out of every three biosimilars marketed by Sandoz are manufactured in Kundl and Schaftenau, the firm's two sites in Tyrol.

Philipp von Lattorff, Managing Director, Boehringer Ingelheim Regional Center Vienna (RCV)

Cancer Research Center Firmly Established in Vienna

Whoever does research and works in Austria is in direct proximity to dynamic growth regions.

Vienna is one of the three most important research locations of Boehringer Ingelheim. What conditions does Boehringer Ingelheim exploit in operating its cancer research center in Austria?

„Boehringer Ingelheim is one of the biggest research-intensive pharmaceutical companies in Austria. Vienna is not only home to the global cancer research center of Boehringer Ingelheim, but also to its biopharmaceutical production and the basic research institute IMP. The key prerequisites for investments are the scientific environment, stable economic and political conditions as well as a reliable research funding and promotion system to safeguard the site in the long term."

„Employees comprise the most important success factor underlying Boehringer Ingelheim's cancer research. Talented, excellently educated and highly motivated people come to Vienna from many countries in the world. Numerous partnerships with leading academic research institutes and biotech firms strengthen our research program. A particularly close partner is the Research Institute of Molecular Pathology (IMP) in Vienna, a center for basic biochemical research supported by Boehringer Ingelheim."

Business meets science. Through IMP, Boehringer Ingelheim cooperates with various institutes at the University of Vienna, the Medical University of Vienna and the Austrian Academy of Sciences. Boehringer Ingelheim ranks among the top 20 pharmaceutical companies in the world, generating revenue of more than EUR 14 billion in 2013. More than 19 percent of its total revenue is invested in research and development.

Ongoing investments. The globally operating group relies on the small but excellent business location of Austria, making it the headquarters for its Region Center Vienna (RCV) responsible for 30 countries in Central and Eastern Europe, Central Asia and Israel as well as the fields of human medicine and animal health.

Region Center Vienna (RCV) is growing

	2010	2011	2012	2013
Investments in EUR million	22.2	21.8	42.7	40.9
Employees	2,834	2,993	3,160	3,273
thereof employees in Austria	1,110	1,177	1,304	1,400

APEIRON BIOLOGICS

"The Austrian biotech landscape is very active. There are attractive deals with pharmaceutical companies in which innovative biotech projects are out-licensed. There are also extraordinary cases of in-licensing of very advanced clinical projects. For example, Apeiron managed to in-license a cancer immune therapy project from Merck KGaA which was already in Phase II testing. Pragmatic and focused clinical development and extensive know-how have played an important role on our path to success, all of which are good arguments in favor of Austria as a business location."

Hans Loibner, CEO of the Viennese biotech company Apeiron Biologics

ABA – Invest in Austria offers comprehensive services – competent consulting in selecting an optimal site, support in dealing with public authorities and funding bodies, on tax and labor issues or in identifying cooperation partners – all free of charge.

Best Consulting on Business Location Issues

ABA – Invest in Austria, the consulting company of the Republic of Austria, is the top choice of international investors.

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- We are happy to advise you on important issues relating to **site selection** such as labor and tax regulations, incentives or real estate prices.
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