

Report

2024

Life Science
Austria

Introduction



The life science sector in Austria is one of the key areas driving the transformation of our economy, characterised by excellent basic science and extensive R&D activities. The industry is not only a hub of innovation and value creation, but also a major employer. This is why life sciences are a central pillar of the country's research and industrial policy.

The figures from the Austrian Life Sciences Statistics clearly speak for themselves, as they have for so many years. The life sciences sector is a dynamic economic driver, benefiting society as a whole and playing a vital role in our healthcare system. The recent COVID-19 pandemic has further highlighted the sector's significance and the critical need for continuous innovation in the field.

This report provides valuable insights into Austria's biotechnology and pharmaceutical industries, as well as the medical technology and digital healthcare sectors. Beyond companies engaged in research and development, it examines the entire life sciences value chain, including core suppliers, service providers, and distribution firms. In addition, it provides a comprehensive picture of the Austrian research landscape and offers an overview of education and research conducted at universities, universities of applied sciences, and non-academic research institutions.

The latest figures clearly show that Austria's long-term efforts to support the Austrian life sciences community have paid off. More than two decades of ongoing support in the funding environment are delivering tangible results. In addition to bottom-up research grants and R&D support services, thematic funding programs create clear location advantages. Thus, the FFG Life Science Programme for R&D projects across all technology readiness levels has been established and equipped with €95 million from 2022 to 2026. A long lasting and significant initiative driving the success of the steadily growing start-up scene is aws LISA – Life Science Austria, managed by Austria Wirtschaftsservice. This programme provides tailored support to life science founders and start-ups at every stage of development, strengthens Austria's life sciences clusters, and promotes Austrian companies and research institutions globally. From 2024 to 2026, the aws Preseed and Seedfinancing Deep Tech programme is allocating €19 million to fund and consult innovative start-ups, further strengthening the country's position as a hub for cutting-edge developments.

For years, a clear shift towards digitalisation has been evident in the life sciences. This trend has gained significant momentum in recent years, driven by the rise of artificial intelligence. AI accelerates research, enhances diagnostics, and fosters the development of personalised medicine. This technology will further transform many areas such as drug discovery, medical imaging, and biotechnology. This report shows that the integration of AI applications into the core processes of companies and research institutions is already reality and continues to grow rapidly.

The report confirms the life sciences sector's upward trajectory. Strong collaboration between science and industry, combined with a supportive ecosystem, reinforces Austria's position as an international prime destination for life sciences, and Austria's commitment to nurturing the life sciences ecosystem will remain strong.

Mag. Dr. Wolfgang Hattmannsdorfer
Federal Minister of Economy, Energy and Tourism

Preface



Austria's life science sector is a vibrant and dynamic hub of scientific exploration and innovation. Over the years, the country has built a strong reputation as a key player in the global life sciences landscape, gaining recognition for its significant contributions across various disciplines, including biotechnology, medical technology, digital health, and pharmaceutical research. Beyond its scientific and technological impact, the life science sector is also a major economic driver, contributing substantially to Austria's gross domestic product.

The strong synergy between an active, growing start-up community, an exceptional education system, world-class research institutions, outstanding medical practice, and established companies makes Austria an ideal place for life sciences. The country's high quality of living, advanced infrastructure and strategic location at the heart of Europe further enhance its appeal.

Additionally, Austria provides a highly supportive ecosystem for innovative companies, including very effective public funding programs. Given the life sciences sector's research-intensive nature, long development cycles, and significant fundraising needs, government support is essential to prevent market failures in this field.

For over 20 years, Austria Wirtschaftsservice, the Austrian promotional bank, has been strengthening the life sciences sector through the aws LISA – Life Science Austria programme, ensuring optimal conditions for this vital industry. Central to this effort are the well-established Deep Tech funding programmes, Preseed and Seedfinancing, which support companies at a very early stage with attractive funding. The International Business Idea Competition, aws BoB – Best of Biotech, helps researchers and students transform innovative ideas into viable businesses. Additionally, start-ups emerging from academic environments receive dedicated support during their early development through incubators funded by the aws AplusB Scale-up programme. The country's regional life science clusters unite under the aws LISA umbrella brand, showcasing Austria's strengths in life sciences on the international stage.

Furthermore, life sciences companies in growth phases can take advantage of financing by the Venture Capital Initiative, founder and SME funds as well as guarantee and loan instruments. The funding provided along the entire value chain is complemented by advisory services, such as innovation protection, as well as matchmaking and connecting services.

With the launch of the aws Spin-off Initiative at the beginning of 2025, Austria is making a further decisive impact in promoting academic spin-offs and their seamless integration into the innovation process. Through this initiative, the commercial utilisation of research results, as well as access to private venture capital, are specifically supported.

Austria's combined efforts are showing success, generating new and meaningful jobs and reinforcing the country's position as a leading hub for innovation. The Austrian life sciences sector is set for a dynamic and prosperous future.

We invite you to explore the Austrian Life Sciences Report 2024, where you will find key facts and figures highlighting the industry's remarkable success!

Mag. Gerfried Brunner
Managing Director Austria Wirtschaftsservice GesmbH

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1. Life Sciences in Austria

Life sciences in Austria at a glance

According to the latest official data, Austria's R&D expenditure in 2023 amounted to 3.26% of gross domestic product (GDP) with a new record of 3.34% expected for 2024.¹ By this measure, Austria ranked third within the EU in 2023.² A steadily increasing share of business R&D is being devoted to high-technology industries, with life sciences – encompassing biotechnology, medical technology and pharmaceuticals – playing a crucial part. The European Commission identifies six “key enabling technologies” as essential to fostering EU growth and maintaining EU leadership, with life science technologies being one of them.³ Supporting the life sciences sector is a priority for the European Union, as it aims to enhance Europe as a life sciences location.

The Austrian Research and Technology Report 2024⁴ highlights numerous achievements in Austrian life sciences research, with Austria's key strengths in cancer research, precision medicine and medical products. For instance, Austria ranks fourth internationally in terms of “excellent scientific publications” in the fields of life sciences such as biochemistry, genetics, and molecular biology. In terms of patents, Austria registered 234 patents in the field of life sciences with the European Patent Office in 2022, corresponding to around 10% of all Austrian patent applications. Additionally, Austria ranked third with respect to ERC grants in life sciences in 2022.

Austria's commitment to life sciences extends beyond R&D to include production. To prevent the relocation of the EU's last fully integrated penicillin production site to Asia, the Austrian federal government together with the Tyrolean government have introduced a package of measures worth up to €50 million to modernise and secure the production facility in Kundl, Tyrol.

Government initiatives have also facilitated the expansion of life sciences in Austria's academic and scientific institutions. The “Uni-Med-Impuls 2030” programme supports the development of the Medical University of Vienna, the Medical University of Graz, the Medical University of Innsbruck, the Medical Faculty in Linz, and the University of Veterinary Medicine Vienna. Austria's universities are increasingly collaborating in teaching and research and are also pooling resources in alignment with state and regional policy. Examples include the establishment of the Ignaz Semmelweis Institute for Infection Research as a cross-university research institute, another is the inter-university cooperation between the University of Salzburg, the Paracelsus Medical University and affiliated hospitals. Life sciences degree programmes are also offered by Austria's universities of applied sciences, providing additional educational opportunities in this field.

1) Statistics Austria, accessed on 7-January-2025 (<https://www.statistik.at/statistiken/forschung-innovation-digitalisierung/forschung-und-experimentelle-entwicklung-fe/forschungsquote-globalschaetzung>)

2) Eurostat, accessed on 7-January-2025 (https://ec.europa.eu/eurostat/databrowser/view/rd_e_gerd_tot__custom_14882781/default/table)

3) European Commission (2022): Science, research and innovation performance of the EU 2022 – Building a sustainable future in uncertain times, pp. 70

4) https://www.bmk.gv.at/en/topics/innovation/publications/technology_reports.html

Non-university research institutions in the life sciences are also expanding. The Austrian Academy of Sciences (OeAW) employs over 500 researchers in the field of life sciences and operated three life science facilities in 2023: The Institute of Molecular Biotechnology (IMBA), the Gregor Mendel Institute (GMI) and the Center of Molecular Medicine (CeMM). Two further facilities were established from 2024 onwards. Other major institutions include the Institute of Science and Technology Austria (ISTA), the Austrian Institute of Technology (AIT) and the nonprofit Research Institute of Molecular Pathology (IMP). The IMP, IMBA and GMI are located at the Campus Vienna BioCenter, a leading life sciences hub bringing together research institutions, biotech companies and educational facilities.

Austria’s life sciences in figures

As of December 2023, the life sciences comprise 1,174 companies and 56 research and education institutions located in Austria. From 2021 to 2023, 146 companies were newly founded, while existing companies increased their numbers of employees by 13% and their turnover by 20%. In total, the sector employed 73,437 people in 2023, generating a turnover of nearly €40 billion. Additionally, 24,294 people were employed in the life sciences branches of research and education institutions in 2023. Table 1 presents key statistics on the Austrian life sciences sector. For an overview and definitions of the 14 categories covered in this report please refer to Box 1 in Section 7.

The data and information presented in this report are based on various sources, the most important of which is a survey conducted by WPZ Research from June to September 2024 on behalf of Austria Wirtschaftsservice (aws) and the Federal Ministry of Economy, Energy and Tourism.

Additional sources include WPZ Research’s database of Austrian companies, which is based on the company database “Aurelia” provided by Bureau Van Dijk, WPZ Research’s database on Austrian spin-offs, the Federal Ministry for Women, Science and Research’s university database, and the catalogue of research institutions from Statistics Austria. The classification of life sciences follows internationally recognised guidelines and definitions established by the Organization for Economic Cooperation and Development (OECD) and the Global Medical Device Nomenclature (GMDN).

Specific numbers and developments will be discussed in more detail in subsequent sections focussing on various categories (i.e., groups of companies and institutions according to their main activity). Due to advancements in the methods as well as the inclusion and recategorisations of existing companies, the data is not directly comparable with the previous report. For this reason, estimates for 2020 have been calculated based on the updated methods and data.

Furthermore, in this report the proportions of numbers of employees and turnover attributed to life-science-related activities are estimated. Of the 73,437 employees listed in Table 1, 45,555 are estimated to work in life-science-related areas. Of the €39.99 billion turnover, €27.07 billion are generated in life-science-related areas. For details on the methods please refer to Section 7.

Table 1 is followed by a map displaying the spatial distribution of the Austrian life sciences sector. Approximately half of all activities are concentrated in Vienna. However, significant companies are also located in scientific and industrial hubs outside Vienna. Additionally, as of 2023, every federal state in Austria hosts at least one university or university of applied sciences active in life sciences.

	2014*	2017*	2020*	2020**	2023***
Number of companies in the life sciences sector	823	917	982	1,136	1,174
Number of employees in life sciences companies	51,660	55,480	60,440	65,187	73,437
Turnover of life sciences companies (€ bn)	19.11	22.40	25.10	33.29	39.99
Number of research and education institutions active in life sciences	55	55	55	55	56
Number of life science employees in research and education institutions	19,830	21,145	24,294	n.a.	24,294

* Numbers as published in the Report 2021.
** Estimated numbers for 2020 by considering changes in the method as well as companies and institutions additionally included in the 2023 survey which were founded before 2020.
*** The numbers on employees and turnover in the table refer to the companies as a whole. The estimated numbers for employees and turnover specifically related to life science activities within these companies are 45,600 employees and €27.1 bn.

Table 1: Key figures for the life sciences in Austria, 2014-2023

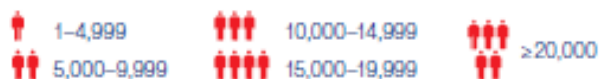
Map of the Life Sciences in Austria

Distributed According to Federal States

Number of life science companies



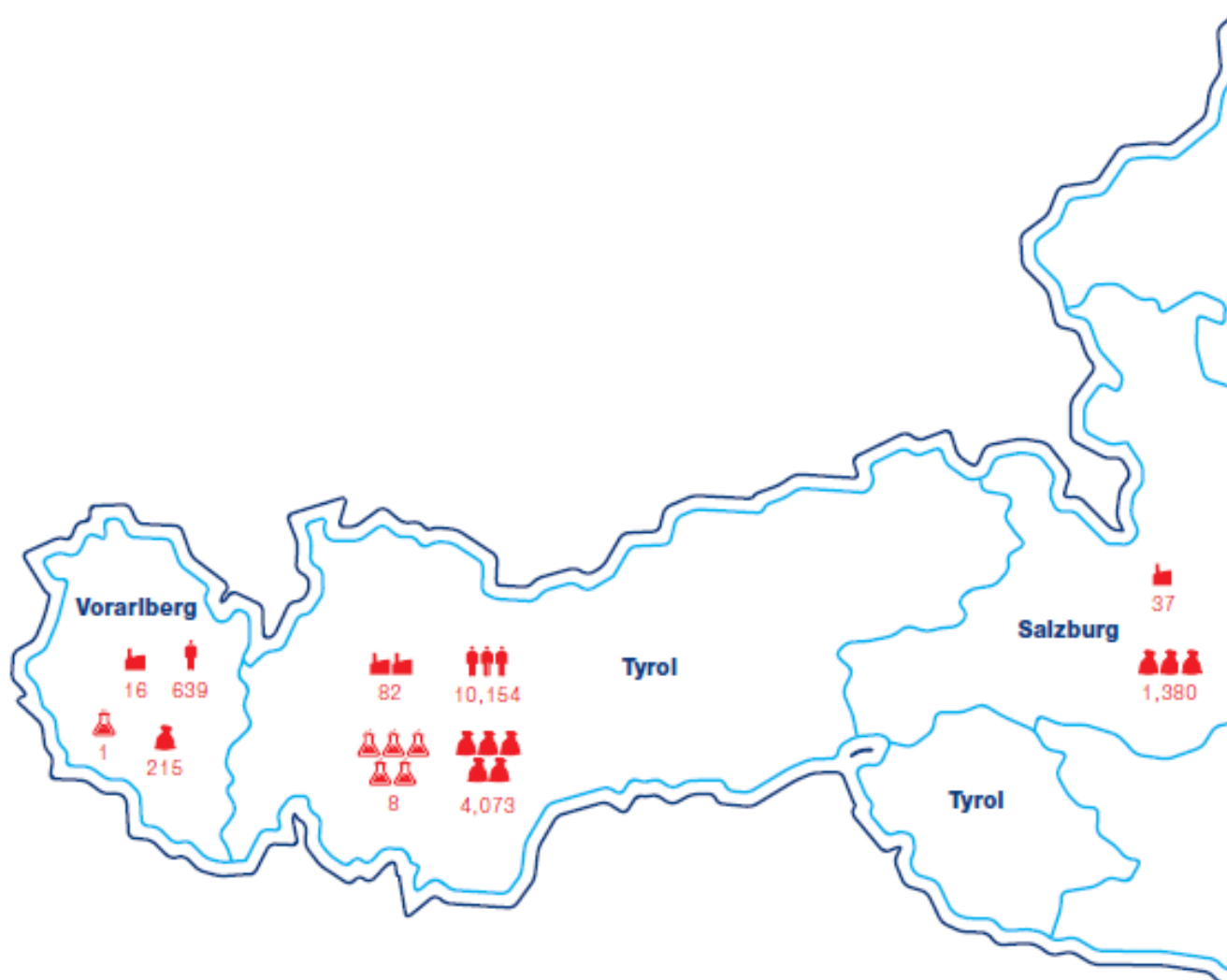
Number of employees in life science companies

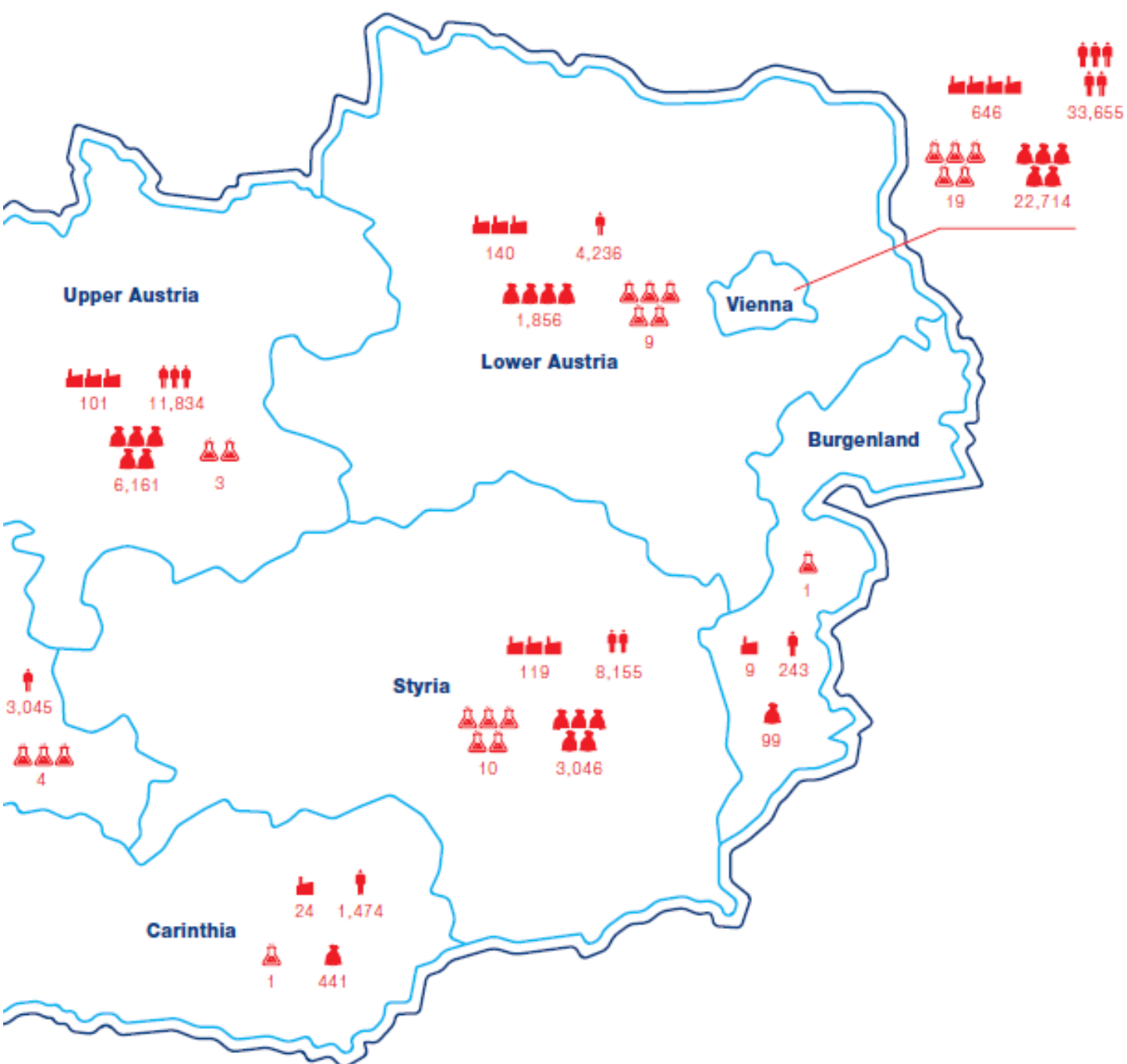


Turnover of life science companies (in € m)



Number of research and education institutions active in life sciences





2. Biotechnology and Pharmaceutical Business Sector in Austria

Overview

Biotechnology and pharmaceutical innovations are essential in addressing societal challenges such as an ageing population, demographic shifts, and pandemics. Over the past decades, Austria has built a strong reputation in this field. Its central location, highly skilled workforce, and extensive technical and scientific expertise have firmly positioned the Austrian biotechnology and pharmaceutical industries on the European life sciences map.

“Research, development, manufacturing companies” covered in this chapter include those that apply biotechnology in R&D and/or manufacturing, as well as companies whose primary activity involves the development and/or manufacturing of drugs without applying biotechnological methods (i.e., pharmaceutical companies). The category of “supply, services, sales companies” comprises further companies that are involved in R&D and/or manufacturing, for example by developing or manufacturing intermediate goods specifically designed for the production of goods classified as biotechnology, such as enzymes. (This excludes companies with no direct connection such as retailers. For detailed definitions, please refer to Section 7.)

Together, the companies develop, produce and support the production of vaccines and drugs but are also active in fields such as creating new crop varieties in the agricultural sector or developing micro-organisms that produce industrial enzymes for the chemical industry. As such, the biotechnology and pharmaceutical business sector is not limited to specific industries as defined by classifications such as NACE but can be found in any industry. Because activities may change over time all companies located in Austria have been reviewed and, to ensure accurate classification, in some cases recategorised.

Many new companies and dynamic growth

From 2021 to 2023, no less than 90 companies were founded, 65 of which are categorised as “research, development, manufacturing companies” and 25 as “supply, services, sales companies”. In addition, many companies have been added to the sample that already existed in 2020. Reasons for this include a more detailed analysis of supply chains, whose importance was highlighted by the COVID-19 pandemic. Additionally, the use of additional data sources has provided a more precise view of the industry, particularly offering better insights into the wholesale sector. Furthermore, in the 2023 sample, each business unit or legal entity listed in the company register is recorded separately to allow for a more accurate evaluation, as individual entities may have different business foci. In previous years, company groups were recorded as a single entry, which also contributed to the increase in the number of companies.

As a result, the current sample is significantly larger than that of the previous report. To ensure comparability of the data, 2020 figures reflecting the new sample and methodology are included in Table 2 below. Existing companies experienced significant growth with employee numbers increasing by 11.5% and turnover by 24%. Among these, “research, development, manufacturing companies” grew by 18% in employee numbers and 20% in turnover. “Supply, services, sales companies” on the other hand grew by about 1% in employee numbers and achieved a 30% growth in turnover. As will be shown and discussed in subsequent sections, these figures reflect the growth of several already rather large companies in biotechnologies. The shares of employees working in the biotechnological and pharmaceutical areas of the companies are estimated to be about two-thirds: Almost 75% in research, development, manufacturing companies but only slightly above 50% in supply, services, sales companies. Regarding turnover, the differences are smaller, about 70% originate in life sciences, about 75% in the research, development, manufacturing companies, and slightly below 70% in supply, services, sales companies.



Other statistics also display Austrian biotechnology as thriving: The Statistics Austria’s Survey on Research and Experimental Development (R&D) shows that the number of researchers in companies classified as biotechnological R&D increased by an impressive 13.82% from 2019 to 2021.

	2014*	2017*	2020*	2020**	2023***
Number of companies in biotechnology and pharmaceuticals	336	363	405	503	532
Research, development, manufacturing companies	175	207	235	250	280
Supply, services, sales companies	161	156	170	253	252
Number of employees in biotechnology and pharmaceuticals	26,500	28,850	32,020	37,891	42,298
Employees in research, development, manufacturing companies	18,480	23,080	25,350	22,953	27,233
Employees in supply, services, sales companies	8,020	5,770	6,670	14,938	15,065
Turnover in biotechnology and pharmaceuticals (€ bn)	11.65	13.97	16.03	23.06	28.93
Turnover of research, development, manufacturing companies (€ bn)	5.72	9.34	11.14	11.94	14.55
Turnover of supply, services, sales companies (€ bn)	5.93	4.63	4.89	11.12	14.37

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 by considering changes in the method as well as companies and institutions additionally included in the 2023 survey which were founded before 2020.

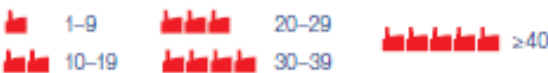
*** The numbers on employees and turnover in the table refer to the companies as a whole. The estimated numbers for employees and turnover specifically related to life science activities within these companies are (from top to bottom): 28,200 employees, 20,100 employees, 8,100 employees, €20.7 billion, €10.8 billion, and €9.8 billion.

Table 2: Key figures for the biotechnology and pharmaceutical business sector, 2014-2023

Map of the Biotechnology and Pharmaceutical Business Sector

Distributed According to Federal States

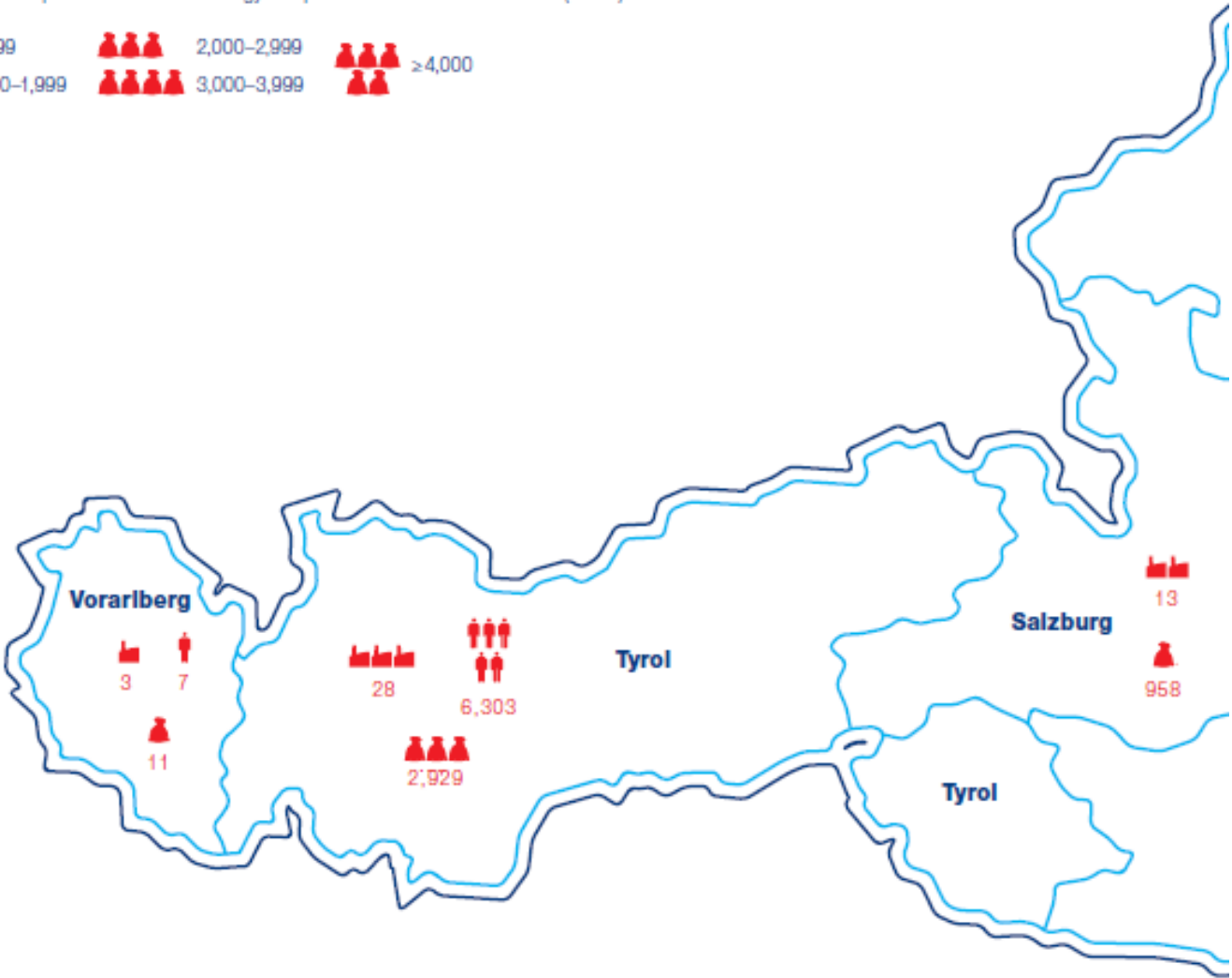
Number of companies in the biotechnology and pharmaceutical business sector

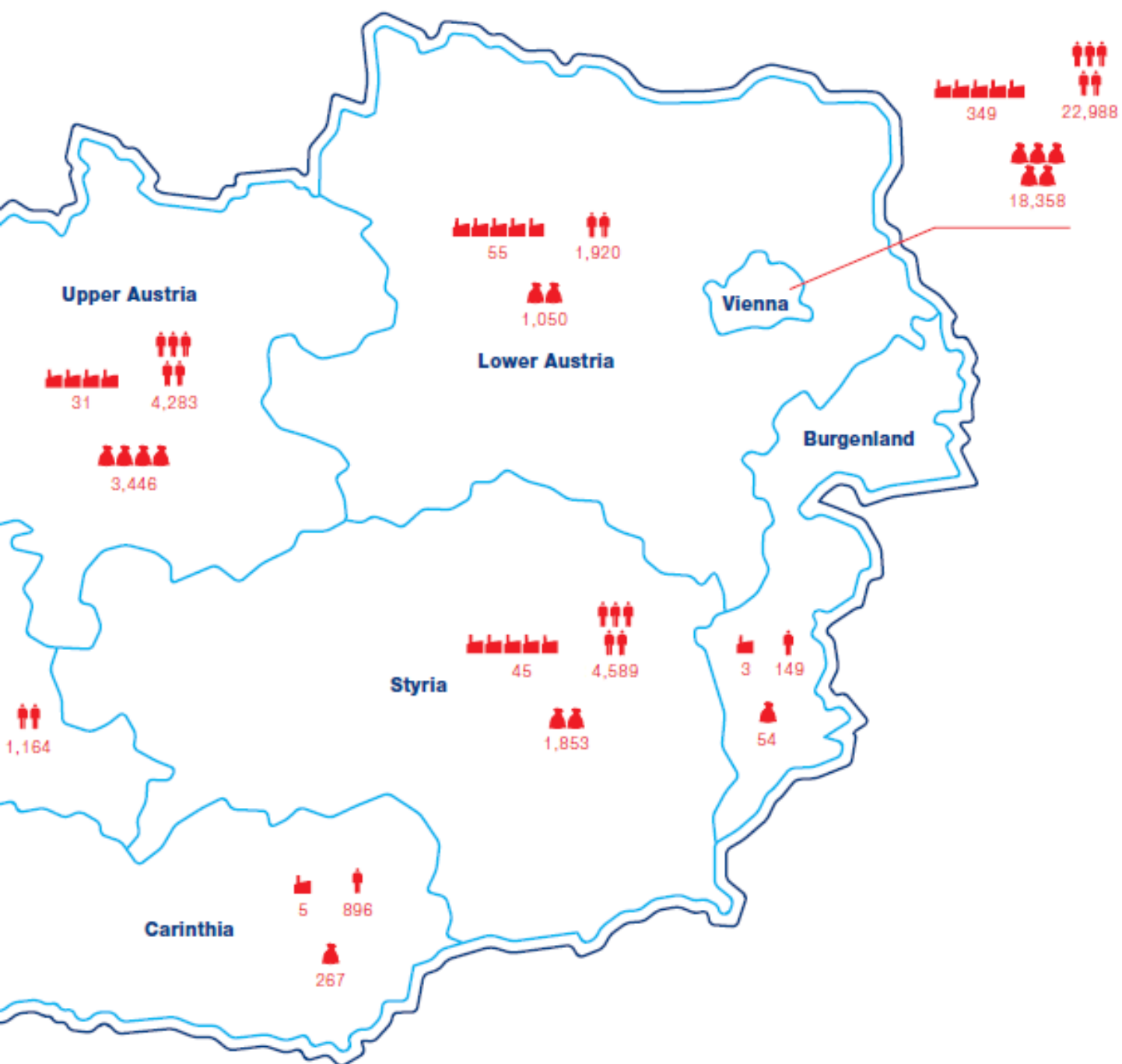


Number of employees in the biotechnology and pharmaceutical business sector



Turnover of companies in the biotechnology and pharmaceutical business sector (in € m)





2.1 Dedicated Biotechnology Companies

Structure, Employees and Turnover

A dedicated biotechnology firm is one whose primary activity involves applying biotechnology techniques to produce goods or services and/or conducting biotechnology R&D. As the figures below demonstrate, the number of companies in this category has continued to grow, with even bigger increases in their employee numbers as well as turnover. While most companies are rather small, some of the larger ones experienced significant growth.

Many new companies, remarkable growth of existing companies

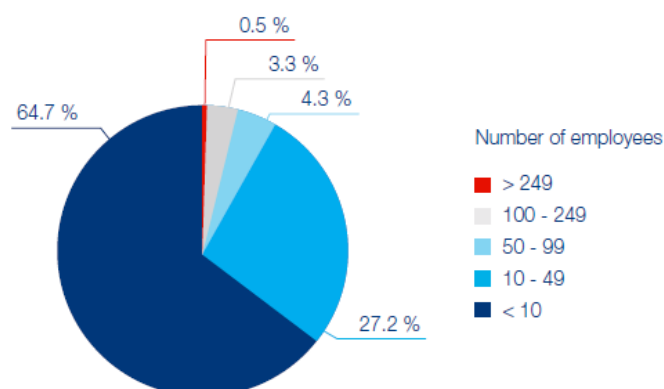
Dedicated biotechnology companies continue to thrive as is shown by several key figures. No less than 54 companies within this category were newly founded from 2021 to 2023. Existing companies grew by 39% in terms of employee numbers and by 68% in turnover. This remarkable growth is primarily driven by a few rather large companies whose turnover increased impressively, tripling in some cases. R&D expenditure and private equity investments also reached new record levels.

In general, the companies are relatively young: With a median founding year of 2017, more than half of the companies were six years or younger as of 2023. Most of the companies are rather small as illustrated in Figure 1, almost two-thirds have fewer than ten employees. This is slightly lower than in previous years, while the shares and numbers of companies with ten or more employees increased. For instance, in 2023, 3.3% reported having 100 to 249 employees. Given the definition, it is no surprise that companies in this category are predominantly active in life-science-related areas, with the share being estimated to be around nine-tenths.

Summarising the data, established firms are continuing to grow, several new firms have been founded, and the number of new companies is considerably higher than the number of closures (54 compared to 27). Together, this highlights a vibrant industry

with promising prospects. This is illustrated by the R&D and financing statistics: A total of €479.7 million was spent on R&D activities, and 32% of companies declared in the survey that they had received private capital.

The companies tend to cluster geographically: 119 are in Vienna, 28 in Lower Austria, and 24 in Styria. Together these three federal states host 89.53% of all companies. This share has remained relatively stable over the past three years (90.60% in 2020). Clustering of economic activities underscores the importance of knowledge spillovers between companies as well as between companies and research institutions. In fact, 36 companies are identified as university spin-offs.



Number of observations: 184.

Figure 1: Numbers of employees of dedicated biotechnology companies in 2023

	2014*		2017*	2020*	2020**	2023
Number of dedicated biotechnology companies	116		127	151	164	191
Number of employees in dedicated biotechnology companies	1,660		1,830	2,300	2,384	3,316
Turnover of dedicated biotechnology companies (€ m)	198		313	416	1,027	1,725
R&D expenditure of dedicated biotechnology companies (€ m)	143.6		170.8	289.9	n.a.	479.7

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 by considering changes in the method as well as companies and institutions included in the 2023 survey that were founded before 2020.

Table 3: Key figures for dedicated biotechnology companies, 2014-2023

2.1 Dedicated Biotechnology Companies

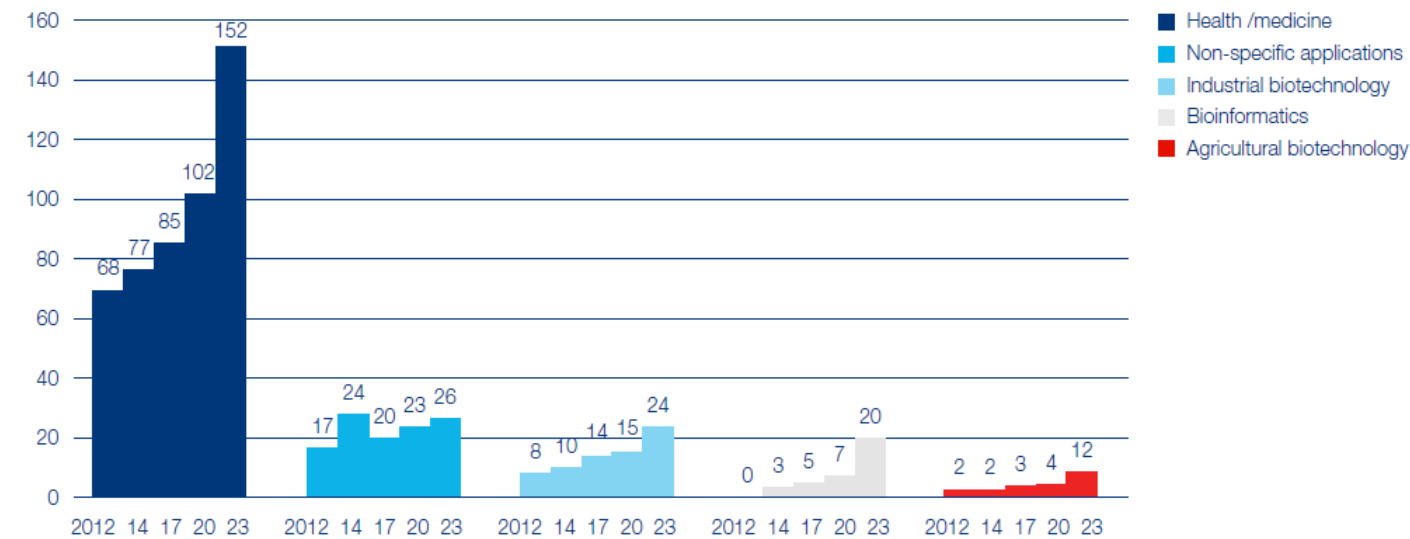
Areas of Activity

By definition, biotechnological companies engage in a wide range of R&D and production activities. The survey asked companies to specify their areas of activity, which were then grouped into five categories. Figure 2 is based on the survey findings and additional research to provide absolute numbers of companies operating in each field. Since companies may be active in multiple areas, the total number of activities exceeds the 191 companies.

Health-related biotechnology leads the field

A significant majority - 80% (152 out of 191 companies) - operate in the field of “health/medicine.” The second category, “non-specific applications,” includes enabling technologies, reagents, and related areas, with 14% of dedicated biotechnology companies operating in this field. “Industrial biotechnology” accounts for 13%, while approximately 10% of companies are engaged in bioinformatics, and 6% operate in “agricultural biotechnology.”

As with other data on dedicated biotechnology companies, the figures for 2023 are considerably higher than those for 2020. This increase is partly due to the inclusion of additional companies in the sample but is primarily driven by newly founded companies. Figure 2 illustrates that the number of active biotechnology companies in Austria is steadily growing across all five fields.



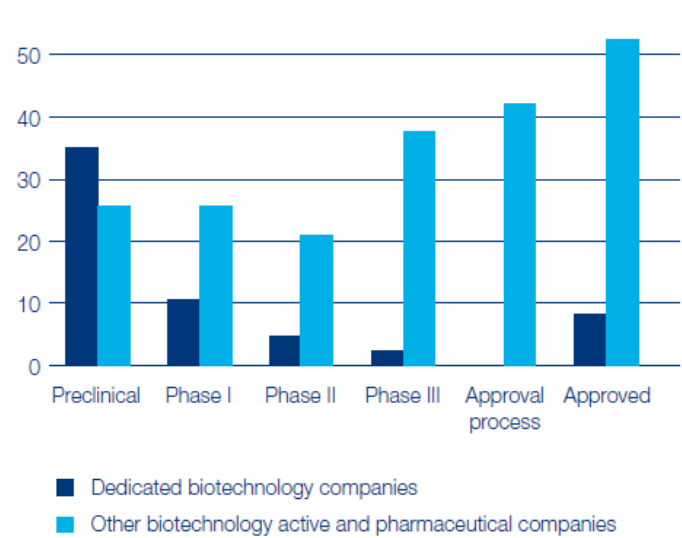
Numbers of observations: dedicated biotechnology companies: 63; other biotechnology and pharmaceutical companies: 21.

Figure 2: Main areas of activity in dedicated biotechnology companies 2012-2023, multiple areas possible

2.1 Dedicated Biotechnology Companies

Clinical Pipeline and Indications

The clinical pipeline refers to the development that companies use to bring a new drug or treatment from initial discovery to market. Figure 3 presents the number of drug candidates in each of the six phases. The observations are limited to companies that identified “health/medicine” as a primary area of activity. Each company is counted only once per phase, i.e. a company with one or more drugs in a particular phase is counted once but also counted in other phases if applicable. Interestingly, when comparing dedicated biotechnology companies with other biotechnology and pharmaceutical companies, the distribution among phases looks almost inverted. In the cases of the latter three phases other biotechnology active companies display significantly higher values, but there are no significant differences regarding the others.

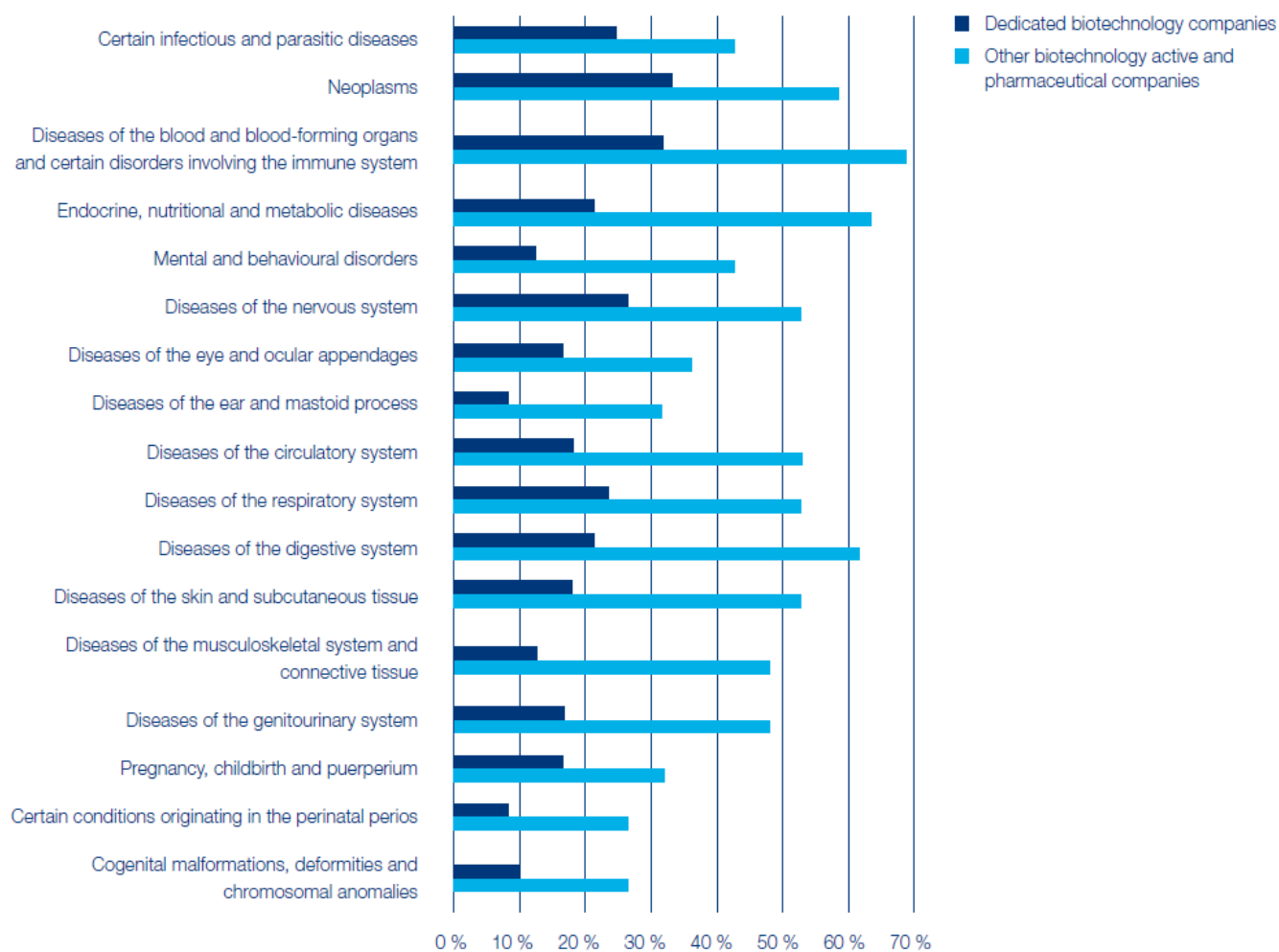


A related item of the survey refers to the therapeutic areas/ indications a company may be assigned to, according to the International Statistical Classification of Diseases and Related Health Problems (10th revision). Figure 4 displays the corresponding shares of companies, with the percentage calculated based on the number of companies that identified themselves as being active in the area of health/medicine (see Figure 2). As in Figures 2 and 3, Figure 4 presents the results for both dedicated biotechnology companies and other biotechnology active companies. Companies may classify themselves under multiple chapters of classification, resulting in total percentages exceeding 100%. In most chapters the share is significantly larger for other biotechnology active companies than for dedicated biotechnology companies.⁵

Numbers of observations: dedicated biotechnology companies: 57, other biotechnology active companies: 19.

Figure 3: Drug candidates of biotechnology companies, 2023

5) Indication with no significant difference are (i) certain infectious and parasitic diseases, (ii) neoplasms, (iii) diseases of the eye and ocular appendages, (iv) pregnancy, childbirth and puerperium, (v) certain conditions originating in the perinatal period and (vi) congenital malformations, deformities and chromosomal anomalies.



Numbers of observations: dedicated biotechnology companies: 57, other biotechnology active companies: 19.

Figure 4: Overview of indications of medical biotechnology companies, 2023

2.1 Dedicated Biotechnology Companies

R&D and Financing

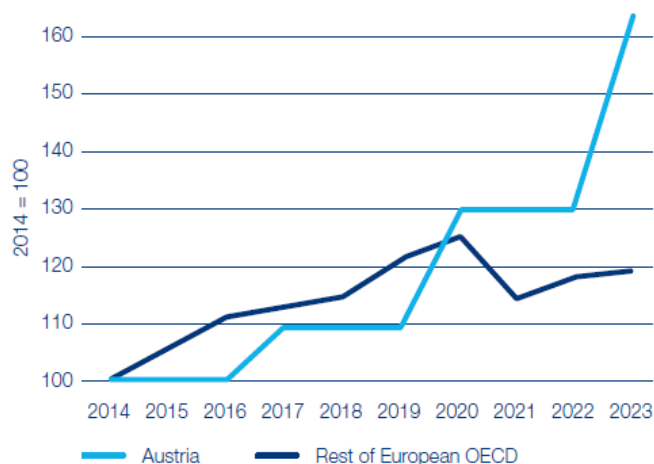
Table 3 shows that dedicated biotechnology companies are among the most R&D intensive: A total of 191 companies generated a turnover of €1,725 million while spending €479.7 million on R&D. To provide context: in terms of the numbers of companies, this group presents the third-largest of the eleven company categories presented in this report, while in terms of turnover it ranks as the third-smallest.

Undoubtedly, some of this is due to the COVID-19 pandemic as evidenced by the number of newly founded (and by the end of 2023 still active) companies: 31 were founded in 2021, 16 in 2022 and seven in 2023. Nevertheless, this category of companies has been growing steadily for a decade now. A comparison with other European OECD countries highlights this trend: As shown in Figure 5, the number of dedicated

biotechnology companies in Austria has increased by 64% since 2014, whereas just 19% for the rest of the European OECD. Although the original time series is incomplete, and the definitions differ across countries, it still provides an indication of the development.⁶

Austria's dedicated biotechnology companies are thriving, as evidenced by their R&D spending, which has grown faster than in most other OECD countries (see Figure 6). The trend is remarkable. This is also highlighted by the official data of Statistics Austria which indicate that R&D expenditures in the related industry "research and experimental development on biotechnology" have nominally increased by 28.2% from 2019 to 2021. In comparison, total R&D expenditures in the business enterprise sector (encompassing all industries) have nominally increased by only 4.1%.

As for risk capital investments, Austria typically ranks in the lower tier within EU rankings, with venture capital volumes that are chronically low compared to countries with similar GDP levels. However, 2023 saw some notable investments, though information on several of them remains undisclosed. Regarding the survey, of the companies that reported having received private capital from 2021 to 2023, 40% are dedicated biotechnology companies.

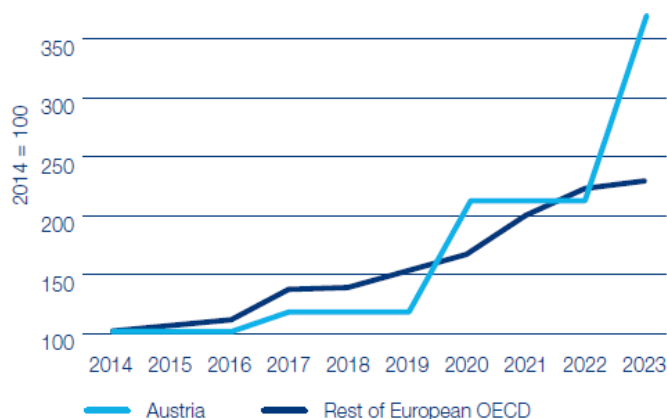


Countries included in "rest of European OECD": Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland.

Note: If data for a specific year is unavailable, the most recent data is used.

Source: OECD biotechnology and nanotechnology indicators as of 21 January 2025, available from <https://www.oecd.org/en/data/datasets/emerging-technology-indicators.html>

Figure 5: Numbers of dedicated biotechnology companies in Austria and rest of European OECD-countries, 2014-2023, 2014=100



Countries included in "Rest of European OECD": Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Lithuania, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, and Switzerland.

Note: If data for a specific year is unavailable, the most recent data is used.

Source: OECD biotechnology and nanotechnology indicators as of 21 January 2025, available at <https://www.oecd.org/en/data/datasets/emerging-technology-indicators.html>

Figure 6: Development of biotechnology R&D expenditures in the business sector in Austria and rest of European OECD-countries, 2014-2023, 2014=100

⁶) The decrease observed in 2021 for the rest of the OECD is primarily attributable to a break in data series in France, which resulted in a reduction of several hundred companies being included in the analysis.

2.2 Other Biotechnology Active Companies

Structure, Employees, Fields of Activity and Turnover

Austria hosts a broad range of companies that are engaged in key biotechnology activities such as applying at least one biotechnology technique to produce goods or services and/or conducting biotechnology R&D while being also active in other areas. Due to recategorisations as well as the emergence of new companies, and the closure of other companies, the sample is not identical to the one used in the previous report. However, a remarkable increase in turnover and employees can be observed in this category.

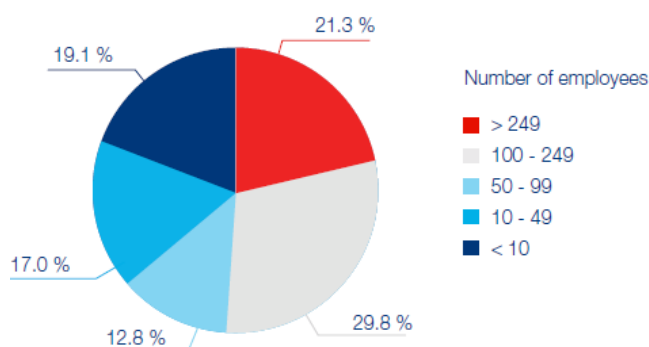
Companies with diverse backgrounds

This category is quite diverse, encompassing companies from various industries as classified by ÖNACE, Austria's adoption of NACE, the statistical classification of economic activities in the European Community. It includes companies from "Manufacture of basic pharmaceutical products and pharmaceutical preparations" provided they are engaged in key biotechnology activities as defined earlier. Some companies are classified under "wholesale of pharmaceutical goods" if they are involved in research, development and manufacturing. Additionally, a few companies classified in ÖNACE as "research and experimental development in biotechnology" are also included.

Figure 7 illustrates that the majority of companies have 100 or more employees. In fact, over 21% of the companies have more than 250 employees and almost 30% have between 100 and 249 employees. Table 4 displays not only numbers of companies, employees and turnover, but also which shares of employees and turnover are related to activities defined as life sciences, based on the survey. The category includes some large drug producers, which are also among the largest life sciences companies in Austria. Thus, other biotechnology active companies, as a group, are larger in terms of both employee

count and turnover compared to dedicated biotechnology companies. This also holds true even when considering only biotechnology-related activities, which equal about two-thirds with respect to employees and turnover as shown in Table 4. However, growth since 2020 has been smaller, though still notable with healthy rates of 17% in employee numbers and 20% in turnover.

The companies in this category also contribute significantly to Austria's R&D expenditures. While not all their activities fall under the OECD's definition of biotechnology, their R&D activities are partly reflected in the Statistics Austria's Survey on Research and Experimental Development (R&D): For example, the industry category "other research and experimental development on natural sciences and engineering" reported an impressive 45.7% increase in R&D expenditure from 2019 to 2021.



Number of observations: 47.

Figure 7: Numbers of employees in other biotechnology active companies in 2023

	2014*	2017*	2020*	2020**	2023***
Number of other biotechnology active companies	27	45	49	47	48
Number of employees in other biotechnology active companies	13,720	17,650	18,870	17,054	19,915
Number of employees in the biotechnology related areas of other biotechnology active companies	5,970	7,100	7,660	11,387	13,297
Turnover of other biotechnology active companies (€ bn)	4.43	7.59	8.64	8.97	10.72
Turnover in the biotechnology related areas of other biotechnology active companies (€ bn)	n.a.	n.a.	n.a.	6.03	7.21

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 were derived by accounting for changes in the method and including companies and institutions that were part of the 2023 survey but were established before 2020.

Table 4: Key figures for other biotechnology active companies, 2014-2023

2.3 Pharmaceutical Companies

Structure, Employees, Fields of Activity and Turnover

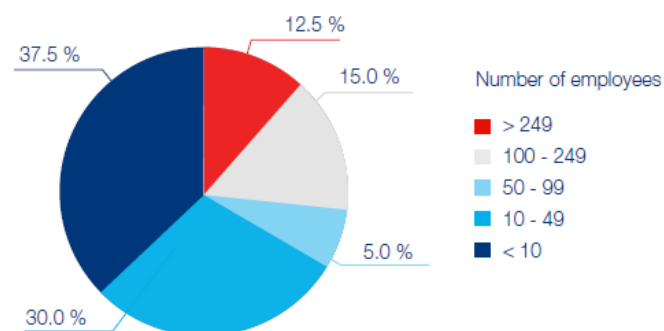
Pharmaceutical companies discover, develop and produce drugs – both chemically synthesised molecules and natural compounds derived from plants or animals for human or veterinary use. Many companies typically classified as pharmaceutical companies are categorised as “dedicated” or “other biotechnology active companies” if they utilise biotechnology techniques. This section focuses on companies whose primary activities involve the development and/or manufacturing of drugs without applying biotechnological methods. Only two companies founded from 2021 to 2023 are included in this category, indicating that this category of companies has remained relatively stable.

Some companies are very large, most are small

This group includes some large companies, both domestic as well as subsidiaries of multinationals, but the majority are rather small. As shown in Figure 8, 67.5% of the pharmaceutical companies have fewer than 50 employees. Growth in terms of employee numbers and turnover is also lower compared to dedicated and other biotechnology active companies. The figures suggest that companies applying biotechnological techniques have been more dynamic in recent years. However, this category of pharmaceutical companies contributes substantially to R&D activities and shows healthy growth. The activities concerning employees and turnover are almost completely life-science-related.

Table 5 shows that growth in terms of numbers of employees was much higher than in terms of turnover since 2020. Regarding R&D, growth appears moderate compared to previous sections, but the level of R&D activity remains rather high. When comparing the figures to Statistics Austria's

Survey on Research and Experimental Development (R&D) it is important to consider that some companies officially classified as “manufacture of basic pharmaceutical products and pharmaceutical preparations” are included in previous sections if they apply biotechnology techniques. Some companies not officially classified under this industry are included here if their activities involve production or R&D. Nevertheless, the Statistics Austria's Survey on Research and Experimental Development (R&D) reports a 7.8% increase in R&D expenditures within the industry from 2019 to 2021 (R&D spending of the industry reached €305 million in 2021). While this is lower than that observed in biotechnology-related industries, it is still considerably higher than the 4.1% increase in the business enterprise sector encompassing all industries (see also Section 2.1).



Number of observations: 40.

Figure 8: Numbers of employees of pharmaceutical companies in 2023

	2014*	2017*	2020*	2020**	2023***
Number of pharmaceutical companies	32	35	35	39	41
Number of employees in pharmaceutical companies	3,100	3,600	4,180	3,514	4,003
Turnover of pharmaceutical companies (€ bn)	1.10	1.43	2.08	1.95	2.11

* Numbers as published in the Report 2021.

**Estimated numbers for 2020 were derived by accounting for changes in the method and including companies and institutions that were part of the 2023 survey but were founded before 2020.

Table 5: Key figures for pharmaceutical companies, 2014-2023

2.4 Core Suppliers in the Biotechnology and Pharmaceutical Business Sector

Structure, Employees, Fields of Activity and Turnover

Drug producers and other companies active in biotechnology – especially those engaged in R&D activities – rely on supplies from other companies. This category refers to “core suppliers” as manufacturers of products specifically developed or designed for use in the development, production or distribution of biotechnology and pharmaceutical products. Other suppliers whose products may also be used by companies outside the life sciences sector are not considered here.

Many companies added

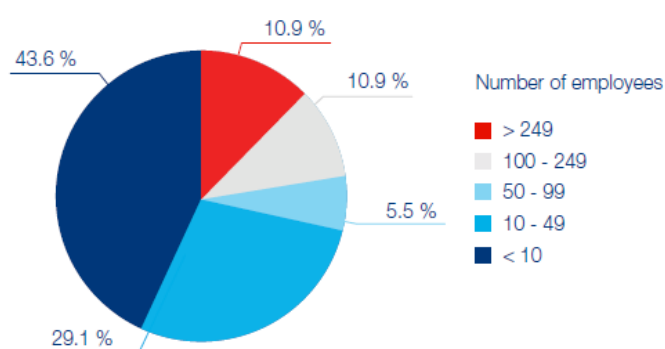
Research for this report, along with a growing understanding of supply chains, has led to the identification of several additional companies in this category, nearly doubling the sample size compared to 2020. However, slightly more companies within this category have ceased operations than have been newly established. Despite this, the surviving companies have performed well, growing by 8% in number of employees and no less than 82% in turnover. Similar to the case of dedicated biotechnology companies, some large companies in this category have experienced exceptionally rapid growth, with turnover increases exceeding €100 million in several cases.



A wide range of activities

It is remarkable that these companies often produce a large variety of goods. According to the survey and additional research, approximately 45% of employees and 40% of turnover are linked to activities in the life sciences sector. As a result, these companies play a vital role in Austria's life sciences industry.

Figure 9 shows that a considerable number of companies are quite large, although the majority are smaller companies. In fact, almost 44% of companies have over 250 employees. There are also three companies in the sample which are identified as university spin-offs, which highlights that some companies are R&D intensive.



Number of observations: 55.

Figure 9: Numbers of employees of core suppliers in the biotechnology and pharmaceutical business sector in 2023

	2014*	2017*	2020*	2020**	2023***
Number of core suppliers in biotechnology and pharmaceuticals	24	26	30	60	57
Number of employees of core suppliers in biotechnology and pharmaceuticals	1,780	1,860	2,430	5,021	5,422
Turnover of core suppliers in biotechnology and pharmaceuticals (€ m)	604	666	774	2,014	3,666

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 were derived by accounting for changes in the method and including companies and institutions that were part of the 2023 survey but were founded before 2020.

*** The numbers on employees and turnover in the table refer to the companies as a whole. The estimated numbers for employees and turnover specifically related to life science activities within these companies are 2,400 employees and €1.4 bn.

Table 6: Key figures for core suppliers in the biotechnology and pharmaceutical business sector, 2014-2023

2.5 Core Service Providers in the Biotechnology and Pharmaceutical Business Sector

Structure, Employees, Fields of Activity and Turnover

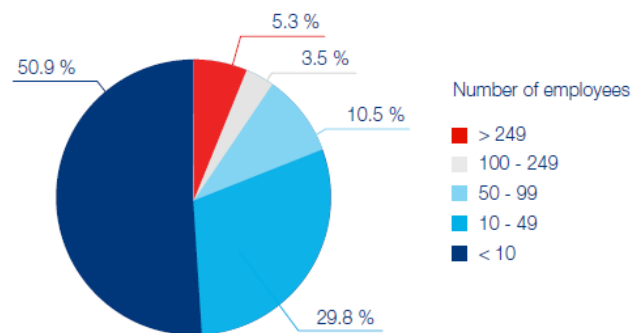
A company assigned to this category provides specific services essential for the development, manufacture, distribution or use of biotechnology and/or pharmaceutical products. Examples include clinical research organisations (CROs), planners of biopharmaceutical facilities or specialised consulting services for pharmaceutical companies. As with the previous category, a distinction is made between “core” and “other” service providers, the latter (not further considered in this report) offer services which are utilised by both life sciences companies as well as companies in other industries. However, while the core service providers deliver specific services tailored for the life sciences sector, they may also offer services to companies outside the life sciences sector.

Very diverse companies

This sample includes one large company with more employees than all the other companies combined. However, only two of its about 20 business activities are related to the life sciences. Due to this, and the presence of a few other large companies, there is a stark difference between the total numbers of employees and turnover and the proportion originating from life sciences in this category. Based on estimates from the survey and

additional research, the life-sciences-related figures are much smaller, with approximately 1,510 employees (corresponding to 28%) and a total turnover of €963 million (30%).

Several companies have been added to this category as can be seen in Table 7. As the aforementioned large company reduced its number of employees, the total growth rate for the category is negative and equals -8%. However, turnover has grown positively at 10%. While three companies have 250 or more employees, about 51% of the companies in this sample are small with fewer than ten employees as shown in Figure 10. Furthermore, 11 companies were newly founded since 2021 and two are identified as university spin-offs, illustrating that some of these companies are R&D intensive.



Number of observations: 57.

Figure 10: Numbers of employees of core service providers in the biotechnology and pharmaceutical business sector in 2023



	2014*	2017*	2020*	2020**	2023***
Number of core service providers in biotechnology and pharmaceuticals	26	38	40	60	61
Number of employees of core service providers in biotechnology and pharmaceuticals	870	690	760	5,853	5,408
Turnover of core service providers in biotechnology and pharmaceuticals (€ m)	103	100	118	2,900	3,204

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 were derived by accounting for changes in the method and including companies and institutions that were part of the 2023 survey but were founded before 2020.

*** The numbers on employees and turnover in the table refer to the companies as a whole. The estimated numbers for employees and turnover specifically related to life science activities within these companies are 1,500 employees and €1.0 bn.

Table 7: Key figures for core service providers in the biotechnology and pharmaceutical business sector, 2014-2023

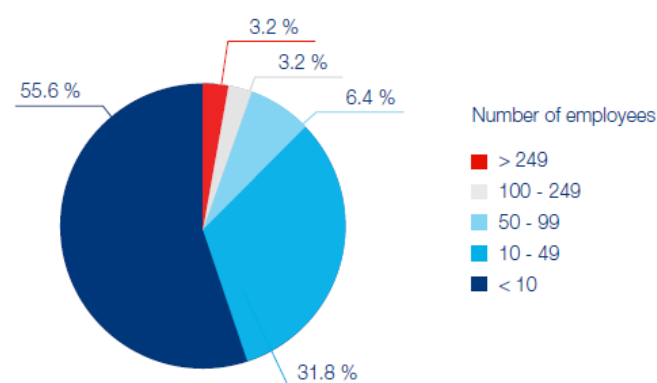
2.6 Core Sales and Distribution Companies in the Biotechnology and Pharmaceutical Business Sector Structure, Employees, Fields of Activity and Turnover

Once a product has been successfully brought to market, sales and distribution become crucial for companies, particularly in the pharmaceutical industry. In this category, companies are included that not only sell or distribute approved biotechnology and/or pharmaceutical products but are also involved in some aspect of their development (e.g., clinical research), typically – but not necessarily – as sales and distribution subsidiaries of globally active companies. Wholesalers with no affiliation to a specific producer and retailers are not considered.

This group includes several rather large companies, some of which are subsidiaries of multinationals, as well as independent companies originating in Austria. Figure 11 shows that almost 56% of the companies in this category are small, with fewer than ten employees. These smaller companies include family businesses operating in niche areas such as animal pharmaceuticals, traditional Asian human medicines, or eye-care products.

Some large subsidiaries and independent companies

A significant number of companies founded before 2020 have been added to this category, increasing the sample size by about one-third compared to 2020 as displayed in Table 8. Sales and distribution companies typically exhibit high turnover per employee. Indeed, in terms of total turnover, this category ranks as the second largest in the current report despite being only the seventh-largest by number of employees. Companies assigned to this category are generally focused on biotechnology and pharmaceutical products, selling few other products. The survey indicates that these activities account for almost 100% of employees and turnover. The aggregate number of employees in existing companies grew by 4% from 2020 to 2023, while turnover increased by 21%



Number of observations: 126.

Figure 11: Numbers of employees of core sales and distribution companies in the biotechnology and pharmaceutical business sector in 2023

	2014*	2017*	2020*	2020**	2023
Number of core sales and distribution companies in biotechnology and pharmaceuticals	111	92	100	133	134
Number of employees of core sales and distribution companies in biotechnology and pharmaceuticals	5,370	3,220	3,480	4,064	4,235
Turnover of core sales and distribution companies in biotechnology and pharmaceuticals (€ bn)	5.22	3.86	4.00	6.20	7.50

* Numbers as published in the Report 2021.

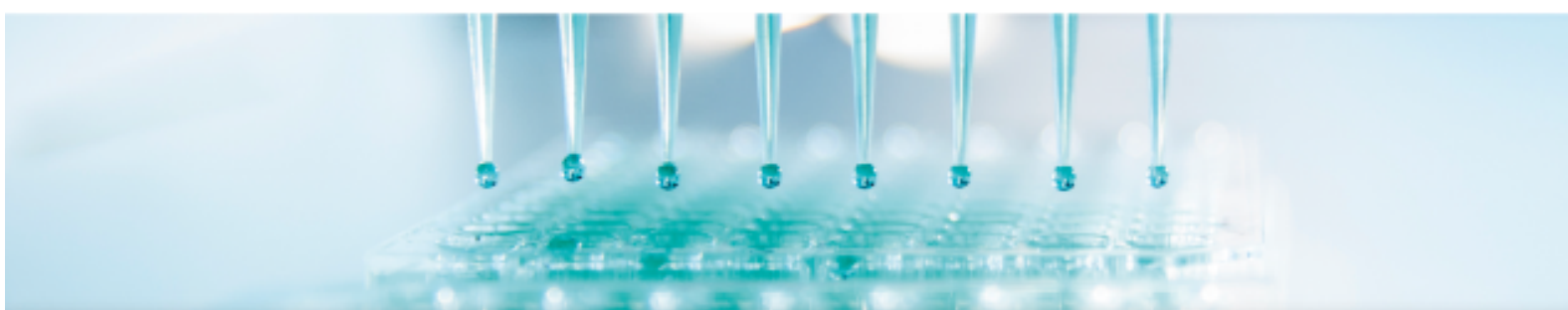
** Estimated numbers for 2020 were derived by accounting for changes in the method and including companies and institutions that were part of the 2023 survey but were founded before 2020.

Table 8: Key figures for core sales and distribution companies in the biotechnology and pharmaceutical business sector, 2014-2023

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3. Medical Device Business Sector in Austria

Overview

Medical devices and related technologies have always been a strong part of the life science industries in Austria. The fields of activity in this sector are highly diverse, medical device companies can be found in each specialised field of health care. The medical device business sector encompasses the development, manufacturing, sales and distribution of medical products, including supplies and services necessary for production. Within research, development, manufacturing companies, there is a further distinction between dedicated medical device companies and other companies active in medical devices. Similar to biotechnology companies, medical device companies primarily focus on the development and/or manufacturing of medical products, whereas for the latter, medical devices represent just one of several business segments.

Favourable development

By various measures, this segment has developed favourably since the last report. From 2021 to 2023, no fewer than 56 companies were founded in Austria, bringing the total to 642 (after accounting for 49 companies that ceased operations). Due to the inclusion of companies established before 2020 but not covered in the last report, especially in the field of supply, service and sales, not only has the total number of companies increased, but so have employee numbers and turnover. For this reason, Table 9 also provides estimates for 2020 that incorporate these additional companies. New market

entries were particularly prominent in research, development, and manufacturing with 32 new companies (while 17 exited). Although the supply, services, and sales companies also saw a notable 24 market entries, 30 companies left the market, resulting in a slight decline in the total number of companies.

When comparing Table 9 to Table 2 it becomes apparent that in total the medical device business sector is smaller than the biotechnological and pharmaceutical business sector despite consisting of more companies. A closer look reveals that research, development, manufacturing companies employ 10,316 people while in biotechnological and pharmaceuticals the number is 27,233. In contrast, the number of employees in supply, services, sales is larger, 20,822 in comparison to 15,065, respectively.

The COVID-19 pandemic has led to a surge in sales, which may explain why turnover among research, development, and manufacturing companies operating in both years – particularly dedicated medical device companies – declined slightly. Nevertheless, when considering all categories, total turnover increased by 9%, and total employment rose significantly by 15% from 2020 to 2023. Other statistics also highlight the segment's growth: The Statistics Austria's Survey on Research and Experimental Development (R&D) reports that companies classified in the ÖNACE catalogue as "manufacture of medical and dental instruments and supplies" increased their R&D expenditure by an impressive 28.7% from 2019 to 2021.

	2014*	2017*	2020*	2020**	2023
Number of companies in the medical device business sector	487	554	577	633	642
Research, development, manufacturing companies	132	171	199	212	227
Supply, services, sales companies	355	383	378	421	415
Number of employees in the medical device business sector	25,160	26,630	28,420	27,296	31,138
Employees in research, development, manufacturing companies	7,200	8,760	9,650	8,967	10,316
Employees in supply, services, sales companies	17,960	17,870	18,770	18,329	20,822
Turnover in the medical device business sector (€ bn)	7.46	8.44	9.03	10.23	11.06
Turnover of research, development, manufacturing companies (€ bn)	2.32	2.69	2.92	2.87	2.82
Turnover of supply, services, sales companies (€ bn)	5.14	5.75	6.11	7.36	8.24

* Numbers as published in the Report 2021.

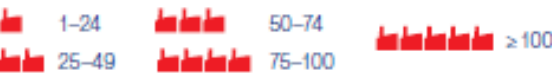
** Estimated numbers for 2020, accounting for changes in the method as well as companies and institutions additionally included in the 2023 survey that were founded before 2020.

Table 9: Key figures for the medical device business sector, 2014-2023

Map of the Medical Device Business Sector

Distributed According to Federal States

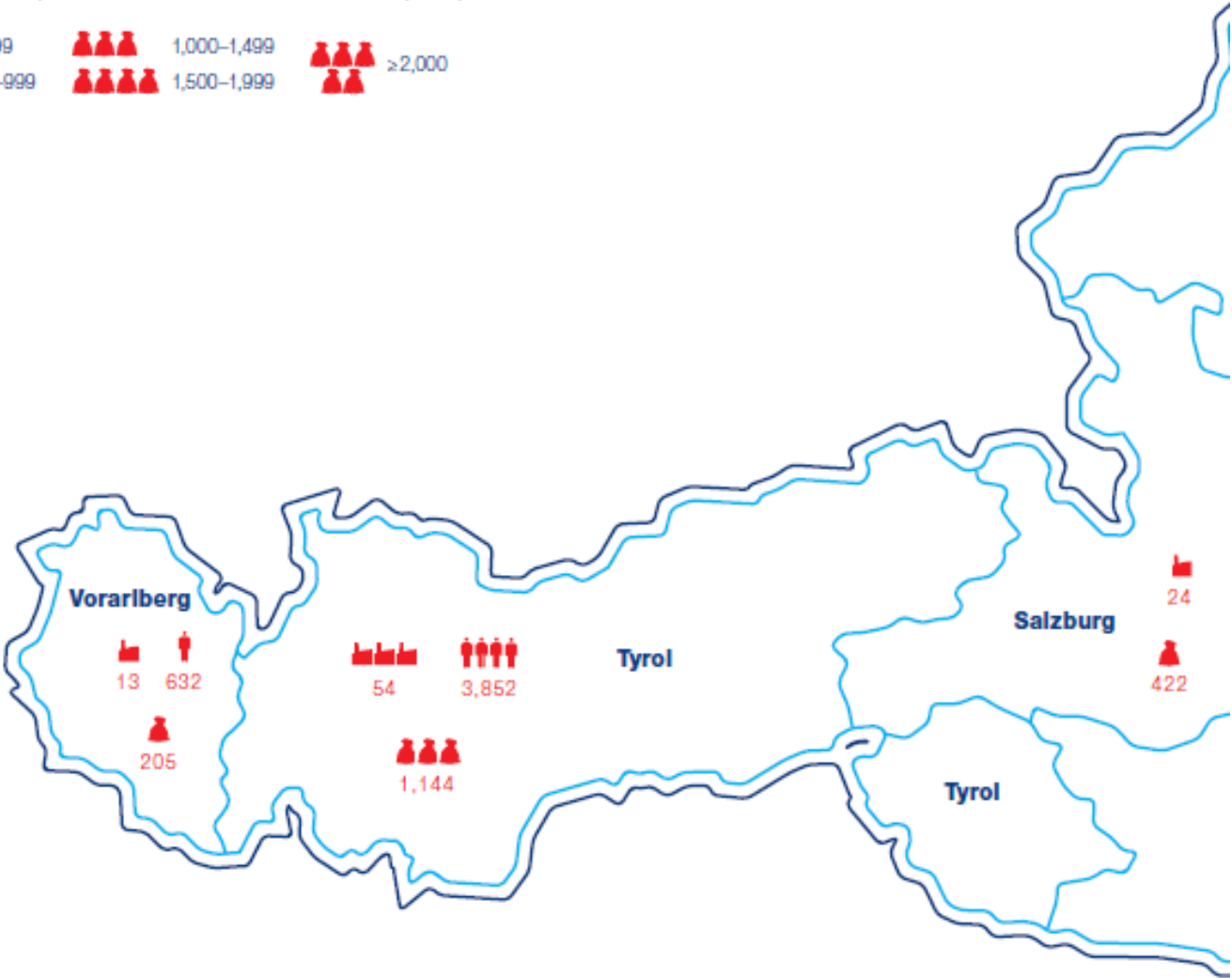
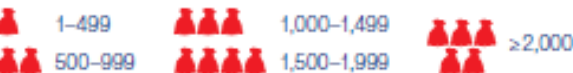
Number of companies in the medical device business sector

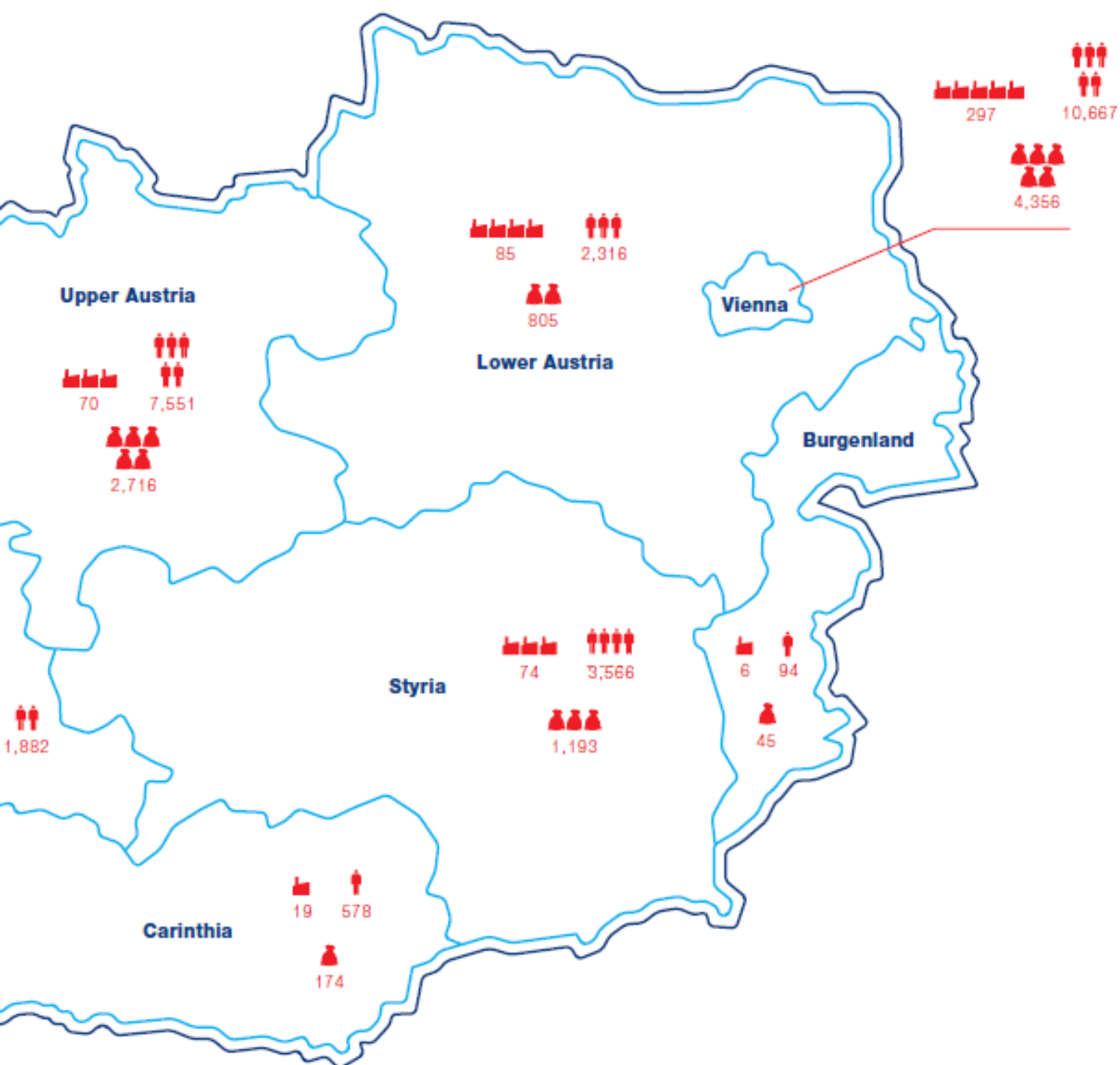


Number of employees in the medical device business sector



Turnover of companies in the medical device business sector (in € m)





3.1 Dedicated Medical Device Companies

Structure, Employees and Turnover

A dedicated medical device company is one whose predominant activity involves the development and/or manufacturing of medical products.⁷ With the number of companies reaching almost 200 by 2023, this category is not only growing in size but also expanding in other ways. It is characterised by a mix of large companies and start-ups, as well as high rates of market entry and exit: 26 companies were founded from 2021 to 2023, while 16 ceased operations.

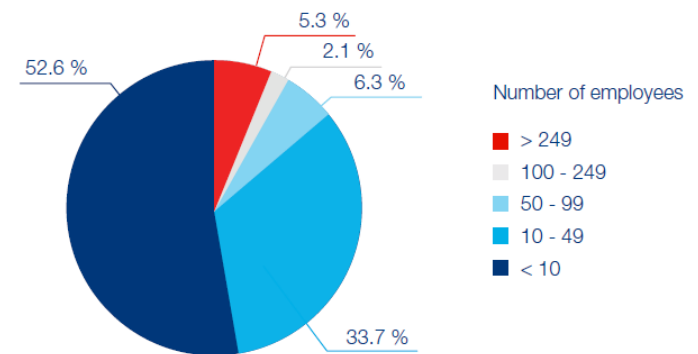
Knowledge-intensive and steadily growing

As shown in Figure 12, over 52% of the companies have fewer than ten employees. This is unsurprising given the category's attractiveness for new companies and its high R&D intensity. Indeed, 15 of the 199 companies are identified as university spin-offs, companies which transfer knowledge and scientific advances from universities into commercial applications. These spin-offs engage in activities such as AI-based medical diagnostics, the development of heart medical devices, cardiac simulation, or software applications for diagnostics.

Table 10 shows that while the total number of employees has increased from 7,666 to 8,940, the overall turnover has declined slightly. This is likely due to the exceptional reference year 2020, shaped by the COVID-19 pandemic and the resulting surge in sales of medical devices. Despite the pandemic, dedicated medical device companies tend to be larger on average than their biotechnological counterparts, despite a similar number of companies. However, R&D expenditures and risk capital investments are comparatively lower, though they have grown

considerably over the years. In fact, 27% of respondents to the question on private capital reported receiving funding from 2021 to 2023.

The tendency to geographical clustering is less pronounced than in the case of dedicated biotechnology companies: The 79 dedicated medical device companies based in Vienna represent almost two-fifths of all companies, whereas in the case of dedicated biotechnology companies that share is way above three-fifths. More than half of the dedicated medical device companies are in Lower Austria, Styria, Tyrol, or Upper Austria, with each of these federal states hosting 20 to 29 companies.



Number of observations: 190.

Figure 12: Numbers of employees of dedicated medical device companies in 2023

	2014*	2017*	2020*	2020**	2023
Number of dedicated medical device companies	124	164	191	189	199
Number of employees in dedicated medical device companies	5,980	7,790	8,680	7,666	8,940
Turnover of dedicated medical device companies (€ bn)	1.31	1.77	1.94	2.67	2.59
R&D expenditure of dedicated medical device companies (€ m)	128.7	156.6	174.7	n.a.	221.2

* Numbers as published in the Report 2021.

** Estimated numbers for 2020, accounting for changes in the method as well as companies and institutions additionally included in the 2023 survey that were founded before 2020.

Table 10: Key figures for dedicated medical device companies, 2014-2023

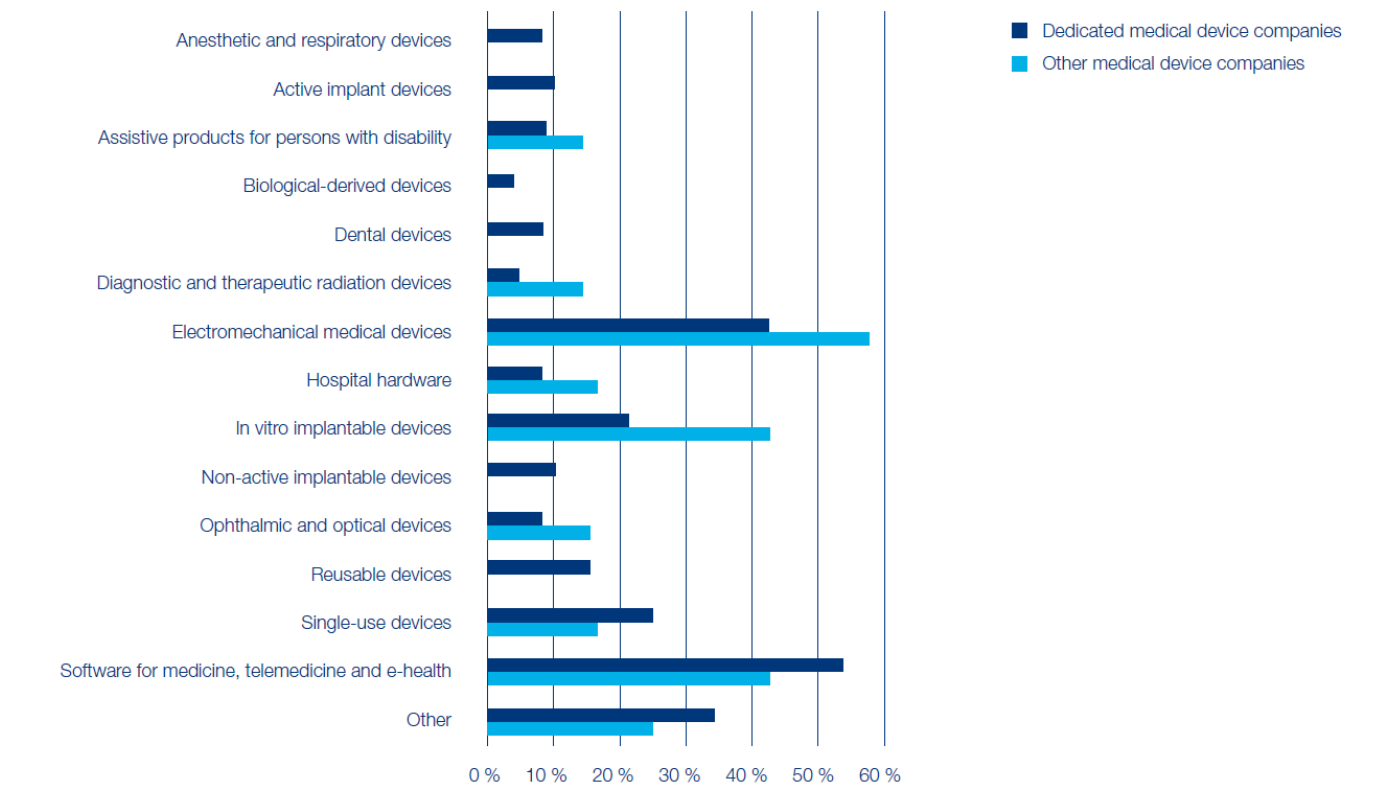
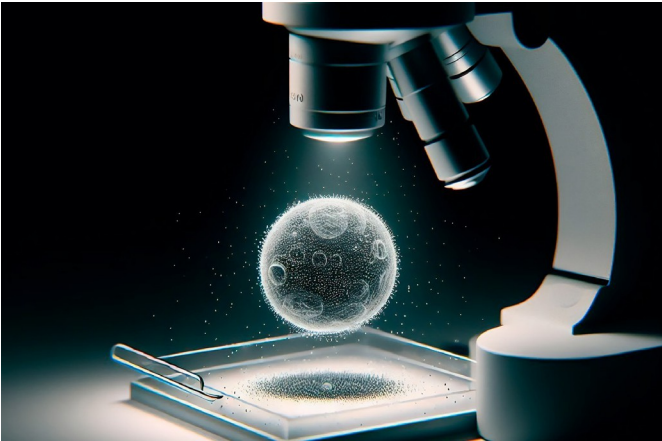
⁷ These products include, as defined by the Global Medical Device Nomenclature, any instrument, apparatus, appliance, material or other article, whether used alone or in combination, including the software necessary for its proper application, intended to be used for human beings for the purpose of diagnosis, prevention, monitoring, treatment or alleviation of disease, injury or handicap.

3.1 Dedicated Medical Device Companies

Fields of Activity

The fields of activity in the medical device sector encompass a wide range of areas, from medical instruments to software, including e-health, as well as CT scanners. In the survey conducted, companies were asked about each of the activities shown in Figure 13 and whether they were active in these fields or engaged in R&D or manufacturing. Figure 13 also includes responses from other companies active in medical devices, although the sample size for this group is too small to draw reliable conclusions. Therefore, these will not be compared in the following discussion.

As shown in the figure, the two most common areas of activity among companies are software for medicine, telemedicine and e-health and electromechanical medical devices. The respective shares of these two activities are significantly higher than of other activity.



Number of observations: dedicated medical device companies: 51; other companies active in medical devices: 7.

Figure 13: Main areas of activity of medical device companies, 2023 (multiple answers possible, figures in percent)

3.1 Dedicated Medical Device Companies

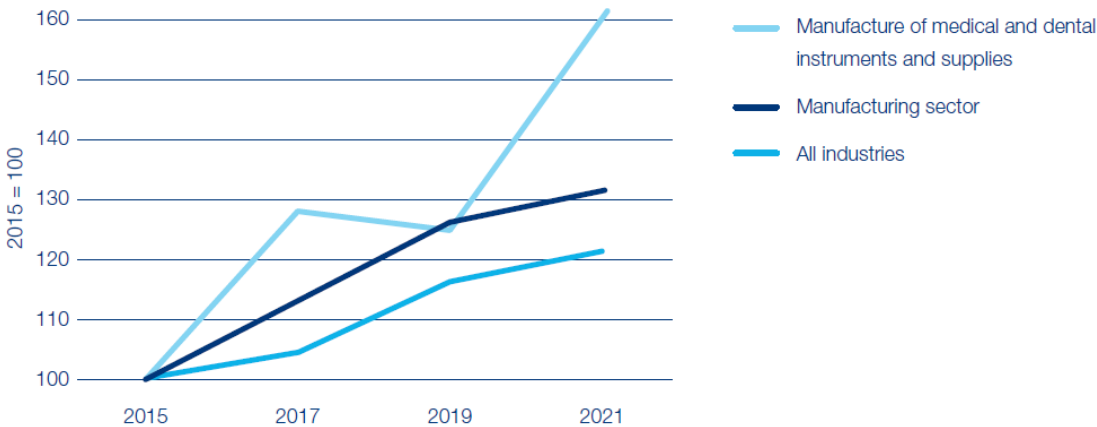
Expenditure and Financing

Dedicated medical device companies stand out from the other categories in this report with their increase in R&D spending and funding. Furthermore, it is evident that these companies have received significant funding since 2020. According to the survey, 28% of companies engaged in R&D and manufacturing have received private capital between 2021 and 2023.

As mentioned above, 26 of the 199 companies in this category were founded between 2021 and 2023. Furthermore, this category includes a considerable number of university spin-offs, in fact 15. They develop and produce a wide range of devices, including imaging systems for the musculoskeletal system, tomographic imaging, blood value monitoring and cardiovascular monitoring.

The industry's R&D intensity and innovativeness are evident in the official R&D statistics. Figure 14 provides an overview: in nominal terms, total R&D expenditure in Austria's business

enterprise sector increased by 21% from 2015 to 2021. In the manufacturing sector, it rose by 31% over the same period. In the industry classified as the "manufacture of medical and dental instruments and supplies" R&D expenditure increased by 61%, i.e. almost three times the rate of all Austrian companies combined and nearly twice the rate of the entire manufacturing sector. From 2019 to 2021 it increased by almost 29%. It is important to note that the "dedicated medical device companies" category is not identical to the industry classification "manufacture of medical and dental instruments and supplies", as the former also includes companies categorised under various industries such as "computer programming, consultancy, and related activities", "retail sale of medical and orthopaedic goods in specialised stores" or "scientific research and development". Furthermore, Figure 14 demonstrates that Austrian companies active in medical device manufacturing are among those experiencing the highest increases in R&D intensity.



Source: Statistics Austria, R&D survey 2021.

Figure 14: R&D expenditure in the business enterprise sector by industry classifications, 2015-2021; 2015 = 100

3.2 Other Companies Active in the Medical Device Business Sector

Structure, Employees, Fields of Activity and Turnover

The medical device segment includes companies which produce medical devices while primarily operating in non-medical technology fields. Although this is the smallest category in this report, it is 3.5 times larger than in the previous report, which included eight companies. One reason for this expansion is that six companies have been established, while only one has ceased operation. Secondly, there has been a rise in the number of companies due to the recategorisation of companies, including some quite large ones. Companies in this category conduct research in fields such as brain activity and non-pharmaceutical treatments of mental-health-disorders or produce precision devices for use in surgery and dental treatments.

Changes in the sample

In particular, one company that mainly produces consumer goods and sold its medical device division is no longer included in this category, while another large company that produces medical devices, among other products, has now been included. Given the inherent diversity of companies in this group, Table 11 differentiates between total employee and turnover figures and those specifically related to life sciences. In fact, the overall figures are much higher, mainly due to the presence of a large company that is only partially involved in medical products. Due to changes in the sample the turnover in this category is not comparable with previous reports.

Steady growth of companies

These companies complement dedicated medical device companies and share similar characteristics, albeit on a smaller scale. For example, the proportion of companies identified as university spin-offs is almost identical – 15 out of 199 in the previous category, compared with two out of 28 here. Interestingly, the size structure is also comparable, as illustrated in Figure 15: 57% of the companies have fewer than ten employees, almost 36% have 10 to 49 employees, slightly more than 7% have 100 or more employees. Table 11 shows that the existing companies demonstrate a steady growth in both numbers of employees and turnover.

Some of these medical device companies are also attractive to risk capital investors. These companies develop technologies such as scintillators or medical devices related to brain activity. Overall, these factors highlight the importance of these companies to the Austrian life sciences sector and its growth.

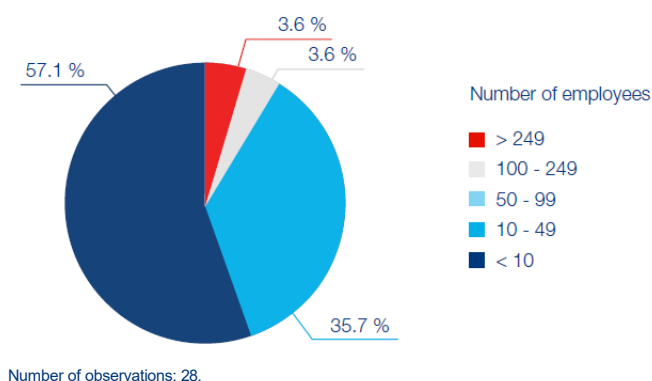


Figure 15: Numbers of employees in other companies active in medical devices in 2023

	2014*	2017*	2020*	2020**	2023
Number of other companies active in medical devices	8	7	8	23	28
Number of employees in other companies active in medical devices	1,220	970	970	1,301	1,376
Number of employees in medical device-related areas of other companies active in medical devices	800	750	770	359	380
Turnover of other companies active in medical devices (€ m)	1,010	918	983	197	233
Turnover in medical device-related areas of other companies active in medical devices (€ m)	475	356	475	71	84

* Numbers as published in the Report 2021.

** Estimated numbers for 2020, accounting for changes in the method as well as companies and institutions additionally included in the 2023 survey that were founded before 2020.

Table 11: Key figures for other companies active in the medical device business sector, 2014-2023

3.3 Core Suppliers in the Medical Device Business Sector

Structure, Employees, Fields of Activity and Turnover

The companies in this category are manufacturers of products specifically developed or designed for use in the development, production or distribution of medical technology products. They should be distinguished from companies that supply medical device companies with products that are also used in other industries, with the latter not being included in this report. The companies covered here are specialised companies, such as producers of medical models or medical supply systems, as well as companies for which the medical device division is one of several fields of activity. This category is growing rapidly, with almost one in eight companies having been founded from 2021 to 2023.

Additionally, approximately 28% have up to 99 employees. As displayed in Table 12, growth is quite robust, and, in terms of both the number of employees and turnover, this category is slightly larger than dedicated medical device companies. However, since many of these, especially the larger companies, supply a broad range of industries, only a fraction of their employees and turnover are related to life sciences. Based on the survey, the estimated shares are about one-fifth.

Highly specialised, R&D-intensive firms

Companies supplying medical device companies are often highly specialised and R&D intensive. Nearly one in ten companies in this category originated in the university system, producing items such as specific sensors, and many of them utilise AI for their product developments and designs. The category also includes established, in some cases quite large companies that supply electronics or provide applications and processes for sterilisation.

As shown in Figure 16, some of these companies are quite large. About 39% of the companies have more than 250 employees, while nearly 19% have up to 249 employees.

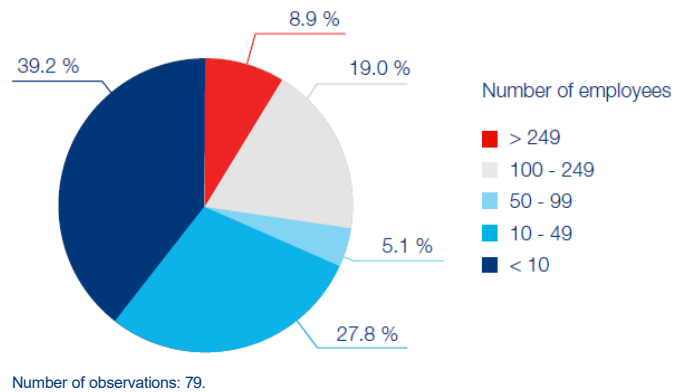


Figure 16: Numbers of employees of core suppliers in the medical device business sector in 2023

	2014*	2017*	2020*	2020**	2023***
Number of core suppliers in medical devices	56	58	60	76	82
Number of employees of core suppliers in medical devices	10,090	9,200	10,120	9,172	10,242
Turnover of core suppliers in medical devices (€ bn)	2.49	2.88	3.05	2.59	3.16

* Numbers as published in the Report 2021.

** Estimated numbers for 2020, accounting for changes in the method as well as companies and institutions additionally included in the 2023 survey that were founded before 2020.

*** The numbers of employees and turnover in the table refer to the companies as a whole. The estimated numbers for employees and turnover specifically related to life science activities within these companies are 2,600 employees and €0.9 bn.

Table 12: Key figures for core suppliers in the medical device business sector, 2014-2023

3.4 Core Service Providers in the Medical Device Business Sector

Structure, Employees, Fields of Activity and Turnover

This category consists of companies providing specific services necessary for the development, manufacture, distribution or use of medical device products. This includes IT services, with exactly one-third of all companies officially assigned to this industry. Companies classified under wholesale and retail trade are also closely related to IT, for example, by offering software and consulting services specifically for medical device companies. In contrast, companies providing services that are demanded by life sciences companies as well as other companies are not considered here.

Three large and many small companies

The size structure as shown in Figure 17 reveals that almost 89% of the companies have fewer than 50 employees, and three large companies are also included. These large companies have a significant impact on the statistics provided in Table 13: two of these large companies operate across multiple fields, the estimated share of activities in the life sciences for the entire category is about two-fifths and one of these large companies has grown exceptionally fast since 2020.

The smaller firms provide a broad range of services such as regulatory consulting services, services for hospitals, and consulting for medical professionals. The category also includes providers of essential services such as laboratory diagnostics. Additionally, the category includes two spin-offs, both of which develop software.

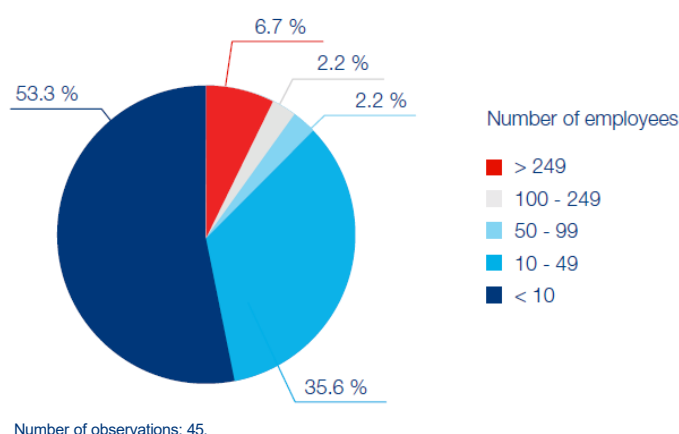


Figure 17: Numbers of employees of core service providers in the medical device business sector in 2023

	2014*	2017*	2020*	2020**	2023***
Number of core service providers in medical devices	22	32	35	46	48
Number of employees of core service providers in medical devices	2,280	2,780	2,520	2,157	3,331
Turnover of core service providers in medical devices (€ m)	315.5	355.0	394.9	989	1.031

* Numbers as published in the Report 2021.

** Estimated numbers for 2020, accounting for changes in the method as well as companies and institutions additionally included in the 2023 survey that were founded before 2020.

*** The numbers of employees and turnover in the table refer to the companies as a whole. The estimated numbers for employees and turnover specifically related to life science activities within these companies are 1,400 employees and €0.4 bn.

Table 13: Key figures for core service providers in the medical device business sector, 2014-2023

3.5 Core Sales and Distribution Companies in the Medical Device Business Sector

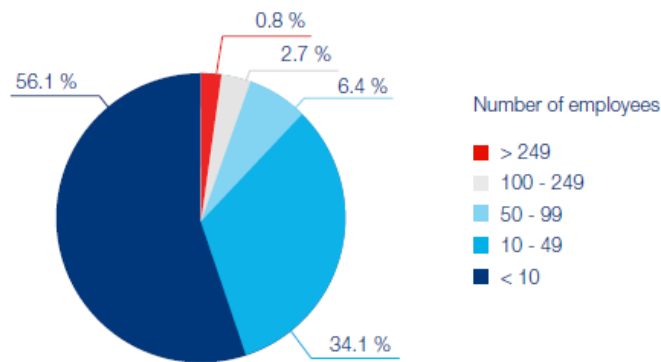
Structure, Employees, and Turnover

A company included in this category not only sells or distributes approved medical devices but is also in some form involved in the respective development, typically, but not necessarily, as a distributor of a foreign company. Austria's enviable location at the geographic heart of Europe makes the country attractive for globally active enterprises. In fact, the two largest companies in this category are subsidiaries of multinational corporations. Customers include hospitals, medical practitioners, and pharmacies.

Many companies, stable demand

By the number of companies, this category is the largest with 285 companies included, which corresponds to almost one-quarter of all Austrian life sciences companies. The category is a mix of subsidiaries of multinational corporations aiming to penetrate the Austrian market, alongside established Austrian companies specialising in specific products or regions, or both. Due to the inclusion of some companies founded before 2020, the category is slightly larger than in 2020 but perhaps quite interestingly, when considering these additions, the number of companies has decreased since 2017, as shown in Table 14.

The size distribution as displayed in Figure 18 shows that more than 90% of the companies have less than 50 employees. Growth figures are moderate, suggesting a stable market. Most companies are predominantly active in life-science-related activities, with the respective share amounting to about three-quarters.



Number of observations: 264.

Figure 18: Numbers of employees of core sales and distribution companies in the medical device business sector in 2023

	2014*	2017*	2020*	2020**	2023***
Number of core sales and distribution companies in medical devices	277	293	283	299	285
Number of employees of core sales and distribution companies in medical devices	5,590	5,890	6,130	6,999	7,249
Turnover of core sales and distribution companies in medical devices (€ bn)	2.33	2.52	2.66	3.78	4.06

* Numbers as published in the Report 2021.
 ** Estimated numbers for 2020, accounting for changes in the method as well as companies and institutions additionally included in the 2023 survey that were founded before 2020.
 *** The numbers on employees and turnover in the table refer to the companies as a whole. The estimated numbers for employees and turnover specifically related to life science activities within these companies are 5,400 and €3.0 bn.

Table 14: Key figures for core sales and distribution companies in the medical device business sector, 2014-2023

4. Research and Education Institutions Active in Life Sciences Overview

By several measures not just companies but also research and education organisations in Austria are expanding, as illustrated by the numbers in Table 15.

Growing number of students

Universities and especially universities of applied sciences are attracting an ever-increasing number of students. According to uni:data, a database provided by the Federal Ministry for Women, Science and Research, the number of students enlisted in life-science-related fields has increased from 62,130 in the winter semester 2020 to 68,340 three years later, corresponding to an increase of 10%. Although most of Austria's life science students are enrolled at public universities, private universities and universities of applied sciences are becoming increasingly important in Austria's life science education system.

More than 15,000 academic publications

As also shown by Table 15 the number of published scientific papers in 2023 was also higher than in 2020, although only slightly so. 15,696 academic publications demonstrate the scientific output of Austrian life science research. Due to changes in the method the other 2023 numbers are not directly comparable to 2020.

56 major research and education institutions

In the following sections, research institutions with a clear focus on life sciences are included in the following three categories: universities (including public and private universities), universities of applied sciences, and non-university research institutions. An organisation is included if it conducts research in the fields of life sciences, has a visible corresponding output such as students or publications and life sciences are a major part of its portfolio of activities. Organisations are not included if, despite conducting research, it is not considered a core aspect of their purpose (e.g., zoos) or if they lack a visible research output (e.g., measurement stations). A complete list of the considered institutions is provided in Section 7.

	2014*	2017*	2020*	2020**	2023
Number of research and education institutions active in life sciences	55	55	55	55	56
Number of life science employees	19,830	21,145	24,294	n.a.	24,294
Number of life science employees in R&D	11,229	12,271	15,262	n.a.	15,648
Number of life science students	59,166	67,218	77,366	62,130	68,340
Total life science budget of research and education institutions (€ bn)	1.44	1.55	1.61	n.a.	1.91
Third-party funding for research and teaching institutions in life sciences (€ m)	385.6	412.2	457.2	n.a.	566.5
Number of peer-reviewed academic publications in life sciences	8,779	9,363	15,169	15,089	15,696

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 by considering changes in the method.

Table 15: Key figures for research and education institutions active in life sciences, 2014-2023

Map of the Research and Education Institutions Active in Life Sciences in Austria

Distributed According to Federal States

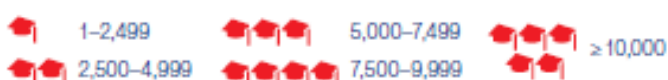
Number of research and education institutions active in life sciences



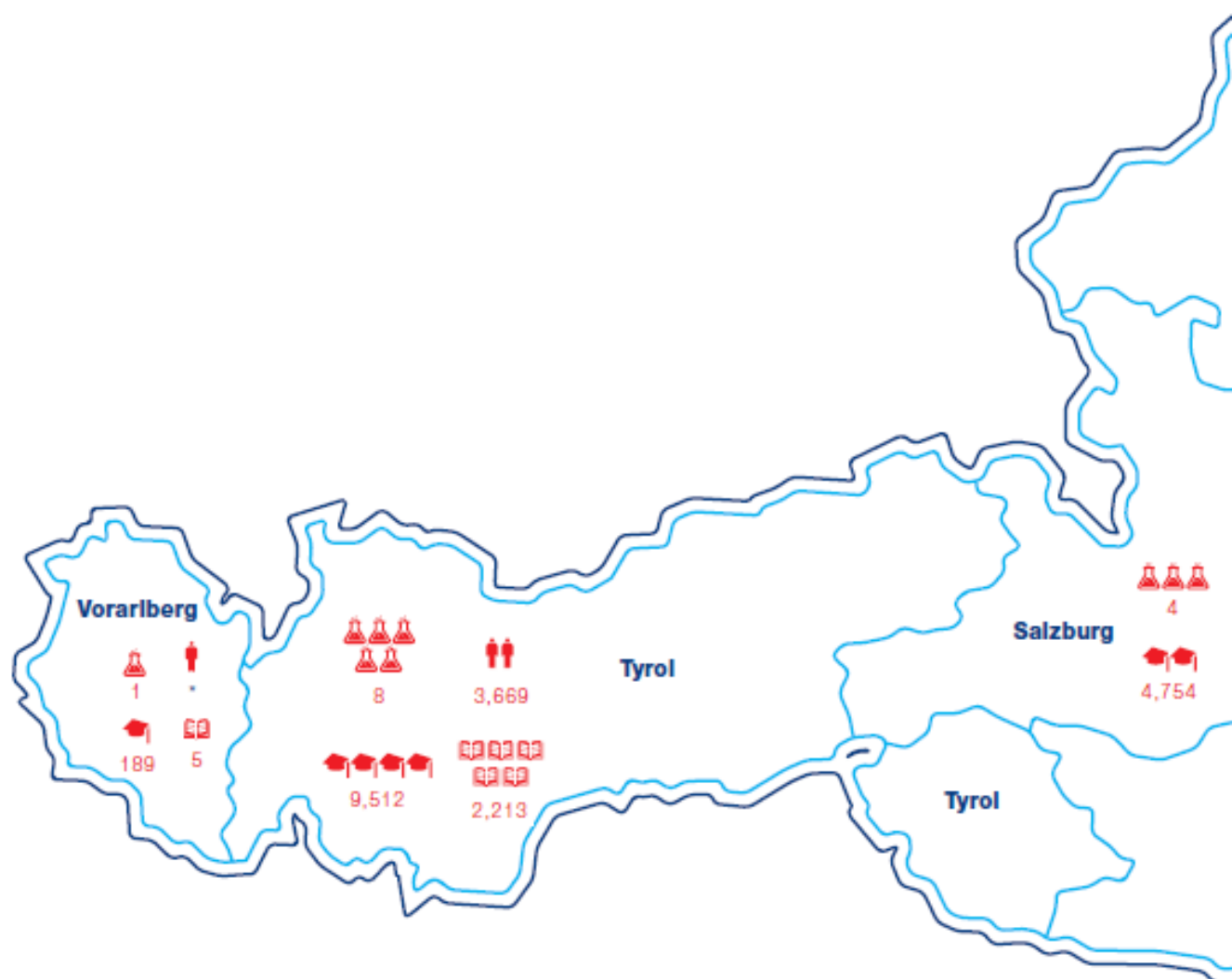
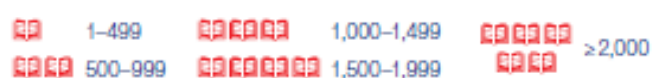
Number of life science employees*

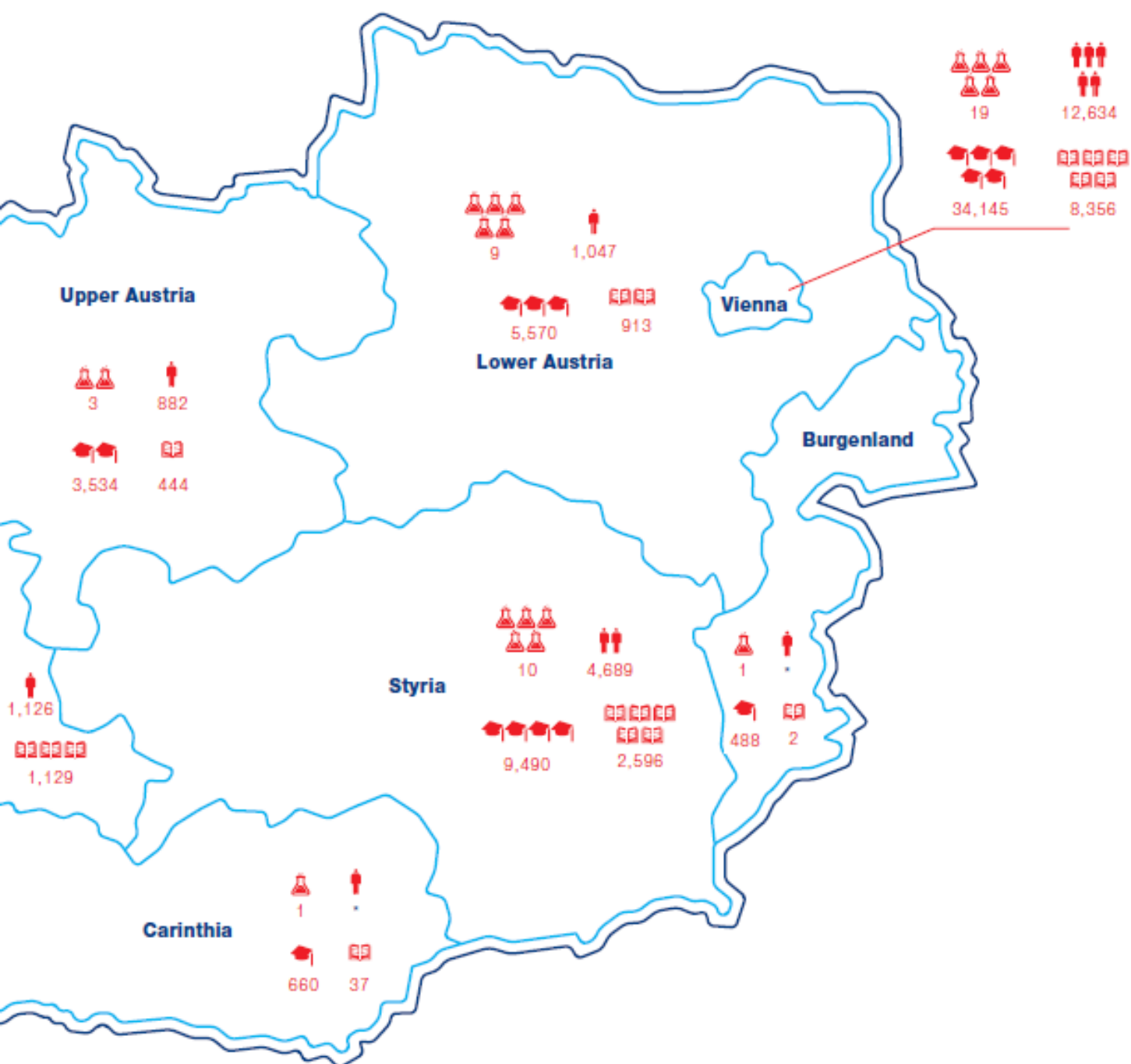


Number of life science students



Number of peer-reviewed academic publications in life sciences





4.1 Universities

Focus Areas, Employees, Students, Budget and Publications

Power houses of life sciences and R&D

Austria is home to several universities which specialise in human medicine. The largest, based on employee headcounts, are the Medical University of Vienna, the Medical University of Graz and the Medical University of Innsbruck. According to our survey, these three universities together employ 11,612 people in life sciences, of whom 7,592 are engaged in R&D. Two additional universities employ more than 1,000 persons in life sciences: the University of Veterinary Medicine in Vienna and the University of Vienna.

Rising role of private universities

All of the above-mentioned universities are public universities, meaning that they belong to the public sector. In recent years, private medical universities in Austria have expanded and now account for a considerable share of students. From 2014 to 2023 the proportion of life sciences students enrolled at private universities has nearly doubled, when considering degree students only ("ordentlich Studierende") rising from 10% to 19%. When also including other students, particularly those enrolled in advanced training courses ("außerordentlich Studierende"), the respective share increased from 12% to 24%.

Life science education expands

Table 16 shows that the total number of students, including those attending advanced training courses, has grown from 52,053 to 56,123 since 2020. The first figure differs from the one in the last report, as they now refer to uni:data, a database provided by the Federal Ministry for Women, Science and Research. The figures represent the total number of students officially registered in fields classified as life sciences in the winter semester 2023.

A boost in research output

The majority of scientific publications in life sciences originates from Austria's universities. The number of such publications increased from 13,578 in 2020 to 13,817 in 2023, as shown in Table 16.



	2014*	2017*	2020*	2020**	2023
Number of universities active in life sciences	17	17	17	n.a.	18
Number of life science employees	16,879	18,068	21,109	n.a.	19,711
Number of life science employees in R&D	9,075	10,246	13,095	n.a.	12,427
Number of life science students	54,196	60,222	67,622	52,053	56,123
Total life science budget of universities (€ bn)	1.18	1.30	1.30	n.a.	1.34
Third-party funding for universities in life sciences (€ m)	270.3	301.9	322.6	n.a.	343.3
Number of peer-reviewed academic publications in life sciences	7,826	8,481	14,162	13,578	13,817

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 by considering changes in the method.

Table 16: Key figures for universities active in life sciences, 2014-2023

4.2 Universities of Applied Sciences

Focus Areas, Employees, Students, Budget and Publications

In 2024, Austria celebrated 30 years of universities of applied sciences. Starting with ten study programmes, they have continuously expanded and are now considered an integral part of the education system. They specialise in combining education with practical application and, as such, serve as important partners of the society and the economy. Some of the studies are specifically designed for part-time students, enabling them to combine practical work with education.

Rapid growth of students

Of Austria's 21 universities of applied sciences, 14 are active in life sciences. Unlike traditional universities at least one university of applied sciences active in life sciences is present in each federal state, thereby improving access to tertiary life science education in remote regions. Austria's universities of applied sciences are expanding overall, with particular growth in life sciences: From 2014 to 2023, the number of life sciences students has more than doubled, rising from 5,660 to 12,218. Table 17 shows that in the three years from 2020 to 2023 this number has increased by 21%. As with universities, these figures are sourced from uni:data provided by the Federal Ministry for Women, Science and Research.

Growing research impact

Table 17 also shows that although the number of scientific publications from universities of applied sciences remains relatively low compared to traditional universities, it more than doubled from 2020 to 2023, increasing from 144 to 299. This rise highlights the increasing role of these institutions not just as centres of education but also as contributors to research.



	2014*	2017*	2020*	2020**	2023
Number of universities of applied sciences active in life sciences	13	13	13	n.a.	14
Number of life science employees	398	621	936	n.a.	1,288
Number of life science employees in R&D	166	268	341	n.a.	709
Number of life science students	4,970	6,996	9,737	10,077	12,218
Total life science budget of universities of applied sciences active (€ m)	26.2	26.6	51.3	n.a.	85.2
Third-party funding for universities of applied sciences active in life sciences (€ m)	12.7	7.34	13.9	n.a.	27.0
Number of peer-reviewed academic publications in life sciences	75	57	161	144	299

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 by considering changes in the method.

Table 17: Key figures for universities of applied sciences active in life sciences, 2014-2023

4.3 Non-University Research Institutions

Focus Areas, Employees, Budget and Publications

Non-university research institutions play an integral and indispensable role in life sciences research in Austria.

Pillars of Austria's Life Sciences

As of 2023, they employ almost 3,300 persons in life sciences, of whom over 2,500 are engaged in R&D. Unsurprisingly, the proportion of third-party funded R&D is relatively high, exceeding 40%. Major institutions include the Institute of Molecular Biotechnology (IMBA), the Gregor Mendel Institute of Molecular Plant Biology (GMI), and the Research Center for Molecular Medicine (CeMM), all of which are founded by the Austrian Academy of Sciences (OeAW). Other major entities are the non-profit Research Institute of Molecular Pathology (IMP), the Institute of Science and Technology Austria (ISTA), and the Austrian Institute of Technology (AIT).

This category has been restructured to reflect organisational changes, incorporating some organisations that were previously not considered, while excluding others that no longer conduct life sciences research. Certain institutions such as zoos or monitoring stations, which do carry out research, have not been included due to their limited visibility in terms of scientific output. A complete list can be found in Section 7.



Significant growth in research output

In absolute numbers, the research output of non-university institutions, as measured by scientific publications, saw the most significant increase from 2020 to 2023, rising from 1,368 to 1,580, as can be seen from Table 18.

	2014*	2017*	2020*	2020**	2023
Number of non-university research institutions active in life sciences	25	25	25	n.a.	24
Number of life science employees	2,553	2,456	2,249	n.a.	3,295
Number of life science employees in R&D	1,988	1,757	1,826	n.a.	2,512
Total life science budget of non-university research institutions (€ m)	234.5	225.4	241.8	n.a.	485.0
Third-party funding of non-university research institutions in life sciences (€ m)	102.6	102.9	120.7	n.a.	196.2
Number of peer-reviewed academic publications in life sciences	878	825	846	1,368	1,580

* Numbers as published in the Report 2021.

** Estimated numbers for 2020 by considering changes in the method.

Table 18: Key figures for non-university research institutions active in life sciences, 2014-2023

5. Applying AI in the Life Sciences

Artificial intelligence (AI) is becoming increasingly important in the life sciences, as it is expected to accelerate research, enhances diagnostics, and enables personalised medicine. AI is transforming areas such as drug discovery, genomics, medical imaging, and biotechnology by processing massive datasets and uncovering patterns beyond human capability.

Integration of AI in core processes

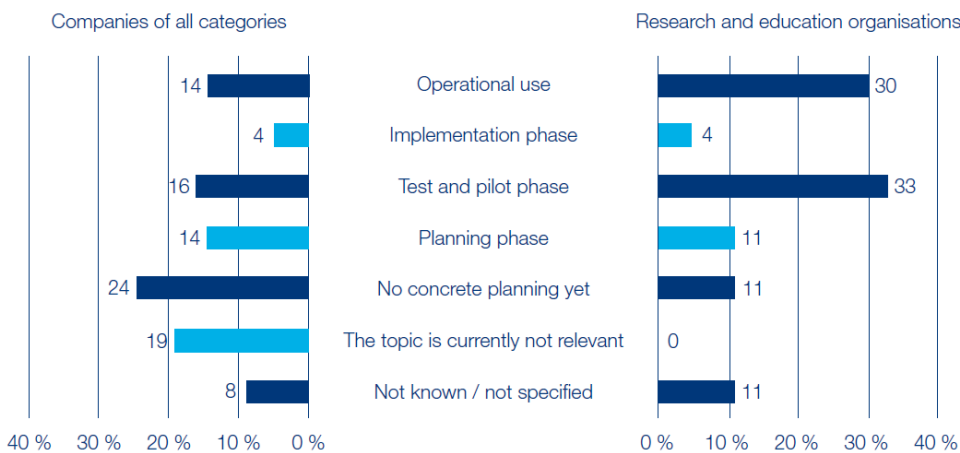
Therefore, the survey also included a question on the integration of AI applications. Companies were asked: “How advanced is the integration of AI applications into your company’s core processes, such as research, development, clinical trials, production, marketing & sales, quality management?” For research and education institutions, the question was phrased as: “How advanced is the integration of AI applications into the core processes of your life sciences research?” The available response options and results are presented in Figure 19.

Research and education institutions at the forefront

As expected, most of the research and education institutions apply AI at various stages, including the test and pilot phase, implementation phase or operational use. Combining these response categories, research and education institutions appear significantly more advanced than companies. While companies vary, the results show no significant differences among different company categories. For instance, 9% of research, development, manufacturing companies in the biotechnology and pharmaceutical business sector reported AI in “operational” use, compared to 20% of supply, service, sales companies in the medical device business sector. However, this difference falls within the margin of measurement. Overall, research and education institutions demonstrate a higher level of AI integration than companies, while variations between different company types are minimal.

Europe’s first biomedical AI institute

In September 2024, the Austrian Academy of Sciences (ÖAW), in collaboration with the Boehringer Ingelheim Foundation, established an institute for biomedical artificial intelligence . The first institute of this kind in Europe, AITHYRA, is dedicated to developing AI-based research approaches for advances in biomedicine. In its own words, it is “building the best place in Europe for stellar AI researchers to work on revolutionary biological problems”.



Numbers of observations: companies: 180, research and education organisations: 27.

Figure 19: Integration of AI applications, 2024, answers in percent

6. Life Sciences in Austria: Summary and Outlook

From nearly every perspective, the years 2021 to 2023 were highly successful for the Austrian life sciences sector, with the following key achievements:

- The number of companies – 1,174 in total – has grown significantly, driven by the establishment of numerous new companies, many of which are spin-offs from universities.
- 532 companies are assigned to the biotechnology and pharmaceutical business sector, 642 to the medical device business sector.
- These companies employ an increasing share of Austria's workforce: As of 2023 they employ 73,437 staff members in total, of which 45,555 are estimated to work in life-science-related areas.
- The companies' turnover in 2023 equalled €39.99 billion, of which €27.07 billion originated in life-science-related areas.
- 58% of employees work in the biotechnology and pharmaceutical business sector, 42% in the medical device business sector. Regarding turnover, the respective shares are 72% and 28%.
- Additionally, the number of organisations involved in academic research is rising. Universities (both public and private), universities of applied sciences and non-university research institutions altogether employ 24,294 staff members in life-science-related areas as of 2023, 15,648 in R&D.
- The number of students in life-science-related fields is growing rapidly, increasing from 62,130 in the winter semester 2020 to 68,340 three years later. The majority are enrolled at public universities, where numbers continue to rise. Moreover, private universities and universities of applied sciences are expanding even more quickly, with their shares of total students steadily increasing.

In terms of research and development, Austria stands out internationally with one of its greatest strengths being the high share of R&D spending relative to GDP – the third highest within the EU. In contrast, Austria's total venture capital investment volume remains low compared to GDP, ranking 14th within the EU. In this context, two facts are worth to be pointed out:

- R&D expenditure of biotechnology as well as medical device companies are high and growing at a fast pace:
 - o According to the survey, the biotechnology companies spent €479.7 million and the medical device companies €221.2 million on R&D in 2023.
 - o According to Statistics Austria, R&D expenditures in the industry "research and experimental development on biotechnology" increased by 28.2% from 2019 to 2021. In the industry "manufacture of medical and dental instruments and supplies" R&D expenditure rose by 28.7%. In comparison, total R&D expenditures in the entire business enterprise sector (encompassing all industries) increased by only 4.1% during the same period.

- Regarding investments, Austrian life sciences companies have performed well: about 30% of dedicated biotechnology companies and dedicated medical device companies reported receiving private capital from 2021 to 2023.

In this context, the European Commission's 2024 annual European Innovation Scoreboard states (p. 135): "The amount of venture capital is a proxy for the relative dynamism of new business creation." Although venture capital and private capital are not identical concepts the figures underscore the perception of Austrian life sciences companies as dynamic businesses. The availability of private capital is a key factor in young companies' ability to commercialise R&D.

Austria's life sciences sector benefits from a strong geographic position. Vienna hosts most companies: of the 1,174 companies considered in this report, 646 are located in Vienna, a key gateway to Europe. 62% of dedicated biotechnology companies and 40% of dedicated medical device companies are located there - emphasising Vienna's role as Austria's scientific centre. Austria's capital also attracts international trade fairs and conferences in the life sciences sector. In 2025, Vienna will host the BIO-Europe conference, expecting more than 6,000 delegates from the biotechnology and pharmaceutical sector.

Life sciences are by no means confined to Vienna. In the biotechnology sector, Styria and Tyrol are particularly noteworthy. Lower Austria's technology hubs in Krems, Tulln, and Wiener Neustadt also show remarkable dynamism, while Upper Austria excels with a robust medical technology industry. Austria is home to six prominent life science clusters across the country that foster activities in science, research, innovation and business. These clusters are coordinated by aws LISA - Life Science Austria with the aim of promoting the country's life sciences sector on the international stage. The six clusters are: ecoplus Lower Austria, Human.Technology Styria, Innovation Salzburg, LISAvienna, Medical Technology Cluster Upper Austria and the Cluster Life Sciences of Standortagentur Tirol.⁸ Together, they foster and strengthen life sciences as an integral part of Austria's innovation ecosystem.

With most indicators trending upwards it is worth noting that Austria is also making strides in cutting-edge fields. Many young companies, including spin-offs, are integrating AI in their developments. The establishment of AlTHYRA in 2024, hosted by the Austrian Academy of Sciences (ÖAW), aims to unite the best of academia, industry, and start-ups, bringing together experts in AI and life science. This initiative will further facilitate the transfer of knowledge from science to commercial application, positioning Austria as a leading hub in life sciences in both academia and business.

⁸) <https://www.lifescienceaustria.at/about-lisa/life-science-austria-lisa>

7. Methods

Definitions and categorisations

In this report, the term “life sciences sector” is used to refer to all companies and research institutions considered as active in life sciences and “industry” to refer to a specific economic activity as classified by NACE. Regarding companies, a further distinction is made between those focused on “research, development, manufacturing” and those engaged in “supply, services, sales”. Companies are included if they operate in the fields of biotechnology as defined by the OECD’s Framework for Biotechnology Statistics, or in medical devices as defined by the Global Medical Device Nomenclature, or if they are active in pharmaceuticals but not classified as biotechnological company. Company registration numbers and their categorisations were provided by aws and the Austrian life science clusters, then identified, verified and supplemented by WPZ Research.

The eleven company categories are disjunctive, meaning that each company and organisation is assigned to one specific category, with definitions being provided in Box 1 on page 48. Each company’s activities were reviewed to ensure accurate categorisation, with adjustments made where necessary. As a result, some companies have been recategorised since the last report. These category changes should be considered when comparing data across reports.

Additionally, further companies and organisations within the life sciences sector were identified and included, contributing to the increased sample size. The number of life sciences companies (categories i to xi in Box 1) rose from 928 to 1,174 (an increase of 26.72%), while the number of research and education institutions remained nearly constant by increasing from 55 to 56 (an increase of 1.81%, see Box 2). New additions include newly established companies since the last report, as well as companies existing before 2021 that were newly identified as active in life sciences. A review of industry codes in the Aurelia database, provided by Bureau van Dijk, identified several relevant companies, including suppliers, small pharmaceutical producers, or medical device distributors. Companies that no longer exist have been removed.



For research and educational institutions, those active in life sciences, such as universities with significant study programmes, were included, while those without relevant contributions to the life sciences sector were excluded. As a result, the segment’s composition changed more than the 1.81% growth figure indicates. A complete list of included institutions can be found in Box 2 on page 49.

The survey

The figures and estimations presented in this report correspond to 2023. Invitations to participate in the online survey were initially sent via e-mail in June 2024 to all companies and organisations classified as in Box 1, including categories xv bis xviii which are not further considered in this report. Three different types of questionnaires were used: one for companies in the biotechnology and pharmaceutical as well as medical device business sectors (categories i to xi), one for research and education institutions (categories xii to xiv), and one for additional companies and organisations solely listed in the Austrian Life Sciences Directory (categories xv to xviii). The questionnaire was available in both English and German. Recipients were reminded to participate via e-mail and phone. The online survey closed on October 1, 2024.

Of the 1,174 companies surveyed, 1,127 (96.00%) were identified in the Aurelia database, provided by Bureau van Dijk. This database includes various company details, such as employee numbers, turnover, address, industry codes (aligned with the Austrian classification ÖNACE 2008), year of foundation, subsidiaries, and shareholders. The Aurelia data on the companies were downloaded and integrated with the original dataset. Subsequently, the data were merged with WPZ Research’s company database, which includes additional details on spin-offs. Finally, the company data were combined with the survey responses to complete the dataset.

Business sectors estimations

For employee and turnover figures, the data in this Report rely on both the survey and the Aurelia database. Employee numbers are available for 1,116 companies, corresponding almost to a total population survey (95.06% of all companies, 99.02% of all identified companies). Turnover figures are available for 622 companies (52.98% of all companies, 55.19% of all identified companies). These figures are combined with the survey’s data on employees and turnover related to biotechnology, pharmaceuticals and medical products to estimate life-science-related activities.

The total employee figures in this report correspond to the data from the Aurelia database. To compensate for companies that were either not identified or had missing employee numbers, the employee figures for each category, each federal state, and

Austria as a whole were adjusted. This was done by multiplying the available employee numbers by the ratio of total companies to companies with available data. To ensure that the sum of employees across the federal states aligns with the total for Austria, the figures for each federal state were adjusted by multiplying them by the ratio of Austria's total to the sum of the federal states' figures. In the maps, only integers are displayed which can lead to slight rounding errors when taking the sums over federal states and comparing them to the total numbers for Austria.

The remaining estimations are based on the 1,116 companies identified in the database with available employee data. To account for companies that did not participate in the survey a propensity score matching (PSM) approach was applied. For each participating company, three to six statistically similar non-participating companies were assigned to via PSM, with the former serving as the basis for estimating values for the latter. This approach implies that statistically similar companies have comparable turnover per employee: For companies with missing turnover figures the estimated turnover per employee is multiplied by the respective company's number of employees to estimate total turnover. For estimates at both the federal state level and for Austria as a whole, the figures are further weighted based on the total number of employees in companies with available data versus those without. The same method is applied to estimate R&D expenditure.

The reason why employee and company estimates rely on the Aurelia database rather than the survey is that for categories with low sample sizes, survey-based estimates alone would be unreliable. For instance, the category "core service providers in the medical device business sector" has a low response rate of

21% representing only ten companies. Not all of them provided data on employees and turnover, making survey-based estimates highly dependent on the inclusion of large companies: Under such circumstances, whether a single large company provides data significantly influences the overall results.

Additionally, employee and turnover figures from the Aurelia database are combined with survey responses to estimate the proportion of company activities classified as life sciences. For similar reasons as outlined above, these should be interpreted as rough estimates. Exceptions are made for the categories "other biotechnology active companies" and "other companies active in medical devices" where response rates are high, and the respective shares are of particular interest.

All other 2023 figures are based on the survey. Regarding activities, the text is referring to "significant" differences if the respective ten percent confidence intervals don't overlap.

The 2020 estimates based on the new method reflect the methodical changes in employee and turnover numbers for companies where data for both years are available in the Aurelia database. The growth rates of these companies in terms of employees and turnover are projected onto the respective category to provide estimates for the 2020 figures. These estimates represent 2020 figures under the assumption that companies were assigned to the categories as in the present report.

Figure 20 shows how these figures are derived, using Table 4 as an example.

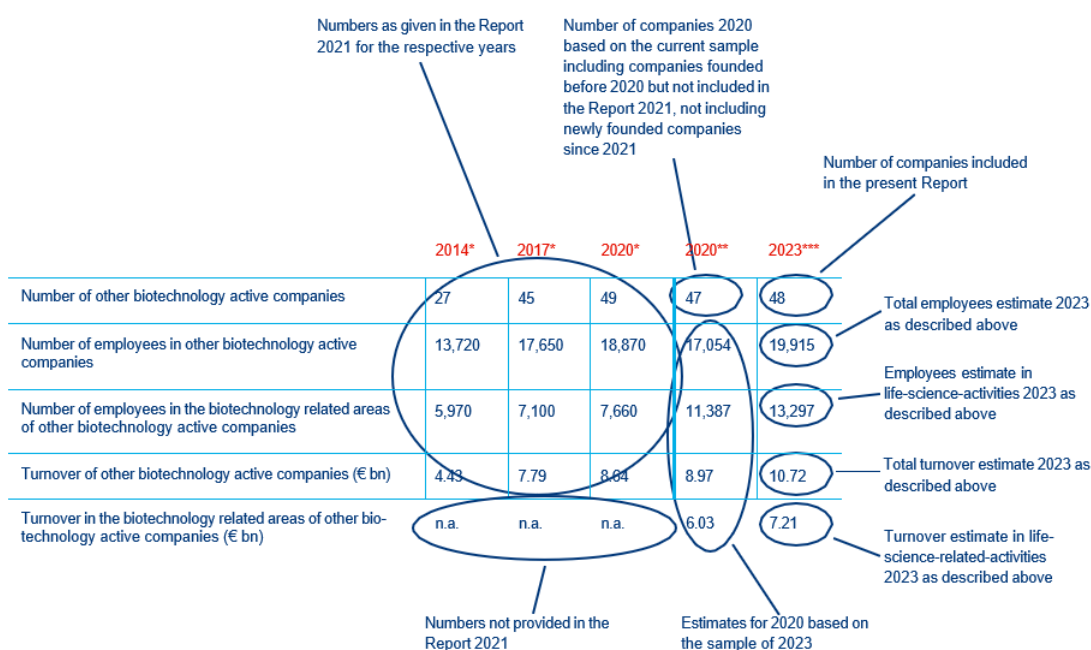


Figure 20: Illustration of the sources of company data

Research and education institutions estimations

Research and education institutions were asked in the survey to provide data on the number of individuals (headcount) employed in all activities related to life sciences, the number of those specifically employed in R&D, the total budget allocated to the field of life sciences, and the proportion of this budget sourced from third-party funding. For those research and education institutions that did not participate in the survey, data were obtained from annual reports and/or the official websites. In the case of research institutions, employee numbers were taken from the Aurelia database. If the information on the proportion of employees in R&D and/or the share of third-party funding was missing, it was assumed that these proportions equalled the weighted average of institutions within the respective categories for which data were available. For universities where no specific data were available, it was assumed that 46% of the total budget was allocated to R&D, which is a standard assumption for life sciences universities. Regarding third-party funding, figures on individual universities from uni:data – a database provided by the Federal Ministry for Women, Science and Research – were used for estimates in cases of missing data.

Student numbers in life sciences were taken entirely from the uni:data database. This source was used because it provides a complete dataset, representing a total population survey, and includes data for previous years. Publication figures correspond to Scopus-listed journals. These figures also represent a total population survey and include data from previous years.

Figure 21 illustrates the sources of these figures using Table 16 as example. While 2020 data for students and publications are available, this is not the case for other figures, as the survey only collected data for 2023. Although the subsamples for universities and universities of applied sciences have each increased by one, they have otherwise remained unchanged. However, the subsample for non-university research institutions has changed significantly and is therefore not directly comparable with the previous reports. A complete list of research institutions included is provided in Box 2.

	2014*	2017*	2020*	2020**	2023
Number of universities active in life sciences	17	17	17	n.a.	18
Number of life science employees	16,879	18,068	21,109	n.a.	19,711
Number of life science employees in R&D	9,075	10,246	13,095	n.a.	12,427
Number of life science students	54,196	60,222	67,622	52,053	56,123
Total life science budget of universities (€ bn)	1.18	1.30	1.30	n.a.	1.34
Third-party funding for universities in life sciences (€ m)	270.3	301.9	322.6	n.a.	343.3
Number of peer-reviewed academic publications in life sciences	7,826	8,481	14,162	13,578	13,817

Figure 21: Illustration of the sources of research and education institution data

Appendix

Definitions, List of Research and Education Institutions, Response Rates

1. Biotechnology and pharmaceutical business sector:

- a. Research, development, manufacturing in the biotechnology and pharmaceutical business sector: companies engaged in biotechnology and/or pharmaceutical research, development and/or manufacturing according to the OECD's framework for biotechnology statistics*
 - i. Dedicated biotechnology companies: biotechnology-active companies whose primary activity involves the application of biotechnology techniques to produce goods or services and/or conduct biotechnology R&D
 - ii. Other biotechnology active companies: companies that use biotechnological techniques to produce goods or services, but also operate in non-biotechnological business areas; in addition, this category includes all types of pharmaceutical companies regardless of their business model, that apply biotechnology in R&D and/or manufacturing (chemically synthesised or biopharmaceutical drugs for human or veterinary use)
 - iii. Pharmaceutical companies: companies that do not rely heavily on biotechnological methods in their day-to-day R&D and manufacturing; a company whose core activity involves the development and/or manufacturing of drugs without applying biotechnological methods
- b. Supply, services, sales in the biotechnology and pharmaceutical business sector: companies operating as suppliers, service providers, or sales companies in biotechnology and/or pharmaceuticals
 - iv. Core suppliers in the biotechnology and pharmaceutical business sector: manufacturer of products which are directly used, specifically developed or designed to be used in the manufacture of biotechnology/pharmaceutical products
 - v. Core service providers in the biotechnology and pharmaceutical business sector: companies offering specialised services essential for the manufacturing or development of biotechnology/pharmaceutical products
 - vi. Core sales and distribution companies in the biotechnology and pharmaceutical business sector: companies that sell or distributes approved biotechnology/pharmaceutical products while also engaging in the respective development (e.g. in clinical research), typically - but not necessarily - as distributors for foreign companies

2. Medical device business sector:

- c. Research, development, manufacturing in the medical devices business sector: companies engaged in research, development and/or manufacturing of medical devices, including software, as defined by the Global Medical Device Nomenclature (GMDN)**
 - vii. Dedicated medical device companies: companies whose core activity focuses on the development and/or manufacturing of medical products
 - viii. Other companies active in medical devices: companies for which medical devices are only one part of their business
- d. Supply, services, sales in the medical device business sector: companies operating as suppliers, service providers or sales companies in medical technology
 - ix. Core suppliers in the medical device business sector: manufacturers of products which are directly used, specifically developed or designed to be used in the manufacture of medical device products
 - x. Core service providers in the medical device business sector: companies offering specific services essential for the manufacturing or development of medical device products
 - xi. Core sales and distribution companies in the medical device business sector: companies that sell or distributes approved biotechnological/pharmaceutical/medical device products while also being involved in some aspect of product development (e.g., clinical research), typically – but not necessarily-as distributors for foreign companies

* <https://web.archive.org/2012-06-14/76870-aframeworkforbiotechnologystatistics.htm>

** <https://www.gmdnagency.org/>

3. Research and education institutions:

- xii. Universities
- xiii. Universities of applied sciences
- xiv. Non-university research institutes

4. The following companies and organisations are not considered in this report but are listed in the Austrian Life Sciences Directory:

- xv. Other suppliers: manufacturers of products which are used in the production of biotechnological/pharmaceutical/medical device products but also applicable in other industries
- xvi. Other service providers: companies offering services required by life sciences companies as well as other companies
- xvii. Other sales companies: wholesale biotechnological/pharmaceutical/medical device companies with no direct affiliation to a specific producer
- xviii. Other organisations: consulting firms, financial service providers, or associations with links to life sciences

Box 1: Definitions and classification of categories

Universities:

1. Danube Private University GmbH
2. Danube University Krems
3. Johannes Kepler University Linz
4. Karl Landsteiner Privatuniversität für Gesundheitswissenschaften GmbH
5. Medical University of Graz
6. Medical University of Innsbruck
7. Medical University of Vienna
8. Paracelsus Medical University
9. Paris Lodron University of Salzburg
10. Sigmund Freud Private University Vienna (SFU)
11. TU Graz - Graz University of Technology
12. TU Wien
13. UMIT TIROL - Private University For Health Sciences and Health Technology
14. University of Graz
15. University of Innsbruck
16. University of Natural Resources and Life Sciences, Vienna (BOKU University)
17. University of Veterinary Medicine, Vienna
18. University of Vienna

Universities of applied sciences:

1. Carinthia University of Applied Sciences
2. FH Campus Wien
3. FH Joanneum
4. Health University of Applied Sciences Tyrol
5. IMC University of Applied Sciences Krems
6. MCI Management Center Innsbruck
7. Salzburg University of Applied Sciences
8. St. Pölten University of Applied Sciences
9. UAS Technikum Wien
10. University of Applied Sciences Burgenland
11. University of Applied Sciences for Health Professions Upper Austria
12. University of Applied Sciences Upper Austria
13. University of Applied Sciences Wiener Neustadt
14. Vorarlberg University of Applied Sciences

Non-university research institutes

1. acib GmbH
2. ADSI – Austrian Drug Screening Institute GmbH
3. AIT Austrian Institute of Technology GmbH
4. Austrian Breast & Colorectal Cancer Study Group (ABCSCG)
5. BEST - Bioenergy and Sustainable Technologies GmbH
6. BioNanoNet Forschungsgesellschaft mbH
7. CBmed GmbH – Center for Biomarker Research in Medicine
8. CeMM - Research Center for Molecular Medicine (OeAW)
9. FFoQSI GmbH
10. GMI - Gregor Mendel Institute of Molecular Plant Biology (OeAW)
11. IMBA - Institute of Molecular Biotechnology (OeAW)
12. Institute of Science and Technology Austria
13. Joanneum Research Forschungsgesellschaft mbH
14. Karl Landsteiner Society
15. Ludwig Boltzmann Gesellschaft (LBG)
16. Max Perutz Labs
17. Österreichisches Forschungsinstitut für Chemie und Technik (OFI)
18. Research Center Pharmaceutical Engineering GmbH
19. Research Institute of Molecular Pathology (IMP)

20. Salzburg Research Forschungsgesellschaft mbH
21. St. Anna Children's Cancer Research Institute (CCRI)
22. Tyrolean Cancer Research Institute
23. VASCage GmbH
24. VRVis GmbH

Box 2: Research and education institutions

	Requested	Answered	Response Rate
Life science companies	1,170	291	24.87%
Biotechnology and pharmaceutical business sector	530	155	29.25%
Research, development, manufacturing in the biotechnology and pharmaceutical business sector	279	104	37.28%
Dedicated biotechnology companies	191	72	37.70%
Other biotechnology active companies	47	21	44.68%
Pharmaceutical companies	41	11	26.83%
Supply, services, sales in the biotechnology and pharmaceutical business sector	251	51	20.32%
Core suppliers in the biotechnology and pharmaceutical business sector	57	21	36.84%
Core service providers in the biotechnology and pharmaceutical business sector	60	20	33.33%
Core sales and distribution companies in the biotechnology and pharmaceutical business sector	134	10	7.46%
Medical device business sector	640	136	21.25%
Research, development, manufacturing in the medical devices business sector	225	77	34.22%
Dedicated medical device companies	199	69	34.67%
Other companies active in medical devices	26	8	30.77%
Supply, services, sales in the medical device business sector	415	59	14.22%
Core suppliers in the medical device business sector	82	26	31.71%
Core service providers in the medical device business sector	48	10	20.83%
Core sales and distribution companies in the medical device business sector	285	23	8.07%
Research and education institutions	56	26	46.43%
Universities	18	8	44.44%
Universities of applied sciences	14	8	57.14%
Non-university research institutes	24	10	41.67%

Table 19: Survey statistics

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