Life Science Barometer 2024

A snapshot of the Swedish life science industry

sweden BIO
The Swedish Life Science Industry Organization

Produced by SwedenBIO in cooperation with Medicon Village Innovation, Sahlgrenska Science Park, Stockholm Science City Foundation, STUNS Life Science and Citeline.

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INTRODUCTION

WELCOME TO THE LIFE SCIENCE BAROMETER 2024!

On a yearly basis, we set out to measure the state of the life science industry, giving you a snapshot in time of its optimism, concerns and trends. We want to give you the taste, feel and color of the industry, to complement hard facts and industry metrics. The Barometer survey was answered by 200 life science executives in October 2023. Even though the study population is not statistically representative of the entire industry, it represents the voice of the industry.

There is currently an effort to measure the life science industry on a nationwide level. The Swedish innovation agency Vinnova published its first report as part of a governmental assignment in April 2023. A national life science industry database called Insight Machine was launched in October 2023 by STUNS, enabling online interactive overviews and analyses. The Life Science Barometer is intended to supplement these automatically generated datasets with the kind of questions that databases cannot provide; How would you yourself define your company identity? What is your outlook in the long term? What is important for you, right now?

The Barometer does not provide final answers but is rather a hypothesis-generating smorgasbord of data, graphs and numbers to start discussions or initiate further analyses. This national Barometer will be followed by regional reports, breaking out the aspects of our main life science regions. And in October 2024, we invite you to the next round of data collection.

Until then, we wish you a pleasant reading and hope for fruitful discussions along the way.

Maja Neiman, SwedenBIO
and the Life Science Barometer project group

CONTENTS

Section 1: The Swedish Life Science Industry	03
Section 2: The State of the Industry 2024	08
Section 3: International Outlook	19
Data Sources and Methods	21

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Main Publisher: SwedenBIO, Wallingatan 24, 111 24 Stockholm, Sweden, info@swedenbio.se
www.swedenbio.se

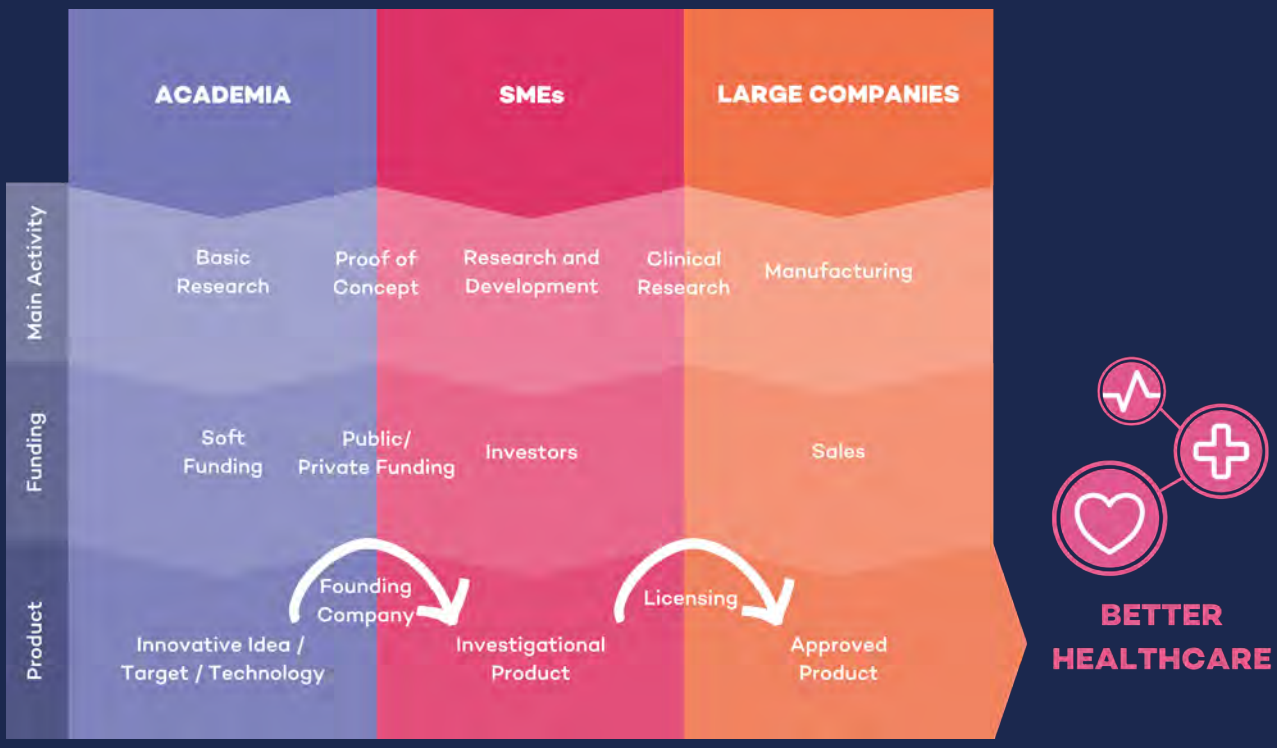
Please cite as the **Life Science Barometer 2024**
Download the report at swedenbio.se/reports

LIFE SCIENCE ECOSYSTEM

AN INTERCONNECTED VALUE CHAIN FOR LIFE SCIENCE PRODUCTS

The life science industry is a key industry that develops new products for patients. These products, such as pharmaceuticals, devices, software, diagnostics or disposables, are mainly used within healthcare. Most life science companies work on a global market, choosing their market dependent on patient needs and business opportunities. However, having the whole value chain operating in Sweden, in collaboration with international actors, is a prerequisite for access to innovations that improve healthcare for Swedish patients.

The value chain of a life science product may be considered as a marathon. It takes years, sometimes decades, to develop a product that meets the high regulatory and business requirements. Today, this marathon is often shared by several specialized companies, acting as a relay race.

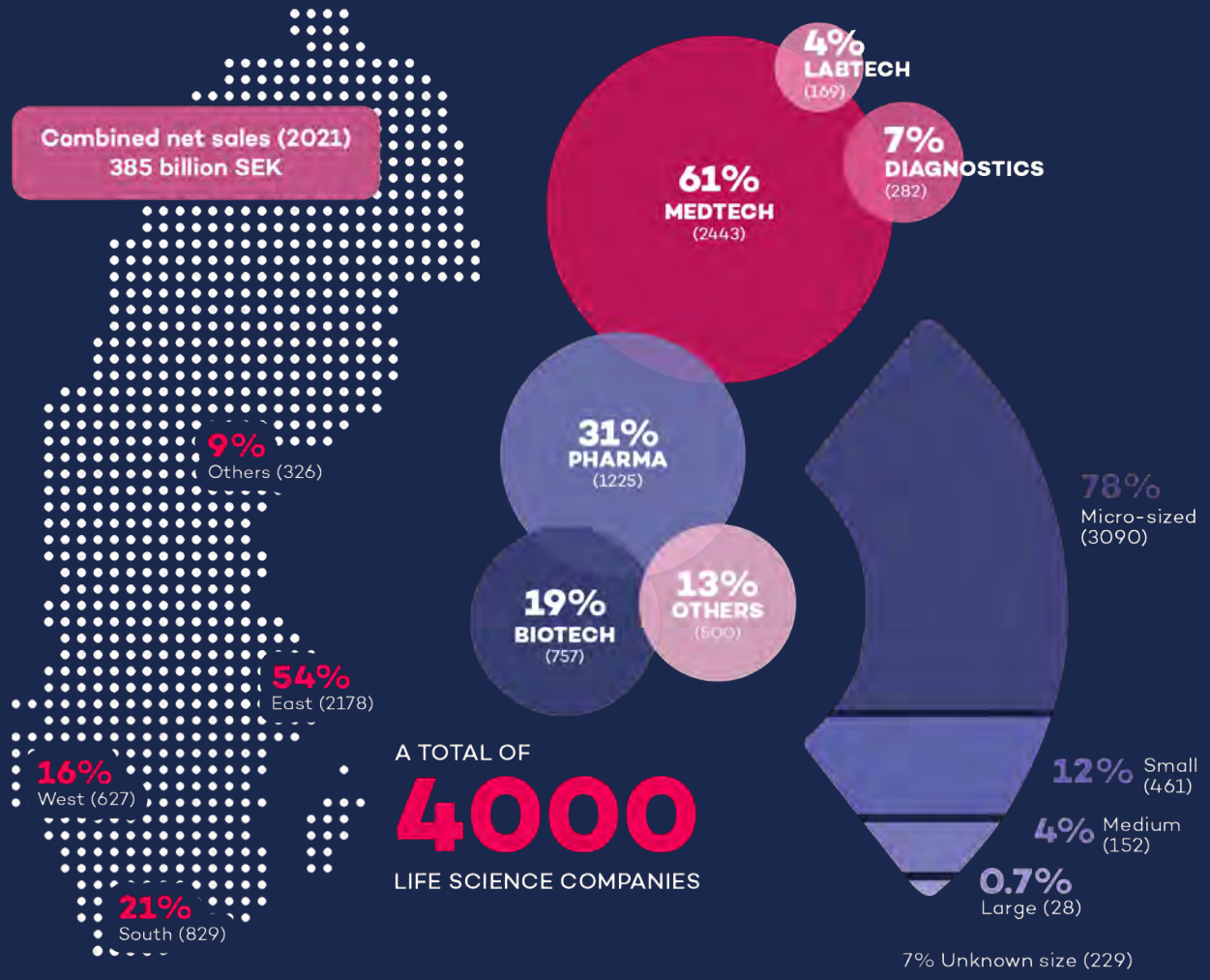


A general route for a life science product is displayed here. An idea or innovation often stems from academic research. In order to translate the academic finding into an investigational product, there is a need to increase the investment beyond what academic research allows. This is when a new company is formed (SME, small and medium size enterprise). To bring the product all the way to patients, most small companies hand over the product (through licensing, acquisition or other business events) to bigger companies that have the financial capacity to perform larger clinical trials, manufacture and sell the product.

Although every product's journey is unique, all actors of the ecosystem play crucial roles in developing new products for patients.

INDUSTRY OVERVIEW

4000 COMPANIES IN SWEDISH LIFE SCIENCE INDUSTRY



The entire Swedish life science industry is composed of approximately 4,000 registered companies, according to a recent report by Vinnova[1]. A large majority are located in either of the three metropolitan regions Stockholm/Uppsala (east, 54%), Göteborg (west, 16%) and Malmö/Lund (south, 21%). These 4,000 companies engage a total of 56,000 employees. In 2021, their combined net sales reached 385 billion SEK[1].

Most companies are very small. 78% are micro-sized with 0-9 employees, including 42% with zero employees and 36% that have 1-9 employees. We note that 12% are small (10-49 employees) and 4% are medium-sized (50-249 employees). Sweden has 28 large life science enterprises (0.7% of the company population) with more than 250 employees. 229 companies are of unknown size, since not all datasets matches.

A majority of the companies (61%) are reported to operate in the medtech segment, but the overlap of segments is significant, which means that the sum of the reported percentages is larger than 100%. The segmentation shown here was reported in the work by Vinnova[1], and is based on an automated algorithm.

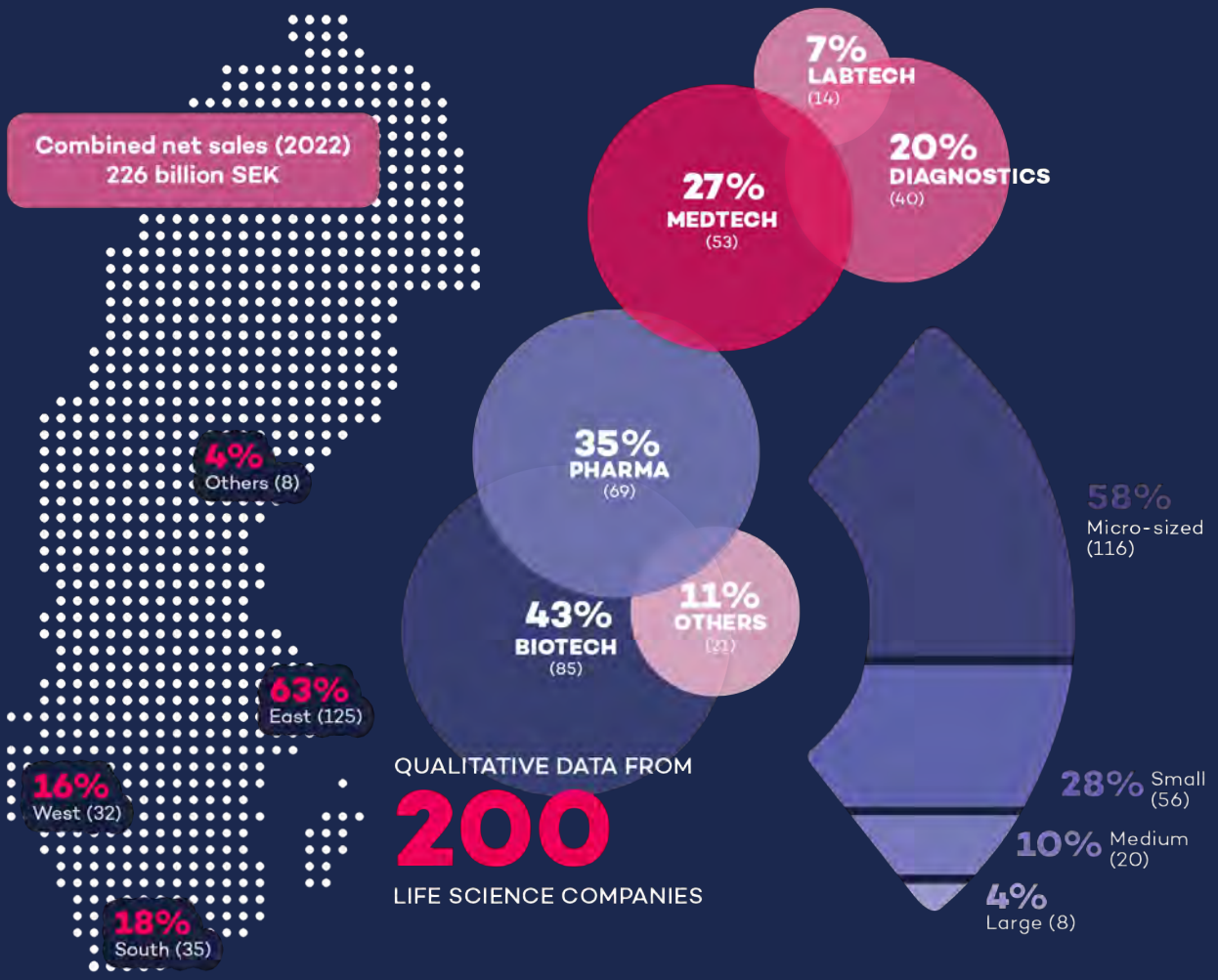
There is currently a large effort to improve automated algorithms and cross-reference existing datasets to build a common knowledge. For custom analyses and insights of the life science industry, we direct you to the database Insight Machine, powered by STUNS[2].

[1] *The Swedish Innovation Agency Vinnova 2023, Statistik över svenska life science-företag, Bilaga 5. Uppdaterad statistik inom N2021/02243, oktober 2023*

[2] *https://insightmachine.stuns.se/login*

BAROMETER COMPANY POPULATION

BAROMETER REFLECTS QUALITATIVE DATA FROM 200 COMPANIES



200 life science executives responded to the Life Science Barometer survey in October 2023. These 200 companies make up 5% of the Swedish life science company population. Together they engage 22,119 employees, which corresponds to 39% of the life science workforce. The combined net sales of these 200 companies added up to 226 billion SEK in 2022.

The geographical spread of responding companies is somewhat representative of the national spread, with a majority in the East of Sweden (Stockholm and Uppsala) followed by the South and the West.

The company size representation among the survey respondents is in favor of larger companies, as compared to the national numbers (page 4). Still, a majority of responders are representing micro-sized companies.

The representation of segments among the respondents is biased in favor of pharma and biotech. The segmentation shown here is based on self-reported company identities in the survey. As in the national numbers (page 4) we note a significant overlap, which means that the segment percentages add up to more than 100%.

BUSINESS SEGMENTS

MAJORITY OF COMPANIES OPERATE IN SEVERAL BUSINESS SEGMENTS

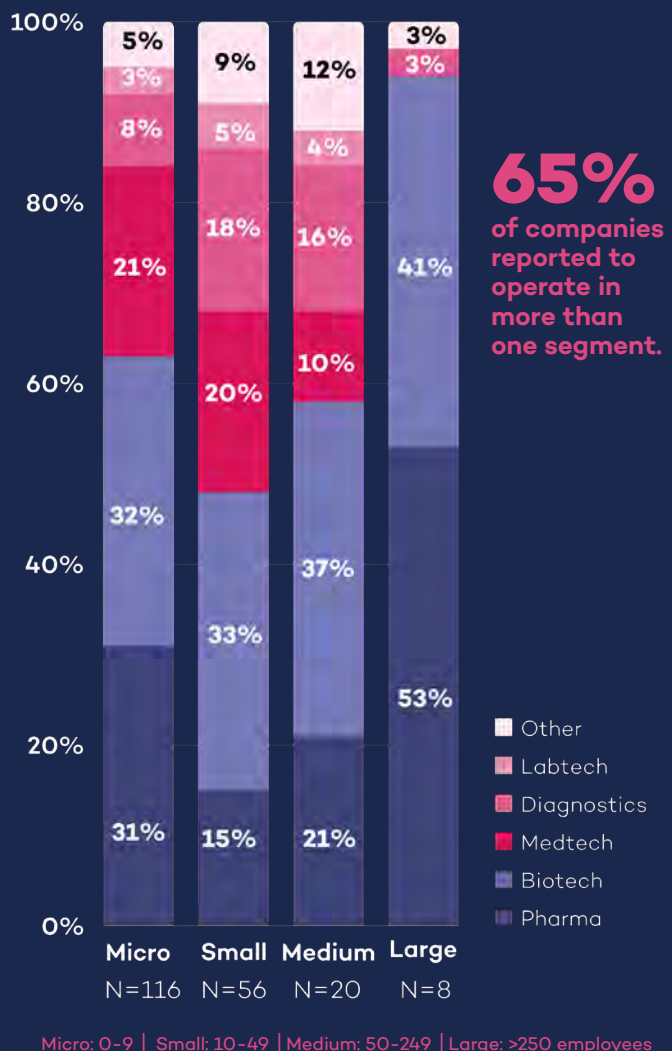
We asked the companies to report their primary business segments/s (shown in figures) and any additional segments they cover. 70 companies (35%) reported one segment, the rest (65%) reported multiple segments. The most common single segment is biotech and the most common combination biotech and pharma, often also in combination with diagnostics. 49 companies (25%) reported covering 4 segments or more.

All segments are represented in the SMEs. The eight largest companies mainly cover biotech and pharma as primary segments but include medtech and diagnostics as additional segments.

"During our work mapping the life science sector we have come across difficulties in segmenting the companies. In reality, companies often exhibit characteristics that belong to multiple segments. It is a struggle between correctness and clarity: We need to reduce the complexity of each company in order to paint the bigger picture."

– Jennie Persson, Analyst, Vinnova

Segments per company size



65% of companies reported to operate in more than one segment.

Micro: 0-9 | Small: 10-49 | Medium: 50-249 | Large: >250 employees

Defining industry segments is difficult as many companies are active in many segments and widely accepted definitions are lacking.

A **pharma** company is developing and/or producing pharmaceuticals.

Biotech companies do not have a standardized definition. Companies that develop pharmaceuticals but don't produce and sell the drugs themselves are sometimes called biotechs. Biotech companies often exploit biological components such as cells, proteins, nucleic acids etc.

Medtech companies develop or produce medical technology, which is a very wide product group, including hospital equipment, prosthetics, disposables etc. The medtech category includes subsegments such as health tech.

Diagnostics is sometimes defined as a subsegment to medtech. Diagnostics includes technology and devices that measure health status, such as blood tests, medical imaging etc.

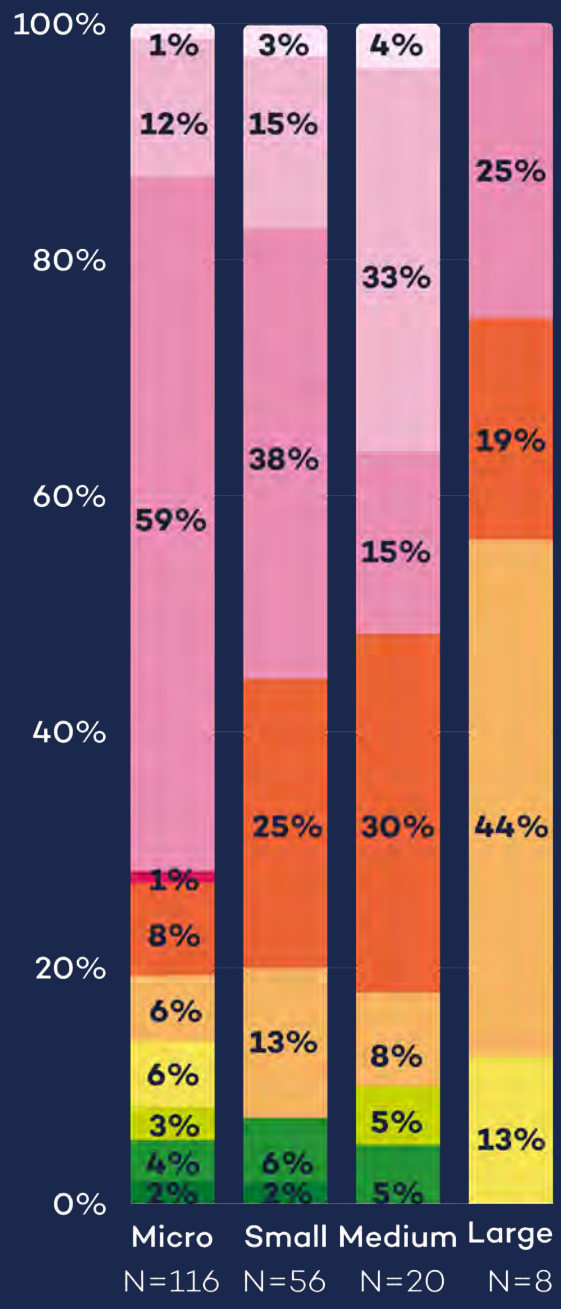
Labtech companies develop or produce laboratory equipment.

The segment alternative" **Other**" includes areas like academic research, recruitment, consulting, cluster/community, cosmetics, data, AI, software, food tech, health tech, green tech, process/equipment validation and production of molecules or enzymes for non-therapeutic applications.

BUSINESS ACTIVITIES

R&D IS THE MOST PROMINENT ACTIVITY AMONG MICRO-SIZED COMPANIES

Business activity per company size



The companies were asked to select their primary and additional business activities, among the alternatives that are shown in the graph legend. 164 companies (82%) reported to be active in R&D or R&D services, making R&D the most frequent activity overall.

Among the micro-sized and small companies, R&D accounts for 59% and 38% of the reported primary activities, respectively. R&D service is the most frequently reported activity among the mid-sized companies, whereas large companies are heavily engaged in manufacturing.

106 companies stated engagement in multiple activities. A common combination, reported by 31 companies, is R&D, manufacturing, marketing and sales.

82%
of companies are active in research and development.

- Regulatory
- RnD Service (CRO, CDMO etc)
- RnD (Research & Development)
- Patent, IP
- Market and Sales
- Manufacturing
- Management Support, Business Consultants
- Investments, Investm.ent Support
- Incubator, Science Park
- HR Support, Recruitment

Micro: 0-9 | Small: 10-49 | Medium: 50-249 | Large: >250 employees

FINANCIAL UPDATE

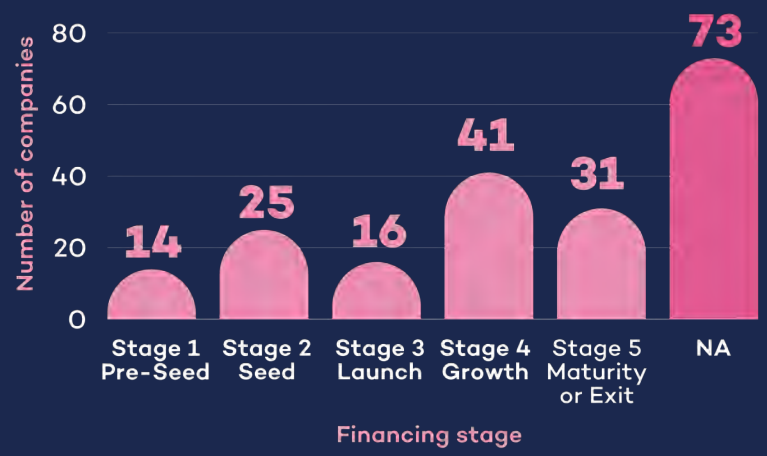
1/3 OF COMPANIES ARE LISTED ON A PUBLIC STOCK MARKET

To understand the financial situation of the life science industry, we asked the companies to define the financial stage they are in. For 73 companies (37%) this scale of pre-seed, seed, launch, growth and maturity/exit financing stages was not applicable (NA). 55 companies (28%) are in early financing stages (pre-seed, seed or launch), 41 companies (21%) are in growth financing, whereas 31 (16%) are in maturity/exit financing.

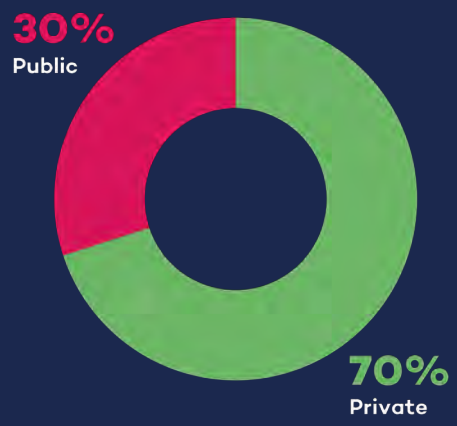
In total, 30% of the companies are public, which means that they are listed on a public stock market. Private companies are funded by investors or by sales.

When looking at the companies' net sales for 2022 in relation to financing stages, we see that the range of revenues increases with the maturity of the company's financial stage. We also note that a majority of companies in stage 5 (maturity/exit) are listed on a public market.

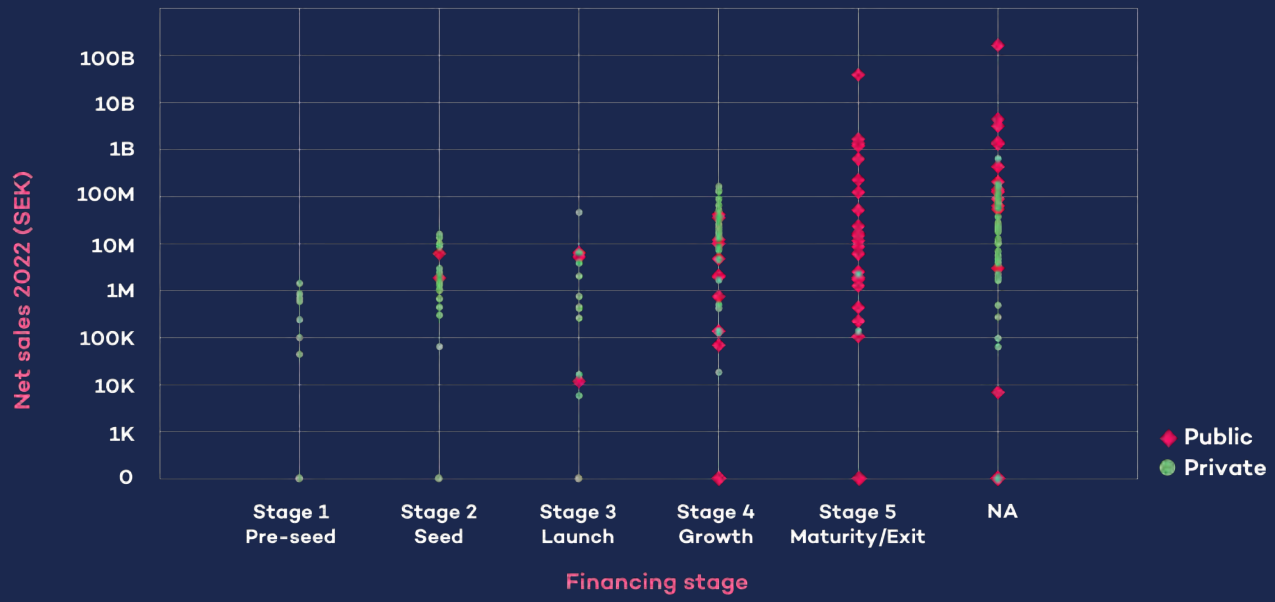
Financing stages



Company ownership



Range of net sales per financing stage



INFLUENCING FACTORS 2024

WHICH FACTORS DO YOU FORESEE TO INFLUENCE YOUR COMPANY DURING 2024?

Funding, macroeconomy and market dynamics were the most frequently mentioned concerns influencing life science companies. We here highlight 10 themes that were frequently mentioned in free text responses by life science executives about what may influence their companies during 2024.

> **"The willingness of investors to support high-innovation companies is currently constrained, and the funding environment in the Nordics for advanced therapeutics is immature compared to the USA and Asia."**
>
> **– Biotech Company**

> **"Many of our Swedish customers struggle to find funding despite interesting science and good results."**
>
> **– R&D Service Company**

Factors included in each theme (number of mentions in parenthesis):

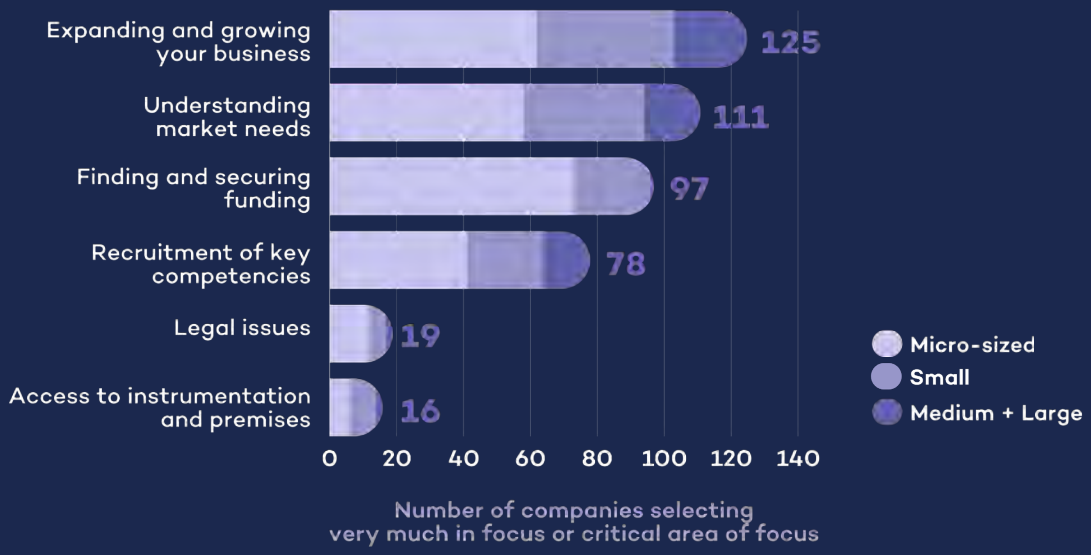
Funding (78): Access to capital, investments and funding.
Macroeconomy (31): Concerns about the economy in large such as financial markets, currencies, inflation, global stock markets.
Market dynamics (17): Market size, request for products or services, overall market trends etc.
Regulatory (16): New EU-legislation, MDR and stricter regulatory demands in general.
Healthcare (13): Concerns about healthcare budgets and the ability to cooperate with healthcare in the innovation process.
Geopolitical turbulence (11): War and reduced stability of democratic institutions.
Clinical trials (10): Results of ongoing trials and the overall trends in clinical trials.
Collaborations (8): Partnerships, networks, cooperation and relations.
Digitalization (8): AI and general digitalization, both in the R&D process and in healthcare.
Competence (7): Recruitment, talent and key competencies.

SHORT TERM FOCUS AREAS

GROWTH IS A TOP PRIORITY

To understand the current priorities, we asked the companies to select to which extent each alternative was a priority at this time (2023/2024). We here show the number of companies that selected very much in focus or critical area of focus, for each alternative. There was no limit to rank all alternatives high.

Focus areas for 2023/2024



Expanding and growing one's business was ranked the most important short term focus area regardless of company size (125 companies, 63%), followed by understanding market needs (111 companies, 56%).

Finding and securing funding was the most prioritized objective among micro-sized companies (63% of the micro sized companies). On the contrary, for the medium and large companies, funding was down prioritized. Instead, expansion (79%), understanding market needs (61%) and recruitment of key competences (50%) were top priorities for the medium and large companies.

Access to instrumentation and premises was ranked low as a focus area, indicating that recent investments in infrastructure are paying off and companies have sufficient access to infrastructure.

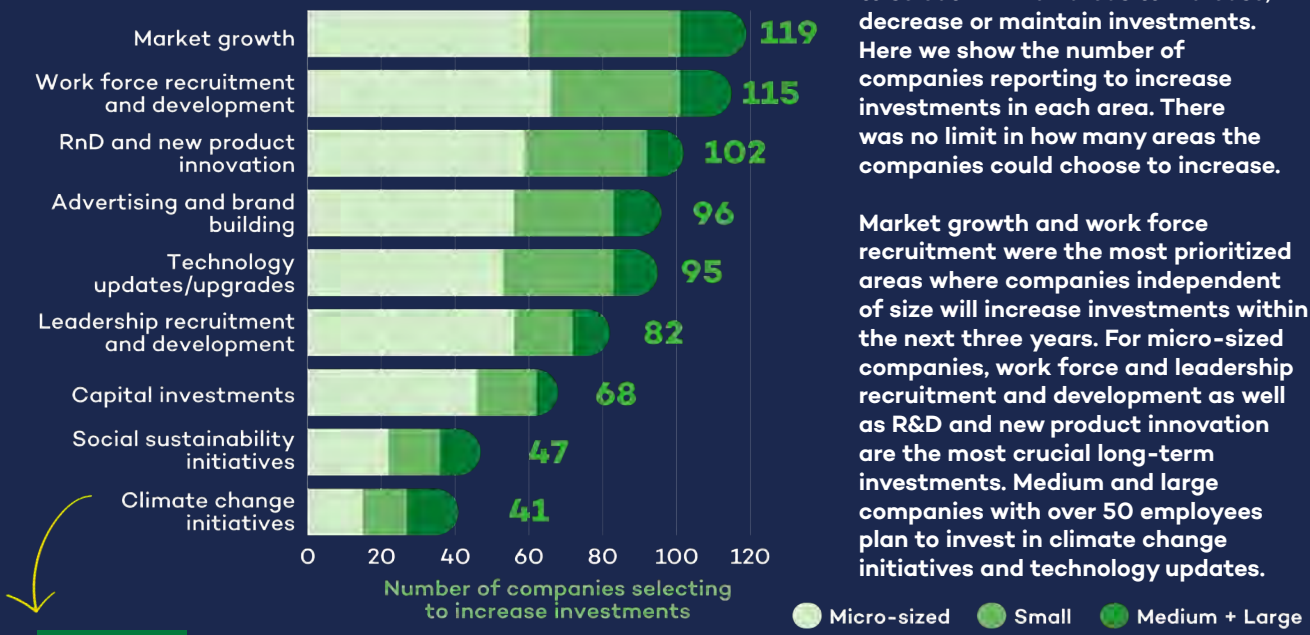
> **"Support policies that encourage innovation and growth in the industry, including increased funding for research and development, streamlined regulatory processes, and incentives for companies to invest in new technologies."**
>
> **– Medtech Company**

> **"Help fund growth companies so we can stay in Sweden."**
>
> **– Biotech Company**

LONG TERM INVESTMENTS

MARKET AND TALENT CONSIDERATIONS ARE TOP OF MIND

Areas for increased investments over the next 3 years



When investigating the long-term outlook, we asked the companies to select in which areas to increase, decrease or maintain investments. Here we show the number of companies reporting to increase investments in each area. There was no limit in how many areas the companies could choose to increase.

Market growth and work force recruitment were the most prioritized areas where companies independent of size will increase investments within the next three years. For micro-sized companies, work force and leadership recruitment and development as well as R&D and new product innovation are the most crucial long-term investments. Medium and large companies with over 50 employees plan to invest in climate change initiatives and technology updates.

INTERVIEW

In 2020, a collaborative effort among life science companies in Uppsala gave rise to a sustainability forum. Evolving into a network, this platform delves into sustainability discussions, new regulations, and associated challenges. Seeking perspectives on the recent sustainability ranking, we turn to Gustav Schultz, Sustainability Champion at Cytiva, and Petra Duprez, Chief Human Resources & Sustainability Officer at Biotage.

How do you explain the current ranking?

Gustav Schultz reflects, "It's challenging to say definitively, but a speculation is that smaller companies, driven by a need for growth, allocate more funds to marketing and evolution. Larger, more established firms can afford a focus shift towards sustainability."

Petra Duprez notes the impact of new directives, especially on medium to large companies. The focus has shifted to climate investments, driven by ongoing efforts. Larger companies, through dual materiality analyses, enhance their understanding and responsiveness to climate-related demands.

How does it look in terms of ranking/prioritization at your organization? Do you recognize yourselves in the analysis?

"Without specific figures, I find it reasonably plausible.", Gustav Schultz acknowledges, "We invest significantly in sustainability, but more in R&D and marketing. Many investments, like new technology, fall into multiple categories. For instance, reducing power consumption is both an R&D and sustainability measure."

Petra Duprez adds, "To some extent, yes. We've intensified our focus on climate-related investments, aligning with the overall ranking."

Are there other types of investments besides purely financial ones?

"Investments extend beyond finances", Gustav Schultz emphasizes. "Identifying process optimization potential demands time before monetary investments. It's challenging to measure engagement precisely, making it somewhat 'fuzzy.'"

Petra Duprez concludes, "Yes, investments include time, education, and communication about our actions and motivations within the field."

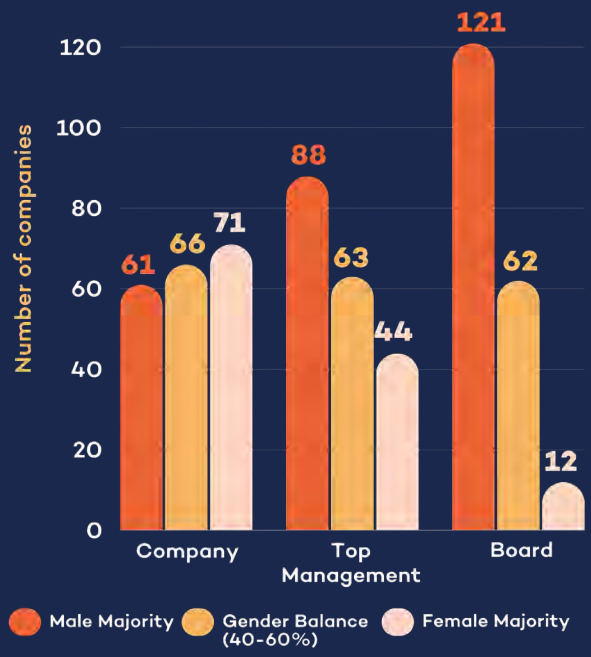
Gustav Schultz
Cytiva

Petra Duprez
Biotage

HUMAN RESOURCES

GENDER IMBALANCE IS ENTRENCHED IN POWER POSITIONS

Gender distributions



In the Barometer, we asked the companies to approximate their female representation. In average, these 200 companies have 49% women in the workforce, 42% women in top management and 30% women in boards.

Shown in the figure are the number of companies with female majority, male majority, or gender balance in the workforce, top management and board. We note that 66 companies (33%) report a gender balanced workforce, while approximately equal numbers of companies are skewed towards a male or a female majority of the workforce.

63% of boards have a male majority.

About 30% of companies have a gender balanced top management (63 companies) and board (62 companies). 32 companies (16%) have a gender balance in both the management and the board at the same time. However, 88 and 121 companies (44% and 62%) have male majority in their top management and boards, while only 44 and 12 companies (23% and 6%) have female majority, indicating that more men reach management positions.

INTERVIEW

One year ago, the Vilda network for women leaders in the life science sector was initiated in response to the slow progress to reach gender balance in top management and boards within the industry. Among its founders is Cecilia Bröms-Thell, Senior Business Developer at Uppsala Innovation Centre.

What do you think about the results on gender balance?

"To enhance the representation of women in leadership roles, especially CEO positions, it is imperative to focus on board composition", says Cecilia Bröms-Thell. She describes that the board, as the body that sets the course for the CEO, plays a pivotal role in shaping the company's culture at all levels. "I must emphasize that the life science industry has favorable conditions for achieving this goal, given the industry's broadly balanced workforce[1]."

Cecilia Bröms-Thell highlights that in Sweden today, most boards and company managements acknowledge the benefits of diversity. However, when recruiting for boards, many tend to lean towards experienced individuals within their existing networks. "We would never advocate for hiring a woman who does not meet the qualifications. Do not compromise on skills", asserts Cecilia Bröms-Thell. "There are numerous highly qualified women out there, but it might require additional effort to broaden the candidate search to discover them. It must be a conscious decision, recognizing that the extra work is worthwhile."

What level of gender balance should the industry aspire to reach?

In start-up companies with minimal staffing, gender statistics may occasionally skew. "The crucial aspect is to create awareness. What kind of company do you envision as you expand?" Cecilia Bröms-Thell explains. "In Uppsala, we evaluate diversity when admitting companies into the incubator, not based on headcount, but we request a plan to foster diverse business management."

Diversity extends beyond gender, encompassing various aspects. Cecilia Bröms-Thell mentions studies indicating that gender-balanced boards and companies are also more diverse in other dimensions, contributing to overall diversity.

Cecilia Bröms-Thell
Uppsala Innovation Centre and Co-founder of Vilda

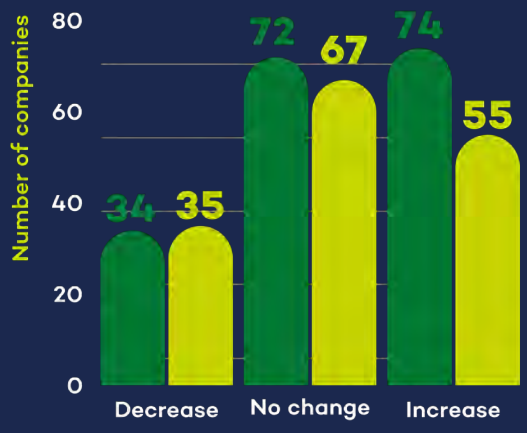
[1] *The Swedish Innovation Agency Vinnova 2023, Statistik över svenska life science-företag, Bilaga 5. Uppdaterad statistik inom N2021/02243, oktober 2023*

HUMAN RESOURCES

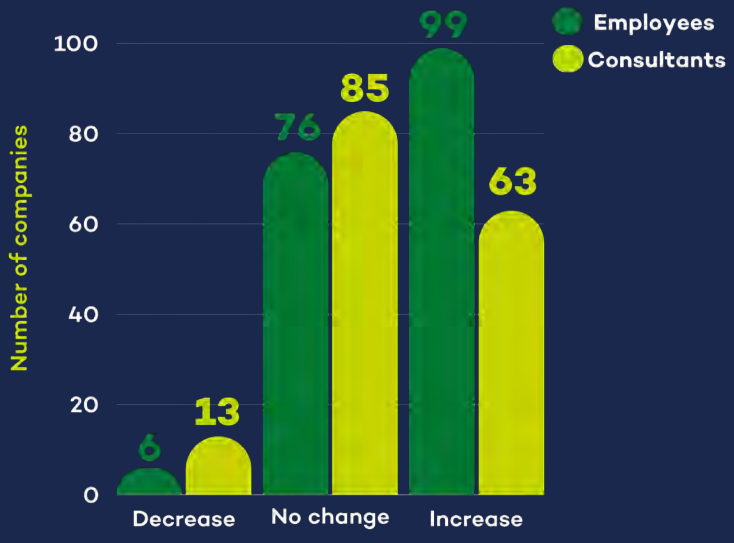
OPTIMISTIC PROGNOSIS FOR WORKFORCE EXPANSION IN 2024

Life science companies are operated by a mixture of employees and consultants. In 2023, a majority of companies had either no change or increased both number of employees and consultants, while only 22% of companies decreased both their number of employees and consultants. For 2024, 99 companies (55%) plan to increase in personnel and 63 (39%) plan to increase the number of consultants. 50 companies are planning to grow the number of both employees and consultants.

Changes 2023



Prognosis for 2024



55% of companies plan to increase personnel in 2024.

Out of the 34 companies that decreased the number of employees in 2023, 3 plan to decrease further, while 15 plan to increase during 2024. Out of the 72 companies with no changes in employees 2023, 40 foresee no change during 2024 and 28 plan to increase personnel. Out of the 74 companies that increased in personnel during 2023, 60 plan to keep growing while only one plans to decrease.

"There must be a stronger incentive for the universities to educate professionals in areas where there is a lack of new talents. This is vital for Sweden's future competitiveness. Sweden must be able to keep and attract next generation talents to the country!"

–Pharma and Diagnostics Company

INTERVIEW

SWEDISH LIFE SCIENCE: INNOVATING AT THE EDGE OF OPTIMISM

In a challenging economic climate, the Sweden BIO Barometer 2024 reflects a cautiously optimistic Swedish life science industry. While innovation continues to thrive, translating research into accessible healthcare solutions is fraught with financial, regulatory and commercial hurdles. Three perspectives from life science leaders shed light on this complex business environment.

Under CEO Hanna Sjöström's leadership, Neola Medical, buoyed by a recent SEK 20 million funding, is gearing up for US clinical trials. "There is a significant interest in new technology in lung monitoring. The area has growth potential, and we have great clinical support for the Neola solution, which is the world's first device for continuous monitoring of lungs in preterm infants," says Sjöström.

A recent collaboration with Stanford University is opening more doors to more partners in the USA and will facilitate Neola's US market entry and understanding of regulatory processes.

Sjöström, optimistic about Swedish life science, emphasizes the importance of strong market and internationalization strategies. She notes, "Given the global emphasis on healthcare post-pandemic, and with an aging population, the outlook is promising for companies enhancing access to healthcare and caregiver efficiency. We need to build on our successful past, keep sharing best practices, and refine our go-to-market and commercialization strategies, especially for the US market."

Hanna Sjöström
CEO
Neola Medical AB

Christina Herder, with 30 years in life science, provides an insightful perspective on the optimism in life science. Her roles spanning management, board positions and consultancy highlight the sector's vibrancy and the challenges of sustaining innovations.

Herder openly shares the recent setbacks she has faced, including a stint as interim CEO that led to bankruptcy due to unsuccessful capital raising. "My experience reflects a broader industry trend of financial hardship and resultant strategic shifts. I have a lot of empathy for the life science companies, especially in advanced development phases, who are currently facing a precarious balance between innovating and ensuring commercial viability."

Noting a disparity between the optimistic survey results and the tougher reality for many companies, Herder points out that this optimism may be skewed by more responses from well-positioned companies, contrasting with the struggles of smaller or listed entities under financial strain.

Emphasizing the importance of resilience, adaptability and strong investment narratives, Herder believes that despite the economic challenges, there's room for optimism. She asserts that "innovative and adaptable companies can succeed, and this goes to show the life science industry's complex yet hopeful nature."

Christina Herder
CEO
Cell4Cure AB

"Beat Vascular Health is revolutionizing early detection of cardiovascular diseases with our AI-driven sensor technology," says co-founder Pontus Axblom, who launched the company in 2020 alongside CTO Mikael Karlsson.

Not surprisingly, Axblom is especially enthusiastic about the potential of AI and machine learning in healthcare, asserting, "We're only beginning to tap into AI's vast capabilities."

He recognizes the hurdles in adopting new technology within healthcare, stressing the importance of ensuring these innovations are both effective and clinically impactful. "Our goal is to go beyond data generation and truly enhance caregiver efficiency," he explains.

Despite the current economic downturn, Axblom's outlook remains positive, shaped by the company's inception during the COVID pandemic. "Navigating through tough times from the start has made us more resilient," he notes. Beat Vascular Health's recent achievements, including joining the CO-AX healthtech accelerator and receiving two Vinnova grants, further fuel their optimism for the future.

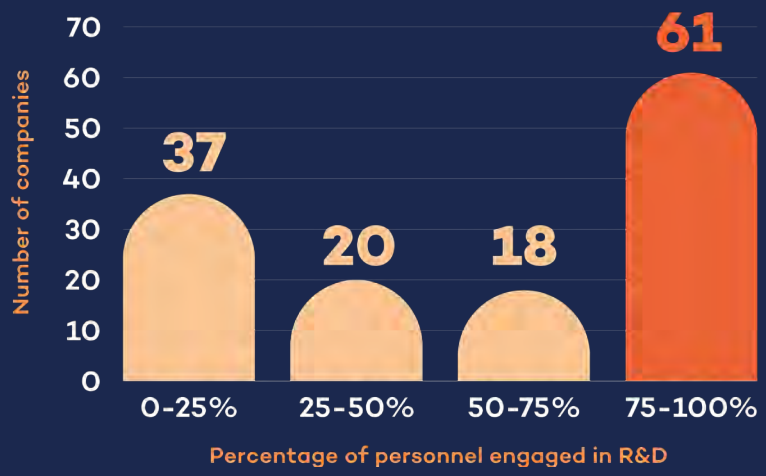
Pontus Axblom
Co-founder & CEO
Beat Vascular Health

RESEARCH AND DEVELOPMENT

SIGNIFICANT INVESTMENTS IN R&D

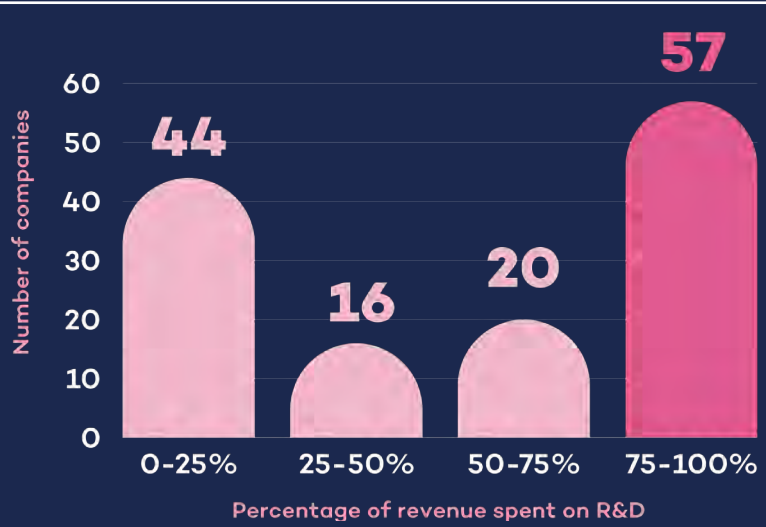
Life science companies are generally research intense. In the Barometer, 164 companies (82%) reported activities within R&D or R&D services.

R&D personnel



51%
of researching companies have more than 3/4 of personnel engaged in R&D.

R&D spending



48%
of researching companies spend more than 3/4 of revenue in R&D.

On average, 67% of their personnel are engaged in R&D. More than half (51%) of the companies have more than three-quarts of their personnel engaged in R&D. 29 companies report 100% of personnel engaged in R&D.

The researching companies spend on average 63% of their revenue on R&D. Almost half (48%) of the companies spend more than three-quarters of their revenue on R&D.

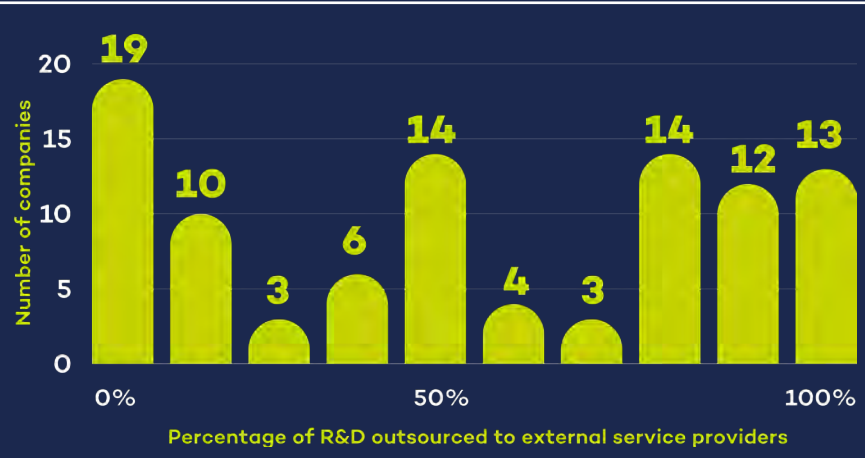
> **"Make sure to invest in science and education first. The next step is to decrease bureaucracy on support systems for commercial R&D."**
>
> **– Biotech Company**

R&D SERVICE

RESEARCH COMPANIES ARE OPERATING INTERNATIONALLY

Companies can perform their R&D activity in-house or outsource their R&D activities to R&D service providers. R&D service providers are a crucial part of the ecosystem providing methods, instruments, services and know-how on a commercial scale.

R&D outsourcing

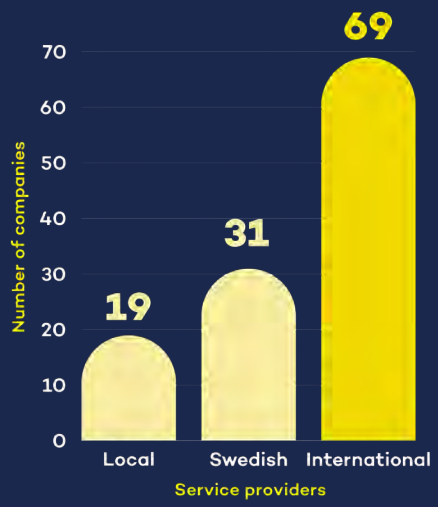


Companies can perform their R&D activity in-house or outsource their R&D activities to R&D service providers. R&D service providers are a crucial part of the ecosystem providing methods, instruments, services and know-how on a commercial scale.

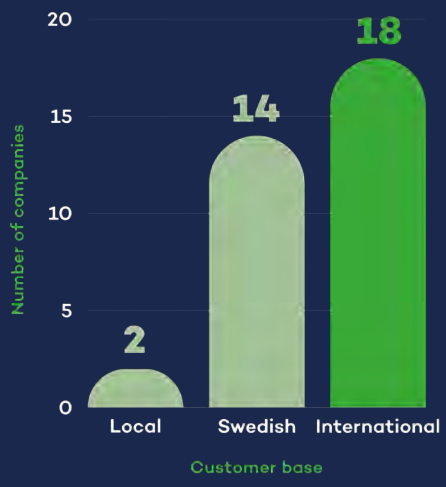
Among the 119 companies that are active within R&D, we observe a spread from 0% to 100% of R&D outsourced to external service providers. 13 companies outsource near 100% of their R&D activities to external service providers and 19 companies perform near all R&D in-house. On average, the research companies outsource 52% of their research activities to external service providers. 69 R&D companies (58%) use international service providers, while 31 (26%) use Swedish. 19 companies turn to local service providers, which here means that they reside in the same county as the company.

Among the 39 companies that reported R&D service as their primary (24) or additional (15) business activity, 46% have an international customer base.

Location of service providers



Location of customers



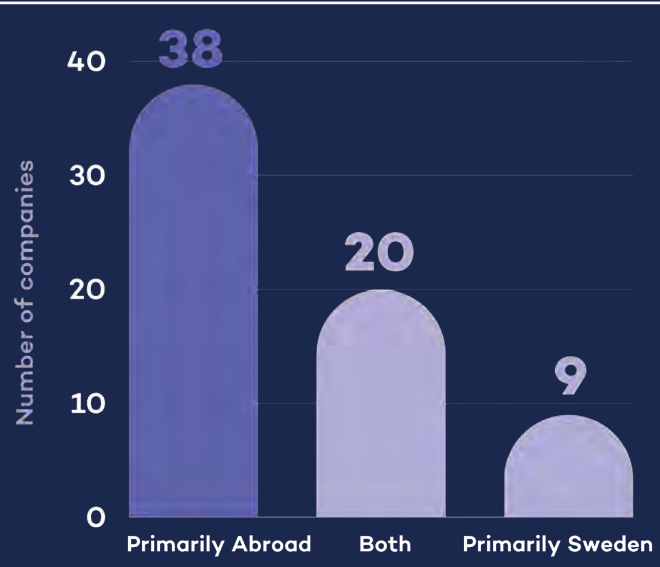
58%
of R&D companies use international service providers.

46%
of R&D service providers have an international customer base.

CLINICAL TRIALS

MOST CLINICAL TRIALS ARE PLACED OUTSIDE OF SWEDEN

Placement of clincal trials



68 companies are currently performing clinical trials. 20 companies (29%) place their trials both abroad and in Sweden. 28 companies (57%) place their clinical trials primarily abroad, while only 9 (13%) place trials primarily in Sweden.

When looking at 12 medtech companies who perform clinical trials, half place their trials primarily abroad. For pharma companies, 67% place their trials primarily abroad, which is similar as reported in the Drug discovery and development pipeline report 2023 (SwedenBIO, 2023).

"The road to implement new innovations into Swedish public health care is extraordinarily long and challenging. Many companies choose other markets meaning that Swedish health care falls behind when it comes to offering up-to-date treatments and diagnostics. We need incentives and initiatives for health care and industry to meet, talk and test new innovations, and these incentives and initiatives need to come from decision makers."

- Biotech Company

INTERVIEW

Gedea Biotech is a biotech company operating in the intersection of pharma and medtech to make products treating and preventing recurrence of bacterial vaginosis. The company has experienced trials in both Sweden and the UK. Annette Säfholm, CEO, talks about the struggles they faced with their initial trials in Sweden.

What is your experience of clinical trials in Sweden and abroad?

When Gedea started, the intention was to do the first clinical trials in Sweden, says Anette Säfholm. One of the co-founders is a gynecologist who has a vast network in suitable clinics at hospitals around Sweden. It was perfectly natural to perform the first studies at hospitals in Sweden. But it turned out to be impossible to achieve. We got very professional help from the clinical trial support units at hospitals in both Malmö and Lund. But at the end of the day, scheduling and staffing in the clinics made it impossible. After a long time and severe struggles, we found private clinics in Sweden that were able to perform the studies. But it was very time consuming to find them.

We have a completely opposite experience from UK. There were no problems performing these kinds of studies in the hospitals. There is a national registry to coordinate the study, which enables clinical sites to sign up. Documentation standards in UK hospitals were notably high, and there were hospital staff dedicated to research in a completely different way.

The best thing for us would be a combination, Annette Säfhols describes. While larger studies abroad are essential for demographic diversity, initiating the first studies in Sweden offers the advantage of close communication with clinical sites. This proximity enables a better understanding of patient flow and provides crucial support to the nursing staff, particularly beneficial for young companies.

What would it mean for patients to get more trials performed in Sweden?

I have heard that EU is far behind the US in implementing new treatments in healthcare. Australia has launched huge tax incentive programs to attract more clinical trials with the intention to make these new treatments available for Australian patients. Now, a clinical trial does not equal implementation in routine care, Anette Säfholm clarifies. But the trial can raise the awareness of the advancements in treatments, and that is crucial for an implementation later on.

Annette Säfholm
CEO
Gedea Biotech

CURIOUSITY AHEAD

WHICH TRENDS IN THE FIELD OF LIFE SCIENCES ARE YOU MOST CURIOUS ABOUT?

200 life science companies responded to the Life Science Barometer survey in October 2023, which is the foundation of this report. These are free text responses to the question: Which trends in the field of life sciences are you most curious about? We have highlighted a subjective selection. Please enjoy and be inspired.

Personalized medicine – Implementation speed of AI – Centralisation vs decentralisation of diagnostic laboratory testing – Local and global trends – Healthcare systemic change- Competences – Reimbursement – Forecast correctly – Revival of antibody based drugs such as mAbs, bispecifics, fusions and ADCs – Equality and access to medicines for patients – FDA Project Optimus, from maximum tolerated to minimum effective dose – Funding – ATMPs – Biopharma development – Gene therapy – Computational Science – Applied AI – **Sweden's positioning in the entire life science chain from R&D to manufacturing** – How to impact the home care and increase the independence of the elderly – AI guided surgical planning and implant use – Drug formulations – Radiopharmaceuticals – Collaboration between private and public sector – New solutions for funding – Swedish initiatives to facilitate clinical trials and increase use of innovative drugs – Vaccines – R&D productivity – Impact of AI and digitalisation – Deals between biotech and pharma – Cryo-EM market – **Regulatory evolution to manage new more personalised medicine** – How the product development evolves – Cell and gene therapy, switching to allogeneic from autologous and the chance/risk that bioengineered antibodies can do the same thing – Pharma M&A – **Regenerative medicine** – Microphysiological systems and new advanced cell-based drug screening technologies – Market access – Price control in the US – Single cell analysis – Long read sequencing – GLP-1 development – **Precision diagnostics** – Incorporating oral health into systemic health – R&D spending – Application of AI and machine learning in products already on the market – The increase of post market presence, both of R&D and regulatory compliance, within pharma, medtech and diagnostics – Health tracking – **Microbiota** – Point-of-care – Decentralized clinical trials – High volume recruitment sites – Biobanking – Pre-clinical testing of antibody based therapeutics in cells and organoids – Precision healthcare – **Prevention** – The internet of medical things – Regulatory environment – Data Science – Mergers and aquisitions – Access to capital – Female health – Spatial proteomics – Robotics – Demands from EU regarding circular economy – Prevention before treatment – Health care (big) data – Remote monitoring – Treatment landscape development – Exosome RnD – Patient safety – **Technologies addressing global health challenges** – New "bio" technologies and their impact on health and the environment – Market access for innovative pharmaceuticals – Personalized patient approaches – Pricing & reimbursement – What to do about the detrimental effect of alternate facts in healthcare and in science– Clinicial trial regulatory evolution in Europe – **The growth, hype and impact of AI** – Adoption of novel modalities in oncology – Impact of the IRA on global investment choices by pharma – **Digital therapeutics** –Market changes in wound healing due to MDR updates – Use of AI in lifescience - Manufacturing innovation/automation - The balance of developing new innovative therapies and the increasing demands on lower pricing – **Changing clinical practice**

Subjectively-selected responses highlighted

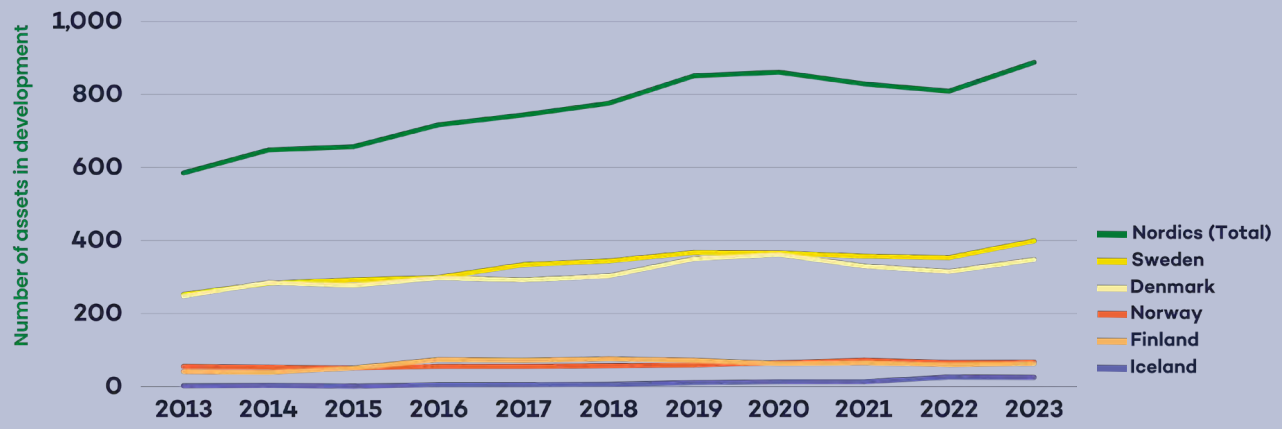
INTERNATIONAL OUTLOOK

NORDIC LIFE SCIENCES BY THE NUMBERS

The Nordics punches above its own weight. The collective Nordic R&D drug pipeline has risen 50% over the last decade to more than 900 assets, equating to a 5% compound annual growth rate (Figure 1). Sweden itself is now the largest contributor within the Nordics, thanks to its diverse set of biotech innovators. The country is home to 130 separate companies with active drug development programs, which combine to create an R&D engine of more than 400 drugs, rivalling the largest multinational pharmaceutical companies.

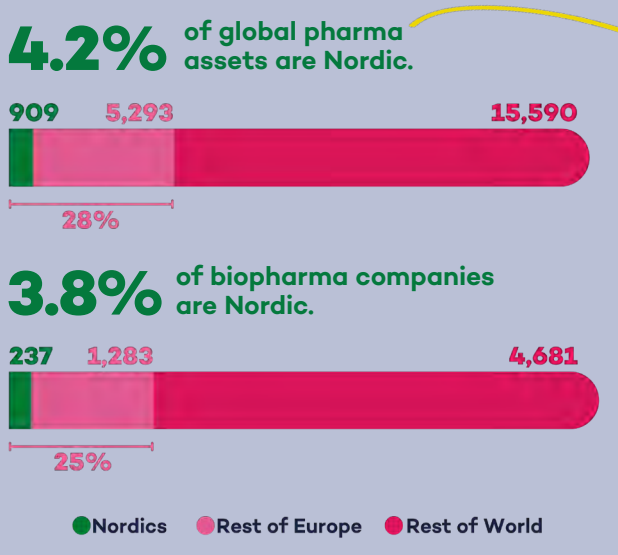
Over this same time period, Europe has managed just 3% growth, seeing the Nordics become increasingly influential in shaping R&D trends across the continent. Its innovations also carry global importance: Wegovy (Novo Nordisk) and Leqembi (BioArctic) in particular will become defining drugs of the next decade, while Nubeqa (Orion) shows that new drugs are discovered across all five countries.

Nordic biopharma pipeline growth

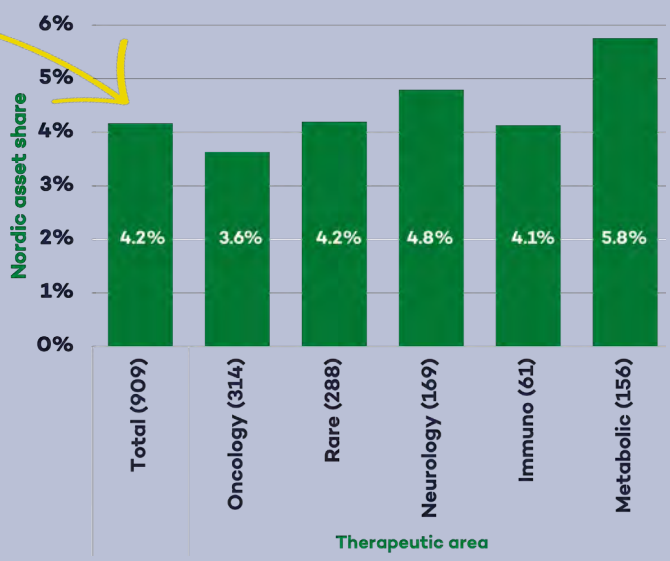


This is despite the Nordics having a small footprint when zooming out to all global R&D. Just 4% of pipeline drugs belong to companies in the region, and its companies also account for 4% of the global total (Figure 2). Nevertheless, there are capabilities and expertise across several key drug technologies and therapeutic areas that are becoming the industry's growth drivers. Biologics and RNA therapies, rare diseases and immunology – these are all areas of notable investment. A legacy of neuroscience and cardiometabolic research continues as Nordic companies remain global leaders in the field. Even cell therapy, where the domestic pipeline is slightly under the 4% share, is rapidly becoming an area of strength with a 50% increase in the last year alone. Swedish companies in particular are supporting this pivot – Anocca is the domestic leader, and its cell therapy pipeline is among the largest in the industry.

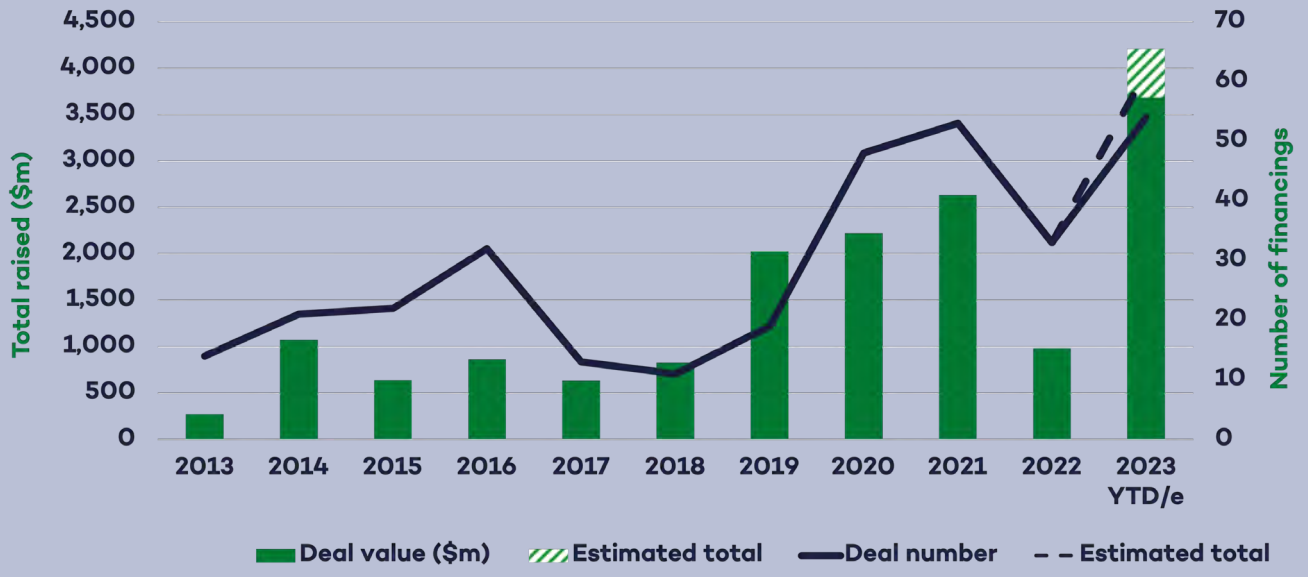
Nordic share of biopharma



Nordic asset share per therapeutic areas



Financing activity in the Nordics



As pipelines have increased, so has the demand for financing. Many companies in the region are pre-revenue innovators and so rely on external investment to progress new treatment options closer to patients. Over the last decade, investors have recognized the potential in the Nordics and 2023 is on track to become a record year of financing with a total in excess of $4bn (Figure 3). This is remarkable considering that the biotech sector as a whole remains in a downturn globally following the pandemic, with financing down approximately 50% from its peak. The Nordics has not only recovered from a challenging 2022 but showed that the sector remains attractive.

Investment in Swedish biotechs has followed a similar trajectory, with a projected 2023 total of >$1bn representing a new peak. Sobi constituted more than half of the total with a SEK6bn rights issue, and 25 separate companies disclosed new financings in 2023. This number of smaller, youthful companies that have been able to raise capital in a challenging market bodes well for the future outlook of biotech in Sweden.

Nordics position within European life sciences

	Nordics	France	Germany	Switzerland	UK
Pipeline size	~900	~850	~900	~1,150	~1,450
Fundraising*	$15.9bn	$12.1bn	$24.1bn	$19.8bn	$56,7bn
Alliances*	477	545	712	802	970
Annual R&D	€2.4bn	€4.2bn	€8.0bn	€7.7bn	€6.4bn
Population	28m	65m	83m	9m	68m

*transactions since 2013

The Nordics compares favorably to other major hotspots in Europe. For a region with a population less than half that of France, Germany, and the UK, it is able to rival these countries on several important metrics of biopharmaceutical innovation (Table 1). Its closest peer is Switzerland, which itself is unique and has an intense concentration within life sciences. As more local success stories emerge, perhaps the Nordics will develop a reputation to rival not only Basel, but also Boston.

Daniel Chancellor
Thought Leadership and Consulting Director
Citeline

DATA SOURCES & METHODS

This report has been produced by SwedenBIO in cooperation with Medicon Village Innovation, Sahlgrenska Science Park, Stockholm Science City Foundation, STUNS Life Science and Citeline.

Questions or comments are welcome to Maja Neiman, Science Director at SwedenBIO and editor of the report: maja.neiman@swedenbio.se

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DATA SOURCES

This report aims to describe the Swedish life science industry through company metrics and a CEO survey. Company metrics are gathered from the national statistics of the life science industry published by Vinnova 2023 and the Swedish life science database Insight machine. The survey was directed to top management of life science companies in Sweden in October-November 2023. 200 life science companies responded to the survey. The international outlook is based on data from the databases provided by Citeline: Biomedtracker, Pharmaprojects. The definition of the life science industry is based on the national automated method developed and described by Vinnova 2023.

DATA PROCESSING AND DEFINITIONS

Company sizes are related to number of employees as follows: Micro 0-9, Small 10-49, Medium 50-249, Large >250 employees. All percentages are calculated in relation to the number of responses to the question. Responses for primary and additional segments as well as business activities were normalized in order for each company to provide a total score of 1.0, regardless of how many alternatives were reported. See table 1 for a schematic of original responses (dummy data) and table 2 for corresponding scores.

TABLE 1	Primary Segment /Activity			Additional Segment /Activity		
	A	B	C	A	B	C
Company 1	1	0	0	0	1	0
Company 2	1	1	1	1	1	1
Company 3	1	1	0	0	1	1

TABLE 2	Primary Segment /Activity			Additional Segment /Activity		
	A	B	C	A	B	C
Company 1	1	0	0	0	1	0
Company 2	0.3	0.3	0.3	0.3	0.3	0.3
Company 3	0.5	0.5	0	0	0.5	0.5

Free text responses were interpreted into categories manually, with the assistance of chat GPT. Topics for interviews were subjectively chosen by the project team.

The international data provided by Citeline use the following definitions: A company is defined Nordic if the headquarters is in a Nordic country. Data from Pharmaprojects describes the pharmaceutical pipeline – includes companies that are developing drugs through the various preclinical and clinical stages and that own the intellectual property and developmental rights. Data from Biomedtracker describes the financing situation – contains the broader ecosystem including: biotechnology, pharmaceuticals, contract research organisations, medical devices, digital health, diagnostics, lab services, research equipment and supplies, distributors and services. The pharma/biotech segments will account for the majority of the deals. This database relies on public disclosures and so may miss the smallest companies that are operating in stealth mode and/or solely through grant funding.

Disclaimer: The content of this report is based on information gathered in good faith and is believed to be correct at the time of publication.
Main Publisher: SwedenBIO, Wallingatan 24, 111 24 Stockholm, Sweden, info@swedenbio.se
www.swedenbio.se

Please cite as the **Life Science Barometer 2024.**
Download the report at swedenbio.se/reports

THANKS TO ALL THE COMPANIES THAT PARTICIPATED TO THE LIFE SCIENCE BAROMETER 2024!

- AAX Biotech
- Abera Bioscience
- Abliva
- Add a Medical
- Adlersson Heath
- AdvanSci Research Solutions
- Aera
- Agardh Recruitment & Consulting
- AlzeCure Pharma
- Alzinova
- AnaCardio
- AnaMar
- APL (Apotek Produktion & Laboratorier)
- Arcede Pharma
- Arex Advisor
- AroCell
- Ascelia Pharma
- AstraZeneca
- Atlas Antibodies
- AZ BioVentureHub
- Bayer
- Beactica Therapeutics
- Beat Vascular Health
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- Bio-Works Technologies
- BioArctic
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- cAIre tech
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- Capitainer
- CAVIDI
- Cavis Technologies
- Ceffort ControlSep
- Cellcolabs
- Chiesi Pharmaceuticals
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- ContextVision
- Cyxone
- Devyser
- Devyser Diagnostics
- Diamyd Medical
- Disruptive Pharma
- Doctrin
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- Ectin Research
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- Inossia
- InvivoPower
- Kancera
- Key2Brain
- Key2Compliance
- Koda Konsult
- Kumu Health Technologies
- Lablytica Life Science
- Larodan
- LIDDS
- LINK Medical
- LIONESS Therapeutics
- LIPUM
- Lokon Pharma
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- Q&Q Labs (Scantox)
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- Testa Center
- Toleranzia
- Toxicology Knowledge Team Sweden
- Truly Labs
- TuuLifeScience
- VERIGRAFT
- Viedoc
- VSA Innovation
- WeQuel
- WntResearch
- Zelmic

+43 companies that wish to be undisclosed

Legend: • Micro-sized • Small • Medium • Large