

LIFE SCIENCE IN EASTERN DENMARK – THE DANISH PART OF MEDICON VALLEY

– a survey of companies in the sector



700 companies

58 000 employees

10 500 new jobs in five years

Investments for +45bn
DKK in new facilities

Pharma largest subsector



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– a survey of companies in the sector

This analysis has been prepared by Øresundsinstitutet as part of the Interreg-project Greater Copenhagen Life Science Analysis Initiative and was written by Kristoffer Dahl Sørensen and Sofi Eriksson.

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Cover photo: News Øresund and Novozymes

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GREATER COPENHAGEN LIFE SCIENCE ANALYSIS INITIATIVE is an EU-project aimed at increasing knowledge about the region's life science cluster. The focus is on the demand for labourers, future expertise needs, and more. The project has received funding through the EU-programme Interreg Öresund-Kattegat-Skagerrak and will continue until 30 June 2022. The project's lead partner is Medicon Valley Alliance, and the partner is Øresundsinstitutet. Region Skåne and Region Zealand are co-funding the project.



MEDICON VALLEY is the bi-national life science cluster spanning Eastern Denmark and the Skåne region of Southern Sweden. Today, the Danish-Swedish region is marketed internationally with the name 'Greater Copenhagen', and its increasing population has reached more than four million residents. In Sweden, the same geographical area is often called the 'Øresund Region'.

PREFACE

The Danish-Swedish life science cluster that stretches over the Øresund, Medicon Valley, continues to surprise – in a good way. This analysis of the Danish part of Medicon Valley not only shows how the life science cluster is continuing to grow and become an evermore important element in the economic development of Denmark and the Øresund Region as a whole; it also shows that the cluster is larger than what was previously understood, and that new, record investments are being planned for plants, research facilities and headquarters in eastern Denmark. The investments will promote continued growth in Medicon Valley.

Other results from the analysis show how the Novo Nordisk Foundation's investment in incubation at BioInnovation Institute is instrumental in increasingly more new life science companies being started up in eastern Denmark. As a contrast to the many new small companies, the analysis confirms that beacon companies with at least 250 employees in Medicon Valley employ 76% of the total 58 000 employees in the life science cluster in eastern Denmark.

The analysis' results are based on a method that includes the processing of statistical data from various sources, extensive research, and numerous interviews. The analysis is part of the Interreg-project Greater Copenhagen Life Science Analysis Initiative, which is headed by Øresundsinstitutet and Medicon Valley. In addition to funding from Interreg, the project has been co-funded by Region Skåne and Region Zealand.

After almost three and a half years, the project is drawing to a close, and we can summarise it by stating that Medicon Valley is growing on both sides of the Øresund Strait, both in terms of employee numbers and when it comes to new investments. That means that Scandinavia's largest life science cluster is continuing to strengthen its position.

Copenhagen and Malmö, 30 May 2022 (updated on 30th June 2022)

Johan Wessman
CEO
Øresundsinstitutet

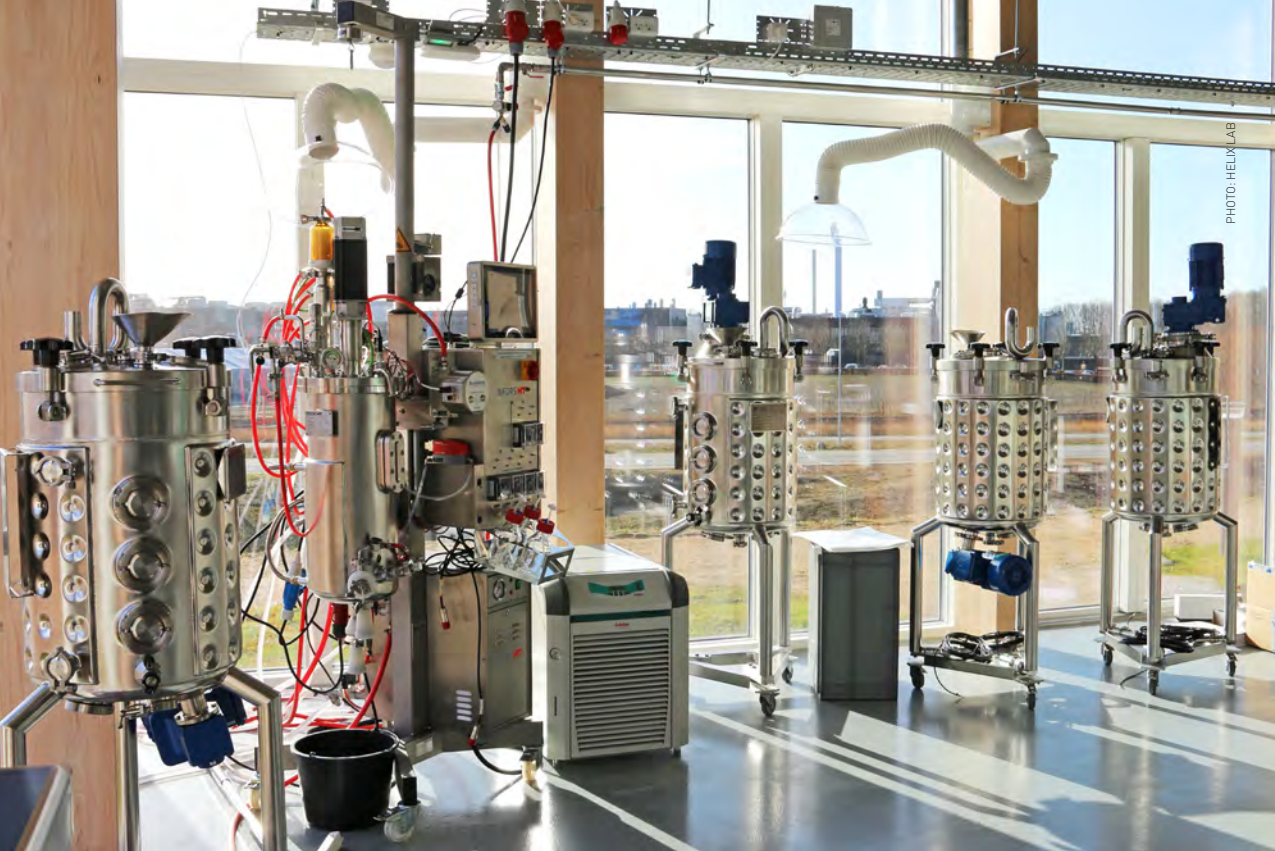


PHOTO: HELIX LAB

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PHOTO: HELIX LAB

700 enterprises

The life science sector in eastern Denmark is comprised of ca 700 companies. Half of them can be categorised as micro-companies with nine employees or fewer, and around 75% of all employees in the sector work at large companies with more than 250 employees.

200 new companies

Around 200 new life science companies have been founded in eastern Denmark since 2017. They employ a total of around 2 300 in the region. The majority of the new companies are in biotech and located in Copenhagen.

DKK 45bn

Life science companies in eastern Denmark are investing more than DKK 45bn in expanding their plants, offices, and R&D facilities.

A THIRD OF EASTERN DENMARK'S LIFE SCIENCE COMPANIES ARE IN COPENHAGEN

272 life science companies were identified in Copenhagen Municipality, which is the municipality in eastern Denmark in which the greatest number of life science companies are located. Many of them are small, research-driven startups. Gladsaxe is the municipality in eastern Denmark where the largest number of life science employees work locally. Around 10 000 work in the life sciences in Gladsaxe Municipality, ca 5 000 of them at Novo Nordisk's global headquarters in Bagsværd.

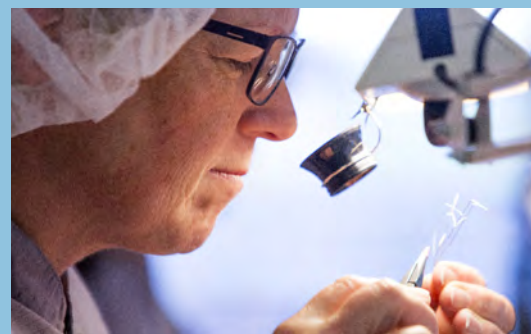


PHOTO: COOK MEDICAL

WANTED: EXPERTISE IN STEM SUBJECTS

Regardless of their subsector, most life science companies in eastern Denmark cite R&D as the most relevant expertise to recruit if they can augment their staff in the coming years. Commercial, regulatory, IT and tech expertise are also in demand in the sector. On the whole, expertise needs and -shortages are related to the STEM subjects (Science, Technology, Engineering and Mathematics). These are some of the results drawn from a questionnaire to which around 50 life science companies responded for this report.

58 000

The life science industry employs 58 000 people in eastern Denmark. In 2017, around 47 700 people worked in life science companies in eastern Denmark, according to the most recent company data available. Employment has grown in all subsectors, i.e. pharma, biotech, medtech, CRO, CMO, ICT/healthtech and foodtech. Employment has risen most in the municipalities of the Capital Region of Denmark above all.

PHARMA LARGEST SUBSECTOR

Around half of those employed in the life science sector in eastern Denmark work in pharma. Pharmaceutical development and production are thus a key sector in eastern Denmark; there are around 100 identified pharma companies, e.g. Novo Nordisk, Lundbeck and LEO Pharma.



PHOTO: NEWS ØRESUND

THE LIFE SCIENCE SECTOR IN EASTERN DENMARK IS GROWING – REGIONAL INVESTMENTS OVER 45BN DKK

The life science sector in eastern Denmark is bigger than previously thought. Around 700 companies identified in eastern Denmark employ around 58 000 people regionally. They have grown by around 10 500 over the past five years, making the sector larger than e.g. the finance- and insurance sector. The driving force behind the employment growth in the sector has primarily been companies in the municipalities of the Capital Region of Denmark, and it appears that the growth will continue in the years to come, with new regional investments in plants, research labs and headquarters worth a total of over DKK 45 bn. The investments are expected to create another 4 000 life science jobs in eastern Denmark. Interviews with professionals from the sector bear witness to a strong belief in the future, but more STEM-expertise is a must if the positive growth in the sector is to continue, they say. Companies express concern when it comes to the supply of expertise to eastern Denmark, which is dependent on skilled employees from abroad – especially in IT and digitalisation. This is demonstrated by a new analysis by Øresunds-instituttet conducted as part of the Interreg-project Greater Copenhagen Life Science Analysis Initiative, headed collaboratively by Medicon Valley Alliance and co-funded by Region Skåne and Region Zealand.

22% employment increase since 2017

Over the past five years, from 2017-2021, employment has grown regionally in the ca 700 companies in eastern Denmark identified by around 22%, according to Øresunds-instituttet's survey of companies. There are thus around 58 000 employees in eastern Denmark's life science companies today; in 2017, there were 47 700. The life science sector "has a defining role in the Danish economy", according to the Ministry of Industry, Business and Financial Affairs, and all subsectors, i.e., pharma, biotech, medtech, CRO, CMO, ICT/healthtech and foodtech, have grown in that period. In total, the greatest number of new jobs in the region were created in pharma, medtech and biotech, and the greatest percentual employment growth was in ICT/healthtech.

PHOTO: NOVO NORDISK

The life science sector in eastern Denmark is larger than previously thought

Around 58 000 people are employed in ca 700 private life science companies in eastern Denmark according to ØresundsInstitutet's survey of the companies. Thus, more people work in the life science sector in eastern Denmark than in the IT- and information service sectors, which employ around 44 000 people in eastern Denmark, or the finance- and insurance sector, which employs around 55 000 people in eastern Denmark, according to Statistics Denmark. The life science sector is thus a Danish strength, and in 2021 it was responsible for around 20% of the total Danish export goods. The around 58 000 regional employees in the sector are more than previously assumed; for example, the Ministry of Industry, Business and Financial Affairs estimates that the life science industry in all of Denmark employs around 50 000 people. The discrepancy may be due to different definitions of the life science sector and the number of statistical sector codes included. ØresundsInstitutet has both acquired data from Statistics Denmark and independently contacted both large and small businesses to obtain supplementary information for the greatest degree of precision regarding the number of employees, and has thus reviewed the most recent employee numbers available in the statistics – read more about the method on page 103-106.

Most work in pharma in eastern Denmark – but most companies are medtech

Around half of the 58 000 people who work in the life science sector in eastern Denmark are in pharma. Pharma is thus the largest subsector in terms of employment, and there are around 100 pharma

companies in eastern Denmark. That the subsector pharma is so large can be attributed to the Danish pharma company Novo Nordisk, which at over a century old is without reservation the largest life science company in all of Medicon Valley, and a global leader for diabetes treatment. The company employs around 18 200 people at 11 different regional sites in eastern Denmark where they undertake R&D, production- and commercial activities.

Although pharma is the subsector in which the greatest number of people work in eastern Denmark, the greatest number of companies are in medtech: around 230 companies were identified in eastern Denmark. Every third life science company in eastern Denmark is a medtech company. Medtech is the second largest subsector in terms of the number of jobs provided, with almost 14 000 employed. The largest medtech companies are Coloplast, Radiometer Medical, and Cook Medical, along with the hearing aid cluster made up of Demant, WS Audiology and GN Hearing, all of which have global headquarters and production- and R&D activities in eastern Denmark – read more in the company survey on page 11-19.

More than DKK 45bn in construction investments give 4 000 new future jobs regionally

Some of the largest life science companies in eastern Denmark are investing in expansions of their plants, research facilities and/or domiciles in eastern Denmark now and in the years to come. ØresundsInstitutet identified 14 regional examples of company expansions linked to the life science sector, which is investing a total of over DKK 45bn and expects to create 4 000 new jobs in the region. For example, Novo Nordisk is investing DKK 18bn to make its largest plant, which is in Kalundborg in north-western Zealand, even larger and more advanced. Northwest of Copenhagen in Ballerup, the pharma company LEO Pharma is undertaking its largest-ever factory project in its more than 100-year history with a budget of DKK 1.5bn. In Hillerød in northern Zealand, the Japanese-owned contract research and -manufacturing company Fujifilm Diosynth Biotechnologies is putting around DKK 17bn into an expansion. This June, it was granted permission to build out the facility by another 73 000 m². This illustrates a tangible investment capacity and belief in the future in the sector, as well as strong manufacturing know-how – in technical terminology CMC-expertise (Chemistry, Manufacturing and Controls) – in eastern Denmark. Because of the new investments, Danish life science expects to be able



to further increase production and exports in the coming years – read more about company expansions on page 25-29.

Expertise supply raises concerns in sector

The shortage of skilled employees is a significant challenge for the life science sector in eastern Denmark. Recruiting for specialist positions can be a lengthy process, and vacant positions are left unfilled. Companies in the region primarily need to recruit employees in 1) Research and development, 2) Sales-, marketing- and business-development, 3) Regulatory affairs and quality assurance, and 4) IT, tech, and production. These are some of the results drawn from a questionnaire answered by around 50 companies in the region of sizes and in all subsectors. In addition, 18 in-depth interviews with various professionals from the sector were conducted for the report.

Large- and small life science companies alike express concern regarding the supply of expertise to eastern Denmark in the future in the subjects Science, Technology, Engineering and Mathematics (STEM). This is in spite of increased admissions to programmes in the STEM-subjects in Denmark; according to authorities, there has been a 7% rise since 2017 – corresponding to 1 000 people. Companies' expertise needs coincide with their reports of a shortage of expertise in the very same subjects. A continuous focus on the STEM-subjects is thus a necessity if the expansive phase in which the sector now finds itself is to continue. Professionals from the sector concur that recruiting employees from abroad – particularly in IT and digital expertise – is vital. Flexible and unbureaucratic labour market regulations for people from abroad are thus important – read more about the supply of expertise on page 87-91.

MEDICON VALLEY EMPLOYS AROUND 65 500 PEOPLE IN 1 150 COMPANIES

A total of around **65 500** people work in private life science companies in Medicon Valley.

Ca **58 000** employees work regionally in private life science companies in eastern Denmark.

Ca **7 500** work in the private life science sector in Skåne.

Ca **700** life science companies were identified in eastern Denmark; there are around **450** life science companies in Skåne. In total, Medicon Valley comprises around **1 150** companies.

The companies identified have created around **12 000** new jobs regionally in the past five years. In that same period, around **300** new life science companies were founded – or more than one new company each week.

There are over **900** border commuters in Medicon Valley. Most commute from Skåne to eastern Denmark.

These are some of the results from an in-depth survey of the region's companies conducted by ØresundsInstitutet between 2019-2022.



MEDICON VALLEY is the bi-national life science cluster spanning eastern Denmark (Region Zealand and the Capital Region of Denmark) and the Skåne region of southern Sweden. Today, the Danish-Swedish region is marketed internationally with the name 'Greater Copenhagen', and its increasing population has reached four million residents. In Sweden, the same geographical area is often called the 'Øresund Region'.

GREATER COPENHAGEN LIFE SCIENCE ANALYSIS INITIATIVE 2019-2022

This report is part of the Greater Copenhagen Life Science Analysis Initiative. The project aims to generate more knowledge about the life science cluster Medicon Valley. Throughout the duration of the project, the life science sector's companies have been meticulously mapped out in a database to reveal the size of the cluster. The demand for skilled labourers and future needs for expertise are also focus areas. Six reports will be published within the project, including *Life Science in Skåne* (2020), *Life Science across the Øresund* (2021) and *Life Science in Eastern Denmark* (2022).



PHOTO: ALK-ABELLO A/S

Life science sector in eastern Denmark created 10 500 new jobs in past five years

The life science sector in eastern Denmark is in an expansion phase. Since 2017, around 10 500 new jobs have been created regionally in the sector – primarily in the Copenhagen area, where the vast majority of those employed in the sector work. Øresundsinstituttet has identified nearly 700 companies in the Danish part of Medicon Valley. Overall, most of the companies are in medtech, whilst the greatest number of employees are in pharma. Most of the startups founded in the past five years are in biotech.

Today, the private life science sector in eastern Denmark comprises around 700 companies with a total of around 58 000 employees. For the sake of comparison, the agricultural-, forestry-, and fishing industries employ around 67 500 people in all of Denmark and around 13 000 in eastern Denmark, and the financial- and insurance sectors employ around 55 000 people in eastern Denmark. The life science sector is growing exponentially. The number of employees in the region has increased by 10 500 individuals since 2017, and around 200 companies have been started since then. Strong job growth is also expected for the coming years; more than DKK 45bn in investments will go to new facilities in eastern Denmark, creating thousands of new jobs – read more on page 25-27.

22% employment growth

Employment growth in the around 700 life science companies in eastern Denmark identified has been overwhelmingly positive for the past five years, from 2017-2021. Around 58 000 people work in the life science sector in eastern Denmark, according to the most recent figures available, which Øresundsinstituttet has collected via contact with companies and from company registers. In 2017, a total of around 47 700 people worked in the sector regionally. That is a 22% employment growth, which corresponds to about 10 500 new jobs in five years.

Geographically, the employment growth in the life science sector in eastern Denmark has been broadly distributed; in total, the greatest number of new jobs were in Copenhagen, Gladsaxe and Ballerup Municipalities. These are the three municipalities in eastern Denmark with the greatest number of life science employees – read more on page 32-35.

Since 2017, more employees have been taken on in all subsectors, comprising pharma, biotech, medtech, CRO, CMO, ICT/healthtech and foodtech – see the table on page 12. The greatest percentual employment growth was seen in the subsector ICT/healthtech, where companies develop digital health solutions. On the whole, the majority of the new jobs created regionally were in pharma, medtech, and biotech; these are the subsectors with the greatest number of companies regionally. Another 9 500 new jobs could potentially be created in the life science sector in Denmark by 2030, e.g. if research is

PHOTO: NEWS ØRESUND



EASTERN DENMARK

The survey of the private life science sector in eastern Denmark reveals

700

Life science companies

58 000

Employees in life science companies in the region

+200

New companies in the region since 2017

+10 000

New jobs in the region since 2017

Source: Statistics Denmark, Bisnode, Central Business Register, and data from the companies.

commercialised more to become startups, according to a report from Damvad Analytics in April 2022.

Most companies in medtech – but more employees in pharma

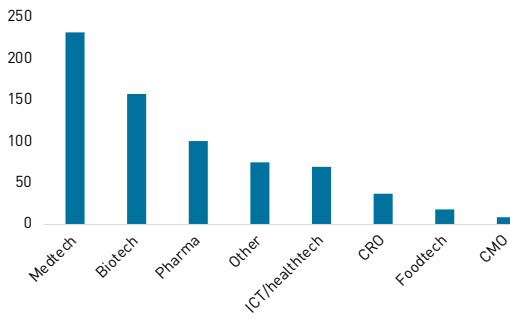
Half of the 58 000 people who work in the life science sector in eastern Denmark and around the Danish capital are in pharma, which is thus the largest subsector in terms of employment with its approximately 100 companies in eastern Denmark – see table below. Together, the beacon companies Novo Nordisk, LEO Pharma and Lundbeck provide around 22 000 jobs in eastern Denmark today. Pharma is thus shaped by large, industrial, firmly established companies, among which are also ALK-Abelló, Xellia Pharmaceuticals, and Ferring Pharmaceuticals, as well as the

regional offices of international pharma companies such as Roche, Bayer and Teva. The pharma subsector has grown by 3 320 employees since 2017, and 17 new companies have been started.

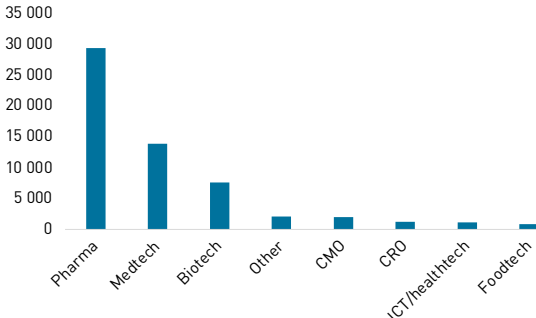
Although pharma is the subsector in which the largest number of people are employed in eastern Denmark, the largest number of companies are in medtech, where 231 companies were identified in eastern Denmark. Every third life science company in eastern Denmark is a medtech company. Medtech is the second-largest subsector in terms of the number of jobs provided, with almost 14 000 employed. Among the largest medtech companies are the hearing aid cluster that includes Demant, WS Audiology, and GN Hearing, as well as Coloplast, Radiometer Medical, and Cook Medical. In addition, numerous medium-sized companies such

A THIRD OF THE LIFE SCIENCE COMPANIES IN EASTERN DENMARK ARE MEDTECH COMPANIES – BUT MOST EMPLOYEES ARE IN PHARMA

Number of life science companies 2021/2022



Number of employees in the life sciences 2021/2022



Sector	Number of companies in eastern Denmark	Number of employees in eastern Denmark 2021/2022	Percentual change of employees in eastern Denmark 2017-2021/22	Change in employees in eastern Denmark 2017-2021/2022	New companies in eastern Denmark since 2017	Employees in new companies in eastern Denmark since 2017
Pharma	100	29 359	13%	3 320	17	145
Medtech	231	13 882	25%	2 804	26	148
Biotech	157	7 587	36%	2 021	82	422
Other*	75	2 051	17%	300	20	90
CMO	9	1 953	47%	621	2	918
CRO	37	1 247	64%	488	8	103
ICT/healthtech	70	1 160	147%	691	43	283
Foodtech	18	877	18%	132	10	176
Total	697	58 116	22%	10 377	208	2 285

Number of employees according to most recent available data from 2017-2021/2022. Source: Statistics Denmark, Bisnode, Central Business Register, and data from the companies. Contract manufacturing organisations (CMO) and contract research organisations (CRO) are companies that are commissioned to either develop and/or manufacture e.g. pharmaceuticals for other companies in the life sciences. *Other refers to e.g. engineering firms, logistics companies, inventory manufacturers and consultants with a life science focus. Figures may have changed since they were reported.

NOVO NORDISK IS THE LARGEST COMPANY IN THE REGION

List of the largest life science companies in eastern Denmark. With its 18 200 employees in the region Novo Nordisk is not only the largest life science company in eastern Denmark, but in the entire Medicon Valley cluster.

Company	Municipality	Subsector	Employees in eastern Denmark 2017	Employees in eastern Denmark 2021/2022
Novo Nordisk A/S	Gledsaxe	Pharma	16 000	18 200
Novozymes A/S	Gledsaxe	Biotech	2 600	2 800
LEO Pharma A/S	Ballerup	Pharma	2 100	2 000
Demant A/S	Egedal	Medtech	1 500	1 800
Chr. Hansen A/S	Rudersdal	Biotech	1 500	1 800
H. Lundbeck A/S	København	Pharma	1 600	1 700
Coloplast A/S	Fredensborg	Medtech	1 200	1 400
Radiometer Medical ApS	København	Medtech	1 000	1 200
WS Audiology A/S	Allerød	Medtech	800	1 100
Fujifilm Diosynth Biotechnologies ApS	Hillerød	CDMO	800	1 000
GN Hearing	Ballerup	Medtech	550	900
NNE A/S	Lyngby-Taarbæk	Other	900	900
ALK-Abelló A/S	Rudersdal	Pharma	750	800
William Cook Europe ApS	Køge	Medtech	800	800
Agilent Technologies Denmark ApS	Glostrup	Medtech	500	700

Number of employees according to most recent available data from 2017-2021/2022. Source: Statistics Denmark, Bisnode, Central Business Register, and data from the companies. CDMO refers to contract manufacturing organisations (CMO) in statistics. Figures may have changed since they were reported, and they are rounded. Some companies were only able to supply figures for 2018 and 2019.

as Medtronic, Ambu and Ferrosan Medical Devices are headquartered in eastern Denmark, and international medtech companies such as Baxter, AbbVie, and Getinge are also located in the region. The medtech sector in eastern Denmark has grown 25% since 2017, which corresponds to 2 804 people, and 26 new companies have been formed.

Most new companies in biotech

208 new life science companies have been founded since 2017. Most of the companies established in the past five years are in biotech. Of the 157 companies identified in the subsector, 82 – i.e., more than half – were started at some point between 2017-2022. Of those 82 companies, almost 50 have links to the BioInnovation Institute Foundation, which was founded by the Novo Nordisk Foundation in 2018 and is a life science incubator in Copenhagen – read more on page 23. Other newly established biotech companies include e.g. scientific spinouts from research at the Technical University of Denmark and the University of Copenhagen, for example Synkline, FluoGuide and Adcendo. In total, 7 587 people work in the subsector biotech in eastern Denmark,

and the number of employees has grown since 2017 by just over 2 000 people. In addition to a broad growth layer, the subsector includes a number of large, industrial companies. The largest companies in biotech are Novozymes, with around 2 800 employees in eastern Denmark and around the capital, followed by Chr. Hansen, Agilent Technologies, Genmab and Ascendis Pharma. The medium-sized biotech companies in the region include Symphogen, Evaxion Biotech and Zealand Pharma.

Contract companies have grown by over 1 000 employees over the past five years

Contract Manufacturing Organisations (CMOs) are a sector with few, but several large companies – see the table on page 12. The in total ten companies identified employ a total of 1 953 people. Above all, Fujifilm Diosynth Biotechnologies – which acquired Biogen's medicine plant in Hillerød Municipality in 2019 – and AGC Biologics in Søborg provide the employment. Both companies are currently expanding their Danish production facilities. Since 2017, the subsector has grown by just over 600 employees. When it comes to Contract Research

Organisations (CROs), there are a greater number of companies with fewer employees. In total, 1 247 work in the subsector, in 37 different companies. Since 2017, around 500 new jobs have been created, and eight companies formed in the CRO-sector in eastern Denmark. Eastern Denmark's largest CRO-companies are Gubra in Hørsholm, KLIFO in Glostrup and Scantox, near Køge. On the whole, startup activity in the CMO- and CRO-subsectors has been relatively low in eastern Denmark over the past five years compared with other life science subsectors in the region. However, some of the larger CMOs collaborate with e.g. smaller life science companies.

Largest percentual increase in employees in ICT/healthtech

The subsector ICT/healthtech refers to life science companies such as Sumondo, Monsenso, and VisioPharm, which develop software solutions and digital health solutions for the healthcare industry to improve stress, obesity or mental conditions. Around 1 160 employees and 70 companies in ICT/healthtech were identified – see the table on page 12. Compared with the other subsectors in the life sciences, ICT/healthtech had the greatest percentual increase in the number of employees in the region between 2017-2022 – 147%, or just under 700 people. There are three matters worth noting in relation to the subsector ICT/healthtech: 64% of the 70 companies have been started since 2017, the majority of them are located in the Municipality of Copenhagen – many with links to BioInnovation Institute – and most of the companies are micro- and small companies, with the exception of 3Shape, which is the largest ICT/healthtech company identified in eastern Denmark and has more than 400 employees in the region.



Foodtech companies employ fewest regionally 18 companies were identified in the subsector food/foodtech, with a total of nearly 900 employees – see the table on page 12. That means that the subsector has grown by around 130 people and 10 new companies since 2017. Despite progress in the subsector food/foodtech, it employs the lowest number of people in the region compared to the other subsectors in the life sciences. CP Kelco, Unibio and Chromologics are example of foodtech companies that develop new ingredients, proteins or colours, e.g. with the help of fermentation processes. As in the subsector ICT/healthtech, there is overlap in the sector; thus, biotech companies such as Chr. Hansen and Novozymes also converge with the foodtech segment, although they are not included in the inventory of the foodtech subsector.

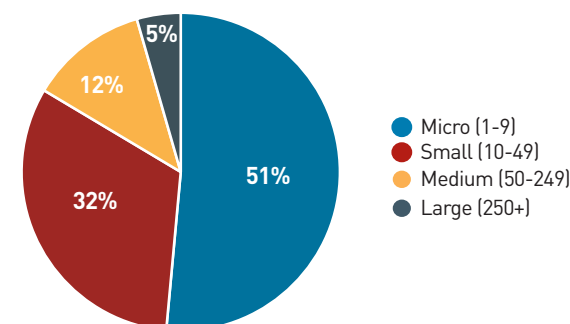
92% work in traditional life science

The life science sector has grown broader in recent years due to new technologies and treatment approaches. The sector also includes companies active in IT-development and in areas where food and health overlap. Because of artificial intelligence and data, pharma-, and medtech companies also collaborate with app producers and software developers. In spite of the fusions, the 'traditional' subsectors pharma, biotech, medtech, CRO and CMO still provide 92% of the 58 000 jobs in the sector in eastern Denmark – see the table on page 15. Of the 10 500 new jobs that were created regionally in the period 2017-2022, the traditional subsectors provide 89%. That means that the five traditional subsectors – which are also the largest in terms of employment – that develop and/or manufacture medicine and therapeutics are those of which the life science is primarily comprised, although the subsectors ICT- and foodtech are experiencing growth.

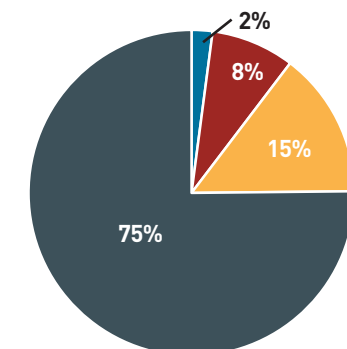
The sector overlap may be wider-reaching than is reflected in the statistics, as e.g. new technology in ICT/healthtech is also utilised by companies that are defined as traditional pharmaceutical companies or biotech companies. Sector overlap is also apparent in e.g. the Novo Nordisk Foundation's new strategy from 2022, where sustainable food for healthy and environmentally friendly food is a focus area. Another example is that improved use of health data has become a more significant issue in the Danish life science strategy from 2021. This is an indication that the overlap between the life science sector and the food/foodtech sector will expand in the years to come, in conjunction with the ICT/healthtech subsector being

A LARGE NUMBER OF THE COMPANIES ARE SMALL – BUT LARGE COMPANIES EMPLOY THREE OUT OF FOUR EMPLOYEES

Number of companies in order of company size



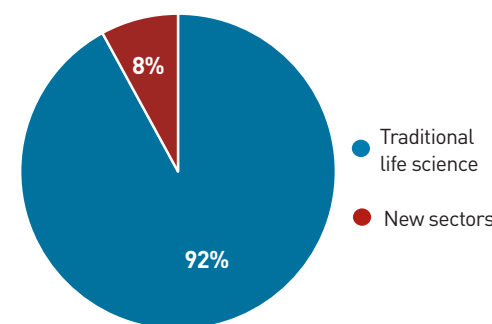
Number of employees in order of company size



Source: Statistics Denmark, Bisnode, Central Business Register, and data from the companies.

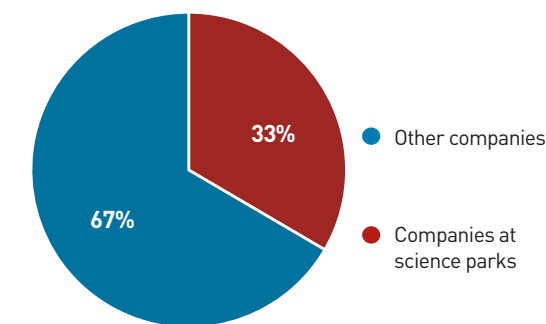
92% WORK IN TRADITIONAL LIFE SCIENCE

Number of employees in traditional life science versus new sectors*



EVERY THIRD COMPANY LINKED TO SCIENCE PARKS

Share of companies at science parks



*'New sectors' refers to the subsectors ICT/healthtech, foodtech and other. 'Traditional life science' refers to the subsectors pharma, biotech, medtech, CRO and CMO. Source: Statistics Denmark, Bisnode, Central Business Register, and data from the companies.

responsible for the greatest regional employee number increase between 2017-2022 at 147%.

Most companies are small, but most work in large

Of the around 700 life science companies identified in eastern Denmark, about half are micro-companies with 1-9 employees; see above table. Around one-fourth of all of the companies in the sector are made up of small companies with 10-49 employees. Only 30 of the companies identified, or 5%, have more than 250 employees and can be considered

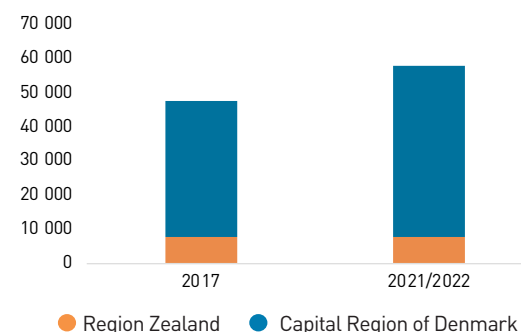
'large' companies according to the EU's defining framework. Nonetheless, the large life science companies in eastern Denmark employ around 76% of the total 58 000 employees in the sector. Micro-companies with 1-9 employees employ a total of 1 200 people, or 2% of the life science employees in eastern Denmark. But both small and large life science companies are important for the sector in eastern Denmark in different ways.

33% of life science companies located in incubators and science parks

Around 230 of the life science companies in eastern

LOW JOB GROWTH IN REGION ZEALAND – DEVELOPMENT IN CAPITAL REGION

Number of employees in respective regions



Denmark are or were previously located in either DTU Science Park in Lyngby and Hørsholm, Symbion Community in Copenhagen, Copenhagen Bio Science Park (COBIS) in Copenhagen, or BioInnovation Institute, also in Copenhagen. 33% of the in total around 700 life science companies identified in eastern Denmark are linked to one of the three science parks and incubators in Zealand, even if companies that had no physical presence at these sites may also have links of a different nature to the environments – see the table on page 15. The life science companies located in these incubation- and science park environments include large companies such as ALK-Abelló and Chr. Hansen, both of which have development departments in science parks in Zealand. Medium-sized companies such as Visiopharm, Medtronic and Glycom are also represented, but in the around 230 life science companies in science parks are particularly small life science companies that rent office- and lab facilities and take advantage of the networking- and collaboration opportunities on site.



MOST REGIONAL EMPLOYEES IN CAPITAL REGION

Eastern Denmark can be politico-administratively divided into the Capital Region of Denmark and Region Zealand. Around 87% of the 58 000 employees in the life science sector in eastern Denmark work in a life science company in the Capital Region of Denmark. That corresponds to ca 50 300 employees. The other 7 200 employees work in a life science company in Region Zealand. Of the ca 10 500 new jobs created regionally in the sector between 2017-2021, the majority – ca 10 250 – were created in the Capital Region of Denmark.

Growth predominantly in the Capital Region

The positive employment development in the life science sector in eastern Denmark in recent years has been concentrated in the Copenhagen area and its adjacent municipalities. Of the around 10 500 new regional jobs created since 2017, approximately 10 250 were created in life science companies located in one of the 29 municipalities in the Capital Region of Denmark. The employment growth in the companies identified is thus around 26%. 7 200 of the 58 000 jobs within life science is located in Region Zealand, which has 17 municipalities. The percentual employment development there has been significantly lower. Employment development in the identified companies in Region Zealand has been around 1%. The majority of the new jobs in the life science sector in eastern Denmark were thus created in the Capital Region of Denmark. The total regional employment development for the life science sector between 2017-2021 was approximately 22%.

The disparate job growth in the Capital Region and Region Zealand is also in part because 11 of the 13 largest life science municipalities in eastern Denmark with more than 1 000 life science employees locally are located in the Capital Region – read more on page 36-43. Novo Nordisk and Chr. Hansen are investing billions of DKK in new expansions of their facilities in Kalundborg in Region Zealand in the coming years and expect hundreds of new jobs to be created as a result. Employment growth in the sector in Region Zealand can thus increase in the future, although more automation and optimisation in production at Novo Nordisk and other companies led to a slight drop in the number of employees in e.g. Kalundborg.

EMPLOYEE NUMBER RISING IN BEACON COMPANIES

Beacon companies with more than 250 employees in eastern Denmark are employing increasing numbers of people, and the number of life science companies in that category is also growing. These companies are particularly important for the economy of the Øresund Region, the growth of the sector, and for competence exchange between large companies and startups across the region. More than three-quarters of all 58 000 employees in the life science industry in eastern Denmark work in large life science companies with more than 250 employees.

30 BEACONS IN EASTERN DENMARK

30 beacon companies with over 250 employees were identified in eastern Denmark.



NOVO NORDISK IS BIGGEST. The largest beacon company in eastern Denmark and all of Medicon Valley is the global diabetes concern Novo Nordisk, which employs around 18 200 people in Zealand and about 100 people in the Swedish offices in Malmö. Other beacon companies in eastern Denmark include Novozymes, LEO Pharma, Lundbeck, Radiometer Medical, Coloplast and the three hearing aid manufacturers Demant, WS Audiology, and GN Hearing.

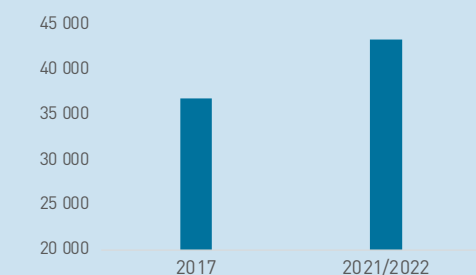
THE BEACON COMPANIES IN EASTERN DENMARK EMPLOY:

44 000

Together, the beacon companies in eastern Denmark employ around 44 000 people regionally. That is an increase of 6 600 jobs since 2017, or ca 18%. On the whole, the life science sector in eastern Denmark has experienced employment growth of ca 22%, so around 10 500 new jobs have been created regionally in the sector.

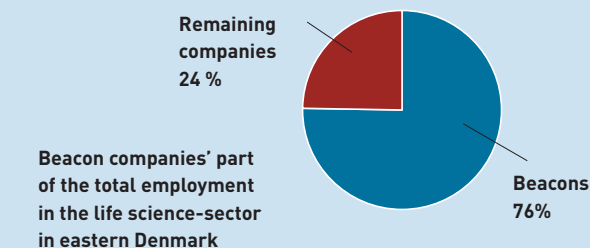
FIVE YEARS, 6 600 MORE EMPLOYEES

Employment development in the beacon companies



76% of total employment

The 30 beacon companies identified are responsible for 76% of the total employment of around 58 000 employees in the life science-sector in eastern Denmark.



Beacon companies' part of the total employment in the life science-sector in eastern Denmark

In eastern Denmark, companies such as e.g. Ferrosan Medical Devices, Dansac, and BK Medical are approaching the 'large company' category. Each employs around 200 to 240 people.

Source: Statistics Denmark, Bisnode, Central Business Register, and data from the companies. The number of employees is rounded off. Please note that these figures may have changed since they were reported, and that some companies were only able to supply figures from 2018 and 2019. The definition of 'beacon' and thus a 'large' company is based on the EU's defining framework for micro-companies (0-9 employees), small companies (10-49 employees), medium-sized companies (50-249 employees) and large companies (> 250 employees).

BEACON COMPANIES' FACILITIES IN EASTERN DENMARK

- 1. Novo Nordisk A/S
- 2. Novozymes A/S
- 3. LEO Pharma A/S
- 4. Chr. Hansen Holding A/S
- 5. Demant A/S
- 6. H. Lundbeck A/S
- 7. Coloplast A/S
- 8. Radiometer Medical ApS
- 9. WS Audiology A/S
- 10. Fujifilm Diosynth Biotechnologies Holdings Denmark ApS
- 11. GN Hearing A/S
- 12. NNE A/S
- 13. ALK-Abelló A/S
- 14. William Cook Europe ApS
- 15. Agilent Technologies Denmark ApS
- 16. Xellia Pharmaceuticals ApS
- 17. AGC Biologics A/S
- 18. AJ Vaccines A/S
- 19. Ferring Pharmaceuticals A/S
- 20. Nomeco A/S
- 21. Convatec Denmark A/S (Unomedical)
- 22. Bavarian Nordic A/S
- 23. Thermo Fisher Diagnostics ApS
- 24. Ambu A/S
- 25. 3Shape A/S
- 26. CP Kelco ApS
- 27. Genmab A/S
- 28. Ascendis Pharma A/S
- 29. Roche A/S
- 30. Abacus Medicine A/S

The definition of 'beacon' and thus a 'large' company is based on the EU's defining framework for micro-companies (0-9 employees), small companies (10-49 companies), medium-sized companies (50-249 employees) and large companies (> 250 employees).

The map shows beacon companies' facilities in Zealand as well as any facilities they may have in Skåne.

Source: The companies were identified using customised data from Statistics Denmark (DST). Information regarding functions at the companies' facilities was gathered via the companies' responses to Øresundsinstitutet's database survey and from information on the companies' websites.

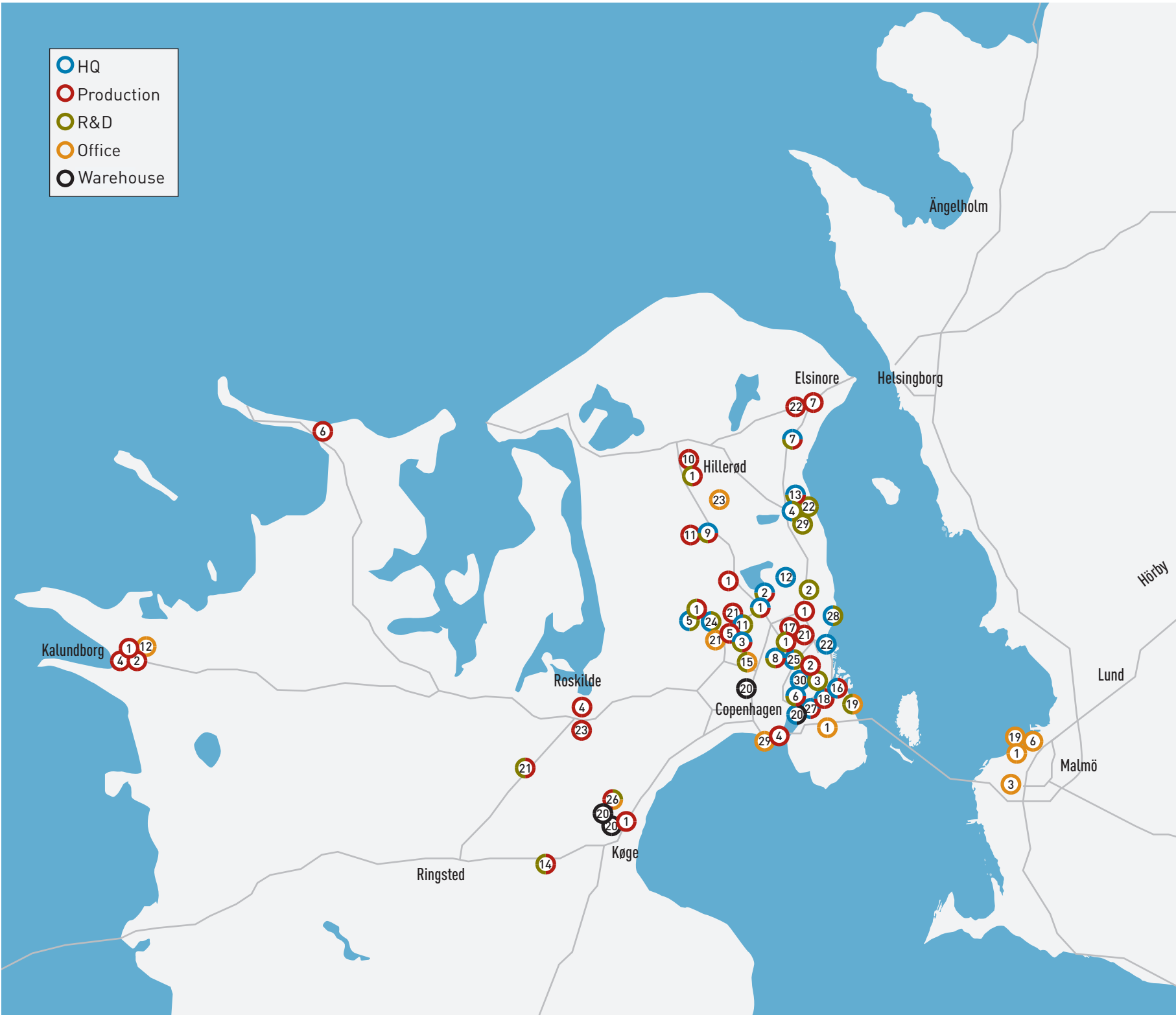


ILLUSTRATION: LØNEGÅRD & CO

MORE NEW LIFE SCIENCE ENTERPRISES
– Companies established since 2017

200

Number of companies

2 300

Number of employees in the new enterprises

BIOTECH COMPANIES RAISE THREE-DIGIT SUM IN THE MILLIONS – AND SEE PRICES DROP

Between 2020-2021, biotech companies in eastern Denmark – most in Copenhagen – raised three-digit sums in the millions from private professional investors and private equity companies for their R&D. Numerous European and American private equity companies were part of the capital raising. According to professionals from the sector, this is an indication that the sector is mature. From late 2021/early 2022 to 11 May 2022, Galecto Biotech and Evaxion Biotech and others have seen depreciation of around 50%. Other Danish biotech companies, e.g. Genmab, Zealand Pharma, and Bavarian Nordic, saw prices fall ca 20-50% in the same period. This is due in part to increasing inflation and speculation in the biotech sector linked to the covid pandemic, say experts from the sector.

Company	Subsector	Capital raised from investors, millions of DKK	Year
IO Biotech	Biotech	945	2021
Muna Therapeutics	Biotech	450	2021
Galecto Biotech	Biotech	410	2020
Adcendo	Biotech	380	2021
MinervaX	Biotech	350	2020
Hemab	Biotech	350	2021
Snipr Biome	Biotech	320	2020
MedTrace	Medtech	180	2021
Dawn Health	Healthtech	160	2021
Union Therapeutics	Biotech	155	2021
Synklino	Biotech	106	2021
Evaxion Biotech	Biotech	100	2021

Source: MedWatch and press releases. Figures may be rounded.



PHOTO: NEWS ØRESUND

RECORD OPERATING PROFIT FOR DANISH LIFE SCIENCE FOUNDATIONS

The Novo Nordisk Foundation, Lundbeck Foundation and the William Demant Foundation had record profits in the multibillions via their respective investment companies in 2021. Novo Holdings, which is majority shareholder of Novo Nordisk and Novozymes, had a revenue of DKK 37bn in 2021. William Demant Invest, majority shareholder of Demant, Össur, and Vision RT, had DKK 23bn in revenue in 2021. Lundbeck Foundation, which is the majority owner of Lundbeck, ALK-Abelló, and Falck, had just about DKK 7bn in earnings – their best financial result to date. Read more about foundation ownership in the life science sector on page 46-47.

FOUNDATIONS LAUNCHES NEW STRATEGIES

In a new 2030-strategy, the Novo Nordisk Foundation is sharpening its focus on sustainable food and more and increasing its annual grants to over DKK 10bn.

In 2022 the Lundbeck Foundation is merging two investment units into one: Lundbeck Foundation BioCapital. The investments will be made exclusively in Danish biotech.

PHOTO: NEWS ØRESUND

INCREASED EFFORTS TO ATTRACT MORE LIFE SCIENCE COMPANIES FROM ABROAD TO DENMARK

The most recent Danish life science strategy, from 2021, increases efforts to e.g. attract more life science investments and -companies to Denmark and Medicon Valley from abroad, for example via Invest in Denmark (IDK) through the Ministry of Foreign Affairs. Example of non-Danish life science companies that have set up in eastern Denmark since 2017:

Moderna – American biotech company, opening a new branch in Denmark in 2022.

Ceptur Therapeutics – American biotech company, opening a new R&D unit in Copenhagen in 2022.

Seagen – American biotech company, established itself in Hørsholm in 2020.

Curaizon – British healthtech company, moved its global headquarters to Copenhagen in 2020.

Cilcare – French CRO-company, opened a new branch in Copenhagen in 2020.

Fujifilm Diosynth Biotechnologies – CDMO-company in Japanese Fujifilm Corporation, purchased Biogen's plant in Hillerød in 2019 for ca DKK 6bn.

Chiesi - Italian pharma company, has marketed its pharmaceuticals in Denmark since 2014 and opened a new branch in Copenhagen in 2019.

PHOTO: NEWS ØRESUND

PHARMACEUTICALS EXPORTS COMPRISE 17.5% OF TOTAL DANISH GOODS EXPORT

In 2021, Danish pharmaceutical exports made up ca 17.5% of total Danish goods exports. In total, Danish life science companies exported pharmaceuticals for 136bn DKK. In 2020, pharmaceutical exports were DKK 137bn, according to figures from the Danish Association of the Pharmaceutical Industry (LIF) and Statistics Denmark. The slight deceleration is nothing that worries LIF.

– There has been positive development in pharmaceutical exports for many years now. It's also apparent in 2021; in the big picture it follows the same trend seen for many years: steep growth, surpassed only by the pandemic year 2020. Total exports for 2021 are on the same level as in the pandemic year 2020, which must be seen as an exceptional year since healthcare systems around the globe were making their acquisitions in correlation with the pandemic, says Vice CEO of LIF Henrik Vestergaard. The trade organisation expects the export of pharmaceuticals to increase in the coming years.

– We expect pharmaceutical exports to follow the positive trend seen for many years now. When you look, there will always be a year or two that breaks with the curve, but the trend in the long run is unmistakable. Danish life science is growing, and that will only continue, says Henrik Vestergaard.

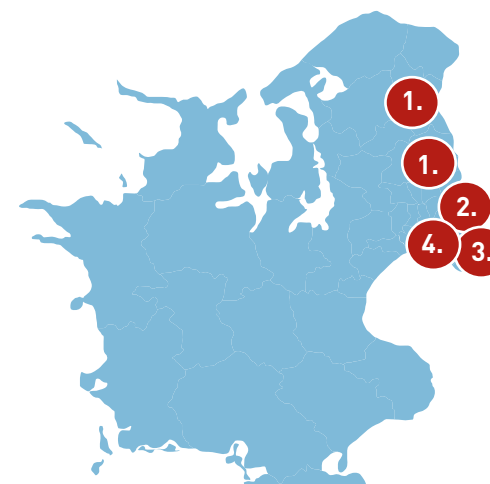
Henrik Vestergaard, Deputy Managing Director of LIF.

PHOTO: LIF

SCIENCE PARKS IN THE LIFE SCIENCES – EASTERN DENMARK

Science parks and incubators for life science companies in eastern Denmark are in an expansive phase as more subsectors in the life sciences, e.g. healthtech, are being included over the years. Players on the field – DTU Science Park, Symbion, COBIS and BioInnovation Institute – are building out their facilities with

more office- and lab space to meet market demands. Around a third of the ca 700 life science companies in eastern Denmark are or have been located at these players, which employ a total of around 8 000 people in the life science and in other sectors.



1. DTU Science Park

Hørsholm and Lyngby

2. COBIS by Symbion

Copenhagen

3. BioInnovation Institute

Copenhagen

4. Symbion

Copenhagen

Source: Based on information provided by the science parks. Information is also based on the science parks' websites and on previous reports published by ØresundsInstitutet.



1. DTU SCIENCE PARK

Founded: 2004

Number of companies: 300

Number of employees at the locations: 4 300

Location: Hørsholm and Lyngby

Focus: Deep tech, life science, biotech and med-tech comprise around 40% of the science park.

DTU Science Park was founded in 2004 when the foundation behind the former research centre Forskningscentret in Hørsholm was dissolved, and a joint-stock company was created and given to the Technical University of Denmark. The science park is spread out over two locations north of Copenhagen. The Hørsholm-site houses e.g. research facilities for large life science companies, and each year the Lyngby-site accelerates more than 50 startups – in life science and other fields – in the incubator Future Box. DTU Science Park is planning to build out its office-and lab space in Hørsholm and Lyngby in the years to come. Evaxion Biotech, MedTrace and Bioneer are just some of the life science companies at DTU Science Park.



3. BIOINNOVATION INSTITUTE

Founded: 2018. BioInnovation Institute Foundation (BII) was established as a commercial foundation with a non-profit purpose in December 2020

Number of companies incubated: 70

Number of employees at the location: 150-200

Location: Copenhagen

Focus: Therapeutics, bioindustrials and healthtech

BioInnovation Institute (BII) was founded and is funded by the Novo Nordisk Foundation. BII runs a life science incubator in Copenhagen where life science startups can be admitted and benefit from entrepreneurship programmes, convertible loans, commercial development advice and access to office- and lab space. The focus on taking on startups from the Nordic countries and beyond at the incubator has grown stronger, and this will continue in the years to come, as BII has significantly increased startup funding starting in 2021. BII has industrial partnerships with Ferring Pharmaceuticals, Danish universities, and others. A new rental contract in 2021 will enable BII to continue to grow in the current COBIS-building in Copenhagen. 2N Pharma, STipe Therapeutics and Inprother are among the life science companies at BII.



2. COBIS BY SYMBION

Founded: 2009

Number of companies inkl. BII's projects: 130

Number of employees at the location: 800

Location: Copenhagen

Focus: Life science, early & later-stage companies

In 2009, the Copenhagen Bio Science Park (COBIS) was established in Copenhagen as the realisation of a political vision created by the Ministry of Higher Education and Science and the Capital Region of Denmark. COBIS originally focused on biotech companies, but in 2014 the science park

broadened its focus, and life science companies in medtech, digital health and diagnostics came to fill more of the science park. Over the years, the science park has had numerous projects and joint experience exchanges with partners across Øresund, including Invest in Skåne and Medeon and MINC in Malmö. In 2018, BioInnovation Institute (BII) began renting space from COBIS, and collaboration between the parties has increased since. With a new agreement in 2021, BII will have even more space at COBIS. To be able to accommodate all of the life science companies, Symbion – which has been sole owner of COBIS since 2018 – is expanding its office- and lab facilities to add 12 000m² more at another location in Copenhagen. The extension will be home to around 600 jobs and 100 companies. Expected completion is in 2023. IO Biotech, MinervaX and Curasight are some of the other companies at COBIS, which is also the location of the data centre DMSC for European Spallation Source (ESS) in Lund.



4. SYMBION COMMUNITY

Founded: 1986

Number of companies: +650

Number of employees at the locations: 3 000

Location: Copenhagen (main facility in Østerbro, and five other locations, including e.g. the University of Copenhagen's Søndre Campus)

Focus: Life science, foodtech, medtech, hardware/makerspace and SaaS (Software as a Service)

Symbion is a private company owned by the Symbion Foundation, the University of Copenhagen, Copenhagen Business School and a number of private actors, e.g. Nordea. Symbion Community is a startup ecosystem and a coworking community. Companies from the life science and other sectors are linked to Symbion Community, which includes Copenhagen Bio Science Park (COBIS) in Copenhagen and a number of other locations in Copenhagen. Symbion Community also helps run the startup community and shared lab CPH Labs, and in 2023 it will be expanding with a new location for life science and sustainability in Copenhagen. Biosyntia, CS Medica and Key2Compliance are some of the companies associated with Symbion Community.

Life science companies build out for over 45bn DKK – thousands of new jobs expected

The life science sector in eastern Denmark has seen significant investment capacity, employment growth, and belief in the future in recent years. This is apparent in various ways, including that life science companies are investing more than DKK 45bn in expanding their production plants, research facilities, and/or offices and domiciles regionally. More than 4 000 new jobs in eastern Denmark are expected to be generated through the investments. Grants from e.g. foundations also benefit shared infrastructure in the region.

18bn DKK are being invested by Novo Nordisk in expanding its existing plants and constructing four new facilities, 17bn are being invested by Fujifilm Diosynth Biotechnologies in expansion of a plant in Hillerød, and 1.5bn is what Chr. Hansen is investing in building out a plant in Kalundborg. These are three examples of life science companies investing and constructing in eastern Denmark. Private investments in company expansions in eastern Denmark are a definite trend shaping current and future development in Medicon Valley. The extensions are taking place in numerous geographic locations, but primarily in the Copenhagen area, in northern Zealand, and in the city of Kalundborg. These are precisely the places where the majority of the life science companies identified in eastern Denmark are located. The investments are thus in close proximity to other life science companies in the cluster.

Life science companies' expansions are both a way to meet the demands for their health products and -services and a way to increase office- and lab space to accommodate the approximate total of 10 500 new employees who have begun working in the sector over the past five years – read more on page 11-19.

– We're running out of space. We have three different locations in Copenhagen, and we expect to expand even more in the coming years, and we'd like to have all our staff in Denmark under the same roof, says Birgitte Stephensen, Executive Vice President & Chief Legal Officer at Genmab, which will move to its newly constructed global headquarters in Valby/ Copenhagen in 2023, which can accommodate 700 employees – read more on page 62-63.

Another reason for the extensions is that life science companies in the region have invested in and built up core competences in pharmaceutical production for many years and refined production processes to have a lower environmental impact, making expanded regional production capacity relevant. An example of this is Novo Nordisk, which has been expanding and specialising its production activities in Kalundborg since 1969.

– Most of the products that Novo Nordisk manufactures and markets around the globe have their base in our Kalundborg plant, and over 32 million patients around the globe receive medicine from Novo Nordisk's manufacturing facilities in Kalundborg, says Michael Hallgren, Senior Vice President at Novo Nordisk API Manufacturing in Kalundborg and the US – read more on page 73-75.

The investments create the foundation for continued increases in production and Danish life science exports, and the companies expect to create around 4 000 new jobs regionally. Production employees, researchers, and office staff are some of the job profiles for which there is a need and that will be in demand in the coming years, according to the companies. Such expertise needs are confirmed in interviews and a survey conducted for this report – read more on page 25.

While life science companies are investing in and expanding their private facilities, a number of companies are finding that there is a shortage of skilled employees, according to numerous surveys. The supply of expertise in Medicon Valley is of great importance for whether or not companies' investments in the coming years are a success or not – read more on page 87-91.

Novo Nordisk's facilities in Kalundborg.

LIFE SCIENCE INVESTMENTS

+45

bn DKK invested by leading life science companies now and in the coming years in expansion of their production-, research- and office facilities in eastern Denmark

+4 000

new jobs that leading life science companies expect their investments in expanding their facilities will create regionally in eastern Denmark

CURRENT AND UPCOMING INVESTMENTS IN EASTERN DENMARK
+ 45BN DKK IN NEW PLANTS, R&D AND OFFICES CREATE +4 000 NEW JOBS

NUM- BER ON MAP	COMPANY	TYPE OF INVESTMENT	CITY	SUM	NEW JOBS CREATED REGIONAL- LY
1.	Novo Nordisk	Four new plants and expansion of existing produc- tion facility – expected completion in 2023/2027.	Kalundborg	18bn DKK	420*
2.	Fujifilm Diosynth Biotechnologies	Plant expansion, 19 400 m2 – expected completion in 2023. In June 2022, the company received per- mission to expand the plant by 73 000 m2 and will invest an additional DKK 11bn in the facility.	Hillerød	17bn DKK	750
3.	Chr. Hansen	Taking over and revamping of a 175 000m2 plant – expected completion in 2023/2024.	Kalundborg	1.5bn DKK	150-200
4.	LEO Pharma	New plant, ca 6 000m2 – expected completion in 2023.	Ballerup	1.5bn DKK	-
5.	AGC Biologics	New plant, 19 000m2 – expected completion in 2023.	Søborg	1.2bn DKK	250-300
6.	Bavarian Nordic	Plant expansion to bring total production area to 4 700m2 – double what it was in 2018 – expected completion in 2022.	Kvistgård	1bn DKK	200
7.	DTU Science Park	New lab buildings with 18 000m2 and a new 27.000 m2 science park building – expected completion in 2024/2025.	Kgs. Lyngby and Hørsholm	1bn DKK	800
8.	Novo Nordisk	Plant expansions of 5000m2 – expected completion in 2022.	Hillerød and Måløv	1bn DKK	-
9.	Ferring Pharmaceuticals	New Danish headquarters and global R&D-centre, 37 500m2 – completion in 2022.	Kastrup	1bn DKK	150
10.	Chr. Hansen	Expansion of headquarters and R&D facilities, 15 000m2 – expected completion in 2022.	Hørsholm	412mn DKK	250
11.	ConvaTec	Plant expansion, 3 000m2 – expected completion in 2022.	Osted	200mn DKK**	-
12.	Symbion/COBIS	New 12 000 m2 office- and lab building – expected completion in 2023.	København	35-40mn DKK	600
13.	Genmab	New global headquarters, 12 500m2 – expected completion in 2023.	Valby	-	350
14.	Remilk	New plant, ca 72 000m2 site – expected completion in 2023/2024.	Kalundborg	-	100

+45bn DKK + 4000 jobs

Source: Internal research and information supplied by the companies via contact, press releases, etc. *Novo Nordisk expects a further 2 500 external employees to be engaged in the plant expansions, but these 2 500 external employees are not included in the count. **ConvaTec's board decided in May 2021 to invest ca 30m USD in plant expansions in Osted, Denmark, and Reynosa, Mexico.

1 200 000

m2 is the size of Novo Nordisk's existing plant in Kalundborg. It is the largest production facility in Medicon Valley. It will be under expansion until 2027

36

bn DKK is Novo Nordisk's invest-
ment in the plant in Kalundborg
between 2000-2027



PHOTO: NOVO NORDISK

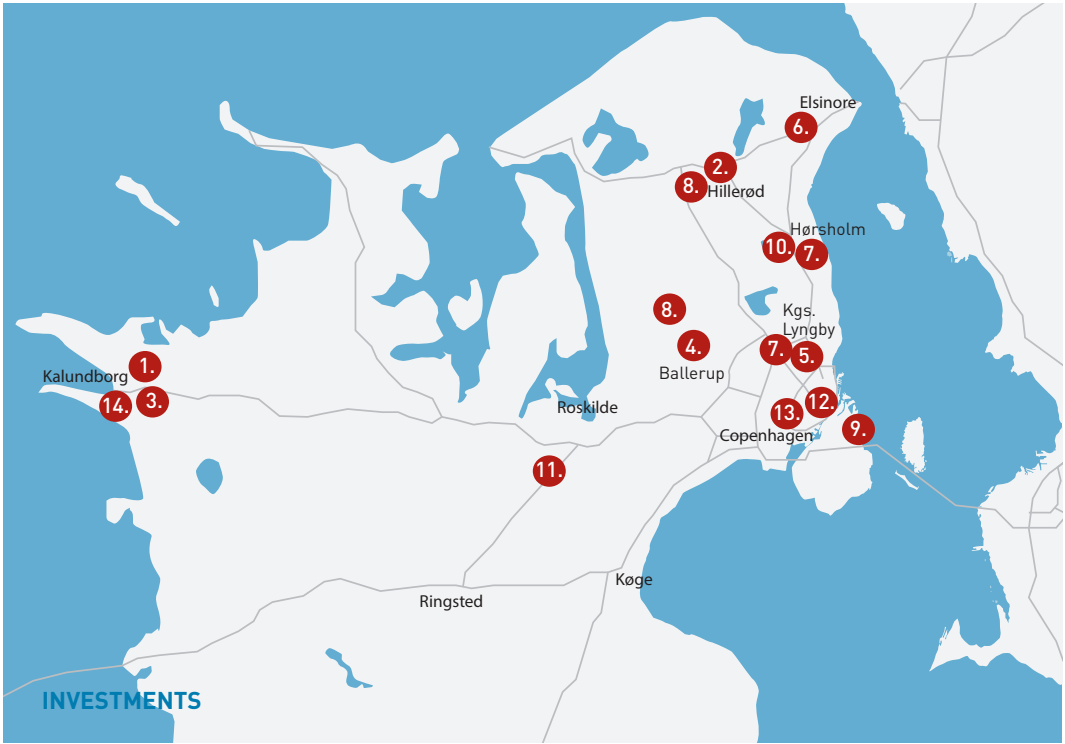


PHOTO: LEO PHARMA



LEO Pharma is building a new plant in Ballerup for 1.5bn DKK.



Fujifilm is expanding its plant in Hillerød for 17bn DKK.



AGC Biologics is building a new plant in Søborg for 1.2bn DKK.

PHOTO: NEWS ØRESUND

PHOTO: NEWS ØRESUND

Foundations and the government support life science in eastern Denmark

Whilst life science companies are investing in and expanding their own business activities, in this year and in the years to come, major investments and efforts for the future are also being made in shared infrastructure that is already benefitting the entire life science sector in eastern Denmark and in Medicon Valley – and society on the whole – in a variety of ways. Private foundations often give financial support to life science undertakings to supplement public funding. Here are a number of examples of investments and efforts in shared infrastructure for research, education, and transportation in eastern Denmark.

PHOTO: NEWS ØRESUND



BIOINNOVATION INSTITUTE FOUNDATION IN COPENHAGEN.

The Novo Nordisk Foundation funded the founding of BioInnovation Institute (BII) in 2018 with DKK 465m, and it 2020 it opened the opportunity to support BII

in Copenhagen with DKK 3.5bn over a ten-year period. Today, BII is an independent industrial foundation that aims to accelerate the commercialisation of life science research in Medicon Valley with increased funding to startups.

INTERNATIONAL CENTRE FOR STEM CELL RESEARCH IN COPENHAGEN.

In 2021 the Novo Nordisk Foundation granted up to DKK 2.2.bn over a ten-year period to establish a research centre that

will become a transnational partnership between the University of Copenhagen and research institutions in Australia and Holland. Stem cell research will pave the way for new medicines, and the grant will also support exchange programmes and shared technological platforms.

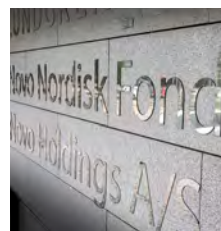
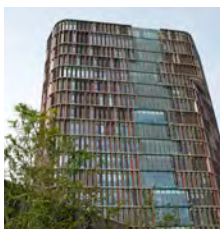


PHOTO: NEWS ØRESUND

PHOTO: NEWS ØRESUND



SKIN IMMUNOLOGY RESEARCH CENTER IN COPENHAGEN.

In 2018 LEO Foundation granted DKK 400m over ten years to the Skin Immunology Research Center, located in Mærsk Tower in Copenhagen. At the centre, to which 50 employees are lin-

ked, Danish and international experts research new therapeutics for a variety of skin disorders, such as psoriasis, and for asthma, that may lead to new medicines and products.

HELIX LAB IN KALUNDBORG.

The Novo Nordisk Foundation, Novo Nordisk A/S, Novozymes A/S and others have granted DKK 120m until 2026 to the research and development centre Helix Lab in Kalundborg, which opened

in 2022. Helix Lab aims to strengthen collaboration between research and the industry and give Master's students from Denmark and abroad the opportunity to do degree projects in collaboration with the industry and make Kalundborg a hub for sustainable pharma production.



PHOTO: HELIX LAB

PHOTO: DTU BIOSUSTAIN



CENTRE FOR BIOSUSTAINABILITY IN LYNGBY.

In 2020 the Novo Nordisk Foundation granted DKK 750m over five years to continue operation and development of the Centre for Biosustainability at the Techni-

cal University of Denmark in Lyngby. The foundation ensured the centre's financial base in 2011, and research in the centre aims to find new solutions in sustainable chemicals, bio-based products, and new microbial foods.

PHOTO: KALUNDBORG KOMMUNE



MOTORWAY TO KALUNDBORG.

In 2021 the Danish Parliament granted DKK 1.9bn for the completion of the 30km motorway to Kalundborg, where life science companies such as Novo Nordisk and Novozymes have production facilities.

The construction work is expected to commence in 2024/2025, according to the Ministry of Transport. The motorway will decrease commuting times between Kalundborg and Copenhagen and facilitate recruitment of employees to Kalundborg.

STENO DIABETES CENTER COPENHAGEN IN HERLEV.

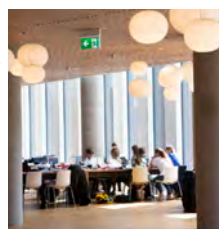
Backed by a grant from the Novo Nordisk Foundation in the amount of DKK 2.9bn. Steno Diabetes Center Copenhagen (SDCC) opened in 2021. In the future,

around 11 000 people with Type 1- and Type 2-diabetes in the Copenhagen area will receive treatment at SDCC, where diabetes education and -research will also take place. Like the four other Steno Diabetes Centres in Denmark, SDCC is publicly owned and -run.



PHOTO: RASMUS HJORTSHØJ / VILHELM LAURITZEN ARCHITECT / MYKELSEN ARCHITECTUR OG STED

PHOTO: NEWS ØRESUND



INNOVATION CENTRE AT THE UNIVERSITY OF COPENHAGEN.

In 2021, the University of Copenhagen opened a new innovation centre in Copenhagen, close to the Faculty of Science and the Faculty of Health and Medical Sciences. The new innovation

centre brings the university's innovation activities under a single roof; previously, they were spread out in different departments. An aim of the centre is to strengthen collaboration with businesses.

CPH LABS IN COPENHAGEN.

In 2021 the Danish Industry Foundation granted DKK 5.8m to CPH Labs, a shared lab facility for biotech entrepreneurs close to Bispebjerg Hospital in Copenhagen. The grant enables more modern

shared labs to be started. In addition to building more labs, the extra resources will be used to devise more incubation and mentorship programmes for the entrepreneurs who rent space there.

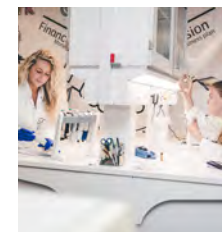
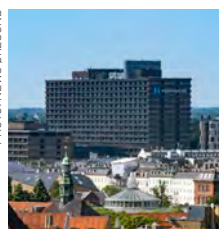


PHOTO: CPH LABS

PHOTO: NEWS ØRESUND



NEW INDUSTRY BEACONS IN ZEALAND AND COPENHAGEN.

In 2022, the Danish Executive Board for Business Development and Growth brought forth DKK 595 m for eight new industry beacons in Denmark. DKK

60.4m will be invested regionally via public-private consortia in test facilities, equipment and education in biosolutions (biotechnology) in Zealand, and DKK 82.4 m will be invested in welfare technology and health solutions for e.g. obesity in the capital.

LIFE SCIENCE CAMPUS IN LYNGBY.

In 2021, the 5 400m²-science education centre LIFE Campus opened in Lyngby, north of Copenhagen. The Novo Nordisk Foundation will grant nearly DKK 1.9bn

to the LIFE Foundation, which runs the campus. The aim is for Danish primary school pupils and students from youth educations will become more interested in and fascinated by the natural sciences.



PHOTO: LIFE FONDEN

Source: Internal research based on e.g. press releases, information on websites, and articles from e.g. MedWatch.



PHOTO: NORDISK/JENS LINDHE

MUNICIPALITY OVERVIEW

The life science sector is thriving in many parts of eastern Denmark – high life science activity in 13 municipalities stands out

The life sciences are a key sector for many municipalities in eastern Denmark, where thousands of jobs are created by large- and medium-sized companies and a growth layer of small companies. 86% of the 58 000 jobs in the sector are concentrated in the municipalities in and around Copenhagen, but important activity for the sector, especially in production, takes place elsewhere in eastern Denmark, such as in Kalundborg.

The life science sector in eastern Denmark is growing in various ways. Most new healthtech- and biotech companies are emerging in Copenhagen Municipality. In Rudersdal Municipality and Lyngby-Taarbæk Municipality, many new startups are hatching alongside larger, research-based companies. In Ballerup Municipality, the pharma company LEO Pharma is investing DKK 1.5bn in a new plant in the largest production-related expansion project of the country's over 100-year history. In Hillerød Municipality and Kalundborg Municipality, industrial enterprises like Novo Nordisk, Chr. Hansen and Fujifilm Diosynth Biotechnologies are expanding their manufacturing facilities by thousands of square metres and hundreds of new employees to stay on top of the market's demands, and a new Israeli foodtech manufacturer in the same municipality wants to build the world's largest fermentation factory for plant-based milk protein there. And with ca 10 000 jobs in the life sciences within its confines, Gladsaxe Municipality stands out as the municipality in eastern Denmark with the highest number of life science employees, largely thanks to Novo Nordisk's and Novozymes' global headquarters in Bagsværd. This illustrates that the will to invest in the sector is strong many places in eastern Denmark.

86% of the 58 000 jobs in the sector in 13 municipalities

ØresundsInstitutet identified life science enterprises in large parts of eastern Denmark. There are a total of 46 municipalities: 29 in the Capital Region of Denmark and 17 in Region Zealand. Regional employment in the sector is primarily concentrated in 13 municipalities however, which can be seen as life science centres – many of them were already mentioned above. There are over 1 000 life science jobs locally in the companies identified in these 13 municipalities. 86% of the total regional employment of 58 000 employees in the life science sector is thus related to these 13 municipalities.

Positive employment growth in most municipalities, over 1 000 life science jobs

The three municipalities in eastern Denmark with the most employees in the private life science industry are Gladsaxe Municipality with around 10 000 employees, Copenhagen Municipality with around 9 000 employees, and Ballerup Municipality with ca 8 000 employees. Employment growth in the sector in all three municipalities has been significantly positive for the past five years, according to ØresundsInstitutet's survey. Overall, employment development in the sector in 11 of the 13 municipalities with over 1 000 life science jobs locally has been positive since 2017. That shows that there has been regional employment growth in the sector in eastern Denmark in most of the municipalities with strong life science activity. The negative employment development in two of the municipalities is due to a company headquarter relocation to another municipality and production effectivizations. Moderate, but lower employment development was seen in the other municipalities in eastern Denmark, where the life science sector is less prominent relative to other sectors. The positive job growth in the sector in eastern Denmark over the past five years is primarily linked to the Capital Region of Denmark, where 11 of the 13 municipalities with more than 1 000 private life science jobs are located.

13

municipalities in eastern Denmark are home to life science companies with more than 1 000 private, local jobs in the life sciences. In 11 of the 13 municipalities, employment development in the sector has been positive since 2017.



PHOTOS: NEWS ØRESUND, NOVOZYMES, NOVO NORDISK



GLADSAXE, COPENHAGEN, AND BALLERUP ARE THE THREE LARGEST MUNICIPALITIES FOR LIFE SCIENCE IN EASTERN DENMARK

Three municipalities in eastern Denmark – Gladsaxe, Copenhagen and Ballerup – are home to life science companies that employ more than 5 000 people in each municipality. Some of Denmark’s largest life science companies have their global headquarters in these municipalities; Novo Nordisk and Novozymes are in Gladsaxe, Lundbeck and Radiometer in Copenhagen, and LEO Pharma and GN Hearing in Ballerup. But there are many other conditions influencing these and ten other municipalities in eastern Denmark in which the life science sector is particularly strong.

Three municipalities in eastern Denmark are home to life science companies that employ more than 5 000 people in each municipality. They are Gladsaxe Municipality, Copenhagen Municipality, and Ballerup Municipality. This is not least because several of the largest life science companies in Denmark have their global headquarters in these municipalities. The life science sector in eastern Denmark is thus concentrated

in and around Copenhagen, but there are also important sector links in Kalundborg and Køge in particular.

International headquarters and R&D-facilities in Gladsaxe and Ballerup
The three largest life science companies in eastern Denmark are located in Gladsaxe Municipality and

Ballerup Municipality. Novo Nordisk and Novozymes have their global headquarters and R&D-facilities in Bagsværd, in Gladsaxe Municipality. Ballerup Municipality is where LEO Pharma has its global headquarters, and it has production- and R&D-facilities on the same site. Other features are also evident. There are a number of larger life science companies in various sectors in Gladsaxe Municipality: the medtech company Ferrosan Medical Devices; the biotech company Zealand Pharma, and the contract manufacturer AGC Biologics for instance are all located in close proximity to one another in Søborg, where they have R&D and global clients and commissions. In Måløv in Ballerup Municipality is Novo Nordisk’s largest R&D facility, with around 3 000 employees. The hearing aid manufacturer GN Hearing and the medtech company Ambu are also located in the municipality, with headquarters and R&D activity close to biotech companies like Symphogen and Sophion Bioscience.

Major startup activity in Copenhagen – but a shortage of lab space

In addition to the global headquarters for the pharma company Lundbeck, the medtech manufacturer Radiometer Medical, and the biotech company Genmab being located in Copenhagen Municipality, more than half of the approximately 200 newly started life science companies founded in the region over the past five years are in Copenhagen Municipality. Denmark’s capital is thus a centre for the life science sector in eastern Denmark, not least because of its proximity to hospital- and research facilities. The incubation environments Copenhagen Bio Science Park (COBIS) and the Novo Nordisk Foundation-funded BioInnovation Institute (BII) have contributed to regional growth in recent years and see major demand on the market. COBIS, owned by the Symbion Community, which rents out co-working space, has around 100 life science companies on its waiting list for a rental, for example. In 2021, BII and COBIS entered a new rental contract that will give BII more space in the current COBIS building so it can expand and accommodate the growing number of life science startups, which include Danish and an increasing number of non-Danish projects. In 2024/2025, BII expects to have doubled the number of startups in incubation to 60-70 companies and has thus increased its startup-funding since 2021. According to Morten Mølgaard, CEO of COBIS, the hope is to expand the network, create new partnerships and offer employees centrally located, flexible office- and

lab space in Copenhagen that attracts companies to the innovation environment.

– We urgently need more square meterage for our facilities, so we made the decision to sign a contract for Fuglebakken, which will cost us between DKK 35-40 m to outfit to meet our clients’ needs, he says – read more in the interview on page 78-80.

The shortage of lab space in the Copenhagen area is something the biotech company Chromologics recognises. It is one of numerous life science-spinouts from the Technical University of Denmark, like the biotech company Venomaid Diagnostics, the foodtech company BioPhero, and the medtech company Nanovi.

– There is not enough affordable lab space in Copenhagen where people can move in and out, says Gerit Tollborg – read more in the interview on page 50-51.

A life science profile for municipalities in eastern Denmark

According to the Ministry of Industry, Business and Financial Affairs, the life science sector is a strength in Denmark. Numerous municipalities in eastern Denmark also highlight life science as a local profile and strength. The cluster organisation Danish Life Science Cluster and the diabetes company Novo

MUNICIPALITIES IN EASTERN DENMARK WITH MOST LIFE SCIENCE JOBS IN THE PRIVATE SECTOR

Municipality	Region	Number of employees in life science companies
Gladsaxe	Capital Region of Denmark	10 000
København	Capital Region of Denmark	9 100
Ballerup	Capital Region of Denmark	7 900
Kalundborg	Region Zealand	4 300
Hillerød	Capital Region of Denmark	4 200
Rudersdal	Capital Region of Denmark	3 500
Gentofte	Capital Region of Denmark	2 000
Lyngby-Taarbæk	Capital Region of Denmark	1 800
Allerød	Capital Region of Denmark	1 700
Køge	Region Zealand	1 600
Fredensborg	Capital Region of Denmark	1 500
Egedal	Capital Region of Denmark	1 500
Hvidovre	Capital Region of Denmark	1 100

Source: Statistics Denmark, Bisnode and Central Business Register.

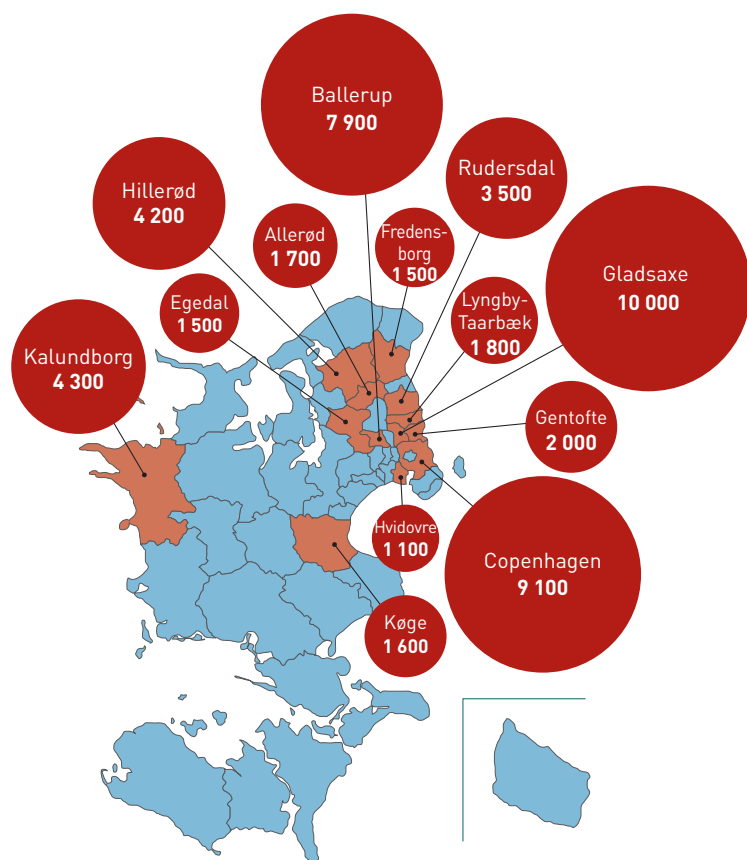


ILLUSTRATION: LONEGÅRD & CO

Nordisk profile Copenhagen as a 'global health capital' with a focus on e.g. obesity and welfare technology. With the construction of the new urban- and industrial district Kildedal, Ballerup Municipality hopes to expand its position as 'one of Scandinavia and northern Europe's largest life science municipalities'. Kalundborg Municipality calls itself a 'biotech city', referring to the large industrial enterprises such as Novo Nordisk, Novozymes, Chr. Hansen and German Boehringer-Ingelheim with production facilities in the city. Gladsaxe Municipality profiles itself as the home of Novo Nordisk's global headquarters in Bagsværd, which employs around 5 000 people locally. Urban development projects such as Favrholt in Hillerød Municipality and Science City Lyngby in Lyngby-Taarbæk Municipality focus on life science, health, research, and education. And with new motorway- and harbour expansion projects, Køge Municipality aims to become a northern European hub for logistics, including pharmaceuticals.

Major construction investments in municipalities around Copenhagen – and in Kalundborg

Numerous large construction projects are a feature of the life science sector, primarily in municipalities close to Copenhagen and in the harbour city of Kalundborg in north-western Zealand. Until 2027, Novo Nordisk is investing DKK 18bn in its production facilities in Kalundborg, where its existing 1 200 000m² facility will be expanded and four new factories will be built. A 50 000m² purification plant and an 8 000m² coarse screening plant will be built for the manufacture of active pharmaceutical ingredients (API). The biotech company Chr. Hansen and the foodtech-company Remilk are also investing in factories in Kalundborg, where the new, 1 560 m² Helix Lab is located.

Major life science investments are also being made closer to Copenhagen in Ballerup Municipality, Hillerød Municipality, Rudersdal Municipality and Lyngby-Taarbæk Municipality. In Hillerød for

example, the global contract research- and manufacturing company Fujifilm Diosynth Biotechnologies with around 1 000 regional employees is investing around DKK 17bn in the expansion of its pharma plant to around 73 000m². In June 2022, Hillerød Municipality approved the company's request to double the size of the facility in the future.

Investments from abroad in Danish life science have increased in scope, from DKK 21bn in 2013 to DKK 34bn in 2019, according to the Ministry of Industry, Business and Financial Affairs in Denmark. That is a 61% increase. The most recent Danish life science strategy, from 2021, earmarks more resources for attracting investments from abroad to Denmark. Investments in the life sciences from Denmark and abroad in recent years have contributed to job growth in 11 of the 13 municipalities in eastern Denmark with more than 1 000 jobs locally in the private life science sector.

Most health tech companies in Copenhagen

The majority of the total ca 70 healthtech companies identified in eastern Denmark are located in Copenhagen Municipality. The healthtech companies overlap with IT and software development due to new technology and treatment approaches, and they employ around 950 people in Copenhagen. Examples are Brain+, Hei Therapeutics, and Cerebriu. Welfare technology, which is driven by advanced data solutions and artificial intelligence, was highlighted in 2022 as an industrial strength in the Capital Region of Denmark, as was a focus on obesity. One reason why healthtech is so prominent in Copenhagen is that Copenhagen Bio Science Park (COBIS) broadened its understanding of life science in 2014 to include for example companies that e.g. develop health apps and digital health solutions.

– That proved very valuable, because a lot of new companies emerged at the time, especially in digital health, which was starting to gain speed in 2016-2017. The environment became far more diverse, says COBIS' CEO Morten Mølgaard – read more on page 78-80.

In addition, healthtech is one of three focus areas at BioInnovation Institute (BII) in Copenhagen, and in 2020 it decided to put more emphasis on healthtech by increasing annual funding of it to around DKK 70m. The sector player Health Tech Hub Copenhagen is thus a point of convergence and a network actor for numerous healthtech enterprises in Copenhagen and throughout Denmark.



PHOTO: HELIX LAB

Biosolutions and microbiome research new focus area in eastern Denmark

In many places in eastern Denmark there is a focus on biosolutions, or new, environmentally friendly ways of producing e.g. food and materials. In Gørlev in western Zealand, FermHub Zealand is currently revamping an old sugar factory into a new test facility that particularly targets startups in biosolutions, including fermentation. Expected completion of the test facility is expected in 2023, and it will receive funding through new support for businesses. DKK 60m were granted to the public-private consortium Biosolutions Zealand, headed by Business Hub Zealand, in 2022. In Roskilde and Kalundborg, resources from the same new business funding will be used to build new demonstration- and production facilities for biosolutions, and in 2022 the Israeli foodtech company Remilk acquired a 72 000m²-site for production of plant-based milk protein.

Life science companies in biosolutions in Zealand such as Novozymes, Chr. Hansen and Glycom can also be considered microbiome enterprises that work with how micro-organisms in the human body and in nature positively influence e.g. cancer and diabetes. Over the past 20 years, microbiome research has grown to become one of Medicon Valley's new strengths in the sciences, as has research in cancer, diabetes and fertility. Private and public players from the sector alike aim to make biosolutions a new industrial beacon in eastern Denmark.

13 MUNICIPALITIES CENTRE OF LIFE SCIENCE SECTOR IN EASTERN DENMARK

More than 1 000 employees work in life science companies in 13 municipalities in eastern Denmark. These municipalities are particularly important for the life science sector in eastern Denmark, as around 86% of the ca 58 000 people employed regionally work in a company located in one of these 13 municipalities. Company structure varies from one municipality to the next, with especially strong startup activity in Copenhagen, Lyngby and Hørsholm because of their proximity to incubators, science parks, the healthcare sector, and universities. Large production facilities and headquarters are located both close to and far from the capital city.

MUNICIPALITY OVERVIEW



GLADSAXE MUNICIPALITY – 10 000 EMPLOYEES

Several of the largest life science companies in eastern Denmark are located northwest of Copenhagen in Gladsaxe Municipality. As a result, Gladsaxe has more employees in the life science sector than any municipality in eastern Denmark. There are nearly 10 000 local jobs in the life science sector in the municipality, distributed among 31 workplaces, mostly in Bagsværd and Søborg. The life science jobs in Gladsaxe Municipality are primarily thanks to the diabetes company Novo Nordisk, which is the largest life science company in all of Medicon Valley. The company employs around 18 200 people in eastern Denmark, around 7 300 of whom work locally in the municipality. More specifically, 5 200 work at the global headquarters in Bagsværd, whilst around 2 200 work in R&D in Søborg. Bagsværd is also the location of the headquarters of Novo Nordisk's sister company Novozymes, where around 1 100 people are employed. The municipality is also home to numerous regional offices for non-Danish pharma companies, including Merck, Amgen, and Teva, and job creation there has been positive since 2017. Positive employment development in the sector appears set to continue in Gladsaxe Municipality in the years to come, as numerous large companies are investing in their plants and increasing their production capacity there and require more staff.

Number of companies 2021/2022: 31
Number of new companies since 2017: 4
Number of employees 2021/2022: 9 995
New jobs since 2017: 1 745 (21%)
Subsector with most employees: Pharma
Most important life science city in the municipality: Bagsværd, Søborg
Largest companies (number of employees in municipality): Novo Nordisk (7 300), Novozymes (1 100), AGC Biologics (674), Ferrosan Medical Devices (233), Zealand Pharma (131) og ConvaTec (100)

Upcoming investments:

- The pharma company Ferrosan Medical Devices is putting a double-digit percent of its turnover into modernising its production machinery over the next few years, with more automation and digital control.
- The contract manufacturer AGC Biologics is expanding its plant in Søborg by 19 000m² for DKK 1.2bn; this will create 250-300 new jobs in the region in the future.



COPENHAGEN MUNICIPALITY – 9 100 EMPLOYEES

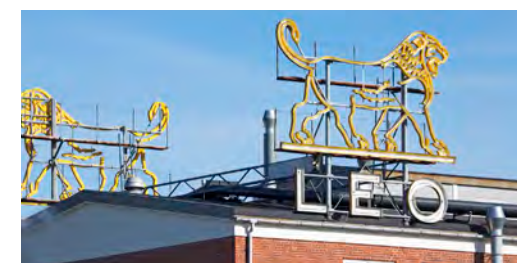
Copenhagen Municipality is the municipality in eastern Denmark in which the greatest number of life science companies are located. 272 life science

workplaces have been identified there, meaning that more than one-third of all of the life science companies mapped in eastern Denmark are concentrated in Copenhagen Municipality. A total of nearly 9 100 people work in life science companies locally. Copenhagen Municipality is thus the municipality in eastern Denmark with the second-largest number of life science employees, after Gladsaxe. Many of the companies are small-scale researching startups and small companies with links to the University of Copenhagen, Copenhagen Bio Science Park (COBIS), and BioInnovation Institute (BII). Because of its strong hospital-, research-, and incubation facilities, more than half of the life science companies started up in the region over the past five years have been established in Copenhagen Municipality. The subsector ICT/healthtech has strong representation in Copenhagen compared to other areas in eastern Denmark. There is also a range of large pharma-, medtech- and biotech companies with headquarters and production plants in the municipality. The number of life science employees decreased when Ferring Pharmaceuticals moved its Danish headquarters and R&D-centre with its approximately 600 employees from Copenhagen to Tårnby Municipality (Kastrup) in 2022, but local employment growth in the sector over the past five years is still positive.

Number of companies 2021/2022: 272
Number of new companies since 2017: 134
Number of employees 2021/2022: 9 126
New jobs since 2017: 2 155 (31%)
Subsector with most employees: Pharma
Most important life science city in the municipality: Copenhagen, Valby
Largest companies (number of employees in the municipality): Lundbeck (1 500), Radiometer Medical (1 300), Xellia Pharmaceuticals (700), AJ Vaccines (600), 3Shape (400), Nomeco (350) Genmab (300), Abacus Medicine (250)

Upcoming investments:

- In 2023 the biotech company Genmab will move into its newly constructed global headquarters in Valby, which can accommodate 700 employees.
- The science park COBIS, headed by the startup community Symbion, is expanding with a new, 12 000m² location in Copenhagen. The new location will have office- and lab space and accommodate around 600 employees.



BALLERUP MUNICIPALITY – 7 900 EMPLOYEES

Research, development, and production of pharmaceuticals and medical equipment is strongly represented in Ballerup Municipality, northwest of Copenhagen, where numerous large Danish and non-Danish pharma-, biotech-, and medtech companies are located. Nearly 8 000 people are employed in the region at the 33 workplaces in the life science sector identified in the municipality, primarily in large companies such as LEO Pharma; with its headquarters, R&D and production in Ballerup, it employs around 2 000 people. Another major employer in Ballerup Municipality is Novo Nordisk, which has situated the company's largest research centre in Måløv. Around 3 000 employees work there, and the Danish production of the oral Semaglutide tablets takes place on site. The Danish hearing aid manufacturer GN Hearing has its headquarters and development facilities in Ballerup, and its competitor Demant also has production facilities in the municipality. Regional offices for large international companies are also located in the municipality, e.g. AstraZeneca, Pfizer, Getinge, Siemens Healthcare, CooperSurgical, Servier and Amgen. Employment growth over the past five years has been positive.

Number of companies 2021/2022: 33
Number of new companies since 2017: 6
Number of employees 2021/2022: 7 854
New jobs since 2017: 1 560 (25%)
Subsector with most employees: Pharma
Largest companies (number of employees in the municipality): Ballerup, Måløv and Glostrup
Largest companies (number of employees in the municipality): Novo Nordisk (3 000), LEO Pharma (2 000), GN Hearing (900), Ambu (450)

Upcoming investments:

- In 2023, PensionDenmark and Ballerup Municipality will begin building Kildedal, a new urban- and industrial area with 2 000 housing units, 10 000 new jobs and a special focus on the life

science sector.

- The pharma company LEO Pharma is building a new plant in Ballerup for 1.5bn DKK; it is the largest-ever factory project in the history of the more than a century-old company.
- In 2021, the pharma company Novo Nordisk decided to invest DKK 500m to expand its production facility in Måløv by around 5 000m².

PHOTO: NOVOZYMES



KALUNDBORG MUNICIPALITY – 4 300 EMPLOYEES

There are relatively few life science companies in Kalundborg Municipality, but those that are there are large and firmly established. Whilst the other municipalities in eastern Denmark with many life science employees are located in the Capital Region, Kalundborg Municipality is located more on its own, on the north-western coast of Zealand. Large-scale plants, big investments and new, locally-funded research- and education facilities are characteristic of the life science environment in the municipality. Focus is on industrial sustainability, bio-fermentation and more. Of the approximately 4 300 people employed in the seven workplaces in the sector identified in the municipality, around 3 350 work at Novo Nordisk's 1 200 000m² plant in Kalundborg, where more than half of the world's insulin is manufactured. It is the diabetes company's largest plant in the world, as well as the largest production facility in Medicon Valley. From the turn of the millennium until today, the pharmaceutical company has invested more than DKK 18bn in the Kalundborg site. Despite large investments, the number of employees in life science companies in Kalundborg Municipality has decreased slightly over the past five years due to optimisation and production automation methods. In the years to come however, employment in the local sector is expected to increase due to e.g. new facilities for Novo Nordisk and Chr. Hansen.

Number of companies 2021/2022: 7
Number of new companies since 2017: 1
Number of employees 2021/2022: 4 290

New jobs since 2017: -92 (-2%)

Subsector with most employees: Pharma

Most important life science city in the municipality: Kalundborg

Largest companies (number of employees in the municipality): Novo Nordisk (3 350), Novozymes (650), NNE (200)

Upcoming investments:

- The pharma company Novo Nordisk is investing DKK 18bn in production in Kalundborg until 2027. Four new plants are being built, and the existing, 1 200 000m²-facilities are being expanded.
- Ingredient supplier Chr. Hansen is starting a new plant in Kalundborg for DKK 1.5bn, and the company expects to bring 150-200 new employees to the site.
- The foodtech company Remilk is building a new plant in Kalundborg on a 72 000m² plot. The company will produce plant-based milk protein in the plant, which is due to be completed in 2023/2024.
- In 2023, the Copenhagen School of Marine Engineering and Technology Management will open a new department in Kalundborg with 30 new places for study.
- The Technical University of Denmark is working to instate a new master's programme in bio-manufacturing in Kalundborg with around 40 places of study locally. DTU will apply as soon as possible to the Ministry of Higher Education and Science to establish and approve the new programme in 2023. The programme would be available for study at earliest in the autumn term of 2024.



PHOTO: NOVO NORDISK

HILLERØD MUNICIPALITY – 4 200 EMPLOYEES

Investments in the billions in just a few years have made Hillerød Municipality a more important life science hotspot in eastern Denmark – especially when it comes to pharmaceutical manufacturing. Around 4 200 people are employed at the 14 work-

places in the life science sector identified in Hillerød Municipality, in northern Zealand. Employment growth over the past five years has been especially positive, and nearly 1 000 new private jobs have been created locally, primarily thanks to a handful of companies: The medtech company Novo Nordisk, the new, Japanese-owned contract company Fujifilm Diosynth Biotechnologies, the validation and calibration equipment manufacturer Ellab, and the medtech companies Elos Medtech and SSI Diagnostica. All of them have grown and increased their employee numbers in Hillerød significantly. In particular, Fujifilm Diosynth Biotechnologies, which acquired Biogen's plant in 2019 for DKK 6bn, and Novo Nordisk's local research- and production facilities are fuelling growth and employment success in the sector in Hillerød. Both companies have invested billions in recent years to expand their production-, warehouse- and office facilities in the municipality and will recruit hundreds of new employees to Hillerød in the coming years, whilst also making new, large investments.

Number of companies 2021/2022: 14

Number of new companies since 2017: 1

Number of employees 2021/2022: 4 211

New jobs since 2017: 865 (26%)

Subsector with most employees: Pharma

Most important life science city in the municipality: Hillerød

Largest companies (number of employees in the municipality): Novo Nordisk (2 700), Fujifilm Diosynth Biotechnologies (1 000), Elos Medtech (170), Ellab (140), SSI Diagnostica (120)

Upcoming investments:

- In June 2022, a new local plan granted the contract manufacturer Fujifilm Diosynth Biotechnologies permission for a new expansion of the Hillerød plant by up to around 73 000m². The company is already investing DKK 6bn until 2023 in building out its medicine plant by 19 400m², which will lead to the creation of 300 new jobs locally, and new recruitments are being made for production. In June of 2022, the company decided to invest a further DKK 11bn in the facility.
- The pharma company Novo Nordisk is investing DKK 500m in new expansions of its warehouse-, office- and production space in Hillerød, with expected completion in 2022.
- The medtech manufacturer Ellab is expanding its headquarters in the industrial zone Trollesminde in Hillerød from 1 000 to 1 500m².

- The new district Favrholm, south of Hillerød, will accommodate 7-8000 new citizens – and potentially just as many jobs, as well as a new hospital with expected inauguration in 2025. The district is being developed by Hillerød Municipality and the real estate companies Stendals Group, NREP, REKA Group and Propreco. A new suburban train station will open in late 2023 and link the district to the suburban train network and the motorway. Construction of the district is underway.



PHOTO: DTU SCIENCE PARK

RUDERSDAL MUNICIPALITY – 3 500 EMPLOYEES

Research-intensive life science activities make Rudersdal Municipality a central location for the sector in eastern Denmark. Firmly established life science companies from Denmark and abroad, such as Roche, FMC, McNeil, Chr. Hansen and ALK-Abelló, as well as a fertile stratum of startups and small companies, makes Rudersdal Municipality north of Copenhagen one of the most diverse life science environments in eastern Denmark. Many different life science companies of various sizes and in a range of subsectors are active in the municipality, and around 3 500 people are employed locally at the 82 workplaces identified, which are primarily in Hørsholm and Birkerød. Ingredient supplier Chr. Hansen and pharma company ALK-Abelló, which specialises in allergy immunotherapy, both have global headquarters in the municipality; together they are responsible for more than half of local employment. The remainder of employees in the sector work at smaller companies. DTU Science Park is the most important highly technological industrial area in the municipality. Following Copenhagen and Lyngby, it is where the largest number of new life science companies develop, and where innovation and new jobs are created. Over the past five years, local employment growth has been positive in the sector, and new plans for expansion at e.g. DTU Science Park and Chr. Hansen will benefit job creation in the years to come.

Number of companies 2021/2022: 82

Number of new companies since 2017: 15
Number of employees 2021/2022: 3 562
New jobs since 2017: 826 (34%)
Subsector with most employees: Biotech
Most important life science cities in the municipality: Hørsholm and Birkørød
Largest companies (number of employees in the municipality):

Chr. Hansen (1 000), ALB-Abelló (850), Oterra (230), Janssen-Cilag (125), McNeil (160), FMC (130)

Upcoming investments:

- Ingredient supplier Chr. Hansen is expanding its R&D facilities at its Hørsholm headquarters for more than DKK 400m; the expansion will add around 15 000m² and accommodate 250 new researchers. Expected completion is in 2022.
- DTU Science Park in Hørsholm is planning to construct a new, 18 000 m², multiuser lab house in Hørsholm. The construction is expected to be complete in two to three years.



PHOTO: NOVO NORDISK

GENTOFTE MUNICIPALITY - 2 000 EMPLOYEES

Multiple small life science companies and a series of large biotech- and pharma companies mean that a total of around 2 000 people are employed locally in the 22 life science workplaces identified north of Copenhagen in Gentofte Municipality. R&D activities primarily take place at the municipality's smaller businesses, whilst larger manufacturing activity in Gentofte takes places first and foremost at Novo Nordisk's plant; it is the municipality's largest life science company with 1 450 local employees. The municipality has a long history with Novo Nordisk: the pharma company founded its first plant in 1927 in Gentofte. Pharmaceutical production has thus long since been the dominant subsector in Gentofte Municipality. The biotech sector has grown more important for the municipality in recent years, and

Ascendis Pharma and Bavarian Nordic are both represented with global headquarters in Hellerup. The latter company consolidated in the municipality in 2020, and together with Ascendis Pharma, it has created hundreds of new jobs locally. Nonetheless, the sector's overall employment growth in the municipality has fallen over the past five years, largely because the engineering company NNE moved its headquarters from Gentofte to Virum in Lyngby-Taarbæk Municipality in 2018.

Number of companies 2021/2022: 22
Number of new companies since 2017: 6
Number of employees 2021/2022: 2 009
New jobs since 2017: -327 (-14%)
Subsector with most employees: Pharma
Most important life science cities in the municipality: Gentofte and Hellerup
Largest companies (number employees in the municipality): Novo Nordisk (1450), Ascendis Pharma (300)
Upcoming investments: -



PHOTO: NEWS ØRESUND

LYNGBY-TAARBÆK MUNICIPALITY - 1 800 EMPLOYEES

Innovation, a strong startup environment, and major investments in new campus facilities in recent years have promoted a distinct local positive employment development in the life science sector in Lyngby-Taarbæk Municipality. Around 1 800 work at the total 38 workplaces identified. Following Copenhagen Municipality, Lyngby-Taarbæk is the municipality in eastern Denmark in which the greatest number of new life science companies have been established over the past five years. A vital factor for the major startup activity is the presence of Campus Lyngby for the Technical University of Denmark and the branch of DTU Science Park where numerous biotech-, medtech- and contract research companies from Denmark and abroad are located. In addition, there are a number of life science companies aimed at new life science sectors such as

healthtech and foodtech, and they have contributed positively to local job creation in recent years. The positive employment growth of the past five years is also due to the presence of large companies such as the engineering company NNE and the biotech company Novozymes, which has chosen to establish in Kongens Lyngby. NNE moved its headquarters to the city, whilst Novozymes has invested DKK 675m in a new global innovation campus, which was completed in 2019 and is the place of employment for 800 people. Expansion of the innovation hub DTU Skylab and an upcoming expansion of DTU Science Park in Kongens Lyngby make the municipality an important hotspot for research-intensive life science activities in the years to come.

Number of companies 2021/2022: 38
Number of new companies 2017: 18
Number of employees 2021/2022: 1 809
New jobs since 2017: 871 (93%)
Subsector with most employees: Biotech
Most important life science cities in the municipality: Kongens Lyngby and Virum
Largest companies (number of employees in the municipality): Novozymes (800), NNE (670)
Upcoming investments:

- DTU Science Park in Kongens Lyngby is planning a new science park with an area of up to 27 000m². Construction is expected to be completed in 2024/2025.



PHOTO: WS AUDIOLOGY

ALLERØD MUNICIPALITY - 1 700 EMPLOYEES

Research, development, and production of medical equipment is unquestionably the most important subsector in the life sciences in Allerød Municipality in northern Zealand. The majority of the 17 life science workplaces in the municipality are active in medtech in highly specialised small-, medium-, and large companies. The majority of those locally employed in the sector work at the hearing aid manufacturer WS Audiology, which employs more than 1 000 people at its headquarters in Lyngby. The

company, which was called Widex until it merged with Singapore-based Sivantos in 2019, has made a positive contribution to local employment growth in the past five years. Other medtech-companies located in the municipality have done the same, primarily the lab company Thermo Fisher Diagnostics, the cell instrument company ChemoMetec, and the epilepsy technology company UNEEG Medical.

Number of companies 2021/2022: 17
Number of new companies since 2017: 3
Number of employees 2021/2022: 1 672
New jobs since 2017: 425 (34%)
Subsector with most employees: Medtech
Most important life science cities in the municipality: Lyngby and Allerød
Largest companies (number of employees in the municipality): WS Audiology (1 050), ChemoMetec (135), Thermo Fisher Diagnostics (130)
Upcoming investments:

- The hearing aid manufacturer WS Audiology expects more R&D investments in Lyngby in the years to come, as the company wants to use 12% of its EUR 142m turnover for R&D, according to the company's annual report for 2020/2021.



PHOTO: NEWS ØRESUND

KØGE MUNICIPALITY - 1 600 EMPLOYEES

Highly specialised production companies, primarily in pharma, medtech, and contract research, are distinctive for the life science sector in Køge Municipality. Around 1 300 people are employed locally at the nine workplaces identified – primarily at well established companies. Employment growth in the sector in the municipality in eastern Denmark has been lower than in other municipalities in the region and in the Copenhagen area. However, the medicinal logistics in the municipality have been dramatically expanded in recent years by the logistics company Nomeco. In 2019, the company opened a new, automated pharmaceutical warehouse with an area of 25 000m² that serves pharmaceutical wholesalers in Scandinavia

and the Baltic countries, and it has created new jobs in Køge Municipality. Nomeco's new pharmaceutical warehouse is located in the area called Skandinavisk Transport Centre; harbour expansions, new motorways and new companies in the life sciences and in other sectors aim to render Køge Municipality a northern European centre for transportation and logistics.

Number of companies 2021/2022: 9

Number of new companies since 2017: -

Number of employees 2021/2022: 1 647

New jobs since 2017: 43 (3%)

Subsector with most employees: Medtech

Most important life science cities in the municipality: Køge, Bjæverskov, Lille Skensved, Borup

Largest companies (number of employees in the municipality): William Cook Europe (800), CP Kelco (370), Novo Nordisk Pharmatech (200), Nomeco (150), Scantox (80)

Upcoming investments:

- The contract research manufacturer Scantox (formerly Charles River Copenhagen) was acquired by the Swedish investment company Impilo in 2021, and new growth measures are underway in Scantox.
- The pharmaceutical company Novo Nordisk Pharmatech, a subsidiary of Novo Nordisk, invested in a production facility in Køge in 2021. The goal is for Novo Nordisk Pharmatech to increase its production portfolio of enzymes to the global market from 2022 and beyond.

Denmark, as well as in Medicon Valley on the whole. With around 1 150 employees locally, Coloplast employs most of the approximately 1 400 employed in the life science sector in Fredensborg Municipality. This is because Coloplast has its headquarters, production, and R&D in Humlebæk, and over the past five years, it has contributed to the positive employment growth in the municipality in general. In 2021, the company made its largest acquisition to date when it bought Swedish Atos Medical, headquartered in Malmö, for 16b DKK.

Number of companies 2021/2022: 12

Number of new companies since 2017: 2

Number of employees 2021/2022: 1 489

New jobs since 2017: 281 (23%)

Subsector with most employees: Medtech

Most important life science city in the municipality: Humlebæk

Largest companies (number of employees in the municipality): Coloplast (1 150), Dansac (240)

Upcoming investments: -



PHOTO: NEWS ØRESUND

EGEDAL MUNICIPALITY – 1 500 EMPLOYEES

There are just a handful of life science companies located in Egedal Municipality in northern Zealand, but the presence of the international, globally leading hearing aid manufacturer Demant means that a total of around 1 500 people work at five life science workplaces identified in the municipality. With its headquarters and R&D activities, Demant provides most of the local life science jobs, whilst the rest of the sector in the municipality comprises smaller medtech- and consultancy companies. Employment growth has been positive over the past five years; this is largely thanks to Demant, which took over a third, 8 000m² building for its headquarters in 2020. The building will be able to accommodate 400 more employees in the future. Job development in the sector in Egedal Municipality is thus looking bright in the years to come. This is also due to contract research company Minerva Imaging; in 2022, the

company began expansion of its R&D facilities in anticipation of the recruitment of new employees. No new life science companies have been established in Egedal Municipality over the past five years.

Number of companies 2021/2022: 5

Number of new companies since 2017: -

Number of employees 2021/2022: 1 450

New jobs since 2017: 229 (19%)

Subsector with most employees: Medtech

Most important life science cities in the municipality: Smørum, Ølstykke

Largest companies (number of employees in the municipality): Demant (1 350)

Upcoming investments:

- The contract research company Minerva Imaging is expanding its R&D facilities by 1 500m² following a strategic partnership agreement with American GE Healthcare in 2021. Construction is expected to be complete in 2022, and Minerva Imaging expects to grow locally from around 70 to 100 employees.



PHOTO: CHR. HANSEN

HVIDOVRE MUNICIPALITY – 1 100 EMPLOYEES

The majority of the just under 1 100 employees in the nine life science workplaces identified in Hvidovre Municipality, southwest of Copenhagen, are employed by the Danish ingredient supplier Chr. Hansen. Around 670 employees are linked to the company's plant, which manufactures bacteria cultures for e.g. the food industry. Biotechnical production and manufacturing are thus the most important life science subsector in Hvidovre Municipality, where job creation has been positive since 2017. However, the municipality will lose several hundred jobs in 2022, as the Swiss pharmaceutical company Roche has sold its Danish quarters in Hvidovre and will move employees to Carlberg City District in Copenhagen; in this mapping however, the employees are registered in Hvidovre Municipality.

Number of companies 2021/2022: 9

Number of new companies since 2017: 2

Number of employees 2021/2022: 1 070

New jobs since 2017: 132 (14%)

Subsector with most employees: Biotech

Most important life science city in the municipality: Hvidovre

Largest companies (number of employees in the municipality): Chr. Hansen (670), Roche (230), Syn-tese (100)

Upcoming investments: -



FREDENSBORG MUNICIPALITY – 1 500 EMPLOYEES

Medtech is the most important subsector in the life sciences in Fredensborg Municipality. Half of the 12 life science workplaces identified in the municipality work in the development, sales, and/or production of medical equipment; of these, Coloplast is indisputably the most important actor in terms of the number of employees and turnover, and it is one of the largest medtech companies in eastern



INTERVIEWS

Optimism for the future, but also concern about finding right competence highlighted in 18 in-depth interviews with sector professionals

The life science sector has grown to become a Danish strength and attracted more political focus. The overall progress in eastern Denmark is evident for 18 selected professionals from the sector that Øresundsinstituttet interviewed for this report. Common features of the interviews were a strong belief in the sector's future, in new expansions of facilities, but there is concern about the supply of competence in the STEM-subjects. Sector players have had different experiences when it comes to collaboration with Swedish Medicon Valley.

Pharmaceutical exports in Denmark have increased over the past decade from DKK 57bn in 2011 to DKK 136bn in 2021, and they now make up ca 18% of Denmark's total goods exports. Political focus on the sector has increased with life science strategies that have put the sector's framework conditions high on the industrial policy agenda. A new, national Life Science Council has been instated. DKK 800m in national funding has been designated for development of a Danish-manufactured covid vaccine, and new cluster organisations and consortia have been established to encourage the development of biotech, welfare technology, medicinal products, and pharmaceuticals in Denmark. Leading Danish life science foundations – the Novo Nordisk Foundation, Lundbeck Foundation and the William Demant Foundation – also had historic profits in the multi-billions via their investment companies in 2021.

But what about the other players in the sector and other large- and small companies in all subsectors in eastern Denmark – do they feel overall progress in the life science sector? Yes, the general message drawn from the 18 in-depth interviews conducted by Øresundsinstituttet for this report is that they do. The in-depth interviews for the report also provide other, more general insights. Three of them are:

Sector players are investing in more space

Science parks, incubators and small-, medium- and large companies report a great demand for their products and services. They are thus investing for the long-term in modernisation, automation, and expansion of their office-, production-, and/or R&D facilities in eastern Denmark, and in connection with that, they expect to recruit thousands of new employees in the coming years.

– Luckily things are going well for our clients, so we are expanding our space as well as our number of clients. Life science is without reservation our greatest vertical.

Biotech and medtech both thrive here. We definitely notice that Danish life science has been growing for the past ten years; both in terms of size and of the 'growth layer' itself, says Steen Donner, CEO of DTU Science Park – read more in the interview on page 54-55.

Recruitment becoming difficult and a concern

Life science companies are finding that recruiting new, skilled employees is becoming more difficult, and a number express concern about the supply of expertise to eastern Denmark in the future, especially in the subjects Science, Technology, Engineering and Mathematics (STEM). Companies are thus linking up with educational institutions to beat the competence challenge.

– We are many companies looking for the same competences. We are working on a recruitment strategy and along with bringing in people from outside, we are also putting efforts into internal training and career paths. We are looking at collaborations with various universities, says Andrea Porchia, General Manager of AGC Biologics – read more in the interview on page 48-49.

Varying collaboration across the Øresund

Sector players' links to the Swedish side of Medicon Valley are varied. For different reasons, some sector players in eastern Denmark have little or no trans-Øresund collaboration. Others would like to become more familiar with the university environments on the opposite shore. Some companies take advantage of e.g. skilled employees from Sweden, conduct research collaborations across the Øresund Strait and have numerous clients in southern Sweden.

– We have employees in Sweden who work with Swedish and Danish projects, and we have Danish employees who travel to Lund and Malmö to advise Swedish projects, says Alejandra Mørk, CEO of KLIFO – read more in the interview on page 64-65.

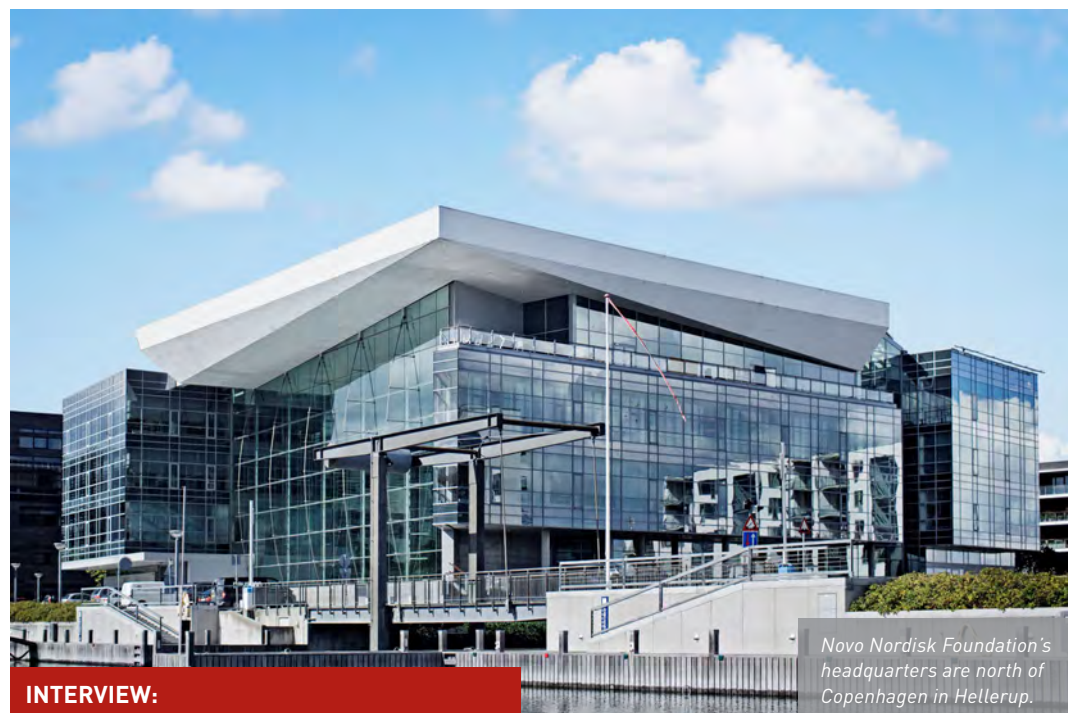


PHOTO: NOVO NORDISK FOUNDATION

Novo Nordisk Foundation's headquarters are north of Copenhagen in Hellerup.

INTERVIEW:

FOUNDATION OWNERSHIP A UNIQUE TRAIT OF DANISH MEDICIN VALLEY

Novo Nordisk, headquartered in Bagsværd, is more than just Medicon Valley's largest life science enterprise; it is also the region's largest foundation-owned firm. Foundation ownership is a unique characteristic shared by a number of the largest life science companies in Danish Medicon Valley, and this is different abroad, says Steen Thomsen, professor of Enterprise Foundations at Copenhagen Business School (CBS). There are advantages and disadvantages, but crucially, it ensures that the foundations are long-term owners focused on developing the enterprise and not putting the majority of shares on offer, he says. A new industrial foundation law even came into effect in 2015, raising demands for transparency, openness, and good foundation management.

Around 5 000 people are employed at Novo Nordisk's global headquarters in Bagsværd, and the diabetes concern has around 18 200 full-time employees at eleven locations in eastern Denmark. At more than a century old, the company is thus not merely the largest life science company in Medicon Valley, but also the largest foundation-owned enterprise in the region – and that foundation ownership places Novo Nordisk and other foundation-owned life science companies like Novozymes, Lundbeck, LEO Pharma and Demant in a special position, according to Steen Thomsen, professor in and an expert on industrial foundations at Copenhagen Business School (CBS).

– The primary characteristic of foundation-owned firms is that the owners have a purpose in conducting the firm. The enterprise itself is a goal. There is a belief that conducting the enterprise has an intrinsic value of its own. In contrast, in a company owned by e.g. a private equity company, value needs to be realised within 5-10 years, he says.

Foundation-owned firms have both a business aim, to generate financial return, and an aim to serve the common good, e.g. by helping patients through various endowments made for activities that help society. Other company owners, on the other hand, see the company exclusively as a way

to earn money, says Steen Thomsen, who has been heading research projects on foundation-owned firms in Denmark and abroad for a decade.

In the case of Novo Nordisk, the Novo Nordisk Foundation owns around 28% of the share capital and has about 75% of the votes in Novo Nordisk, whilst the remaining shares are traded. That highlights another particular quality of foundation governance: The foundation always holds the controlling interest, says Steen Thomsen. This is true even if it should choose to sell a small equity interest externally, like e.g. the LEO Foundation did in 2021, after 35 years as the sole owner of LEO Pharma, when the Swedish private equity company Nordic Capital paid €450m for around one-fifth of the company.

There are other defining characteristics for foundation-owned firms. For one, foundation-owned firms are not for sale; this is different to many other companies, says Steen Thomsen. In addition, they are managed with a long-term focus, and administrative directors and chair members hold their posts longer; finally, foundation-owned firms have little debt, and their operations are more stable than those of non-foundation-owned firms, says Steen Thomsen.

"The primary characteristic of foundation-owned firms is that the owners have a purpose in conducting the firm. The enterprise itself is a goal."

Foundation ownership suits life science's many time horizons

Numerous life science companies in Denmark are foundation-owned, which is rather uncommon abroad, Steen Thomsen remarks. It is thus a unique characteristic of the Danish end of Medicon Valley in comparison to its Swedish counterpart, where foundation-ownership is not as prevalent in the life science sector. Danish life science is facilitated by resources from private foundations, and there are numerous advantages related to that, he says.

– Life science has both a long investment period and a long payback period. First, there is a lengthy research phase, so companies in the life sciences need a long-term time horizon. This is something that foundations have, because the idea of a foundation is that it should continue indefinitely, says Steen Thomsen, pointing out that foundation ownership can also have disadvantages.

– It can be more difficult for companies to see

when they're on the wrong track and following the wrong strategy. A downside of a long-term focus can be too much patience. On top of that, employees are kept on longer, which can be positive as well as negative for operations, says Steen Thomsen.

New relations may result in more foundation-owned firms again

The reason numerous Danish companies in the life sciences and beyond are foundation-owned can be traced back to among other things the high taxes on private companies in the 1970s and -80s, e.g. high capital taxes, says Steen Thomsen. Foundation-ownership became an alternative to circumvent the high taxation. Over the past 25 years however, interest in founding new industrial foundations has been lower, as it was necessary to turn over significant capital to the state and pay 42% capital gains tax before the foundation was established, says Steen Thomsen.

That changed in 2021 however, opening up for the creation of more foundation-owned firms in Medicon Valley, according to Steen Thomsen. In addition, it may be significant that foundation owners such as the Novo Nordisk Foundation and Lundbeck Foundation have become so prosperous that their venture-startups can eventually become new, large foundation-owned firms.

A new industrial foundation law even came into effect in 2015, raising demands for transparency, openness, and good foundation management. To Steen Thomsen, it seems that many foundation-owned firms are fairly satisfied with the legislative change, which also creates increased public goodwill.

– Many foundations would say that increased transparency has helped increase their legitimacy in society, and that is important for a good reputation, which in turn plays into good working conditions and a good relationship to Danish society and the rest of the private sector, he says. ■

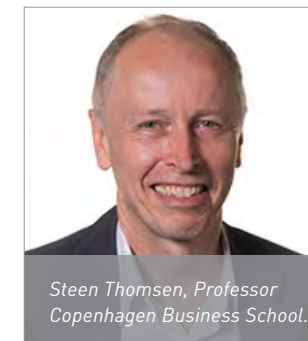
Steen Thomsen, Professor
Copenhagen Business School.

PHOTO: CBS



INTERVIEW:

FAST-GROWING AGC BIOLOGICS EXPANDS IN SØBORG – 19 000M2 MORE AND 300 NEW EMPLOYEES IN YEARS TO COME

The CDMO company AGC Biologics has been one of the fastest growing life science companies in Denmark in recent years. The number of employees has more than tripled since 2016, and increased demand has led the company to invest DKK 1.2bn in a new production facility in Søborg. The investment is expected to generate around 250-300 new jobs in the coming years. Some of the skills in demand are manufacturing, process development, quality assurance, and quality control scientists. The company's site lead in Copenhagen Andrea Porchia finds that the skilled labour demand in the region has grown over the past years, with many companies seeking the same expertise and trying to attract employees from abroad and the surrounding universities.

In 2001, six former employees of Novo Nordisk and Novozymes formed the company CMC Biologics. Japanese glass and chemical producer Asahi Glass Company Bioscience (AGC) acquired the German biopharmaceutical manufacturer Biomeva in September 2016 and Danish CMC Biologics in February 2017.

As of January 2018, Asahi Glass Company, Biomeva, and CMC Biologics were thus integrated to form the new AGC Biologics and became a global

player in the CDMO sector. AGC Biologics has since acquired additional facilities and companies around the world, expanding its offerings and creating a global network of manufacturing sites across three continents. The company has had a strong focus on cell and gene therapy over the past year.

The facility in Copenhagen works with the development- and manufacture of mammalian and microbial-based therapeutic proteins and serves companies from the USA, Asia, and Europe.

AGC Biology's customers include everything from small companies with 1-2 employees to the pharma market's 'really big players'. Among other things, AGC Biologics manufactured the Covid-19 vaccine developed by the Danish joint venture company AdaptVac on the basis of research from the University of Copenhagen, to which Bavarian Nordic now owns the rights.

New facility in Søborg expected to create 300 jobs

Since 2016, the number of employees at AGC Biologics in Copenhagen has grown from 200 to around 800 people. This high-paced growth is expected to continue in the years to come, as increased demand has led the company to increase its capacity and area in the Copenhagen facility. AGC Biologics is thus now investing DKK 1.2bn in a new, 19 000m² production facility on the neighbouring site in Søborg.

– Our current space is fully in use and many of our customers require additional capacity or want larger batches, and we have had to move assignments to other sites as a result. This great demand we have experienced is why we are constructing a new factory, says Andrea Porchia, adding that the Søborg site will thus be one of the group's largest. Facilities are also being expanded in Germany and elsewhere at the same time.

AGC Biologics expects to recruit an additional 250-300 employees over the coming years for when the new facility is operational in 2023, and the company will be looking for competence in numerous areas, says Andrea Porchia.

– We will need competence in areas such as manufacturing, process development, quality assurance, and quality control, as well as other supporting functions, she says.

High demand for labour in the region

Recruiting 250-300 people over the period may prove challenging, as the required skills are in great demand at the life science companies of the Øresund Region.

– We are one of many companies seeking the same competences. We are working on a recruitment strategy and in addition to bringing in people from outside, we are also working with internal training and career paths. We are looking into collaborations with various universities, and many of the company's experts are already being recruited from the University of Copenhagen, DTU, and elsewhere today, says Andrea Porchia. ■

"We will need competences such as manufacturing, process development, quality assurance and quality control among other supporting functions."



AGC BIOLOGICS A/S

- **Founded:** 2018
- **Branches in life sciences:** CDMO (Contract Development Manufacturing Organization)
- **Focus area:** Cell and gene therapy
- **Ownership:** Private
- **General Manager:** Andrea Porchia
- **Headquarters:** Søborg
- **Global headquarters:** Seattle
- **Turnover 2021:** 2.2bn DKK
- **Gross year-end result 2021:** 730mn DKK
- **Total number of employees in Medicon Valley:** Approx. 700
- **Total number of employees globally:** Approx. 2 000

INTERVIEW:

CHROMOLOGICS DEVELOPS NEW COLOURS WHERE THE FOOD INDUSTRY AND BIOTECHNOLOGY MEET



Chromologics' labs are in Søborg, not far from Copenhagen.

Chromologics develops natural colours that can make food production more sustainable. It is one of a number of life science companies in Medicon Valley active in the area where the food- and biotech industries intersect. The company has experienced only minimal difficulties recruiting and has found that even experienced people from the sector can be attracted to smaller startups. The challenge the sector faces is linked more to a shortage of affordable lab space and upscaling facilities for fermentation, says CEO of Chromologics Gerit Tolborg.

At the Alfa Laval Innovation House, near Copenhagen in Søborg, the biotech company Chromologics is busy developing new, sustainable colours for the food industry. Instead of extracting colours from insects and vegetables for food production, the company works to manufacture natural colours with the help of a fermentation process in a lab.

Chromologics was founded in 2017 and its field of activity is where the food industry and biotechnology meet. Theirs is a niche field that attracted attention in 2021 when the American Food and Drug Administration (FDA) approved the addition of a natural blue, flower-derived colorant to the list of approved colour additives for food and drink.

– For us, this is very interesting. It shows that there is movement in the industry sector, says founder and CEO of Chromologics Gerit Tolborg, who discovered a red pigment while doing her PhD at the Technical University of Denmark (DTU). It inspired her to transform her university research into a business activity.

From scientific to commercial thinking

The past few years have been very eventful for the biotech company. Chromologics has gone from a university startup funded with soft money grants to raising venture capital from Novo Holdings, Blue Horizon, Nordic Food Tech VC and the Danish Growth Fund, and in just one year its staff has

grown from four to ten employees.

– Closing our series seed in April 2021 moves the focus from exclusively research to commercial targets, says Gerit Tolborg, adding that three months of incubation at BioInnovation Institute (BII) in Copenhagen in 2020 were valuable in many ways.

They received advice on patent protection, investor contacts and fundraising, and most importantly, they learned to narrow the company's focus and to reflect on how the scientific idea could be scaled. All expertise that natural scientists generally do not possess, Gerit Tolborg points out.

– Where we used to think scientifically, we learned to think commercially. We didn't really dare to be focused, but at BII the focus became important, she says.

Shortage of lab- and testing facilities in the region affect Danish-Swedish links

For life science startups, the task of finding good, affordable office space and development facilities in the Copenhagen area has not always been easy, Gerit Tolborg explains.

– It was difficult for us to find lab space. COBIS and others are fully booked, so we set up in Søborg at the Alfa Laval Innovation House and built our own lab. There is not enough affordable lab space in Copenhagen where people can move in and out, says Gerit Tolborg. She believes that another disadvantage in



Gerit Tolborg, CEO Chromologics.

"We are a good mix of young people and more experienced people with networks and long experience from e.g. Novozymes. We may not necessarily offer the same job security or the same pay, but we can offer people the opportunity to be part of something really exciting."

Medicon Valley is the lack of up-scaling facilities.

– If there is one thing we are missing in the cluster, it is fermentation capacity, says Gerit Tolborg. She is happy that the company FermHub Zealand will – according to plans – open a testing facility in 2023 in Gørlev, western Zealand, that targets startups in biosolutions and fermentation.

– When we wanted to scale up our process, it was impossible to find anything in Denmark or close by, so we had to go to Belgium to do it. DTU has some equipment, but it was being renovated and thus not accessible. As a startup, you can't just buy a bioreactor for 600 000 DKK. And even if you could, it would not be delivered quickly. This is something we have struggled with a lot, and I know that other companies in the same field have the same concerns, says Gerit Tolborg.

The consequence of that is that their networks to food manufacturers and collaborators are increa-

singly outside Medicon Valley.

– We network south and not across the Øresund to Sweden, she says.

Will seek expertise in sales and business development

On the positive side, Medicon Valley is well positioned, with large industry players that both support and challenge, says Gerit Tolborg. Contrary to the contemporary discussions about the shortage of skilled employees, she has found recruitment smooth every time, and she has also found that it is possible to recruit people from firmly established companies to startups.

– We are a good mix of young people and more experienced people with networks and long experience from e.g. Novozymes. We may not necessarily offer the same job security or the same pay, but we can offer people the opportunity to be part of something really exciting, something they can help carry out, she says.

With the prospect of bringing its first colour to the market in 2024, Chromologics will need technical expertise and knowledge in business development, microbial fermentation, and sales in the years to come, says Gerit Tolborg.

– We are going to build our sales department and design and start our sales strategy, she says. ■



CHROMOLOGICS ApS

- **Founded:** 2017
- **Branches in life sciences:** Foodtech/biotech
- **Focus area:** Fungal fermentation solutions
- **Ownership:** Private
- **CEO:** Gerit Tolborg
- **Headquarters:** Søborg
- **Turnover 2021:** -
- **Gross year-end result 2021:** -
- **Total number of employees in Medicon Valley:** Approx. 15

INTERVIEW:

"BY AND LARGE, MANY MORE STEM GRADUATES ARE A MUST"



More than 50 years have gone by since the privately-owned American medtech producer Cook Medical set up in Denmark with two employees. Today, more than 800 people work at Cook Medical in Bjæverskov, about 50km southwest of Copenhagen. Every year, the company invests around DKK 100m to further develop the company, which manufactures vascular implants used in the healthcare sector. The balance between the education on offer regionally and the industry's expertise needs is excellent, but the life science sector in eastern Denmark is challenged because there are too few science graduates with the right qualifications, according to Thomas Gabriel, Managing Director of Cook Medical in Denmark.

Numerous life science companies from abroad have established themselves in the Medicon Valley cluster over the past five years, including Italian Chiesi, French Cilcare and Japanese Fujifilm. In July 2022, the American biotech company Moderna is also planning to open a commercial office in the region. Cook Medical has been represented in eastern Denmark for more than 50 years: in 1969, the company's founder William A. Cook decided to set up the first company outside of the USA, in Søborg. It had two employees. Business activity has since increased, and the company has moved to Bjæverskov, around 50km southwest of Copenhagen. From Bjæverskov, the company produces stent grafts, vena cava filters and airway management devices used for a long list of purposes, such as in aorta interventions, interventional radiology, and endoscopy. Around 800 people are employed at the medtech company in Bjæverskov, and it is the largest company in Køge Municipality. Cook Medical has invested steadily in improvement and expansion of the site, and it will keep on doing so, says Thomas Gabriel, Managing

"The issue is very simple that there aren't enough graduates. There's by and large a need for many more STEM graduates."

Director of Cook Medical in Denmark. – We continually invest in the development of our site in Bjæverskov – somewhere around DKK 100m annually. It's something we do to maintain our competitive edge and ensure our continued development.

Director of Cook Medical in Denmark.

– We continually invest in the development of our site in Bjæverskov – somewhere around DKK 100m annually. It's something we do to maintain our competitive edge and ensure our continued development.

All science specialists at a premium

In addition to production activity, Cook Medical in Bjæverskov also has business in quality assurance, regulatory affairs, R&D and various other functions that support the company both locally and regionally. William Cook Europe LifeScience Services supports its sister companies with batch certification of advanced therapy medicinal products, e.g. cell therapy products. Like other life science companies in eastern Denmark, the expertise the medtech company needs is thus in the natural sciences, and they are experiencing a shortage of expertise and competition for graduates, Thomas Gabriel explains.

– At Cook Medical, we employ for example project managers and engineers for R&D, process development, production equipment development,

test and validation and software validation. On top of that, we need engineering expertise for a number of processes from classic product development, from optimisation of production equipment and -processes, automation, to product maintenance when products have reached the market. That means that we're primarily interested in graduates from scientific master's programmes at universities and pharmaceutical graduates. We have seen that all of the types of graduates we need most are in massive demand, says Thomas Gabriel. He continues:

– For that reason, it would benefit the sector if more people completed master's educations nationally in Science, Technology, Engineering and Mathematics (STEM); the educations currently offered are largely excellent. As we see it, the mix of programmes in Denmark is actually quite alright. The issue is very simply that there aren't enough graduates. There's by and large a need for many more STEM graduates. And there's also a need for skilled staff electricians, smiths, and similar professionals, concludes Thomas Gabriel. ■



COOK MEDICAL DENMARK

- **Founded:** 1969
- **Branches in life sciences:** Medtech

- **Focus area:** Vascular implants
- **Ownership:** Private
- **Managing Director:** Thomas Gabriel
- **Headquarters:** Bjæverskov
- **Global headquarters:** Bloomington, Indiana, USA
- **Turnover 2021:** 1.5bn DKK
- **Gross year-end result 2021:** -
- **Total number of employees in Medicon Valley:** Approx. 800
- **Total number of employees globally:** Approx. 12 000



Each year, Cook Medical invests ca DKK 100m in its production in Bjæverskov.

INTERVIEW:

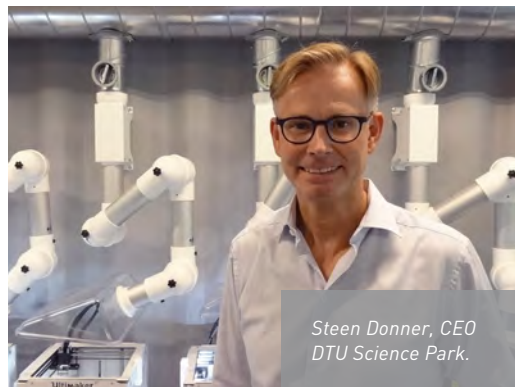
DTU SCIENCE PARK INVESTS NEARLY 1BN DKK TO EXPAND LAB- AND OFFICE FACILITIES IN LYNGBY AND HØRSHOLM

DTU Science Park will be expanding its campus environments in the coming years. A new, 18 000m², multi-user lab house in Hørsholm and a brand new, 27 000m² science park building in Lyngby will give the around 300 companies there more office- and lab space. Investments in the new constructions are up to almost 1bn DKK, says Steen Donner, CEO of DTU Science Park. Things are going well for our clients, and that gives rise to a need for more space as companies increase their employee force. The shortage of skilled workers is a challenge for the companies at DTU Science Park however, and they're recruiting more and more from abroad, he says.

The life science sector's successes in Denmark, with increased profits, exports, and employment, is noticeable at DTU Science Park, which is based in two different locations north of Copenhagen – in Hørsholm and Lyngby – and houses around 300 companies. Around 40% of the science park's 180 000 m² is rented out to companies active in the life sciences.

– Happily, things are going well for our clients, so we are expanding our space as well as our number of clients. Life science is without reservation our greatest vertical. Biotech and medtech both thrive here. We definitely notice that Danish life science has been growing for the past ten years; that means both growth in terms of size and of the 'growth layer' itself, says Steen Donner, CEO of DTU Science Park. Success in the sector, he adds, has also led to companies requesting more space.

– In the past three years alone, our clients have requested a net total of 15 000m² to respond to growth. We're now at a place where we need to



Steen Donner, CEO
DTU Science Park.

PHOTO: NEWS ØRESUND

build new lab facilities, he says, explaining that their occupation capacity is now at close to 100%.

Due to the increased need for space, the science park will start construction of a new lab house in Hørsholm in 2022, so they will be able to offer their clients more options for expansion, says Steen Donner.

– We're currently planning a brand-new lab house. It will probably be two or three years before it's operational, but we plan to build a 18 000m², multi-user lab house that can be expanded, he says.

New science park construction in 2024/2025

Parallel to the expansion in Hørsholm, DTU Science Park is also planning a new addition to its other campus site in Lyngby. The building will be complete in 2024/2025, says Steen Donner.

– We're working on building a completely new science park with up to 27 000m² of space. With the expansion in Lyngby and Hørsholm, over the next few years we'll be investing a total of almost DKK 1bn in new facilities, he says.

"Danish life science has had a lot of momentum over the past decade, and a precondition for that continuing is that we have a skilled labour force."

The increased presence on the horizon in Lyngby will not only create more space; it will hopefully also pave the way for more industrial collaborations, Steen Donner says.

– Ideally, there would be more collaborations between smaller companies at DTU Science Park and corporates from the campus in Lyngby and beyond; we know that collaborations like those can move both parties and benefit growth in Denmark, he says, and mentions e.g. Novozymes with its innovation campus in Lyngby, which can accommodate 800 employees, as a potential partner for collaboration.

2 500-3 000 life science employees in Hørsholm and Lyngby

Since its founding in 2004, DTU Science Park has focused on the field of deep tech, which is related to the life science sector in many ways. Deep tech companies are typically from the research world and based on IP-rights, and they devote a long time to development, the cost of which is high.

The medtech company MedTrace, the health-tech company Optoceutics and the biotech company Evaxion Biotech in DTU Science Park all work together with other deep tech companies in artificial intelligence, the robotics industry, and climate technology, says Steen Donner.

Large life science companies from Denmark and abroad are headed from the Hørsholm location, for example the Swiss pharma company Roche, the ingredients developer Chr. Hansen, and the allergy concern ALK. Chr. Hansen is currently adding on to their facilities, says Steen Donner.

At the location in Lyngby, more than 50 startups have been accelerated annually in the incubator FutureBox since it was established in 2018.

– 4 500 people go to work at the science park's two locations every day, and 2 500-3 000 of them work in the life sciences. All these many players help create a cluster and a community, and that's attractive for our clients, he says.

Today and tomorrow, labour shortage greatest challenge

If there is one pressing challenge for the companies at DTU Science Park, both currently and for the years to come, it has to do with skilled labourers, Steen Donner explains.

– Danish life science has had a lot of momentum over the past decade, and a precondition for that continuing is that we have a skilled labour force. The life science industry now makes up over 20% of exports, so if it slows down, we'll feel it, says Steen Donner, pointing out that simply attracting expertise from abroad is not enough.

As other sector players and life science companies also point out, then, it is vital that the Medicon Valley cluster bring more students into STEM-programmes in the region so that life science companies will continue to have access to the necessary expertise, he says.

In addition to that, it is important to make staying in the region attractive for experts from abroad; in that respect, fostering cluster mentality can make a big difference, says Steen Donner.

– The advantage for those from abroad is that if things don't work at one company, they can switch to another. They are not restricted. Job opportunities are plentiful. That is also something that a cluster can offer, he says. ■



PHOTO: NEWS ØRESUND

DTU SCIENCE PARK

- **Founded:** 2004 (when the former research centre in Hørsholm was linked to Technical University of Denmark and the foundation that owned it was dissolved)
- **Location:** Hørsholm and Lyngby
- **Number of companies:** Approx. 300
- **Number of employees at the locations:** Approx. 4 500; of these, 2 500-3 000 work in the life sciences
- **Focus:** Deep tech, life science, biotech and medtech comprise around 40% of the science park

INTERVIEW:

GROWTH AND A NEW PROFILE MEAN MAJOR RECRUITMENT NEED FOR ELOS MEDTECH – BUT COMPETITION IS STIFF

Based in Hillerød, the medtech company Elos Medtech has gone from being the sole subcontractor supplying larger medtech companies with advanced small parts such as screws and components related to dental implants to developing and marketing its own products and brands, as well offering consultations on production design, commercialisation, and quality assurance in medtech. Coupled with growth in the company in general, the new profile has meant that finding enough of the right expertise has been a challenge.

Today, Elos Medtech has 170 full-time employees in Hillerød. When it was founded in Gørlose in northern Zealand in 1969, its name was Pinol Finmekanik; the new name was adopted in the early-2000s, when the company was acquired by the Swedish concern Elos Medtech, whose global headquarters are in Gothenburg. As Pinol Finmekanik, the company had positioned itself primarily as a dental medtech subcontractor, and over time the company also began developing its own medtech products, introducing the first of its own products more than a decade ago. Around five years ago, Elos Medtech began collaborating with a design firm; the company's operations thus develop from subcontracting to include advising other companies on production design, quality assurance and regulatory affairs within medtech. In conjunction with that, Elos Medtech also needed to recruit new expertise.

– Concretely speaking, we have and will con-



Peter Ohlsen, Chief Financial Officer Elos Medtech.

PHOTO: ELOS MEDTECH

tinue to have a need for additional expertise in metalwork manufacturing of small components with very small tolerances; quality assurance; regulatory affairs; development engineers for the dental segment; and international sales and marketing.

And finally, we will also need IT resources with a focus on optimising primarily administrative processes, says Peter Ohlsen, Chief Financial Officer.

But finding the right expertise today is not easy, Peter Ohlsen reports. He says that like many other companies today, Elos Medtech finds it challenging to bring in enough applications for the majority of positions they advertise.

– As a result, we've had multiple situations in which there have been

fewer qualified applicants to choose from than we ideally would hope for. Recently, these challenges have been most tangible in IT, QA, and professionally trained production personnel.

For the life science sector to continue strongly in Skåne in the future, Peter Ohlsen highlights the importance of keeping production facilities and relevant educations – academic programmes as well

as vocational training – in Denmark.

– It's simply not effective to believe, as some politicians do, that we can continue relocating all manufacturing operations to countries where costs are lower or try to steer young people in a particular direction, where the overwhelming majority should

pursue an academic path. We still need professionally training young people and we need manufacturing operations in Denmark that keep focus on creating high value in manufacturing processes through continued development and innovation, says Peter Ohlsen. ■

PHOTO: ELOS MEDTECH



ELOS MEDTECH PINOL A/S

- **Founded:** 1969
- **Branches in life sciences:** Medtech

- **Focus area:** Dental, orthopedics, diagnostic and hearing device.
- **Ownership:** Listed
- **CEO:** Tina Friis Poulsen
- **Headquarters:** Hillerød
- **Global headquarters:** Gothenburg
- **Gross profit 2021:** 106mn DKK
- **Gross year-end result 2021:** +30mn DKK
- **Total number of employees in Medicin Valley:** Approx. 170
- **Total number of employees globally:** Approx. 600



PHOTO: ELOS MEDTECH

INTERVIEW:

MAJOR INVESTMENTS BY FERROSAN MEDICAL DEVICES WITH SUPPORT OF NEW SWEDISH OWNER

The medtech company Ferrosan Medical Devices employs around 240 people in Søborg, manufacturing products to stop bleeding during surgery and more. With backing from a Swedish private equity company, the company will be putting a double-digit percent of its turnover into modernising its production machinery over the next few years, with automation and digital control. Recruiting IT- and tech-expertise in Medicon Valley is difficult however, and that is a great challenge for the cluster, says CEO Rasmus Hother le Fevre. He highlights frequent collaboration between the public and private sectors, a hospital sector that runs smoothly, and foundations with strong capital resources as solid regional strengths.

Every three seconds, around the clock and every day of the year, one of Ferrosan Medical Devices products is used somewhere in the world, says CEO Rasmus Hother le Fevre, who now heads the Danish medtech company, which is over a century old and employs around 240 people at its headquarters near Copenhagen in Søborg.

– Less than one per cent of our clients are in Denmark. The American market is our largest, and after that is Asia, mainly China, says Rasmus Hother le Fevre.

Originally a pharmaceutical company that developed iron supplement products, in 1986 Ferrosan A/S was acquired by Novo A/S, which took over the company's pharmaceuticals, and Ferrosan became more focused on something it had been experimenting with since the 1940s: developing and manufacturing haemostatic products, which are used during surgery to stop bleeding. Although it has changed hands several times since being sold off by Novo in 1995, Ferrosan Medical Devices' focus remains on the niche, which is the company's so-called bio-material-division, says Rasmus Hother le Fevre.

"We can't get enough people in automation and digitalisation. They are very difficult to recruit."

– Sales of our haemostatic products are in the triple-digit millions, he says, adding that the company has another electromechanic division with a product for vacuum-assisted biopsies.

– With our division of labour, we at Ferrosan Medical Devices research, develop, and manufacture, and we have patents for that, says Rasmus Hother le Fevre. In addition he says that Ethicon, a subsidiary of Johnson & Johnson with 11 000 employees, is in charge of the global sale of Ferrosan Medical Devices haemostatic products. Many of the device components are manufactured by around 100 employees in Poland.

Automation and digitalization increase production capacity

Since 2019, Ferrosan Medical Devices has been overhauling its production methods in Søborg to make the plant, which is active around the clock, more automated and digitally controlled; the process will continue until 2023/2024, says Rasmus Hother le Fevre. This should ensure that the medtech company is prepared for authorities' requirements in the



Rasmus Hother le Fevre, CEO Ferrosan Medical Devices.

PHOTO: NEWS ØRESUND

future, and that there is sufficient capacity to keep up with the double-digit growth rates that have brought – and will continue to bring – more employees.

– We're currently investing a lot in modernizing our production equipment on site. We're investing a double-digit per cent of our turnover – around 700m DKK – in updating our production equipment, along with investments in our development, says Rasmus Hother le Fevre. In that respect, he says, the company's Swedish owner, the private equity company Impilo, is an important actor.

– An advantage of having an owner whose focus is on the life science industry is that when we work in the medtech- and pharma sectors, the development process and the clinical testing phase are long; it's important to have an owner who understands the development timelines, he says.

Digital expertise must be recruited externally

Rasmus Hother le Fevre greatly values the close collaboration in the region between universities, surgeons at hospitals, and the industry. Collaboration between the public and private sectors works well, the hospital sector operates smoothly, and there are multiple foundations with strong economic resources, he points out. At the same time, he says, the sector is under pressure in other respects, not least when it comes to the need for expertise in digitalisation, material development, and automation.

– We can't get enough people in automation and digitalisation. They are very difficult to recruit. There's a real shortage there, says Rasmus Hother le Fevre. He believes that it is related to other sectors demanding the same expertise.

The medtech company is thus looking for special digital expertise around the globe and working to attract people from abroad, as well as connecting with suitable graduate- and PhD students by parti-



PHOTO: NEWS ØRESUND

FERROSAN MEDICAL DEVICES A/S

- **Founded:** 1920
- **Branches in life sciences:** Medtech
- **Focus area:** Haemostasis and biopsy procedures
- **Ownership:** Private
- **CEO:** Rasmus Hother le Fevre
- **Global headquarters:** Søborg
- **Turnover 2021:** 720mn DKK
- **Gross year-end result 2021:** 135mn DKK
- **Total number of employees in Medicon Valley:** Approx. 240
- **Total number of employees globally:** Approx. 350

cipating in career events and identifying the leading universities within their niche.

In addition, he says, it is important that the hospital sector has both time and resources for innovation.

– We need to continue to ensure that the health sector has the resources it needs – not only to treat patients, but that it also has enough left over to look toward the future and work with the industry to develop health solutions for tomorrow, whether those solutions are in medicine or medtech, says Rasmus Hother le Fevre. ■



PHOTO: NEWS ØRESUND

INTERVIEW:

Fujifilm is expanding its plant in Hillerød for ca DKK 17bn.

FUJIFILM DIOSYNTH BIOTECHNOLOGIES ADDING ON 19 400M2 IN HILLERØD – BUILDOUT DECISION THIS SUMMER

By 2023, Japanese Fujifilm Diosynth Biotechnologies (FDB) will expand its plant in Hillerød by 19 400m², and it expects its staff to grow to 1 100 employees. The global contract research- and manufacturing company is also waiting to find out whether production can be expanded further when the current extension is complete. In June, a new local plan might approve expansion by an additional ca 73 000m². That could mean new investments in the billions and many new employment opportunities.

One of the largest life science companies in eastern Denmark may become even larger in the future. Fujifilm Diosynth Biotechnologies (FDB) is negotiating with Hillerød Municipality for the approval of a new local plan this June; that could mean that the company can expand its plant again by up to around 73 000m².

If the new local plan is approved in June, FDB will be able to scale up with either three large production buildings with a height of 25m, or with two production buildings, a filling plant, and office buildings.

Both scenarios have the potential to bring new investments in the billions to Hillerød for the Japanese-owned company, which manufactures biopharmaceuticals, including viral vaccines and gene therapies for external clients and pharmaceutical companies. FDB has also been involved in the production of an antibody treatment for Covid-19 on behalf of the Bill & Melinda Gates Foundation.

The company is currently already expanding on the site, after having acquired the plant in Hillerød for around DKK 6bn in 2019. The production facility had previously been owned by the American

Biogen, which had in turn established their plant there on an empty lot in 2001.

In 2020, FDB decided to invest around DKK 6bn in the facility – roughly the same amount for which they had bought it. The large investment should double production capacity; for example, six new 20 000L bio-reactors will be in operation. The reactors serve for large scale cell culture drug substance manufacturing. The investment will also increase the number of employees by 300 by 2023, bringing the total number on staff to approximately 1 100 people.

FDB's current expansive phase is due to a strong global demand for biopharmaceutical manufacturing. 15 out of 20 of the world's major pharmaceutical- and biotech companies have already placed orders or committed to collaborations.

Because of the great interest, the company can continuously recruit many new employees. FDB's current factory in Hillerød is just under 55 000m². The buildout currently underway will add 19 400m², and as stated earlier, the possible future addition would add 73 000m²; in several years, then, the factory in Hillerød may be more than double the size it is now. ■

Update: On 29th June 2022, Fujifilm Diosynth Biotechnologies announced that it is investing an additional DKK 11bn in its Hillerød facility, which will create 450 new jobs in Hillerød. On 22nd of June 2022, Hillerød Municipality approved a new local plan that allows for a new expansion of the plant by up to 73 000 m².



PHOTO: NEWS ØRESUND

FUJIFILM DIOSYNTH BIOTECHNOLOGIES ApS

- **Founded:** 2019 (acquired from American Biogen, which built the facility in 2001)
- **Branches in life sciences:** CDMO (Contract Development Manufacturing Organization)
- **Focus area:** Cell culture, microbial fermentation and viral vectors and vaccines
- **Ownership:** Private
- **Chief Operating Officer:** Lars Petersen
- **Headquarters:** Hillerød
- **Turnover 2020/2021:** 2.7bn DKK
- **Gross year-end result 2021:** -
- **Total number of employees in Medicon Valley:** Approx. 1 000
- **Total number of employees globally:** Approx. 3 000



PHOTO: FUJIFILM

INTERVIEW:

GENMAB IS CONSOLIDATING ITS COPENHAGEN ACTIVITIES AND BUILDING A NEW GLOBAL HEADQUARTERS WITH ROOM FOR 700 EMPLOYEES

The biotech company Genmab is one of the life science companies in Medicon Valley whose staff has grown most over the past five years. For that very reason, the company needs more space and is currently building new global headquarters in Copenhagen that will be nearly four times larger than their current headquarters. The new headquarters are a milestone for the company, says Birgitte Stephensen, Executive Vice President and Chief Legal Officer at Genmab. The large number of employees is partially due to the biotech company's goal to take over more of the marketing of their own cancer drugs, and partially due to a large number of new research projects.

The listed Danish biotech company Genmab expects to inaugurate its new global headquarters in Valby, Copenhagen in the first half of 2023. The move will give the company space for its growing staff. Founded in Copenhagen in 1999, Genmab now has international operations and commercial activities in Princeton, USA; Utrecht, Holland; and Tokyo, Japan.

– We're running out of space. We have three different locations in Copenhagen, and we expect to expand even more in the coming years, so we'd like to have all our staff in Denmark under the same roof, says Birgitte Stephensen, Executive Vice President and Chief Legal Officer at Genmab.

The new headquarters in Copenhagen thus has space for around 700 employees, which will ensure the company enough office space to grow robustly in the coming years, which is something the biotech company expects to continue doing, says Birgitte Stephensen.

She adds that when it comes to recruitment, Genmab benefits from the dense concentration of life science companies in Medicon Valley; because there are many professionals in the region, they generally don't have difficulty recruiting employees.



Birgitte Stephensen, Executive Vice President & Chief Legal Officer Genmab.

PHOTO: GENMAB/TUALA HJARNØ

The 12 500m² new headquarters will be nearly four times larger than its current headquarters at Kalvebod Brygge in Copenhagen, where the company's base has been 3 500m² in a building owned by the Swedish real estate company Castellum.

Prior to that, Genmab was in other locations in the Copenhagen area; the biotech company is currently building its new domicile from the ground up, and the consolidation is an important one.

– This is a very important milestone for Genmab. I've been with the company since 2002 and we've had many different addresses, and over the years it has been hard to predict how many people we would be. We had a few tough years during the financial crisis, and we had to cut our staff and downsize our offices, so I see this as a really important milestone that shows that we have become a very well consolidated company, says Birgitte Stephensen.

Genmab quadrupled its labour force in Medicon Valley

Genmab hit another milestone in July 2021 when its number of employees around the globe

rounded 1 000; of these, 300 are in Copenhagen – that's nearly five times what the Danish staff number was five years ago, when around 60 people were employed in Copenhagen.

Genmab is thus one of the life science companies in Medicon Valley whose staff has grown most since 2017, according to figures compiled by Øresundsinstituttet and data available from the company register Bisnode.

The steep employee growth curve that the company has followed over the past four or five years is, according to Birgitte Stephensen, also a manifestation of Genmab's vision to market its products on its own by 2025; doing this requires additional competences.

Genmab currently has five products on the market. Four of them are currently sold by the international life science companies Janssen, Novartis and Horizon Therapeutics, and Genmab receives milestone- and royalty payments. One of the products, DARZALEX®, for a type of cancer called myelomatosis, is marketed by Janssen and is responsible for around 73% of turnover.

The goal to be involved in the marketing of a pharmaceutical of which Genmab has 50% ownership or more was already fulfilled in 2021 with the drug TIVDAK®, for recurring, metastatic cervical cancer. The biotech company will market TIVDAK® in the USA with its American collaborator Seagen following the American drug authorities' approval last September; this may be seen as yet another in a series of milestones for the biotech company.

Copenhagen area production expertise is strong and growing

The other reason Genmab's staff is growing is that the company's pipeline is growing and there are more clinical projects, explains Birgitte Stephensen. The more comprehensive development work is partially due to a new collaboration agreement for new cancer drugs with the American biotech company AbbVie, which has already brought Genmab more than 40mn USD in milestone payments

from the American company.

– We have a very broad range of different functions and different expertise represented on our

Danish site, but the areas where growth has been especially strong are clinical operations and our CMC-area, which is in charge of production, says Birgitte Stephensen

The new location in Copenhagen will not include labs, which the company's seats in Holland and the USA do. The building will exclusively

contain offices, and its placement was largely influenced by where employees live and the short distance to Copenhagen Airport, says Birgitte Stephensen. ■

"We had a few tough years during the financial crisis, and we had to cut our staff and downsize our offices, so I see this as a really important milestone that shows that we have become a very consolidated company."



PHOTO: GENMAB/JOOST MELIS

GENMAB A/S

- **Founded:** 1999
- **Branches in the life sciences:** Biotech
- **Focus area:** Cancer
- **Ownership:** Listed
- **CEO:** Jan van de Winkel
- **Turnover 2021:** DKK 8.5bn
- **Gross year-end result 2021:** DKK 3bn
- **Total number of employees in Medicon Valley:** Approx. 315
- **Total number of employees globally:** Approx. 1 000

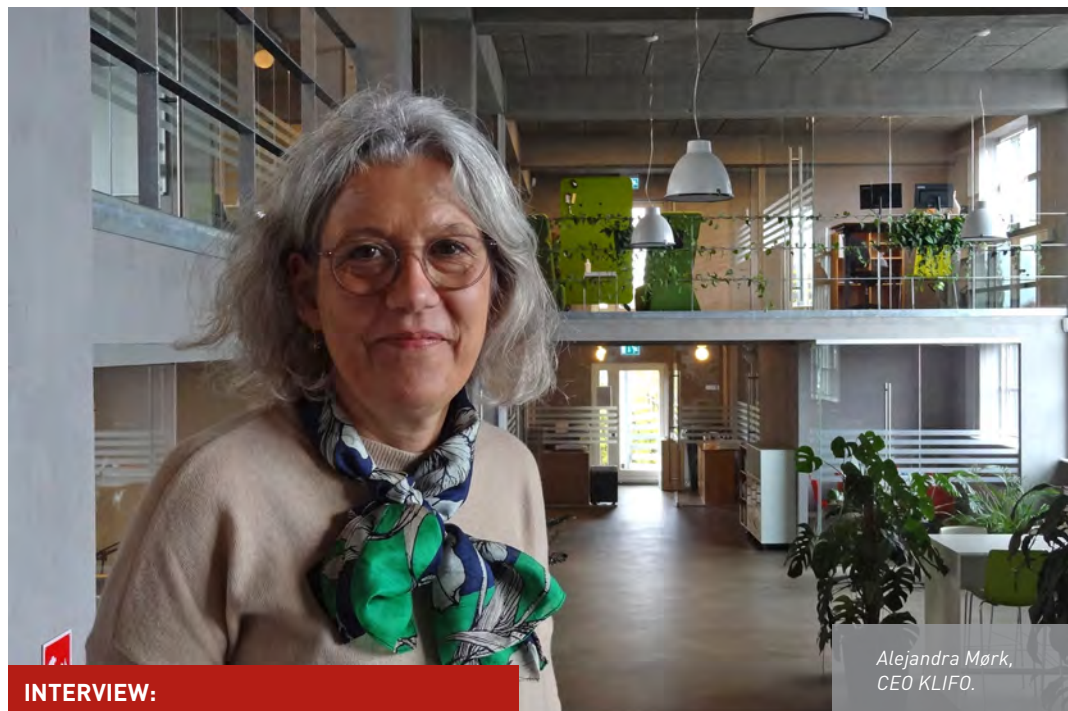


PHOTO: NEWS ØRESUND

INTERVIEW:

Alejandra Mørk,
CEO KLIFO.

“WE LIVE LOCALLY – IN AN INTERNATIONAL SENSE”

From its headquarters in Glostrup, Denmark, the drug development consultancy KLIFO has grown beyond national borders in recent years and advises biotech- and pharmaceutical companies in Medicon Valley and beyond on e.g. regulatory expertise. Many startups and large, firmly established life science companies with R&D and production result in a diverse, regional labour market, and that hones expertise so employees can move smoothly between smaller biotech companies and Big Pharma, says Alejandra Mørk, CEO of KLIFO. She reports that finding the right candidate for vacant positions has become more difficult over the past year. More employees in quality assurance will be decisive for the future, as the educational system has downgraded its importance for many years, she says.

With around 150 employees at its headquarters near Copenhagen and divisions in Lund in southern Sweden as well as in Germany and Holland, each year KLIFO is involved as an external contract research actor in around 300 pharma-projects on both sides of the Øresund and around the globe.

The company provides assistance to pharmaceutical-, biotech-, and medtech-companies if they e.g. lack regulatory expertise or need advice on documenting to authorities, monitoring side effects, or planning clinical trials.

Over the past few years, KLIFO has grown to

become one of Denmark's largest consultancy firms within pharmaceutical development, with clients ranging from large pharmaceutical companies to small startups. Many of the projects for which they provide advice are related to oncology, which is one of Medicon Valley's strengths.

– We have employees in Sweden who work with Swedish and Danish projects, and we have Danish employees who travel to Lund and Malmö to advise Swedish projects, says Alejandra Mørk.

In that sense, there are many life science links across the Danish-Swedish Medicon Valley-cluster, she says.

Øresund Region gives holistic understanding of life science

Alejandra Mørk says that the life science sector is in a different place than it was when she bought KLIFO some ten years ago, when the pharma sector was well underway to outsourcing various competences to external contract providers, e.g. KLIFO.

– I knew about a lot of biotech companies in the Øresund Region, and because of my previous work in pharma I had seen that many biotech companies went down the wrong path because they didn't have an overview of the entire pharmaceutical development process, she says. She feels that the biggest change since then has not been on the provider side, but rather on the consumer side.

– Pharma and biotech have both become far more professional and aware of how they utilise their providers, and that has increased the need for high quality providers, says Alejandra Mørk.

For KLIFO, it's vital that employees have industry experience and an understanding of the whole picture. Conditions for that are positive in the Øresund Region with its major concentration of large-scale production, R&D, startups, and pharma-logistics, as well as a combination of firmly established practice and new technologies and methods, Alejandra Mørk says.

– Sometimes we're in a large pharmaceutical company, and other times a small biotech startup. Moving between environments sharpens one's skills, she says, adding:

– I wouldn't have gotten the idea to run this company if we weren't located in Medicon Valley. We live locally, but in an international sense. Pharmaceuticals should be deliverable to the American, European, Japanese, and Chinese markets, she says.

Quality assurance needs more educational focus

Since KLIFO was founded in 1994, the company and its staff have grown steadily, Alejandra Mørk expects more employees next year because pharma-outsourcing is a trend that's set to continue. The Dutch private equity company Gilde Healthcare, which is now the majority shareholder, is pushing for an increase in KLIFO's international presence.

Alejandra Mørk has noted a challenge, however: recruitment has become more difficult.

– Until 2021, we were always able to find the people we wanted. And many people have come to KLIFO looking for job opportunities. But in 2021 it became very clear that those people are in very high



PHOTO: NEWS ØRESUND

KLIFO A/S

- **Founded:** 1994
- **Branches in life sciences:** Integrated Drug and Device Development Consultancy
- **Focus area:** Drug and device development
- **Ownership:** Private
- **CEO:** Alejandra Mørk
- **Global headquarters:** Glostrup
- **Turnover 2021:** -
- **Gross year-end result 2021:** -
- **Total number of employees in Medicon Valley:** Approx. 150
- **Total number of employees globally:** Approx. 200

“Sometimes we're in a large pharmaceutical company, and other times a small biotech startup. Moving between environments sharpens one's skills.”

demand, she says, adding that the greatest shortage of candidates is in “the entire quality assurance field”.

– Quality assurance is a gigantic domain in pharmaceutical development. And the areas of pharmaceutical technology and pharmaceutical regulation have been downgraded in importance in our educational systems over many years now, says Alejandra Mørk, who is hoping for increased STEM admissions in the future.

– When we talk about what Denmark will live off of, it's really important not to spend too much time looking at anything else, because life science is a goldmine underfoot, and it has proven its worth time and time again. That should lead more young people to pursue an education that can be used under the aegis of the sector, says Alejandra Mørk. ■

INTERVIEW:

“PRODUCTION NEEDS ATTENTION TOO – IT’S NOT ALL ABOUT R&D”



Christian Beenfeldt,
Project Director Knowledge
Hub Zealand.

Across five years, the public-private partnership Knowledge Hub Zealand has helped Kalundborg become a life science city and an important location for education in the life sciences. Founding Campus Absalon in 2021 and Helix Lab in 2022 meant that Knowledge Hub Zealand’s first intermediate goal of attracting more science and technology students to the city had been fulfilled. The focus for the years to come will be on establishing an upscaling centre to benefit production companies like Novo Nordisk, Novozymes and Chr. Hansen, because sound and sustainable production methods can strengthen the life science sector in Zealand, says Project Director at Knowledge Hub Zealand Christian Beenfeldt.

Knowledge Hub Zealand was founded in 2017 in response to difficulties recruiting skilled employees to Kalundborg on Zealand’s north-western coast. Today, the public-private partnership, which comprises Kalundborg Municipality, the industry, the educational institutions of Zealand, and Region Zealand has helped make it possible for students in Science, Technology, Engineering and Mathematics (STEM) to study numerous life science programmes in the city, says Christian Beenfeldt, Project Director at Knowledge Hub Zealand.

– If we rewind five years, Kalundborg was not an education city. We have gone from zero to 176 student housing units, he says.

In addition to student housing, the University College Absalon founded a 5000m² campus with labs, lecture halls and conference facilities in the city in 2021. Around 100 students there are studying to become bioanalysts or obtain Bachelor degrees in

bio- and mechanical engineering in close collaboration with the city’s life science companies, which include Novo Nordisk, Novozymes and Chr. Hansen – all of which have large plants in Kalundborg.

– We also view mechanical engineers as life science employees, because we have a very large process industry and an automated industry, says Christian Beenfeldt.

He adds that last year, Copenhagen School of Marine Engineering and Technology Management in Copenhagen decided to open a local branch in Kalundborg, and next year it plans to create 30 places for students in the city, which may help meet the demands for the technological expertise of many companies in the life science sector and beyond.

New Helix Lab makes transregional and global student exchange possible

In February 2022, Kalundborg’s position as an important city for the life sciences in Zealand was strengthened once again with the opening of Helix

Lab, a new, 1560m² centre for education and research that will attract Master students from Denmark and abroad – e.g. from Lund University – to Kalundborg, where they can collaborate with industrial companies from the local area to develop new, innovative and sustainable production technology.

– Helix Lab has facilities for working with projects on a pilot scale. There’s a chemistry-biology lab, an analysis lab, a QC Lab (microbiological), and facilities where Master students can work with robotics, automation, and all of the Industry 4.0 aspects, says Christian Beenfeldt, adding that industry representatives follow and tutor the students’ projects.

Helix Lab is led by the University College Absalon and has received a total of DKK 120m in grants – DKK 65m of which from the Novo Nordisk Foundation – to finance equipment, staff, and operational costs for Helix Lab for the first five-year project phase.

With the founding Campus Absalon and Helix Lab, Knowledge Hub Zealand’s first intermediate goal was fulfilled: A large and coherent campus in close proximity to the industry, says Christian Beenfeldt. The second intermediate goal for the years to come is: An upscaling centre that can upscale model production to full-scale production.

– There’s still a puzzle piece missing, but we have every reason to believe that it will fall into place with the government’s measures, he says, referring to the funds to promote industry through which Region Zealand has received DKK 60m in 2022 to invest in testing facilities, equipment and training in biosolutions (biotechnology) so that new, environmentally-friendly methods can be developed for the manufacturing of e.g. food and materials.

Pay attention to production and national supply chains, not just R&D

Of Novo Nordisk’s 17 700 employees in Denmark, 56% work in production and 25% in R&D.

According to Christian Beenfeldt, that brings an important point to the fore.

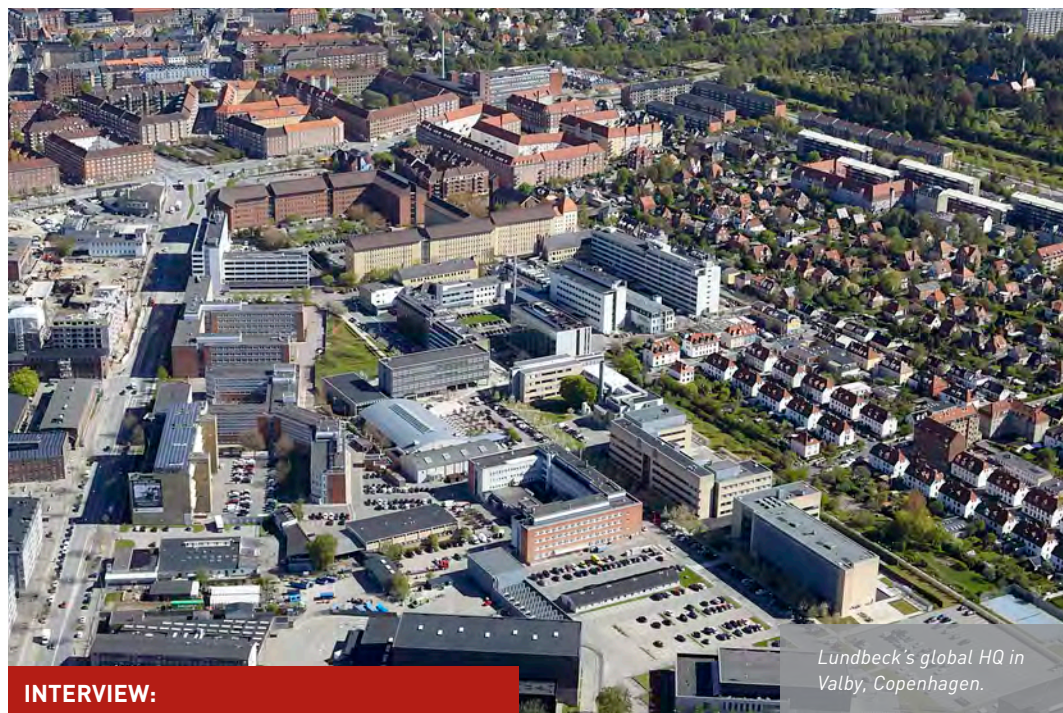
– There is a lot of focus on R&D in the life sciences, and that’s understandable. It’s exciting to develop new molecules and new medicines. But we also need to pay attention to the importance of production. If we cannot manufacture in a sound and responsible way in Denmark, we won’t be able to keep the leader’s jersey. So, it is important to pay attention to production; it’s not all about R&D, he says. He points out that more education on offer and increased collaboration with the industry is not just important for Kalundborg, but for the whole life science sector in Denmark.

– The covid crisis has taught us the importance of having our supply chains closer and of having a degree of domestic production expertise. At the same time, there is major shift underway with Industry 4.0 and automation, and that means that we in Denmark can grow to have a special competitive edge in the future when it comes to production, and there is an enormous, new growth adventure underway in biosolutions, he says. ■

KNOWLEDGE HUB ZEALAND

Knowledge Hub Zealand is an association and a partnership that aims to strengthen knowledge exchange in Zealand with collaboration between the industry and universities and works to make Kalundborg a hub for biofermentation and sustainable biotech production. The following actors are represented in the association: Region Zealand, Kalundborg Municipality, Novo Nordisk, Novozymes, Roskilde University, the University of Southern Denmark, University College Absalon, and Zealand – Academy of Technologies and Business.





INTERVIEW:

LUNDBECK: SKILLED LABOURERS FROM ABROAD AND FOCUS ON EDUCATION TO OVERCOME THE CHALLENGE OF MEDICON VALLEY'S LABOUR FORCE SHORTAGE

One of Medicon Valley's largest life science companies, H Lundbeck, whose specialty is neurological medicine, is currently in the process of strategically restructuring its research to strengthen its pipeline. That calls for many new specialists and advanced digital expertise, and many such professionals are in short supply in Medicon Valley, says Elise Hauge, Executive Vice President for People and Communication at Lundbeck. More skilled labourers from abroad, more commuters across the Danish-Swedish border and more STEM admissions would benefit the Medicon Valley cluster, according to Lundbeck.

In 2019, Lundbeck presented its new growth strategy, "Expand and Invest to Grow". Among other things, the strategy has resulted in the pharma company acquiring two biotech companies in the USA for more than 15bn DKK. As of 2022, a new A- and B-class share structure will further the company's interests in the future: new and if necessary even larger acquisitions in the billions will be possible, and new partnerships can be entered

to bring new pharmaceuticals for the treatment of neurological diseases to the market.

This has ensured Lundbeck access to new competences and new knowledge on the development of biopharmaceuticals, which will become an even more important way to manufacture new drugs in the future, says Elise Hauge, Executive Vice President for People and Communication at Lundbeck.

– Lundbeck has changed over the past few years.

Traditionally, our company's medicines have been based on small molecules, and that's one way of researching, and now we are moving more toward biological products, which is another way of working, she says.

The shift in Lundbeck's R&D work has meant that the company had to dismiss around 100 employees in Denmark in 2020. Around 300 employees were made redundant in 2021, primarily in the USA and India. More new employees have started at Lundbeck since then, Elise Hauge explains.

Whilst Lundbeck has succeeded in engaging new staff with specialised knowledge of biological products and also recruited a new head of research for early development who can deliver in line with the growth strategy, the pharmaceuticals company currently has around 50 vacant positions at its plant in Lumsås, Zealand and at its headquarters in Valby, Copenhagen. That may cause delays in the development of new medicines, says Elise Hauge.

– In Lumsås, it's partly a question of getting engineers for production. In Valby, we particularly need specialists in neurological research, PhD graduates and doctors, says Elise Hauge, adding that the coronavirus pandemic has accelerated the need for even more digital competences.

– We need to appraise where digitalisation can be used more in our clinical tests, but also how to maintain contact with people who are testing our products, for example via an app, so we can gather real time evidence.

We're looking to recruit a lot of people with digital expertise. So are a lot of other companies and industries. Digital expertise is hard to find, she says.

"There are a lot of Swedish-speakers at the site, so many people cross the Øresund bridge from Sweden to Denmark every morning."

More specialist training is important

According to Elise Hauge, there aren't enough life science-specialists in Medicon Valley – and she knows that many other companies in the sector, such as the hearing aid manufacturer Demant and the dermatology company LEO Pharma, have a shortage of highly qualified labourers.

– My colleagues at other pharma companies are also concerned about the future. We don't see it getting easier to recruit highly skilled labourers in the future. In that sense, we see it increasingly becoming a problem, says Elise Hauge. She sees recruiting the right people as decisive in relation to



LUNDBECK A/S

- **Founded:** 1915
- **Branches in life sciences:** Pharma
- **Focus area:** Brain medicine
- **Ownership:** Foundation-owned and listed
- **CEO:** Deborah Dunsire
- **Global headquarters:** Valby
- **Turnover 2021:** 16.3bn DKK
- **Gross year-end result 2021:** 1.6bn DKK
- **Total number of employees in Medicon Valley:** Approx. 1 750
- **Total number of employees globally:** Approx. 5 500

other challenges in the sector.

– If we don't have the right people at Lundbeck, we cannot function as a company. Recruiting the right people, and in the numbers that we need, is really vital, she says.

To be able to help confront those challenges, Elise Hauge participated in a work group within the framework of the so-called

'Reformkommission', at the helm of which is the renowned Danish professor of economy Nina Smith. In early April of this year, the commission presented its first recommendations for higher education, adult education, continuing education, and industry.

The commission was established by the Danish government in October, 2020, and when 2022 draws to a close it will offer solutions for issues such as e.g. how to better secure educational efforts for the future.

According to Elise Hauge, this is extremely important for maintaining and further developing Medicon Valley's leading position as an international life science hub.

– Personally, I'm concerned about whether we are educating enough people and whether we're educating them right. That's one part we can do better in Denmark, she says. She mentions that Lundbeck is working to encourage more upper secondary students to choose STEM-subjects (Science, Technology, Engineering, Mathematics), for example with the competition Drug Hunters.

Make it easier to recruit from abroad

According to Elise Hauge, the other structural challenge in Medicon Valley is the shortage of skilled labourers.

– We have to accept that we need to recruit from abroad. There just aren't enough neurological researchers in Denmark, so we must bring them from abroad. And that isn't always easy, says Elise Hauge. She mentions that it sometimes takes months for the authorities to process work- and residence permits for workers coming to Denmark from abroad, and she sees that as an "uncertainty factor".

Due to the shortage of skilled labourer in Denmark, Lundbeck recruits continuously from around the world as well as from Skåne; many other life science companies in eastern Denmark, such as Ferring Pharmaceuticals and Novo Nordisk, do the same.

– There are a lot of Swedish-speakers at the site, so many people cross the Øresund Bridge from Sweden to Denmark every morning, says Elise Hau-

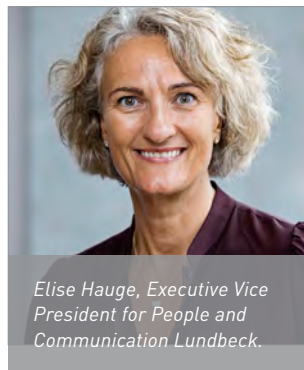
ge. She sees that as an indication that the trans-border exchange of expertise works well and is important in Medicon Valley.

Something else Elise Hauge considers positive is that the Danish government entered

a political agreement in early 2022, part of which entails that the deduction for R&D will be permanently raised to 130%.

– We're good at entering partnerships and working with universities and hospitals. As an example, Lundbeck collaborates with Rigshospitalet on how molecules are transported into the brain, says Elise Hauge, adding that politicians must never take for granted the life science sector's growth and its increasing exports.

– We do a good job, and the politicians can easily say "Well, that's going great", and then go focus on something else, but if the politicians were to nurse it more, I think this golden egg could grow even bigger and benefit everyone in Denmark and Sweden, says Elise Hauge. ■



Elise Hauge, Executive Vice President for People and Communication Lundbeck.

PHOTO: LUNDBECK

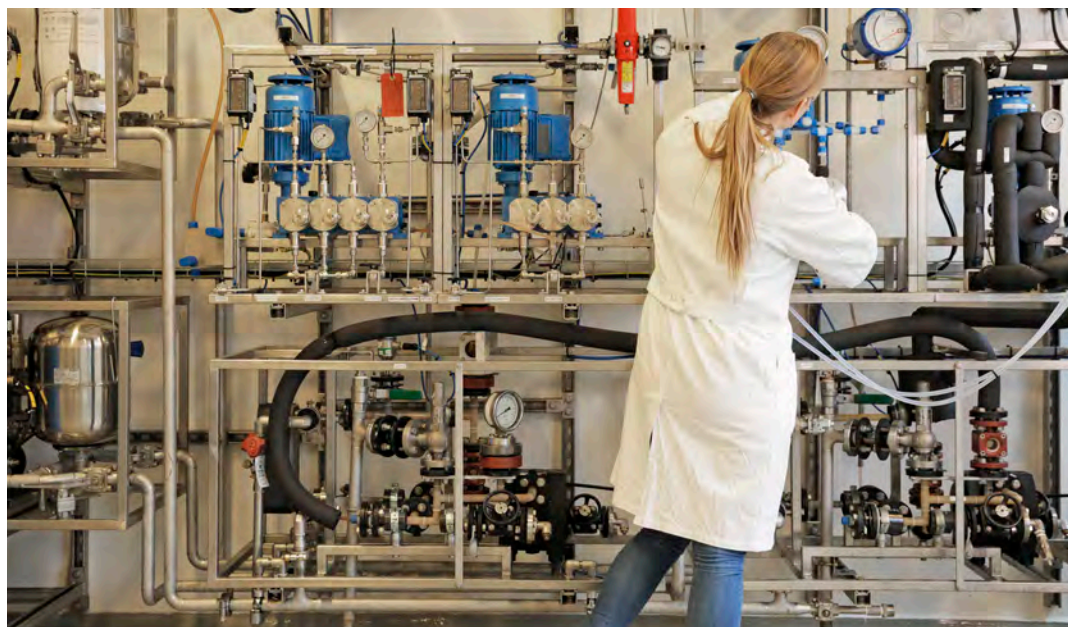


PHOTO: LUNDBECK

INTERVIEW:

MONSENDO SEES ITSELF AS A LIFE SCIENCE BUSINESS AND AN IT-ENTERPRISE



Thomas Lethenborg, CEO Monsenso.

PHOTO: MONSENDO

Like many other healthtech companies, Monsenso is at home in Copenhagen, where it develops apps and software solutions to promote better mental health in patients with mental- and neurological conditions. The company depends on skilled labourers from abroad and that the healthcare sector has the necessary resources to embrace the IT-shift, says Thomas Lethenborg, CEO of Monsenso. More educations that combine tech and health would benefit Medicon Valley, where it is difficult to recruit software developers, user experience designers, and interprofessional profiles with psychiatric expertise and an interest in tech and computer science, he says.

The majority of Medicon Valley's healthtech companies are in Copenhagen. One of them is Monsenso, founded in 2013 as a spinout from the IT University of Copenhagen and a research project. Today, around 20 people work at the listed company, developing apps and software solutions that can help patients with neurological conditions, and Monsenso's CEO Thomas Lethenborg says that it is both a life science business and an IT company.

– Our strength lies in that we have one foot in the clinical camp, and that we bring that with us to the life science sector in constructing our platforms with clinical partners, he says. He explains:

– We built a cloud-based software-as-a-service platform that is used in part to supplement treatment of neurological conditions, and also to gather real world data, from real patients. This supports both the treatment and clinical trials, says Thomas Lethenborg.

He says that their goal is personalised treatment of patients with computer technology, so that patients receive the right treatment from therapists, psychologists, psychiatrists, or psychiatric nurses.

– In the analogue world, you'll get – at best – a form that a patient filled in while waiting to be called in to an appointment. With digital tools, the people providing treatment can receive indications, from afar or when en route, if something is

not as it should be with a patient, and they can be proactive, says Thomas Lethenborg.

Monsenso collaborates with pharmaceutical companies, the Capital Region of Denmark, and Glostrup and Slagelse Municipalities, and more, and patients such as bipolar patients and individuals undergoing treatment for substance abuse and stress use the company's IT-solutions as part of their treatment, and what might seem like rigorous self-monitoring is nothing new for that group, Thomas Lethenborg points out.

– Patients are already being asked to self-monitor on paper in all psychiatric settings. Here we have a clinically validated solution with CE-marking, and in 2022 it will have MDR-certification, he says.

Global ambitions boost recruitment, but GDPR is a challenge

Since the beginning, Monsenso has aspired to become a global company. Today, that is apparent in the eight or nine nationalities represented in its small staff. All communication is in English, and the majority of the company's turnover is generated abroad, primarily in Europe, says Thomas Lethenborg.

– If we thought that we should fill our company ranks with Danish employees, it just wouldn't

be possible, he says. He emphasises the importance of good, flexible conditions for international students, both for attracting them to Medicon Valley and for keeping them here.

The company's international ambitions sometimes also cause difficulties for them as a healthtech company, despite the fact that they have sold their digital health solutions to 15 countries and translated them to 12 languages.

– We collect data that can be traced directly to individuals, so our solutions need to be secure and fulfil not only GDPR laws, but also local compliance regulations in each country, Thomas Lethenborg says.

Another significant challenge for healthcare companies lies in information security certifications, which are irrelevant for pharma, he points out. On the positive side, Monsenso and other healthtech companies are spared from sending applications to the pharmaceutical authorities.

– We don't need our solutions to have EMA- or FDA-approval, unless we position them explicitly as digital therapeutics, and that has not been our strategy. But the possibility does exist. Especially if it is a digital supplement to a medication that enhances utilisation of the medication, he says.

Instead, the approval process for healthtech companies leans more toward European regulatory standards, which medtech companies know from CE-marking and MDR-approval, he says.

Interprofessional profiles with tech-, sales- and life science know-how are important

Monsenso has doubled its number of employees in Copenhagen over the past year and a half, despite occasional difficulties recruiting, says Thomas Lethenborg. He has the impression that other companies active where the fields of Artificial Intelligence, IT and medtech overlap are also experiencing a shortage of skilled employees.

– I am concerned about the future – specifically for tech and the combination of tech and life science, he says.

More specifically, it has been difficult for them to recruit software developers, user experience designers and transdisciplinary profiles with psychiatric expertise and an interest in tech and

computer science. But finding good people for sales and project managers with life science knowledge is also hard, he points out.

Thomas Lethenborg also emphasises that Medicon Valley would do well to link more educational programmes in clinical and technical disciplines. This is something toward which the Technical University of Denmark (DTU) took new steps in 2022, when it

instated a new, digital health specialisation for bachelor students. He is positive about the transdisciplinary specialist focus.

– Combining traditional medicine and healthtech solutions has

great practical value; we can improve medicines and make them more effective and reduce the risks with studies because we can set up more focused clinical studies with specific target groups, says Thomas Lethenborg. ■

"If we thought that we should fill our company ranks with Danish employees, it just wouldn't be possible."

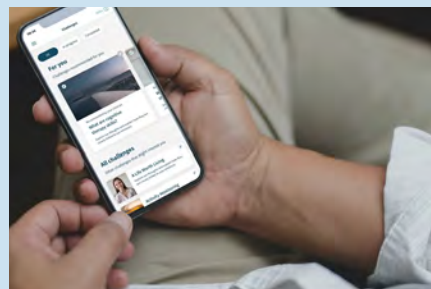


PHOTO: MONSENSO

MONSENSO A/S

- **Founded:** 2013
- **Branches in life sciences:** ICT/healthtech
- **Focus area:** Mental healthcare
- **Ownership:** Listed
- **CEO:** Thomas Lethenborg
- **Revenue 2021:** 7.1mn DKK
- **Gross year-end result 2021:** -
- **Total number of employees in Medicon Valley:** Approx. 20



PHOTO: NOVO NORDISK

INTERVIEW:

Michael Hallgren, Senior Vice President Novo Nordisk Kalundborg.

NOVO NORDISK INVESTING DKK 18BN IN NEW FACILITIES IN KALUNDBORG, WILL RECRUIT 400 NEW EMPLOYEES

Novo Nordisk's manufacturing facility in the harbour city Kalundborg in north-western Zealand is the sector's largest production facility in Medicon Valley, employing more than 3000 people and manufacturing around half of the world's insulin. The Danish global pharmaceutical company is investing DKK 18bn in its production in Kalundborg. Four new plants will be built, existing facilities will be expanded, and more than 400 new employees will be recruited to keep pace with sales growth and the demand for the company's diabetes products. A master programme in pharmaceutical engineering would boost Denmark as a manufacturing nation and Medicon Valley as a whole, says Michael Hallgren, who is Senior Vice President at Novo Nordisk API Manufacturing in Kalundborg and in the US.

With an area of 1 200 000m², equivalent to 168 football pitches, and a staff of around 3 300, Novo Nordisk's production facility in Kalundborg is more than just the diabetes company's largest manufacturing site in Medicon Valley; it is also their largest in the world.

The production facilities in the harbour city in north-western Zealand were inaugurated in 1969. Since the turn of the millennium, the pharmaceutical company has invested more than DKK 18bn in

production facilities in the city, and Novo Nordisk will continue to invest in Kalundborg for many of the coming years: in December 2021, the company decided to invest DKK 17bn in three new manufacturing facilities and build out the existing facility in Kalundborg, expected to be finalised by 2027.

– This will establish additional capacity across the entire value chain from manufacturing of active pharmaceutical ingredients to assembly and packaging. With the investment, 400 new jobs will

be created. Investments in the facilities emphasise Novo Nordisk's intention to continue to be a strong presence in Denmark and Kalundborg, says Michael Hallgren, Senior Vice President at Novo Nordisk API Manufacturing in Kalundborg and in the US.

In May 2022, Novo Nordisk announced that it will invest an additional DKK 1bn in the Kalundborg site, on top of the DKK 17bn investment.

Majority of Novo Nordisk's products have links to Kalundborg

Around half of the world's insulin is manufactured at the Kalundborg plant, e.g. by the genetic modification of yeast. Ingredients for the company's diabetes tablet, other pharmaceutical preparations for obesity and diabetes, and a number of biopharmaceutical products are also manufactured in Kalundborg.

Michael Hallgren calls the plant "a cornerstone in Novo Nordisk's global production setup". The facility is thus very important for diabetics around the world.

– Most of the products that Novo Nordisk manufactures and markets around the globe have their base in our Kalundborg plant, and over 32 million patients around the globe receive medicine from Novo Nordisk's manufacturing facilities in Kalundborg, says Michael Hallgren, whose responsibilities also include a newly constructed plant in the USA that will have 500 employees in the future.

The number of employees at the Kalundborg site has decreased by around 200 over the past five years, from around 3 500 in 2017 to 3 300 in 2022, according to figures supplied by the company. According to Michael Hallgren, this is largely due to effectivization and automatization of the plant.

400 new employees, primarily with STEM expertise

Because the investments in the billions being made in Kalundborg will lead to the creation of 400 new positions there, Novo Nordisk has started a global recruitment effort to locate new employees for the manufacturing facilities in the city. The primary need is for individuals with expertise in Science, Technology, Engineering and Mathematics (STEM), says Michael Hallgren.

– We are currently hiring new colleagues for

various roles, including – but not limited to – Automation and Robotics Engineers, Process Engineers, Development Scientists, Data Scientists, Process Scientists, Process Operators, Project Managers, Associate Managers and Quality Assurance Professionals, he says.

The recruitment effort is also taking place via a new, two-year talent programme that targets recent graduates and graduate students interested in working with biomanufacturing.

– In addition to ordinary job postings, we have established a 'Manufacturing Talent Programme'

where we will hire recent or soon-to-be graduates. For this programme specifically, we're seeking a diverse range of applicants within Science, Engineering, IT & Automation, and Robotics, says Michael Hallgren.

He explains that those in the talent programme will have permanent positions at Novo Nordisk, with three rotations in the first two years of employment.

– The first rotation will consist of manufacturing process exposure. The second will consist of data analytics exposure. The third will be either in IT/automations, robotics, manufacturing development, or in our major green fields projects, taking part in establishing sustainable and state-of-the-art green field manufacturing facilities, he says.

Novo wishes for a master-level programme in pharmaceutical engineering

Institutions like the University College Absalon make it possible to train as e.g. a biotech engineer, a machine engineer or a bioanalyst in Kalundborg today. From January 2022, master students in Den-



Novo Nordisk's expansion in Kalundborg includes a 50 000m²-purification plant.

PHOTO: NOVO NORDISK

mark and from abroad have new opportunities to do thesis projects in Industry 4.0 and sustainability in collaboration with the industry in Kalundborg with Helix Lab, a public-private educational and research centre, says Michael Hallgren, who believes that the educations could be even stronger still.

– A next step to strengthen both Medicon Valley and Denmark as a manufacturing nation on the whole could be establishing an educational programme specifically for pharma. Locating it near manufacturing sites that take on graduates would be an advantage and give the pipeline a local context, making it easier to recruit and retain skilled employees locally. Concretely, we see potential in for example master-level training in pharmaceutical engineering. In addition, there is a need for ordinary training programmes and continuing education on multiple levels, specifically in the Industry 4.0 and sustainability transformation of Denmark as a manufacturing nation, says Michael Hallgren. He adds:

– Test-, demo- and upscaling facilities would also strengthen the attractiveness for investments and startups. Those parameters would also strengthen Medicon Valley and the entire sector. ■



Novo Nordisk's existing manufacturing facility in Kalundborg.

PHOTO: NOVO NORDISK



PHOTO: NEWS ØRESUND

NOVO NORDISK A/S

- **Founded:** 1923
- **Branches in life sciences:** Pharma
- **Focus area:** Diabetes, haemophilia, overweight and obesity
- **Ownership:** Novo Nordisk Foundation and listed
- **CEO:** Lars Fruergaard-Jørgensen
- **Global headquarters:** Bagsværd
- **Turnover 2021:** 141bn DKK
- **Gross year-end result 2021:** 59bn DKK
- **Total number of employees in Medicon Valley:** Approx. 18 300
- **Total number of employees globally:** Approx. 48 500

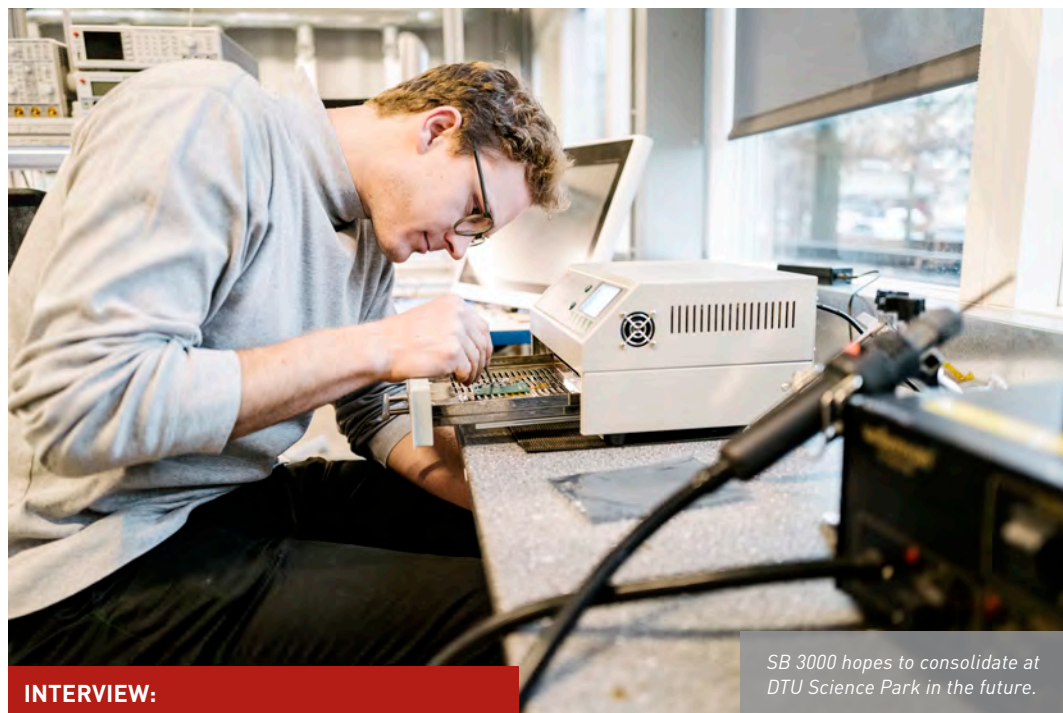


PHOTO: DTU SCIENCE PARK

INTERVIEW:

SB 3000 hopes to consolidate at DTU Science Park in the future.

A GOOD PEPTIDE ENVIRONMENT HAS BENEFITTED RECRUITMENT FOR THE LIFE SCIENCE COMPANY SB3000

SB3000 makes neither medicines nor medical equipment. Instead, the life science company works on developing a peptide-technological platform that can make medicine production more environmentally friendly, so fewer raw materials and less energy are wasted in the production process. SB3000 sees its potential clients initially in companies that develop peptide-based medicines, and in the longer term, antibody-based medicines – both on both sides of the Øresund Strait and around the globe when development of the tech-platform is complete around 2025. Recruiting employees with peptide chemistry know-how has gone well for the company in the Copenhagen area, where many peptide companies are concentrated. Most of the applicants are from abroad however, and liberal rules for employees from abroad are thus important, says Jens Bukrinski, who was Head of R&D at SB3000 until 2021.

SB3000 is a British deep tech-company that is developing a technology platform that can be used for peptide-based, more environmentally friendly production of pharmaceuticals. The company hopes to grow in Denmark and is looking at possibilities to further consolidate its presence in the country in the near future, e.g. in new labs at DTU Science Park in Lyngby, but that depends on factors such

as how quickly they can scale up and find clients, and how funding progresses, says Bukrinski, who headed R&D at SB3000 until 2021.

– Peptide drug development in Copenhagen is the centre of this science. It been like that from the early days; many startups from universities have picked up this organic chemistry; a lot has been happening at University of Copenhagen and

the University of Aarhus – and of course thanks to Novo Nordisk, which does a large part of its business in peptides and has educated numerous scientists – that is invaluable, says Jens Bukrinski.

Numerous life science companies of various sizes in the Copenhagen area and Zealand work with peptide-based pharmaceuticals besides Novo Nordisk – Zealand Pharma, Lundbeck, IO Biotech and Epoqe Pharma, to name just a few – and that creates an attractive talent pool that has already benefitted SB3000 when it has come to recruiting new peptide scientists to the company, Jens Bukrinski explains.

– We received 70 applications from qualified candidates for a single vacant position for a peptide scientist; there were many people from all over the globe. Green chemistry and sustainable

solutions are a major focus in Denmark, and that is a plus. People want to come here with their families to do this kind of research because they know there's a good scientific environment here, says Jens Bukrinski. He mentions that he has had different experiences of recruitment on the other side of the Øresund.

– We used to have a lab in Lund and tried – unsuccessfully – to recruit a peptide scientist there. But in Copenhagen recruiting hasn't been a problem, says Jens Bukrinski.

"We used to have a lab in Lund and tried - unsuccessfully - to recruit a peptide scientist there. But in Copenhagen recruiting hasn't been a problem."

Open borders and free access to research literature are core

The fact that most of the applicants for positions in Denmark that SB3000 has received – such as e.g. chemical scientists and pharmaceutical developers – have come from abroad highlights an important point, says Jens Bukrinski. He believes that open borders and liberal regulations when it comes to employees from abroad are essential for the life science sector in eastern Denmark. For that reason, he is concerned about political measures that might restrict access to employees from abroad.

– The influx of competence would be lost, and then the biotech cluster would be lost, he says, adding that it was grim when travel was made difficult during the covid pandemic.

Something that Jens Bukrinski would like to see when it comes to the life science sector are

research-based startups, and free access to scientific literature for small- and medium-sized companies.

– We need access to scientific literature, and it should be free of charge. This would be my greatest request from any government or the EU: Give us free access to scientific literature. It's such an obstacle right now. You pay 30 USD just to look at articles or papers and see that 'oh, this is of no value to me'. Open source is very limited. The only thing you can do is move to the library. But sometimes you're in the lab and need to know something. The

need is not limited to biotech; the same is true for all innovative business activities, says Jens Bukrinski.

In Denmark's most recent life science strategy, from May 2021, DKK 0.5bn have been earmarked for a working group to

start up an analytical study to identify obstacles and opportunities involved in granting such companies free access to license-based scientific literature. ■

Jens Bukrinski took the position of CTO of Epoqe Pharma in December 2021. He was Head of R&D at SB3000 from 2018 to 2021.

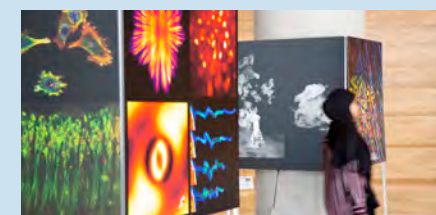
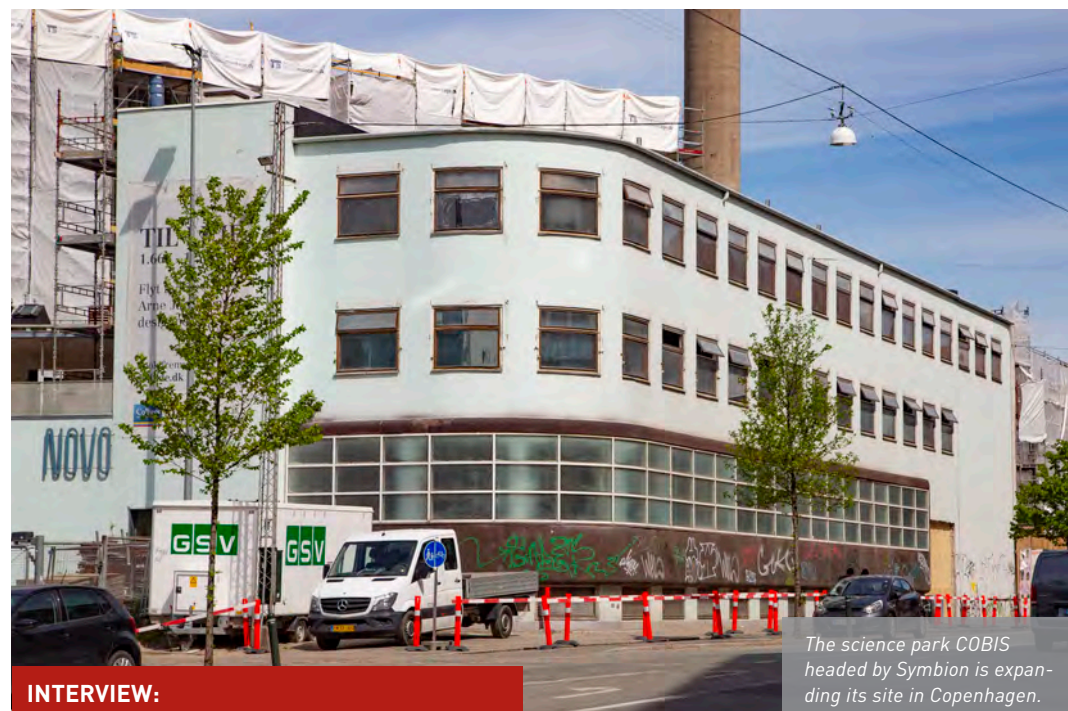


PHOTO: NEWS ØRESUND

SWEDISH BIOMIMETICS 3000

- **Founded:** 2004
- **Branches in life sciences:** Biotech
- **Focus area:** Peptide drug development
- **Ownership:** Private
- **CEO:** Tom Podkolinski
- **Turnover 2021:** -
- **Gross year-end result 2021:** -



SYMBION TAKES OVER NOVO NORDISK'S PLANT AND ADDS 12 000M2 TO COBIS

The science park COBIS is headed by the startup community Symbion, and it is growing. When the renovation of Novo Nordisk's former headquarters in Copenhagen is complete in late 2022/ early 2023, COBIS and BII will both have more office- and lab space at their disposal to take on more life science startups in their communities. There are currently more than 100 life science companies waiting to become part of Symbion's life science community, which will house its more mature companies at the new location in Fuglebakken in the future. The early startups at BII will fill most of the space at what is now COBIS, says the CEO of COBIS, Morten Mølgaard.

In late 2022/ early 2023, a new growth centre for life science startups will open its doors in Copenhagen. The site, 'Den Hvide Fabrik' (the White Factory), formerly Novo Nordisk's headquarters, is still home to Novo Nordisk's sister company Novozymes, whose manufacturing plant is on the neighbouring site.

The community organisation Symbion is the party behind the new 12 000m2 life science location. Symbion heads Copenhagen Bio Science Park (COBIS), which will benefit from the expansion with more office- and lab space; COBIS' current address near Rigshospitalet is now full to capacity.

The new Frederiksberg/Nørrebro-location will allow the science park to become a link between the scientific environment near Rigshospitalet and the commercial environment around Copenhagen Business School, and it will also house numerous life science startups, says Morten Mølgaard, CEO of COBIS. COBIS is home to around 130 life science companies, including IO Biotech, Adcendo, Orphazyme, Galecto and MinervaX; the two lattermost have scientific links to Lund University.

– We urgently need more square meterage for our facilities, so we made the decision to sign a contract for Fuglebakken. It will cost us between

DKK 35-40m to outfit it to meet our clients' needs, he says, and adds:

– Right now there is a waiting list with more than 100 companies active in drug development, digital health, devices & medtech, diagnostics and more that want to be part of our life science startup community. That is a very high demand, says Morten Mølgaard.

Both life science startups and established life science companies are waiting to get in to COBIS, but the vast majority are life science startups, Morten Mølgaard explains.

– We're getting an increasing number of enquiries from established companies interested in getting in and being in contact with the environment, he says. In part, this is to get a better sense of what's happening in the life science sector, and in part it has to do with offering employees a chance to be immersed in a dynamic startup environment rather than sitting alone in an office, explains Morten Mølgaard.

From financial crisis to favour

Today, COBIS is very successful, but that wasn't a given when the science park came into being in 2009 from a public tender by the state and the Capital Region of Denmark to establish and operate a life science biotech park in Copenhagen, says Morten Mølgaard. It was the tail end of the financial crisis, the sector had been brought to its knees, and there was not enough capital, he says. But from those meagre conditions emerged a new way of working in the sector, Morten Mølgaard says.

– The shortage of capital led people to find new ways to develop their biotech firms, and that was largely through partnerships. People were chair-people for each other, they were on each other's advisory boards, some shared CEOs, others shared labs, and so on, says Morten Mølgaard.

Several important events have shaped COBIS since. In 2012 for example, the Chinese genomics organisation BGI Europe founded its European headquarters in the science park with the first 10 or so employees.

– That signalled that COBIS was interesting for a large, international concern, Morten Mølgaard says. Another milestone was reached in 2014, he says, when COBIS' aim was refocused.

– Rather than narrowly focusing on biotech, the focus became health in a broader sense, and we could invite companies from e.g. medtech, digital health and diagnostics. That was really valuable because a lot of new companies emerged at the



COBIS BY SYMBION

- **Founded:** 2009
- **Location:** Ole Maaløes Vej and Tagensvej, Nørrebro, Copenhagen
- **Number of companies incl. BII's projects:** Approx. 130
- **Number of employees at the location:** Approx. 800
- **Focus:** Life science, early-stage companies

FUGLEBAKKEN BY SYMBION

- **Founded:** 2023
- **Location:** Fuglebakken, Nørrebro/Frederiksberg, Copenhagen
- **Expected number of companies:** 100
- **Expected number of employees at the location:** 600
- **Focus:** Life science, early- & later-stage companies

time, especially in digital health, which was starting to pick up in 2016-2017. The environment became more diverse, he says.

When the Novo Nordisk Foundation-backed incubator BioInnovation Institute (BII) became a tenant in 2018, it was a third milestone, Morten Mølgaard explains.

– It may be the most valuable client we've had to date.

In 2019, BII started renting an entire floor at COBIS, and the two parties signed a new rental agreement in 2021. According to Morten Mølgaard, it entails that in two or three years the current COBIS building will primarily house BII's early proof of concept companies, whilst the new location on the former Novo Nordisk site will largely be for somewhat more mature life science companies that have perhaps raised their first round of funding.

In addition, COBIS and BII hope to identify

opportunities to expand more into the North Campus area near Mærsk Tower; there are two or three properties there that the University of Copenhagen is planning to vacate in the next few years and taking them over may come into question for COBIS – Morten Mølgaard hopes so.

Markedly more equity raised

Although there is a shortage of lab facilities and workforce in Medicon Valley according to Morten Mølgaard, the research is good, and access to capital has improved, he finds.

– If we look at it historically, companies at COBIS have raised between DKK 500-800m a year in capital for all of our companies together. In 2020, that figure exploded to DKK 4.5bn, and in 2021 we'll hit around DKK 4.3bn DKK. The capital raising being done has simply become significantly larger. In the past, bringing in 12-15mn was cause for celebration, and now the companies with the best prospects are raising triple digit millions for continued growth, Morten Mølgaard says.

"Right now there is a waiting list with more than 100 companies active in drug development, digital health, devices & medtech, diagnostics and more that want to be part of our life science startup community."

If Medicon Valley is to continue developing in a positive direction, it will be necessary for actors from the sector to collaborate with other Scandinavian- and international players and market Medicon Valley as a Nordic region and not just a Copenhagen region in order to increase the geographic- and demographic size.

– We aren't good enough to link to larger international clusters and activities. Multiple analyses have confirmed that the clusters that operate best are more network-oriented, and our framework conditions make it difficult to collaborate laterally, for example with health data exchange, says Morten Mølgaard, and expresses another direct concern:

– I find that the amount of state-funding available tends to shrink as private actors grow larger. There is a tendency to an attitude of, 'Novo Nordisk Foundation can take care of that', and the public authorities' role gets forgotten to a degree, but it should be that if an early life science project doesn't fit into the Novo Nordisk Foundation, there should be other actors to turn to, says Morten Mølgaard. ■



Morten Mølgaard,
CEO Copenhagen Bio
Science Park (COBIS).

PHOTO: NEWS ØRESUND



PHOTO: SYMPHOGEN

Symphogen's HQ north-east of Copenhagen in Ballerup.

INTERVIEW:

SYMPHOGEN IS GROWING: WITH MORE R&D PROJECTS AND EMPLOYEES IN BALLERUP, MORE TRANSDISCIPLINARY PROJECT MANAGERS AND TRAINEE PROGRAMMES WOULD BE USEFUL

The Danish biotech company Symphogen was moving toward an IPO for several years but was ultimately acquired by the French Servier in 2020. Around 30 more employees have since started working in Ballerup, where plans for more recruitment are also underway. Beyond the scientific employees, who are in great demand, the sector in the Copenhagen area would benefit from more transdisciplinary project managers with life science expertise and trainee programmes for new graduates, according to Karin Garre, General Manager of Symphogen. Knowledge about what kind of expertise students in Skåne have to offer is too limited, she says.

There are many life science companies from abroad with business activities in Medicon Valley. One of them is the French pharma group Servier. In 2020, it acquired the Danish biotech company Symphogen, which has around 135 employees in Ballerup, for an undisclosed sum.

Whilst acquisitions from abroad sometimes

lead to cutbacks or relocations in the life science sector, it has been another, positive case for Symphogen, which has experienced success on various levels since the acquisition.

– Symphogen is now a 'Centre of Excellence' for antibodies for Servier. We have more projects, our portfolio has grown, and in addition, Servier

has brought us into some of its partner projects, which we have evaluated and refined. That is one of the reasons why we have recruited more employees in the past nine months, and will continue to do so, says Karin Garre, General Manager of Symphogen.

The company name refers to the idea behind the founding of the company: to reflect nature's way of attacking cancers with a symphony of different antibodies. An example is the pharmaceutical candidate Sym004 for intestinal cancer, which will soon enter Phase III and then, the company hopes, continue toward approval.

In Ballerup however, Symphogen has continued to focus on discovery and early antibody development of therapeutics for cancer and neuroinflammatory diseases, in addition to focusing on CMC-development in later phases. The company works very closely with the rest of the Servier Group, which has 22 000 employees around the world, says Karin Garre.

The biotech company was once located in DTU Science Park in Hørsholm and Lyngby, and part-owned by Novo A/S (now Novo Holdings A/S) and others. It collaborates with e.g. Herlev Hospital and Rigshospitalet.

Symphogen also continues to work with outsourcing and has long-standing collaborations in pre-clinic, clinic, and production, for example with regional contract manufacturers such as AGC Biologics, Klifo, and others in the Medicon Valley area, and Symphogen also outsources to the USA and Canada, says Karin Garre. The company's employees are typically from the Copenhagen area, southern Sweden, and from abroad.

In addition to Symphogen's technology platform, expertise in biologics and the portfolio of pre-clinical and clinical projects, the agile working style and ecosystem of Medicon Valley were also elements that Servier found it valuable to acquire, says Karin Garre.

Good project managers needed for outsourcing tasks

Symphogen is far from the only life science company in Medicon Valley that works with antibodies; Alligator Bioscience in Lund and Genmab and Lundbeck in Copenhagen work with antibodies in relation to cancer and migraines, respectively. Competition for talent has thus increased in recent years, says Karin Garre.

— There is an enormous upsurge in activity. Biotech has new financial resources, and with them comes an increase in the number of activities and projects. We need to look harder for new employees. In that sense, it's natural that competition for expertise is heightened, she says, adding that although Symphogen will continue to recruit

people, primarily in R&D, there is also an upper limit to how many employees can be accommodated in Ballerup.

There are currently no plans to expand the site, she says. Instead, the biotech company is investigating what needs to be accommodated internally, and how further outsourcing and distribution of tasks with Servier in France might be carried out. In general, internal development processes and outsourcing both require transdisciplinary profiles with knowledge in biology, pharmaceutical deve-

"There is an enormous upsurge in activity. Biotech has new financial resources, and with them comes an increase in the number of activities and projects. We need to look harder for new employees."



Karin Garre,
General Manager
Symphogen.


lopment, and project management, and they are in shortage, she says.

— How do we balance what we can and want to do ourselves and what we can purchase 'in town', and what possibilities do we have when it comes to using AI to 'handle' our data and optimise how we plan projects and processes. Employees who can do that would be valuable for us, says Karin Garre, who believes that more can be done with new graduates from life science programmes.

— Two-year trainee- and 'travel around-programmes' for new graduates might be able to

bring innovation to companies and foster young professionals by giving them new knowledge, introducing methods and letting them experience different workplaces and issues, says Karin Garre. She believes that such programmes could increase knowledge about candidates from southern Sweden.

— There are a number of different educational programmes at e.g. Lund University, and we are not familiar with them, says Karin Garre, who welcomes transdisciplinary life science job fairs and -meetings. ■



- **Focus area:** Antibodies
- **Ownership:** Private
- **General Manager:** Karin Garre
- **Global headquarters:** Paris
- **Turnover 2021:** -
- **Gross year-end result 2021:** -
- **Total number of employees in Medicon Valley:** Approx. 135
- **Total number of employees globally:** Center of Excellence in the Servier Group with approx. 22 000 employees globally.

SYMPHOGEN A/S

- **Founded:** 2000
- **Branches in life sciences:** Biotech





PHOTO: WS AUDIOLOGY

INTERVIEW:

WS Audiology employs around 1 050 in Lyngø in Zealand.

2019 DANISH-SINGAPOREAN FUSION HELPED HEARING AID MANUFACTURER WS AUDIOLOGY RECRUIT

The world's third-largest hearing aid company, WS Audiology, employs 11 000 people around the globe and around 1 050 in the region at its headquarters in Lyngø in Zealand, and it has twofold experience of the challenge of recruiting skilled employees. The company fusion in 2019 was a boost for talent recruitment from around the globe because WS Audiology became a global operator. Like other life science companies however, the company has felt the overall shortage of special IT-expertise and sought to combat the challenge with graduate programmes, more brand awareness, and a focus on diversity, says Senior HR Director of WS Audiology in Denmark Malene Brøstrøm.

In 2019, the Danish hearing aid company Widex merged with the Singaporean hearing aid company Sivantos; together, they became WS Audiology. Today, the company is the third-largest privately owned hearing aid company in terms of the number of employees, and the Swedish private equity company EQT owns 49% of its shares.

Without a doubt, the merger has made it easier for the company – which has one of its two headquarters in Lyngø, Zealand, as well as production and R&D – to attract skills to Medicon Valley from

abroad, explains Malene Brøstrøm, Senior HR Director of WS Audiology in Denmark.

– The merger really put us on the map as a leader in the hearing aid industry, and it brought together talents from all over the world. We have a strong international foundation across the organisation, especially after our merger, and combined with the ability to be placed at our different sites in Singapore & Germany, this makes a strong foundation for attracting talents that are looking for international adventures, she says.

Since the merger, WS Audiology has focused more on openness, transparency, and interaction with the surrounding environment – which includes the educational sector – than they did previously in order to improve the company's recruitment possibilities in Denmark. In 2021, the company inaugurated a new graduate programme that allows talent to experience different parts of the company's core activities before deciding which way to take their careers, says Malene Brøstrøm.

It does this in recognition of the fact that they will continue to need many new talents in the years to come, and that WS Audiology cannot simply focus on attracting experienced skilled employees but must create opportunities for future talents to thrive and develop internally.

– We are a growing company and therefore we will need a wide range of talents from many different areas, everything from our highly specialised R&D people, to marketing, operations, finance, and more, says Malene Brøstrøm.

Improved employment, but shortage of IT-specialists

Alongside Demant and GN Hearing, WS Audiology is a globally-leading hearing aid manufacturer. All of the companies have headquarters, production and R&D in Zealand, and together they employ around 3 800 people in the regionally in eastern Denmark. Together, they have created a total of around 900 new jobs over the past five years. Despite the employment growth and the internationally strong position, WS Audiology, like other life science companies, is challenged by the shortage of skilled employees. IT-expertise is particularly difficult to recruit, says Malene Brøstrøm.

– Highly skilled IT-workers and software engineers are in high demand everywhere, so like many other companies, we are fighting for these talents, she says.

According to a member survey by the Danish Chamber of Commerce from 2021, IT-specialists are the area in which recruitment needs – both in the life science sector and beyond – will be highest until 2030.

In that respect, WS Audiology has an advantage in terms of recruitment as a global company that can accommodate diversity and has branches in Europe and Asia, Malene Brøstrøm explains.



PHOTO: WS AUDIOLOGY

WS AUDIOLOGY A/S

- **Founded:** 2019
- **Branches in life sciences:** Medtech
- **Focus area:** Hearing aids
- **Ownership:** Private
- **CEO:** Eric Bernard
- **Global headquarters:** Lyngø and Singapore
- **Turnover 2020/2021:** 2.05bn EUR
- **Gross year-end result 2021:** -
- **Total number of employees in Medicon Valley:** Approx. 1 050
- **Total number of employees globally:** Approx. 11 000

– We are not restricted to talent-hunting only in our own geographical area, and we can offer new employees a working environment that is both truly international and has a strong purpose. We

hear it time and time again: The purpose is truly something that has an impact on our future employees. Furthermore, we have a strong focus on sustainability, including diversity, and hence we have seen an increased interest in talent from all around the globe, she says.

In the fiscal year 2021, WS Audiology increased its investments in R&D by 12% to 142m EUR. As the new R&D investments make their way to Lyngø, in northern Zealand, it is vital that the labour

market is as flexible as possible – also when it comes to employees from abroad, Malene Brøstrøm emphasises.

– Making Medicon Valley more welcoming to foreign talent, making the visa process quick and simple to navigate – these are very important things. Denmark and Sweden are very attractive countries to live in, but there is still a lot of bureaucracy, she says. ■

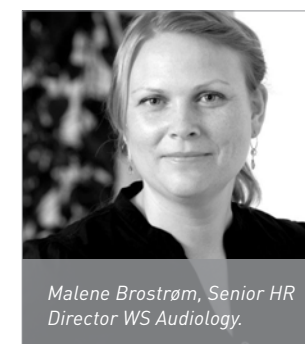


PHOTO: WS AUDIOLOGY

Malene Brøstrøm, Senior HR Director WS Audiology.

Expertise needed for R&D, sales and marketing, regulatory affairs, IT and tech

Regardless of subsector, most life science companies in eastern Denmark cite R&D as the most relevant expertise to recruit if they are able to augment their staff in the coming years. Commercial and regulatory expertise and IT and tech competences are also in demand in the sector. Competence needs are linked to the STEM subjects (Science, Technology, Engineering and Mathematics) on the whole.

Life science companies in eastern Denmark need access to various competences if new employees can be recruited in the coming years. Overall, these expertise needs are largely linked to the STEM subjects (Science, Technology, Engineering and Mathematics), commercial and regulatory, and IT. Four main areas of required expertise can be distinguished: 1) Research and development, 2) sales, marketing, and business development, 3) regulatory affairs and quality assurance, and 4) expertise in IT, tech, and production. The greatest recruitment need is in R&D, where researchers and staff with scientific expertise are central. These are some of the results of a questionnaire-based study and in-depth interviews of and with life science companies in eastern Denmark conducted by ØresundsInstitutet between 2021-2022.

Of the 14 potential areas for recruitment, the majority of the ca 50 companies interviewed would like to recruit more personnel with scientific expertise and skills in sales and marketing. That aligns with the results regarding expertise needs presented in the reports 'Life Science in Skåne', published in 2020, and 'Life Science across the Øresund', from 2021, both prepared by ØresundsInstitutet. Researchers with niche knowledge and commercial profiles who know the market are important for companies. Small-, medium- and large life science companies in all subsectors reported in the survey that they need recruits in the subject areas in the table below. In other words, numerous life science companies in eastern Denmark need new researchers, new marketing people, regulatory experts, lab technicians, process operators, engineers, IT-specialists, and more. One of those companies is Novo Nordisk.

– Currently, we are hiring new colleagues in various roles, including but not limited to Automation and Robotics Engineers, Process Engineers, Development Scientists, Data Scientists, Process Scientists, Process Operators, Project Managers, Associate Managers and Quality Assurance Professionals, says Michael Hallgren, Senior Vice President at Novo Nordisk API Manufacturing in Kalundborg and the US – read more in the interview on page 73-75.

COMPANIES PLAN TO RECRUIT MOSTLY IN R&D

Area for recruitment	Number of companies
R&D	34
Sales	33
Regulatory Affairs	30
Business Development	24
IT and Technology	22
Marketing	20
Production	19
Laboratory	18
Storage and logistics	15
Economy	15
Human Resources	14
Distribution	10
Communication	10
Law	7

Source: Questionnaire with ca. 50 respondents from life science companies in eastern Denmark. Responses in multiple categories were possible.

METHOD

Life science companies in eastern Denmark with more than 100 employees were contacted via telephone or email with a survey link from a database between early 2021 and the spring of 2022. Smaller companies in science parks in eastern Denmark were also contacted in this manner. Around 50 life science companies in eastern Denmark with varying staff sizes and in various subsectors contributed to the survey of expertise. Information on the methods used in the report on pages 103-106.

LABOUR MARKET AND THE NEED FOR EXPERTISE

New rules mean new regulatory requirements

Following R&D and sales and marketing, 30 life science companies responded in the survey that their expertise needs in regulatory affairs are important. Small-, medium- and large life science companies all report the need for expertise in regulatory affairs. In recent years, quality assurance and regulatory affairs have become more demanding in terms of administration for pharma-, biotech-, and medtech companies, as the legal requirements have been tightened in the life science sector, e.g. by the EU.

Academic and vocational skills needed

Following R&D and sales and marketing, 19 of the companies interviewed report that if given the chance, they would recruit expertise in production. In particular, a number of medium- and large life science companies in all subsectors express the need for expertise in production as relatively important. The expertise may be university-level, such as e.g. industrial engineers, or from other skilled training, such as process operators. This makes it evident that skilled professionals with medium-length educations are also important for the sector in the region.

Expertise in regulatory affairs, production specialists, scientists and IT and digital experts difficult to recruit

Many of the areas of expertise in demand in the life science sector in eastern Denmark today and in the years to come are areas in which life science companies in the region consider it difficult to recruit. Companies report that expertise in regulatory affairs and quality assurance, as well as technicians, production specialists and engineers, natural science researchers and people with IT- and digital expertise are difficult to recruit. Around 58% of the ca 50 businesses interviewed report however that they have experienced difficulties recruiting specific expertise. The majority of the companies interviewed expect their staff in the region to grow in the years to come however, and ca 63% of the companies interviewed have increased their staff in the region over the past five years.

Regardless of subsector, the expertise that life science businesses in eastern Denmark deem to be in short supply can be summarised in five main areas: 1) Regulatory experts and quality assurance professionals; 2) Technicians, vocational professionals, engineers, and production specialists; 3) Researchers with a background in the natural sciences; 4) IT- and software profiles and digital specialists, and 5) Salespeople, market access-specialists and commercial profiles. The professional profiles are difficult to recruit, according to ca 50 large- and small life science companies in all subsectors who responded to a questionnaire and were interviewed in depth by Øresundsinstituttet between 2021-2022. In other words, there is a shortage of expertise and a need for competence in the STEM subjects (Science, Technology, Engineering and Mathematics) and commercial and regulatory, as well as in IT and the digital realm.

Around 58% of the businesses interviewed report that recruiting certain expertise has been a

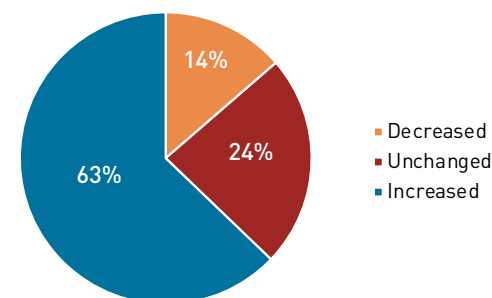
challenge. At the same time, 42% of the companies report that they have experienced no difficulty sourcing expertise, not least due to successful employer branding work – see the table on page 89.

Difficulties recruiting specific skills is thus experienced very differently in the sector, and companies find that recruitment has become more challenging:

– Until 2021, we were always able to find the people we wanted. And many people have come to KLIFO looking for job opportunities. But in 2021 it became very clear that those people are in very high demand, says Alejandra Mørk, CEO of the consultancy company KLIFO, which has seen significant economic and staff growth in Denmark, Sweden, and internationally over the past five years, adding that the greatest shortage of candidates in Zealand is in quality assurance – read more in the interview on page 64-65.

A shortage of expertise in the sector is also experienced by the biotech company Symphogen, which

CHANGE IN THE COMPANIES' EMPLOYEE NUMBERS SINCE 2017



Based on data from 616 companies. Source: Statistics Denmark, Bisnode, Central Business Register and data from the companies.

is located northwest of Copenhagen in Ballerup together with other key life science companies such as LEO Pharma, Ambu, and GN Hearing.

– There is an enormous upsurge in activity. Biotech has gotten new financial resources, and with them comes an increase in the number of activities and projects. We need to look harder for new employees. In that sense, it's natural that competition for expertise is heightened, says Symphogen's General Manager Karin Garre – read more in the interview on page 81-83.

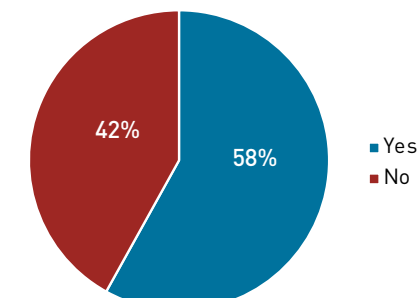
Despite challenges recruiting certain expertise regionally, the majority of the companies questioned expect their staff in the region to grow in years to come – see the table to the left.

The survey of the companies also shows that 63% of life science companies in eastern Denmark have recruited more employees in the region over the past five years and that their staff has thus grown – see the table above. The sector is thus able to grow and expects to continue to do so despite various expertise shortages.

Shortage of specialists in regulatory affairs and quality assurance

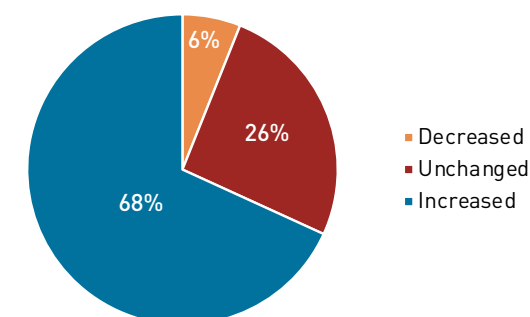
There is generally a lot of competition for highly specialised life science employees, according to numerous companies that responded to the questionnaire. Around 15 of the ca 50 companies from various subsectors questioned stated that there is a shortage of specialists in regulatory affairs (RA) and quality assurance (QA) in eastern Denmark. The same shortage is also experienced in Skåne, according to companies in the report Life Science in Skåne. The recruitment situation for QA and

IT IS DIFFICULT TO RECRUIT SPECIFIC EXPERTISE?



Based on survey responses from 62 companies.

HOW DO YOU EXPECT EMPLOYEE NUMBERS TO DEVELOP IN THE COMING YEARS?



Based on survey responses from 66 companies.

RA, where specialists such as engineers and legal practitioners ensure that pharmaceuticals and medicinal products meet quality assurance standards and authorities' requirements, is thus challenging in Medicon Valley in general. Alejandra Mørk, CEO of the consultancy KLIFO, says:

– Quality assurance is a gigantic domain in pharmaceutical development. And the areas of pharmaceutical technology and pharmaceutical regulation have been downgraded in importance in our educational systems for many years now, she says – read more in the interview on page 64-65.

Industrial production professionals hard to recruit

Another area in which around 15 of the ca 50 companies from all subsectors questioned report

recruiting difficulties is related to the area of production tech. Specialists such as technicians, skilled operators and production specialists are in shortage regionally, according to the life science companies. Such professionals can be qualified with long- or medium-length educations. The medtech company Elos Medtech in Hillerød, northern Zealand emphasises the importance of focusing on the area of production technology:

– It's simply not an effective approach to believe, as some politicians do, that we can continue relocating all manufacturing operations to countries where costs are lower, or try to steer young people in a particular direction where the overwhelming majority should pursue an academic path. We still need to professionally train young people and we need manufacturing operations in Denmark that keep focus on creating high value in manufacturing processes through continued development and innovation, says Peter Ohlsen, Head of HR at Elos Medtech – read more in the interview on page 56-57.

Shortage of IT-specialists and digital know-how as more data use gains acceptance

IT, software development and digital expertise is a third area in which there is a shortage of qualified competence in eastern Denmark. Around 10 of the ca 50 companies from various subsectors questioned reported expertise shortage in this area. One of them is the global hearing aid manufacturer WS Audiology, which employs around 1 050 employees at one of its two global headquarters, in Lynge in northern Zealand.

– Highly skilled IT-workers and software engineers are in high demand everywhere, so like many other companies, we are fighting for these talents, says Malene Brostrøm, Senior HR Director at WS Audiology – read more in the interview on page 84-85.

At the same time, the use of data-driven solutions and digital tools plays an increasingly active role in e.g. clinical development, production machinery, and research work in the life science companies in Medicon Valley and around the world. For example, in 2022 Novo Nordisk established a new global department for Digital Science and Innovation, which will make more use of data, IT, artificial intelligence and digital potential in pharmaceutical development. The digitalisation of clinical studies is also something that e.g. LEO Pharma, headquartered in Ballerup, works with. The pharma company Lundbeck, whose headquarters are in Valby, Copenhagen, where it employs more than 1 500

people, is also bringing more digital expertise into the business, although it can be difficult.

– We need to think about how digitalisation can be used more in our clinical trials, and how with can – for example via an app – stay in contact with people while they are testing our products so that we can collect real time evidence. We're looking to sign on a lot of people with digital expertise. And many other companies and industries are doing the same. Digital expertise is hard to find, says Elise Hauge, Executive Vice President for People and Communication at Lundbeck – read more in the interview on page 68-70.

Companies seeking R&D people and commercial profiles

A fourth and fifth area, respectively, in which ca. 10 of the ca. 50 companies from different subsectors questioned point to a shortage of expertise is in research and knowledge in the natural sciences, as well as salespeople and other commercial profiles. Lacking expertise in the natural sciences is both general and linked to specific expertise in the companies' core business activity. Expertise shortage in sales and the commercial realm is also highlighted by large international companies with sales offices in the Copenhagen area, for which it can be difficult to recruit e.g. market access specialists. Finally, life science companies also report a general shortage of recruitable professionals with the necessary experience, and that it is difficult to recruit people with know-how in clinical supplies management.

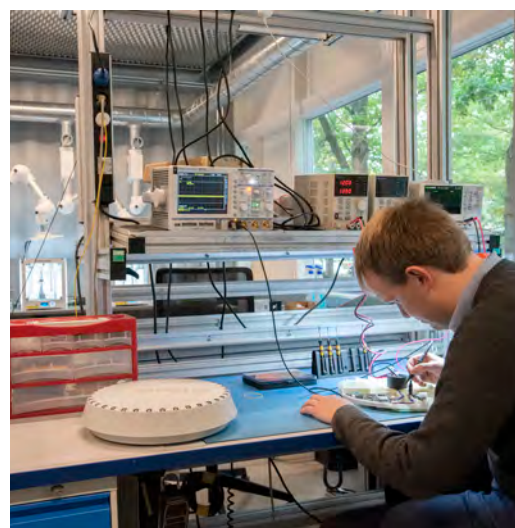


PHOTO: DTU SCIENCE PARK

Does the education on offer in the region correspond to life science companies' expertise needs?

On the whole, the educational programmes on offer in the region correspond to the industry's actual expertise needs. Of the ca 50 life science companies of various sizes and from various subsectors in eastern Denmark questioned, around three out of four report general satisfaction with the programmes offered, whilst ca one-fourth maintain there is room for improvement, for example via more transdisciplinary educational paths, e.g. pharma engineer training.

There is general satisfaction when it comes to the balance between the educational training on offer in the life sciences in eastern Denmark and the needs for expertise in the life science industry; this was reported by around 50 large-, medium- and small life science companies in all subsectors in eastern Denmark in a survey conducted by Øresundsinstitutet.

When asked 'Is there a good balance between the education on offer in the region and the demand for particular competences in the sector?', 44 life science companies responded yes, whilst 14 answered no – see the diagram below. A number of leading and smaller companies in the region thus feel that the educational programmes on offer correspond to the industry's expertise requirements, and a smaller percentage of the companies questioned – which include both large-, medium- and small companies in various subsectors – believe there is room for improvement. Numerous companies also report that the education on offer regionally is sound, but that they believe the challenge lies in an insufficient number of people choosing a programme in the natural sciences or technology.

More graduates and new transdisciplinary offering a must, say professionals

One of eastern Denmark's largest medtech manufacturers Cook Medical, with around 800 employees in Bjæverskov, near Køge, sees the issue thus:

– As we see it, the mix of programmes in Denmark is actually quite alright. The issue is quite simply that there aren't enough graduates. There's by and large a need for many more STEM graduates. And there's also a need for skilled electricians, smiths, and similar professionals, says the CEO of Cook Medical Europe Thomas Gabriel – read more in the interview on page 52-53.

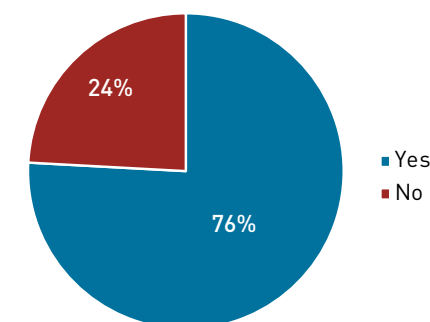
The pharma company Novo Nordisk, which has around 18 200 employees in the region in eastern Denmark, agrees that there is a need for more educational programmes.

– We see concrete potential in e.g. a master's in pharmaceutical engineering. In addition, there is a need for ordinary training programmes and continuing education on multiple levels, specifically in the Industry 4.0 transformation and the green shift of Denmark as a producing nation, says Michael Hallgren, who is Senior Vice President at Novo Nordisk API Manufacturing in Kalundborg and the US – read more in the interview on page 73-75.

Sector overlap between e.g. medtech and IT, computer science and healthcare will also make more transdisciplinary educations that bring together clinical and technological disciplines relevant in the future, says Thomas Lethenborg, CEO of the healthcare company Monsenso – read more in the interview on page 71-72.

There is already focus on transdisciplinary connections at educational institutions such as the University of Copenhagen, Copenhagen Business School, and the Technical University of Denmark, where the industry and the healthcare sector are brought together. In 2022, the lattermost decided to instate a new, bachelor-level digital health specialisation with the programme Medicine and Technology.

DO TRAINING AND EDUCATION CORRESPOND WELL TO THE DEMAND FOR EXPERTISE?



Based on survey responses from 58 companies.



PHOTO: NEWS ØRESUND

SWEDISH PRESENCE IN EASTERN DENMARK

Sweden influences Danish life science with skilled labourers, the stock market, research, and capital

With border commuters, capital raising, investments, and research collaborations, trans-Øresund contact in the life science sector is extensive. Multiple Swedish life science actors have been increasing their business activity in the Copenhagen area in recent years, and Danish life science companies continue to seek out the stock market in Sweden. Highly educated employees from Sweden thus benefit the life science sector in eastern Denmark, as many of the leading companies have Swedish employees.

The life science sector in Sweden is integrated with the life science sector in eastern Denmark in various ways. Some of the Swedish actors are investment companies such as EQT, Impilo, HealthCap and Nordic Capital, which became a minority shareholder of LEO Pharma when it invested EUR 450m in the company in July 2021.

Hundreds of border commuters from Sweden work in leading companies in eastern Denmark

Border commuters are important for the life science sector in Medicon Valley, as many of those active in the sector gain their professional experience across the Øresund. There are over 900 border commuters in the sector, many of them in positions that require a high level of expertise. This was mapped out by ØresundsInstitutet in 2020-2021. At least 800 people from Sweden work in the sector on the Danish side. Over 100 border commuters from Denmark commute to jobs in the sector in Skåne. Regional border commuters in the life science sector thus flow primarily from Sweden to Denmark. Professionals from

the sector pay Danish income tax, and are in many cases employed at larger companies such as e.g. Novo Nordisk, Ferring Pharmaceuticals, Lundbeck, LEO Pharma, Coloplast, Chr. Hansen, Demant, AGC Biologics and Genmab. Swedes hold executive positions in a number of the companies. For these companies, trans-Øresund exchange broadens the recruitment base for life science companies in eastern Denmark, as well as for life science companies in Skåne such as e.g. Aros Medical, Arjo, and PolyPeptide in Malmö. This is important, since life science companies often seek specific knowledge in subject areas from the natural sciences where certain competences can be difficult to recruit – read more on page 87.

However, the covid pandemic has meant tax problems for border commuters in the life sciences and other sectors. Official restrictions have made it difficult for many people to fulfil the requirement of being physically present in one's country of employment 50% of the time. Sweden and Denmark thus began renegotiating the 'Øresund Agreement' in 2021-2022, in order to make it more adaptable to a more flexible labour market after covid and allow for more work from home.

900

More than 900 Danish-Swedish border commuters were identified in Medicon Valley in ØresundsInstitutet's survey between 2020-2021*

800 BORDER COMMUTERS FROM SWEDEN

At least 800 border commuters from Sweden were identified as working in life science companies in eastern Denmark; for example, approx. 200 commuters from Sweden work at Novo Nordisk on the Danish side of the Øresund.



PHOTO: NEWS ØRESUND

100 BORDER COMMUTERS FROM DENMARK

At least 100 border commuters from Denmark were identified as working in life science companies in Skåne. Most of the sector's commuters travel from Sweden to Denmark.

*The figures are based on the report *Life Science Across the Øresund*, published by ØresundsInstitutet in June 2021.

When the new regulations will become effective has not yet been announced.

Swedish IPOs give Danish life science companies ca 700m SEK

Sweden's more active stock exchange has been an advantage for numerous Danish life science companies that have sought capital via Nasdaq or Spotlight Stock Market in Stockholm. From 2014-2021, 14 Danish life science companies – largely in biotech and pharma, and often located in the Copenhagen area – have raised capital on the Swedish stock exchange for pharmaceutical candidates, development of medical equipment, and digital health products. Around SEK 700m were initially raised by the companies on their IPOs in Sweden – see the table below. Share emissions following the IPO have increased the amount of capital raised by the companies further. The Danish life science companies, listed in Sweden have thus raised ca

SEK 2bn over the years, according to the Swedish investment company Sedermera Corporate Finance in the 2021 report Life Science Across the Øresund, prepared by ØresundsInstitutet. Dividend taxation in Sweden is 30%, and in Denmark 42% for profit exceeding DKK 57 200, which makes it more attractive for investors in Sweden to invest in e.g. life science companies.

Swedish financial actors set up in Copenhagen for life science investments

Swedish financial players in the life sciences have started new branches in Copenhagen in recent years. In 2018, Spotlight Group AB, which is behind the Swedish mini stock exchange Spotlight Stock Market and has its headquarters in Malmö, set up Danish offices and a company list in Copenhagen. In 2021, Sedermera Corporate Finance, which is part of Spotlight Group AB, also established its presence in Copenhagen. Sedermera

Corporate Finance has given financial advice to 19 Danish companies, most of which are in the life sciences, regarding listing and equity raising on the stock exchange in Sweden. The Swedish private equity company Segulah Medical Acceleration also opened new offices in Copenhagen in 2021.

Swedish investments and owners at companies in eastern Denmark – but few Swedish CEOs

In 2021, Nordic Capital invested EUR 450m in LEO Pharma; for 35 years prior, the LEO Foundation had been the sole owner of one of Denmark's largest pharma companies. This is one example of a Swedish-global investment company with minority ownership of a life science company in eastern Denmark. The Stockholm-based private equity company HealthCap also has investments in smaller biotech companies in Copenhagen. Swedish EQT invests in life science companies in eastern Denmark, as does Impilo, which has increased its portfolio of life science investments in eastern Denmark in recent years – see the table.

The lab suppliers Holm & Halby and Triolab and the medtech manufacturer Elos Medtech Pinol are other example of life science companies in eastern Denmark with Swedish ownership, and Swedish-owned producers of medtech such as Geringe, Arjo and Medioplast have subsidiaries in eastern Denmark.

While there are Swedish owners and investors in eastern Denmark, no Swedish CEOs were found at Danish listed life science companies or among the ten largest private companies in Denmark, according to a survey of the sector prepared by ØresundsInstitutet in 2021. This is due in part to the companies' large size: they have more resources to locate and recruit top candidates from the international market. At the same time, there are around 20 Danish CEOs at listed- and private life science companies in Skåne, e.g. Hansa Biopharma, Ascelia Pharma and CellaVision. There are however Swedish CEOs at smaller life science companies in eastern Denmark, e.g. Ramcon and Flow Robotics.

Research projects unite Swedish and Danish life science players

Sweden and the life science sector in eastern Denmark are connected when it comes to research in the natural sciences between universities, businesses, and organisations. One example is the colla-

EXAMPLE OF SWEDISH FINANCIAL ACTORS WITH INVESTMENTS IN EASTERN DENMARK

Investor	Company	Votes and capital
EQT	Ellab A/S, Hillerød	Majority shareholder
EQT	WS Audiology A/S, Lyngø	49% – second largest shareholder
Impilo	Scantox A/S, Lille Skensved	Majority shareholder
Impilo	Ferrosan Medical Devices A/S, Søborg	Majority shareholder
HealthCap	Hemab ApS, Copenhagen	Minority shareholder
HealthCap	Adcendo ApS, Copenhagen	Minority shareholder
Linc AB	FluoGuide A/S, Copenhagen	7,7% – third largest shareholder
Industrifonden	MinervaX A/S, Copenhagen	Minority shareholder
Nordic Capital*	LEO Pharma A/S, Ballerup	Minority shareholder

Sources: Companies' annual reports, press releases, reports in the press, information on company websites and information from the companies themselves. Please note that these figures may have changed since they were reported. *Nordic Capital operates globally, but its largest offices are in Stockholm.

boration between Swedish and Danish researchers at the research facilities MAX IV and European Spallation Source (ESS) in Lund. Swedish sector players, e.g. Lund University and Region Skåne, have thus been part of numerous EU-funded Inter-reg-projects with Danish players such as DiaUnion and ReproUnion. In addition, various contract research organisations (CROs) conduct research for clients on the Danish shores of the Øresund. Among these CROs are Red Glead Discovery, Truly Labs, and ImaGene-IT, all of which are based at the science park Medicin Village in Lund. The biotech companies Alligator Bioscience and Idogen in Lund also have research collaborations with Scandion Oncology and KLIFO in the Copenhagen area, respectively.



PHOTO: ELOS MEDTECH

14 DANISH COMPANIES HAVE LISTED IN SWEDEN SINCE 2014, 13 OF WHICH ARE STILL LISTED

Company name	Subsector	Exchange/marketplace	HQ site	Listing date	Capital approx. raised at IPO
Saniona AB*	Biotech/pharma	Nasdaq	Glostrup	2014	17 mn SEK
Allarity Therapeutics A/S (formerly Oncology Venture A/S)*	Biotech/pharma	Nasdaq	Hørsholm	2015	20 mn SEK
Neuvolution (delisting) ¹	Biotech/pharma	Nasdaq		2015	250 mn SEK
RhoVac AB	Biotech/pharma	Spotlight Stock Market	Lund/Hørsholm	2016	20 mn SEK
Expres2ion Biotech Holding AB	Biotech/pharma	Nasdaq	Hørsholm	2016	18 mn SEK
Acarix AB	Medtech	Nasdaq	Malmö/Hellerup	2016	125 mn SEK
SynAct Pharma AB	Biotech/pharma	Spotlight Stock Market	Lund/Holte	2016	32 mn SEK
2curex AB	Biotech/pharma	Nasdaq	Copenhagen	2017	18 mn SEK
Initiator Pharma	Biotech/pharma	Spotlight Stock Market	Copenhagen	2017	20 mn SEK
Scandion Oncology A/S*	Biotech/pharma	Nasdaq	Copenhagen	2018	26 mn SEK
FluoGuide A/S*	Biotech/pharma	Nasdaq	Copenhagen	2019	22 mn SEK
Qlife Holding AB	Healthtech	Nasdaq	Helsingborg/Ballerup	2020	55 mn SEK
DanCann Pharma A/S	Biotech/pharma	Spotlight Stock Market	Ansager	2020	42 mn SEK
CS Medica A/S	Medtech	Spotlight Stock Market	Copenhagen	2021	30 mn SEK

695 mn SEK

Source: Nasdaq, Spotlight Stock Market, Nordic Growth Market and information from the companies. The figures in the above table for capital raised with an IPO are rounded off. Capital raised with later emissions is not included. Note that even if the companies are classified as Danish companies, some have partial headquarters in Skåne.¹Neuvolution was sold to Amgen for 1.6bn SEK in 2019. *Saniona, FluoGuide, Scandion Oncology and Allarity Therapeutics were originally listed on Spotlight Stock Market but have moved to Nasdaq Stockholm.

FACT & FIGURES ABOUT MEDICON VALLEY

The Danish-Swedish Medicon Valley in the Øresund Region is one of the EU's leading life science clusters. Academic strengths on both sides of the Øresund Strait are in cancer, diabetes, and fertility research. The region is home to large, global pharma-, medtech-, and contract manufacturers in proximity to universities, hospitals, research facilities, and small companies in science parks. The region's labour force crosses the Danish-Swedish border, and companies and researchers in both countries collaborate despite bureaucratic national barriers. Below are some selected results of the Interreg-project Greater Copenhagen Life Science Analysis Initiative from 2019-2022.

65 500

regional employees in private life science companies in Medicon Valley



PHOTO: NEWS ØRESUND

1 150

life science companies identified regionally

300

new life science companies have been founded over the past five years – more than one new company started every week

12 000

new regional jobs created in the past five years by the life science companies identified

900

border commuters identified in the sector. Most commute from Skåne to eastern Denmark

The data is based on the reports from the Greater Copenhagen Life Science Analysis Initiative: *Life Science in Skåne* (2020), *Life Science Across the Øresund* (2021) and *Life Science in Eastern Denmark* (2022).



... EASTERN DENMARK

58 000

of the total ca 65 500 employees work in private life science companies regionally in eastern Denmark; that corresponds to ca 88% of all employees in the cluster.

Over the past five years, 10 500 of the ca 12 000 new jobs in the cluster were created regionally in eastern Denmark; that corresponds to ca 87.5%.

Most life science employees work in Gladsaxe, Copenhagen, and Ballerup Municipalities.

Around 700 life science companies were identified in eastern Denmark. That corresponds to 60% of Medicon Valley's companies being located in eastern Denmark.

Around 200 new life science companies were started in eastern Denmark from 2017-2021. Most are in Copenhagen.

Pharma is the largest subsector in eastern Denmark and has around 29 000 employees.

... SKÅNE

7 500

of the total ca 65 500 total employees work in private life science companies regionally in Skåne; that corresponds to ca 12% of all employees in the cluster.

Over the past five years, 1 500 of the ca 12 000 new jobs in the cluster regionally have been created in Skåne. That corresponds to ca 12.5%.

Most life science employees work in Malmö, Lund, and Helsingborg Municipalities.

Around 450 life science companies were identified in Skåne; this corresponds to around 40% of Medicon Valley's companies being in Skåne.

Around 100 new life science companies were started in Skåne from 2015-2020, most of them in Lund.

Medtech is the largest subsector in Skåne, with around 3 100 employees.

What needs to be done to improve growth opportunities in the life science sector in eastern Denmark?

Even more professionals in Science, Technology, Engineering and Mathematics (STEM) would improve the life science sector's growth opportunities in eastern Denmark; there is a need for scientific and technical expertise in the sector. Action is also needed for more recruitment of employees from abroad with fewer bureaucratic barriers, according to a questionnaire and in-depth interviews to which ca 50 companies responded.

A hospital sector that runs smoothly, a high educational standard, thriving research environments, good startup opportunities, industry foundations with strong resources and good collaboration between the private and public sectors: these are some of the strengths associated with the life science sector in eastern Denmark, according to the diverse accounts of companies and players from the sector – read more on page 45. But the sector's structural conditions could be improved upon. Based on responses to a questionnaire and in-depth interviews conducted from 2021-2022 with around 50 small-, medium-, and large life science companies in eastern Denmark, Øresundsinstituttet identified a number of general and specific efforts that can strengthen the sector's growth conditions in the region. On the whole, the various efforts are linked to conditions related to employees and expertise. At the same time, the shortage of skilled labourers in Denmark's life science- and other sectors is significant and considered a growth barrier, according to the industry.

More STEM master's graduates important despite increased admissions

The importance of educating more master's students in Science, Technology, Engineering and Mathematics (STEM) subjects was highlighted in various ways as an important measure by around ten of the companies that completed the questionnaire and many of the companies interviewed for this report. Pharmacists, lab technicians, chemists, molecular biologists, engineers, production technicians and IT-specialists are thus some of the STEM-professionals important for the sector.

– We should be at the ready in all respects in order to train and recruit IT/STEM-profiles, said one large medtech company that responded to the questionnaire.

STEM-admissions in Denmark have in fact increased steeply over the past five years in all business academy programmes, vocational bachelor programmes and bachelor programmes, according to the Ministry of Higher Education and Science. Admissions dropped 5% from 2020 to 2021 however, to 16 040 people.

This was due in part to particularly high admissions due to the covid pandemic, when the Danish Parliament decided to instate around 4 000 extra places of study, also targeting the STEM subjects. Compared to 2019 however, 2021 admissions are 4% higher, and the admissions number has been rising since 2017, when 15 040 people in all types of training were admitted to a STEM-programme in Denmark; that corresponds to an increase from 2017-2021 of around 7%, or ca 1 000 people. For the sake of comparison, general increase in admissions to non-STEM-programmes has been 3%. Admissions to STEM-programmes in Denmark thus surpasses admissions to all other higher educations, according to the Ministry of Higher Education and Science. The trade organisations Confederation of Danish Industry and the Danish Chamber of Commerce expressed concern regarding the progression of STEM-admissions between 2020-2021 however, and a 2021 report by the Economic Council of the Labour Movement concluded that there will be a deficit of around 100 000 professionals in 2030. Life science companies in eastern Denmark continue to report that more STEM-expertise is vital, and that continuous focus on STEM-subjects is a necessity – read more on page 87-91.

Employees from abroad important for sector

Another important measure for the life science sector in eastern Denmark is related to recruitment of employees from abroad, both from the EU and beyond, as ca ten of the companies that answered the questionnaire and a number of the companies interviewed stated in various ways. Numerous companies require professional profiles with niche expertise, and such candidates are not always in the region, as pointed out by e.g. the pharma company Lundbeck, which has ca 1 700 employees in eastern Denmark.

– We need to come to grips with the fact that we have to recruit from abroad. There simply aren't enough neuroscientists in Denmark, so we need to employ them from abroad. And that isn't always easy,

says Elise Hauge, Executive Vice President for People and Communication i Lundbeck – read more in the interview on page 68-70.

The issue is thus both faster processing times for employees from abroad as well as less bureaucracy when it comes to border commuters who live in Sweden and work in the sector in eastern Denmark.

– Working with tax schemes, etc is very demanding if one doesn't have a lot of administrative resources, as a smaller biotech company from the Copenhagen area states, and one of the world's largest hearing aid manufacturers, WS Audiology, which is headquartered in Lynge in northern Zealand adds:

– Making Medicon Valley more welcoming to foreign talent, making the visa process quick and easy to navigate are very important things, says Malene Brostrøm, Senior HR Director of WS Audiology – read more in the interview on page 84-85.

The Danish Association of the Pharmaceutical Industry (LIF) and others have previously highlighted the importance of simplifying regulations and making them less bureaucratic when it comes to employees from abroad, but there are still challenges in the sector, according to the survey.

Many other efforts that can improve the sector and other measures being taken

In addition to efforts related to more STEM-expertise and employees from abroad, the companies questioned expressed that there is a need for a series of other different measures. One large biotech company emphasises the importance of marketing the Øresund Region as a biotech cluster; this is something that e.g. the Novo Nordisk Foundation has been working on for the past 10 years with the strategic initiative 'Copenhagen Bioscience Cluster'. Over the years, the foundation has granted more than DKK 6.5 billion (€875m) to establish and expand the cluster on both sides of the Øresund, for example by granting DKK

225m for the microscope MicroMAX at the research facility MAX IV in Lund.

Other, smaller medtech companies mention that more informed assistance and counsel on demanding requirements from authorities would be beneficial; companies could turn to a central place, perhaps in an umbrella organisation or with the authorities, to receive support managing with multiple and new regulatory requirements issued in recent years, e.g. with the EU's new medical devices regulation (MDR).

Other large biotech- and medtech companies emphasise the importance of working to build bridges between educational institutions and companies so the sector can have an influence on educational content. More opportunities for internships during educational training to allow students to develop real world skills are also highlighted. The biotech company Symphogen, which has around 135 employees in Ballerup, northwest of Copenhagen, also finds this important.

– Two-year trainee- and 'travel around-programmes' for new graduates might be able to bring innovation to companies and foster young professionals by giving them new knowledge, introducing methods and letting them experience different workplaces and issues, says Karin Garre, General Manager of Symphogen – read more on page 81-83. Other, smaller biotech companies also point out the need to improve taxation conditions in Denmark and more risk capital in the region. Multiple developments have taken place in that area in recent years. The founding of the life science incubator BioInnovation Institute, in 2018; the founding of Sunstone Life Science Ventures Fund IV in 2019; the establishment of the Danish-Swedish venture capital investment firms Eir Ventures and Sound Bioventures in 2020 and 2022, respectively, and a permanent 130% tax deduction for companies' R&D expenses all contribute to an improved capital climate and improved tax conditions in Medicon Valley, although some companies still maintain that improvements could be made, according to the survey.

NEW LIFE SCIENCE ACTORS TO IMPROVE FRAMEWORK CONDITIONS

The Danish government established a new national Life Science Council in 2021. The council will continue discuss improvements of the framework conditions for the life science sector in Denmark, as well as how collaboration between actors in the sector may be boosted. The council comprises 20 high-level members who represent life science companies, trade organisations, ministries, universities, foundations, the healthcare sector, wage earners' organisations and patient associations.

In 2018, a new life science division of the Ministry of Industry, Business and Financial Affairs was established. The division works with growth conditions and industry-political measures that may benefit the life science sector in Denmark.

In 2021, the new cluster organisation Danish Life Science Cluster was instated. Headquartered in Copenhagen, it has regional hubs around the country. Among other things, the organisation works with more developed collaborations between Danish life science actors.

HEALTH DATA FOCUS OF DENMARK'S LATEST LIFE SCIENCE STRATEGY – THE SECTOR STILL FEELS BARRIERS

Health data can strengthen public-private collaboration, create new business opportunities for life science companies, and improve patient treatments, but there are obstacles preventing life science companies from accessing Danish health data to create new innovations, says Brian Mikkelsen, CEO of the Danish Chamber of Commerce. He is thus pleased to see that health data is an important area in Denmark's latest life science strategy from 2021. Supplying expertise that can help the sector's continued growth and a new tax agreement for people who commute over the Øresund are other important measures for the sector, he says.

In May 2021, the Danish government and other parliamentary parties entered a political agreement for Denmark's life science sector. A total of DKK 270m will launch 38 initiatives from 2021-2023 to strengthen framework for the sector in Denmark. One important focal point of the strategy is health data.

Around DKK 30m is earmarked for improving utilisation of health data. Among other things, a joint access platform will be created for better health data use. This will benefit e.g. academic research and companies' commercial possibilities to develop new health products and -solutions to help patients. Brian Mikkelsen is CEO of the Danish Chamber of Commerce, which represents around 18 000 Danish businesses. He believes that the life science strategy includes many good measures, and that the focus on the area of health data is vital.

– The challenges faced by our members from all over the life science sector are all different, but access and utilisation of health data is a fairly constant issue. Quite simply, we need to be better at making our health data available for the development of new, innovative solutions, says Brian Mikkelsen.

However, there are challenges to using Danish health data optimally in the current situation, according to an analysis prepared on behalf of the cluster organisation Danish Life Science Cluster in January 2022.

– New, advanced data analysis methods, new types of data and growing data volumes create new opportunities to make even better use of Danish health data. Unfortunately, the healthcare sector, research environments and companies experience

various barriers when it comes to realising potential of those opportunities, states the analysis. It also states that technological development has caught up with legislation, and that approval for applications to use health data lasts a long time.

It is necessary to find solutions to legal- and administrative challenges however, because health data also has the potential to strengthen collaboration between the life science industry, authorities, and public actors, says Brian Mikkelsen.

– We need to ensure that innovation reaches patients. We believe that offering patients the most innovative treatments should be the hallmark of the healthcare sector. In that respect it is absolutely vital that we strengthen collaboration between the public- and private sectors for the development of new products, particularly with the help of health data, says Brian Mikkelsen. He points out that expertise supply to the sector is central; according to the Danish Chamber of Commerce, with the right

framework conditions in place, Danish life science exports can be doubled, to DKK 345bn, by 2030.

– Our projections indicate significant growth in the life science sector, which naturally also means an increased demand for the right competences. It's particularly important that we are in a position to seize the growth that will come, and a shortage of skilled employees should not stand in the way.

We conducted a member survey that indicates an increased demand for special IT-expertise in the future, and it is important that life science companies can recruit the right people, either from Denmark or from abroad, Brian Mikkelsen says.

He would also like to see an updated tax agreement between Denmark and Sweden on this side of the covid pandemic, so border commuters are not required to be physically present in their country of employment 50% of a three-month period in order to be taxed in their country of employment, as dictated by the 'Øresund Agreement'.

– The Danish Chamber of Commerce calls on politicians to find a more flexible solution to the taxation issue so that Swedish residents employed in Denmark and Danish residents employed in Sweden don't need to glance over their shoulders each time they sit down at home with their computers to take care of a company task, says Brian Mikkelsen.



PHOTO: NEWS ØRESUND



PHOTO: NORDISK

STATISTICS AND METHOD

There is no established statistic definition that encompasses the entire life science sector. The sector comprises businesses that manufacture molecules, pills, apps, hospital beds and much more. The many scientific disciplines and areas of focus on e.g. disease extend into a multitude of subject areas, making it difficult to apprehend the sector as a whole. This report has been prepared in order to depict the cluster in eastern Denmark more comprehensively, using the methodology described below. The principal foundation of the analysis is a broad extraction of data delivered by Statistics Denmark; this was reviewed and supplemented with additional quantitative and qualitative information to render the most complete representation possible.

The survey of life science companies in eastern Denmark comprises the qualitative and quantitative methods described in the following, with the aim of providing both depth and an overview of the sector. This method triangulation has been necessary, as certain aspects such as e.g. the need for expertise and efforts are better suited to qualitative access, whilst aspects such as employee numbers and business categorisations are better accessed quantitatively.

Quantitative data collection

The quantitative component consists primarily of data requested from Statistics Denmark. The data was received in October 2020 and comprises e.g. company name, location, zip code, and employee number range.

The requested data was extracted by Statistics Denmark from the business registry Erhvervsregisteret and encompasses 5 sector codes/DB07-codes on a four-digit level. These sector codes were selected in cooperation with Statistics Denmark, and the same codes were also used for industry reports by e.g. the Confederation of Danish Industry and the Ministry of Industry, Business and Financial Affairs to define a core segment of the life science sector.

	DB07-code
Manufacture of basic pharmaceutical products	21 10
Manufacture of pharmaceutical preparations	21 20
Manufacture of irradiation, electromedical and electrotherapeutic equipment	26 60
Manufacture of medical and dental instruments and supplies	32 50
Wholesale trade of pharmaceutical goods	46 46

The requested data also encompasses two other sector codes/DB07-codes on a four-digit level. These codes were also selected in cooperation with Statistics Denmark and have also been utilised by actors such as the Confederation of Danish Industry and the Ministry of Industry, Business and Financial Affairs to define the life science sector, although these sector codes also relate more broadly to business activity in research.

	DB07-code
Research and experimental development on biotechnology	72 11
Other research and experimental development on natural sciences and engineering	72 19

The seven sector codes/DB07-codes above were supplemented further with 37 other sector codes/DB07-codes on a four-digit level in cooperation with Statistics Denmark. This was done in order to capture as many life science businesses as possible, as well as to capture business activity in relevant sector overlap with the life sciences, in the knowledge that many of the businesses within these sector codes would not be relevant for the survey of companies – see more on the following page.

In addition to data from Statistics Denmark, Øresundsinstituttet also retrieved data on life science businesses from polls of companies and businesses' websites, as well as from online information from the science parks and incubators DTU Science Park, COBIS, BioInnovation Institute and Symbion. Parallel research and monitoring of relevant news media were also conducted and contributed knowledge about a number of companies. Øresundsinstituttet was also in contact with various industrial actors such as Copenhagen Capacity to gather input on relevant business activities.

	DB07-code
Manufacture of margarine and similar edible fats	10 42
Other dairy production	10 51
Manufacture of grain mill products	10 61
Manufacture of other food products n.e.c.	10 89
Manufacture of knitted and crocheted hosiery	14 31
Manufacture of other paper and paperboard	17 12
Manufacture of household and sanitary goods and of toilet requisites	17 22
Manufacture of other inorganic basic chemicals	20 13
Manufacture of other organic basic chemicals	20 14
Manufacture of soap and detergents, cleaning and polishing preparations	20 41
Manufacture of perfumes and toilet preparations	20 42
Manufacture of other chemical products n.e.c.	20 59
Manufacture of other rubber products	22 19
Manufacture of plastic packing goods	22 22
Manufacture of other plastic products	22 29
Manufacture of instruments and appliances for measuring, testing and navigation	26 51
Manufacture of bicycles and invalid carriages	30 92
Other human health activities n.e.c.	86 90
Treatment and disposal of hazardous waste	38 22
Construction of residential and non-residential buildings	41 20
Wholesale of other machinery and equipment n.e.c.	46 69
Wholesale of chemical products	46 75
Retail sale in other non-specialised stores with food, beverages or tobacco predominating	47 11
Chemists	47 73
Retail sale of medical and orthopaedic goods	47 74
Other software publishing	58 29
Computer programming	62 01
Computer consultancy activities	62 02
Legal advisory	69 10
Business and other management consultancy activities	70 22

	DB07-code
Industrial engineering activities and related technical consultancy	71 12
Technical testing and analysis	71 20
Other professional, scientific and technical activities n.e.c.	74 90
Temporary employment agency activities	78 20
General medical practice activities	86 21
Specialist medical practice activities	86 22
Other general medical practice activities	86 90

Quantitative data processing

The 44 sector codes represent a total of ca. 65 000 business registrations in data extracted from Statistics Denmark. Far from all of the companies proved relevant in relation to the definition of life science in this survey however; ultimately, 700 businesses were identified as utilisable.

Statistics Denmark categorised all companies according to their position in relation to the 'triviality threshold'. The business register contains many companies that are inactive or too small to be considered more than hobby enterprises. Only companies for which at least one half full-time annual employment was performed and/or those with a profit of a certain size are reported as over the triviality threshold. Around 41 200 businesses were deemed below the triviality threshold and were omitted. Enterprises over the triviality threshold and with an estimated 0 employees were also omitted. 14 300 businesses remained and were subjected to multiple rounds of large-scale and finer selection. Reservations are made for the inadvertent omission of small but relevant companies due to the method used. It should be noted that a few businesses were identified as relevant despite being below the triviality threshold.

In the case of the first 7 sector codes, comprising around 900 of the 14 300 businesses that are statistically primarily defined as in the life science sector, a specific review was done in which each business was researched online and with the help of data from Bisnode, a European data and analysis company. The companies were deemed relevant if they were active, operating in the sector, had a website, had submitted accounting reports and had more than two registered employees, although exceptions were made for relevant single-person companies in and outside of the science parks.

The remaining 37 sector codes comprised ca 13 400 of the 14 300 businesses that were statistically secondarily defined as in the life science sector, and a more general review was conducted due to time limitations. First, the life science businesses in the remaining sector codes were assessed using search words such as pharma, med and bio to give an overview of the data material. Of them, multiple sector codes were selected, as they contained a certain portion of life science businesses. Businesses with an estimated more than 4 employees were examined in the same way as the 7 primary sector codes. Businesses with an estimated 0-4 employees were not prioritised due to time constraints. This technique may mean that some relevant businesses were inadvertently overseen, but time restrictions made this unavoidable.

All sorted data was subsequently transferred to a database program in FileMaker, which Øresundsinstituttet constructed with the help of a local IT company to do programming specifically for this survey. The database contains quantifiable checkboxes, free text fields and dropdown menus, making it possible to enter supplementary business information that was not included in the information from Statistics Denmark. The various fields in the database were operationalised, making it possible to determine the kind of diagrams/tables, and thus findings, could be generated for the survey with the new supplementary business information.

The sector codes for this report are based, with few exceptions, on the sector codes used for the 'Life Science in Skåne', published by Øresundsinstituttet in 2020. The Danish and Swedish four-digit codes are directly comparable; however, each country has its own unique national subcategories that cannot necessarily be directly compared.

Supplementary data and quantitative poll

In order to do a survey of the cluster, supplementary business information was reviewed via the relevant businesses' websites, annual reports and LinkedIn accounts, and data was added from Bisnode and the Central Business Register (CVR). Figures from second-hand sources such as e.g. company registers is not necessary entirely accurate. Supplementary information on all of the relevant life science businesses was retrieved from the sources above. In addition, a quantitative poll was conducted in which companies with more than 100 employees from the 7 sector codes assumed relevant in eastern Denmark were contacted via survey link,

telephone and/or email between 2021 and 2022. A special interview guide, built around the database, was developed to make the communication as effective as possible. The interview consisted in part of introductory questions regarding e.g. sector affiliation, transborder- and business activities, and in part of specific questions regarding e.g. needs for expertise, further efforts, and recruitments. In all subsectors, contact with the largest businesses was prioritised most highly, as per the EU Commission's definition of micro- small-, medium-sized and large enterprises:

- Micro: 0-9 full-time employees
- Small: 10-49 full-time employees
- Medium-sized: 50-249 full-time employees
- Large: at least 250 full-time employees

Whenever possible, the businesses were contacted via telephone first rather than email in order to maximise the response percentage. Businesses with which no contact could be established were either omitted or included with less information. Supplementary business information for the survey via survey link, telephone or email was ultimately retrieved from around 50 life science businesses in eastern Denmark. Input for the expertise- and recruitment part of the poll was retrieved from around 50 businesses.

Qualitative interviews

18 qualitative in-depth interviews for the report were held via telephone, email, Microsoft Teams or in a physical meeting. Interviewees included leading employees and directors of life science enterprises or science parks in eastern Denmark. All interviewees were given the opportunity to fact-check their interviews. Two science parks and incubation environments in eastern Denmark were selected for in-depth interviews, as around a third of eastern Denmark's life science enterprises are or have been located in these settings, and the actors have a broad knowledge of the sector's conditions and challenges, especially from the perspective of smaller businesses. In addition, 17 businesses were selected for in-depth interviews according to selection criteria related to topicality and essentiality, as well as in order to achieve a broad scope in terms of company size and the representation of various subsectors and sector overlap. All interviews were conducted between September 2021 and May 2022 and followed a semi-structured interview guide, which was adjusted

for each interview occasion. The questions from the interview guide for the quantitative poll were also posed in the qualitative interviews.

Categorisation – traditional life science and new subsectors

The first division of businesses was based on the businesses' DB07-codes. As mentioned, 7 sector codes/DB07-codes were categorised as the traditional core segment of the life science sector via research and external consultations. As many businesses – also outside these DB07-codes – operate in the life science sector, either directly, as researchers, manufacturers or similar, or indirectly, as supporting enterprises or partners of life science businesses, we chose to review multiple DB07-codes manually in order to locate businesses that are designated as supplementary to the core segment. These businesses are active in the life sciences to varying degrees, and we thus sorted these supplementary businesses in two categories: Businesses closely associated with the life sciences, and businesses with some life science associations. Departing from businesses' presentations of themselves in interviews and on websites and LinkedIn, we determined the subcategory to which each business belonged and the extent to which the business was focused on the life sciences. Working in this manner meant that the DB07-codes did not control the categorisation; instead, it was based on independent judgment and company contact.

- **Businesses with a close association to the life sciences:** Businesses describe themselves as life science enterprises, or alternately, describe their primary operations as in the life science sector or as in partnership with life science businesses. As the primary operations of businesses with close associations to the life sciences are within the life science sector, all employees of these businesses are included in the total number of employees in the life science sector in Skåne.

- **Businesses with some life science association:** These businesses operate in or for multiple sectors, including the life science sector, which does not however have any special status in the enterprise's description of itself. The number of employees in the businesses with some life science associations are not included in the total number of employees in eastern Denmark's life science sector, as this would be misleading.

Categorisation – subsectors and sector overlap

There are many subsector categorisations in the life sciences, and the boundaries separating subsectors can sometimes be difficult to determine. Øresunds-instituttet has divided the sector into five overarching subsectors: biotech, pharma and medtech. In addition, contract research organisations (CROs) and contract manufacturing organisations (CMOs) are separate subsectors in the survey, as such enterprises are seen as specialised and integrated subsectors in the life sciences. Furthermore, three sector overlaps have been identified between the life sciences and other sectors, namely ICT/healthtech, food and other areas such as consultancy companies focused on the life sciences. Some enterprises have therefore been categorised as either ICT/healthtech, foodtech, or other businesses based on the process described above.

Number of employees

Data on the number of employees in the various businesses have been preferentially retrieved from company information. The primary focus has been on the number of full-time employees, and secondarily on the annual work carried out, if necessary, as annual work performed can be distributed over several employees. In telephone and email contact, businesses were asked about the size of their labour force between 2017-2021. If this data was not accessible from the companies themselves, the information was retrieved from Bisnode and the Central Business Register.



PHOTO: NEWS ØRESUND

INTERVIEW LIST

- **Jens Bukrinski**, Head of R&D (former), Swedish Biomimetics 3000, meeting, 2021-09-07
- **Gerit Tolborg**, CEO, Chromologics, meeting, 2021-09-15
- **Steen Donner**, CEO, DTU Science Park, meeting, 2021-09-17
- **Morten Mølgaard**, CEO, Copenhagen Bio Science Park (COBIS), meeting, 2021-09-21
- **Elise Hauge**, Executive Vice President People and Communication, Lundbeck, meeting, 2021-09-27
- **Christian Beenfeldt**, Project Director, Knowledge Hub Zealand, telephone, 2021-10-06
- **Birgitte Stephensen**, Executive Vice President & Chief Legal Officer, Genmab, digital meeting, 2021-10-08
- **Michael Hallgren**, Senior Vice President, Novo Nordisk Manufacturing Kalundborg, e-mail, 2021-10-12
- **Alejandra Mørk**, CEO, KLIFO, meeting, 2021-10-26
- **Steen Thomsen**, Professor, Copenhagen Business School (CBS), telephone, 2021-10-26
- **Karin Garre**, General Manager, Symphogen, meeting, 2021-10-28
- **Rasmus Hother le Fevre**, CEO, Ferrosan Medical Devices, meeting, 2021-11-26
- **Andrea Porchia**, Copenhagen General Manager, AGC Biologics, digital meeting, 2021-12-17
- **Thomas Lethenborg**, CEO, Monsenso, digital meeting, 2021-12-21
- **Peter Ohlsen**, Chief Financial Officer, Elos Medtech Pinol, e-mail, 2022-02-08
- **Henrik Vestergaard**, Deputy Managing Director, The Danish Association of the Pharmaceutical Industry (Lif), e-mail, 2022-02-15
- **Malene Brostrøm**, Senior HR Director, WS Audiology Denmark, e-mail, 2022-03-18
- **Thomas Gabriel**, Managing Director, Cook Medical Denmark, e-mail, 2022-05-04
- **Brian Mikkelsen**, CEO, The Danish Chamber of Commerce, e-mail, 2022-05-05

REFERENCE LIST

PRIMARY STATISTICAL SOURCES:

- DST/Statistics Denmark, including customised analyses

OTHER SOURCES:

- Bisnode, Nordic Business Key, business database
- Central Business Register (CVR), business database
- MedWatch, Danish media outlet focusing on the life science industry
- Ministry of Higher Education and Science, Denmark
- Websites of science parks and incubators: bii.dk, symbion.dk, dtusciencepark.dk
- Websites of community networks: Health Tech Hub Copenhagen, Medicon Valley Alliance
- Press releases and annual reports from respective companies
- Nasdaq and Spotlight Stock Market, providers of listings and services to listed companies
- Greater Copenhagen Life Science Analysis Initiative, State of Medicon Valley, November 2022
- Greater Copenhagen Life Science Analysis Initiative, Life Science across the Øresund, June 2021
- Greater Copenhagen Life Science Analysis Initiative, Life Science in Skåne, November 2020
- News Øresund, Danish-Swedish news agency; part of Øresunds-instituttet
- Rapidus, news agency focusing on growth companies in the Øresund region
- In addition, we received data via email and telephone from companies, municipalities, trade organisations, universities and other players





GREATER COPENHAGEN LIFE SCIENCE ANALYSIS INITIATIVE is an EU-project aimed at increasing knowledge about the region's life science cluster Medicon Valley. The focus is on the demand for labourers, future expertise needs, and more. The project has received funding through the EU-programme Interreg Öresund-Kattegat-Skagerrak and will continue until 30 June 2022. The project's lead partner is Medicon Valley Alliance, and the partner is Øresundsinstittet.

The primary objective of the GCLSA-project developed and managed jointly by the Danish-Swedish organizations Øresundsinstittet and Medicon Valley Alliance is to

- 1) analyze and increase knowledge about the need and demand for competencies and skills and
- 2) support the development of the integrated labor market in the Danish-Swedish life science cluster, Medicon Valley.

Furthermore, the project will establish a bi-national forum which can push this agenda on an ongoing basis thereby addressing an issue of crucial importance for growth and employment on both the Danish and the Swedish side of the Greater Copenhagen region.

Targeting national, regional and local Danish and Swedish policy makers and key opinion leaders from industry and academia, the analysis work and the deliberations of the established Competencies and Skills Forum aim to provide a more qualified point of departure for developing initiatives which

- increase awareness of the supply and demand of labor in the regional life science cluster and facilitate mobility on the bi-national regional life science labor market
- optimize relevant life science educations in Sweden and Denmark including a more coherent approach to the prioritization and distribution of resources for R&D and educational institutions specifically addressing the needs of the life science industry
- highlight the scientific, commercial and societal strongholds of the Medicon Valley region and market the general attractiveness of the region as a first-class destination for both talent and business.
- investigate which factors are decisive when life science companies in the region successfully develop and expand
- provide national and regional stakeholders working with labor market life science related issues a common statistic point of departure and methodology
- help to eliminate obstacles to the free movement of labor (commuting) between Sweden and Denmark

In sum, the analysis work provided, and the forum established will not only help Medicon Valley prosper and grow scientifically, but also help finetune and fuel the growth engine created by public and private stakeholders during the last 20 years, which has helped Medicon Valley to firmly establish itself as the leading and most dynamic and vibrant life science cluster of the Nordics.

ØRESUNDSINSTITUTTET

Øi is an independent Danish-Swedish centre for analytics and information that brings together more than 100 actors from the industry, the public sector and academic institutions with the aim of strengthening knowledge about societal developments on both sides of the Øresund Strait. As a member of Øresundsinstittet, you become part of our strong Danish-Swedish network – and gain access to network meetings, facts, analyses and news about developments in the Greater Copenhagen region.
www.oresundsinstittet.org

MEDICON VALLEY ALLIANCE

MVA is a Gold Label-certified, non-profit member organisation in the Danish-Swedish life science cluster Medicon Valley. Its 300 members include universities, hospitals, human life science businesses, regional governments and service providers that represent the Region's 'double triple-helix'. The activities in MVA focus on strengthening collaborations for a vibrant life science ecosystem in Medicon Valley through networking events and increased collaboration across borders and sectors.
www.mva.org

THE VISION

The vision is to be a well-known and respected member-driven contributor to the realisation and positioning of Medicon Valley as the most competitive and vital life science cluster in Northern Europe.

THE MISSION

MVA is committed to realising Medicon Valley's potential by facilitating networking, knowledge-sharing, and collaboration, analysing challenges and potentials, and mobilising support from key opinion leaders.

CALL TO ACTION

Read more about the Danish-Swedish life science cluster organisation Medicon Valley Alliance's events and activities on www.mva.org, where you can also find more information about how YOUR company can benefit from a membership.



Medicon Valley Alliance



