

**INVEST IN**

**AN UP-AND-COMING**

**LIFE SCIENCE CLUSTER**



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**The North Danish life science cluster is young, but shows remarkable promise in particular areas. Whether your area of expertise lies within the fields of biotech, pharmaceuticals, medical technology or software, Aalborg's innovative research and business environment could well be the perfect choice for your next investment or establishment of new activities.**

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While the life science industry in North Denmark is relatively young, much of the research behind the ground-breaking inventions and innovations created in the Aalborg area has been underway for decades.

### **Cooperation is the Key to Success**

The region has a remarkably strong tradition for cooperation between local companies, the public health sector, local authorities and Aalborg University, which enjoys world-wide recognition as one of the finest research and educational institutions in the world. Much of the university's research is performed in cooperation with international companies and research institutions.

Many departments at the Aalborg University Hospital (AUH) cooperate closely with Aalborg University on research projects. Leading doctors from the hospital teach at the university and perform research as well as treat patients. With a brand new, state-of-the-art hospital being built in Aalborg right next to the university campus, this close cooperation and the integration of treatment, research, education and product development will be further facilitated. Indeed, this cooperation has had an important impact on the new hospital's layout.

### **Life Science Innovation**

The "Idea Clinic" at the AUH is a good example of how the North Danish drive to constantly innovate manifests itself. At the "Idea Clinic", hospital employees and patients can receive professional help in translating ideas or inventions that can improve patient treatment or care. These suggestions and ideas may be based on professional research or merely an inspiration based on personal experience.

The life science field has always been a North Danish priority and enjoys much political attention. In fact, the North Denmark Region has historically funded and driven a large number of projects and initiatives with the aim of supporting and developing the life science cluster.

It was recently decided to gather all these initiatives under one unifying organisation, simply named LSI (Life Science Innovation). The organisation has a double bottom line, aiming to benefit the health of citizens, patients and employees in hospitals, nursing homes etc. as well as create growth and value for companies in the region.

### **Learn more about Life Science Innovation**

**INVEST IN**

**WORLD-CLASS**

**RESEARCH**

The North Danish life science cluster is characterised by:

- › Unique synergies between industry and research
- › Focus on partnerships and collaborations to spark innovation
- › World-class research and education
- › Political support and public investments
- › Innovative, local companies
- › A highly educated and talented workforce
- › Attractive infrastructure and framework conditions

### **State-of-the-Art Hospital Underway**

The North Denmark Region is currently carrying out a large-scale construction of the new AUH, a so-called "super hospital" encompassing 143,000 square metres and 587 beds. The new hospital will replace the current buildings in the north and south of Aalborg and gather all activities in one location on the east side of the city, right next to the Aalborg University campus and its Faculty of Medicine.

The new hospital will house an emergency department, out-patient departments, operating rooms, laboratories, a paediatric ward, an intensive care unit, rehabilitation programs, university facilities for research and education purposes as well as a number of service functions.

The new AUH will be able to offer the most specialised treatment in the region and is expected to employ approx. 5,000 people.

Aalborg University Hospital may be described as a research centre in itself, as the hospital conducts research in a number of areas such as clinical nursing, sexology, cardiology, diet and exercise, intestinal failure and cancer.

### **A Head Start in Technology**

On a global scale, the eHealth industry is growing rapidly and considered to have great potential. North Danish researchers and companies have a head start in this area, thanks to a very successful information and communication technology (ICT) cluster.

This dynamic and innovative cluster has grown from a historical regional foothold in the ICT industry, which stems from a unique research community based around Aalborg University and a series of large, international corporations with R&D departments in Aalborg. Historically, many of these companies operated within the fields of mobile and wireless technologies, earning the area the nickname 'Mobile Valley'.

Companies and researchers in the region are particularly focusing on developing software that can lighten the administrative burden in the health sector, improve patient monitoring or help to engage the patient more actively in his own recovery.

## **LIFE SCIENCE IN NORTH DENMARK**

### **IMPORTANT CORE AREAS**

- › Pain and motor systems, pain relief and transitional pain research
- › Robotics
- › Pathology
- › Cardiology and lipid research
- › E-health solutions, home monitoring
- › Arthrosis
- › Register based research including epidemiology and biostatistics
- › Neurology and neurophysiology, neural engineering and neuro rehabilitation
- › Health technology including rehabilitational, biomedical and pharmaceutical
- › Bio markers – identification, diagnostics and detection
- › Bio mechanics and bio medicine including stem cell research and immunology
- › Medical informatics including decision support systems and image analysis
- › Welfare technology
- › Clinical trials

# LIFE SCIENCE RESEARCH

## AT AALBORG UNIVERSITY

**The research conducted at Aalborg University and in cooperation with the hospitals in the region provides a dynamic framework for the establishment of new companies and the development of new products.**

According to a recent survey performed by the Confederation of Danish Industry, Aalborg University (AAU) is the best in the country at cooperating with private companies. 44 % of all dissertations at Aalborg University are completed in cooperation with a private company. At the same time, the university as a research institution does very well in international rankings. Aalborg University achieves a five-star ranking by the QS World University Rankings, putting it on a par with Harvard, Oxford, Cambridge and Stanford.

It is particularly worth noting that not only medical and health related research in the classical sense is performed at the university and at the hospitals, but that research contributions and product ideas come from a variety of areas, including IT, electronic systems, chemistry, machine technology, design etc. - and that these connections are especially beneficial in the development of new products and methods for the health and life science sector.

According to a report conducted by the Danish Ministry of Higher Education and Science, AAU is the Danish research institution that has produced the second largest number of new inventions in 2016, namely 90, and the largest number of sales and option contracts, namely 77. AAU is the Danish research institution with the most partnerships and research collaborations and the one that registers the largest number of new patents.

The Faculty of Medicine at AAU consists of HST (Department of Health Science and Technology), KI (Department of Clinical Medicine), the Doctoral School of Medicine, Biomedical Science and Technology with three programs; and the School of Medicine and Health with 14 health science programs (master's, continuing education master's and bachelor's programs).

## The Department of Health Science and Technology

**The Department of Health Science and Technology (HST) is the largest, integrated health technology research and education environment in Denmark.**

This department at Aalborg University encompasses three important research centres of which two are basic research centres, namely CNAP (Center for Neuroplasticity and Pain) and SMI (Center for Sensory-Motor Interaction).

› The department has 280 employees, of which 230 are scholars. More than 1,700 students are enrolled at the department, which has approximately 100 PhD students.

› In 2016, the department published 704 research publications. It had a yearly turnover of 199 mill DKK in 2016, of which 52 mill came from external funding.

› Since 2000, HST research has reported 110 inventions, applied for 50 patents, sold 20 inventions and established 18 spin-off companies.

› The research conducted at HST centres around three main areas of specialisation: Biomedicine (blood-brain barriers, neurological conditions, cancer, immunology and molecular medicine), Sensory-Motor Interaction (biomarkers, rehabilitation technology, biomechanics etc.) and Informatics (decision support systems, respiration technology, medical image treatment and tele homecare).

# LIFE SCIENCE COMPANIES

## IN NORTH DENMARK

**Some of the innovative, private companies in the life science industry located in and near Aalborg are:**

- › LT Automation (automation and robotics)
- › Intelligent Systems (intelligent hospital logistics etc.)
- › Judex (biomedical engineering and medical informatics)
- › Cephalon (electro diagnostic devices and supplies)
- › Genokey (data analysis solutions for research and clinical decision)
- › Mermaid Care (medical technology)
- › Thermaid (thermal equipment)
- › Treat Systems (decision support for antimicrobial stewardship)
- › Anybody Technology (orthopaedics and assistive devices)
- › TKS Technology (advanced tongue and hand controls for the paralysed)
- › Medei (electronic data management for medtech and clinical research)
- › Nocitech (quantitative pain assessment)
- › CCBR (clinical research)
- › OBI Medical (software for blood gas testing)
- › RTX (RF wireless healthcare device design and development)
- › Xtel (produces innovative DNA copier and contributed to developing robot for senior care)
- › LBN Medical (diagnostic imaging equipment)
- › Novo Nordisk (pharmaceuticals)

# Clinical Trials

**North Denmark has optimal conditions for executing clinical research, pre-clinical and clinical trials within areas such as biomedical technology and pharmaceutical products.**

There are many advantages to performing clinical trials in North Denmark:

- › The proximity means that several hospitals can recruit patients for the same study. This makes it possible to perform large, single centre trials in North Denmark.
- › Denmark is among the cheapest countries in Western Europe for performing clinical trials. There is a long tradition for performing studies on healthy volunteers for basic and proof-of-concept studies, and the Danish track record for clinical trial aspects per capita is among the best in the world.
- › Danish hospitals have a large capacity, a high efficiency and broad experience in executing clinical trials.

› In Denmark, it is simpler and faster than anywhere else in Europe to apply for clinical trial authorisation. The protocol approval system is very efficient, clinical trials are a political priority and the approval time is short (approx. one month).

› Denmark has well-organised public health and death registries and a unique social security number system, which eases data collection and provides access to relevant data in connection with studies, trials etc.

Approx. 1,000 clinical trials are approved and carried out every year, and approx. 20,000 Danes participate in clinical trials each year.

Eir (Empowering Industry and Research) is an organisation that helps medical and pharmaceutical companies seek partners for clinical trials and provides access to advanced laboratories or clinics.

**[Learn more about Empowering Industry and Research](#)**

**INVEST IN**

**EASY ACCESS**

**TO CLINIC TRIALS**

North Denmark has a registered population of 600,000+ inhabitants, 500,000+ out-patient visits/year, approx. 38,000 surgical interventions/year and approx. 243,000 hospitalisations.

Groups of selected patient populations can efficiently and easily be recruited for small or large clinical trials.

# The Danish Life Science Industry

**The Danish pharmaceutical industry is strong, and several Danish companies are leading in the world.**

In fact, Denmark produces the largest number of new medical products per capita in Europe. Research, development and production of pharmaceutical products are among Denmark's biggest commercial successes.

The strong Danish market position in the pharmaceutical field acts as a catalyst for developments in related areas such as biotech.

Indeed, Denmark's solid foundation in the pharmaceutical field influences the whole value chain from identification of needs over product development and clinical trials to production and marketing.

Consequently, a large number of Danish companies develop, produce and sell medical instruments, devices, implants, aids and tools for the prevention and treatment of different illnesses.

The industry is among the largest in Europe measured per capita, highly driven by an innovative approach, and Danish medical products are among the country's most important exports.

## 5 REASONS TO

## INVEST IN AALBORG

**Location, location, location** - you have the world at your doorstep in Aalborg, which is situated in North Denmark and has direct flights to European capitals, a dynamic international port and an extensive network of road and rail connections.

**Growing population** - with its 212,000 citizens, Aalborg ranks as the third largest municipality in Denmark. The city is constantly growing and has a relatively young population not least thanks to its renowned educational institutions. The city has a well-educated population and is home to Aalborg University with its more than 23,000 students.

**Dedicated workforce** - the total workforce amounts to 270,000 people within commuting distance. North Danes are characterised by their dedication, flexibility and high-level qualifications. The people of Aalborg ranks as the happiest people in Europe.

**Global city** - there are about 11,000 international employees in Aalborg, and 4,500 international students. More than 26 % of all employees in the private sector work in a company with foreign owners. Aalborg's diverse talent pool is constantly expanding and providing greater multilingual capabilities as well as new global opportunities.

**Vibrant business community** - Aalborg offers vast business opportunities and burst with energy and innovation. New companies expand or relocate to Aalborg their business to Aalborg every week - both from other Danish regions and from abroad.

[www.investinaalborg.dk](http://www.investinaalborg.dk)

#### **About Invest in Aalborg**

Invest in Aalborg is a partnership between the Port of Aalborg, NOVI Science Park, Aalborg University and the City of Aalborg. It is the partnership in an increasingly globalised city that will ensure you a single point of contact and easy access to prime locations, world-class research, local business know-how and the local authorities.

Let us help you build your business case. Our services are driven entirely by your needs and are independent and free of charge.

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