



Strengthening life science

Life Science in Sweden

SWEDEN IN GLOBAL RANKINGS:



INNOVATION #1
EU European Innovation
Score Board 2022



TALENT #2
IMD World Talent Ranking
2021



BUSINESS #2
Forbes Best countries for
Business 2022

STRONG AND GROWING LIFE SCIENCE NATION

3 000
companies

42 000
Employees

164 billion SEK
Market size

115 billion SEK
Life science export 2021



Unique patient registers
and biobanks for clinical
trials and research



Vision for eHealth 2025

LIFE SCIENCE CLUSTERS



A transformational time in Life Science

Driven by game changing trends



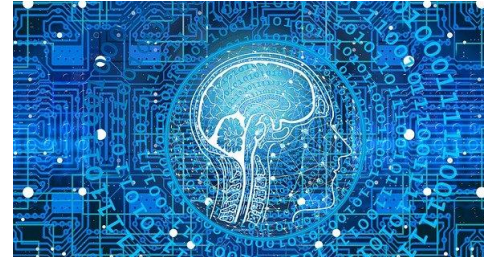
Structural factors

- Ageing populations
- Patent expiries and increased generic competition
- Payer pressure and increasing regulations
- Informed and demanding patients



Scientific advancements

- Towards prevention, prediction, early intervention and personalized care
- Gene and cell therapies, omics
- Regenerative approaches



Digitalization

- Rapid technology advancements
- AI finding clinical value
- Personalized society
- The connected individual



Health data

- Exploding availability and potential for sharing of data
- GDPR
- Improvement in prevention, diagnosis and treatment

IMPORTANCE OF LIFE SCIENCE

”Svensk export av life science har växt förbi personbilsindustrin”

Swedish life science export 115 billion SEK 2021, for the first time higher than export value of cars - *Karl-Petter Thorwaldsson Näringsminister*, January 2022



TIME, Dec. 27, 2021 / Jan. 3, 2022



**West Sweden.
A vibrant life science ecosystem.**

Health Innovation West is a cluster organisation aiming to put West Sweden on the global map when it comes to life science and health innovation.

Stronger together!



What is Health Innovation West?

- A West Swedish cluster organisation in Life Science representing:
 - The private sector
 - The public sector
 - Academia
- A platform for cross-sector and cross-functional collaboration and innovation.
- A window for West Swedish Life Science

Why we're creating a **life science cluster?**

- To catalyse collaborations and innovations connected to human health

...and thereby attract talents and new investments and establishments to the West Swedish region

HEALTH INNOVATION WEST – STRENGTHENING LIFE SCIENCE

HEALTHCARE

Region Västra Götaland is the principal organisation for all main healthcare operators - and test bed providers - in the region, with prominent private market operators in the mix.

ACADEMIA

Five universities in the region form a backbone of scientific excellence. Internationally-acclaimed academia have generated ground-breaking research, and Nobel-prize winners.

INVESTMENT & FUNDING

Governmental funding, private capital and International investors are active in West Sweden and appreciate the wide range of companies, in combination with cutting edge innovation.

INNOVATION SUPPORT

West Sweden has a wide spread of support systems for bringing new ideas to life. Expertise, openness and willingness to collaborate are distinct and significant factors.

INDUSTRY

The life science industry in West Sweden is a mix of large international companies and over 400 SME and startups. The strong heritage of automotive and ICE industry presents excellent conditions for sector convergence.



The power of co-action.

Proud tradition of groundbreaking innovation emerging from cross-collaboration

High density of knowledge intensive actors within life science and tech, utilizing sector convergence to accelerate innovation

Together striving to fulfil the vision and goals of Sweden’s national life science strategy

Image: GoCo, one of many game-changing initiatives in the region

LEADING LIFE SCIENCE COMPANIES AND R&D CAPACITY



HEALTHCARE AND PATIENT ACCESS



EXCELLENT SCIENCE



LEADING MOBILITY AND TECH CLUSTER



SUPPORTING ENVIRONMENTS



#1

the largest University hospital in the Nordics

485

life science companies

11 000

employed in life science companies

2,5+ BSEK

raised by life science companies in 2021¹

34%

of Sweden’s total private R&D investments

Industry R&D

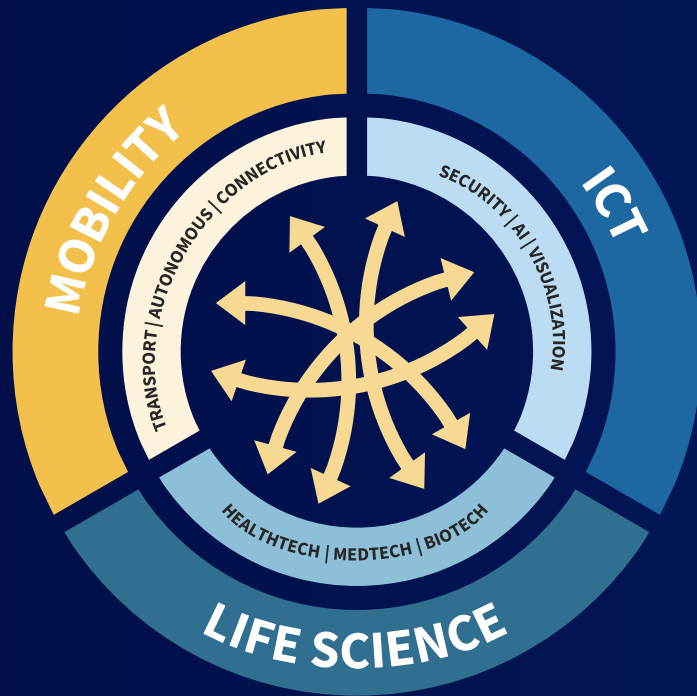
AstraZeneca, Molnlycke
Health Care, Vitrolife, Essity

#1

in clinical research in Sweden²

¹Includes companies at AZ BioVentureHub, Sahlgrenska Science Park and Biotech Center ²The Quality of clinical research in Västra Götaland top-ranked by Vetenskapsrådet (2018) Utvärdering av den kliniska forskningens kvalitet and many more omfattas av ALF-avtalet. Sources: Vetenskapsrådet, Triathlon Group, Sahlgrenska University Hospital, VGR, SSP, AZ BVH

Unprecedented cross-sector opportunities – A leading mobility & ICT cluster



Healthtech pioneer the mobility industry

Detectivio and Eyescanner the first healthtech companies to enter collaboration with global mobility companies through the collaboration hub MobilityXlab



Breaking new frontiers in Life science



Advanced therapeutics & Regenerative medicine

- AstraZeneca global leader with strategic R&D site in region
- Prestigious track record
- Major investments in nucleotides, drug delivery and associated infrastructure



Materials science & Infection control

- The origin and epicenter of osseointegrated implants
- The home of world leaders; Mölnlycke, Essity, Getinge, Dentsply
- Leading material science



Health Tech

- Leading mobility and ICT cluster
- Mass of start-up and scale-up companies within health tech
- Unprecedented cross-sector opportunities



Medical Imaging

- World-class imaging infrastructure
- High-density of imaging actors
- Prominent research in computer vision
- Synergies with ICT/mobility

Runner-ups. Examples of additional areas where strong elements exist in the region

Healthy aging

Oncology

IVF and transplantation

Prevention & lifestyle

Precision medicine

Healthcare delivery and efficiency

The new world for life science



- Phase II (100.000 sqm)
Next Development Area
- Phase I (100.000 sqm)
Under Construction

> 6 billion SEK
investment

2021
first building ready

> 200 000
square meters



**Together for a sustainable impact
in life science**

A prestigious track record of catalysing collaboration and innovation.

BioVentureHub

Innovation ecosystem set up by AstraZeneca

Innovation ecosystem set up by AstraZeneca
31 companies
556 MSEK raised and 14 new clinical trials in 2021

BOIC

One of Europe's most advanced centers for diagnostics and imaging

One of Europe's most advanced centers for diagnostics and imaging
>2 billion SEK investment
Enable world-unique clinical trials and collaborations

GoCo

Building a new health innovation city in Gothenburg

A new health innovation city
>5 billion SEK and 200 000+ m2
Home of leading life science companies and focus on health & sports, with first tenant moving in 2021

GoCo Health Innovation City

Sahlgrenska Life

Gather industry, university and health care for collaboration and innovation

Gathers industry, university and healthcare
Construction will start 2023
21 500 individuals will work or study here 2030

Multi billion investments in new infrastructure and meeting places

OligoNova

A national center for research and development of therapeutic oligonucleotides

National center for Oligonucleotide Therapies
A 100+ MSEK investment
Initiated by AstraZeneca and the University of Gothenburg

FoRmulaEx

Research center with scientific excellence in nucleotide delivery

Research center dedicated to nucleotide delivery, hosted by Chalmers University of Technology
Bringing some of the best scientists in together
32 publications, majority joint academic-industrial authorship

Bringing some of the best minds in academia and industry together

HEALTH INNOVATION WEST – STRENGTHENING LIFE SCIENCE

Unique R&D site and a **key driver of innovation and collaboration** in the region

Gothenburg site is the home of 2 of 3 focus research areas

Cardiovascular & Metabolic Disease (CVMD)

Respiratory, Inflammation & Autoimmunity (RIA)

Taking big steps towards the next level of collaboration and open innovation

BioVentureHub

Health Works

OligoNova

GoCo Health Innovation City

AstraZeneca 

 **Gothenburg | Sweden**

One of AstraZeneca's three strategic, global R&D centers

2800 employees

70+ nationalities

17 billion SEK
investment in R&D

Spin-off potential



HEALTH INNOVATION WEST – STRENGTHENING LIFE SCIENCE

AstraZeneca BioVentureHub

One of the most novel incubators in the world

An innovative 4D (drugs, devices, diagnostics, digital health) ecosystem integrated at the heart of AstraZeneca's strategic R&D centre.

Figures from 2021:

31 growth companies

556 million SEK
raised

14 clinical trials
initiated

36 new patents

”
Dare to trust and dare to share, and things will happen.

Magnus Björnsne, CEO AstraZeneca BioVentureHub

”
The BioVentureHub is the perfect environment for us to continue our growth journey.

Nils Löfgren, CEO at Nanolyze

AstraZeneca 

BIO
VENTURE
HUB 

Getinge – Passion For Life

Supporting hospitals and life science institutions in their most important task – saving lives.

- Founded in the village of Getinge, Sweden in 1904
- +10,700 employees worldwide, 19 production sites in 9 countries
- 27.1 BSEK net sales in 2021

Regional business and presence

- Global headquarters in Gothenburg, Sweden
- Manufacturing site in Getinge with 17,000 m² facility area including offices, factory, labs and training center and approx. 450 employees mainly working with R&D and manufacturing of tailor-made Life Science
- Research collaboration with the School of Business, Economics and Law at University of Gothenburg, Sweden, on activities related to customer centric innovation and sustainability
- Partnership with Universeum & Foundation for Queen Silvia Children's Hospital





A national center for research and development of therapeutic oligonucleotides*

A 100+ MSEK investment

Initiated in 2020 by AstraZeneca and the University of Gothenburg through support from SweLife and the Swedish government innovation agency, Vinnova

Gathering national experts on therapeutic oligonucleotides, representing academia, regions, institutes, industry and SMEs.

OligoNova Hub

From target to preclinical “*in vitro* PoC”

Part of SciLifeLab DDD platform

OligoNova Accelerate

From preclinical “*in vitro* PoC” to preclinical PoC/early clinical evaluation

R&A Challenges

Innovative science collaborations

Network

National scientific network on oligonucleotide research

*A new form of treatment based on short and highly modified RNA or DNA molecules



Fundamental science to enable a therapeutic paradigm shift

HEALTH INNOVATION WEST – STRENGTHENING LIFE SCIENCE

FoRmulaEx

Research centre for functional RNA delivery, contributing to fundamental science for the design of safe and efficient nanoscale drug-delivery vehicles for next generation nucleotide drugs

Academic-industrial collaboration hosted by Chalmers University of Technology, a eight-year initiative granted by SSF

Groundbreaking results starting to emerge. Examples:

- New screening method for mRNA
- New method making it possible to follow the process of uptake of vaccine or drug RNA into the cell
- Improved instrument for measurement of nanoparticles



HEALTH INNOVATION WEST – STRENGTHENING LIFE SCIENCE

The largest University hospital in the Nordics

Sahlgrenska University Hospital

#1 the largest University hospital in the Nordics

1 600 hospital beds

17 000+

employees

#1 in clinical research in Sweden¹

National specialized medical care in several areas, including heart surgery, lung transplantation, liver transplantation, endometriosis care among others

Accredited Comprehensive Cancer Center 2022



¹The Quality of clinical research in Västra Götaland top-ranked by Vetenskapsrådet (2018)
Sources: Vetenskapsrådet, Sahlgrenska University Hospital

BOIC

Advanced center for
diagnostics and
imaging

AI Competence Center

opened 2021

Sahlgrenska Life

Construction start
2023

Major investments and a clear direction
towards increased collaboration and
innovation

BOIC – precision
medicine enabled

**One of Europe's most advanced
centers for diagnostics and
imaging**

2+ billion SEK investment

**SahlBEC lab inaugurated 2021 to
enable public/private research**

**Enable world-unique clinical
trials**



**Dedicated task force and
public/private research
collaboration project in planning**



HEALTH INNOVATION WEST – STRENGTHENING LIFE SCIENCE



Sahlgreńska University Hospital

Sahlgreńska Life

Gather industry, university and health care for collaboration and innovation

6 billion SEK
investment

21 500
individuals will work or study here 2030

113 000
square meters

2023
Construction start













Regional strengths

Academic excellence and the best clinical research in Sweden¹

- Largest University hospital in the Nordics
- Internationally eminent scientific strongholds and renowned top-class clinical research¹
- Unique patient registers and biobanks for clinical trials and research
- Gothia Forum dedicated to strengthening clinical research in the region

SCIENTIFIC STRONGHOLDS FOR WEST SWEDEN

 Dentistry and Oral surgery	 Transplantation
 Cardiovascular & metabolic disease	 Neuroscience & Geriatrics
 Biomaterials	 Maternity and Midwifery
 System biology and bioinformatics	 Basic oncology research
 Genetic research	 Complementary subjects: Chemistry, materials science and energy



5
universities

5 700+
academic researchers

**50
000+**
students

#1
in clinical research in
Sweden¹

¹Vetenskapsrådet (2018) Utvärdering av den kliniska forskningens kvalitet vid de landsting som omfattas av ALF-avtalet
Source: Triathlon (2020) Market analysis of cluster strongholds and opportunities.

Breaking new frontiers – Examples of innovative research



Biomarkers for Alzheimer's disease

Blood tests for Alzheimer's disease developed by top-ranked researchers at University of Gothenburg. High research funding now received to continue with other forms of dementia.



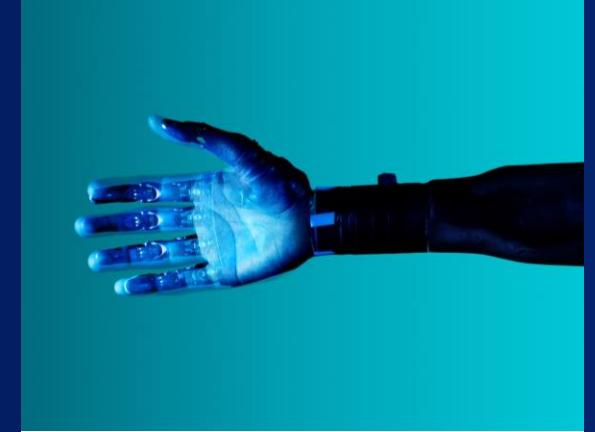
Live tracking RNA with fluorescence

Researchers at Chalmers have succeeded in developing a breakthrough method to label mRNA molecules and thereby follow, in real time, their path through cells.



System biology and bioinformatics

Prominent research teams at Chalmers as well as University of Skövde developing methods, algorithms and software to solve biological research problems.



Mind controlled prosthetic arm

The world's first implantable robotic arm controlled by thoughts, made possible by leading science in neuro-musculoskeletal prostheses and multidisciplinary collaborations in the region.

Providing a strong ecosystem for new science and innovation to reach clinical use

CHALMERS VENTURES *What if*



Best VC
By Nordic Startup Awards (2022)

CHALMERS VENTURES *What if*



1st in Sweden
World top 3 (2019/2020)

CHALMERS VENTURES *What if*



1st in Sweden
World top 10 (2019/2020)

GU Ventures



2nd in Sweden
World top 20 (2019/2020)



A leading region for **advanced therapies and regenerative medicine**

- Unique eco system for research and development of novel therapies - a meeting ground for new knowledge and new solutions
- Building upon extensive expertise and infrastructure developed during many years
- Substantial public and private investments
- AstraZeneca ramping up:
 - Global Cell Therapy Center opened in 2020
 - CRISPR capabilities
 - Investing in oligonucleotide capabilities

HEALTH INNOVATION WEST – STRENGTHENING LIFE SCIENCE

A unique eco system covering the full value chain



ATMP-center Sahlgrenska	3D Bioprinting Center	Stem Cell Biobank
Stem Cell Laboratory	FoRmulaEx	Cell and Tissue Laboratory
OligoNova	Laboratory for Transplantation and Regenerative Medicine	

Taking the lead in **infection control** and **wound care**

GETINGE ✱

- Employees worldwide: **10 700**
- Annual revenue: **27 000 MSEK**



- Employees worldwide: **46 000**
- Annual revenue: **121 800 MSEK**



- Employees worldwide: **8 070**
- Annual revenue: **17 900 MSEK**



- Employees worldwide: **1 000+**
- Annual revenue: **n/a**
(Part of Dentsply Sirona)

NEW COLLABORATIONS AND ACQUISITIONS

Essity's acquisition of ABIGO Medical is completed

Essity acquires advanced wound care company in US

Bactiguard inleder utvecklings-samarbete med Dentsply inom dentalområdet

USPTO Grants Foundational Patent to Amferia for Antimicrobial Technology

Mölnlycke Partners With Tissue Analytics to Simplify and Standardize Chronic Wound Care

Development of graphene-based antibacterial surface for medical devices - Effective, safe and affordable



Implants and biomaterials

A regional strength and successful business arising from collaboration



22
companies

4,600 MEUR
total market cap¹

Triple helix
collaboration

¹Estimated cluster value as of 2018. Source: Triathlon Group

An industry that continues to develop



2020: FDA premarket approval



2021: Johnson & Johnson agreement



2021: FDA Breakthrough Device Designation



2022: IPO 80 MSEK

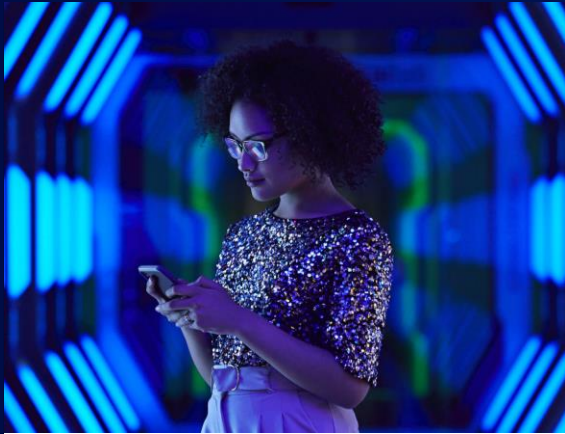


2022: Integrate 2022



2022: Cochlear acquires Oticon

Breaking new ground in **Digital Health**



Gamified digital therapeutics

Engaging and personalized patient experience with a clinically validated gamification platform



AI-based software for drug testing

Detects the influence of drugs through image analysis of the eye area, by filming a sequence on a person's eye



Prepare dental care for the digital future

Collaboration platforms using advanced image analysis and AI for better health and dental services



Quantifying human physiology

Measurement of vital signs using advanced technology, sensors, machine learning, and artificial neural networks



HEALTH INNOVATION WEST – STRENGTHENING LIFE SCIENCE

Stronger together

WITH A JOINT COMMITMENT TO
DEVELOP A WORLD CLASS LIFE
SCIENCE CLUSTER OF TOMORROW





Thank **you!**