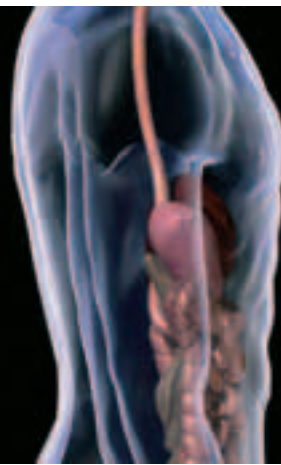


Invest in Sweden

Metabolic Disease



Sweden – advancing treatments of lifestyle diseases



Invest in Sweden Agency

Sweden – advancing treatments of lifestyle diseases

Changes in human behaviors and lifestyles over the last century have resulted in a dramatic rise in obesity and type II diabetes worldwide. No longer are these distinct diseases in themselves. Obesity and type II diabetes are usually manifestations of a much broader underlying disorder – the metabolic syndrome, which is characterized by a combination of a number of risk factors for myocardial infarction and stroke, including obesity, high blood pressure, insulin resistance, type II diabetes, and changes in blood lipids. Finding new drugs and therapies in this area is a high priority.

High quality research, extensive breadth Sweden is a world-leading authority in diabetes, obesity, metabolic syndrome and atherosclerosis research. The Diabetes Program at Lund University, a coordinated research program with some 20 research groups and well over 100 researchers, is one of Europe’s finest, according to a study by the Boston Consulting Group. Other Swedish academic research strongholds include Karolinska Institutet in Stockholm, one of Europe’s largest medical universities, and Sahlgrenska Academy in Göteborg. Not only is the quality of research very high, but it also covers the entire spectrum, from understanding diseases at the molecular level or via molecular genetics, to traditional epidemiology.

Strong industrial tradition Through pharmaceutical companies such as Astra, Kabi and Pharmacia, Sweden has a rich history in drug development aimed at regulating metabolic disorders and treating diabetes and lipid disorders. Gastrointestinal research is another area in which Sweden is at the forefront, accounting for blockbuster drugs like Losec (Prilosec) and Nexium. Today, Sweden’s life science industry is one of Europe’s most prominent and devotes extensive efforts to metabolic diseases.

Prime location for R&D A 2004 report by Cap Gemini Ernst & Young, comparing how current and future EU countries measure against each other when attracting life-science industry investments, ranks Sweden first in two of the most important criteria: research climate and labor quality. Sweden was also identified as “best-in-class” for investments in biotechnology facilities. Other Swedish advantages are outstanding levels of cooperation between universities, hospitals and the pharmaceutical industry, attractive operating costs, and the ease with which Swedes collaborate internationally. Swedish researchers are also respected for their ability to deliver on time.

Unique scope to perform clinical trials Sweden is a leading clinical trials country, distinguished by high scientific standards and a great capacity to track patients over time. Large-scale clinical trials can be performed here with outstanding records of speed and quality. One Swedish contract research firm (NMCT, Nordic Management of Clinical Trials) is noted for its ability to manage a screening program of 30,000 obese individuals in five weeks, resulting in the identification of more than 500 previously drug-naive diabetics. More than 30 of the largest pharmaceutical companies perform clinical trials in Sweden.

“Sweden is among Europe’s most progressive biotechnology countries, with a number of prominent clusters and a strong intellectual knowledge base in science.”

Scott Foraker
Vice President, Licensing
Amgen

Amgen has a strategic partnership with Sweden’s Biovitrum related to Biovitrum’s small molecule enzyme inhibitors.

Sweden meets major location decision criteria

Position	Research climate 1)	Labor quality 2)
Sweden	1	1
Finland	2	2
Denmark	3	6
Netherlands	4	9
UK	5	5
Germany	6	7
Belgium	7	3
Austria	8	14
France	9	11
Ireland	10	4

¹⁾ The quality and level of local pharmaceutical research

²⁾ The quality of the local labor force

Source: Cap Gemini Ernst & Young, “EU Enlargement: Driving Change in the European Life Sciences Industry”, 2004

Other advantages include homogeneous health- and medical care systems, high enrollment rates and low drop-out rates. This is a reflection of high education, trust and confidence in the public health care system as well as an awareness of the potential benefits new treatment may bring. The Medical Products Agency (MPA), Sweden's regulatory authority, is widely respected. The MPA was one of the first agencies to have its clinical data approved by the US Food and Drug Administration.

Large-scale EU projects managed from Sweden Swedish-based researchers are project coordinators of large international grants from the European Community. Dr. Ulf Smith at the Sahlgrenska Academy in Göteborg was project coordinator for "EuroDiabetesGene" from 1999 to 2004, and is presently the project coordinator for "EUGENE2." Dr. Suzanne Dickson, also at the Sahlgrenska Academy, is project coordinator for "Identification of new drug targets for the treatment of obesity and diabetes," a five-year EUR 11.7 million study involving many of Europe's top obesity researchers. As a result of the strong Swedish involvement in these projects, a large share of the budgets will be spent in Sweden.

Sweden a natural choice for innovative drug discovery Numerous international pharmaceutical and biotechnology companies bet on Sweden to deliver candidate drugs for various metabolic diseases. These include AstraZeneca, which has its global R&D headquarters for cardiovascular and gastrointestinal diseases in Sweden, as well as Amgen, Serono and Wyeth, which have all struck strategic research agreements with Swedish firms. The Swedish venture capital market is another investment route. Numerous firms are specialized in life science, covering all segments and stages of company growth.

Choose Sweden to strengthen your competitive advantage!

Good reasons to choose Sweden

- Academic research excellence.
- Strong industrial tradition.
- Capacity for rapid, large-scale clinical trials.
- Large and well defined registers and biobanks.
- Unique knowledge about the metabolic syndrome.
- Drug development is to a large extent focused on metabolic diseases.
- AstraZeneca's global R&D headquarters for gastrointestinal and cardiovascular diseases is located in Sweden.
- Sweden coordinates EU obesity and type II diabetes research.

A leading health care nation

Health system performance

1. Sweden
2. Norway
3. Australia
4. Canada
5. France
6. Germany
7. Spain
8. Finland
9. Italy
10. Denmark

Source: "Measuring the health of nations: analysis of mortality amenable to health care" Ellen Nolte and Martin McKee, London School of Hygiene and Tropical Medicine

Swedish life science venture capitalists (a selection)

Health Cap
H&B Capital
Innovationskapital
Investor Growth Capital
Karolinska Investment Mgmt.
Scandinavian Life Science
SEB Företagsinvest
Swedfund

Research excellence

Swedish researchers in diabetes, obesity, metabolic syndrome (insulin resistance) and atherosclerosis are among the world's foremost in their disciplines.

Research institutes such as Karolinska Institutet in Stockholm, Lund University in Lund and Sahlgrenska Academy in Göteborg are noted for their ability to nurture innovation in metabolic disease research. The universities in Linköping and Umeå are other sources of strong academic research.

Prof. Åke Lernmark, a world-renowned diabetes researcher and discoverer of GAD (Glutamic Acid Decarboxylase) antibodies, operates out of Lund University, where he is joined by researchers such as Prof. Bo Ahren, Prof. Leif Groop and Dr. Jan Nilsson.

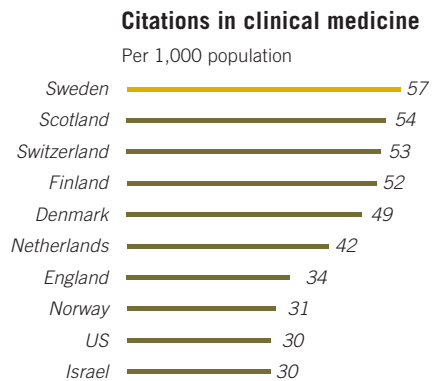
The city of Göteborg, with its Sahlgrenska Academy, is a leading center for research into metabolic diseases. The late Prof. Per Björntorp, father of the metabolic syndrome, introduced experimental methodology into the field. Today, researchers such as Prof. Jan Borén and Prof. Sven Enerbäck are working to ensure that Göteborg maintains its leading position. Professors Borén and Enerbäck are behind an initiative to establish a metabolic syndrome center of excellence that would engage some 85 researchers. Prof. Lars Sjöström, who is recognized as the principal investigator of the Swedish Obese Subjects intervention study (see next page), is another authority in this field.

Prof. Jan-Åke Gustafsson, a pioneer in the field of molecular nutrition and recipient of the 2004 Bristol-Myers Squibb Award for distinguished achievement in nutrition research, works at Karolinska Institutet. Other prominent scientists there include Prof. Suad Efendic, a noted diabetes researcher, Prof. Bo Angelin and Prof. Stephan Rössner, an international authority on obesity.

A research team led by Prof. Olle Korsgren at the Uppsala University is among the recipients of a USD 75 million NIH grant to conduct studies of islet transplantation in patients with type I diabetes. The five-year program, announced in 2004, will involve five centers in the US, Canada and Sweden. Clinical trials will be coordinated by the Swedish research team and performed on patients in Sweden, Denmark, Finland and Norway.



Source: "Biotechnology Innovation Scoreboard 2003", European Commission



Source: The Lancet, Vol 363, 2004

* Biotechnology innovation in more than 20 countries was benchmarked. 19 indicators in three categories were measured: Human resources and creation of new biotechnology knowledge; Transmission and application of biotechnology knowledge; and Innovation finance, outputs and markets in biotechnology.

Unique registers and biobanks

Sweden offers major advantages for epidemiological and register-based research, due to a very long tradition in keeping national and comprehensive population and health data registers. For instance, the Swedish Hospital Discharge Register includes inpatient data from 1964 and onwards. The Swedish Multi-Generation Register enables the identification of first-degree relatives of all Swedish residents born in 1932 or later.

Sweden also has the most extensive twin register in the world (180,000 twins), an invaluable tool for studying the relation between disease, genes, and environment. Moreover, several large biobanks have been built up, both during routine medical health care as well as for specific research purposes. Sweden's use of personal identity numbers allows registers and biobanks to be linked with each other, enabling unique conditions to study how genetic and environment factors influence health.



Pioneering functional food science

Functional food science, which focuses on the specific physiological effects of food or food components, may play an important role in preventing diet-related diseases. Sweden has pioneered developments in this science field.

Sweden's excellence is primarily concentrated to the southern parts, where most of the country's food production takes place. At Lund University, the Functional Food Science Center involves some 70 senior researchers from nearly 40 departments and five faculties. Research encompasses several key areas, including food-related nutrition, food science, biotechnology, medical sciences, product design, process technology and health economics.

Established links between the innovative food industry and the academic world ensure a smooth transfer of technology and know-how. One strong resource in this area is SIK, the Swedish Institute for Food and Biotechnology. SIK is involved in numerous strategic and applied research projects on behalf of its clients. Sweden also has the necessary legislation to stimulate market introduction of functional foods. In contrast to most European countries, Sweden allows the use of physiological claims in the marketing of food products, providing that the health effects are documented.

Swedish Obese Subjects (SOS) Intervention Study

The world-renowned Swedish Obese Subjects (SOS) Intervention Study offers unique scope for investigating how obesity induces the metabolic syndrome. The study, which began in 1987, has to date registered more than 6,300 obese patients, of whom over 2,000 have undergone gastric surgery. The study is performed in collaboration with 25 surgical clinics and 480 primary health care centers across Sweden.

The control group consists of some 2,000 people who have received conventional treatment, including nutritional and exercise advice as well as obesity drugs. Patients in the two groups are studied on eleven occasions during a twenty-year period with respect to mortality, morbidity, nutritional habits, health-related quality of life and health economics. The researchers, led by principal investigator Lars Sjöström, have shown that gastric surgery for the treatment of severe obesity results in long-term weight loss and improved lifestyle.

Corporate activity

Drugs for treating diabetes and metabolic disorders represent some 30 percent of the current drug development pipeline at Swedish biotechnology firms. Sweden is also the global R&D headquarters for AstraZeneca, which conducts its cardiovascular and gastrointestinal research at Swedish sites.

<p>Affibody www.affibody.com Protein-engineering technologies for product development in biotherapeutics, proteomics and separomics.</p>	<p>Arexis www.arexis.com Rapid candidate drug generation for metabolic and inflammatory diseases.</p>
<p>Alligator Bioscience www.alligatorbioscience.com Optimized proteins through new generation of gene technology.</p>	<p>BioInvent www.bioinvent.com Antibody-based drugs for HIV, atherosclerosis, oncology and osteoarthritis.</p>
<p>Biovitrum www.biovitrum.com One of Europe's largest biotech firms, with over 500 employees. Focus on drug discovery and development for treating metabolic diseases.</p>	<p>Cellartis www.cellartis.com Aims to launch therapies for human diseases and other significant application of stem cell technologies.</p>
<p>Creative Peptides www.creativepeptides.se Discovery and development of biopharmaceutical drugs to treat long-term complications of type I diabetes.</p>	<p>Heptahelix www.heptahelix.com Drug discovery concerning G-protein coupled receptors. Discovered the Free Fatty Acid Receptors group.</p>
<p>InDex Pharmaceuticals www.indexpharmab.com Antisense therapeutics for inflammatory diseases and cancer.</p>	<p>Karo Bio www.karobio.com Focus on nuclear receptors for development of novel pharmaceuticals in major disease areas.</p>
<p>Medivir www.medivir.com One of the most prominent biotech firms, over 100 researchers. Compounds based on proteases and polymerases as target enzymes.</p>	<p>Orexo www.orexo.com Products and projects to target CNS, gastrointestinal and urogenital indications.</p>

Home of AstraZeneca's global R&D headquarters

AstraZeneca traces its Swedish roots to 1913, when Astra was founded in the city of Södertälje, south of Stockholm. Astra merged with UK-based Zeneca in 1999 to form what is today the world's sixth-largest pharmaceutical company. Almost half of AstraZeneca's 11,500 research employees are based in Sweden, which hosts the company's global R&D headquarters as well as the headquarters for three of the company's six therapeutic areas.

AstraZeneca employs over 2,500 people at its global R&D headquarters for cardiovascular and gastrointestinal diseases in Mölndal (suburb of Göteborg). Products developed at the Mölndal site include the ulcer medicine Losec (Prilosec), the world's best-selling drug for several years in the late 1990s, Seloken and Nexium.

Some 1,500 researchers are employed in Södertälje, the AstraZeneca's corporate research headquarters. The Södertälje site heads the neuroscience area and is behind drugs like Xylocaine and Naropin. 1,200 people work at AstraZeneca's facilities in Lund, the university city in southern Sweden. The site is responsible for AstraZeneca's respiratory and inflammation therapeutic area. In total, AstraZeneca employs some 13,000 people in Sweden, over 20 percent of its global workforce.

Serono: “A great place to access new technology.”

Serono, one of the world’s largest biotechnology companies, is no stranger to licensing. Some 25 percent of its annual research budget is spent on outside research, and approximately half of the current product pipeline is derived from R&D collaborations. In 2004, a two-year old Swedish company was added to the list of partners.

Established in 2002 by Svante Rasmuson and co-researchers at Sweden’s famed Karolinska Institutet, InDex Pharmaceuticals develops antisense therapeutics and diagnostic/prognostic tools for unmet medical needs in the areas of inflammation and oncology.

Under the agreement, signed in early 2004, Serono has exclusive worldwide rights to develop and commercialize InDex’s product Kappaproct® for the treatment of ulcerative colitis and potentially for other inflammatory diseases. “Kappaproct® has the potential to be a significant breakthrough,” says Bushara, head of business development at Serono. The product induces clinical remission in patients with active ulcerative colitis without compromising safety. The disease mainly affects young people, with disease onset typically occurring between the ages of 20 and 30 years.

Kappaproct® is an antisense inhibitor of the p65 protein, a key activator of the pro-inflammatory NF-kappa B pathway. It is currently being tested in a Phase II clinical trial involving 150

patients. In a completed proof-of-concept clinical trial in patients with therapy-resistant inflammatory bowel disease, it was shown that the majority responded positively to a single dose of Kappaproct®. Only mild adverse effects were recorded.

Bushara says Sweden is a great place to access new technology, with good R&D management capacity and skilled scientists within both academia and the business sector. “Sweden’s pharmaceutical industry tradition, most notably with Astra and Pharmacia, has contributed to the creation of an excellent environment for biotechnology activities.”

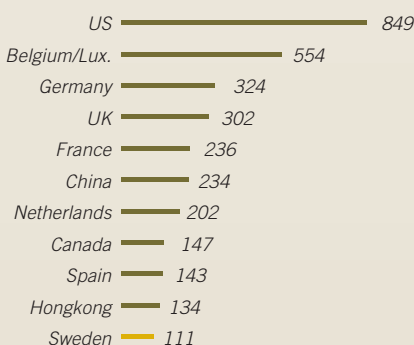


Sweden – engine for growth

There are several reasons why Sweden is attractive to foreign business. For one, investors gain access to sophisticated products and technologies, skills, innovations, and first-rate infrastructure. Establishing a position in Sweden means a triple market presence in Scandinavia, the Northern Europe/Baltic Sea region, and the European Union – home to some 450 million consumers. Additional advantages include a qualified workforce, extensive R&D facilities, competitive business costs, an advanced testing market, and demanding customers and suppliers providing the foundation for business operations of the highest caliber. The Swedish business climate and growth prospects earn high rankings in most internationally recognized studies and surveys.

Largest recipients of FDI

1999–2003, USD billion



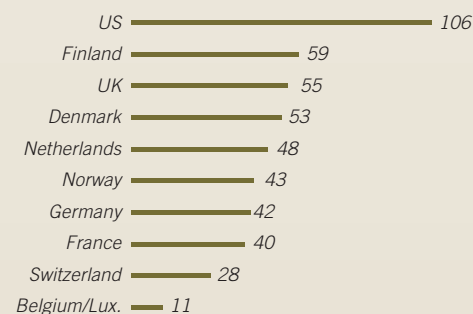
Sweden is one of the world’s main recipients of foreign direct investment (FDI).

Note: Figures for Belgium/Luxembourg are not comparable since the registered capital flows to a large extent are channelled to other countries.

Source: Unctad, 2004

Foreign-owned companies are major employers

2003, employees (000s)



Sweden is an internationalized business community. In 2003, 10,100 foreign-owned companies employed a total of 564,200 Swedes, or approximately 23 percent of all employees in the private sector.

Source: Swedish Institute of Growth Policy Studies, 2004

ISA – Business facilitator

Invest in Sweden Agency (ISA) is the government agency responsible for informing about business and investment opportunities in Sweden. Companies planning to establish or expand operations in Sweden can, free of charge, obtain information and assistance from ISA and its regional and international network.

With headquarters in Stockholm, ISA has international operations and representation in major European, North-American and Asian cities. The vast majority of ISA staff have a background in the corporate sector and expertise in the investment process. These attributes help ensure professional guidance for successful business launches in Sweden.

Welcome to the ISA web site at www.isa.se

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