

## **Medicon Valley: where biotech is business**

### **Copenhagen, Denmark and Malmo, Sweden**

#### **SYNTHESIS**

Since 1997, co-operation in the field of life-sciences in the cross-border Öresund region has been structured under the brand name 'Medicon Valley'<sup>1</sup>. The primary initiators behind the cluster organisation Medicon Valley Academy were the universities in Lund and Copenhagen, strongly supported by the major pharmaceutical companies in the region, e.g. Novo Nordisk, Lundbeck and Astra-Zeneca. Copenhagen Capacity and Region Skåne, the public organisations promoting the region on respectively the Danish and Swedish sides of the straits have also been key players. Medicon Valley was initially co-financed by the European Regional Development Fund under the INTERREG programme. The development of business and research co-operation in life sciences was given a major boost in 2000 as a result of the opening of the Öresund Bridge<sup>2</sup> (which was also ERDF co-financed in a separate project).

By 2007, the Medicon Valley Alliance<sup>3</sup> (hereafter MVA) was one of Europe's most significant cluster organisations with 256 paying members, involving university departments, healthcare organisations and most of the biotech and medical technology related companies and other organisations located in the Öresund region. Operations are overseen by a board of directors, representing diverse nature of the partnership, that is formed by a mix of Danish/Swedish, public/private, academic/industry, small/large firms representatives.

From 1997 to end 2006, 118 start-ups within the life science field were established in the region. As the branding has become stronger, more seed and venture capitalists have entered the region, which shows that there is sufficient critical mass to achieve a strong return on investments within life science industries. As a result, Medicon Valley attracts more foreign direct investment (FDI) in life science than any other region in Europe.

This network assists its members through various means, including organised networks on various subjects (e.g. currently on urology, diabetes, mass spectrometry) in order to support the innovation process within the life sciences field in the region. MVA puts also great effort into marketing of Medicon Valley at international fairs and exhibitions, representing member organisations as well as the region. These activities are developed in collaboration with Copenhagen Capacity and Region Skåne.

The external factors that have made MVA a success include: world class research and a unique research base; large enterprises with possibilities for spin offs and exchange of competence; critical mass in venture capital; representatives that can join forces in syndicates and foreign actors who can offer support; good infrastructure – both physical and social; hospitals and clinical research to support innovation; and strong branding to facilitate identification and cooperation between the respective parties.

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<sup>1</sup> <http://www.mediconvalley.com/>

<sup>2</sup> <http://osb.oeresundsbron.dk/frontpage/?lang=1&area=bron>

<sup>3</sup> <http://www.mva.org>

Indeed, the branding is considered one of the strongest factors leading to the success of the Medicon Valley Academy, providing identification both regionally and internationally, and contributing to a common vision amongst its diverse members.

Internal success factors include realistic goals that provide satisfaction along the whole value chain from research to enterprise; and awareness of differences in needs of members of the alliance, which is seen as an asset and means of learning. A key factor has been the willingness of stakeholders on both side of the strait to accept the risks of a venture as ambitious as creating a new region, Öresundsregionen.

## **Background information**

**Country:** Sweden and Denmark

**Region:** Copenhagen (Denmark) and Skåne (Sweden) – Öresund

**Project title:** Medicon Valley

**Key words:** regional cooperation; clusters and business networks, transfer of technology; support for enterprises: start up, spin off

**Duration of project:** 1997 – 2006

**Funding** (budget of the initial project implemented in the period 1997 - 1999):

Total budget	€784,616
ERDF contribution	€392,308
Regional budget	€392,308

**ERDF Objective:** INTERREG

## 1. PROJECT DESCRIPTION

The ERDF has partly funded three important consecutive large projects in Medicon Valley, related to:

- the initial investigation into which theme would be most beneficial for development within the region;
- the branding of Medicon Valley, constructed to support the life sciences, as a result of the investigation referred to above;
- establishment of the Medicon Valley Academy (known since 2007 as the Medicon Valley Alliance, MVA).

This report focuses primarily on the last of these three projects, though as they were interlinked, the first two projects will be touched upon when required.

The MVA is an inter-regional non-profit network organisation, which works for the benefit of the development of the Medicon Valley region. Altogether, MVA has around 260 members who share a common interest in the development of the biotech, medtech and life science sectors in the Öresund region. These members represent regional authorities, hospitals, university faculties and biotech and medical related establishments in the region.

MVA is an initiative of the universities in the region, mainly the University of Lund (Sweden) and the Copenhagen University (Denmark). The formal ERDF application was made by Copenhagen University. The purpose of the academy is to strengthen network-creation and knowledge exchange among actors within the biotech and life sciences area.

MVA works to improve the conditions for science and knowledge production, technology transfer, and innovation and the preconditions for enterprises to exploit this knowledge. It focuses on creating a beneficial environment and climate for innovation through networking, creating platforms for interaction between various actors and providing opportunities to exchange information with foreign counterparts. MVA has created a contact database and a website based knowledge platform derived from its mapping activities, which contributed greatly to the establishment of dedicated networks. In the early stages of network formation, MVA plays an active part, but as the network becomes self-sustaining, it steps back, enabling the best use of limited resources through their diversion towards new networks to meet the interests of other stakeholders.

MVA puts great effort into marketing of Medicon Valley at international fairs, representing member organisations as well as the region. These activities are often developed in collaboration with Copenhagen Capacity and Region Skåne, the public organisations promoting the region on the Danish and Swedish sides respectively. Other types of activities in which MVA engages are seminars organised on important and relevant topics, information processing through its website and other activities to promote knowledge and information exchange.

The primary beneficiaries are the regional enterprises which are members of MVA, both within the life sciences and related fields. Medicon Valley estimates that every new job within life sciences has a multiplier effect on the regional economy of between four and five jobs. Also, the larger business corporations benefit because a dynamic region offers a better basis for knowledge exchange and a more attractive workplace for employees.

Higher education institutions benefit from increased opportunities for knowledge exchange, and the opportunity to fulfil their “third mission”, to provide knowledge diffusion outside of the academic world and interact in knowledge exchange with industry and business establishments. Researchers can access stronger and more extensive networks, especially with the view to disseminate their research results.

Through its activities, MVA has contributed to the international visibility of the region. From 1997 to end 2006, 118 start-ups within life sciences in the region have originated from Medicon Valley activities. A study conducted in 2002 showed that almost half of the general managers of these start-ups were from large pharmaceutical companies. As the region’s reputation has grown, more seed and venture capital investors have entered the region.

MVA also aims to focus on better regulation aspects through the promotion of a framework conducive to the establishment and operation of young innovative enterprises as well as lobbying for harmonisation of tax regulations to encourage cross-border mobility and encourage other Nordic citizens to settle in the region. The overarching objective of these actions is to increase regional competitiveness.

Supporting regional development at national level is a complex task. Denmark’s capital, Copenhagen, its most dynamic region, borders a Swedish region that is definitely very much second to the Swedish capital, Stockholm, 600 km away. Taking this into account, INTERREG funding has fitted very well with the regional actors’ desire to cooperate across the strait.

Interestingly, the regional interests in this development were so strong in Denmark and Sweden that the project would most likely have been realised even without the INTERREG funding, however, the progress would likely have been slower. The strength of ties developed during the implementation of the project is quite clear, especially when one looks how well the organisation has survived the sudden withdrawal of INTERREG funds in 2002, due to a misunderstanding of the regulations.

## **2. POLITICAL AND STRATEGIC CONTEXTS**

A Danish professor was conducting research on the knowledge society, in the course of which he described the existence of two separate national systems within the life sciences on both sides of the Öresund Strait<sup>4</sup>. A study carried out in 2002<sup>5</sup> considered whether there was sufficient critical mass to become a world competitor in life sciences through the creation an interregional network. In the areas of diabetes, cancer, inflammation and neurosciences it was found that the work, both within the academia and business and trade industries was internationally competitive. Developing these two regions into one system would mean more growth, which would be enabled by the new bridge across the strait.

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<sup>4</sup> Christian Wichmann Matthiessen, Bridging the Öresund: potential regional dynamics Integration of Copenhagen (Denmark) and Malmö–Lund (Sweden) A cross-border project on the European metropolitan level, *Journal of Transport Geography*, Volume 8, Issue 3, September 2000, Pages 171-180

<sup>5</sup> Commercial Attractiveness of Biomedical R&D in Medicon Valley: the Role of R&D in Attracting Regional Investments; Prepared by The Boston Consulting Group, November 2002 <http://www.mediconvalley.com/images/publications/Commercial%20attractiveness%20of%20biomedical%20RD%20in%20Medicon%20Valley%20-BCG%20Nov%202002.pdf>

At the same time, many universities and university hospitals in the region were interested in creating ‘umbrella organisation’ to support their activities within the life sciences. Both Lund and Copenhagen Universities were active from the beginning, both perceiving the potential positive future impact of a network, and both willing to contribute some initial funding.

Subsequently, Medicon Valley has become one of Europe's strongest life science cluster. It spans the Greater Copenhagen area in Denmark and the Skåne region of southern Sweden. The two regions have been connected by a bridge, supporting car and train transport since July 2000, making it possible to travel between the two largest cities in the regions, Copenhagen and Malmo, in 20 minutes. Medicon Valley aims to become one of the world's top life science clusters. Agreements between local companies and leading multinationals in pharmaceuticals underline that the region is well on the way to achieving this goal; such as the 2007 agreement between the Danish firm Genmab<sup>6</sup> and GlaxoSmithKline to work together on commercialising an experimental drug against lymph cancer. However, competition is fierce and with both the US and China being very active in these fields, sustaining a leading role is very challenging.

Medicon Valley is a strong brand name, used in the region to mark the regional relationship on life sciences. The brand is primarily used by:

- 1) MVA, which is to be known as the Medicon Valley Alliance is a stable network of organisations (presently 256 members), involving the participation from universities and municipalities to small, medium and large enterprises. Their focus is on creating a feasible and innovative climate for regional actors within the field of life science in the region of Copenhagen in Denmark and Lund/Malmo (Skåne) in Sweden.
- 2) Skåne County Administrative Board<sup>7</sup>, Region Skåne<sup>8</sup> and Copenhagen Capacity<sup>9</sup> are the public actors involved in the Medicon Valley project. Their aim is primarily to encourage other actors to move to, to establish and to invest in the Greater Copenhagen area in Denmark and the Skåne region of southern Sweden.

Region Skåne and Copenhagen Capacity are two important members of MVA. The dual nationality aspect of Medicon Valley is very important to these two organisations, and neither takes any action under the brand name Medicon Valley without reference to its counterpart. Since the mid-1990s fast-paced development within life sciences in these two regions has occurred, and today Medicon Valley comprises a dense cluster of universities, hospitals and companies within life science, biotech, medtech and pharma, many of which are R&D based. Furthermore, many of the regions’ universities have a strong heritage in biological and medical research and have produced several Nobel Prize winners. The almost century-long presence of a number of research-intensive and fully integrated pharmaceutical companies, such as Novo Nordisk, H. Lundbeck, AstraZeneca and LEO Pharma, has also contributed significantly to the development of the region by strengthening capabilities within applied research, attracting suppliers and producing spin-offs.

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<sup>6</sup> <http://www.genmab.com>

<sup>7</sup> <http://www.m.lst.se/m/>

<sup>8</sup> Region Skåne is the Inward Investment Agency for Skåne, see <http://www.skane.com/cmarter/cmarter.asp?doc=504>

<sup>9</sup> The official organisation assisting companies interested in setting up or investing in Copenhagen, the capital of Denmark, or the Øresund region. See : <http://www.copcap.com/>

### **3. IMPLEMENTATION**

#### ***3.1. Project design and planning***

The idea to support and strengthen the life science industry within the region was jointly supported by the regional authorities, universities on both sides of the Öresund Strait and industry actors. While Lund University in Sweden and Copenhagen University in Denmark were the main instigators, they also co-financed the initiative.

As mentioned above, the needs assessment was made at an early stage and the branding of Medicon Valley followed. The actors that initiated the early stage needs assessment evaluation also initiated the Medicon Valley Academy, the life science membership network supporting the innovation process in the region.

#### ***3.2. Management, monitoring and evaluation system***

A group of board members was elected to oversee the initial project, with a Lund University member appointed chairman, representing universities, regions, hospitals, trade and business actors, such as Astra, Gambro, Novo Nordisk, public representatives and the county governor. At the end of 1997, the first director was appointed, coming from the company Novo Nordisk<sup>10</sup>. This type of management structure has continued for the Medicon Valley projects. The objective is to have both nations represented at the top of the organisation. For example, if the elected chairman is Danish, then the project manager is Swedish, and vice versa. There have also been continuous efforts made to include both private and public actors.

The current organisation of MVA consists of a board of directors, representing the diversity of the membership. The board includes representatives from Lund University, Technical University of Denmark, Malmo University, University of Copenhagen, and industry and research actors (Ventac Partners, Ferring Pharmaceutical, Bioinvent International, Novo Nordisk, Lundbeck, Topo Target, Trial Form Support, Astra Zeneca) and public agencies (Capital region of Denmark and Region Skåne). The broad representation of the various stakeholders in the region provides experience, commitment and influence from Denmark and Sweden and from the private/public life science and health care sectors.

In 2004, an evaluation “From bioscience to new jobs in Medicon Valley”<sup>11</sup> was published based on replies to a survey designed to analyse Danish and Swedish innovation systems and their role in Medicon Valley. The objective of this assignment was to set the scene for MVA’s future activities and now decisions based on the results of this survey are constantly revised, as part of the planning process.

The management structure was designed to be flexible to meet changing and unexpected needs and obstacles. For example, when the organisation realised in 2002 that the ERDF funding would be discontinued, MVA acted strategically to minimise the negative effects. The organisation was slimmed down, some staff was laid off, and a new project manager

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<sup>10</sup> <http://www.novonordisk.com/>

<sup>11</sup> [http://www.mva.org/content/us/news/media\(989,1033\)/Innovation\\_Report\\_October\\_2004.pdf](http://www.mva.org/content/us/news/media(989,1033)/Innovation_Report_October_2004.pdf) also available at [http://www.mediconvalley.com/images/publications/Innovation\\_Report\\_October\\_2004.pdf](http://www.mediconvalley.com/images/publications/Innovation_Report_October_2004.pdf)

was appointed. Actions were reprioritised towards less costly use of resources, such as using volunteers and use of alternative communication channels.

### ***3.3. Governance: partnership and leadership***

After the branding was achieved and the network was launched, some 23 actors from trade and industry applied to join, more than had been initially hoped for, and by 2002 it had already 100 members.

The interaction between MVA and the two regional development agencies (Region Skåne and Copenhagen Capacity), is twofold:

- the agencies are members of the network, and two of the larger financial supporters through membership fees;
- the agencies use the brand name to attract companies and other large organisations in the health care sector to the Öresund region.

Region Skåne and Copenhagen Capacity are regional, not national organisations. They work together in developing the region jointly as well as for their own objectives and maintain an awareness of each other's regional and national advantages.

### ***3.4. Innovative elements and novel approaches to implementation***

In Sweden and in Denmark, representatives from academia rarely initiate regional development projects such as Medicon Valley. However, Lund and Copenhagen Universities identified options for knowledge diffusion and collaboration with regional actors in the private, public and academic fields of life sciences. In particular, the possible complementarities in research and business activities on the two sides of the straits, which had not been fully exploited up to the mid-nineties. Academic co-operation has been formalised since the mid-1990s in the form of the Öresund University<sup>12</sup>, a consortium of twelve universities and university colleges on both sides of the sound. Co-operation in life-sciences under MVA was a strong contributing factor in this development<sup>13</sup>.

In order to succeed in meeting the set objectives, a triple helix organisation was established, including from the outset academia, public organisations and industry, which at that time (mid 1990s) was quite a novel approach. MVA has been a precursor and is now only part of a wider framework promoting a cross-border regional co-operation in science and innovation. The Öresund Science Region<sup>14</sup>, established in 2001, is a broader umbrella organisation pursuing similar goals in terms of 'triple-helix' co-operation. Based on the MVA model, it has fostered the creation of four other platforms: the Öresund IT Academy (ICT), Öresund Food Network (food science), Öresund Environment Academy (environmental), Öresund Logistics (logistics)

To create a tempting brand name and then attract actors and members should be also considered as innovative. The ambition was to embody within the brand name all the attributes necessary to make it useful to potential members as well as becoming a means of supporting the future development of the cross-border regions. A 2002 study considered

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<sup>12</sup> <http://www.uni.oresund.org>

<sup>13</sup> [http://www.oecd.org/document/16/0,2340,en\\_2649\\_201185\\_34406608\\_1\\_1\\_1\\_1.00.html](http://www.oecd.org/document/16/0,2340,en_2649_201185_34406608_1_1_1_1.00.html)

<sup>14</sup> <http://www.oresundscienceregion.org/>

how strong each of the main research fields in Medicon Valley were and how best this 'brand name' could be exploited<sup>15</sup>.

### ***3.5. Key implementation obstacles and problem-solving practices***

Due to a misunderstanding, the third instalment of the ERDF contribution had to be returned to the ERDF authorities. As mentioned above, MVA had to let people go, and restructure the organisation in order to get back on track.

In Sweden, it can be difficult to convince the government in Stockholm that investing in Medicon Valley is beneficial, since there is a perceived risk that Swedish investment will end up in Denmark. The regional Skåne perspective is that if Sweden does not invest in Medicon Valley, it will not get the payoffs that taking part in Medicon Valley offers Sweden and the Skåne region, which is not always in line with Swedish national policies made in Stockholm.

The distance between the political levels differ in Skåne and in Copenhagen, as Copenhagen is the Danish capital, housing the national government. Skåne, on the other hand, is about 550 km distance from Stockholm, therefore it is difficult for the region to influence national policymakers. This difference also emerges in the respective national media. Swedish nationwide papers generally do not cover Skåne, while Copenhagen, being the capital, has the strongest media coverage in Denmark. Access to political decision-making processes and media coverage could explain why the initiative is given different degrees of attention on either side of the Strait. The differing degree of media or political attention also affects potential for development in the two regions. Specific differences in national legislation or practices, e.g. tax legislations, housing costs and living expenses for employees, and so on, are more likely to be higher on the agenda in Copenhagen than in Stockholm, due to the relative distance of Skåne from the capital.

## **4. INNOVATION RESULTS**

MVA activities are working towards creating an innovative life science climate in the region, through providing possibilities for knowledge exchange between the investors and innovators. This is done mostly through organised networking events. MVA, for example, represents its members at international conferences and exhibitions, promoting transnational cooperation, while representatives from Medicon Valley visit other life science development clusters. These actions are indirect support for innovations, creating a sound basis for knowledge and competence exchange.

Other activities are aimed to facilitate innovation linkages and knowledge flows between different actors in the innovation system. This mostly involves developing support services for innovation tailored to the needs and level of development of the specific network. For example, there are network groups for researchers, new enterprises, other specific fields, and so on, which have been initiated by MVA, but which have become stronger and self sustaining. MVA can then move on to other initiatives supporting the regional innovative

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<sup>15</sup> Commercial Attractiveness of Biomedical R&D in Medicon Valley: the Role of R&D in Attracting Regional Investments; Prepared by The Boston Consulting Group, November 2002; available at [http://www.mediconvalley.com/images/publications/Commercial attractiveness of biomedical RD in Medicon Valley -BCG Nov 02.pdf](http://www.mediconvalley.com/images/publications/Commercial%20attractiveness%20of%20biomedical%20RD%20in%20Medicon%20Valley%20-%20BCG%20Nov%2002.pdf)

climate, e.g. Medicon Valley can facilitate access for its members or researchers support from bio incubators, for example, at Lund and Copenhagen universities, supporting early stage innovators.

Medicon Valley is also working more strategically on influencing policy, mostly on tax legislation in the two countries. These efforts, if successful, would simplify the situation for innovators working and living in the region, making it easier for them to live on one side of the strait and work or study on the other. At another level, efforts are being made to influence the investment policies in Sweden and Denmark, especially towards young innovative companies, to make it easier for public and private assets to move freely across borders.

Product innovations within MVA span new techniques or new drugs to ease recovery from e.g. cancer, or simplifying the life of diabetics. In this sector, the distance from inventing to getting the product on the market is quite long and requires strong support to be achieved. This support is offered by Medicon Valley, which offers inventors opportunities for new collaboration to simplify testing and/or carry out further development.

## **5. SUSTAINABILITY AND TRANSFERABILITY**

### ***5.1. Sustainability***

Funding from ERDF has already ceased, as mentioned above, and the organisation is now mostly reliant on membership fees. All newly established companies within the two regions are invited to become members (the first year for free) and are informed about the advantages of being part of the MVA and being established in the respective region(s). In 2006, 16 new companies were established. The newcomers are invited to an initial seminar, where they get to meet other new members. They also can identify which networks and functions organised by MVA will benefit them most. In 2007, the seminar presentation was delivered by an entrepreneur, who shared his experiences on starting and running enterprises. For those entrepreneurs who become members of MVA, there is a follow-up seminar after one year. This appears to be a highly sustainable format, as long as the organisation continues to offer value for money, and can devote sufficient time to members to offer them the returns they expect on membership fees.

### ***5.2. Transferability***

The creation of Medicon Valley was well-timed, coinciding as it did with completion of the bridge connecting the two regions, with increased interest in the media on cluster development, and mutual curiosity within the regions about what collaboration might provide. Similar cluster developments in other fields in these regions, such as food and information technology, have also prospered. As one of the interviewees noted: “everything was there, we just had to put it in place”.

The factors necessary to create similar innovative clusters, based on the experience of Medicon Valley, can be summarised as follows:

- world class research and a unique research basis;
- large enterprises with the possibility for spin offs and competence exchange;
- critical mass in venture capital;

- representatives that can join together in syndicates, and foreign actors to offer support;
- good infrastructures, both physical and social;
- presence of hospitals and clinical research organisations that support innovation and new product development;
- strong branding, which simplifies identification and co-working among parties.

## 6. CONCLUSIONS: MAIN SUCCESS FACTORS

Five factors considered as the most critical for the success of the MVA project:

- The **branding** of the Medicon Valley, which has become internationally recognised and respected was mentioned by all interviewees as the main success factor. This brand, combined with the slogan “where biotech is business”, has strengthened regional unity. The strong brand name has persuaded larger actors to join MVA.
- Working towards and having realisable and realistic **visions**, where synergy and collaboration are constructive aspects and appeal to the joint interests in the regions. This should involve as many perspectives as possible in the planning process.
- Involvement in the whole of the **value chain**, from research to enterprise, having the capability to offer innovations to investors and entrepreneurs, and vice versa, and providing testing facilities and bio incubators.
- Working through **networking**, offering arenas for different subjects, people and actors according to their needs and interests, e.g. project manager network, human resource network, various research networks, small enterprises network and so on.
- Awareness of the constant **duality** of the project: two nationalities, public/private, small/large enterprises, and the capacity to make this a potential for development. The challenge of comparing and getting the best out of these perspectives, while always remembering that all perspectives are equally important in the long run for the maintenance of the brand name and the development of the regions.

Three additional success factors identified in retrospect are:

- 1) The change in the organisation from being very academic to becoming more **business oriented**. This is reflected in the change of name from Academy to Alliance, in order to encourage the inclusion of actors that do not primarily identify themselves with the name “Academy”. It has been important to be dynamic and to adapt to contexts and needs.
- 2) Businesses and investors need to be convinced that they will get **value for money** in order to invest. The public, in this case academic, funding - where financial return is not as important since other returns are expected, such as regional development or knowledge diffusion - is needed to create the first little snowball and get it rolling. Once this is on the move, business or seed capital can be sought, and as the snowball builds it becomes easier to persuade the larger actors of the benefits of investment, since potential for return is more apparent.
- 3) **Regional willingness** to take risk is also a factor worth mentioning. Regions stakeholders from two nations on different sides of the strait were willing to take the risk of trying to create a new region, Öresundsregionen. The willingness to alter regional perspectives for regional gain is a clear, after-the-fact success factor.

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