



## Sector White Paper

### Finance and Innovation – Investing in Swiss Life Sciences

#### The Life Sciences, Medtech & Biotech Environment in the Greater Zurich Area

*Summary:* This white paper will demonstrate that the unique state of the Swiss biotech sector in the Greater Zurich Area makes the region a particularly auspicious environment in which to inject foreign and domestic capital. The paper will aim to put into perspective Swiss success in the field in the context of international trends.

In particular, we will identify the financial factors for biotech development in the Greater Zurich Area that make this region a hotbed both of innovation and capital growth, with a discussion of: rising private equity and venture capital; the role of 'big pharma'; liquidity in the public markets; and favorable tax codes. We as well discuss the qualitative factors that make the Greater Zurich Area a favorable destination for company growth and investment, including: the devotion to research and development, which fosters unprecedented innovation; the strength, reputation, and robustness of government and academia funding; patent trends; and, lastly, a vibrant culture rooted in a wonderful quality of life.

*The Swiss biotech sector employs over 19,000. The Greater Zurich Area represents the largest biotech hotspot.*

*Why should a foreign investor explore Switzerland, and particularly Greater Zurich Area? That is precisely what this paper seeks to explain.*

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## Private Equity, Venture Capital, and the life sciences footprint.

Switzerland, relatively small both in geography and population, may not be the first country to come to mind as a life sciences influencer alongside the United States, Germany, and China. However, a recent influx of capital into the sector – from domestic and foreign sources – suggest otherwise, especially when compared to the rest of Europe. It seems financiers are confident in the commitment public and private sectors have placed on research and development, which is favorably disproportionate to the rest of the world. To wit, life sciences contributes significantly to the GNP, and the private sector is benefitting from a trickling down effect from academia, employs thousands, making it a vital sector in fostering overall growth in Switzerland.

Over 70 private equity firms are located in Switzerland, managing more than \$12 billion in capital.

The number of announced deals and transactions with target, buyer or seller in Switzerland rose to over 250 in quarter 1 of 2012, more than double the highest quarter (Q2) of 2011. Healthcare recorded the second smallest decrease in stock performance over the past 12 months, and the index is steadily climbing upward since a valley in August 2011. Price-Earnings ratio is performing (20.3x) at a rate higher than the SMI index (18.1x).

According to the 2012 Swiss Biotech Report, Switzerland is home to 249 biotech companies, 75% of which are core biotech companies with substantive research programs. The remaining quarter constitutes a strong base of biotech suppliers. Pharma and medtech together contribute 4% to the GNP, and it is estimated Swiss biotech companies raised over CHF 500m in new capital in 2011.



Location of the Greater Zurich Area within Switzerland

The sector also employs over 19,000. The Greater Zurich Area enjoys a major share of life sciences and biotech hotspot Switzerland.

Of particular note is the current value and output of intellectual capital, as evidenced by the nearly two-fold spike in intramural R&D in the research and development sector, and a similar increase in pharma research and

development. This, logically, has led to a marked increase in the number of biotech companies emerging in Switzerland in the last decade: as more innovations arise, so does private development and commercialization. According to S.E.C.A. (Swiss Private Equity and Corporate Finance Association), life science companies represented

The Greater Zurich Area region within Switzerland.

more than a third of all private equity investments and nearly half of all venture deals in 2010.

This growth of the biotech private sector, nurtured by seminal research and development in academia and its close ties to the public sector, is significant on the international level. The SXI Life Sciences index grew 214% in total return from 2002-2006. During that time, the AMEX Healthcare index experienced about a 60% increase, and the DJ Stock 600 Healthcare experienced a smaller percentage increase.

Further, the sector has drawn international institutional investor interest, and the number of private equity transactions is both a cause and result of investor confidence.

Out of 10 biotech private equity transactions of 2009 and 2010, selected by the Swiss MedTech Report 2011, four brought in six or more institutional investors. These financings attracted international suitors, including top American investors. The varying investment values (ranging from under \$5 million to over \$35 million) suggest companies at diverse stages of financing have found success.

Switzerland is among the top 20 of countries experiencing steady growth of domestic Private Equity and Venture Capital in number of funds and deal flow since 2002. In 2008, Swiss private equity activity represented 12% of the activity in the DACH countries, with fundraising activities nearly 30% higher than that of Germany. A total of 74 firms were headquartered in Switzerland, managing \$12.8 billion in capital. Swiss PE and VC lobby groups such as S.E.C.A. and *Le RESEAU* foster corporate finance activities and entrepreneurship within the country, as well.

While the Swiss investor base grows, the country remains a favorable destination for international investors. Non-domestic European funds were the source of more than two-thirds of the funds commenced in 2009, with an additional 20% coming from outside of Europe.

Switzerland is unique among most other financial centers because of its strong institutional asset management culture, which is centered on the Greater Zurich Area, with clusters such as Zug, Zurich and Schwyz that rank among the wealthiest locations in the world. Greater Zurich Area is also home to large banks Credit Suisse, UBS, as well as other private banks, clearly strengthening its economic influence nationwide. The financial culture encompasses pension funds, asset managers and a diverse range of alternative investment expertise including private equity, hedge funds and funds of funds.

Michael Appenzeller, co-founder and manager of Etops Operations Services, noted in 2011 that one of the key assets as a financial hub is the presence of a large private client base consisting of a large number of family offices acting as seed investors in alternative funds. Further, he notes, there is a strong support system for start-up managers seeking to access established distribution channels.

## Roche and Novartis as benefactors.

Switzerland, of course, is home to two of the world's largest pharma companies: Novartis and Roche. Having these giants in one's backyard is a marked advantage for pre-clinical and clinical stage biotechs in coordinating licensing deals and partnering for research. Further, however, these companies support home-grown and local talent with strategic and institutional investment.

More than 40% of Novartis Venture Fund European holdings are located in Switzerland.

As Marco Estermann, Head Issuer of SIX Swiss Exchange has said, the most crucial thing for large pharma companies is the pipeline. The ease of obtaining a robust pipeline, of course, is magnified when one can rely on domestic ventures to move from the bench top level to pre-clinical and clinical phase. Thus, big pharma favors a healthy research culture together with a motivated private sector. Roche and Novartis consistently make the list of significant donors to Greater Zurich Area research institutions and universities, and frequently become top collaborators and partners for local out-licensed technology. As important, however, are the investment funds which can support promising domestic companies on the large scale.

Novartis Venture Fund holds eight companies in Switzerland, as compared to 10 in all of Europe. In 2009, Novartis Venture Fund participated in a \$21.19m equity financing of Symetis, a Swiss biotech developing heart valve replacement therapies. That year, Novartis-backed Evolva Holding SA merged with Arpida resulting in a listing on the Swiss stock exchange. In 2010, Novartis-backed Neovacs filed for an IPO on Alternext Paris. In 2010, Novartis Venture Fund also led a \$4.34m series A financing of NanoPowers, a Swiss medical device company developing artificial muscle technology. Four more Swiss companies exited the 2005-2010 fund by way of IPO or M&A.

Global Competitiveness Index  
Top 10 World Rankings

Ranking	
1	Switzerland
2	Sweden
3	Singapore
4	USA
5	Germany
6	Japan
7	Finland
8	Netherlands
9	Denmark
10	Canada

Source: World Economic Forum 2010

It is important to understand that these venture funds, however, represent only a small percentage of the big pharma commitments to backing Swiss companies. Venture funds such as this should be considered case studies in the value the big players place on the Swiss life sciences environment. Simply put, Roche and Novartis explore Switzerland at a disproportionate level to their activities in

the rest of the world because of the unique environment which fosters unprecedented innovation. Public research institutions, academia, and the private sector benefit significantly from the donations and investment of Swiss big pharma at nearly all levels of development.

## Public markets and M&A outlook.

*Domestic and foreign investors have grown and remain active in Switzerland. This has fostered important company growth and success at the finish line at a level which rivals the international leaders. The performance of both the public and private markets together with unique tax structures (see below) may yield greater interest from international suitors. Further, international trends suggest Switzerland is in an advantageous position to bring increased capital into the domestic biotech sector, both internal and abroad. Here, we explore the foundations for biotech innovation that make Switzerland an attractive player in the sector.*

Switzerland, and especially its finance cluster in the Greater Zurich Area, is a common destination for respected foreign companies seeking primary and secondary listings, with a sizeable percentage operating in healthcare. The Greater Zurich Area, and its Zurich-based SIX Swiss Exchange, is a unique breeding ground for developmental biotechnology companies, both foreign and domestic.

*Marco Estermann, Head Issuer Relations of Zurich-based SIX Swiss Exchange, spoke with [OneMedRadio](#) about the state of biotech company development.*

Although the endgame for companies founded here may not be a primary listing on the domestic public market, there is indeed precedent for success, notes Marco Estermann, Head Issuer Relations of Zurich-based SIX Swiss Exchange. Further, top European and American institutional investors have a demonstrated interest in the Swiss public market.

According to the SWX Europe, Switzerland accounts for 14% of blue-chip trading of the Stoxx 50 index. The top 100 U.S. based institutional investors maintain on average 20% of their European equity holdings in Swiss blue-chip securities. As of 2008, nearly 25% of companies listed in the SWX (now a wholly owned subsidiary of SIX Swiss Exchange) operate in the healthcare sector.

SIX Swiss Exchange was also the first stock exchange in the world to incorporate a fully automated trading, clearing and settlement platform (1995).

## Switzerland's unique tax structure explained.

Switzerland's favorable tax structure is well-known globally, and certainly one of the most obvious selling points to individuals and companies exploring the country. However, it is important to understand the intricacies of the tax system to assess which entities can take the most advantage. This section explains the national and local tax structures, and why Greater Zurich Area is uniquely positioned as a favorable destination within Switzerland.

The Swiss tax system offers companies as well as individuals one of the most advantageous tax environments in the world. There exists a unique relationship between the federal and local levels that efficiently optimizes the tax code; further, a favorable income tax code has helped establish Switzerland as a favorable destination for individual wealth managers and private investors, as well as companies.

The taxation requirement in Switzerland is divided into three sections: national, cantonal, and municipal. Cantonal taxes are similar to state taxes in the United States and vary based on the region and nature of your office. The effective federal tax rate is 7.83% and Cantonal rates rise to a maximum of 25%. This places Switzerland as one of countries with the lowest tax burden worldwide.

Taxation rates at the cantonal and municipal levels are determined independently from federal jurisdiction. The constitution also allows these statutes to be made subject to a popular referendum at all levels. Thus, Swiss tax rates are in practice set directly – and responsibly – by voters at the local level. This results in an ongoing, healthy fiscal competition between cantons and municipalities, bringing down overall tax rates significantly.

While Switzerland has a “classical” corporate tax system, there exist several provisions that can significantly lower corporate tax rates. Greater Zurich Area estimates corporate income tax rate to fall between 15-25%, and that a careful selection and design of company structures can minimize the effective tax rate to below 8%. Further exemptions and tax holidays at federal, cantonal and municipal level may apply for international companies that facilitate economic development with projects that are “close to production”.

Corporate Income Tax Rate

1 Depending on Location; 2 Trading Companies; 3 Depending on Type of Income

		%
Switzerland 1		12-26
Switzerland 2		5-12
Ireland 3		12.5-25
Poland		19
Singapore		20
Netherlands		25.5
Sweden/Norway		28
UK		30
France		33.3
Belgium		33.9
Germany		38

Source: KPMG's Tax Rate Survey 2007

Personal Income Tax Rate  
Percentage of Gross Income Including Social Contributions

■ Married, 2 children, single earner (fulltime job)  
■ Single, no children (fulltime job)

		%
Switzerland		10/20
Japan		16/19
France		18/30
UK		20/26
Belgium		23/42
Germany		24/43
Netherlands		29/36
Denmark		30/41

Source: OECD 2007

Companies with special company structures and business functions in Switzerland (e.g. multinational corporations) may enjoy tax privileges. For instance, a “participation exemption” reduces the amount of tax due by a company on profit of corresponding company profit in which the holding company owns 20% or more of shares. For a “traditional” holding company structure, the tax rate is 0% for all outside participations. Intellectual property holding companies may apply for specific tax rulings that will reduce effective taxation rate to 1.5-2%.

Switzerland also induces a “domicile privilege” tax limiting the domestic income taxes of resident companies with chief operations abroad. Switzerland's foreign trade organization cites the country's liberal approach as “one of the main reasons why Switzerland is such an attractive corporate location.” Thanks to its favorable tax environment among business-critical factors such as political and regulatory stability, an excellent infrastructure and other parameters, the 2011-2012 World Economic Forum's Global Competitiveness Report places Switzerland first among 142 countries.

## Unique devotion to research and development.

*A fundamental reason for the significant flow of capital is the uniquely interconnected regulatory and patenting environment that fosters innovation. Swiss companies devote much of their resources to R&D, and in turn lead international numbers in most research and development categories. The public sector fosters technological development well beyond the pre-clinical phase, as well. Research institutions notoriously work very closely with the private sector to roll out superior technologies, and the government provides a uniquely conducive receptacle for private investment by implementing favorable patent codes and time-to-market.*

Working in close cooperation with industry, science, research and the cantons, Switzerland creates the framework conditions for a strong economic environment at the federal level. Industry thrives on its ability to rapidly turn inventions and patents into market-ready innovations.

Statistics show that the Switzerland patent market is competitive throughout the world. According to the Swiss Biotech Report, the number of patent applications per capita has steadily increased between 2000 and 2010, rising approx. 70%.

*Dr. Eric de la Fortelle, CEO of Delenex Therapeutics, spoke with [OneMedRadio](#) about how Switzerland is uniquely positioned to foster innovation in the biotech sector.*

Large companies accounted for 57% of patent applicants from 2008-2010, while small and medium sized enterprises (SMEs) represented 30% of the patent pool. Public research institutions accounted for the remaining 13%.

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Cancer patents were most heavily concentrated in the Greater

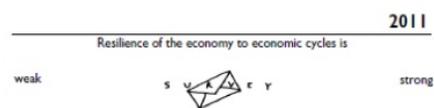
Zurich Area, as well as multiple sclerosis and autoimmune diseases, among other conditions.

The Swiss Biotech Report also notes the success of Swiss companies seeking international patent registration, as well as the success of accepted patents as compared to Europe and the West.

Swiss biotech patents represent about 4.4% of all patents filed in the country in the last decade, about even with European numbers.

The Swiss Medtech Report 2011 cites the strength of the Swiss internal research and development enterprises as a key factor in the country's prominence in medical technology exportation. The report cites that international corporations, such as Medtronic and Zimmer, flock to Switzerland because the sector "spends significantly more on research and development, proportionally, than the engineering and electronic industries." In the medtech sector, the average amount devoted to research and development in Switzerland is around 11% of sales. This number falls in line with the global average of 11% of sales, according to investment bank Ascent. The United States medtech industry spent just under 5% of revenue (\$9.1bn) on research and development in 2010, according to AdvaMed. EucoMed estimates that Europe medtech as a whole spends about 8% of sales (7.5bn Euro) on R&D each year.

## RESILIENCE OF THE ECONOMY



Ranking	Country	Score
1	NORWAY	7.74
2	AUSTRALIA	7.68
3	SWITZERLAND	7.34
4	INDIA	7.33
5	CANADA	7.28
6	QATAR	6.99
7	CHILE	6.94
8	TAIWAN	6.84
9	ISRAEL	6.83

This commitment is especially important when compared to other biotech powerhouses. In 2010, the Swiss biotech sector achieved revenues of CHF9.254m, and the sector invested CHF2.067m into R&D. That 22% investment in R&D is one percent less than R&D spending in 2009, in which revenue was about CHF80,000 higher.

US Biotech companies, however, spent 7% less on R&D from 2009 to 2010, according to BDO. The previous year, R&D spending in the United States declined by 9%.

The downward trend is evident in the rest of Europe as well, where 55% of European biotech companies decreased R&D spending in 2009. Though R&D expense increased 5% in 2010, revenues and market cap increased at a rate disproportionate to R&D.

*Dr. Oliver Rinner, CEO of BiognoSYS,  
spoke with [OneMedRadio](#) about the  
emerging field of proteomics, and  
the unique relationship between the  
Swiss private and public sector.*

## Federal mandates coupled with strong academia foster innovation.

*In addition to statistics there is structural evidence of a culture that promotes the development of innovation and intellectual property. At the exploration level is where Switzerland is especially unique. The Swiss government doles out significant funding to new grant applications each year, and despite a global recession that number has continued at a steady annual increase. This qualitative aspect is one of the most important differentials of this market.*

The Swiss federal government mandates a significant amount of funding to biotech research that is particularly impressive given the size of the country and its population. Federal funding is mainly accomplished through the Swiss National Science Foundation (SNSF), Switzerland's leading provider of scientific research funding, which holds approximately CHF 700 million in funding to support over 3,400 research projects. The SNSF annually supports over 7,000 researchers, almost 80% of whom are age 35 and younger. The SNSF supports three types of programs: National Research Programme, National Centres of Competence in Research and the International Programme.

National Centers of Competence in Research (NCCR) exist throughout Switzerland as research infrastructure to foster long-term development. The country currently houses 27 NCCRs. Most importantly, various patents have resulted from the research, including 50 in the categories of "Neuro", 23 from "Genetics" and 20 from "Structural Biology".

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According to SBR, "The excellent results have led to cooperation with industry and mobilized third-party funding to the tune of over CHF 36 million. Perhaps the most gratifying impact is the number of start-ups founded during this time and which are still in business."

The SBR also notes this unique collaborative environment fosters revolutionary innovation. For example, "NCCR Kidney.CH" is the first research network in the world to explore the physiological processes in healthy and diseased kidneys across a broad thematic spectrum.

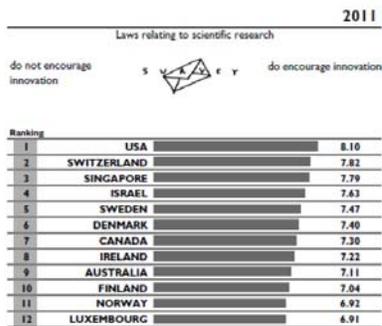
In 2011, SNSF approved 359 project grants in biology and medicine, providing CHF 142.9mm, which represents 40% of the total approved distribution. SNSF approved more than half of international program applications in 2011. SNSF approved 70 grants for experimental medicine, for a total of CHF 28.4mm, and 64 grants for clinical medicine, for a total of CHF 20.8mm.

In total, nearly 3,900 instances of international collaboration have taken place in the context of SNSF-supported grants. The United States and Germany lead in collaborations with SNSF-supported projects, with 672 and 746, respectively.

Other important groups supporting research and development include: CTI Medtech Initiative, a federal entity promoting knowledge transfer between academic and clinical R&D; the Competence Center for Medical Technology, which serves as a link between hospitals, research and industry; and the Medical Culture, a network of over 270 manufacturers, suppliers and service advisors.

As important as robust federal funding for high-quality projects is the presence of interconnected and reputable academic and research institutions. Further, there is a unique accessibility of funding between the research and private sector that facilitates timely development of technology.

## SCIENTIFIC RESEARCH LEGISLATION



IMD Business School lists Switzerland as second only to the US in legislation encouraging innovation.

original innovation in the private sector. The institution has made significant strides in the field of cancer research in recent years (notably with the successful insertion of a biological computer network in human cells which detect and destroy cancer cells), and prostate cancer diagnosis.

In addition to providing sizeable grants (that can reach upwards of \$1.5 million for PhDs), ETH is a case study in the unique Swiss collaboration between academia, philanthropy and the private sector. ETH received donations from dozens of Swiss and international corporations in 2011 (including Novartis and Roche), as well as hundreds of organizations and foundations. The institution has also partnered with Roche to develop insulin multipliers to treat diabetes. More than one-third of ETH expenditure is financed by national research sponsorship, and business partnerships finance over 47% of ETH expenditure.

Institutions in the Greater Zurich Area represent a large beneficiary of SNSF funds, among them two powerful research and education institutes in the heart of Zurich. In addition to the University of Zurich (receiving CHF 105mm in grants alone), the ETH Zurich (the Federal institute of Technology) is the most prominent Swiss academic institution with a healthy grant fund and a stellar academic reputation. ETH Zurich has been repeatedly considered the finest technological and scientific university in continental Europe. This science and technology university is the workplace of over 20,000 students and research students and recruits the world's most innovative and knowledgeable staff.

Research and studies ranging from molecular algebra to metallic bone implants have spawned significant partnering with and

## Favorable patent and regulatory strengthens interconnectivity.

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The Swiss Biotech Report also notes the success of Swiss companies seeking international patent registration, as well as the success of accepted patents as compared to Europe and the West.

Doug Ebert, Senior Advisor Americas at the Greater Zurich Area AG spoke with [OneMedRadio](#) about the strong patent protection and record short time-to-market in the Greater Zurich Area

Swiss biotech patents represent about 4.4% of all patents filed in the country in the last decade, about even with European numbers. More than one quarter of biotech patents filed in Switzerland were granted in 2011, about 6.5x the percentage of biotech patents granted in Europe. This multiple is average throughout the decade.

## Quality of life.

*In quality of life surveys, Switzerland and Zurich are consistently ranked among the top locations in the world when it comes to socio-cultural environment, and criteria of everyday quality of living such as health and sanitation, personal safety, schools and education, culture, convenience and recreation. From a human resources point of view, these parameters are oftentimes beneficial for tech companies with business models based on high added value through knowledge-intensive and innovative processes. Mercer's authoritative list, among others, ranked Zurich the second most desirable city in the world in 2011, and the region held the top spot for seven straight years from 2001 to 2008.*

Last, but not least, it is worth turning our attention to what sometimes seems difficult to quantify or measure but nonetheless stands as an important factor in the overall quality of the life sciences environment in the Greater Zurich Area: the influence of the outstanding quality of life in the Greater Zurich Area.



As Marco Estermann notes, the appeal and beauty of Switzerland, and the Greater Zurich Area in particular, go beyond numbers and rankings. The pleasure of aesthetics in everyday life, such as having a pristine lake and the backdrop of the Swiss Alps at your office window, or spending your lunch break swimming in the river in the middle of a city, not only manage to validate a hard day's work. A professional climate in which public and private traffic, public services and just about everything else works according to the highest standards of Swiss quality and efficiency, also guarantees a convenient life style for international employees and their families. From a human resources perspective, satisfaction with work/life conditions is a winning argument when it comes to attracting the

best and the brightest, i.e. highly specialized and well-qualified talent from all over the world, to corporations in the Greater Zurich Area. Quality of life is also crucial for maintaining employees job satisfaction, as well as their productive, creative and innovative capacities for the company at the highest possible level in the long term.

The intangibles of Swiss quality of life may well be an important ingredient for the unique mixture the Greater Zurich Area has to offer for international corporations: Entrepreneurial and fiscal responsibility in business, combined with a cosmopolitan and sophisticated consciousness about all other aspects that matter in a fulfilled life. Together they have formed an economic environment that is conducive for a solid, sustainable economic growth through world-class innovation in technology.

### City Rankings

Rank	City
1	Vienna
2	Zurich
3	Auckland
4	Munich
5	Düsseldorf
5	Vancouver
7	Frankfurt
8	Geneva
9	Bern
9	Copenhagen
11	Sydney
12	Amsterdam
13	Wellington

The Mercer 2011 city rankings based on quality of life study listed Zurich second in the world.

In comparison to many other national economies in Europe and worldwide, this mix has served Switzerland's economy well. Quality of life has consistently been a tie-breaker for international technology companies looking to expand into new markets, especially in the life sciences, biotech and medtech sectors, tipping the balance in favor of the Greater Zurich Area.

**Notes:**

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