SPECIAL ISSUE ON BIOALPS, THE LIFE SCIENCES CLUSTER OF WESTERN SWITZERLAND

technology

BY Bilan

2020

REVOLUTION IN HEALTHCARE

HOW ROBOTICS, VIRTUAL REALITY AND ARTIFICIAL INTELLIGENCE ARE IMPROVING THE PROFESSION

BioAlps
Life Sciences Cluster Western Switzerland

2020 | WHO's designated International Year of the Nurse and the Midwife

BioAlps pays tribute to the nurses and medical staff for their work during the COVID-19 pandemic.

The empowering of innovation by nurses and midwifes is recognized by top nursing care innovation experts from western Switzerland and will be further endorsed during our "Connecting Life Sciences Innovators"* event.

*"BD has a long commitment of developing **simpler, safer and smarter technologies** and working in partnership with nurses to enhance workflows and processes to improve patient safety and outcomes. **Nurses are not just heroes in times of crisis but heroes all the time**!"*

Mrs Els Van Herewegen | *Marketing Director Europe*
Specimen Management Integrated Diagnostic Solutions

BD

*"The difference between a **real innovation** or an additional gadget in the hospital practice? The **affordance**, the **acceptability of the technology** which depends on the epistemic level of the individual trained with a reflexive bachelor."*

Prof Olivier Schirlin | **Professeur HES**
Head of Nursing Care Bachelor's Degree Programme
& Research in higher-education

haute école arc santé

*"The generation of nurses that we are training today will have to build a healthcare system that is oriented towards home care and capable of avoiding unnecessary hospitalization or shortening it. **Innovation** will be at the heart of these issues and our graduates must, from the time they graduate, learn to **work as equals with engineers and developers**, and to learn about the **innovation chain and develop their critical thinking skills**."*

Mr Jacques Chapuis | *Director*

La Source. Institut et Haute Ecole de la Santé

*"**Nursing Team Academy** : In a changing world take control of your learning serving **clinical nursing leadership**."*

Mrs Dominique Faure-Arnaud
Maitre d'enseignement
Nursing Team Academy Project Lead
Haute Ecole de Santé | Nursing Care

Hes·so VALAIS WALLIS

"SICHH – Improving the access to technologies for the medical staff"

Dr. Jean-Marc Brunner | *CEO*

SICHH PLAY innovation

*"The benefits of **patient empowerment** are more and more recognized, and **digital technologies** have an important potential to favor it. Innovating in the way we deliver care and create **partnership with our patients** is what motivates us every day."*

Mrs Helena Bornet dit Vorgeat
Concerto Project Lead
Vision 20/20 Project Lead

HUG Hôpitaux Universitaires Genève | CENTRE DE L'INNOVATION

*"**Healthcare technology** is useless if it is not perfectly **suited to the needs and fully integrated into care practice**. We are indebted to the Source innovation Lab (SILAB) for organizing this great meeting between caregivers and innovators, train the former and bring attention of the latter to the benefits of a **high quality of care**."*

Dr Dominique Truchot-Cardot
Head of SILAB & Ordinary Professor

La Source. Institut et Haute Ecole de la Santé | Silab Source Innovation Lab

***CONNECTING LIFE SCIENCES INNOVATORS @ BD**
12 | 11 | 20

This 4à6 Special Edition, organised in partnership with BD, brings together Swiss healthcare leaders for an exchange of knowledge, experiences and ideas on nursing innovation while fostering collaboration across academia, industry and healthcare organisms.

BioAlps
Life Sciences Cluster Western Switzerland

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Abionic, GaDia, ABCDx or 1Drop offer rapid diagnosis tests capable of detecting a large number of pathologies in a matter of minutes

CAREER

HEALTH VALLEY

PARTNERSHIP

BUSINESS GUIDE

COUVER: SHUTTERSTOCK

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Health Valley's emblematic nursing staff

All it took was a virus to change certain of the habits and patterns in which we were comfortably settled. Working from home has become the new normal, distance teaching has overcome its fears and tracking is here to stay.

Over and above these changes, the coronavirus has also shone a spotlight on certain professions more accustomed to background roles, such as sales people, delivery staff and nurses. The images of nurses doing everything in their power to save lives are imprinted in our collective memory.

The World Health Organization (WHO) designated 2020 as the International Year of the Nurse and the Midwife, but also issued a stern warning: the world is short of six million nurses. By 2030, the global shortage of nurses and midwives will have reached nine million. Switzerland is no exception to this rule.

Applause from the balcony every evening is not enough. Switzerland, a country at the cutting edge of health and life sciences, must also give its nurses more attractive working conditions. Today, many are leaving the hospital workplace for sheer exhaustion, but also for want of motivating prospects, autonomy or decent pay.

And yet, the profession is not only indispensable, it is also key to innovation, as shown by the SILAB featured in our special report. This facility in Lausanne is a simulated hospital where nurses can hone their skills. It also supports the start-ups and companies that come to test their prototype there before a full-scale commercial launch. SILAB's capacity for innovation is reflected in its use of serious games to teach clinical assessment, its development of virtual reality tools or its production of virtual preop visit prototypes.

Now nursing care must also be part of what is commonly referred to as "Health Valley", because it is just as much a part of life sciences in Western Switzerland as biotech, IT, medtech, micro- and nanotechnologies.

Health Valley has built its reputation on this convergence of disciplines and professions into an interdisciplinary approach that has spawned numerous companies and start-ups. Several nuggets have emerged from this ecosystem. Today Western Switzerland is recognised as a hub of medical technologies developed by innovative start-ups, multinationals and biotech manufacturers working with hospitals, universities, training facilities and companies in the pharmaceutical industry. And the key to this success lies in the cooperation among the various players.

Switzerland must protect this wealth by continuing to invest in life sciences and by maintaining top-level training facilities that meet industry requirements. For this sector to grow and achieve its ambitions in Western Switzerland, it is absolutely essential to develop training in biotech manufacturing. It is equally crucial to attract and train growing numbers of nursing staff. Because these women and men, though not in the spotlight, are an integral part of the Health Valley.

Nursing training must maintain its high standards and be delivered through Switzerland's system of specialised higher-education establishments (HES). A host of studies has shown that nurses' level of training determines the quality and safety of the care they provide. A bachelor's level (HES) is associated with fewer medication errors, fewer falls and fewer deaths, for example.

The nursing training dispensed by the regular higher-education establishments (ES) corresponds to two-thirds of the training dispensed by the HES establishments. The ES practitioner training was current 30 years ago, but the world has changed since then. In 2020, a nurse's job is not only to care but also to innovate and generate ideas.

"Nurse's job is not only to care but also to innovate"

GHISLAINE BLOCH
Editor of Technology by Bilan

PHOTO: DR

Creativity must remain a fuzzy process

A little nasty virus has shown us how fragile we are, not only in our bodies, but also in our economics and social relations. We must do fundamental adjustments in the way we interact and on how to conduct our activities, also in view of climate, environment and natural resources. Countries, regions, organizations, industries, teaching institutions and individuals have reacted in different ways, in the urgency of the fast spreading disease.

The opportunity today is to recover in a smart way, strengthen our resilience and anticipate future worldwide crises. Each actor of our environment has a role to play in this recovery process, keeping the focus on contributive actions. Not everybody should now move to manufacturing protection masks, developing vaccines and phone tracking applications. The next crisis is unpredictable, foreseeable in terms of likelihood, unknown in its nature.

Key words for a more resistant health environment: education and innovation.

BioAlps' main annual event, BioAlps Networking Day, has been redesigned to cover global topics in a dynamic and interactive style. Transversal themes, attractive to the entire health community of Western Switzerland, have been identified in the perspective of the fast evolution of this sector.

On November 2019, BioAlps Networking Day addressed the fascinating subject of the emergence of new professions in health care, disease management and quality of life improvement. We covered the fundamental changes of healthcare sector in the recent years and we tried to figure out in which directions the development will go in the future. Digital health is the main change we are all experiencing, from patient follow-up, exploitation of huge amounts of health-related data to artificial intelligence for better diagnostics. All these new technologies induce a shift in the profile of healthcare professionals. It impacts the entire field, from nurses, to manufacturers and scientists. Our half-day event demonstrated the capital importance of preparing the next generation of professionals for these changes, through an optimized education system. Switzerland has always been a leader in providing and anticipating the best possible education. We must now reinforce our strength and build a solid ground to achieve the future health challenges.

Following the same philosophy, BioAlps decided to focus the 2020 edition of our Networking Day on the innovation strengths of our community in Western Switzerland, especially in the context of the recent sanitary crisis and the rethinking of our capabilities to reinvent ourselves to be stronger, better, quicker. As done in 2019 in the context of innovation, we will get a clear picture of our current innovation skills, but, most importantly, the Networking Day will crystallize the trends and expectations for what future innovation should be. Innovation is generated at every level of our added value chain. It comes from individuals, from startups, from large companies, from technical schools and academia. Innovation is everywhere, it is a mindset, an attitude. Often, innovation can be leveraged by simple and cheap actions. Collaboration, sharing ideas, brainstorming sessions, open source approaches, seminars, get-togethers, challenges, hackathons, competitions, social events, public debates: all this can foster ideas, trigger a developing process, generate value. Innovation is not a structured process and it is fine to be this way. Creativity must remain a fuzzy process. If we try to funnel the innovation process, it will lack oxygen. On the contrary, our ideas should go wild, be provocative, and evolve outside the tracks.

Education and innovation are some of the highest peaks in BioAlps' mountain chain. Let's push them up!

"Education and innovation form the keystone to BioAlps' ecosystem's resilience and strength"

CLAUDE CLÉMENT
President of BioAlps

PHOTO: DR

Technology is revolutionising nursing care

The development of robotics, virtual reality and artificial intelligence is revolutionising the nursing profession. The SILAB – part of the La Source Institute and School of Nursing in Lausanne– supports not only nurses but also start-ups. **BY GHISLAINE BLOCH**

Founded in 1859 in Lausanne, The La Source School of Nursing was the world's first secular nursing school.

Today, the nursing students practice also operating a robot (such as Pepper, below).

Nurses in white coats stroll around in a vast open space that looks more like an industrial loft or an artificial, film-set hospital. Welcome to SILAB, the Source Innovation Lab at the La Source Institute and School of Nursing. While the patients may all be actors or articulated mannequins, the care staff are well and truly real. They are all third-year students doing a Bachelor of Science in Nursing, given the opportunity to hone their practical expertise and broaden their knowledge in this brand new facility. "The simulated hospital has 21 beds and two apartments in which students can practise providing home care," says Dominique Truchot-Cardot, full professor, associate dean of innovation and head of SILAB. "We designed a complete preclinical setting in which we can test innovations and analyse certain solutions supported by the SILAB."

The nursing students practice not only treating and caring for patients but also operating a robot, using an exoskeleton and understanding the data generated by sensors and other measuring devices. The development of robotics, virtual reality and artificial intelligence is revolutionising the nursing profession. "Nursing care is in the grip of major upheaval and we need to prepare our students for these changes," insists Dominique Truchot-Cardot. Accordingly, the programme includes serious games, virtual reality to learn about blood transfusions and clinical assessment, and the use of auscultation simulators.

Dominique Truchot-Cardot (Seated on the left), head of SILAB (the Source Innovation Lab at the La Source Institute and School of Nursing), with her team.

PHOTOS: LA SOURCE, OSSENT-PORTNER/ARCHIVES FONDATION LA SOURCE

Coping with the mass of data

Will robots one day replace carers? "If blood tests are performed by robots, so much the better. These repetitive technical procedures are boring and may even be dangerous sometimes. In the future, the nurse will just have to set the robot in motion, then explain the procedure and reassure the patient. The machine will never replace carers' emotional intelligence," says Dominique Truchot-Cardot. "The SILAB is helping students adopt these changes in technology and acquire a new awareness."

To address population aging and the explosion in chronic pathologies such as diabetes or hypertension, more and more patients will be equipped with sensors and connected bracelets. Often sensors will be installed in the homes of certain patients considered to be at risk. "Nurses must be able to work with and grasp this mass of data," adds Dominique Truchot-Cardot, who has practised as a specialist in intensive care. "It is the nurse who knows the patient best and who will ensure the continuity of care, liaise between the patient, the doctor and the family, and be capable of making a thorough, multifocal assessment of the patient and his or her possibilities for rehabilitation and reintegration."

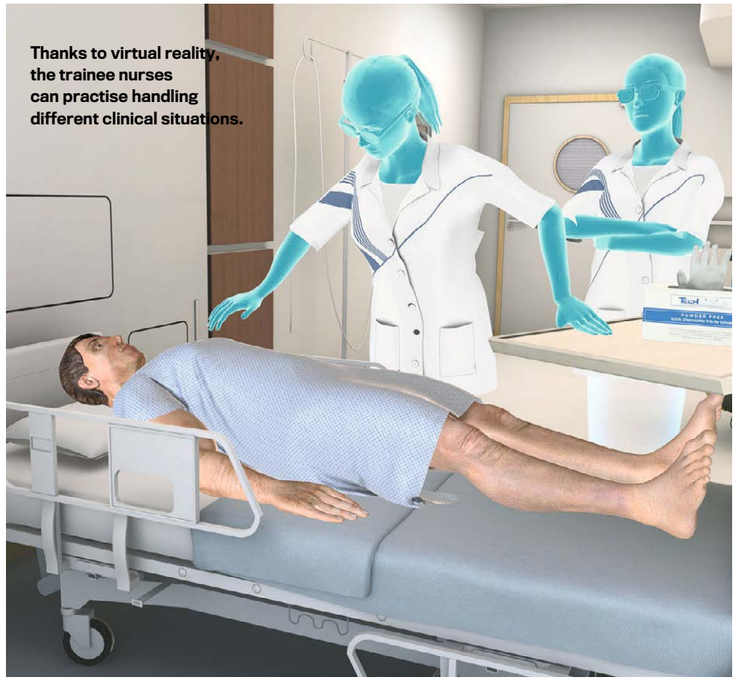
The SILAB will not confine its support to nurses: it also intends to guide start-ups.

La Source has dedicated itself to developing and implementing innovative methods.

Many businesses regularly come to test their prototype there or assess their project. "We receive requests from two or three start-ups every week. In 2019, we supported about ten of them. The SILAB is a hub where the outside comes to meet real life. We offer solutions that revolve around the patient, not just around the client," says Dominique Truchot-Cardot, who is backed by a five-person team. A groundbreaking concept can be discussed and put to the test in practice.

Dominique Truchot-Cardot has observed that many businesses fail to factor in the reality of patient care in their project design and don't put it to the test of reality early enough. "I see some projects that will never make it to the patient's bedside because the interface is far too complicated or unsuited," says the specialist.

"Start-ups try to test their innovation in hospitals, but it isn't always possible. Hospitals can't take in all of the prototypes that are developed in Switzerland. It may even be dangerous in terms of data protection and patient security," points out Dominique Truchot-Cardot.



Thanks to virtual reality, the trainee nurses can practise handling different clinical situations.

UbiSim's global success in nursing training

In late 2017, the Vaud-based start-up UbiSim set out to develop a training tool for nursing care. "When we started out, we could only count on our team of virtual reality engineers. So, naturally, we approached the La Source School of Nursing in Lausanne to validate our project and together develop all of the virtual reality simulation scenarios for the students," says Gauthier Dubruel, co-founder of UbiSim.

Equipped with a virtual reality headset and controllers, the trainee nurses can practise handling different clinical situations ranging from using a sphygmomanometer to treating a newborn baby in respiratory distress.

The first scenario trained nurses in blood transfusions. "Immersive virtual reality gives students an opportunity to practise in total freedom, without the limitations of time or nursing equipment and with no need for a teacher to be present," says Dominique Truchot-Cardot, full professor and associate dean of innovation, as she presents the SILAB.

"The platform is also used by professionals in continuing vocational training to reduce the risk of error, in particular by using more complicated scenarios for which they are required to respond rapidly and accurately," adds Gauthier Dubruel.

"Around 4500 learners have already used our solution for their training courses"

Joint initiatives in Canada

In Switzerland, over 1,000 patients die each year as a result of a medical error and 10% of health costs are generated by adverse events. "A large part of these critical incidents could be avoided if patient care and treatment strictly followed approved protocols that are regularly updated and correctly applied," points out Dominique Truchot-Cardot. "By significantly increasing the opportunities and time available for trying out and rehearsing care techniques, the virtual reality platform developed by UbiSim and La Source will help improve the quality of care and increase patient safety, for the same level of human resources and budget."

With its staff of eight, UbiSim is now working with various training schools, universities and hospitals around the world, and in particular with the Centre Hospitalier Métropole Savoie, the Ensemble Hospitalier de la Côte and the Hôpital Jules Gonin in Lausanne. "Around 4,500 learners have already used our solution for their training courses. We adapt our scenarios to the needs of the nursing schools and care teams," adds Gauthier Dubruel, who is now focusing primarily on the North American market. The start-up, which recently opened an office in Montreal, plans to generate half of its revenue in Canada and the United States, while retaining its offices in the EdTech Collider at the Ecole polytechnique fédérale de Lausanne (EPFL). "We need to be as close as possible to our markets. There is also tremendous expertise in simulation, software development and 3D in North America."

In collaboration with the Université de Montréal Faculty of Nursing, UbiSim has been training nearly 350 students a year since autumn 2018 at a time when nursing internships are increasingly difficult to find. Two patient care modules have been developed, one on in-home patient care and the other set in a private practice. The aim is to situate the learning experience in context and provide an opportunity for students to visualise the steps of the nursing process, learn to handle the equipment and familiarise themselves with key situations they will encounter in their professional practice.

PHOTO: UBISIM

ZOOM

A shortage of nurses and midwives

The year 2020 is one we will remember. The images of nurses doing everything in their power to save lives are imprinted in our collective memory. Over and above the havoc it is wreaking, Covid-19 has shone a spotlight on the unflagging, Herculean efforts made by the medical profession and in particular nurses. We are more than ever aware that these women and men are indispensable and play a crucial role in promoting health, preventing disease and providing care. The World Health Organization (WHO) designated 2020 as the International Year of the Nurse and the Midwife, but also issued a stern warning: the world is short of six million nurses. By 2030, the global shortage of nurses and midwives will have reached nine million.

In a report on the status of the global nursing workforce, the UN's health agency, the international Nursing Now campaign and the International Council of Nurses (ICN) highlight the crucial role played by its professionals, who represent over half of all medical staff worldwide.

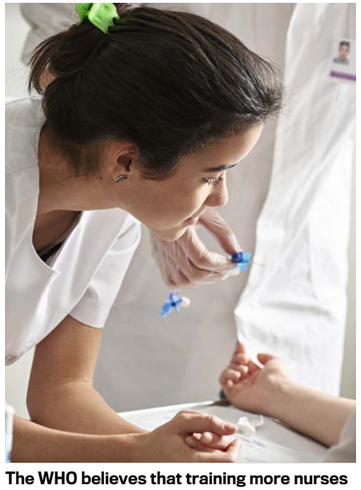
According to the report, there are just under 28 million active nursing professionals worldwide. The number rose by 4.7 million between 2014 and 2018, but there is still a global shortfall of 5.9 million nurses, with the most acute shortages to be found in the poorer countries of Africa, South East Asia, the Middle East and South America.

The ICN Chief Executive Officer Howard Catton noted that infection rates, medication errors and mortality rates are "higher when there are too few nurses". Mary Watkins, who co-chaired the report, expressed concern that, because the wealthier countries are not training sufficient professionals, they are relying on immigration, thereby worsening shortages in the departure countries.

The WHO believes that training more nurses and midwives is undoubtedly a cost-effective investment. The report by the High-Level Commission on Health Employment and Economic Growth concluded that "investments in education and job creation in the health and social sectors result in a triple return of improved health outcomes, global health security, and inclusive economic growth". "Nurses and midwives are the backbone of every health system: in 2020 we're calling on all countries to invest in nurses and midwives as part of their commitment to health for all," said Tedros Adhanom Ghebreyesus, WHO Director-General

Globally, 70% of medical staff and social workers are women, as against 41% in all job sectors combined. The WHO is also calling on the world's governments to improve nurses' working conditions. The WHO further believes that it will not be possible to achieve the UN's Agenda 2030 sustainable development goals without nurses and midwives – whether they are the goals directly related to health or those aimed at combating poverty, achieving sustainable economic development, access to sanitation and gender equality for women and girls.

The shortage of nurses is also a topical issue in Switzerland, where population ageing is substantially increasing healthcare needs. Many nurses and midwives leave the profession early. To counter this trend, working conditions, which are not sufficiently attractive in Switzerland at the moment, must be improved.



PHOTOS: REGIS GOLAY, DR

The WHO believes that training more nurses is undoubtedly a cost-effective investment.

Technis anticipates elderly people's falls

Technis, a company founded five years ago in Lausanne by engineers from the EPFL, was quick to turn to SILAB to test its technology. Today it is still working with this laboratory at the La Source Institute and School of Nursing to test its smart flooring solutions and familiarise nursing staff with the new technology. "We are currently rolling out our system of smart room sensors to address the needs of informal caregivers and nursing staff," says Florian Le Formal, in charge of the Technis Care product in this company with a staff of 20.

Technis Care can detect slight changes in elderly people's habits, such as the distance between steps, the speed at which they walk or the number of nocturnal awakenings. "Our sensors return all sorts of information and anticipate falls. If the distance between steps becomes shorter, it can indicate a certain functional decline that could lead to an accident," explains Florian Le Formal. "A number of nursing homes in Switzerland, France and Greece are testing the technology. At a later stage, we hope to cater for apartments equipped with medical technology."

In practice, the Technis pressure sensors are placed underneath the floor covering. When a person moves around, there is a disturbance in the electric signal. This information is combined with artificial intelligence and processed by the start-up's algorithms. If the system detects that the person is declining or wandering, it sends an alert to the care staff. Through its collaboration with the SILAB, the start-up hopes to be able to detect wandering in an apartment, which often reveals neurodegenerative disease several years before it becomes apparent.

The start-up, founded by Wiktor Bourée, has two product lines: the smart flooring solutions designed for healthcare applications and the smart mats that count visitor footfall entering a facility in order to record attendance figures and track people flow. The company's clients include universities, the Fondation Beyeler's art museum in Basle, Palexpo, CERN and amusement parks.

The Lausanne-based company plans to double its current 20-strong workforce by 2021. The start-up has an office in Paris and intends to expand into German-speaking Switzerland, Germany, Northern Italy, Spain and Great Britain.

A single drop of **blood** for a host of information

Many start-ups in western Switzerland offer rapid diagnosis tests capable of detecting a large number of pathologies in a matter of minutes. The benefits translate to time and money savings, along with high-quality results. **BY GHISLAINE BLOCH**

A single drop of blood can save lives.

PHOTO: JONATHAN KNOWLES/GETTY IMAGES

In a matter of minutes, a drop of blood can reveal decisive information and save lives. In recent years, Swiss start-ups have crafted their know-how in rapid diagnosis tests in a wide variety of areas, from detecting an allergy to tracking down the origin of a stroke or a nosocomial infection.

A single drop of blood is all it takes to detect the risk of sepsis – a life-threatening blood infection – with a result obtained in just five minutes. Nicolas Durand, the director and cofounder of the Vaud-based SME Abionic, would like to make his test a routine examination in hospitals. "It will become standard practice, just like taking someone's temperature," he hopes. Today this test is not systematically performed and the results are known only several hours later. And yet every minute counts. "Every four seconds, someone dies of this. But if it is detected in time, it can be treated with an antibiotic," points out Nicolas Durand.

At the height of the Covid-19 crisis, the Lausanne-based SME supplied ultra-fast diagnosis devices, free of charge, to the Geneva University Hospitals' intensive care unit in order to more rapidly detect sepsis, which is one of the possible complications in Covid-19 patients who develop a bacterial pneumonia.

The machine developed by Abionic obtained CE marking last March, so can now be marketed throughout the European Union. "Our order book is filling up. We are working with a number of countries, including France, Italy, Spain and Great Britain," says Nicolas Durand, who plans to sell hundreds of machines and hundreds of thousands of tests in 2021. The tests, known as "capsules", are single-use consumables made by a production line in Epalinges in the canton of Vaud.

The SME, which was founded in 2010 and whose innovation is based on microfluidic sensors, is now looking for backers, and in particular financial backers, so that it can rapidly roll out its technology in Switzerland and further afield. "The diagnostics sector does not attract investors so much as companies operating in the biotechnology sector, since the potential output is not as substantial," says the Lausanne-based entrepreneur. "We want to make money and be able to stand on our own two feet."

Abionic aims to roll out its sepsis-related tests and, at the same time, continue with an international multicentre study to demonstrate the technical benefits of its screening test. In general, the company's preferred marketing strategy is big pharma licencing.

GaDia has its sights set on a pathogenic yeast

A short distance away, in the canton of Valais, a couple of start-ups have developed expertise that enabled them to quickly bring out rapid serology tests for Covid-19, also using a drop of blood.

They are Augurix and GaDia, working in partnership with a Chinese manufacturer. They channelled their expertise into these tests, which are carried out with a single drop of blood taken from the subject's fingertip. The drop of blood is placed in a receptacle the size of a pregnancy test. After 10 minutes, it indicates whether or not the blood contains specific antibodies that develop during a SARS-CoV-2 (Covid-19) infection.

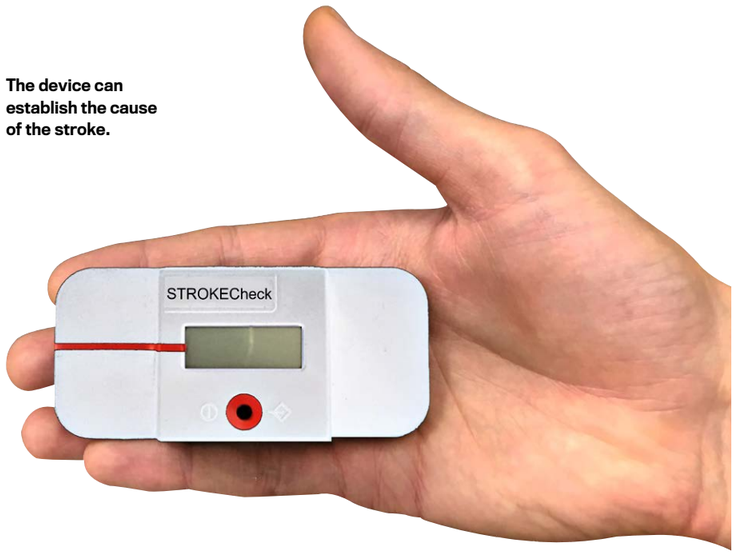
A positive test result indicates that the patient has been infected by the coronavirus and that he or she has developed antibodies specific to the virus. Over and above the rapidity of the results, the benefits of a system such as this also lie in its modest cost by comparison with standard serological analyses. "According to studies of over 1,000 cases, the Augurix test for Covid-19 has a sensitivity of 98.5% for a specificity of 96%", writes the Valais-based SME Augurix, which started up its business operations by marketing a rapid test for detecting gluten intolerance. A second study is in progress in three hospitals in Switzerland.

To develop such a system, Augurix leveraged its screening expertise in the fields of gastro-enterology and infectiology, and to detect sepsis. Before the current coronavirus epidemic, Augurix was already taking an interest in the SARS-COV-1 coronavirus. This is also how the company first met the Chinese partner that is producing the tests.

Apart from the coronavirus, GaDia is still working on a rapid test for detecting nosocomial infections contracted during a stay in hospital. These infections are very often linked to invasive surgery and concern nearly one out of every ten patients who goes into hospital. In Switzerland, roughly 70,000 patients are affected.

“This test can be used to treat over 50% of patients with an ischaemic stroke”

JEAN-CHARLES SANCHEZ, FROM ABCDX



The device can establish the cause of the stroke.

These infections can have a bacterial, viral or fungal. “The latter account for a third of all nosocomial infections,” says Percevent Ducrest, director and co-founder of GaDia, a start-up based in Monthey. The fungi involved can be from internal or external sources: on the skin or the intestines, or on catheters, for example.

When a patient needs to undergo a major antibiotic treatment, there is a risk that these fungi will multiply and lead to an infection, which may itself turn into septicaemia. GaDia is focusing its efforts on a pathogenic yeast called Candida, which is often present in intensive care units.

When this happens, the causes of the infection must be rapidly identified so that the treatment can be adapted. “At the moment, it takes nearly three days to get the test results back. But every day lost before treatment begins multiplies the mortality rate by four, very often pushing it above 30%,” regrets Percevent Ducrest. Septicaemia is the number one cause of death in the world.In Switzerland, there are 2,000 deaths per year as a result of a nosocomial infection.

To speed up the process, GaDia has developed a rapid test that yields a result in 15 minutes, using a drop of blood. The test, with a visual display that can be read without any additional device, could easily be mistaken for a pregnancy test. It detects the immune response of the patient, who develops antibodies against specific markers.

Preclinical trials have revealed a sensitivity of nearly 90%. “We are working on increasing the test’s sensitivity and specificity,” explains microbiologist Percevent Ducrest, who did a bachelor’s degree at HES Sion, before doing a master’s in food microbiology on bacterial and fungal toxins at HES Bern. The start-up hopes to obtain clinical validation in hospitals by 2021 so that it can move on to certification.

Aiming for a market valued at 3 billion francs per year, it hopes to generate revenue of 2–3 million francs in 2022 by selling 100,000 tests. “We are going to concentrate on 80 to 90 hospitals that have intensive care units in Switzerland, Germany, Austria and Great Britain. The tests will initially be produced at the BioArk in Monthey.”

GaDia has other projects on the drawing board, too. The start-up would like to bring out a rapid test in infectiology, capable of detecting antibiotic resistance. Another avenue it would like to explore is screening for food intolerances.

Strokes, the second most frequent cause of death among men

Another test performed on a drop of blood is the one developed by the Geneva-based start-up ABCDx. In Switzerland, someone has a stroke every 30 minutes and around 20% of the victims die because they don’t receive treatment quickly enough. Approximately 25% of stroke victims will recover without any after-effects, while the remainder will have to cope with more or less major disabilities. The World Health Organization rates strokes as the second most frequent cause of death among men and the leading cause of death for women.

Biochemist Jean-Charles Sanchez, who is a professor at the University of Geneva and co-founder of the start-up ABCDx, would like to radically change the way this pathology is handled with the help of his rapid diagnosis kit. “It can save lives,” he says. “The purpose of this device is to help the ambulance officer or the accident and emergency doctor establish the cause of the stroke as quickly as possible and decide how to treat it.” The tool looks like a pregnancy test: just prick the fingertip to collect a drop of blood and in 10 minutes, the device can establish the cause of the stroke, says Jean-Charles Sanchez.

It is essential to ascertain which of the two main stroke mechanisms is involved as quickly as possible in order to initiate the right treatment. It can be either an ischaemic stroke, which occurs when a blood clot blocks a blood vessel in the brain, or a haemorrhagic stroke caused by a ruptured artery in the brain.

Only ischaemic strokes, which represent nearly 80% of cases, can be treated by thrombolysis or thrombectomy. These treatments consist in dissolving the blood clot with medicines or removing it from the blood vessel with a catheter. If this is done quickly, many of the disabilities suffered by stroke victims can be avoided.

The test developed by ABCDx, a start-up founded in 2014, detects three proteins. “This test can be used to treat over 50% of patients with an ischaemic stroke, with none of the risks entailed in treating haemorrhagic cases,” says Jean-Charles Sanchez. Today, only 15% to 20% of patients are treated. For the others, the diagnosis is made too later,” he says regretfully.

“We can perform up to 64 different analyses”

LUC GERVAIS, FROM 1DROP

PHOTOS: RIGHETTI/LUNDI13, DR

“Our book is filling up. We are working with a number of countries”

NICOLAS DURAND, FROM ABIONIC

Five minutes to detect the risk of sepsis.

Jean-Charles Sanchez has worked with Professor Denis Hochstrasser, who is Vice-Rector of the University of Geneva. “Thanks to our work in proteomics, we have patented a whole series of biomarkers linked to different brain diseases.” The University of Geneva has granted licences to ABCDx, which has obtained CE marking authorising it to market an initial diagnosis test for brain damage.

In the event of a fall, there may be a risk of cerebral haemorrhage. To check this, patients need to have a scan done to detect any possible brain damage. “But there is an average six-and-a-half hour wait,” says Jean-Charges Sanchez.

With a drop of blood, the test can detect the severity or absence of brain injury after an impact, just as it does after a stroke. “The test searches for traces of two proteins, H-FABP and GFAP. With these two biomarkers, we can send over 50% of patients home without needing a scan,” says Jean-Charles Sanchez, who founded ABCDx with Joan Montaner from the Val d’Hebron Research Institute (VHIR) in Barcelona. He plans to distribute the test to hospitals and doctors, along with pharmacists, sports clubs and health and welfare institutions.

The drop of blood is inserted in the microfluidic chip.

Results obtained in few minutes

We cannot conclude this article without mentioning 1DROP, an SME based in Neuchâtel, Switzerland. The company has developed a system that can perform tests at the patient’s bedside using a drop of blood, whereas such tests are usually performed in a laboratory by taking a blood sample from a vein. Now there is no need to take a large blood sample from the patient’s arm, take the sample to the laboratory, employ staff to analyse the sample, and wait for the results. The results are obtained in a matter of minutes for a tenth of the price.

The drop of blood is inserted in the microfluidic chip, which is in turn placed in a fluorescent reader. The data is shared with a smartphone app or a computer. “We can perform up to 64 different analyses using just one drop of sample. The results are obtained in a matter of minutes,” says Luc Gervais, the founder of the SME. Most of these analyses focus on cardiovascular diseases such as heart failure, thrombosis, embolism or myocardial infarction. The microfluidic chip searches for the characteristic biomarkers of these cardiovascular diseases. It can also adjust the biochemical reagents to detect infectious diseases such as Covid-19 in a few minutes. The benefits can be seen in time savings, lower prices and high-quality results.

1DROP has forged partnerships with pharmaceutical companies such as Johnson&Johnson to develop home tests for certain autoimmune diseases. The system is currently undergoing thorough examination in validation studies conducted in hospitals, clinical laboratories and pharmaceutical companies. The company is working with the Massachusetts General Hospital (MGH), the University of Harvard, NASA (National Aeronautics and Space Administration) and the École polytechnique fédérale de Lausanne (EPFL).

1DROP, which can call on the laboratories at the EPFL and the Center for Electronics and Microtechnology (CSEM) in Microcity to conduct its analyses, has already made tens of thousands of chips. It hopes to obtain CE marking in 2021 so that it can begin marketing its tests all over Europe. “There are 12 people working at our production and R&D facility. We are currently building our capacities and recruiting several more staff members,” says Luc Gervais.

Biotech companies are having trouble recruiting

In the production field, job offers outnumber job seekers. Industry stakeholders believe the answer lies in boosting vocational training programmes. **BY JEAN-PHILIPPE BUCHS**

Biotechnology is booming in Western Switzerland! In Visp, Lonza is investing one billion francs in building a number of new facilities, the first of which is to be commissioned this autumn. In Corsier-sur-Vevey, the Merck group is spending 250 million francs on a development centre that will be operational by the end of 2022. At Yverdon-les-Bains, the construction of Incyte's new production facility is nearing completion, while Celgene inaugurated a facility in Couvet, in the canton of Neuchâtel, in 2018. UCB Farchim has been operating a new cutting-edge plant in Bulle since 2014. Over the past ten years, a host of companies, of all sizes, have created thousands of new jobs in this high value-added industry. However, they sometimes struggle to recruit employees with the necessary skill sets for their specific needs.

"The current situation is not sustainable if we want to develop Western Switzerland into biopharma cluster. Industrial production takes qualified technicians. There is a vocational training program for apprentices. The only schooling for such program is delivered by EPIC School in Monthey. This is far from Neuchâtel region. We aim to promote and develop this specialization, but we need a second schooling center in Neuchâtel region to make the lives of our apprentices – and ours – easier. Our pilot cohort of three apprentices who started in 2019 is doing well. Two more apprentices started in August 2020, though we offered four positions. Our ambition was to recruit four apprentices per year. We have partially reached the number, five out of eight. The distance between Neuchâtel and Monthey represents a crucial obstacle, for them and for us, notes Catherine Kuhn, Head of Human Resources at Takeda Neuchâtel." This Japanese group manufactures the active principles used in treatments for haemophilia. The Neuchâtel site has a staff of around 630, most of them in production, quality and engineering departments.

UCB Farchim has been operating a new cutting-edge plant in Bulle since 2014.

CAREER

Competition to attract new talents

"There is stiff competition among the main industry players to attract new talents. People with experience in biotechnology or in certain very specific areas of biotech can be more difficult to recruit," notes Stéphane Crausaz, head of human resources at UCB Farchim, where the workforce grew from 381 at end-2015 to 537 at end-2019. The German company Merck, on the other hand, targets people specialised in science and new technology: experts in data science, quality, engineering, automation or robotics, for example.

In Visp, Lonza has taken on around 200 new employees this year under its Ibex project, which aims to produce new drugs for other companies. For the next stages of its development in the Haut-Valais region, it will need to recruit several hundred additional employees. "We're looking for applicants from a variety of career tracks: highly-qualified scientists and engineers, production staff, workers in the support functions and apprentices," says a spokesperson for the Basle-based group. To secure the highly-specialised staff it will need in the near future, Lonza has signed a ten-year partnership with the University of Applied Sciences and Arts of Western Switzerland (HES-SO Valais-Wallis). As the two partners point out, "The need for qualified staff, process digitalisation and automation, and the acquisition of students prompted us to share knowledge and boost synergies".

PHOTO: UCB, OLIVIER ANBERGEN

Recruiting in the agri-food sector

While there seem to be sufficient bachelor's and master's graduates to meet companies' requirements, the same cannot be said for production technicians. "This is the main field in which there are more job offers than job seekers. Because of the shortage of apprentices, we are having to recruit in the agri-food sector, where the hygiene requirements are very similar to those in our own industry," points out Stéphane Crausaz. "Biotech processes are more complex than traditional chemical pharma manufacturing, Therefore, other skill sets are required", says Takeda Neuchâtel spokeperson Salvatore Parata.

For several decades, the EPIC in Monthey has been delivering vocational training in chemistry and pharmacy, reflecting the historical presence of industry stakeholders in the Canton of Valais (currently BASF, Cimo Huntsman and Syngenta). This year, 18 apprentices obtained a vocational training certificate in chemistry and pharmacy production. "Few companies are aware of this course, unlike the course for laboratory assistants. Since the beginning of the academic year last August, the course has been adapted to more closely meet their needs and a new teacher, specialised in this sector, has just begun work here," says the school's principal, Fabrice Donnet-Monay.

Creating a new training programme

"For this sector to grow and achieve its ambitions in Western Switzerland, it is absolutely essential to develop training in biotech manufacturing," says Salvatore Parata. He believes the key institutional, vocational training and industry stakeholders in Western Switzerland should join forces to develop a fully-fledged training programme in this area. Stéphane Crausaz agrees: "We need to set up a training programme that meets companies' requirements, and move beyond local canton boundaries and interests to develop public-private collaboration at a broader level."

> "The current situation is not sustainable if we want to develop Western Switzerland into a biopharma cluster"

According to Merck's spokesperson Bénédicte Bogh, "setting up a new training specialisation could be a way of retaining future talents in the region and attracting future investments". She notes, however, that "there is a major source of labour in the traditional pharmaceutical industry, where many workers are keen to move into biopharma. We think it is just as important to enable these professions to bridge the gap between these two industries by providing them with openings for continuing education or apprenticeships. We believe science and technology are strongly linked nowadays, which is why it is essential to upgrade the existing training courses to incorporate a larger proportion of new technologies and prepare talents for tomorrow's work."

A production technologists for the Neuchâtel-based biotech Takeda. A qualification currently provided only by the EPIC establishment in Monthey.

PHOTO: TAKEDA PHARMACEUTICAL COMPANY LIMITED/NEUCHÂTEL

CAREER

New, highly sought-after skills

Sweeping changes in technology and the regulatory context are reshaping the life sciences professions. This rapidly evolving industry is seeing the fight for rare skills gather pace at every level.

BY JOAN PLANCADE

Switzerland is faring better than most in the fierce competition for talent in the life sciences. In Western Switzerland, the ecosystem boasts 95 bioinformaticians per million inhabitants: one of the highest rates in the world for this highly sought-after qualification. And yet, Claude Joris, Secretary General of the BioAlps Association, is concerned about the shortage of resources observed at every level: "A disruptive technology like big data has a swift and far-reaching impact on the industry and therefore on the professions involved. The academic and industrial communities are working more closely together to address the need, but the demand is such that these new profiles are often hard to find."

Data processing: the crux of the matter

The fast-changing biotech and medtech professions are grappling with exponential growth in the volumes of data collected, as explains Jérome Wojcik, Chairman of the Board of Directors of the Swiss Institute of Bioinformatics in Lausanne: "Twenty years ago, a biologist collected data and compiled it in an Excel spreadsheet. Today, we're talking about gigabits of data to be processed, so computer skills are absolutely essential. Data scientists are highly sought after and the life sciences are in competition with other sectors for these profiles."

The search for cross-cutting skills is pushed to the extreme in cutting-edge biotech, as the example of the start-up Stalicla shows. This Geneva-based company uses artificial intelligence to identify subgroups of patients so that it can more accurately target treatments for neuro-developmental pathologies such as autism. In addition to data scientists, CEO Lynn Durham recruits computational biologists, an extremely rare combination of skills: "We're not talking about a biologist with a smattering of IT skills. Ideally, we're looking for a double PhD. On top of the line-of-business knowledge, to work with artificial intelligence, you need to know how to code." Stalicla also employs computational chemists: research chemists working exclusively on a computer and using models to study molecular reactions.

Stalicla has established its R&D facility in Barcelona, a global skills cluster gathered around the Barcelona Supercomputing Center. Other locations are still possible, though, according to Lynn Durham: "The keyword is agility when you are vying for people with such highly-specialised skills. We are capable of setting up a unit in the United States just to hire someone with the skills we need: the company moves to where the resources are. You could say it is a quasi-organic change."

Alongside advanced research, the production processes are undergoing far-reaching changes, too. BioAlps is working with the Neuchâtel-based biotech Takeda to identify the training requirements for production technologists. This qualification specifically designed around industry requirements is currently provided only by the EPIC establishment in Monthey.

Raphaël Laederach, Head of Site Engineering at Takeda Neuchâtel, has seen big data bring about a sea change in maintenance jobs: "Thanks to so-called smart sensors, the day-to-day work is becoming far more focused on anticipating through preventive maintenance than on corrective action. New technologies make it possible to anticipate breakdowns before they occur, and new technologies such as augmented reality and algorithms are making it easier to fix them."

New regulations, new needs

The processing of large quantities of sometimes sensitive data demands a deontology and a level of protection that, since 2018, have been laid down in Europe by the General Data Protection Regulation (GDPR). The GDPR is applicable to Swiss companies' non-Swiss customers and suppliers. Jérôme Wojcik, from the Swiss Institute of Bioinformatics, notes the progress made in the profession of data protection officer since the new regulation was brought in: "It's quite new. Up until now, what we have always tried to protect was intellectual property, not personal data."

Another major regulatory change that is weighing on the Medtech sector is the new CE marking. Brought in three years ago following the breast implants scandal, it requires some minor medical devices to be reclassified and imposes heavier requirements on clinical trials.

To meet the new requirements, companies have been fighting for the services of compliance officers, though there are too few of them to cater for the market's requirements. It is a puzzling situation for Philippe Etter, Senior Partner at Medidee, whose consultants work in this particular segment: "Brussels is taking a heavy-handed approach, at the risk of jeopardising innovation. Of course, our sector reaped the benefits of the situation and recorded very strong growth, but it makes little sense to hire a consultant when a company needs a full-time equivalent."

> "A disruptive technology like big data has a swift and far-reaching impact on the industry and therefore on the professions involved"

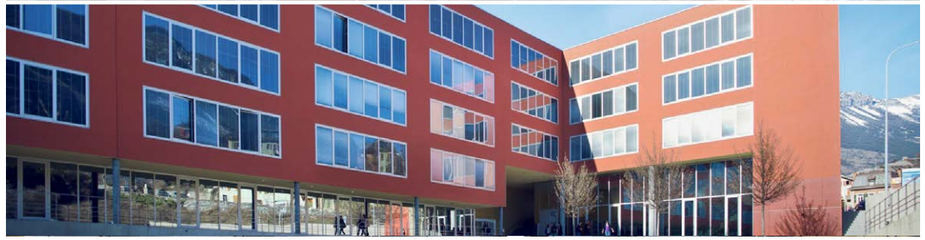
In addition to its in-house training programmes, Medidee has worked with the HEIG engineering and management school in Yverdon to set up a specialised Certificate of Advanced Studies in Clinical Affairs, Regulatory and Quality for Medical Devices and In-Vitro Diagnostic (CARAQA) to address the shortage. The job description includes strategic planning, setting up a quality system for clinical trials, and managing the product certification process. A highly varied activity, but one that is sometimes misunderstood, says Philippe Etter: "People often imagine a notary's clerk, when in fact the job involves constant contact and calls for excellent communication and interpersonal skills. We negotiate with engineers and organisations on a daily basis. Some profiles have a PhD and some initial experience in industry, but we can also take economists or doctors and train them for the job."

Reorganising skills to overcome the shortage

Some branches opt for a far-reaching redistribution of skills to meet market expectations. The medical profession in one example: it is gradually introducing the profession of specialised nurse practitioner (SNP). The SNP position is breaking down the traditional silos and positioning itself as an intermediate role, somewhere between doctor and nurse. An SNP is capable of making a diagnosis, prescribing medicines and overseeing a treatment. SNP training is through a specialised course at Master's level. The only such course in Western Switzerland is run at the University of Lausanne and the first intake will graduate in September However, operating on a patient or certifying a death remain the prerogative of a doctor. Gilles Lugrin, director of the Institute of Higher Education and Research in Healthcare (IFS) and head of the programme, says there are many benefits: "Health costs are skyrocketing and, at the same time, we are seeing a growing number of medical deserts where, for example, doctors who should have retired years ago are still working for want of a replacement. In the Vaud Canton or the Joux valley, for example, the SNP can help offset the shortage of doctors by monitoring certain chronic illnesses." The system has been operating in the United States since the 1960s and in Quebec since the 1980s, and has demonstrated its viability, says the specialist: "We noted some reticence to begin with, but the benefits were very soon apparent: there was more time to devote to the patient, to understand his or her environment, when the doctor was often in a hurry and pressed for time. SNPs work in partnership with a doctor and can refer cases back to the doctor if they go beyond their skills."

The legislation remains to be amended. The Confederation has left it to the cantons to legislate on the matter. An article of law was adopted by vote in November 2018 in the canton of Vaud; the implementing regulation has been drafted and a proposal could be put to the Grand Council this autumn. Geneva and the canton of Valais, which are also involved in the reform, could follow suit.

Nursing studies last three years.



A number of partnerships have been forged with industry.

EPFL runs a Bachelor's and Master's programme in life sciences engineering.

An abundance of life sciences courses

There has been a steep increase in student enrolments in recent years, especially in life sciences. The courses are increasingly aligned on industry requirements. BY GHISLAINE BLOCH

There is a great number and variety of life sciences courses in Western Switzerland. They are taught in higher-education establishments.

It is difficult to present an exhaustive list of the training options. Life sciences involve branches that range from biology, chemistry and biochemistry to the engineering sciences, medicine and biotechnology. These courses deal with a wide range of subjects, from the study of models (yeast, the fruit fly, nematodes, etc.) to the development of new diagnostic methods and including the practical application of knowledge, its use at technical level and its positioning on the market.

A new dedicated life sciences building

The Swiss Federal Institute of Technology Lausanne (EPFL) runs a Bachelor's and Master's programme in life sciences engineering, along with four doctoral programmes in biotechnologies and bioengineering, computational and quantitative biology, molecular approaches to the life sciences and neuroscience. The universities also run courses in life sciences. The current trend lies at the intersection of disciplines and in drawing different academic fields together. The future life sciences buildings is to be erected in the University of Lausanne (UNIL-Sorge) university district, just a short distance from the EPFL. The glass walls of the building, designed to cater for both of the higher-education establishments. The new facilities also address the need to train growing numbers of students in life sciences, where enrolments have increased steeply in recent years.

In the HES establishments, the focus is more on production techniques and processes, and on the link with practice. The University of Applied Sciences and Arts of Western Switzerland (HES-SO) and the engineering and architecture universities, including courses in chemistry and life sciences, are tasked with training engineers to bachelor's level in three years and equipping them to enter the world of work. Nursing studies also last 3 years and prepare for the HES-SO Bachelor of Science in Nursing. In Switzerland, the number of students beginning their studies in the field of chemistry and life sciences rose from 796 in 2013 to 871 in 2019: a 9.4% increase.

Within the HES-SO, a number of partnerships have been forged with industry, such as the partnership concluded in January 2020 between Lonza and the HES-SO Valais-Wallis. This bachelor's course prepares students for three vocational paths: food technology, biotechnology and analytical chemistry.

A centre in Fribourg since 2016

Some training centres run programmes specifically focused on industry. One example is the bioFactory Competence Center SA (BCC) in Fribourg, which has been operating since January 2016. The courses it runs include both theoretical and practical programmes, and cover every aspect of a biopharmaceutical production process. The training programmes are suited to every level of knowledge. The BCC works with the regional placement office in Fribourg and other cantons to set up training programmes for the unemployed and build bridges between job seekers and the biotech industry.

PHOTOS: BIERER, DR, HERZOG

Health Valley will come through the Covid-19 crisis even stronger

HEALTH VALLEY

Despite the current pandemic, the pipeline of new business projects is continuing to expand. Investments in Western Switzerland's biotech cluster are set to continue at a brisk pace.

BY MARY VAKARIDIS

"Every two years or so, the Health Valley biotech cluster in Western Switzerland welcomes another major investment. The arrival of Incyte and expansion projects at CSL Behring, Merck and GE Healthcare have formed a steady stream. It's our job to target the highest-performing companies and persuade them to set up business here." Thomas Bohn, at the head of the Greater Geneva Bern area (GGBa), is unruffled by the aftermath of the Coronavirus crisis. "At the height of the pandemic, a major project that could take shape within the next two years was added to our pipeline. This piece of news shows that Health Valley's success rests on solid fundamentals." A selection of these all-important fundamentals follows. According to the Global Innovation Index, Switzerland holds a solid position as the world's leading country for medical innovation. In the 2000s, Western Switzerland emerged as a key skills cluster in the health field: a specialisation that soon earned it the nickname of "Health Valley". Biotechnology, artificial intelligence and medtech converge in a multi-disciplinary approach. Today Health Valley represents in 2019 37,500 jobs distributed among around a thousand companies. This Swiss cluster ranks among the top three in European research behind the British leaders Oxford and Cambridge.

The local skills base is underpinned by the long-established presence of major global pharma players such as Roche, Novartis and Lonza, all three of which are based in Basle. More recently, the concentration of skills in the "Lemanic Arc" has prompted many foreign companies to open production plants there: the Swedish company Ferring's establishment in Saint-Prex (Vaud) in 2006 is just one example. Producing the large molecules required for biotech applications has proved to be extremely complex. On the strength of a highly-trained labour pool and world-leading schools and universities, Health Valley is in a position to supply staff the meet up-to-the-minute demands.

New production sites

A look back over the latest milestones of a success story. In 2016, CSL Behring decided to invest one billion francs in building a new factory in Longeau, in Bernese Jura (the Western Switzerland area of the canton of Bern) and create 300 jobs there. The booming company now needs more space and, at the beginning of this year, took over a building in Bern that it intends to convert to suit its requirements at a cost of 10 million francs. At global level, the biotech company is actively involved in research into a Covid-19 vaccine.

A year later, in 2017, one of the new US-based biotechnology leaders picked the Y-Parc site in Yverdon as the site of a new production facility for anti-cancer treatments. Delaware-based Incyte has announced a project worth 100 million dollars and bringing 130 jobs. Following in the wake of this industry heavyweight, the Indian company ACG also chose the Y-Parc site last autumn. The Mumbai-based firm intends to transfer its Zagreb facility in Croatia – the country that houses its largest plant in Europe – to the northern Vaud region. ACG manufactures hard-shell and soft-shell capsules and aluminium packaging for the pharmaceutical industry.

GE Healthcare plans to build a new production facility at Signy Park.

In early 2020, Merck, the German life sciences heavyweight, launched construction of a new biotech centre in Corsier-sur-Vevey (Vaud) at a cost of 270 million francs. A variety of operations will be brought together in the new headquarters, which should be fully operational in late 2022. In 2019, Merck announced that it would invest 150 million dollars in the plant in Aubonne (Vaud). The project includes the construction of a new building dedicated to biotech drugs, to supply a market of some 150 countries. The products manufactured there will include a fertility treatment, anti-cancer treatments and drugs that are currently still in the clinical development phase. The Merck Group has made Health Valley a strategic platform for its operations and will have invested over one billion francs there over the past ten years. In Switzerland, the company employs 2,300 people at around ten sites.

Last January, GE Healthcare Life Sciences, a division of the US-based GE Healthcare multinational, announced plans to build a new production facility for cellular treatments at Signy Park, near Geneva Airport. A research and development team will also be based there. The centre, which is planned for 200 employees, should be fully operational in 2022. It will add to the company's global network of facilities, situated mainly in the United Kingdom, Sweden and China.

"The pandemic has also highlighted the need to relocate the production of medicines and strategic health facilities back to Switzerland" THOMAS BOHN, FROM GGBA

Relocating the production of medicines in Switzerland

The biotech company Ichnos Sciences, based at the Epalinges biotech hub in Lausanne's suburban ring, is breaking away from its parent company, the Indian generic drug manufacturer, Glenmark. In a move to focus on innovation in oncology, autoimmune diseases and pain control, this prominent start-up hopes shortly to be listed on the Nasdaq Technology Sector Index.

The Covid-19 pandemic has, of course, put a damper on all of Health Valley's operations. Thomas Bohn is optimistic, though: "Health Valley can be expected to benefit from the post-coronavirus period insofar as businesses involved in digital healthcare, biotech or e-learning are going to gain momentum as a means of rolling out efforts to fight the disease. The pandemic has also highlighted the need to relocate the production of medicines and strategic health facilities back to Switzerland. We will make sure the promoters of these projects are aware of all that our region has to offer."

PHOTOS: MERCK, GE HEALTHCARE

The bright future of organoids

What if companies could test their meds on human organ-like models that are developed in laboratories? Organoids are not currently widely used in industry (pharma, cosmetics, etc.) however researchers are progressing towards that end. CSEM plays an important role. **BY REBECCA GARCIA**

Since John B. Gurdon and Shinya Yamanaka won 2012's Nobel Prize in Medicine for their work on reprogramming mature cells, research on organoids never stopped progressing. "It's a very hot topic" says Gilles Weder, Team Leader Life Microtechnologies at the Swiss Center for Electronics and Microtechnology (CSEM). His team and many researchers around the world are working on organoids, which is a technology that can prove very useful. In theory, it is quite simple. One takes a sample from someone's stem cells and arrange for it to grow as a organlike structure so called mini-organs. The step further is to use it for testing meds or administering treatments. "It's midway between in vivo and in vitro culture" explains Gilles Weder. Organoid technology is promising but still need to be standardized. "The complexity of organoids is still limiting and usually restricted to organoids of one single type. However, diseases and medicines often interplay with multiple organs. In this respect technology is not yet mature enough, so that poses a disadvantage for research." adds Tewis Bouwmeester, Head DAx in Chemical Biology & Therapeutics, NIBR Site Head Switzerland. Organoids lack automation. "For pharmaceutical companies to afford, we need to make it scalable." says Gilles Weder. Madeline A. Lancaster1 and Juergen A. Knoblich reviewed the research on organoids in 2020. They wrote: "Overall, organoids have enormous potential to model development and disease, as a tool for drug testing, and as a therapeutic approach. Future efforts will no doubt bring them closer to reaching that potential." There are mainly three applications: drug testing, disease modelling and organe replacing. They are at different level of maturity. "The latest is not available on the market yet. It may take ten years to biomanufacture organs based on organoids as building blocks" explains Gilles Weder.

CSEM is guiding researches

Many startups and companies work on their solutions. CSEM leads the research and organize conferences and meeting for scientists to learn the latest developments."We play a neutral role to gather start-ups with emerging technologies, academia and large pharma." points out Gilles Weder. For him, Switzerland plays a huge role in developing the organoids roadmap, as well as the United States, Germany, United Kingdom, Austria and France. CSEM has different partners, such as SUN Bioscience or Kugelmeiers. They are working on a way to industrialize the processes of organoid production, manipulation, sorting, assembling and monitoringsince medicine needs exact replicates to test and validate its products.

Still, labs have to overcome several difficulties if pharmaceutical companies want to use this technology to take over. Novartis recognizes using it "since a few years", but it is not complete enough to be self-sufficient. "Developments related to vascularization, filtration of fluids or lymphangiogenesis can be expected in the near future." says Tewis Bouwmeester, Head DAx in Chemical Biology & Therapeutics, NIBR Site Head Switzerland. Many entities are working on or with it - including hospitals and academics. Organoids are however still tricky to use. They work in specific settings and don't stand for the complexity of the entire human body. They are also a bit pricey in its early stage. Pharma companies said that the cost of research technologies are always interesting. Time will certainly help with that, especially with such a potentiel use for organoids.

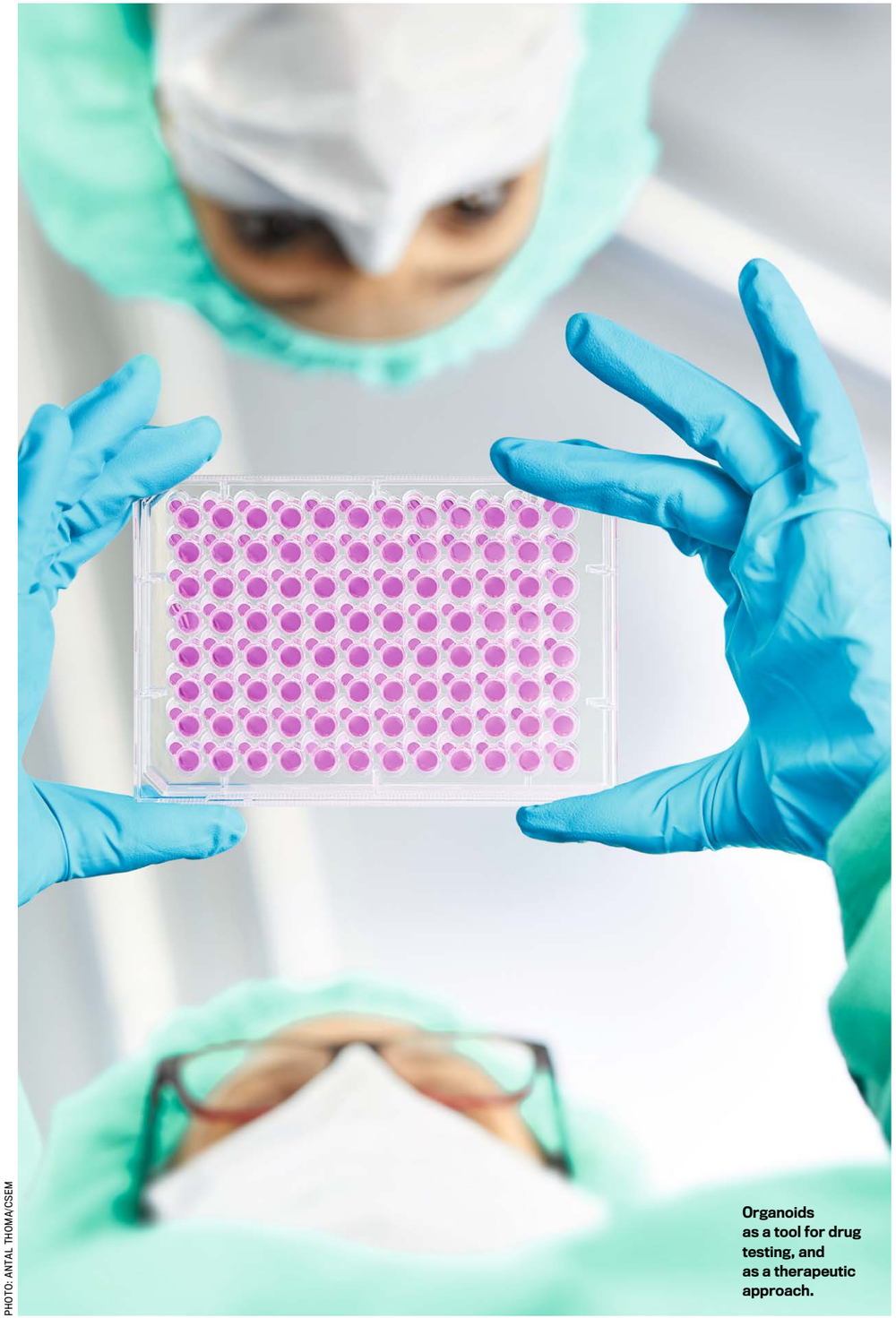
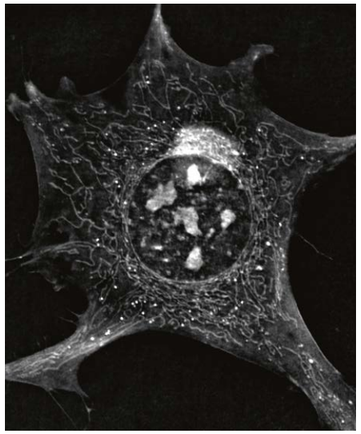


PHOTO: ANTAL THOMA/CSEM

Organoids as a tool for drug testing, and as a therapeutic approach.

> "We play a neutral role to gather start-ups with emerging technologies, academia and large pharma"

The CX-A microscope.



Mouse pre-adipocytes.

PHOTOS: NANOLIVE

A live cell imaging microscope

EPLF spin-off Nanolive has developed a one-of-a-kind device for watching cellular processes unfold over time. BY MARY VAKARIDIS

"Our microscope lets scientists conduct experiments in a range of conditions and obtain high-quality images generated using the refractive index, without adding fluorescent markers", explains Mathieu Frechin, head of quantitative biology at the start-up Nanolive. This way, researchers see cells that are disrupted as little as possible by the conditions in which they are observed. Nanolive won one of the Fondation Vigier's five 100,000 franc prizes in 2016, and was one of the top 10 innovations selected by the standard-setting magazine, The Scientist. With partners including the Harvard Medical School and Hôpitaux de Paris, the firm is now a recognised leader. Nanolive is an EPFL spin-off built around the 3D Cell Explorer microscope system, the firm's disruptive proprietary technology. The system makes its possible, for the first time ever, to study a living cell in real time and in 3D without damaging it. Last summer, the company also launched the world's first microscope for automated live-cell imaging. The start-up has already sold 200 devices around the world, representing all three of its products currently on the market.

The Nanolive platform was built to study macrocellular dynamics: it enables scientists to observe cell health, proliferation, movement and function. The system is also used to investigate micro-organism dynamics and interactions, such as mitochondrial networks. The platform uses a rotating, low-power laser to generate images of cells from every angle. The system generates holographic information that can then be compiled into 3D images, using dedicated software. Used in combination with other data yielded by fluorescent imaging, the 3D Cell Explorer-fluo system also enables scientists to track delicate, dynamic cellular processes over time. The signals reveal the subtle variations in structure and activity triggered by medicines or genetic mutations.

"Holography offers a unique means to measure cells in their native environment"

Revolutionary technology

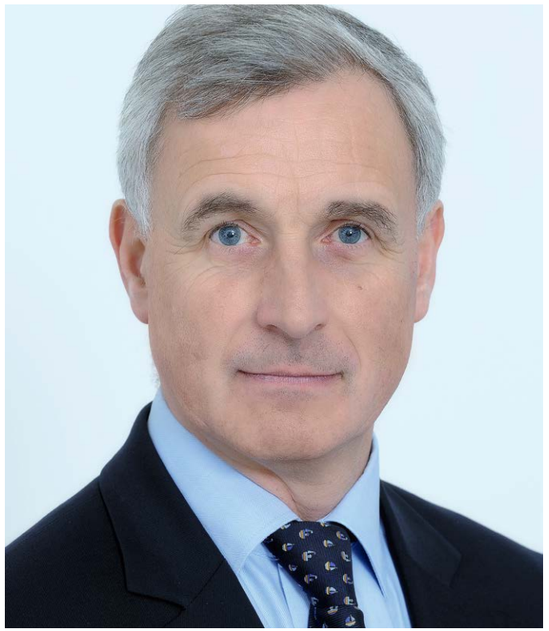
Nanolive was developed by Yann Cotte, Fatih Toy, Andreas Kern and Sébastien Equis at the EPFL Innovation Park in 2013 with initial funding of 2.7 million francs. The start-up, which now has 41 employees, does not release figures and remains discreet about its shareholders. "The combination of holography and rotational scanning makes Nanolive imaging a revolutionary technology," says the company. "Holography offers a unique means to measure cells in their native environment: label-free, non-invasive, manipulation-free, and interference-free."

The CX-A's key feature is its automated analysis and the ability to program multiple imaging regimens within the same plate, allowing users to run different applications in parallel. According to Nanolive, hundreds of images can be collected every hour and analysis can continue for days or weeks, while cells remain intact in a physiologically controlled environment. "Every new discovery starts with an unprecedented observation," says Sébastien Equis, co-founder of Nanolive. "We have created a unique tool to seamlessly follow cells from the macro level of cell populations, down to their individual organelle ecosystem."

Vaud-based company ADC Therapeutics becomes the latest unicorn

Since its IPO last May, the biotech start-up is valued at two billion dollars on the New York Stock Exchange.

BY MARY VAKARIDIS



Chris Martin, CEO of ADCT is also senior executive of the UK-based pharmaceutical giant AstraZeneca.

PHOTO: DR

The Vaud-based start-up ADC Therapeutics (ADCT) could not have made a more perilous debut on the New York Stock Exchange. On 15 May last, at the height of the coronavirus crisis, the biotech firm was the first Swiss company to attempt an IPO since the pandemic that began last March put a sudden stop to new listings. The move was further complicated by the fact that the firm, based at the Lausanne-Epalinges biotech hub, went directly across the Atlantic to the New York Stock Exchange (NYSE) without going through the Zurich Stock Exchange. The least we can say is that the operation was crowned with success. In mid-June, the company's market capitalisation was nearing 2.5 billion dollars, up by more than 50% over the issue price. This achievement has ushered ADCT into the very select circle of "unicorns": companies valued at over one billion dollars. The IPO has enabled the company to raise the 248 million dollars it needs to continue developing its anticancer treatments based on conjugated antibodies. The company plans to increase its current 120-strong workforce to some 200 employees by the end of the year.

ADCT works in advanced clinical stage oncology. The start-up develops antibody drug conjugates for patients suffering from haematological malignancies and solid tumours. The research operations are based in the United Kingdom. ADCT had already made an initial attempt to enter the stock exchange last September, before unfavourable market conditions prompted it to withdraw its application for listing. In the meantime, the company has released new data from the phase II clinical trials of its flagship products. The first drug is scheduled for commercial release on the US market in mid-2021, subject to FDA approval.

"The IPO has enabled the company to raise the 248 millions dollars"

Serial entrepreneur

ADCT is indissolubly linked with British scientist Chris Martin, who played a major role in the firm's launch in 2012 and has since sat on the board of directors, becoming CEO in 2015. Prior to the OPA, the executive team at his side collected a total of 558.6 million dollars. A serial entrepreneur, Chris Martin founded Spirogen in 2000 and sold it to AstraZeneca for 440 million dollars in 2013. He subsequently joined the circle of senior executives of the UK-based pharmaceutical giant, AstraZeneca.

For its listing on the New York Stock Exchange, ADCT was advised by the investment banks Morgan Stanley, BofA, Merrill Lynch and Cowen. ADCT has four drugs in the clinical phase, along with others in the preclinical development phase. The most advanced candidate in the development pipeline is Lonca, designed to treat a form of lymphoma known as diffuse large B-cell lymphoma. Subject to approval by the relevant authorities, it should be launched in 2021. The company has already started setting up a sales organisation in preparation for the commercial release of its first product. The main shareholders include the UK-based group AstraZeneca (6.7%), Swiss company HPWH TH (10.6%) and especially Auven Therapeutics GP. This investment company, in which ADCT's former CEO Michael Forer (2012-2015) is a partner, remains the company's main shareholder.

Lunaphore has developed a microfluidic for ultra-high performance biopsy analysis.

PHOTO: LUNAPHORE

HEALTH VALLEY

Lunaphore sets its sights on the US market

The Swiss Federal Institute of Technology Lausanne (EPFL) is developing a tissue diagnostics platform for cancer research and diagnosis. **BY MARY VAKARIDIS**

"We have achieved our sales targets. We are already on the market in several European countries, including Germany, France, Italy and Spain," reports Déborah Heintze, Lunaphore's co-founder and COO. Lunaphore, which was founded in 2014 by Ata Tuna Ciftlik, Déborah Heintze and Diego Dupouy, has developed a microfluid used for ultra-high performance biopsy analysis. Backed by a string of innovation awards, the start-up recently raised 25 million francs during a financing round last February. The funds will be used to support growth and conquer the US market. The EPFL spin-off, which entered the commercialisation phase last year, is now in a growth phase and looking to fill a half-dozen positions. The company, which has a current workforce of 35, is a majority holding of the investment fund Kohlberg Kravis Roberts & Co. KKR, a US-based company with global operations, manages multiple asset classes, including private equity, energy, real estate and credit. This heavyweight's portfolio is worth a total of some 620 billion dollars.

Another major shareholder, the Japanese giant PHC Holdings Corporation, plays a key role in Lunaphore's history, with a strategic acquisition dating back to spring 2019.

"We are already on the market in several European countries"

The Tokyo-based firm acquired the Epredia company from the US-based giant Thermo Fisher for 1.14 billion dollars. Active in the anatomical pathology field, including microscope slides, instruments and other consumables, Epredia develops solutions for precision cancer diagnostics. Lunaphore, on the other hand, works in cancer research. The Vaud-based start-up has won a name for itself in immunohistochemistry, devoted to cancer research, detection and diagnostics. Its system can run ultra-fast analyses and automate a whole series of complex tests.

Speed performance

The first product was launched on the market in February 2019. Called LabSat, it is designed for research laboratories. It is an automated system for distributing reagents to a slide. It performs immunohistochemical (IHC) tests on tissue samples in a matter of minutes. The system's ultra-fast performances are obtained thanks to a new microfluidic chip. This patented technology performs high-precision tissue staining and drastically reduces the reagent incubation times. Switzerland is the firm's leading market.

The challenge this year is the company's entry on the US market. "Our Japanese shareholder, the PHC Holdings Corporation, should ease our access to the US market through its subsidiary Epredia, which is already well established there. At a later stage, this partnership will also offer us growth prospects on the Asian market," says Déborah Heintze. Lunaphore is currently preparing a new product, designed from the LabSat model, which includes a built-in microscope. The prototype is scheduled for release in 2021.

GeNeuro is out to fight multiple sclerosis

The Geneva-based company, listed on the Euronext stock exchange since 2016, is trying to neutralise a pathogenic protein in patients' brain using a monoclonal antibody. **BY GHISLAINE BLOCH**

The Geneva-based company GeNeuro, in Plan-les-Ouates, is not widely publicised and yet its particular expertise is attracting growing interest. "We should promote ourselves more," admits Jesus Martin-Garcia, CEO of the company founded in 2006 and listed on the Euronext stock exchange since 2016.

For a number of years now, GeNeuro has been developing a new therapeutic approach that could prove revolutionary. It tries to block mechanisms suspected of being key drivers of neurodegeneration in multiple sclerosis, an autoimmune disease of the central nervous system that affects nearly 2.5 million people worldwide.

There are currently a number of anti-inflammatories on the market, marketed mainly by Biogen, Roche, Sanofi and Novartis. These treatments reduce the frequency of outbreaks, but do not prevent the disability from progressing over the long term. GeNeuro has taken a different approach. "We are trying to neutralise a pathogenic protein (pHERV-W-Env) in patients' brain. It is encoded in human DNA by viral genes," explains GeNeuro's CEO, Jesus Martin-Garcia. "These genes are normally repressed in the genome and do not express any proteins. However, they can be reactivated and then express this pathogenic envelope protein."

Inhibiting this protein by using a monoclonal antibody named temelimab should have an effect on the neurodegeneration. The company hopes this will halt the disease's progression, in particular by reactivating the natural process that repairs the myelin in the brain.

Jesus Martin-Garcia, CEO of GeNeuro, founded in 2006.

PHOTO: STEEVE IUNCKER-GOMEZ

"There are many diseases in which these pathogenic proteins encoded by viral genes seem to play a key role."

Results expected in 2021

After achieving promising results on over 200 patients, GeNeuro is finalising its phase IIb clinical studies. "We are going to start clinical trials of temelimab with the Academic Specialist Center at the Karolinska Institutet in Stockholm, Sweden. We expect to see some results in the second half of 2021," Jesus Martin-Garcia was pleased to report. This study concerns patients whose invalidity is progressing without any inflammatory outbreaks. It will provide information about patients' tolerance of temelimab and its efficacy at higher doses.

GeNeuro is headquartered in Geneva, Switzerland, and operates an R&D centre in Lyon, France. It has a staff of 20. It holds the rights to 17 patent families that protect its technology. The company raised 17.5 million euros in 2020, which will finance its operations through to mid-2022 and provide the necessary resources to complete the clinical trials of temelimab.

The funding will also allow GeNeuro to continue developing its antibody in amyotrophic lateral sclerosis, also known as Charcot disease. This disease causes muscular weakness and eventually paralysis. Patients' life expectancy remains very short and there is as yet no treatment available. "There are many diseases in which these pathogenic proteins encoded by viral genes seem to play a key role. Eight per cent of human DNA is made up of these remnants of retroviruses that infected our ancestors, and understanding these mechanisms will help us treat many pathologies that are undertreated today," adds Jesus Martin-Garcia. "We are in the process of opening up a new type of biology."

In 2017, no fewer than 800,000 people around the world received a replacement heart valve.

HEALTH VALLEY

A biomechanical valve has been a life's work

Bringing heart disease sufferers a better alternative has been a life's work, passed on from father to son and now entering its final phase of tests. Portrait of the Neuchâtel-based company Novostia. BY JULIE MÜLLER

Our life depends on our heart: four valves that open and close no fewer than 36 million times a year. However, this finely-tuned machine can sometimes go wrong and even start malfunctioning. When this happens, it needs to be replaced. For the moment, there are only two alternatives. The first is to insert a mechanical valve that lasts a lifetime and is highly-resistant, but which makes a noise and requires the patient to take anticoagulants. The second alternative is to opt for a biological valve made with animal tissue, which starts to deteriorate after 10 to 15 years in an adult or after five years in a young patient. It is a very weighty decision, fraught with consequences, especially when it concerns a child.

Sixty people die of a heart attack or a cardiovascular accident every day in Switzerland. Given the statistics, and with an acute awareness of the problem, researcher and surgeon Didier Lapeyre set out to combine the best of both types of valves. After 25 years of research, it is a mission accomplished. "To give the project fresh impetus and aim for a marketable solution, I took over the reins in 2017 and set up the Novostia company with my partners", says Geoffroy Lapeyre, the designer's son. From his headquarters in the Microcity technology park in Neuchâtel, the businessman then set out to enlist investors. "It means a lot to me because I helped my father for over 15 years in his search for the holy grail," he explains. Their dedication has paid off.

On the brink of success

In just a few months, the TRIFLO valve developed with Dassault-Aviation engineers, academic institutions such as the EPFL and Swiss high-tech companies has attracted interest. The valve, which has already been patented and validated by extensive testing (in vitro and in animal studies), is now moving into the phase of clinical trials on humans. This decisive step in the process requires funding. But here, too, the challenge has been met, as Geoffroy Lapeyre explains: "In addition to the 6.5 million francs we raised in October 2018, we were awarded a grant for a further 2.5 million euros by the European Innovation Council (EIC) last January." The first tests on humans will be able to begin next year. They will be conducted jointly in various European university hospitals and will eventually lead to large-scale distribution.

For a technology that took several years to be developed, it is now moving ahead very quickly. Novostia's noiseless TRIFLO biomechanical valve, which requires neither re-operation nor anticoagulants, brings real hope for young patients. Not only in Switzerland but also in emerging countries, where access to medicines remains limited and the average age of the population is still very low. "I am continuing my father's work but, more importantly, we are addressing a global need that, unfortunately, is still very present," concludes Novostia's CEO, Geoffroy Lapeyre.

A cutting-edge system

The TRIFLO valve is made of high-performance, ultra-resistant, biocompatible materials. It will be produced in five or six different sizes to cater also for children. This disruptive technology has a much slower closing speed and gentler action than the traditional valves, so avoids turbulence in the blood and the constant noise made by the mechanical valves implanted up to now, which was audible to the host.

PHOTO: PIXABAY

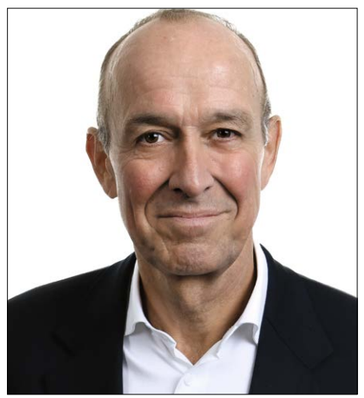
How to make European-driven innovation possible

European growth companies lack capital, yet the continent's future rests on them. A group of experts calls for the creation of an EU funding platform to pool scattered investments and offer public guarantees. BY MYRET ZAKI

European startups don't receive enough funds. Especially European funds. Yet the continental economy's future rests on the capacity to fund "smarter solutions for people's health, elderly care, education, travel, leisure, manufacturing and climate change". And "smaller innovative growth enterprises are the ones who will create most of the future jobs and needed societal innovation". That was the thinking behind the birth of a new project, the "EU equity initiative for a sustainable & equitable Recovery & Renewal of EU societies", a few months ago. The initiative was announced in an "Open Paper" on June 16, written by a group of informal independent experts, and chaired by Christian Motzfeld, a Danish green tech entrepreneur. Among the group are well-known names of the Swiss tech scene, like Alisée de Tonnac, CEO and co-founder of Seedstars World. "It was obvious for Seedstars to support such an initiative, led by great leaders in the VC space", she told Bilan.

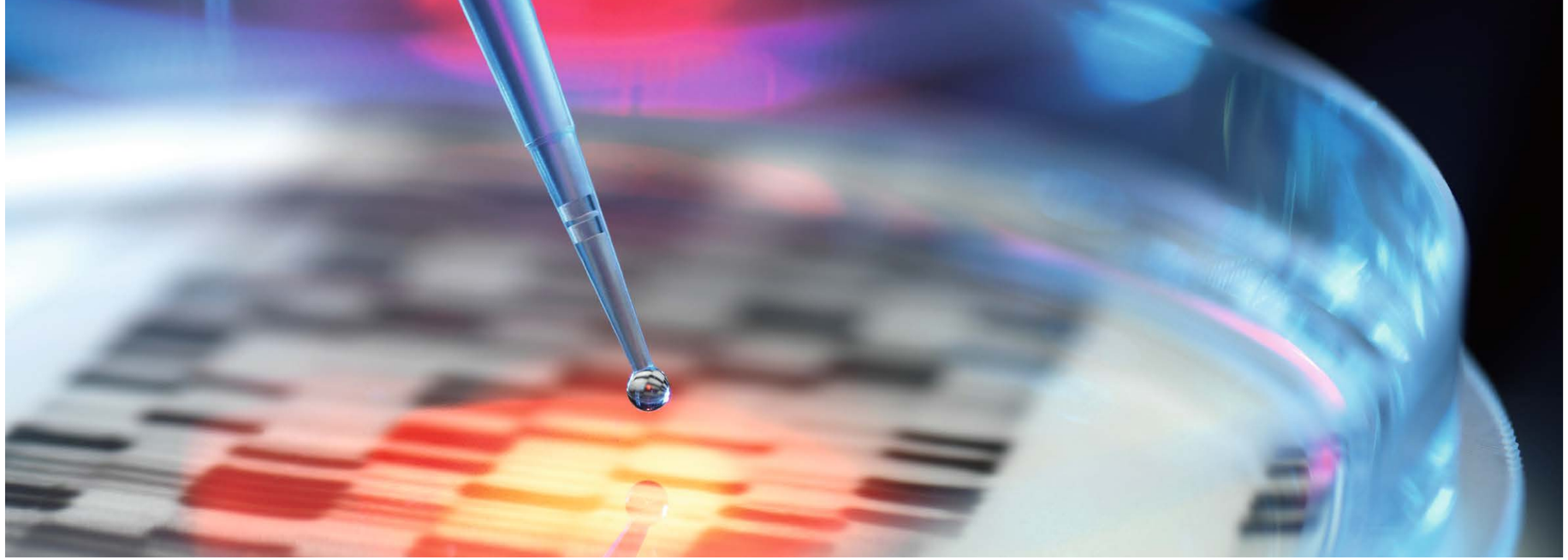
Key to these experts is an economic development that takes a sustainable path and avoids too much indebtedness. The group is envisioning the creation of an EU fund, that would help channel national and private seed money from all over Europe to continental startups and growth companies. Usually, money flows easily to European ventures in the early stages (seeking funds between 1 and 5 million), but late-stage companies have a harder time getting support from continental investors, and usually end up being funded by external investors (often from the U.S.). As they face tough competition from the US and China, they often get bought up. To this group of experts, Europe needs to better compete with the US, and funding needs to be less scattered. At stake is the future of Europe's economies. «We need to save and renew millions of jobs and enterprises, while the digital transformation of our societies is accelerating», writes William Stevens, CEO of Techtour and facilitator and editor of the project. At stake also is encouraging European ownership, and European initial public offerings (IPOs), when foreign ownership is often the rule. Having looked at these problems, the group recommends to the European Union to scale independent investments with equity in growth enterprises by guaranteeing public funding at EU level. Capital investments would be pooled on an open mutualized platform linking guarantees and capital. The premise is that a public/private partnership, scaled up at the European level, would be the key to address the fragmentation of the funding market. The other premise is that long term, equity is much better than loans for growth companies. "High growth businesses are more relevant than ever before in such uncertain times, adds Alisée de Tonnac. Hopefully their agility and anticipation for change will bring more sustainable and impactful innovation for consumers and citizens around the world". The discrepancy between funding in Europe and in the US is pointed out by private equity expert Hans Van Swaay, from Lyrique Private Equity, in Nyon (VD): "A report by the Kauffmann Foundation calculated that the share of venture capital to GDP is very high in the US, and we believe it is too low in Europe". This is due, he says, to the very high valuations in the US. In the life sciences sector for instance, US valuations are 40% higher than Europe, where many quality companies exist, with much lower operating costs. "Operating a biotech in Boston is much more costly than in European cities", says Hans van Swaay.

← **Alisée de Tonnac CEO and co-founder of Seedstars World.**



→ **Hans Van Swaay, from Lyrique Private Equity in Nyon (VD).**

PHOTOS: DANIEL MITCHELL/EQ IMAGES, DR



In health services, Switzerland gained two places in terms of competitiveness between 2018 and 2020.

A wide lens view of Western Switzerland's health ecosystem

The health ecosystem in Western Switzerland has weathered the storm and maintained its buoyancy. This is due to the wide variety of life sciences companies in the region, the strong value added of the preventive, diagnostic, treatment, therapeutic and digital health arenas and the agility of the players. **BY PHILIPPE LEUBA AND JEAN-NATHANAËL KARAKASH**

LARGE VIEW

The pandemic that swept across the world in 2020 changed the outlook for many companies and individuals. The health ecosystem in Western Switzerland has weathered the storm and maintained its buoyancy. This is due to the wide variety of life sciences companies in the region, the strong value added of the preventive, diagnostic, treatment, therapeutic and digital health arenas and the agility of the players in the field. The life sciences branch, notably healthcare, came to the fore in an unprecedented focus of attention, as the population realised what a major role the sector plays in maintaining science, health and business.

Companies leapt to assist in whichever way they could: BCD Microtechnique in Vaud switched production to produce medical grade respiratory devices, while CoreMedica in Geneva used its innovation in core capillary blood analysis for micro testing of wet and dried blood samples to help ease the load hospital and laboratory staff. Lonza AG in the Valais provided manufacturing capabilities for API products, notably for medicine to treat infectious diseases. Neuchâtel-based CSEM's research centre in Landquart (Grisons) and Adamant Innotech (Jura) together developed a rapid serological test to detect up to 20 different antibodies, to help test for Covid-19 among other pathogens. Startup Abionic made available its technology to predict sepsis in seriously ill patients, while Epithelix provided testing kits for evaluating antiviral drugs or therapeutic strategies.

A competitive country in which to invest

IMD ranked Switzerland's health services top of the list in 2019. Switzerland gained two places in terms of competitiveness, moving from fifth to third place between 2018 and 2020. There has been good investment by business angels and venture capitalists, with an increase in volume of 41.9% from CHF 86.6 million to CHF 122.9 million in the last year. Western Switzerland continues to generate attractive healthcare startups, for scale-up or acquisitions, and attract new companies to the region such as CSL Behring and Fresenius Kabi, who has settled its worldwide biosimilars research entity in Eysins. The Merck group started negotiations in 2019 to invest CHF 270 million in its Corsier-sur-Vevey (Vaud) site in the next two years, making it a fully operational central site in 2022.

Incyte Biosciences set up its European headquarters in Morges while waiting for the CHF 130 million investment in a monoclonal antibody production and administrative site at the Y-Parc incubator in Yverdon to be built, scheduled for completion in 2020. The first cornerstone for the buildings was laid in 2018. GE Healthcare Lifesciences has also planned a new facility in Grens, in the new Signy Park, for the production of single use kits for GE's cell processing systems. Lonza also pursued expansion and investments in their Western Switzerland sites.

Could Superman have walked again?

The region can celebrate a world première: for the first time eight paraplegic persons with spinal cord injury (SCI) were able to walk, thanks notably to the work of Professors Grégoire Courtine and Jocelyne Bloch, an achievement that was celebrated in the worldwide media. NeuroRestore, a new centre set up in 2019 by the Defitech Foundation, Lausanne University Hospital (CHUV), the University of Lausanne's (UNIL) Faculty of Biology and Medicine (FMB), and EPFL, will harness expertise in neurorehabilitation and neurosurgical implant technologies across the four partner institutions as a result of the team's revolutionary research. The system combines precise electrical stimulation of the spinal cord, controlled by a pacemaker and an intelligent body support system.

Innovation pursued in all areas of health

The Western Switzerland Regional Innovation System (RIS-SO) for the cantons of Bern, Fribourg, Geneva, Neuchâtel, Jura, Valais, Vaud, was put into place as was the Swiss association of Western Switzerland Innovation Networks (ARI-SO), both with non-repayable federal funding. The aim is to offer efficient local support to SMEs and startups in Western Switzerland in the areas of sector promotion and coaching services. This is aided and abetted by organisations such as Platinn, with coaching and support, and Alliance, which forges links between companies and laboratories with the aim of intensifying technology transfer, to the dual benefit of entrepreneurs and researchers. Some 6000 researchers are part of this network.

In 2019, Switzerland also filed a record number of patent applications per capita overall. The country has a share of 1.3% of the global biotech patent portfolio accounting for 4% of the global portfolio value. A particular strength is the field of antibodies and cytokines. Swiss inventors have been involved in the initial phase of emerging technologies, such as probiotics, CAR cells (cells engineered to display chimeric antigen receptors), or genome editing (i.e. CRISPR/Cas, TALEN, ZNF).

Big data, robotics and digital health

Further developments in artificial intelligence and big data are changing the face of healthcare, including personalised medicine which is becoming more and more of a reality. Sophia Genetics, for example, leverages statistical inference, pattern recognition and machine learning to maximize the value of genomics and radiomics data. GenomSys develops technology powering enterprise-grade tools and applications for efficient processing and sharing of DNA data, enabling the progress of large scale and personalized genomic medicine. Netsensing is using the fusion of data collected from several sensors (IoT) to prevent irreversible physiological damage. DomoSafety, addressing the ageing demographics, uses connected objects that provide greater security and are discreetly placed in the home: main entrance door, bathroom, kitchen, living room and bedroom. The purpose is to prevent home-based accidents among the elderly.

The National Centre of Competence in Research (NCCR) Robotics is a Swiss nationwide organisation funded by the Swiss National Science Foundation pulls together top researchers from all over the country with the objective of developing new, human oriented robotic technology for improving people's quality of life. Lambda Health System's physiotherapists, neuroscientists and engineers have designed a new game-based robotic therapy approach to inspire and motivate patients throughout their rehabilitation journey. Intuitive Surgical, maker of the da Vinci surgical system and Ion endoluminal system, based in Western Switzerland, has been working consistently to reduce invasive surgery through robotics.

Aktiia has developed a user-friendly connected wrist device that measures blood pressure 24/7. SISPha seeks the continuous improvement of the quality of care, in the interest of patients and public health, by offering an interdisciplinary platform for pharmacists and other health professionals. It is likely that there will be strong emergence of digital health companies in the coming years.

Talent underlies performance

At the basis of this thriving life sciences community is the strong presence and interaction of the universities and research centres which boast three Nobel prize winners in the past few years. The Universities of Lausanne and Geneva and EPFL, as well as other higher education institutions such as HEIG-VD and HES-SO are all researching machine learning, which in turn is influencing medical decision-making and diagnostics. Startups like UbiSim are working with teaching clinics such as Clinique de la Source, to use virtual reality to train larger numbers of nurses. Indeed, with the forthcoming inversion of the demographic pyramid as Baby Boomers reach retirement age, the need for more effective and managed healthcare becomes imperative.

The workforce in Western Switzerland is highly skilled and this is thanks to two factors: academic and research excellence and the possibility to use the dual-track apprentice system. Under this system, young people combine on-the-job training with lessons in a vocational school. In turn, they receive a high-quality vocational education, which then gives them direct access to the labour market. Further qualifications, academic or not, can then be acquired throughout their career to ensure that they upskill or reskill.

The new normal will bring new opportunities

The stability of the Swiss economy and its tightly connected infrastructures will no doubt continue to attract talent and foster innovation. As digital technologies progress, there will be new opportunities in health, whether it is in drug discovery, patient management, telemedicine or data crunching. We, in Western Switzerland, are deeply committed to fostering innovation and maintaining a highly skilled workforce, that provide value-added to health systems at home and abroad.

PHILIPPE LEUBA
Minister of Economic Affairs, Innovation and Sport, Canton of Vaud

JEAN-NATHANAËL KARAKASH
Minister of Economy and Social Affairs, Canton of Neuchâtel, President of the association of Western Switzerland Innovation Networks (ARI-SO)

PHOTOS: TEK/GETTY IMAGES, ANEX, DR

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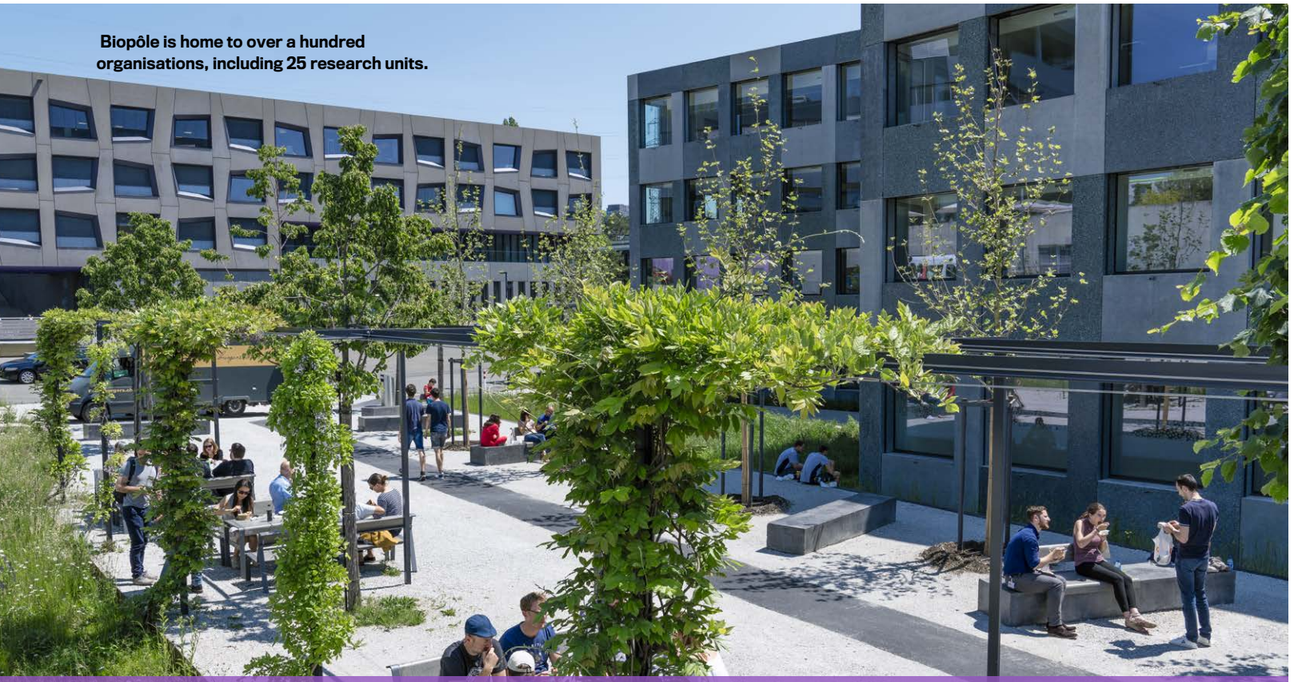

Biopôle is home to over a hundred organisations, including 25 research units.

Innovation as a Culture at Biopôle Lausanne

PARTNERSHIP

Innovation ecosystems like Biopôle Lausanne can offer to young entrepreneurs, fostering chance encounters, open-mindedness and – most importantly – a test-and-adapt culture.

BY NASRI G. NAHAS, CHIEF EXECUTIVE OFFICER AT BIOPÔLE SA

Innovation is probably best defined as the process of translating ideas or inventions into goods or services that create value for which customers are willing to pay. Indeed, innovation can be seen as being anchored on two established criteria: the development of novel ideas combined with a focus on the paying customer. With this in mind, while the role of innovator should be one of constantly seeking new ideas and inventions – not only in core technologies but also in processes, business development, human resources, etc. – entrepreneurs should be perpetually gauging how these new ideas meet critical customer needs or enable processes that they not only appreciate but value. This drive to add value for clients, rather than fishing for awards, is what separates entrepreneurs from inventors and provides the keystone for the innovative process. Ideas and innovations without a paying customer are only good for patent offices.

Innovation in its most authentic form is not an objective – an end in itself – but instead can be considered as a process, a path, a general and inclusive mindset. It is this fusion of inspiration and a desire to meet customer demand that drives the entrepreneurial spirit. In order to embrace this mindset, entrepreneurs should free themselves of some of innovation's romantic myths, such as the myth of epiphany: ideas don't fall from above like "apples"; they are instead the fruit of tireless labour, both individual and collaborative, self-driven and standing on the shoulders of giants. Contrary to popular myth, good ideas are not exactly rare; given a willingness to embrace creative thinking and think outside the box, their prevalence is self-evident. It is also a myth that the best ideas always win; history provides countless examples of suboptimal solutions dominating the market in many industries. The fact is that inventions don't need to be perfect to be successful; they just need to occupy that sweet spot between being better than what currently exists and attractive to the general public.

Serendipity, however, is not an innovation myth; it is a reality. Unanticipated encounters do happen; chance exchanges can unlock inspiration, leading to new realms of thinking and development. Luck is indeed a trait of character and is a quality that should be cultivated through that open, tireless, constructive, indefatigable mindset so fertile for those 'Eureka' moments. In this respect, the right mindset, attitude and enablers are probably among the most important features that innovation ecosystems like Biopôle Lausanne can offer to young entrepreneurs, fostering chance encounters, open-mindedness and – most importantly – a test-and-adapt (rather than a plan-and-control) culture.

Our vision at Biopôle is to be one of the leading life sciences ecosystems, one that brings together a broad range of organisations, perspectives and disciplines to drive outstanding innovation for the betterment of healthcare. In this respect, we focus our innovation endeavours around two major initiatives, which both echo and complement our broader ecosystem's other efforts and are designed to encourage exchange and inclusion mindset.

StartLab

The Swiss Biotech Report states that, Lausanne is the heart and hub of innovation in life sciences. Among other factors, this is mainly due to:

1. a high concentration of local start-ups
2. the region's unique educational opportunities
3. the presence of major industry players
4. Vaud Canton's unrivalled research infrastructure, home to a vast network of supporting institutions and partners.

In order to maximise the innovation potential for life sciences companies in Vaud Canton, we created StartLab, an incubator dedicated exclusively to life sciences, enabling start-up entrepreneurs to take the giant leap out of their comfort zone while providing an environment designed to boost their chances of success. At StartLab, our role is to bridge the innovation gap between inspiration and market acceptance.

And so, we have developed what we believe is the ultimate life sciences incubator: a bespoke infrastructure dedicated to life sciences, comprising shared laboratories, equipment and offices, along with a network of academic and business experts in the life sciences industry – itself a priceless resource for entrepreneurs seeking new skills and knowledge. All of this, of course, exists within the dynamic Biopôle ecosystem, a fertile environment dedicated to nurturing companies and helping them thrive.

Combined with this is our START programme, a competitive scheme overseen by the unique blend of professionals on our StartLab Advisory Board, offering tailored coaching and financial advantages to our most early-stage promising startups. (more information at www.startlab.ch)

PHOTOS: NICOLAS SPHULER

The laboratory of StartLab at Biopôle.

Digital is the new Black

The Digital Health Hub (DH2) vision is a collaborative initiative, aiming to bring professionals, researchers and companies from the Swiss digital health community and beyond together in one place to develop innovative solutions for, and with, patients. Whether you are part of a start-up, a multinational, a private company, a joint project or you're still just nursing the seeds of an idea, the DH2 community can help boost your project.

The digital health sector is evolving rapidly, developing a growing list of products, services and solutions, including e-health, connected health, e-solutions, apps, mobile solutions and more. But how easy is it for patients to understand and access these innovations? The role of the DH2 Digital Pulse is to bring together industrial and clinical experts, as well as leading players in the fields of public and digital health, to identify and support the best start-up projects and raise awareness of digital health alternatives.

Our vision is to transform healthcare and change patients' lives through revolutionary digital health solutions. To this end, along with our partners, we developed our Vanguard Programme, offering support to highly promising digital health projects over a six-month period, boosting their innovation and business potential. (more information at www.dh2.ch)

Beyond StartLab and the DH2, Biopôle is a broader ecosystem that offers a vibrant environment that nurtures synergies and collaboration in our community and beyond, enabling ground-breaking developments in the life sciences. We do our utmost to provide a world-class combination of infrastructure, added-value services, an inspiring landscape and a vast network and unparalleled community engagement to allow our members to thrive.

Today, Biopôle is home to over a hundred diverse organisations – all active in the field of life sciences – including 25 research units, from the University of Lausanne , Lausanne University Hospital (CHUV) and Ludwig Institute for Cancer Research, and more than 90 companies and organizations (Abionic, Distalmotion, ADC Therapeutics, Ichnos, Nestlé Health Science, Mymetics, Novigenix, Precision for Medicine, Unilabs, Genomsys, Gondola Medical Technologies, Anergis, Haya Therapeutics, Volumina Medical to list a few), from start-ups and scale-ups to established multinationals. What unites all our pharma, biotech, medtech, digital health and service companies is our shared passion for life sciences in all their richness and diversity. Our collective goal is to drive outstanding innovation for the betterment of healthcare.

Innovation needs inclusive ecosystems that foster both diversity and convergence. At Biopôle, these needs are met by our community members and partners, two third of which are collaborating with each other in a wealth of fruitful ways to generate some of the most innovative ideas and concepts in the field of life sciences.

www.biopole.ch

The Life Sciences sector is highly competitive. The input of a patent attorney specialized in this field is highly recommended.

PARTNERSHIP

Plausibility in patenting Life Sciences inventions

Great care should be taken when deciding whether and when to file a patent application and how much experimental data a patent application should contain.

BY GILLES PFEND, PH.D SWISS & EUROPEAN PATENT ATTORNEY AND PARTNER WITH KATZAROV

The so-called «first-to-file» patent system, in which the first to file the application will have the right to a patent, has advantages but also some disadvantages, particularly in the highly competitive Life Sciences sector.

One of these disadvantages concerns the risk of filing a patent application for an invention for which little or no experimental data exists. There is a substantial risk that this application, during its examination by the European Patent Office (EPO), will be objected to for lack of sufficiency or inventive step, trough lack of plausibility or credibility.

Although plausibility is neither a patentability criterion nor a ground for opposing (or invalidating) an EP patent, Examiners of the EPO are increasingly probing a patent beyond the standard novelty and inventive step requirements to ask whether the patent is plausible in the context of both sufficiency and inventive step.

If an invention lacks reproducibility because its desired technical effect, as expressed in a claim such as e.g. in a claim related to a compound for use in the treatment of disease X, is not achieved, this results in a lack of sufficient disclosure. Otherwise, i.e. if the effect is not expressed in the claim but is part of the problem to be solved, there is a problem of inventive step.

Let's consider the two following scenarios.

Scenario 1: Technical effect is mentioned but not supported by data in the application as filed

This is the most common situation. The applicant files a patent application for an invention for which he has not yet been able to prove experimentally that it solves the technical problem it is supposed to solve.

A typical example is a chemical or biological compound X which is supposed to be useful in the treatment of disease Y.

Although nowhere in the European Patent Convention (EPC) does it state that examples are necessary, the EPO faced with such a situation will not fail to question the applicant on the plausibility of this claim, either during the examination of the patent application or during opposition or appeal proceedings when this issue is raised by a third party.

The applicant or owner will then have to show or make plausible that the technical problem has been solved at the filing date of the patent application.

In the absence of any data, experiments or post-filing data which demonstrate the technical effect in the application at the date of filing, it may still be possible to demonstrate plausibility based on prior art or common general knowledge.

Thus, if the chemical or biological compound X is known from the prior art to act on a particular pathway and if the invention relates to the discovery of the involvement of this pathway in disease Y, the applicant may argue that the plausibility requirement is met as of the filing date of the patent application.

However, if the patent application provides no more than a vague indication of a possible medical use for a chemical compound yet to be identified, post-filing evidence or common general knowledge cannot be used to remedy the fundamental insufficiency of disclosure of such subject-matter at the filing date.

In any case, it must be borne in mind that the use of prior art or common general knowledge can be double-edged.

Scenario 2: Technical effect is mentioned, and the application contains some data in the application as filed

This is the case, for example, when the compound X is claimed as a Markush claim. A Markush claim is defined by a common structure, i.e. if an essential structural element (e.g. chemical structure) is common to all variants, or if all variants belong to a recognized class of chemical compounds in the field to which the invention belongs.

The EPO, in general, admits that certain variants or compounds do not have the claimed technical effect (non-working embodiments). Of course, it depends on the number of non-working embodiments. Indeed, if the claim recites 10 compounds and 4 of them do not display the technical effect, there is little chance that the claimed invention will be considered plausible. On the other hand, if the claim is a Markush claim encompassing a large number of alternatives, only some of which corresponding to non-working embodiments, it seems sufficient that the patent application contains information on the relevant criteria to identify the working embodiments within the claimed alternatives to meet the plausibility requirement.

Are in vivo experiments necessary?

This is a question we are very often asked by applicants as it is obvious that in vivo (animal or human) data are only rarely available at the time of filing a patent application. It may be sufficient to establish plausibility that in vitro data, directly and unambiguously reflect, the therapeutic effect on which the claimed therapeutic application is based or, alternatively, that there is an established link between the physiological effects of the claimed compound and the disease in question.

If in vitro data are generated in one or more cell models commonly recognized by the scientific community as models reproducing the disease in question, there should be no problem in establishing plausibility.

In conclusion, great care should be taken when deciding whether (and when) to file a patent application and how much experimental data a patent application should contain. The input of the patent attorney is crucial at this stage of the decision as it can have important consequences on the patentability of the invention and ultimately on obtaining a strong patent protection in all the jurisdictions of interest.

The topic of this article was the subject of a MINTT workshop organized by the Technology Transfer Office (TTO) of EPFL on June 12, 2020. The author would like to thank the organizers as well as the participants for this stimulating event.

Four tips for a smooth internationalization

Internationalization is an attractive opportunity for many Swiss companies to grow their business. It is important to anticipate post-Covid-19 times, as of today.

BY SWITZERLAND GLOBAL ENTERPRISE (S-GE)

1. Choose the right business and sales model
One basic question has to be clarified first: What is the ideal way to internationalize? There are many different options to sell products and services abroad – acquiring international customers directly from Switzerland, collaborating with partners or setting up a subsidiary. Choosing the right strategy depends on various factors and has to be closely examined.

2. Create a solid Swiss foundation, start small and in nearby markets
A good market position in Switzerland is certainly a good starting point to go abroad. One thing can be said for sure when looking for the ideal export market: There is no such thing as a "simple market". When starting with internationalization, developing one market after another makes sense. Targeting culturally related and geographically close markets is another good approach for Swiss SMEs.

3. Check your possibilities for digitization and automation
Successful market development requires a lot of time and resources. Digitalization and automation open up new possibilities for optimization. Examine whether digital support can help your business reach more customers and deliver a better customer experience.

4. Focus on the customer requirements
Note that foreign customers may have different requirements than the customers at home. When selecting an export market, focusing on customer requirements is essential. Travel to your target country as soon as it will be possible, gain experience, make contacts and test the response to your product.

Switzerland Global Enterprise (S-GE) is the official Swiss organization for export and investment promotion with offices throughout Switzerland and in 31 countries. s-ge.com/contact

PARTNERSHIP

Diagnostic tests at the heart of the human health

The center has been able to implement within a few weeks a Swissmedic-approved test to identify Covid-19 under the flagship of the Cantonal Hospital of Fribourg. BY DR JEAN-MARC BRUNNER, CEO AT SICHH

With its new industrial division Swiss Smart Diagnostics (SSD), SICHH in Fribourg is candidate as center of technology competences at national level. During the last 18 months, the center developed specific competences and created a network of industrial and academic partners in this particular field to address the challenged issues of the future of personalized medicine. This new division is committed to improve knowledge, promote innovation & support the technology transfer through patient-oriented R&D building its innovation program.

Since the global health crisis due to the Covid pandemic, diagnostic tests have become a topic of general interest for their societal impacts in containing the spread of the virus. Thanks to the newly established division, the center has been able to implement within few weeks a Swissmedic-approved test to identify Covid-19 under the flagship of the Cantonal Hospital of Fribourg. The team is also exploring new diagnostic avenues of Covid-19 (e.g. a test based on saliva, an advanced serologic test) and is still active in fundamental research with a study lead by the hospital of Fribourg assessing the relationship between respiratory illness (e.g. Covid-19) and the loss of smell and taste.

Production of Covid-19 diagnostic tests.

PHOTOS: SICHH, DR

The center's broad spectrum of activities
This research is part of the approach of non-invasive DNA based tests SICHH is developing in a program called Liquid Biopsy for the early detection of diseases (LBEDD). This area of focus is guiding the treatment choice and the accurate follow-up of patients. The multiple benefits of liquid biopsy translate into improved treatment efficacy, quality of life and long-term patient survival while contributing to reducing health costs.

The broad spectrum of activities of the center with its four facilities (Biomolecular, Digital Health, Materials and Tech) is the result of an integrative approach which the center relies on to foster innovation and ensure the necessary flexibility it asks.

Building bridges between Silicon Valley and Health Valley

As global competition for talent becomes more fierce, companies are drawn to Western Switzerland because of the large pool of available R&D, production and management expertise.

BY ELISA NESSI, HEAD OF COMMUNICATION GGBA

Marjorie Hamelin is the U.S. director of the Greater Geneva Bern area (GGBa).

PHOTOS: DR

Marjorie Hamelin is the U.S. director of GGBa, the foreign investment promotion agency bringing together the cantons of Bern, Fribourg, Vaud, Neuchâtel, Geneva and Valais. As such, she offers tailor-made, confidential support to companies from the San Francisco Bay Area looking at setting up a presence in Switzerland. GGBa has a network of 15 representatives around the world, including four in the U.S.

People generally associate Silicon Valley with tech giants and Internet start-ups, rather than life sciences companies...
Marjorie Hamelin: While most VC activity in Silicon Valley is still focused on high tech, the life sciences sector is picking up, now representing more jobs (82,000) than the Internet and telecom industry. Engineering, biology and computer science are coming together fostering a multidisciplinary culture within the Bay Area. As big data, AI and biology intertwine, biotech and tech investors converge.

What do life sciences companies from Silicon Valley look for in Switzerland's Health Valley?
As global competition for talent becomes more fierce, companies are drawn to Western Switzerland because of the large pool of available R&D, production and management expertise.

"As big data, AI and biology intertwine, biotech and tech investors converge"

What are the current trends in life sciences?
I am in touch with fast-growing companies in the life sciences sector and I have noticed that telehealth, clinical data analytics, digital device and consumer health are getting considerable funding. Within medtech, the In Vitro Diagnostics (IVDs) segment remains rich with opportunity. Driven by emerging technologies – like precision genomics, liquid biopsies, molecular point-of-care tests, and even smartphone-based self-tests – IVDs can facilitate early detection and more effective treatment of disease.

ILLUSTRATION: SIB – BY AUREL MÄRKI

PARTNERSHIP

Data scientists for life

The SIB Swiss Institute of Bioinformatics supports life sciences innovation with data expertise. BY MAÏA BERMAN, SIB

Any new innovation is at risk of withering before it achieves any meaningful societal impact. It may be too complex to use or interpret, or error-prone, its results may be hard to reproduce… the list goes on. And when such an innovation has the potential to improve our health, ways to foster its widespread adoption are all the more critical.

Examples of health innovations abound: targeted therapies, real-time monitoring of epidemics, drug design, and many more. To be used routinely and scaled up they need to be supported by a range of specific skills, some of which pertain to computer science. And applying computer science to biological problems is the purpose of bioinformatics.

In recent years, bioinformatics has expanded its role: from supporting fundamental life sciences research, it has become instrumental in applications of direct relevance to society.

Bioinformatics is the application of computer technology to the understanding and effective use of biological and clinical data.

A Swiss-wide platform to enable the detection of outbreaks in near real-time

Rapidly mutating and increasingly drug-resistant bacteria are the cause of several diseases and significant health care costs.

"Tracking outbreaks of resistant strains at the molecular level is key to supporting public health", says Aitana Lebrand, Senior Project Manager at SIB's Clinical Bioinformatics Group. "Transmission sources can include human and veterinary medicine as well as the environment. Right now, the data generated is siloed. Meaningful insights on the scale of Switzerland necessitate a harmonized integrative approach."

To this end, in 2018, a nationwide secure platform for near real-time sharing of pathogen genomes (SPSP) was launched. It is co-piloted by SIB and by stakeholders from all the three fields. Its goal? To enable clinical, veterinary and food safety microbiology labs to analyse and share, via the platform and in near real-time, the genomes of the pathogen strains they are detecting – together with associated epidemiological information. SPSP will also facilitate the molecular surveillance of outbreaks and provide policy makers with additional tools to manage them.

Structural bioinformatics: an investigation tool for targeted therapies

Cancer is characterized by several mutations in the DNA. Some have little effect, but sometimes a single change can modify the tridimensional structure of a protein, and therefore its function, such as the control of cell division. So which mutation(s) really matter?

Additional expertise from outside the oncology lab is required to answer this question. "The approach used today with a view to targeted therapies involves multidisciplinary teams of oncologists, pathologists, geneticists and bioinformaticians, organized in 'Molecular Tumour Boards' or MTB", explains Vincent Zoete, SIB Group Leader (University of Lausanne, Ludwig Institute for Cancer Research Lausanne), and member of the MTB of the Réseau Romand d'Oncologie*.

Structural bioinformatics allows investigation of the effects of unknown mutations on protein structures, and how these interact with possible drugs. In some cases, this reveals the source of resistance to a treatment. In others, it suggests that a drug traditionally prescribed for a different pathology can be used to target the mutation. "Such information is key for us clinicians, as it avoids giving unnecessary treatment to patients, and opens the door to off-target usage of known drugs", says Olivier Michielin, SIB Group Leader and Head of Precision Oncology Center at CHUV.

**The Western Switzerland cancer network*

www.sib.swiss

Translating Research into Reality

What makes the Canton of Bern really stand out is the smooth interplay of research, clinics and the business community.

BY CHRISTOPH AMMANN, DIRECTOR OF ECONOMIC AFFAIRS, ENERGY AND ENVIRONMENT

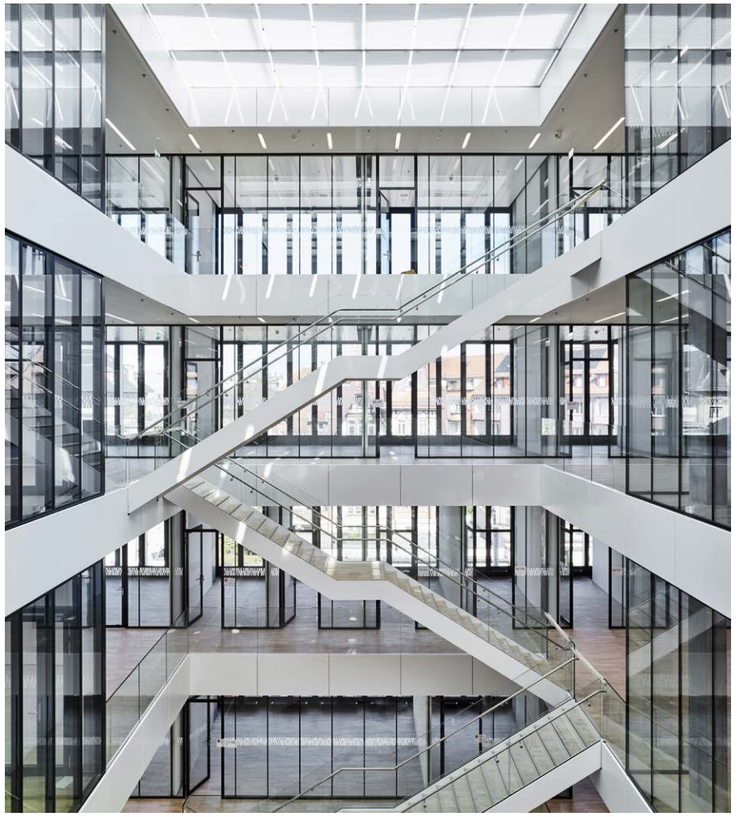

PHOTO: DR

The sitem-insel has opened the doors to its new building at the Insel Campus last year.

A dense network of biotechnology, pharmaceutical and medical technology companies and research centers make the Canton of Bern an important player in the life sciences industry. But what makes the canton really stand out is the smooth interplay of research, clinics and the business community.

This interplay has provided fresh impetus time and again, strengthening the leadership role of the Canton of Bern – and not just since yesterday. One story that has gone down in the annals of history is the collaboration of the Nobel Prize Laureate Professor Theodor Kocher and the mechanic Maurice Schaerer, which led to the establishment of Schaerer Medical AG. Another is the collaboration of Professor Maurice E. Müller and Robert Mathys Senior, which resulted in the founding of Mathys European Orthopaedics.

The sitem-insel AG, the Swiss Institute for Translational and Entrepreneurial Medicine, embraces this same tradition. It is the first institution of its kind in the country and has opened the doors to its new building at the Insel Campus last year. This unique and nationally significant center of competence converts findings from medical research and industrial development as quickly as possible into marketable products, medicines or treatment methods for patients. The interdisciplinary institution brings together researchers, physicians and entrepreneurs. As a school, it offers a variety of study programs for continuing education in translational medicine and biomedical entrepreneurship in a joint effort with the University of Bern.

A project such as sitem-insel requires the right ecosystem for innovation: It comprises private partner companies such as CSL Behring AG, Siemens Healthcare AG and Diabetes Center Bern; research institutes such as EMPA, ARTORG Center and the University of Bern with its large medical school; as well as the Bern University Hospital – Insel Group with its many strong clinics. Essentially, the Canton of Bern and the Swiss Confederation granted sitem-insel significant start-up funding and actively pushed its creation.

Medical Technology

The ability to translate ideas into products has helped other sectors to flourish in the Canton of Bern, especially medical technology. The watch industry has combined its understanding of precision with a manufacturing expertise unparalleled anywhere else in the world. Today the suppliers arising from this tradition are highly specialized technology firms that manufacture products for a range of different sectors. Some of them generate more than 50 percent of their sales with medtech products and are heavily export-oriented, with target markets in the United States, Germany, the Netherlands, France, Italy and China. Today nearly 300 medical technology companies are active in the Canton of Bern as manufacturers and suppliers and their number is on the rise.

Biotechnology/Pharmaceuticals

With its strongly expanding investments, the biotech company CSL Behring AG is an important flagship in the Canton of Bern. It specializes in the production of medicines for treating immune deficiencies and immune disorders and in the manufacture of albumin solutions for treating shock and burn victims, and medicines for rhesus prophylaxis. In response to the Coronavirus crisis, CSL Behring is making its resources available to various partners and moving full steam to develop a therapy.

The University of Bern is also responsible for extraordinary accomplishments in research and teaching. As the largest medical school in Switzerland, it offers excellent opportunities for highly qualified and forward-looking research. The spectrum ranges from basic research at preclinical institutions and the Department for Biomedical Research to translational and clinical research.

Takeda Neuchâtel goes AGILE

How to ensure 24/7 industrial biopharmaceutical production of life-saving therapies in Covid-19 times? In Neuchâtel, Takeda developed new competencies to ensure industrial production during the lockdown.

BY SALVATORE PARATA, COMMUNICATION MANAGER, TAKEDA NEUCHÂTEL
STÉPHANE MOREY, AGILE LEAD, TAKEDA NEUCHÂTEL
ENRIK BOUCHOT, AGILE LEAD, TAKEDA NEUCHÂTEL

Takeda Neuchâtel produces three medicines that treat two types of blood coagulation disorders. Factor VIII, a protein for the blood clotting cascade in patients with hemophilia A. Factor VIII 'long lasting', a long-acting version of Factor VIII. Von Willebrand Factor, a protein that treats patients with Von Willebrand Disease, a rare form of blood clotting disorder. These are 'recombinant' products, without the addition of human or animal derivatives. They offer a very high degree of efficacy and quality.

Takeda's 239-years long history has been built on four core values – Integrity, Fairness, Honesty and Perseverance. "AGILE is our global transformational engine to make Takeda's Manufacturing, Supply, and Quality innovative, lean and efficient, explains Jérôme Veyret, Takeda Neuchâtel Head of Business Excellence. A new way of doing things and a new mindset that drives our strategy, develops our talents, and keeps us focused on our core mission. It is an endless change process ".

AGILE at Takeda Neuchâtel

In Takeda, AGILE does not refer to the 'Agile project management methodology'. It is an internal acronym that stands for Advance Global Manufacturing and Supply & Global Quality to become even more a patient-focused, Innovative, Lean & Efficient organization.

Based on our ambition to continue being an innovative manufacturing site at the forefront of the biotechnology industrial production, our AGILE Roadmap is a plan for our global AGILE Program. The AGILE Roadmap at Neuchâtel is composed of about one hundred projects. They are clustered around themes to address specific focus areas. They are designed, deployed and measured over iterative waves of six months, delivering sustained and transformative impact. For each wave, approximately ten selected projects are prioritized to address one specific focus area. As an example, the Covid-19 crisis obliged us to react fast and with agility to re-organize our teams. We had to ensure production and protective measures on site while assigning more than half of employees to homework. A project called 'developing employees' competencies for remote work' – part of our AGILE approach was setup within in few weeks.

Acting fast and looking beyond the Covid-19 crisis

How to ensure industrial operations of a 24/7 biotechnology plant producing live-saving therapies while keeping part of our personnel in remote work? In early March 2020, practically overnight, we had to allocate 50% of our 650 employees to remote work while ensuring protection of the teams operating on site. After a short period of adaptation, employees found ways to maintain efficiency while working remotely. Today, we have seen that remote work can improve work-life balance while some key fields and organisational processes can be at risk. To respond to this unprecedented and immediate challenge, we designed a project during the Covid crisis with the objective to anticipate remote work in the long term while ensuring industrial production on site and supply for patients.

"We live in times of dramatic changes and industry disruptions. Small, incremental changes will not allow us to keep pace in this environment. AGILE was conceived and based on this understanding to deliver truly transformational jumps, focused on one topic area at a time to not only keep pace but leap ahead!" concluded Juergen Wagner, Takeda Neuchâtel Site Head.

AGILE was based on this understanding to deliver truly transformational jumps.

PHOTO: TAKEDA PHARMACEUTICAL COMPANY LIMITED/NEUCHÂTEL

PARTNERSHIP

CSL Behring has partnered with other leading plasma companies to form the CoVIg-19 Plasma Alliance.

PHOTO: DR

CSL's support in the fight against the corona virus

All hopes in the fight against the corona virus currently rest on the pharmaceutical and medical sector. The biotech company CSL and its subsidiary CSL Behring are at the forefront of this fight. In order to accelerate the development of treatment options, CSL makes its expertise in science and production available to various partners throughout the group. BY FOUNDATION OF THE PLASMA ALLIANCE, HAND IN HAND IN A GLOBAL TEAM

CSL Behring has partnered with other leading plasma companies to form the CoVIg-19 Plasma Alliance. This unprecedented industry collaboration aims to develop a hyperimmunoglobulin (HI) that could be a potential therapy for treating patients with severe complications of Covid-19.

The HI is produced from plasma of people who have fully recovered from Covid-19, known as convalescent plasma. Their blood contains a high level of antibodies that can fight this virus. After donation, the convalescent plasma is put into a manufacturing process where it undergoes effective virus inactivation and elimination steps before being purified into a liquid HI.

The project is currently in the preclinical phase. The test batches for this were produced at CSL Behring in Bern: "We have the expertise and technologies to produce the test product for the clinical trials on our facilities in Wankdorf," reports Pierre Caloz, Head of Manufacturing EU & APAC.

The first processing steps were already started in mid-May 2020. "We are proud to be able to make an important contribution from the Bern site and, if successful, to make this therapeutic option available to protect the population," says Martin Schären, Head of the Bern site.

In Switzerland, the SRC blood donation service is responsible for plasma donations. At the time of the market launch of the HI, Nathan Roth, Head of Plasma Product Development and head of the global CoVIg-19 alliance within the CSL, says: "With the first test batches in Bern we have laid the foundation stone. If they are successful, we will produce the material for the clinical trial at our pilot plant in Bern in June. The first human studies are planned for late summer 2020. It will take several months before the product will be on the market, so the exact date is speculation". Further information about the Plasma Alliance can be found at www.covig-19PlasmaAlliance.org.

Development platform for antibodies

Together with SAB Biotherapeutics (SAB), a development company for human antibodies, CSL Behring is pursuing a new approach: a therapy based on human polyclonal antibodies, which simulates the natural immune response of the human body. SAB has developed an immunotherapy platform to produce these antibodies. It is based on advanced gene technology. The therapy candidate SAB-185 generated on this platform is specifically directed against the SARS-CoV-2 virus that causes Covid-19. SAB-185 can be generated without the need to resort to blood plasma donations from recovered patients. An artificial human chromosome is used in cattle to produce these antibodies. This novel approach makes it possible for the first time to produce targeted, neutralizing antibody products in large quantities. The expertise, technology and resources of CSL Behring as a leading biopharmaceutical company can accelerate the development of this potential therapy. These antibodies are expected to be clinically tested in early summer. The CSL Behring research team in Bern, Switzerland, is actively involved in this project.

CSL supports the University of Queensland (AUS) in its efforts to develop a Covid 19 vaccine by providing its technical expertise. As part of this partnership, CSL has donated its proprietary MF59® adjuvant technology to the University's preclinical development program.

www.cslbehring.ch

The assembly of electronics can be carried out in a cleanroom environment at Turck duotec.

PARTNERSHIP

Innovative electronics from Jura

Turck duotec specializes in electronics technologies for challenging environments.

BY VICTOR CALLEGARI, DIRECTOR BUSINESS DEVELOPMENT, TURCK DUOTEC

In 1988 the Turck corporation, an already established leading player in industrial automation solutions, recognized the potential in the newly developed Surface Mount Technology (SMT) for electronic production. Compared to the traditional Through Hole Technology, the SMT technology would allow for higher production speed and, more importantly, open the doors to a new level of miniaturization of electronic sub-assemblies. Despite the large investment, the entrepreneurial instinct of the founder Werner Turck pushed him to acquire this new technology and incorporate Turck duotec, with the vision to serve customers in new market segments in addition to automation solutions.

Unlike the company Turck, Turck duotec doesn't have its own products: its core business lies in the development and production of customer-specific electronic solutions. The company focuses on markets in medical technology, building automation and mobility and offers its services – ranging from in-house development and industrialization to production – from its locations in Switzerland, Germany and Mexico. Turck duotec can act as the general contractor for the time to market processes, covering all phases from a technical feasibility study to series production with lifecycle management.

Founded in Delémont

The Swiss location was founded in 1985 in Delémont, canton of Jura. Initially, it produced the new miniaturized proximity sensors for Turck. Today, the location is a development and production site and employs approximately 230 collaborators. It covers a broad technology base for electronics, including clean room assembly for high-tech medical components, such as autoclaveable light sources. A strong segment remains sensors of different types, produced from a couple of hundred up to several million units per year. Additional competences include high-precision chip-on-board assembly of camera electronics, LED illumination modules and custom miniaturized sensor systems to measure magnetic and electric fields, forces and pressure on ceramic or metallic substrates.

A demonstrator of an overmoulded autonomous sensor for IoT applications.

In parallel to the miniaturization of electronic components and fabrication technologies, the miniaturization of the housing for a reliable function of the electronic is a challenge in itself. At the end of the 1990s, Turck duotec introduced its new miniaturized protection concept: the direct overmoulding technology, where small-assembled electronics are inserted into an injection mould and covered with a minimal amount of polymer. Through constant material and process development, the performance of the electronic products can be adapted to different environmental conditions, such as high temperature ranges (i.e. -40 to 150°C) or high chemical and ageing resistance (i.e. >1000 cleaning cycles for autoclaveable (sterilization by steam) electronics).

First female electronic apprentice in Jura

The company is ISO 9001 and 13485 (medical) certified and is proud to have had the opportunity to train the first female electronic apprentice in the canton of Jura in 2019.

Today, several collaborations are ongoing with innovative companies in Switzerland and abroad, such as Icosamed. Collaborative research projects are carried out for wearable electronics with EPFL; with CSEM, the integration of printed electronics is underway.

www.turck-duotec.com, delemont@turck-duotec.com

PHOTO: TURCK, AXEL STEGCKEN

Bracco Group, a global leader in diagnostic imaging

Bracco Suisse SA, founded in 1989, is specialized in the research, development and production of innovative ultrasound contrast agents for medical imaging. **BY THIERRY BETTINGER AND MARIACRISTINA CEDRINI, BRACCO**

The Plan-les-Ouates site currently employs more than 100 highly expert people.

PHOTO: BRACCO

In its over 90-year history, Bracco has developed numerous active ingredients for contrast media that have forever changed the world of diagnostics. Bracco is an international Group active in the healthcare sector and a world leader in diagnostic imaging. It has around 3,600 employees with an annual consolidated turnover of around 1,5 billion euros. The core business, Bracco Imaging, offers products and solutions portfolio for all the key diagnostic imaging modalities: X-Ray Imaging (including Computed Tomography-CT), Magnetic Resonance Imaging, Contrast Enhanced Ultrasound, Nuclear Medicine through radioactive tracers, and novel PET imaging agents to inform clinical management and guide care for cancer patients in areas of unmet medical need. The continually evolving portfolio is completed by a range of medical devices, advanced administration systems and dose-management software. Bracco Imaging has a well skilled and an innovative R&D organization with an efficient process-oriented approach and a track record in the diagnostic imaging field. The company invests approximately 9% of reference turnover in R&D activities, and its R&D centers are located in Italy, Switzerland, UK and the USA.

Thirty years of innovation in Switzerland

Bracco Suisse SA, founded in 1989, is specialized in the research, development and production of innovative ultrasound contrast agents for medical imaging. In 1997 Bracco Imaging BV Geneva was created as a division of Bracco Imaging S.p.A. The two entities have been part of Bracco Suisse SA since 2010. The Plan-les-Ouates site currently employs more than 100 highly expert people. This activity has been successful with the marketing since 2001 of SonoVue® gas microbubble (for radiological, cardiological and vesicoureteral reflux applications) approved as an ultrasound contrast product in more than 35 countries. In addition, a quantification software specific for contrast enhanced ultrasound imaging has been developed, marketed in Europe and some parts of Asia since 2011.

Investment of over 70 Million CHF in Geneva for a second line of production

Bracco Suisse produces the company's latest generation contrast medium for ultrasound, the result of Bracco's extensive research efforts in the field of ultrasound. The site operates in compliance with the highest standards in terms of Quality and Good Manufacturing Practices. A second production line, Hexagon project, was announced in 2019 on the occasion of the Geneva plant's 30th anniversary, to support the strong increase in product demand.

In the Bracco Suisse R&D laboratory, researchers work on exploiting their unique expertise in the field of gas microbubble to possibly extend the field of use for new clinical imaging and therapeutic applications. Studies are performed on the interactions of novel agents with various receptors expressed in the vasculature. These extensive research programs have led to a new clinical development for personalized medicine for oncology. In addition, fields outside diagnostic applications are explored to further increase the franchise of the microbubble platform for therapeutic purposes. In addition, new ways of formulating nano and microparticles are also investigated using the microfluidic technology. Lastly, activity in the field of software for new quantification solutions for the ultrasound signal is under development. This will become more and more important to provide tools to support emergence of personalized medicine, where quantitative data are needed. Entering the area of machine learning in relation to artificial intelligence is our next stage of development to possibly further enhance the value of the software and overall, of the contrast enhanced ultrasound imaging modality.

The Jura-based company Pibor ISO, at Glovelier, is celebrating its 70th anniversary in 2022.

PARTNERSHIP

The family business Pibor ISO produces machined parts for various industries, including medical technology

In late 2015, Pibor ISO received RJC-COP and RJC-CoC certification. The RJC is an international non-profit organisation that was created to promote responsible ethical, social and environmental practices. **BY CÉDRIC BOURQUARD, CEO OF PIBOR ISO**

Industry needs to continually seek new markets and adapt to change. Having met the challenges of deindustrialisation, Asian competition, a floating exchange rate for the franc, and digitalisation, Swiss industry must now cope with the Covid-19 pandemic. Other challenges will arise in future, but the Jura-based company Pibor ISO, at Glovelier, is ready to face them, counting on the verticalisation of its trades, which enables it to work with just a few subcontractors.

Pibor ISO, at Glovelier, active in the production of components for watch exteriors and microtechnology, also continues to adapt, notably by seeking new customers. Founded in 1952, with a production plant of 8,500 square metres, this family business with 135 employees is now also developing medical technology components. It aims to regularly increase the share of its turnover in this sector to be less dependent on watchmaking.

Increased productivity

With its verticalised production system involving more than forty different specialised trades, all dedicated to the design and manufacture of components for watch exteriors («habillage»), medtech and microtechnology, Pibor ISO is currently positioned as one of the world leaders for development in its field.

More than sixty years of research, studies and development give Pibor ISO's engineers all the knowledge and know-how they need to support our designers and creators in complex projects. Ongoing investment in new machines and technologies has enabled us to achieve a high degree of verticalisation in our production chain, which ensures perfect control of our processes and enables us to meet the needs of our customers.

Using new technologies, gains can be achieved in productivity, efficiency, and quality. Parts are now machined with digital monitoring. Known as Industry 4.0, this new generation of connected production units incorporates both artificial intelligence and robotics.

Traceability for precious metals and professional ethics

As part of its environmental commitment, for more than 20 years Pibor ISO has been implementing a policy that aims to reduce its impact.

The RJC-CoC standard requires the creation of a traceability chain for precious metals that are sourced, produced, processed and sold responsibly.

Pibor ISO is also in compliance with all "Reach" standards.

We also have ISO 9001:2015 certification, while ISO 13485 certification is in progress.

In a context of globalization, innovation is essential for the sustainability of a business. To achieve this, we are allocating substantial resources to the continuous training of our employees and investments in new 4.0 production tools.

A company aims to be the best, but it must also remain competitive and responsive. That is why flexibility has become our everyday standard. With 100% Swiss-Made production on a single site, the integration of all the necessary trades along the entire value chain gives Pibor ISO the total control needed to support our customers with professionalism and efficiency.

The Marly Innovation Center breaks new ground in technology and social norms

The new ecodistrict adjoining the technology centre will welcome its first residents in December 2021, ushering in a new era by reinventing the way we live and work. **BY MATHIEU PILLER, CO-DIRECTOR OF THE MARLY INNOVATION CENTER**

The MIC's laboratories are equipped for cutting-edge research and perfectly suited to tenants' requirements (shown here, a team member from InnoMedica Holding AG).

The Éco Quartier de l'Ancienne Papeterie: a natural, high-quality living environment just a short distance from the Marly Innovation Center technology park.

PHOTOS: DR

Who wouldn't dream of living in a quiet, leafy district just beside their workplace? Be able to walk children to the crèche, stroll along the banks of the Gérine, work out during the lunch break, have lunch at home with the family... eliminate the daily commute, save time, boost quality of life...

Come winter 2021, all that will be possible in the new sustainable district built on the site of the former paper mill. Adjoining the Marly Innovation Center (MIC) technology park, with no through traffic, but with a direct public transport link to the train station, the ecodistrict will also feature an indoor swimming pool, intergenerational areas, shops and administrative offices. A total of 362 homes will be available at the end of the first development phase.

An innovative community and an asset for businesses

The truly novel feature here is the combination of a sustainable lifestyle district and the premium-grade infrastructures of a technology park. Being able to offer your employees a superior quality of life is a powerful drawcard for recruiting and retaining employees. The technology park will reap the benefits of the companies' energy and drive, and will continue to expand. Numerous growth opportunities are on hand, in particular for laboratory work.

The Éco Quartier de l'Ancienne Papeterie, which is owned by the MIC, will be the first sustainable district in the Friburg canton to have earned «One Planet Living» certification, a label developed by the Bioregional association and WWF International in 2004. Its demanding standards are designed to simultaneously reduce our impact on the planet and enhance our quality of life. A firm believer that technology and the well-being and quality of the workforce are key success factors for businesses and their innovation processes, the MIC is building a sustainable residential district directly linked to the technology campus. Better living is emerging as the next big success factor!

marly-innovation-center.org/en/eco-district/ or anura.ch/projet-marly

The MIC in brief

One of the largest and fastest-growing techno-campuses in Switzerland. Located in the Fribourg canton, it occupies a plot of land of about 370,000 m² along the Gérine river.
The campus includes laboratories (chemistry, physics – 7,000 m²), clean rooms, technical rooms, offices, storage facilities and conference rooms.
The MIC currently houses over 155 companies and 550 jobs. The main sectors are technology, research and development, 3D (bio-)printing and workshops.
To expand the facilities, five buildings with modular spaces – configurable to meet your needs – have recently been constructed.
The construction of an eco-district (360 apartments) will provide an entire ecosystem for the people who work on-site!
marly-innovation-center.org

Professor Roseline Nussbaumer (center) leads the iPrint Center Bioprinting research group discussions together with Raphaël Wenger and Muriel Mauron, both R&D Engineers.

PHOTO: IPRINT CENTER

PARTNERSHIP

iPrint Center innovates in bio-printing human living tissues

The first application for these artificial living tissues lies in the replacement of animal testing for drug screening.

BY RENATA MOLLIET, HEAD OF MARKETING AND COMMUNICATION AT IPRINT CENTER

Additive manufacturing (3D Printing) has become one of the most innovative technologies in the pharmaceutical and medical fields. Within the last decade, there have been significant advances in the engineering of drug delivery and medical devices, as well as human living tissues.

The additive manufacturing techniques, which can be used in the pharmaceutical field and for tissue engineering are an important focus in the research at iPrint Center. We especially focus on Inkjet-based 3D Printing research and are currently collaborating with different partners in Switzerland and all around the globe.

The Bioprinting research group leads projects which include a variety of 3D Printing processes, in particular extrusion-based Fused Deposition Modeling (FDM) and Inkjet-based 3D Printing.

For drug delivery innovation, Inkjet-based 3D Printing could potentially allow for the printing of patient-specific oral pills on-demand, lowering costs and easing manufacturing. In the future, we expect the development of a more personalized medicine as the dosing and release characteristics of the drug delivery devices can be changed by altering its pharmaceutical content and 3D design using computer-aided design (CAD).

In tissue engineering, Bioprinting has emerged as a promising option to create multicellular, multi-compartmental and vascularized biotissues. The principle of bioprinting relies on the placement of bioinks into spatially defined structures using automated 3D printing technologies. Currently, the printed tissues are only a fraction of a millimeter thick but creating thicker structure remains a challenge: most 3D tissues with dimensions over the millimeter need vascularization in order to function properly. A second challenge is to develop an economical and feasible technology for high-throughput, reliable and highly reproducible application of the bioprinting approach. One big drawback of all current bioprinting technologies is that they all suffer from limitations in throughput and/or in resolution. This strongly impairs the fabrication of such complex 3D tissues and the productivity in tissue engineering.

To address these challenges, we aim to apply industrial multi-nozzle inkjet, a reliable and robust high-throughput digital technology, for bioprinting. It has the potential to allow high-throughput and high-resolution cell deposition for the engineering of complex multi-cellular 3D tissue constructs. Inkjet-based 3D Printing is a highly scalable technology enabling the fabrication of structure as fine as 10µm, as needed for capillaries while featuring the control of thousands of nozzles in parallel to print volumes of cm3 within minutes. More realistic human 3D tissue models could be constructed at low processing time and costs.

Multidisciplinary research at the iPrint Center has led to the development of a multi-material 3D Bioprinting approach for the engineering of vascularized tissues composed of living human cells. The first application for these artificial living tissues lies in the replacement of animal testing for drug screening. In comparison to living animals, engineered tissues are more cost-effective and more reproducible while limiting the errors due to inter-spices differences and causing less ethical concerns. We believe these studies could lead to manufacturing living organs in some years from now.

If research continues to rise in the area of Bioprinting there is a huge potential for Inkjet-based 3D Printing to leave the proof of concept stage and to be developed into a widely used manufacturing tool. However, multiple regulatory questions should be addressed. Some countries have already published guideline documents for medical device manufacturing using additive manufacturing technology. Accordingly, we anticipate that more 3D printed pharmaceutical/medical products will reach the market within the next few years.

iPrint Center will continually work together with industry and stands as an important player in this exciting field of innovation.

How CERN contributes to innovation in healthcare

Applications of CERN technologies to the healthcare domain represent one of the most relevant knowledge transfer opportunities in terms of potential impact on society.

BY HELEN DIXON-ALTABER AND BENJAMIN FRISCH, KNOWLEDGE TRANSFER GROUP, CERN

CERN, the European Laboratory for Particle Physics, which straddles the French-Swiss border near Geneva, is perhaps most famous for the world's most complex machine, the 27km-long Large Hadron Collider. The LHC was conceived to address unanswered questions about our universe. To achieve this core mission of fundamental research, an international team of talented engineers, technicians and scientists collaborates to push-back the frontiers of knowledge.

This unique environment naturally creates opportunities for innovation and CERN develops technologies and expertise that have potential in many areas beyond particle physics. At first glance, it may seem unbelievable that such a machine could have an impact on our everyday lives but advances in fields including accelerators, detectors and computing have led to many examples of applications of CERN's technologies. The best-known is the invention of the World Wide Web, but the laboratory has contributed to applications in a surprising range of fields including aerospace, safety, cultural heritage and medicine. As an integral part of its activities, CERN strives to ensure that these developments benefit society and has a dedicated Knowledge Transfer group to liaise with different actors in industry and academia creating opportunities for this to happen.

CERN has built a culture of entrepreneurship

Applications of CERN technologies to the healthcare domain represent one of the most relevant knowledge transfer opportunities in terms of potential impact on society. Accelerator technologies like those found at CERN are at the core of radiotherapy devices for cancer treatment and crystals developed for particle physics experiments are ubiquitous in PET scanners. From the IT domain, computer simulation codes initially developed for particle physics are now crucial for modelling the effects of radiation on biological tissues and more recently, the shift towards personalised medicine has led to an interest in AI and the data analytics techniques used by particle physicists to deal with their huge data sets. Manuela Cirilli, Medical Applications Section Leader within the KT group, says: "These are just some well-established examples of medical applications of our technologies and know-how, but we are sure that there are many untapped opportunities. To identify these, we need input and ideas from the healthcare community – doctors, medical physicists, MedTech and pharma companies – so we can tackle their actual needs."

There are many ways to collaborate with CERN and successful partnerships have been established with industry and academia alike. CERN has built a culture of entrepreneurship and has established a network of ten Business Incubation Centres (BICs) throughout its Member States. Here, companies can directly express their interest in adopting a CERN technology and have access to expertise, networks and support in accessing funding.

CERN is proud to support the knowledge-transfer process from particle physics to medical research and the MedTech and pharmaceutics industries to boost healthcare innovation and work towards solutions to unmet medical needs. Manuela Cirilli concludes "Bringing disruptive technologies to the MedTech scene is an exciting challenge, and we invite innovative organisations to contact us and explore how we can collaborate to make an impact on healthcare."

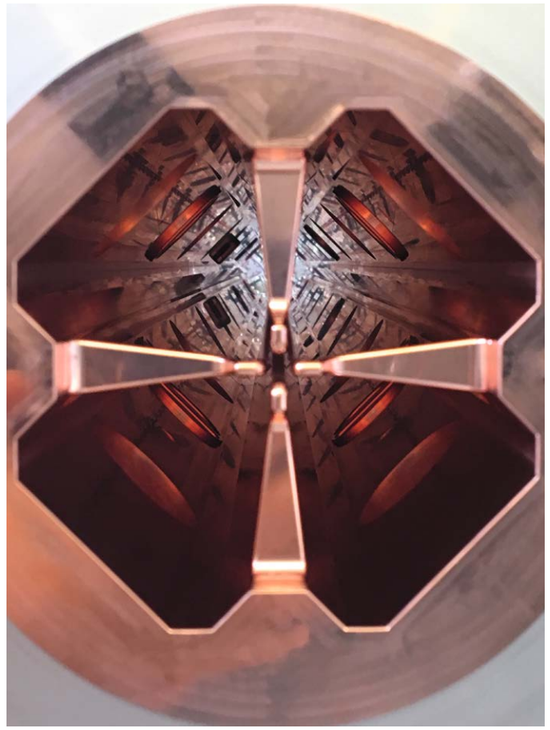

PHOTO: BENJAMIN KOUBEK

CERN's accelerator technologies prepare the future of radiotherapy.

Rolande Goette, President EMEA: "The center is designed to demonstrate innovative BD technologies across the care continuum and provide a collaborative environment for customers and thought leaders to advance solutions to healthcare challenges."

Embracing innovation in a changing environment

In the BD Innovation and Engagement Center at our European Headquarters in Eysins, customers, industry leaders and peers meet and exchange ideas. **BY SARA NAAKTGEBOREN, ASSOCIATE DIRECTOR, INNOVATION & ENGAGEMENT CENTER, BD SWITZERLAND SARL**

PARTNERSHIP

Innovation has never been more crucial given the new experiences we are living through. With over 65,000 employees globally, BD may be one of the largest medical technology companies in the world, but its origins lie in the ethos of answering relevant needs and adapting to change.

This is being demonstrated right now. Since our portfolio of solutions serves the entire healthcare continuum—from research to diagnosis, to the process of care, to the treatment of disease – we have adjusted business models during Covid-19 to fit new requirements and supply demands, to respond to critical need. This need has addressed diagnostic capabilities to identify Covid-19 cases, and real-time informatics and electronic surveillance technology, as well as essential medical devices to support patient care.

Our teams continue to support those on the frontline, helping ensure the right solutions and services are in place for health care providers.

Safety beyond Covid-19

The safety of healthcare professionals and patients has been central to our strategy throughout our 120-year history of advancing the world of health. We are pioneers in the development of safe practice by creating solutions to protect professionals from accidental blood exposure. Today we are tackling antibiotic resistance, healthcare associated infections, medication errors, and laboratory analytical errors. These are public health issues which affect everyone. Importantly, improving safety also helps healthcare systems become more efficient.

These broader themes are brought to life in the BD Innovation and Engagement Center at our European Headquarters in Eysins. This is an immersive environment where customers, industry leaders and peers meet and exchange ideas. Guests come from diverse backgrounds including: health care institutions, research, clinical laboratories, pharmaceutical industry, as well members of the general public.

The center houses BD innovations from laboratory diagnostics, clinical and outpatient areas, as well as a pharmacy, and highlights the complexity and interdependencies of patient pathways. Guests can observe our holistic solutions in a simulated setting that mimics a patient's care journey and they leave with a better understanding of how these solutions can be applied in their own hospitals or laboratories. The center is also a valuable resource for practical hands-on customer and associate training.

Beyond the product portfolio, the center also provides an opportunity to learn more about how BD collaborates for positive global impact.

We strive to 'do well, by doing good' through social investing, volunteering, public-private partnerships and sustainability efforts. In 2019, the Eysins-based team worked with community partners to donate more than 11,000 treatments worldwide, from providing emergency catheter supplies to Guatemala, through to shipping surgical supply packs to Yemen. Our donations have reached as far as the Democratic Republic of Congo, supplying necessities to rural medical centers. Most recently we donated ICU equipment to hospitals in Spain that were severely impacted by the pandemic.

Looking ahead

The structure of how BD runs its virtual training and events has changed to adapt to Covid-19 requirements but not the spirit. We are still focused on collaborating with customers to jointly address needed improvements across the care continuum.

BD will continue innovating, evolving and adapting to improve the safe, efficient and sustainable delivery of healthcare from hospitals to patients' homes. The company employs 300 people across Switzerland, and many of our European business teams are located here. The resources employed, including our Supply Chain Center of Excellence, are crucial for the next phases of MedTech development.

The new world leader in over-the-counter products

The GSK Consumer Healthcare Campus in Prangins, near Nyon, has an essential role to play for Switzerland with its 1,250 employees.

BY FANNY DOUGOUD, COMMUNICATIONS MANAGER AT GSK

Almost a year ago, GSK completed its transaction with Pfizer to combine their consumer healthcare businesses into a new world-leading consumer healthcare joint venture.

Following the successful joint venture with Pfizer in August 2019, GSK Consumer Healthcare became the new global leader in OTC products and has first or second market share positions in all key geographies, including the US and China. The combined business created a portfolio of highly-trusted, complementary consumer health brands, including Sensodyne, Voltaren, Otrivin, Panadol, Advil, Centrum and Caltrate.

GSK Consumer Healthcare is an important element of GSK's corporate structure. The company has 3 global businesses that discover, develop and manufacture innovative pharmaceutical medicines, vaccines and consumer healthcare products with a special purpose: to help people do more, feel better and live longer thanks to its 99'000 employees around the world and the 95 countries where GSK operates.

An important presence in Switzerland

In this context, the GSK Consumer Healthcare Campus in Prangins, near Nyon, has an essential role to play for Switzerland with its 1,250 employees. More than 100 years old, this industrial site now houses the headquarters for the Pain Relief, Respiratory and Skin Health categories. Voltaren, Otrivin and Fenistil are the biggest and most well-known brands produced at the Prangins factory. It is a unique campus within the GSK Consumer Healthcare network where all stages of the value chain are represented.

"After expanding and modernising the factory with best-in-class infrastructure, the Prangins Campus is continuing its transformation and investments. We are very pleased and excited that we will soon be able to reunite and welcome all our Swiss Romande based employees on a single site, thanks to the construction of a new administrative building, designed to support innovation and bring our employees closer to our consumers", explains Aurélien Uldry, member of the Campus Leadership Team.

PHOTO: GSK

Sample of a product undergoing final quality control.

Understanding pain

Since 2016, GSK Prangins' global Pain Relief team organises a global representative assessment of the state of pain in the world: the Global Pain Index (GPI) study. The GPI study this year surveyed 19'000 individuals around the world from 19 countries to understand the impact of pain on their everyday lives, health, emotions, motivations and behaviours. The results are impressive: 93 % (+ 2 pts since 2018) have suffered pain in the last year, one third of the world's population are in pain every day.

Respiratory expertise in protection against air pollution

In October 2018, the Prangins global Respiratory team launched The Clean Breathing Institute, a worldwide initiative set up to help find ways to reduce the negative impact of air pollution on the respiratory health of people around the world.

The Institute brings together GSK's scientific expertise in respiratory health with academic, institutional and international bodies, as well as medical professionals and innovators from science, technology, engineering and NGOs.

These experts have conducted the first-of-its kind social study, which "will help to understand the hidden human impact of air pollution and the steps we can take to reduce its emotional stresses", says Dr Sundeep Salvi, author of the study and Director of the Chest Research Foundation, Pune, India.

In these exciting times, where public health is at the heart of the global agenda, GSK Consumer Healthcare has a unique opportunity to bring innovative solutions to help people around the world to enjoy the life to the full.

Production building (usine Nord) in Evionnaz.

PARTNERSHIP

Siegfried and the role of Evionnaz

The company is an important supplier of development services and a producer of drug substances and finished dosage forms for the pharmaceutical industry. **BY CHRISTA BRÜGGER, SENIOR COMMUNICATIONS MANAGER, SIEGFRIED**

The Siegfried Group is a global life sciences company, headquartered in Zofingen (AG), with facilities located in Switzerland, the USA, Malta, China, Germany and France. With its nine sites on three continents, Siegfried today competes in the top group of the worldwide leading CDMOs (Custom Development and Manufacturing Organizations) and is active in a highly competitive but attractive and continuously growing market.

Siegfried is an important supplier of development services and a producer of drug substances and finished dosage forms for the pharmaceutical industry as well as a valued strategic partner of various pharmaceutical companies. The company is able to produce about 200 of the 1500 drug substances approved for marketing by the FDA. Thus, Siegfried supports the annual medical treatment of about 40 million patients.

Siegfried has expanded its technology base and geographic presence around the world in the past years. In addition to technological competence and a global presence, full compliance for all products and work processes to ensure safety is a high priority. The company adheres to the most rigorous requirements and quality guidelines in development, production and marketing. Siegfried's reputation in this area is confirmed by a seamless performance record for audits – carried out by regulatory authorities and clients.

Global Network as a Central Strategic Focus

According to its vision, "Siegfried is the most trusted partner of the pharmaceutical industry and the global leader in the CDMO space – because we are the strongest team running the most competitive network."

With its globally integrated production network, Siegfried is able to guarantee supply across the globe. Due to its internal cooperation and networking our company's performance is greater than the sum of its individual sites. The aim is to ensure that individual products are produced at that site which provides the most suitable equipment and technology in combination with the required expert skills. At the same time, the qualification of two sites on multiple countries or continents increases both reliability of supply and flexibility. Recent Covid-19 constraints have shown such model to be reliable and provide a flexible safe supply to Siegfried's strategic customers.

Expansion of technological capabilities represents a further strategic focus in addition to strengthening the network concept. In the course of 2019, Siegfried implemented investments at several sites that will benefit research & development and connected production operations.

Evionnaz – important role in Siegfried's network and mastering key capabilities

The Evionnaz Site, located in Western Switzerland, specializes in the production of active pharmaceutical ingredients and intermediates. The production capacity amounts to 315 m3. The company was established in Evionnaz, Canton of Valais, in 1957 and operated under the Orgamol name. It was acquired by BASF in 2005 and joined the Siegfried Group in 2015.

In the Siegfried network of six Drug Substance production sites, Evionnaz is – along with Zofingen (Switzerland) and Nantong (China) – one of three Process Research and Development centers. Moreover, Evionnaz is one of two launch sites focusing on new processes and thus plays an important and central strategic role in the network.

The site includes four production units, two finishing centers, a kilolab and a pilot plant providing all of the necessary services: quality control, waste water treatment plant, etc. The installations are designed to simultaneously manufacture various products involving complex chemical processes.

In 2019, construction of a new micronization plant in Evionnaz started. Commisioning is planned for summer 2020. Micronization is fine milling to particles below 20 microns and represents a key bridging technology between drug substance and drug product services. This new production unit integrates in the Particle Engineering network of Siegfried with capabilities from lab to production on multiple technologies like micronization,spray drying or wet milling. It thus supports Siegfried's strategy to be a world class supplier for pharmaceuticals and a reliable partner for our customers as it helps our partners in the development of a new drug formulation as well as ensures that the final product can be manufactured and delivered in the quality and reliability our customers expect from us.

PHOTO: SIEGFRIED

A Guide to life sciences companies

The Health Valley of Western Switzerland hosts a large number of biotech, medtech and pharma companies. The following business guide lists all the member companies of the BioAlps network.

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
3volutec SA	Supplier & Engineering	JU	3volutec.com
Aardex Group SA	Medtech	VS	aardex.ch
AB2 Bio SA	Biotech	VD	ab2bio.com
ABC Orthodontics SA	Medtech	JU	abc-orthodontics.ch
ABCDx SA – Advanced Brain Companion Diagnostics SA	Medtech	GE	abcdx.ch
Abionic SA	Medtech	VD	abionic.com
Abologix Sàrl	Biotech	GE	abologix.com
Abrema	Service Provider	VD	abrema.com
AC BioScience SA	Biotech	VD	ac-bioscience.com
AC Immune SA	Biotech	VD	acimmune.com
AC Solutions Sàrl	Cosmetics & Fagrances	JU	
Accuratus AG	Medtech	BE	accuratus.ch
Accuray International	Medtech	VD	accuray.com
ACG Inspection SA	Service Provider	VD	acg-world.com
Acrostak International Distribution Sàrl	Medtech	GE	acrostak.com
Actando SA	Service Provider	GE	actando.com
Actemium Suisse SA	Service Provider	VD	actemium.ch
Actidot Drink SA	Nutrition	VS	actidot.ch
Actimed SA	Medtech	VD	actimed.ch
Active-Food SA	Nutrition	NE	active-food.ch
Activen SA	Cosmetics & Fagrances	VD	activen.ch
ActLight SA	Supplier & Engineering	VD	act-light.com
Adamant Innotech SA	Medtech	NE	adamant-innotech.ch
ADC Therapeutics SA	Biotech	VD	adctherapeutics.com
Addex Therapeutics SA	Pharma	GE	addextherapeutics.com
Adecco Life Sciences	Service Provider	GE	adecco.ch
Adima AG	Supplier & Engineering	BE	galenica.com
Adipogen	Medtech	VD	adipogen.com
Adiposs Sàrl	Biotech	GE	adiposs.com
ADIPSE Sàrl	Service Provider	GE	
Adolphe Merkle Institute	Academi & Research	FR	am-institute.ch
Advanced Accelerator Applications International SA	Medtech	GE	adacap.com
Advanced Microfluidics SA	Medtech	VD	amf.ch
aeChem Sàrl	Medtech	VS	aechem.ch
Aesyra SA	Medtech	VD	aesyra.com
AFE Partners SA	Service Provider	GE	afepartners.com
Agilent Technologies SA	Medtech	ZH	keysight.com
Aginko Research AG	Service Provider	FR	aginko.com
Agolin SA	Veterinary	VD	agolin.com
Agroscope (Changins)	Academi & Research	VD	agroscope.admin.ch
Agroscope Liebefeld-Posieux	Academi & Research	BE	liebefeld-kulturen.ch
AgroSustain Sàrl	Nutrition	VD	agrosustain.ch
Akenco Pharma SA	Pharma	GE	akenco-pharma.com
Akka Switzerland SA	Service Provider	VD	akka-technologies.com
Akson Engineering Sàrl	Medtech	VD	akson.ch
Akson SA	Medtech	GE	
Aktiia SA	Digital Health	NE	aktiia.com
Albedis SA	Service Provider	VD	albedis.com
Alchimie Forever Sàrl	Cosmetics & Fagrances	GE	alchimie-forever.com
Alcimed Sàrl	Service Provider	VD	alcimed.com
Alcon Management SA	Service Provider	GE	alcon.com
Alcon Pharmaceuticals Ltd	Pharma	FR	alcon.com
Aleva Neurotherapeutics SA	Medtech	VD	aleva-neuro.com
Alithea Genomics SA	Service Provider	VD	
Alliance	Service Provider	VD	alliance-tt.ch/accueil
Alliance Consulting	Service Provider	VD	alliance-consulting.ch
Almedica AG	Medtech	FR	almedica.ch
Alp ICT	Public & Non Profit Organism	GE	alpict.com
Alpes Lasers SA	Medtech	NE	alpeslasers.com
Alphom Sàrl	Service Provider	NE	alphom.com
Alpine Institute for Drug Discovery SA	Pharma	VD	aidd.ch
ALPS Automation SA	Supplier & Engineering	VS	alpsautomation.ch
Alpvision	Supplier & Engineering	VD	alpvision.com
Alro Engineering SA	Supplier & Engineering	VS	alro.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
ALS - Anti-Ageing Laboratories Switzerland SA	Cosmetics & Fagrances	FR	als-als.com
Altacare	Service Provider	VD	altacare.fr
Altran AG	Service Provider	VD	altran.ch
Alveolix AG	Medtech	BE	alveolix.com
Alver Golden Chlorella SA	Nutrition	VD	alver.ch
ALYS Technologies SA	Medtech	VD	alys-technologies.com
Amal Therapeutics SA	Biotech	GE	amaltherapeutics.com
Amazentis SA	Medtech	VD	amazentis.com
American Orthodontics Switzerland Sàrl	Medtech	VS	americanortho.de
Amires Sàrl	Service Provider	NE	amires.eu
Amotec Technique de montage SA	Medtech	BE	amotec.ch
Amsonic SA	Medtech	BE	amsonic.ch
Analytecon SA	Pharma	NE	
Andre Roland SA.	Service Provider	VD	andreroland.com
Andrew Alliance SA	Medtech	GE	andrewalliance.com
Andromis SA	Medtech	GE	andromis.ch
Applimed SA	Medtech	FR	applimed.ch
Aptissen	Medtech	GE	aptissen.com
Aquanetto Group GmbH	Supplier & Engineering	VS	aquanetto.ch
ARB Biotech Sàrl	Biotech	GE	claytonbiotech.com
Ares Life Sciences SA	Capital Risk & Investors	GE	areslifesciences.com
Argenius Sàrl	Service Provider	VD	argenius.com
Arnold Deppeler SA	Medtech	VD	deppeler.ch
Artefact SA	Service Provider	VD	
ARTIRIA Sàrl	Medtech	GE	artiria-medical.com
Ascendys Sàrl	Digital Health	GE	ascendys.ch
Asceneuron	Biotech	VD	asceneuron.com
Aspivix SA	Supplier & Engineering	VD	aspivix.com
Assco Engineering Monthey SA	Medtech	VS	assco.ch
Assut Medical Sàrl	Medtech	VD	assutsutures.com
Assystem Switerland SA	Supplier & Engineering	NE	assystem.com
Aston Life Sciences Sàrl	Service Provider	VD	astonls.com
Astral Technologies Sàrl	Service Provider	JU	astraltechnologies.com
Asulab SA	Medtech	NE	asulab.ch
Asyril SA	Medtech	FR	asyril.ch
Atelier Mécanique René de Siebenthal & Fils SA	Supplier & Engineering	VD	desiebenthal.ch
Atheris Laboratories SA	Service Provider	GE	
Atokalpa SA	Supplier & Engineering	JU	atokalpa.ch
Atracsys Sàrl	Medtech	VD	atracsys.com
Attolight SA	Medtech	VD	attolight.com
Auctris Life Sciences SA	Service Provider	VD	auctris.com
Augurix SA	Medtech	VS	augurix.com
Auregen Bio Therapeutics SA	Biotech	GE	
Auxyme SA	Service Provider	VS	auxyme.ch
Axalbion SA	Biotech	VD	axalbion.com
Axepta SA	Service Provider	GE	axepta.com
Aximed SA	Medtech	JU	aximed.com
Axis biodental SA	Medtech	BS	axis-biodental.ch
Azad Pharma AG	Pharma	BE	azad.ch
B Braun Medical SA	Medtech	LU	bbraun.ch
B.C. Development SA	Medtech	JU	bcdevelopment.ch
Baccinex SA	Pharma	JU	baccinex.com
Bachem SA	Pharma	VS	bachem.com
Baldelli SA	Medtech	NE	baldelliautomation.com
Balluff HyTech AG	Medtech	BE	balluff.com
Bangerter Microtechnik AG	Medtech	BE	bangerter.com
BASF Suisse SA	Pharma	VS	basf.ch
Battelle Memorial Institute Geneva Research Center	Academic & Research	GE	battelle.org
Bausch Advanced Technology Group	Medtech	JU	bausch-group.com
BC Consulting & Solutions Sàrl	Service Provider	VD	eu.com
Bccc Avocats Sàrl	Service Provider	GE	bccc.ch
BCD Microtechnique SA	Medtech	VD	bcd-microtechnique.com
BD Switzerland Sàrl	Medtech	VD	bd.com
Be Ceuticals	Cosmetics & Fagrances	VS	be-ceuticals.com
be.care SA	Digital Health	VD	becare.swiss
Beckman Coulter Eurocenter SA	Biotech	VD	beckmancoulter.ch
Beemed SA	Digital Health	GE	beemed.com
Beijing Tong Ren Tang Swiss SA	Nutrition	GE	tongrentsngcm.com
Bellus Health (International) Limited	Pharma	VD	bellushealth.com
Bench International Sàrl	Service Provider	GE	benchinternational.com
Berdat Charles	Medtech	JU	charlesberdat.ch
Bernafon AG	Medtech	BE	bernafon.com
Berney Précision SA	Medtech	VD	berney-precision.ch
Biar SA	Medtech	VS	biar.com

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Bien-Air Dental SA	Medtech	BE	bien-air.ch
Bien-Air Surgery SA	Medtech	JU	bienair.com
BiiON	Service Provider	FR	biion.com
Bio-Rad Laboratories AG	Medtech	FR	bio-rad.com
Bio-Ur SA	Biotech	JU	
BioApply Sàrl	Foundation & Association	VD	bioapply.com
BioArk SA	Scientific Park & Incubator	VS	bioark.ch
BioCell Interface SA	Medtech	NE	biocell-interface.com
Biofactory Competence Center SA	Academic & Research	FR	bcc.ch
Biofluid Systems SA	Supplier & Engineering	VD	biofluidsystems.com
Biokaizen Lab SA	Medtech	VS	theark.ch
Biokema SA	Veterinary	VD	biokema.ch
Biolabo Scientific Instruments SA	Medtech	FR	labgene.ch
Biomapas	Service Provider	VD	biomapas.eu
BioMérieux (Suisse) SA	Medtech	GE	biomerieux.com
BionActis SA	Supplier & Engineering	VS	bionactis.com
Bionomous Sàrl	Medtech	VD	bionomous.ch
BioNoox Suisse SA	Biotech	VD	bionoox.com
BioPack Medical Sàrl	Medtech	VD	biopack.ch
Biopôle SA	Scientific Park & Incubator	VD	biopole.ch
BioScan SA	Medtech	GE	bioscan.ch
BioScience Medical SA	Medtech	NE	biosciencemed.ch
Biosensors Europe SA	Medtech	VD	biosensor.com/int/contact-us
BioSig Technologies Inc	Medtech	GE	biosigtech.com
Biosite International Sàrl	Medtech	VD	biosite.com
Biosmart GmbH	Medtech	BE	biosmart.ch
Biospectal	Digital Health	VD	biospectal.com
Biotech SA	Medtech	JU	biotec.ch
BioWebSpin	Service Provider	VS	biowebspin.com
Biowetrics SA	Digital Health	NE	biowetrics.com
BioXpress Therapeutics SA	Biotech	GE	bioxpress.com
Bista Consulting	Service Provider	VD	bista-consulting.com
BLANC-LABO	Distributor	VD	blanc-labo.com
BlueOcean Ventures	Capital Risk & Investors	GE	blueocean-ventures.com
BM Laser, Broquet et Monin	Medtech	JU	bm-laser.ch
bNovate Technologies SA	Medtech	VD	bnovate.com
Boiron SA	Pharma	GE	boiron.com
Bordier Affinity Products SA	Biotech	VD	bordier.ch
Borrer Executive Search	Service Provider	VD	borrerexecutive.com
Botta Orthopädie AG	Medtech	BE	bottaweb.ch
Bracco Suisse SA	Medtech	GE	bracco.com
BrainGenetics SA	Digital Health	VD	b-genetics.ch
Bredam SA	Medtech	VD	bredam.ch
Bricad Associates Sàrl	Service Provider	VD	bricad.com
Brook Automation AG	Medtech	BE	brooks.com
Bruker BioSpin AG	Medtech	VD	
BS-Optics SA	Supplier & Engineering	FR	bs-optics.com
BT Bienne Special Tools Sàrl	Supplier & Engineering	BE	btbienne.ch
Büchi Optik AG	Supplier & Engineering	BE	buechioptik.ch
Bumotec SA	Supplier & Engineering	FR	starrag.com/fr-fr
Business & Decision (Suisse) SA	Service Provider	GE	businessdecision-lifesciences.com
Cabinet Frederic Tissot-Favre	Service Provider	VD	tissot-favre.com
Cabinet SR Conseils SA	Service Provider	VD	successjob-biotech.ch
Calciphos S.A	Nutrition	VD	
Cälinesse	Cosmetics & Fagrances	VS	calinesse.com
Calpys SA	Digital Health	VS	calyps.ch
Calypso Biotech SA	Biotech	GE	calypsobiotech.com
Calypte Biomedical Corporation	Medtech	GE	calypte.com
CAMARA AND PARTNERS Sàrl	Service Provider	VD	camara-partners.com
CAPQUA Sàrl	Supplier & Engineering	NE	capqua.ch
Cara Association	Digital Health	VD	cara.ch
Carbagas AG	Supplier & Engineering	BE	industrie.carbagas.ch
Cardinal Health Switzerland Sàrl	Distributor	VD	cardinalhealth.co.uk
CardioBeat Sarl	Service Provider	GE	cardiobeat.ch
CareFusion Switzerland Sàrl	Medtech	VD	carefusion.com
Carestream Health Suisse SA	Distributor	VD	carestream.com
Carthagenetics	Biotech	VD	carthagenetics.com
Cascination AG	Medtech	BE	cascination.com
Cassiopée Applied Solutions Sàrl	Digital Health	VD	cassiopee.org
CBI | Clinical Business Intelligence	Service Provider	VD	a-cbi.com
CCV (Centre Chimie Vouvry) Sàrl	Service Provider	VS	ccv-chimie.ch
Cdm Centre de diagnostic moléculaire SA	Service Provider	FR	
CEFAI Caoching & Conseils	Service Provider	VD	
Ceidos SA	Medtech	VS	ceidos.com

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Celgene International Sàrl	Biotech	NE	celgene.com
Cell Receptor SA	Biotech	GE	cellreceptor.ch
CELL-CAPS SA	Medtech	GE	
Cellestia Biotech AG	Biotech	VD	cellestia.com
CELLnTEC Advanced Cell Systems	Medtech	BE	cellntec.com
Cendres + Métaux SA	Supplier & Engineering	BE	cmsa.ch
Centredoc	Service Provider	NE	centredoc.ch
Ceramaret SA	Supplier & Engineering	NE	ceramaret.ch
Cerebro GmbH	Digital Health	GE	cerebro.pro
Ceres Heilmittel AG	Pharma	VS	ceresheilmittel.ch
CERN	Academic & Research	GE	kt.cern
Certus Molecular Diagnostics AG	Medtech	BE	venturekick.ch
ChemAlive SA	Digital Health	VD	chemalive.com
ChemTech	Service Provider	FR	heia-fr.ch/en/applied-research/institutes/chemtech
ChondroNest SA	Biotech	VS	chondronest.com
Chord Therapeutics	Biotech	GE	chordtherapeutics.com
CHUV	Academic & Research	VD	chuv.ch
Ciba Vision Europe AG	Medtech	FR	alcon.com
CimArk SA	Scientific Park & Incubator	VS	cimark.ch
Cimo Compagnie Industrielle de Monthey SA	Service Provider	VS	cimo.ch
Ciposa SA	Supplier & Engineering	NE	ciposa.com
CLA Clinical Laboratory Automation SA	Service Provider	JU	cla.ch
Claude Ammann Consulting	Service Provider	VD	claudeammann.com
CleantechAlps	Public & Non Profit Organism	VS	cleantech-alps.com/en
Clinique romande de réadaptation	Academic & Research	VS	crr-suva.ch/clinique-readaptation
Clinopsis SA	Service Provider	VD	clinopsis.com
Coat-X SA	Supplier & Engineering	NE	coat-x.com
Cognex	Supplier & Engineering	VD	cognex.com
Colnec Health	Digital Health	GE	colnec.com
Combioxin SA	Biotech	GE	combioxin.com
Comelec SA	Supplier & Engineering	NE	comelec.ch
Comet AG	Medtech	FR	comet.ch
Comphya Sàrl	Medtech	VD	comphya.com
Composites Busch SA	Medtech	JU	compositesbusch.ch
Concept Fondation	Foundation & Association	GE	concpetfoundation.org
Confrérie Clinique SA	Medtech	VD	confrerie-clinique.com
Consultancy in Sciences	Service Provider	VD	consultantsinscience.com
Contelec AG	Medtech	BE	contelec.ch
CoPexis SA	Service Provider	VD	drdcpharma.com
CordSavings	Medtech	VS	cordsavings.ch
CoreMedica Europe SA	Biotech	GE	coremedicalabs.com
CoronaSense	Medtech	VS	coronasense.ch
Cosmotec SA	Pharma	VS	cosmotec.ch
Coulter Partners	Service Provider	VD	coulterpartners.com
Covance Central Laboratory Services SA	Pharma	GE	covance.com
Covestre International SA	Pharma	FR	covestro.com
CRB - Centre de Recherches Biocosmétiques SA	Cosmetics & Fagrances	VD	crbcosmetics.ch
Creaholic SA	Medtech	BE	creaholic.com
Creapole SA	Service Provider	JU	creapole.ch
Createch AG	Medtech	BE	createch.ch
Cremo SA	Nutrition	FR	cremo.ch
Crisalix SA	Medtech	VD	crisalix.com
Crucell Switzerland AG	Biotech	BE	crucell.com
CSEM - Centre Suisse d'Electronique et de Microtechnique SA	Academic & Research	NE	csem.ch
CSL Behring SA	Pharma	BE	cslbehring.ch
CSSR SA - Centre de Stérilisation de Suisse Romande	Service Provider	FR	cssr.ch
Cukierman & Co. Life Sciences	Capital Risk & Investors	VD	cukiermanlifesciences.com
Curio Biotech	Medtech	VS	curiobiotech.com
CVO-Europe SA	Service Provider	GE	cvo-europe.com
CXIO Foundation	Foundation & Association	VD	cxiofoundation.ch
Cyrex Sàrl	Distributor	FR	cyrex.ch
D&A Laboratoire	Cosmetics & Fagrances	VS	da-laboratoire.ch
DAC-Ortho SA	Medtech	GE	
Dade Behring Diagnostics	Medtech	FR	siemens-healthineers.com/laboratory-diagnostics
Dassym SA	Medtech	JU	dassym.com
Data Mining Int Inc	Service Provider	GE	datamining-international.com
Datamed	Service Provider	FR	datamed.ch
Datametrix AG	Digital Health	NE	datametrix.ch
DBS System SA	Medtech	VD	dbs-system.ch
Debio Research & Manufacturing SA	Pharma	VS	debiopharm.com
Debiopharm Diagnostic SA	Pharma	FR	debiopharm.com
Debiopharm Investment SA	Capital Risk & Investors	VD	debiopharm.com
Debiopharm SA	Pharma	VD	debiopharm.com
Debiotech SA	Medtech	VD	debiotech.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Dec Group Headquarters	Supplier & Engineering	VD	dec.group.net
Decomplix AG	Service Provider	BE	decomplix.ch
Décovi SA	Medtech	JU	decovi.ch
Deep Cube	Digital Health	VD	deepcube.ch
Deerfiled Institute for Healthcare Research LLC	academic & Research	VD	biopole.ch
Degonda-Rehab SA	Medtech	VD	degonda.ch
Delley Semences et Plantes	Nutrition	FR	dsp-delley.ch
Delman SA	Capital Risk & Investors	GE	delman.ch
Deloa SA	Medtech	JU	borruat.ch
Dentsply IH SA	Medtech	VD	dentsplyimplants.com
Dentsply Maillefer Sàrl	Medtech	VD	dentsplymaillefer.com
DePGen SA	Pharma	GE	netrispharma.com
DePuy Ace Sàrl	Medtech	NE	depuy.com
DePuy Mitek Sàrl	Medtech	NE	depuy.com
DePuy Motion Sàrl	Medtech	NE	depepuysynthes.com
DermAbiotech Sàrl	Cosmetics & Fagrances	GE	
Dermopharma Switzerland	Cosmetics & Fagrances	GE	dermopharma.ch
Detech SA	Medtech	JU	detech.ch
DFB Pharmaceuticals Inc.	Pharma	VD	healthpoint.com
Diacosa AG	Pharma	BE	diacosa.ch
Diagnoplex	Pharma	VD	diagnoplex.com
DiagnoSwiss SA	Pharma	VS	diagnoswiss.com
Diavantis AG	Service Provider	BE	
Diepharmex SA	Pharma	GE	audispray.com
Digmesa AG	Medtech	BE	digmesa.com
Dineras International SA	Service Provider	GE	
Distalmotion SA	Medtech	VD	distalmotion.com
DJO Global Switzerland Sàrl	Medtech	VD	djoglobal.com
DM2TC Sàrl	Service Provider	VD	dm2tc.ch
DomoSafety SA	Digital Health	VD	domo-safety.com
Dompé International SA	Pharma	VD	dompe.com
Donawa Consulting Sàrl	Service Provider	VD	donawa.com
Dorix SA	Medtech	BE	dorix.ch
Dorphan	Pharma	VD	dorphan.com
Dr E Gräub AG	Pharma	BE	graeub.com
Dr WiiCARE SA	Service Provider	FR	
Dräger Medical Suisse SA	Medtech	BE	draeger.ch
Drugdesigntech SA	Medtech	GE	drugdesigntech.com
Drugs for Neglected Diseases Initiative (DNDi)	Foundation & Association	GE	dndi.org
DSM Nutritional Products AG	Nutrition	VS	dsmlalden.ch
DSM Nutritional Products AG - Alpaflor	Nutrition	VS	dsmnutritionalproducts.com
DuPont de Nemours Holding SA	Pharma	GE	dupont.com
Dynamics Group SA	Service Provider	GE	dynamicsgroup.ch
Dynatec SA	Medtech	VD	dynatec.ch
EarlySight	Medtech	VD	earlysight.com
EBA-Med	Medtech	GE	eba-med.com
Eclosion SA	Foundation & Association	GE	eclosion.ch
Eclosion2 & cie SCPC	Foundation & Association	GE	eclosion.com
Ecole Polytechnique Fédérale de Lausanne - EPFL	Academic & Research	VD	epfl.ch
Ecosafe SA	Supplier & Engineering	VD	ecosafesa.com
Edwards Lifesciences SA	Medtech	VD	edwards.com
Effik SA	Supplier & Engineering	VD	effik.ch
Egatec SA	Service Provider	BE	egatecsa.gelbeseiten.ch/home.aspx
Elanix Biotechnologies SA	Biotech	VD	elanixbiotechnologies.com
ELCA	Service Provider	VD	elca.ch
Electro Medical Systems SA	Medtech	VD	ems-company.com
Electro Müller AG	Supplier & Engineering	BE	electro-mueller.ch
Electromag SA	Supplier & Engineering	VD	electromag.ch
Elefil Swiss Sàrl	Supplier & Engineering	FR	elefilswiss.com
Eli Lilly Export SA	Distributor	GE	lilly.ch
Elkobio	Service Provider	GE	elkobio.com
Embion Technologies SA	Nutrition	VD	embiontech.com
Emboflu SA	Medtech	VD	emboflu.ch
EmedSwiss SA	Digital Health	FR	emedswiss.ch
Emergent BioSolutions Berna Gmbh (PaxVax Berna)	Pharma	BE	emergentbiosolutions.com
Emovo Care SA	Medtech	VD	
Encretpixel	Service Provider	VD	encretpixel.com
Endeavour Vision SA	Capital Risk & Investors	GE	endeavourvision.com
Ender Diagnostics AG	Medtech	BE	enderdiagnostics.com
Endotelix Diagnostics Sàrl	Medtech	GE	
Endoxa Neuroscience s.à.r.l	Service Provider	NE	endoxaneuroscience.com
Engqvist Consulting	Service Provider	VD	engqvistconsulting.com
Eoswiss Engineering Sarl	Service Provider	GE	eoswiss.ch
EP Solutions SA	Medtech	VD	ep-solutions.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
EPFL Blue Brain Project	Academic & Research	GE	epfl.ch/research/domains/bluebrain/blue-brain-and-covid-19
Epithelix Sàrl	Biotech	GE	epithelix.com
ERAS Ingénierie Switzerland	Service Provider	VS	eras.com
Ergomed Virtuoso Sarl	Service Provider	GE	ergomedplc.com
Erib Corp SA	Digital Health	BE	eribch.com
Espace Création	Scientific Park & Incubator	VS	espacec.ch
EspeRare Foundation	Foundation & Association	GE	esperare.org
Essential Medical Fondation	Foundation & Association	VD	essentialmed.org
Estoppey-Addor SA	Medtech	BE	estoppey-addor.ch
Estoppey-Reber AG	Supplier & Engineering	BE	estoppey.ch
Etameca SA	Medtech	BE	etameca.ch
Ethical Skin Care SA	Cosmetics & Fagrances	NE	ethicalskincare.ch
Ethicon Sàrl	Medtech	NE	ethiconinc.com
Ethimedix SA	Medtech	GE	ethimedix.com
Euro Alliance SA	Public & Non Profit Organism	VS	euroalliancesa.com
Exabone Gmbh	Medtech	VD	exabone.com
ExcellGene SA	Biotech	VS	excellgene.com
ExCellness Biotech SA	Medtech	VD	excellness.com
Eyeware Tech SA	Digital Health	VS	eyeware.tech
FabLab Sion	Supplier & Engineering	VS	fablab-sion.ch/association
Fabrinal SA	Medtech	NE	fabrinal.ch
FAS Medic SA (part of IMI plc, Norgen)	Supplier & Engineering	GE	norgren.com/lifesciences
Fasteris SA	Service Provider	GE	fasteris.com
Ferring International Center SA	Pharma	VD	ferring.com
FinalSpark Sàrl	Academic & Research	VD	finalspark.com
Firmenich SA	Service Provider	GE	firmenich.com
First Aid Marketing GmbH	Service Provider	BE	firstaidmarketing.ch
Fischer Connectors SA	Supplier & Engineering	VD	fischerconnectors.com/global
FKG Dentaire SA	Medtech	NE	fkg.ch
Flares Analytics SA	Medtech	VD	
Flexdental Services SA	Distributor	VD	fdservices.ch
FMC Production	Service Provider	GE	fmcproduction.com
FME AG	Medtech	BE	fme-ag.com
Fondation Artères	Foundation & Association	GE	arteres.org
Fondation Campus Biotech	Foundation & Association	GE	campusbiotech.ch
Fondation EPFL Innovation Park	Scientific Park & Incubator	VD	epfl-innovationpark.ch
Fondation Genevoise pour l'Innovation Technologique (Fongit)	Foundation & Association	GE	fongit.ch
Fondation Genevoise pour la Formation et la Recherche Médicale	Foundation & Association	GE	gfmer.ch
Fondation H. Dudley Wright	Foundation & Association	GE	hdwright.org
Fondation Innovative Medicines for Tuberculosis (IM4TB)	Foundation & Association	VD	im4tb.org
Fondation ISREC	Foundation & Association	VD	isrec.ch
Fondation Jeantet	Foundation & Association	GE	jeantet.ch
Fondation Leenaards	Foundation & Association	VD	leenaards.ch
Fondation Osirix	Foundation & Association	GE	osirixfoundation.com
Fondation pour Recherche Medicale	Foundation & Association	GE	unige.ch
Forimtech	Medtech	GE	forimtech.ch
Fors AG	Medtech	BE	fors.ch
Foundation for Hand Surgery	Foundation & Association	GE	foundation-handsurgery.org
Foundation for Innovative New Diagnostics (FIND)	Foundation & Association	GE	finddx.org
Fresenius Kabi SwissBioSim Gmbh	Biotech	VD	fresenius-kabi.com
Frewitt	Supplier & Engineering	FR	frewitt.com
Frimorfo SA	Service Provider	FR	frimorfo.com
Fritz Gyger AG	Medtech	BE	fgyger.ch
FSC - Fondation Suisse pour les Cyberthèses	Medtech	VS	fsc-sfc.org
Future Health Biobank	Service Provider	FR	futurehealthbiobank.ch
Future Health Cell Bank SA	Service Provider	GE	futurehealth.co.uk
G-Ray Médical	Supplier & Engineering	NE	g-ray.ch
GaDia SA	Medtech	VS	gadia.net
Gait Up	Medtech	VD	gaitup.com
Galderma Pharma SA	Pharma	VD	galderma.ch
Galderma SA	Cosmetics & Fagrances	VD	galderma.com
Galenica AG	Distributor	BE	galenica.com
Galexis AG	Service Provider	BE	e-galexis.com
GALSER SA	Service Provider	GE	galser.ch
Gamaya SA	Nutrition	VD	gamaya.com
Gavi-The Vaccine Alliance	Foundation & Association	GE	gavi.org
GBiotech Sarl	Biotech	GE	geneva-biotech.com
GE Healthcare Life Sciences	Medtech	VD	biosafe.ch
Gene Predictis SA	Medtech	VD	genepredictis.com
Gene Signal International SA	Service Provider	VD	genesignal.com
GeneBio - Geneva Bioinformatics SA	Digital Health	GE	genebio.com
Genegis SA	Digital Health	GE	genegis.ch
General Microtechnology & Photonics (GMP) SA	Supplier & Engineering	VD	gmp.ch
GeNeuro SA	Biotech	GE	geneuro.com
GENEUS.CH	Scientific Park & Incubator	GE	geneus.ch
Geneva Biotech	Biotech	GE	geneva-biotech.com
Genevensis Sàrl	Service Provider	GE	genevensis.com
Genevest Consulting Group SA	Service Provider	GE	genevest.ch
Genge & Thoma AG	Supplier & Engineering	BE	gengethoma.ch
GeniuSoft Sàrl	Digital Health	FR	geniusoft.ch
Genknowme SA	Digital Health	VD	genknowme.ch
GenKyoTex SA	Biotech	GE	genkyotex.com
Genohm SA	Service Provider	VD	genohm.com
Genomic Health International Sàrl	Biotech	GE	genomichealth.com
GenomSoft	Digital Health	GE	genomsoft.com
GenomSys SA	Digital Health	VD	genomsys.com
Gersteltec Sàrl	Supplier & Engineering	VD	gersteltec.ch
GetSet Surgical SA	Medtech	VD	getsetsurgical.com
Gevaltec Sàrl	Medtech	VS	
GF Machining Solutions SA	Medtech	GE	gfms.com
Gibaud (Suisse) SA	Medtech	GE	gibaud.com
Givaudan Suisse SA	Cosmetics & Fagrances	GE	givaudan.com
GlaxoSmithKline AG	Pharma	BE	glaxosmithkline.ch
GliaPharm SA	Biotech	GE	gliapharm.com
Globus Medical	Medtech	VD	globusmedical.com
GMB Services SA	Service Provider	VD	gmb-services.com
GMT Fine Chemicals SA	Pharma	NE	gmtfinechemicals.ch
GNUbiotics Sciences	Biotech	VD	gnubiotics.com
Gomina AG	Medtech	VS	gomina.ch
Gondola Medical Technologies SA	Digital Health	VD	gondola-parkinson.com
Greater Geneva Bern area	Public & Non Profit Organism	VD	ggba-switzerland.ch
Gribi AG	Medtech	BE	gribi.ch
Griffon Pharmaceuticals International	Biotech	VD	griffonpharma.com
Groupe Genitec Holding SA	Service Provider	JU	genitec.net
Groupe PP Holding SA	Capital Risk & Investors	GE	groupe-pp.ch
GSK Consumer Health Care SA	Pharma	VD	glaxosmithkline.ch
GTX Medical SA	Medtech	VD	gtxmedical.com
GXP Consulting Switzerland	Service Provider	VD	gxp-cs.com
Gymetrics SA	Medtech	VD	gymetrics.com
H&H INTL Holding	Nutrition	GE	hh.global
H. Hilderbrand Cie & SA	Medtech	GE	hilderbrand.ch
Haag-Streit Holding AG	Medtech	BE	haag-streit.com
Haemonetics SA	Medtech	VD	haemonetics.com
Hanco Schleiftechnik AG	Medtech	FR	hanco.ch
Handylife	Digital Health	VD	handylife.com
Harald Nordin SA	Medtech	VD	nordin-dental.com
Haslab GmbH	Medtech	BE	haslab.ch
Haute Ecole Vaudoise	Academic & Research	VD	hev.ch
HAYA Therapeutics	Biotech	VD	biopole.ch/fr/company/haya-therapeutics
HCI Solutions SA	Service Provider	BE	hcisolutions.ch
HE-ARC - Haute Ecole Arc	Academic & Research	NE	he-arc.ch
HEALTH Corporate and Healthcare Agency	Service Provider	VD	healththeagency.ch
Health Systems and Technology	Service Provider	GE	hst-consulting.ch
Health Tech SA	Foundation & Association	VD	holding-bs.com
HEIG-VD	Academic & Research	VD	heig-vd.ch
Helbling Technik Bern AG	Supplier & Engineering	BE	helbling.ch
Helios Handicap Sàrl	Distributor	VS	helioshandicap.ch
Helvedis Pharma SA	Pharma	JU	helvedis.com
Helvemed SA	Service Provider	GE	helvemed.com
Helvetica Health Care Sàrl	Medtech	GE	h-h-c.com
Helvitek Labs SA	Supplier & Engineering	VD	helvitek.com
Hemacore SA	Medtech	VS	hemacore.com
Hemasoft SA	Service Provider	FR	hemasoft.com
Henry Schein Medical AG	Medtech	BE	henryschein-med.de
HEPIA	Academic & Research	GE	hepia.hesge.ch
Hepia - Tissue Engineering Laboratory	Academic & Research	GE	hesge.ch/hepia/groupe/genie-tissulaire
Heraeus Materials SA	Medtech	VD	heraeus-medicalcomponents.com
HES-SO Fribourg	Academic & Research	FR	hefr.ch
HES-SO Genève	Academic & Research	GE	hesge.ch
HES-SO La Source / Institut et Haute Ecole de la Santé	Academic & Research	VD	ecolelasource.ch
HES-SO Valais-Wallis	Academic & Research	VS	hevs.ch
Heska SA	Biotech	FR	heska.com
High Lantern Group	Service Provider	GE	highlanterngroup.com
HighPoint Solutions	Service Provider	GE	highpoint-solutions.com
Hilderbrand Cie & SA	Supplier & Engineering	GE	hilderbrand.ch
Hilfsmittelstelle HMS Bern AG	Medtech	BE	hilfsmittelstelle.ch
Hiqscreen Sarl	Service Provider	GE	hiqscreen.com
HL Technology SA	Medtech	NE	hl-technology.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
HMCARE SA	Medtech	GE	hmcare.ch
HMT Microelectronic AG	Medtech	BE	hmt.ch
Hock'n Roll AG	Medtech	BE	hocknroll.ch
Hoffmann Neopac AG	Medtech	BE	hoffmannneopac.ch
Hologic Europe Middle East and Africa SA	Medtech	VD	hologic.com
Homeolab SA	Pharma	VS	pharmacievouilloz.ch
Hopital Ophtalmique Jules-Gonin - Fondation Asile des Aveugles	Academic & Research	VD	
Horphag Research	Pharma	GE	pycnogenol.com
HPlus Therapeutics Sàrl	Biotech	GE	
HUG - Hôpitaux Universitaires de Genève	Academic & Research	GE	hcuge.ch
HUG - Innovation Center	Academic & Research	GE	hug-ge.ch/centre-innovation
Humard Automation SA	Supplier & Engineering	JU	humard.com
Huntsman Advanced Materials (Switzerland) Sàrl	Supplier & Engineering	VS	huntsman.com
Huperion Sarl	Service Provider	GE	huperion.com
Hybrid S.A.	Supplier & Engineering	NE	hybrid.swiss
Hygie-Tech SA	Medtech	VS	hygie-tech.ch
I-Care Suisse SA	Service Provider	NE	icareweb.com
I-Dent Innovation For Dentistry SA	Medtech	VD	i-dent-dental.com
Ibex (Lonza Ltd)	Biotech	VS	
Ichnos Sciences Biotherapeutics SA	Biotech	VD	ichnossciences.com
Ichnos Sciences SA	Biotech	NE	glenmarkpharma.com
IcosaMed Sàrl	Digital Health	NE	icosamed.com
ID Quantique SA	Supplier & Engineering	GE	idquantique.com
ID-Gene Ecodiagnostics	Service Provider	GE	id-gene.com
Idexx Switzerland AG	Veterinary	BE	idexx.com
IE Group	Supplier & Engineering	GE	ie-group.com
IFPMA	Foundation & Association	GE	ifpma.org
IHMA Europe Sàrl	Service Provider	VD	ihmainc.com
IIMG - Instruments, Industrial & Medical Group SA	Service Provider	FR	iimgroup.org
Il-Med Tec SA	Capital Risk & Investors	BE	ilmedtec.ch
ILS Services SA	Service Provider	GE	integralife.eu
Inartis Foundation	Foundation & Association	VD	inartis.ch
Inartis Network	Foundation & Association	VD	inartis-network.ch
Incite Medical Sàrl	Service Provider	GE	incitemedical.ch
Incyte Biosciences International SA	Biotech	VD	incyte.com
Incyte Biosciences Technical Operations Sàrl	Biotech	VD	incyte.com
Incyte Europe Sàrl	Pharma	GE	incyte.com
Index Ventures	Capital Risk & Investors	GE	indexventures.com
Indigo Consulting Sàrl	Service Provider	GE	indigoconsulting.ch
Inflamalps SA	Nutrition	VS	inflamalps.com
Infomed SA	Medtech	GE	infomedsa.ch
INNOmaterials SA	Service Provider	JU	innomaterials.net
InnoPeritus Sàrl	Service Provider	GE	
Innosurf SA	Medtech	FR	innosurf.ch
Innovaud	Foundation & Association	VD	innovaud.ch
Inomed Technology SA	Medtech	JU	inomed.ch
INSELSPITAL / Universitätsklinik RIA	Academic & Research	BE	bachmannlab.ch
Inselspital, Hôpital universitaire de Berne	Academic & Research	BE	insel.ch
InsideReg Sarl	Service Provider	VD	insidereg.com
Institut Clayton de la Recherche	Academic & Research	GE	claytonbiotech.ch
Institut de Recherche en Ophtalmologie	Academic & Research	VS	iro.vsnet.ch
Institut de Recherche en Réadaptation (IRR)	Academic & Research	VS	irr-valais.ch
Institut Suisse des Vitamines	Academic & Research	VD	swissvitamin.ch
Instrumat AG	Medtech	VD	instumat.ch
Intento	Digital Health	VD	intento.ch
Intercosmetica Neuchâtel SA	Cosmetics & Fagrances	NE	intercosmetica.ch
Interdelta SA	Pharma	FR	interdelta.ch
Interdigit SA	Service Provider	VD	interdigit.com
Interlabor Belp AG	Service Provider	BE	interlabor.ch
InterMedService Sàrl	Service Provider	JU	intermedservice.org
Intersteri AG	Service Provider	BE	intersteri.ch
Intrace Medical SA	Service Provider	VD	intrace-medical.com
Intuitive Surgical Sàrl	Medtech	VD	intuitivesurgical.com
Invacare International Sàrl	Medtech	SO	invacare.eu.com
INVENesis Sàrl	Biotech	NE	invenesis.com
iOnctura SA	Biotech	GE	ionctura.com/
iPrint Center	Medtech	FR	iprint.center/Pages/Home.aspx
Ipstudies Sàrl	Service Provider	FR	ipstudies.ch
IQVIA RDS Switzerland Sàrl	Medtech	VD	iqvia.com/locations/switzerland
Ismeca Europe Semiconductor SA	Supplier & Engineering	NE	cohuseg.com
ISS AG - Integrated Scientific Services	Service Provider	BE	iss-ag.ch
Ithetis	Veterinary	VD	ithetis.com
IUMSP	Academic & Research	VD	iumsp.ch
IVA Biotechnology	Biotech	VS	

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Ivers-Lee MedTec AG	Service Provider	BE	iverslee.com
Ixxeo Healthcare SA	Service Provider	VD	ixxeo.com
Jacques Allemann SA	Medtech	BE	jacques-allemann.ch
JAG Jakob AG	Medtech	BE	jag.ch
JB Metrics SA	Service Provider	NE	jbmetrics.ch
Jet Medical SA	Medtech	NE	jetmedical.net
Kisano Suisse SA	Digital Health	VD	kisanogroup.com
Komax Systems LCF SA	Medtech	NE	komax.ch
Kuhn und Bieri AG	Medtech	BE	kuhnbieri.ch
Kuranos	Medtech	GE	kuranos.com
Kyburz & Cie SA	Medtech	NE	kyburz-cie.ch
Kylys Sàrl	Biotech	GE	kylys.com
L-Techs SA	Supplier & Engineering	FR	
La Colline Cellular Research Laboratories	Cosmetics & Fagrances	VS	lacolline-skincare.com
La Manufacture Ressorts CML	Supplier & Engineering	VD	lamanufacture.ch
Labatec Pharma SA	Pharma	GE	labatecpharma.com
Labgene Scientific SA	Supplier & Engineering	FR	labgene.ch
Laboratoire Bailleul	Pharma	GE	bailleul.com
Laboratoire de Technologie Avancée (LTA)	Academic & Research	GE	lta-geneve.ch
Laboratoire Gibro SA	Cosmetics & Fagrances	NE	gibro.ch
Laboratoire Pauline Burgener Switzerland SA	Cosmetics & Fagrances	VD	drburgener.com
Laboratoire SCM SA	Service Provider	JU	genitec.net
Laboratoires Anesa SA	Service Provider	VS	
Laboratoires Biologiques Arval SA	Cosmetics & Fagrances	VS	arvalcosmetics.com
Laboratoires Mergens SA	Pharma	VD	mergens.ch
Laboratoires Plan SA	Pharma	GE	laboratoiresplan.com
Laborial Suisse SA	Service Provider	VD	laborial.com
labseed SA	Medtech	VD	labseed.com
Lambda Health System	Digital Health	VD	lhs-sa.ch
Lamineries Matthey SA	Supplier & Engineering	BE	matthey.ch
Lascco SA	Scientific Park & Incubator	GE	lascco.com
Lasea Switzerland SA	Supplier & Engineering	BE	lasea.com
Laser Automation Gekatronic SA	Medtech	NE	laser-automation.com
Laserix SA	Medtech	VD	laserixsa.com
Lasermed SA	Medtech	FR	lasermed.ch
Lastec AG	Medtech	BE	lastec.ch
Laubscher Präzision AG	Supplier & Engineering	BE	burde-metall.at/glc.htm
Lauener et Cie SA	Medtech	NE	lauener.ch
LauzHack Against COVID-19	Scientific Park & Incubator	VD	covid19.lauzhack.com
LBA Switzerland	Nutrition	VD	lba-bhmed.com
Le Vivier	Scientific Park & Incubator	FR	vivier.ch
Legacy HealthCare (Switzerland) SA	Nutrition	VD	legacyhealthcare.ch
Leitner SA	Medtech	BE	leitner-ag.ch
Leman Cardiovascular SA	Medtech	VD	lemancardiovascular.com
Leman Consulting SA	Service Provider	VD	lemanconsulting.ch
Leman Micro Devices SA	Medtech	VD	leman-micro.com
Lemo SA	Medtech	VD	lemo.com
Lemur-Scouting Sàrl	Service Provider	JU	lemur-scouting.ch
Les Naturelles Predige SA	Cosmetics & Fagrances	VD	les-naturelles.com
LI Lasers Instruments Sàrl	Service Provider	VS	laser-instruments.com
Lifescience Consulting SA	Service Provider	GE	lifescience-consulting.com
LIG-Systems	Service Provider	GE	lig-systems.ch
Limula Biotech	Digital Health	VD	limula-biotech.com
Link Implants AG	Medtech	BE	link-implants.ch
Linkage Biosciences Sàrl	Biotech	GE	linkagebio.com
LKT Swiss Health Technology SA	Medtech	BE	
LMA Urology Suisse SA	Medtech	VD	lmaurology.com
Innomedica Holding AG	Pharma	FR	innomedica.com
Locatis SA	Medtech	JU	locatis-electronics.ch
Logival SA	Medtech	VS	logival.ch
Lonza AG	Pharma	VS	lonza.com
Loop Medical	Medtech	VD	loop-medical.com
Loroch CTLS	Service Provider	VD	loroch.ch
Louis Bélet SA	Medtech	JU	beletsa.ch
LPS Services SA	Medtech	FR	lps-services.ch
LSB-Fournier SA	Supplier & Engineering	VS	lasalleblanche.com
Ludwig Center for Cancer Research	Academic & Research	VD	ludwigcancerresearch.org
Lugaia AG	Service Provider	VS	lugaia.ch
Lumendo AG	Medtech	VD	lumendo.ch
Lunaphore Technologies SA	Medtech	VD	lunaphore.ch
Lymphatica Medtech SA,	Medtech	VD	lymphatica.ch
Lyncée Tec SA	Medtech	VD	lynceetec.com
Madep SA	Service Provider	NE	madep-sa.com
Mandatec AG	Medtech	BE	mandatec.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Mane SA	Cosmetics & Fagrances	VS	mane.com
Manigley SA	Medtech	BE	manigley.ch
Manufactures D'Outils Dumont SA	Medtech	JU	dumonttools.com
Manuplast SA	Medtech	VD	manuplast.ch
Mapag Maschinen AG	Medtech	BE	mapag.ch
MAPE Engineering Switzerland SA	Service Provider	JU	groupe-mape.com
Marcel Blanc et Cie SA	Medtech	VD	marcel-blanc.ch
Marcel Jaccard SA	Scientific Park & Incubator	NE	jaccard.ch
Marketing Matters Consulting	Service Provider	VD	marketingmatters.ch
Marly Innovation Center	Scientific Park & Incubator	FR	m-innovationcenter.org
Masimo Sàrl	Medtech	NE	masimo.com
MassChallenge Switzerland	Scientific Park & Incubator	VD	switzerland.masschallenge.org
Max Jung AG	Medtech	BE	maxjung.ch
MaxiVAX	Service Provider	GE	maxivax.ch
MCL Medizinische Laboratorien	Service Provider	BE	mcl.ch
MCS Labordatensysteme AG	Medtech	BE	mcs-ag.com
MD Development Sàrl	Digital Health	NE	
MD-Clinicals	Service Provider	VD	md-clinicals.com
Meca-Test SA	Supplier & Engineering	GE	meca-test.ch
Mecaplast SA	Medtech	FR	mecaplast.ch
Mecha Ch Rohr	Supplier & Engineering	BE	mecha.ch
Med Communications International,Sàrl	Service Provider	GE	medcommunications.com
Med Discovery SA	Biotech	VD	med-discovery.com
Medabe SA	Service Provider	VS	
Medacta International SA	Medtech	JU	medacta.com
MedC. Partners Sàrl	Service Provider	VD	medmap.ch ou medcpartners.com
Medeco-ch Sàrl	Service Provider	VD	medeco-ch.com
MedExpansion Sàrl	Service Provider	VD	medexpansion.ch
Medical Devices Lease SA	Service Provider	NE	mdlfinance.com
Medical Titanium Sàrl	Supplier & Engineering	GE	medicaltitanium.com
Medico Technique SA	Medtech	NE	
Medicontur	Medtech	GE	medicontur.com
Medicosearch AG	Service Provider	BE	medicosearch.ch
Medics Labor	Service Provider	BE	medics-labor.ch
Medidee Services SA	Service Provider	VD	medidee.com
Mediliant SA	Medtech	NE	mediliant.com
Medimaps Group	Service Provider	GE	medimapsgroup.com
Medinel Sàrl	Service Provider	VD	medinel.com
Medinorma Sàrl	Service Provider	VD	medinorma.ch
Medion Grifols Diagnostics AG	Supplier & Engineering	FR	grifols.com/en/switzerland
Mediplant	Foundation & Association	VS	mediplant.ch
Medirio SA	Medtech	VS	medirio.com
mediSeeds	Nutrition	VS	mediseeds.ch
Medistri SA	Service Provider	FR	medistri.com
Meditec Consulting GmbH	Service Provider	BE	meditec-consulting.ch
Medlight SA	Medtech	VD	medlight.com
Medos International Sàrl	Pharma	NE	jnj.com
Medows Sàrl	Service Provider	VD	medows.ch
Medtronic Europe Sàrl	Medtech	VD	medtronic.ch
Meister + Cie AG	Supplier & Engineering	BE	meister-ag.ch
Melet Schloesing Pharmaceuticals SA	Service Provider	NE	mslabos.eu/hum
Memedge Consulting Sàrl	Service Provider	VD	memedge-consulting.ch
mementor GmbH	Service Provider	FR	memntor.ch
Mensys Group	Service Provider	VD	mensys-group.com
Mentice SA	Service Provider	VD	mentice.com
Merck Group SA	Pharma	VD	merckgroup.com
Merck Institute for Pharmacometrics SA	Academic & Research	VD	
Meridian AG	Medtech	BE	meridian.ch
MesenFlow Technologies Sàrl	Medtech	GE	mesenflow.com
Métafil-Lagirolle SA	Medtech	JU	metafil-lagirolle.ch
Meyer Sintermetall AG	Medtech	BE	sintermetall.ch
MH LOG	Service Provider	BE	mh-log.ch
Michael Page Healthcare & Life science	Service Provider	GE	michaelpage.ch
Micro Precision Systems AG	Medtech	BE	mpsag.com
Microcity SA	Supplier & Engineering	NE	microcity.ch/nos-programmes/pour-les-startups
Microdose SA	Distributor	VD	easymonitoring.ch
Micronarc	Public & Non Profit Organism	NE	micronarc.ch
Microscan Service SA	Service Provider	VD	microscan.ch
Microsens SA	Supplier & Engineering	VD	microsens.ch
Micrus Endovascular SA	Medtech	VD	micrusendovascular.com
Mikajaki SA	Medtech	GE	mikajaki.com
Mikron Holding AG	Supplier & Engineering	BE	mikron-tg.com
Milian SA Dutscher Group	Distributor	GE	milian.com
Milupa SA	Nutrition	FR	milupa.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Mimix Biotherapeutics AG	Medtech	NE	mimixbio.com
MindMaze SA	Digital Health	VD	mindmaze.ch
Mintaka Medical Research Foundation	Foundation & Association	GE	mintakafoundation.com
MLF Consulting Services Sàrl	Service Provider	VD	mlf-consulting.com
MMEX Sàrl	Service Provider	FR	
MMOS Sàrl	Digital Health	VS	mmos.ch
MMV Medicines for Malaria Venture	Foundation & Association	GE	mmv.org
Moinas & Savoye SA	Service Provider	GE	msc-ip.com
Monnier & Zahner AG	Medtech	BE	monnier-zahner.ch
Morphotonix SA	Supplier & Engineering	VD	morphotonix.com
Motilis Medica SA	Medtech	VD	motilis.com
MPI International	Capital Risk & Investors	VD	mpi-inter.com
MPS Precimed	Supplier & Engineering	BE	mpsprecimed.com
MS BeautiLab SA	Cosmetics & Fagrances	FR	marvinpac.com
My Stetho	Veterinary	NE	mystetho.com
My-Vitality Sàrl	Digital Health	VD	mypulses.com
Mycotec SA	Service Provider	NE	mycotec.ch
MyK Consulting	Service Provider	GE	mykconsulting.com
Mymetics SA	Biotech	VD	mymetics.com
Myotest SA	Medtech	VS	myotest.ch
Nagi Bioscience	Medtech	VD	nagibio.ch
Namiki Precision of Europe SA	Supplier & Engineering	VD	namiki.net
Nano Bridging Molecules SA	Medtech	VD	nbmolecules.com
Nanogalenix	Veterinary	JU	nanogalenix.com
Nanolive SA	Medtech	VD	nanolive.ch
NanoLockin GmbH	Supplier & Engineering	FR	nanolockin.com
Nanologica Pure Sàrl	Supplier & Engineering	JU	nanologica.com
Nanosensors	Supplier & Engineering	NE	nanosensors.com
NanoWorld AG	Distributor	NE	nanoworld.com
NBB Biotech GmbH	Service Provider	FR	nbbbiotech.com
NCC Nutrition Cosmetics Creation SA	Nutrition	GE	nccreation.ch
NCCR Robotics	Public & Non Profit Organism	VD	nccr-robotics.ch
ND Biosciences SA	Biotech	VD	nd-biosciences.com
Neo Medical SA	Medtech	VD	neo-medical.com
NeoCoat	Supplier & Engineering	NE	neocoat.ch
Neocutis SA	Cosmetics & Fagrances	VD	neocutis.com
NeoGenomics Europe SA	Medtech	VD	neogenomics.com
NeoMed Medical Sàrl	Medtech	GE	neomed.net
Nestec SA	Nutrition	VD	nestlenutrition.com
Nestle Health Science	Biotech	VD	nestlehealthscience.ch
Nestlé Institute of Health Sciences SA	Biotech	VD	nestleinstitutehealthsciences.com
Nestlé Research Center SA	Nutrition	VD	nestle.ch
NetModule AG	Medtech	BE	netmodule.com
Netsensing Technology	Medtech	NE	netsensing.ch
NetUnion Sàrl	Digital Health	VD	netunion.com
Neurix SA	Service Provider	GE	neurix.ch
Neuro.IO Fondation	Foundation & Association	VD	neuro.io
NeuroAssets Sàrl	Service Provider	VD	neuroassets.com
Neurolite	Medtech	BE	neurolite.ch
Neurosoft Bioelectronics	Medtech	GE	neurosoft-bio.com
NextKidney SA	Medtech	VD	nextkidney.com
Niklaus	Supplier & Engineering	GE	niklaus-sa.com
Nivalis Group SA (Formerly CPAutomation)	Supplier & Engineering	FR	nivalisgroup.ch
Novagraaf International SA	Service Provider	GE	novagraaf.ch
Novassay SA	Pharma	VD	novassay.com
Novateb	Medtech	VD	novateb.ch
Novigenix SA	Biotech	VD	novigenix.com
NovImmune SA	Biotech	GE	novimmune.com
Novipart Health & Life Sciences Sàrl	Service Provider	VS	novipart.com
Novo Business Consultants AG	Service Provider	BE	novo-bc.ch
Novodent SA	Medtech	VD	implantswiss.com
Novoglas	Medtech	BE	novoglas.ch
Novostia SA	Medtech	NE	novostia.com
Nufer Medical AG	Medtech	BE	nufer-medical.ch
Numelec SA	Medtech	GE	numelec.com
Nutricia SA	Nutrition	FR	nutricia.ch
Nutrilinks	Nutrition	VD	nutrilinks.net
Nutrimedis SA	Nutrition	FR	nutrimedis.ch
NV Logistics SA	Service Provider	GE	nvlogistics.com
ObsEva SA	Biotech	GE	obseva.com
Obtech Medical Sàrl	Medtech	NE	jnj.com
Octave Biotech Consulting	Service Provider	GE	octavebiotech.com
Oculis Switzerland	Pharma	VD	oculis.com
Odinelixir SA	Cosmetics & Fagrances	VS	odinelixir.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Olympus Suisse SA	Medtech	VD	olympus.ch
OM Pharma SA	Biotech	GE	viforpharma.com
Omega Insights	Service Provider	GE	omegainsights.com
Omega Statistical Consulting	Service Provider	VD	omegastatco.ch
OmniScience SA	Service Provider	GE	omniscience-ltd.com
OMSI Ventures Sàrl	Capital Risk & Investors	GE	omsiventures.com
OncoEthix SA (Merck)	Biotech	VD	oncoethix.com
ONCommit Sàrl	Service Provider	VD	oncommit.ch
OncoTheis	Biotech	GE	oncotheis.com
Ondaco Sàrl	Service Provider	GE	ondaco.com
One Drop Diagnostic Sàrl	Medtech	NE	1dropdx.com
OneDoc SA	Digital Health	GE	onedoc.ch
Opera CRO	Service Provider	GE	operacro.com
Optimo Medical AG	Medtech	BE	optimo-medical.com
Oriflame Cosmetics SA	Cosmetics & Fagrances	FR	oriflame.com
Orphée SA	Digital Health	GE	orphee-medical.com
Ortho-Team AG	Medtech	BE	ortho-team.ch
Ortho.Kern SA	Medtech	VD	ortho-kern.ch
Orthoglobal Sàrl	Service Provider	VD	orthoglobal.ch
Oscimed SA	Medtech	NE	oscimedsa.com
Osterwalder AG	Medtech	BE	osterwalder.com
Otsuka SA	Pharma	GE	otsuka.com
P&TS SA	Service Provider	NE	patentattorneys.ch
P.T.M.	Service Provider	GE	ptm.ch
Pact & Partners International	Service Provider	VD	pactpartners.com
PACTT	Academi & Research	VD	pactt.ch
Partner Inside	Service Provider	NE	partner-inside.com
PB Swiss Tools AG	Medtech	BE	pbswisstools.com
PB&B SA	Cosmetics & Fagrances	VD	pbbtech.ch
Pearlwater Mineralquellen AG	Nutrition	VS	pearlwater.ch
Pen-fix Sàrl	Medtech	JU	pen-fix.ch
Perfusal Sàrl	Medtech	JU	perfusal.ch
Petitpierre SA	Medtech	NE	petitpierre.ch
Petz Industries AG	Medtech	FR	petz-industries.com
Pewatron AG	Supplier & Engineering	FR	pewatron.com
PFL Antralux SA	Medtech	NE	precel.ch
PFM Medical CCP	Medtech	NE	pfmmedical.com
PGT Healthcare	Digital Health	GE	
Pharma Consulting Marion Senn GmbH	Medtech	BE	pharmaconsulting.ch
Pharma Futura SA	Service Provider	VS	nutritiondusport.ch
Pharmafocus	Distributor	FR	pharmafocus.ch
Pharmalp SA	Nutrition	VS	pharmalp.ch
Pharmasys	Service Provider	NE	pharmasys.ch
Pharmatic AG	Service Provider	BE	pharmatic.ch
Phasis Sàrl	Medtech	GE	phasis.ch
Phenosystems SA	Service Provider	VD	phenosystems.com
Phi Pharma SA	Pharma	VS	phi-pharma.com
Phonak Communication AG	Medtech	FR	phonak-communications.com
PHT Corporation Sàrl	Service Provider	GE	ert.com
Physio Home Care SA	Distributor	VD	physiohomecare.ch
Phyt-Inov SA	Cosmetics & Fagrances	JU	phyt-inov.com
PhytoArk SA	Scientific Park & Incubator	VS	phytoark.ch
PhytoConcept	Service Provider	VS	
Phytomed AG	Cosmetics & Fagrances	BE	phytomed.ch
Phytopharma SA	Pharma	FR	phytopharma.ch
PhytoSwiss Pharma Sàrl	Nutrition	VS	phytoswisspharma.ch
Pibor Iso SA	Medtech	JU	pibor.ch
PICC Solution SA	Service Provider	VD	picc-solution.com
Pico Drill SA	Medtech	VD	picodrill.com
Pierre Kern Orthopédie	Medtech	VD	ortho-kern.ch
Piguet Frères SA	Medtech	VD	piguet-freres.ch
Pimatron Medizintechnik + Consulting GmbH	Service Provider	BE	
Pixels Trade SA	Service Provider	GE	pixelstrade.com
Pixon Engineering SA	Service Provider	VS	pixon-ch.com
PKNM Solutions	Service Provider	VD	pknmsolutions.ch
Plair SA	Medtech	GE	plair.ch
Plaspaq SA	Medtech	FR	plaspaq.ch
platinn	Service Provider	FR	platinn.ch
PMS Process Management System	Service Provider	FR	pmssystem.ch
Pnn Medical SA	Medtech	VD	pnnmedical.ch
Polar Electro Europe AG	Medtech	NE	polar.com
Polares Medical SA	Medtech	VD	polaresmedical.com
Polydec SA	Medtech	BE	polydec.ch
Polyform Kopp AG	Supplier & Engineering	BE	polyform.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Posalux SA	Supplier & Engineering	BE	posalux.ch
Positive Coating SA	Supplier & Engineering	NE	positivecoating.ch
Precipart SA	Medtech	BE	precipart.ch
Précision élèctronique Precel SA	Supplier & Engineering	NE	precel.ch
Precision For Medicine	Digital Health	GE	quartzbio.com
PreenTec AG	Supplier & Engineering	FR	preentec.ch
PregLem SA	Biotech	GE	preglem.com
Pretec AG	Supplier & Engineering	BE	pretec.ch
Prexton Therapeutics	Biotech	GE	prextontherapeutics.com
Primequal SA	Medtech	GE	primequal.com
Pristem SA	Medtech	VD	pristem.com
Product Life AG	Service Provider	VD	productlife.ch
Productec SA	Service Provider	JU	productec.ch
Produits Dentaires SA	Medtech	VD	pdsa.ch
Promed SA	Service Provider	FR	Promed-lab.ch
Prosai SA	Service Provider	FR	
Protaccine Biotec Sàrl	Veterinary	JU	protaccinebiotec.ch
Protec Medical Sàrl	Distributor	GE	protec-shop.ch
ProTool AG	Medtech	BE	protool-ltd.ch
Proxilab Analyses Médicales SA	Service Provider	VD	proxilab.ch
Pryv	Digital Health	VD	pryv.com
PulmonX International Sàrl	Medtech	NE	pulmonx.com
Pure by Switzerland SA	Cosmetics & Fagrances	JU	purebyswitzerland.com
PwC - PricewaterhouseCoopers	Service Provider	VD	pwc.ch
PX Dental SA	Medtech	NE	pxdental.ch
PX Holding SA	Supplier & Engineering	NE	pxgroup.com
PX Precimet SA	Supplier & Engineering	NE	pxgroup.com
PX Services SA	Service Provider	NE	pxservices.ch
QGel SA	Biotech	VD	qgelbio.com
Qloudlab	Medtech	VD	qloudlab.com
Qualimatest SA	Supplier & Engineering	GE	qmt-goup.com
Quantis International	Service Provider	VD	quantis-intl.com
Quantum Pharmaceuticals SA	Cosmetics & Fagrances	NE	quantumpharmaceuticals.com
Quotient Suisse SA	Service Provider	VD	quotientbd.com
R-Action Distribution Sàrl	Medtech	VD	radistribution.com
Randstad Professionals Life Sciences	Service Provider	GE	randstad.ch
Raumedic AG	Supplier & Engineering	FR	raumedic.com
Recomatic SA	Medtech	JU	recomatic.ch
Redelec Technologie SA	Supplier & Engineering	VS	redelec.ch
Regen Lab SA	Medtech	VD	regenlab.com
RegenHU SA	Medtech	FR	regenhu.com
RegioMed Fred Riesen	Distributor	BE	regiomed.ch
Relief Therapeutics	Biotech	GE	reliefftherapeutics.com
REM Analytics	Medtech	VD	remanalytics.ch
Reminisciences SA	Biotech	VD	
Remora Partners	Capital Risk & Investors	VD	remora-partners.ch
ReseaChem GmbH	Service Provider	BE	reseachem.ch
Resonetics SA	Medtech	VD	resonetics.com/innovations/medelec-swiss-precision-tubing
RetinAI Medical GmbH	Medtech	BE	retinai.com
Reuteler & Cie SA - Patent & Trademark Attorneys	Service Provider	VD	reuteler.net
RF Pharmaceuticals Sàrl	Service Provider	GE	
Rheon Medical SA	Medtech	VD	rheonmedical.com
Rhizen Pharmaceuticals SA	Pharma	NE	rhizen.com
Ridepharm Consulting Sàrl	Service Provider	VS	ridepharm.com
Riotex AG	Cosmetics & Fagrances	BE	riotex.ch
RNI Consulting Healthcare	Service Provider	VS	rni-conseil.com
Rodanotech Sàrl	Service Provider	GE	rodanotech.ch
Roewasys AG	Medtech	BE	roewasys.com
Romande Energie Services Sa	Supplier & Engineering	VD	romande-energie.ch
Romedic SA	Medtech	VD	
Rosin Entreprise Sàrl	Supplier & Engineering	VD	rosin-ent.com
RS Research	Biotech	VD	rsresearch.net
Ruetschi Technology AG	Medtech	FR	ruetschi.com/en
Rüfenacht AG	Medtech	BE	starbowl.ch
Rüsch (Schweiz) AG	Supplier & Engineering	BE	ruesch-schweiz.ch
S&S Sàrl	Medtech	BE	ssgmt.com
S-GE Switzerland Global Enterprise	Public & Non Profit Organism	VD	s-ge.com
Safrima AG	Medtech	BE	safrima.ch
Salus Partners SA	Capital Risk & Investors	VD	salus-partners.ch
SamanTree Medical SA	Medtech	VD	samantree.com
Sandozmedica Ltd	Service Provider	VD	sandozmedica.com
Saniswiss SA	Service Provider	GE	saniswiss.com
Sanitex SA	Medtech	JU	sanitex.ch
Sankom Switzerland SA	Nutrition	JU	sankom.com

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Sanofi (Suisse) SA	Pharma	GE	sanofi.ch
Santen Switzerland SA	Pharma	GE	santen.eu
Saphetor SA	Service Provider	VD	saphetor.com
Saphirwerk Industrieprodukte AG	Medtech	BE	saphirwerk.com
SATYAtek SA	Medtech	VD	satyatek.co.in
SAV-IOL SA	Medtech	NE	sav-iol.ch
SBG – Healthcare Strategic Marketing & Communication	Service Provider	VD	sbg-marcom.ch
Sccopi Engineering Sàrl	Service Provider	GE	sccopi.com
Schaerer Mayfield Schweiz AG	Supplier & Engineering	BE	schaerermayfield.com
Schlafli Engineering AG	Medtech	BE	schlafli.ch
Schmitz AG	Medtech	BE	schmitz-soehne.com
ScienceVisuals Sàrl	Service Provider	VD	sciencevisuals.com
Scientis Pharma SA	Pharma	GE	scientispharma.ch
Scitec Research SA	Service Provider	VD	scitec-research.com
SCU,SWissCheckUp,SA	Service Provider	GE	swisscheckup.com
SDI Surgical Device International Sàrl	Medtech	BE	sdigmbh.ch
Second Sight Medical Products Sàrl	Medtech	VD	2-sight.com
Sedia AG	Service Provider	FR	sedia.ch
SEDIN SA	Service Provider	GE	sedin.ch
SEED Biosciences Sàrl	Medtech	VD	seedbiosciences.com
SeedIMPULSE SA	Medtech	VD	seedimpulse.ch
Selexis SA	Biotech	GE	selexis.com
Semadeni AG	Supplier & Engineering	BE	semadeni.com
Semtech Neuchâtel Sàrl	Supplier & Engineering	NE	semtech.com
Senbiosys SA	Medtech	NE	senbiosys.com
SensArs Neuroprosthetics Sàrl	Medtech	VD	sensars.com
SENSaSION Sàrl	Medtech	VS	sensasion.ch
Sensimed SA	Digital Health	VD	sensimed.ch
Servier Suisse SA	Pharma	GE	servier.com
Seyonic SA	Supplier & Engineering	NE	seyonic.com
SFL Regulatory Affairs & Scientific Communication GmbH	Service Provider	VD	sfl-services.com
SGS M-Scan SA	Service Provider	GE	sgs.com/en/life-sciences
SGX Sensortech SA	Medtech	NE	sgxsensortech.com
Shire Recombinant Sàrl	Biotech	NE	shireswitzerland.ch
SIB Swiss Institute of Bioinformatics	Academic & Research	VD	sib.swiss
SICHH Swiss Integrative Center for Human Health	Academic & Research	FR	sichh.ch
SICPA SA	Supplier & Engineering	VD	sicpa.com
SIE AG Surgical Systems	Medtech	BE	ziemergroup.com
Siegfried Evionnaz SA	Pharma	VS	siegfried.ch
Siemens Healthineers SA	Medtech	ZH	siemens.ch
Signal Processing SA	Medtech	VD	signal-processing.com
Silver Wave SA	Cosmetics & Fagrances	GE	silverwavemedical.com
SilverSwiss Technology Sàrl	Medtech	FR	silverswiss.ch
Simatec AG	Supplier & Engineering	BE	simatec.com
SIMPLINext SA	Medtech	NE	simplinext.com
Sincopharm SA	Pharma	VD	sincopharm.ch
Sintetica Bioren SA	Pharma	NE	sintetica-bioren.com
Sipel	Medtech	GE	sipel.ch
Sirad SA	Medtech	NE	sirad.ch
SISPha SA	Service Provider	VS	sispha.com
Sitem-Insel Ltd.	Scientific Park & Incubator	BE	sitem-insel.ch
Skin Cell Technologies	Service Provider	VS	
Smart Cardia	Medtech	VD	smartcardia.com
Smartcanula Sàrl	Medtech	VD	smartcanula.com
SmartGene Services Sàrl	Medtech	VD	smartgene.ch
SMR Engineering & Development SA	Medtech	BE	smr.ch
SMT Swiss Microtechnology AG	Supplier & Engineering	BE	ziemergroup.com
Snortec Sàrl	Medtech	GE	snortec.ch
SNP Consulting	Service Provider	FR	swissnp.ch
Socar Research SA	Service Provider	VD	socar-research.com
Société Suisse des Explosifs	Supplier & Engineering	VS	explosif.ch
Socorex Isba SA	Medtech	VD	socorex.com
Solae Europe SA	Nutrition	GE	solae.com
Solid Drug Development (SDD) SA	Service Provider	GE	soliddrugdevelopment.com
SolvAxis SA	Service Provider	BE	solvaxis.com
SONCEBOZ SA	Supplier & Engineering	BE	sonceboz.com/en/medtech
Sonoscope SA	Medtech	FR	sonoscope.ch
Sonoview LLC	Medtech	BE	sono-view.com
SOPHiA GENETICS	Digital Health	VD	sophiagenetics.com
Sourcin SA	Service Provider	FR	sourcin.com
SP Solutions SA	Service Provider	VS	spsolutions.ch
SpacePharma SA	Medtech	JU	space4p.com
Spagyros SA	Service Provider	JU	spagyros.ch
SPD Swiss Precision Diagnostics	Medtech	GE	swissprecisiondiagnostics.com

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Spectroswiss Sàrl	Service Provider	VD	spectroswiss.ch
Spentys Sàrl	Medtech	VD	spentys.com
SpineArt	Medtech	GE	spineart.ch
Spinomix SA	Medtech	VD	spinomix.com
SpirAlps SA	Nutrition	VS	spiralps.ch
SQTS Swiss Quality Testing Services	Service Provider	FR	sqts.ch
Staar Surgical AG	Medtech	BE	staar.com
Stalicla SA	Biotech	GE	stalicla.com
Stamford Consultants	Service Provider	VD	thestamfordgroup.com
Startech Consulting	Service Provider	VD	startech-consulting.ch
Station de recherche Agroscope Changins-Wädenswil	Academic & Research	VS	agroscope.admin.ch
Steiger Galvanotechnique SA	Medtech	FR	steiger.ch
Stemedica International SA	Biotech	VD	stemedica.com
Stemergie Biotechnology SA	Biotech	GE	stemergie.com
SteriLux SA	Supplier & Engineering	VD	sterilux.ch
Steris AG	Supplier & Engineering	BE	steris.com
SteriSwiss Sàrl	Medtech	GE	steriswiss.ch
Stiftung für Technologische Innovation	Foundation & Association	BE	sti-stiftung.ch
STIMIT AG	Medtech	BE	stimit.com
Stolmár & Partner Intellectual Property S.à.r.l.	Service Provider	GE	stolmar-ip.com
Stoppani AG	Service Provider	BE	stoppani.com
Stragen Pharma SA	Pharma	GE	stragen.ch
Stratarium Sàrl	Service Provider	VD	stratarium.com
Straumann Villeret SA	Medtech	BE	straumann.com
Stryker Spine SA	Medtech	NE	stryker.ch
Stryker Spine SA	Medtech	NE	stryker.com
Stryker Trauma SA	Medtech	GE	stryker.ch
Suisse Med Technologies SA	Supplier & Engineering	GE	suisseMT.com
SUISSELLE	Cosmetics & Fagrances	VD	suisselle.com
Sun bioscience SA	Cosmetics & Fagrances	VD	sunbioscience.ch
Sunrise Medical AG	Medtech	BE	sunrisemedical.ch
Sunstar Suisse SA	Cosmetics & Fagrances	VD	sunstar.com
Supply Chain Operations SA	Service Provider	VD	suplychainoperations.ch
Surcotec SA	Medtech	GE	surcotec.ch
Surgical Instrument Systems. AG	Medtech	BE	
Süss MicrOptics SA	Supplier & Engineering	NE	suss-microoptics.com
Swiss Beauty Technologies SA	Cosmetics & Fagrances	VS	oseocosmetics.ch
Swiss Biobank Sàrl	Biotech	VD	swissbiobank.com
Swiss Biobanking Platform	Biotech	VD	swissbiobanking.ch
Swiss Biotech Center	Academic & Research	VS	swissbiotechenter.com
Swiss Center for ANtibiotic Resistance (Anresis)	Academic & Research	BE	anresis.ch
Swiss Dental Material SA	Medtech	VS	sdm-sa.com
Swiss Food & Nutrition Valley	Public & Non Profit Organism	VD	swissfoodnutritionvalley.ch
Swiss Institute of Cell Therapies (SICT)	Foundation & Association	GE	swiss-ict.ch
Swiss Medbank SA	Service Provider	VD	swissmedbank.com
Swiss Medical Care SA	Medtech	VD	swissmedcare.com
Swiss Medtech	Foundation & Association	BE	swiss-medtech.ch
Swiss Motion Technologies SA	Medtech	VD	swissmotiontechnologies.com
Swiss National COVID-19 Science Task Force	Service Provider	BE	ncs-tf.ch/en
Swiss Phytopharma	Nutrition	GE	swissphytopharma.com
Swiss Vaccine Research Institute c/o CHUV	Academic & Research	VD	swissvaccineresearchinstitute.ch
Swiss-Medical-Consultants Sàrl	Medtech	VD	swiss-medical-consultants.com
Swissaustral Biotech SA	Biotech	VS	swissaustral.ch
Swisscom Digital Lab	Digital Health	VD	research.swisscom.ai
SwissDeCode Sarl	Nutrition	VD	swissdecode.com
Swissderm AG	Cosmetics & Fagrances	FR	swissderm.ch
Swisselect SA	Service Provider	VD	swisselect.ch
Swissfillon AG	Service Provider	VS	swissfillon.com
SwissKH Sàrl	Service Provider	JU	swisskh.ch
SwissLens SA	Medtech	VD	swisslens.ch
SwissSource Sàrl	Service Provider	VD	swissource.com
Swisssurgical Sàrl	Medtech	VD	swisssurgical.com
Swortec SA	Medtech	VS	swortec.ch
Symbion Medical Systems Sàrl	Medtech	VD	symbion-medical.com
Symbios Orthopédie SA	Medtech	VD	symbios.ch
Symetis SA (Boston Scientifics)	Medtech	VD	symetis.com
Synaptive Medical	Medtech	VD	synaptivemedical.com
Syngenta Crop Protection Monthey SA	Nutrition	VS	syngenta.com
Synthena AG	Biotech	BE	synthena.com
Synthes Produktions GmbH	Medtech	VS	synthes.com
SYRHA	Biotech	GE	syrhatech.com
Sysmatec	Service Provider	VS	sysmatec.ch
Sysmex Digitana SA	Supplier & Engineering	VD	sysmex.ch
Systems Assembling SA	Medtech	NE	sysa.ch

COMPANY NAME	MAIN SECTOR	CANTON	INTERNET
Tabrasco SA	Medtech	VD	tabrasco.com
Tagator	Service Provider	VD	tagator.com
Takeda (Site Baxalta Manufacturing Sàrl)	Biotech	NE	takeda.com
Talislife Sàrl	Service Provider	VD	talislife.com
TauDerma Sàrl	Cosmetics & Fagrances	VS	tauderma.com
TC Logiciel Sàrl	Service Provider	VD	tclogiciel.com
Tech-Laser Sandoz SA	Supplier & Engineering	VD	techlaser.ch
Techma Consult Sàrl	Service Provider	VD	techma-consult.com
Techmed Solutions & Assets	Service Provider	VD	techmedsa.com
TechniCAD Engineering SA	Service Provider	VS	technicad.ch
Technis SA	Supplier & Engineering	VD	mytechnis.com
TechnoCut SA	Medtech	JU	technocutsa.ch
Temmentec AG	Cosmetics & Fagrances	BE	temmentec.ch
Tenax SA	Medtech	JU	jic.ch/tenax
Terapet Sàrl	Medtech	GE	terapet.ch
Texelia	Service Provider	GE	texelia.com
The Ark	Public & Non Profit Organism	VS	theark.ch
The Biotech Quality Group	Service Provider	NE	thebiotechqualitygroup.com
The MathWorks GmbH	Service Provider	BE	mathworks.ch
The Wyss Center	Academic & Research	GE	wysscenter.ch
Thermo Fisher Scientific SA	Medtech	VD	thermofisher.com
Tissot Medical Research SA	Medtech	NE	tissotmedical.com
TM Swiss MED	Supplier & Engineering	GE	lelabo-ae.ch
Tolerys SA	Biotech	GE	tolerys.com
Topotarget Switzerland SA	Biotech	VD	topotarget.com
Tornos SA	Supplier & Engineering	BE	tornos.com
Totzke & Dreher Scientific SA	Service Provider	GE	td-s.com
TQM Insight	Service Provider	GE	tqm-insight.com
Trabold & Co AG	Medtech	BE	trabold.ch
Trajan Scientific Switzerland	Distributor	FR	trajanscimed.com/pages/life
TransNovum SA	Supplier & Engineering	FR	
TRB Chemedica	Pharma	VS	trbchemedica.com
TRB Chemedica International SA	Pharma	GE	trbchemedica.com
Triflo Medical Switzerland Sàrl	Service Provider	NE	triflomedical.com
Trimastek Sàrl	Service Provider	NE	trimastek.ch
Trinzo	Service Provider	GE	trinzo.com
Triskel Integrated Services SA	Service Provider	GE	triskel.com
Turck Duotec S.A	Supplier & Engineering	JU	turck-duotec.com
Twiice	Medtech	VD	twiice.ch
Typon Medical Systems	Service Provider	BE	typon.ch
UCB Farchim SA	Pharma	FR	ucb.com/worldwide/switzerland
UICC (Union for International Cancer Control)	Public & Non Profit Organism	GE	uicc.org
UNIBE – University of Bern – DIP	Academic & Research	BE	ivi.unibe.ch/research/virology
Unident SA	Service Provider	GE	unident.ch
UNIFR – University of Fribourg	Academic & Research	FR	unifr.ch
UNIGE Faculty of Medicine	Academic & Research	GE	unige.ch/medecine
UNIGE – University of Geneva	Academic & Research	GE	unige.ch
UNIL – University of Lausanne	Academic & Research	VD	unil.ch
Unilabs SA	Pharma	GE	unilabs.ch
Unimed SA	Medtech	VD	unimed.ch
UNINE – Support Recherche et Innovation (SRI)	Academic & Research	NE	unine.ch/sri/home.html
UNINE – University of Neuchâtel	Academic & Research	NE	unine.ch
UniPix	Medtech	VD	unipix-lab.com
Uniquer Sàrl	Service Provider	VD	uniquer.ch
Unitec – Université de Genève	Public & Non Profit Organism	GE	unige.ch/unitec/presentation.html
Unitechnologies SA	Supplier & Engineering	BE	unitechnologies.com
United BioSource (Suisse) SA	Service Provider	GE	ubc.com
UniverCité	Scientific Park & Incubator	VD	univercite.ch
Vaccine Formulaton Institute CH Ltd	Biotech	GE	
Valpharmex SA	Distributor	VS	valpharmex.com
Valplantes	Cosmetics & Fagrances	VS	valplantes.ch
Valsynthèse SA	Pharma	VS	valsynthese.ch
Valtronic Technologies SA	Medtech	VD	valtronic.com
Valucept Sàrl	Cosmetics & Fagrances	GE	valucept.com
Vaxeal Holding SA	Biotech	VD	vaxeal-group.com
Venturelab	Cosmetics & Fagrances	VD	venturelab.ch
Vibwife GmbH	Service Provider	BE	vibwife.com
ViDi Systems SA (acquired by Cognex Corporation)	Supplier & Engineering	FR	vidi-systems.com
Vifor Pharma SA	Pharma	FR	viforpharma.com
Vigisense SA	Medtech	GE	vigisense.com
Vinci Capital	Capital Risk & Investors	VD	vincicapital.ch
Viral Inactivated Plasma Systems SA	Medtech	NE	vipsmedical.com
Vitanae SA	Cosmetics & Fagrances	JU	
Vivactis Switzerland SA	Service Provider	VD	vivactis.com
Vivaleas SA	Service Provider	GE	vivaleas.com
Viventis Microscopy Sàrl	Medtech	VD	viventis-microscopy.com
Vivos Dental SA	Medtech	FR	vivosdental.com
Voisin Consulting Life Sciences	Service Provider	VD	voisinconsulting.com
Volumina Medical	Medtech	VD	volumina-medical.ch
Volv Global	Medtech	VD	volv.global
Vtuls	Digital Health	VD	vtuls.com
Vuilleumier Technology SA	Medtech	BE	vui-tec.ch
VWR International AG	Service Provider	VD	vwr.com
Vygon Suisse Sàrl	Medtech	BE	vygon.ch
W Life Sciences	Service Provider	VD	wlifesciences.com
WAMA Diagnostics(Switzerland)SA	Medtech	VS	wamadiagnostics.ch
WHO / WEF Covid Action Platform	Supplier & Engineering	GE	weforum.org/covid-action-platform
Wibemo SA	Supplier & Engineering	JU	wibemo.ch
Willemin-Macodel SA	Supplier & Engineering	JU	willemin-macodel.com
Wire Engineering Sàrl	Supplier & Engineering	FR	wire-engineering.com
Witech Bassecourt SA	Supplier & Engineering	JU	witech-sa.ch
World Courrier (Switzerland) SA	Service Provider	GE	worldcourrier.com
World Medical Device Organization	Foundation & Association	VD	wmdo.org
Xactform SA	Supplier & Engineering	NE	xactform.com
Xigen SA	Biotech	VD	xigenpharma.com
XPERTOX Toxicology Services GmbH	Service Provider	FR	xpertox.ch
Xsensio	Medtech	VD	xsensio.com
Y-Parc SA	Scientific Park & Incubator	VD	y-parc.ch
Ypsomed AG	Medtech	BE	ypsomed.com
Zanin Swiss Cosmetics	Cosmetics & Fagrances	VS	zanin-cosmetics.ch
ZENUM	Digital Health	VD	zenumtechnologies.com
Ziemer Ophthalmic Systems AG	Medtech	BE	ziemergroup.com
Zimmer Schweiz GmbH	Medtech	BE	zimmer.com
Zimmer Surgical	Medtech	GE	zimmer.com
Zoetis Schweiz GmbH	Veterinary	JU	zoetis.ch
ZTC Technology SA	Medtech	NE	ztc-techno.com

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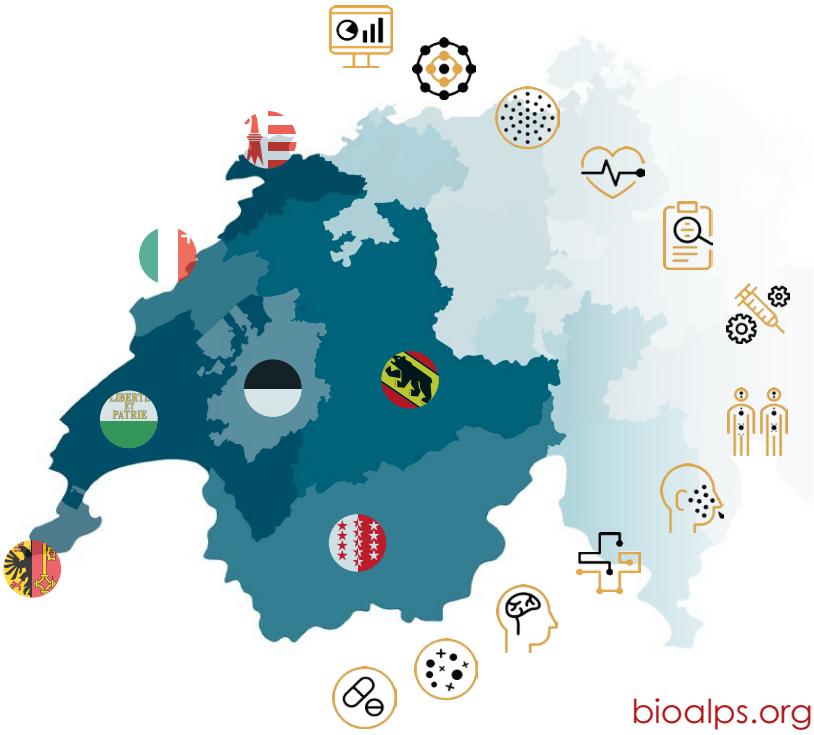
Our Life Sciences Landscape



COVID-19
Value Chain of Actors

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