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Supplement to the Treatise

WOLFGANG RUNGE: TECHNOLOGY ENTREPRENEURSHIP

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Reference to this treatise will be made in the following form:
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The current case relates to the case of the contract research and contract manufacturing startup ChemCon GmbH which addresses pharmaceutical (and biotechnology) companies as well as fine chemicals companies as customers and partners.

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ASCA GmbH –
Angewandte Synthesechemie Adlershof

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Introduction

This is a case of (special) “necessity entrepreneurship” [Runge:14,300-301,308,314,318]. Necessity entrepreneurship is mostly related to the situation of the job market [Runge:316-317]. The proportion of entrepreneurship in a country is usually related inversely to the level of the job market: The worse the job market the higher the level of (necessity) entrepreneurship.

The case shows how two East German chemists grown up in the German Democratic Republic (GDR) and having made their careers in the GDR science system found their place in Germany’s post-re-unification science and research sector entering the business side with their startup during a very special time and environmental conditions.

In so far this case provides a complement to JPK Instruments GmbH [Runge 2014] whose entrepreneurial history focuses on four friends grown up in the GDR and subjected to the corresponding school and higher education system, but studying already in the re-united Germany at Berlin’s Humboldt University before founding their firm.

ASCA GmbH – Angewandte Synthesechemie Adlershof is essentially a private contract research organization (CRO) founded on October 24, 2000 in Berlin-Adlershof (Germany). It is an example how two former renowned scientists of the Zentralinstitut für Organische Chemie (ZIOC) der Akademie der Wissenschaften in Adlershof (AdW, Central Institute of Organic Chemistry of the GDR Academy of Sciences) in the former socialistic German Democratic Republic – Prof. Dr. Hans Schick (born 1937) und Dr. Christine Wedler (born 1950) – after the fall of the Berlin Wall (German Re-Unification) struggled to survive and ended up as successful “necessity entrepreneurs” in the capitalistic West [Runge:300-301,308].

They shared their fate with many other scientists of the former GDR ending up as, for instance, the founders of IGV GmbH (Institut für Getreideverarbeitung GmbH) [Runge:301,369,1044-1047]. During that time just former employees of the Academy of Sciences founded 100 firms [Wassermann 2007].

Chemistry-oriented contract research organizations have a natural tendency to bridge gaps in the landscape of industrial pharmaceutical research & development (R&D). As “laboratories for hire” CROs have emerged as vital agents.

ASCA is located at the WISTA (Wissenschafts- und Wirtschaftsstandort Berlin Adlershof, Science and Business Location). It creates novel and practical solutions for all types of synthetic problems in organic chemistry and explores them on a laboratory scale. Molecules that are likely to be useful leads for drug discovery processes are synthesized in close cooperation with industrial partners. Great care is taken in devising the synthetic strategies, preparing and analyzing the substances and documenting the results [ASCA – Unternehmen].

Additionally, in the context of the corporate purpose ASCA may also provide vocational education and training, for instance, of lab technicians as also ChemCon [Runge 2015a] does.

Concerning its CRO-orientation ASCA GmbH exhibits some similarities to ChemCon GmbH in Freiburg (Germany) [Runge 2015a]. And correspondingly the ChemCon case provides related information about the technology, customers, markets and legislation for the business environment ASCA is operating in.

In terms of research activities, leaders and employees, location and founding process ASCA is largely a conversion of a state-financend established chemical research institute in the GDR-based socialistic system into a private technical venture in the capitalistic system needed to finance itself via customers.

Formally the emergence of the research-based startup (RBSU) resembles a *management buy-out* (MBO) [Runge:41,251,309,632,676,1044] in the capitalistic world: Leaders or managers of

a group of employees who are well known to each other and have deep experience in a particular business area and usually have also knowledge or even contacts with related customers spin-off with the group from a parent organization by founding an independent company.

Awards and Publicity

With very large attention in the media ASCA GmbH and its foundation process represents a prototypical example focusing on *attitudes and traits of personalities* to overcome unexpected constellations of life, difficulties and setbacks to ultimately succeed.

In particular, ASCA and especially Christine Wedler were recognized and awarded essentially concerning *leadership characteristics, employee orientations and corporate culture*.

In 2006 Dr. Christine Wedler was awarded as “Berlin Female Entrepreneur of the Year 2006” for creation and maintenance of jobs, services, offers in the field of training for employees and work-life balance [PE BUT 2006].

Awarded companies are characterized by their outstanding achievements. For example, the family friendliness of ASCA GmbH was rated by the jury as excellent: During ASCA’s early phase four "ASCA children" were born, the fifth was on the way. After their pregnancy all mothers returned back to work [PE BUT 2006].

In the competition for "Berlin's Best Employer 2011" ASCA GmbH was in the Top 5. Main criteria for the assessment are outstanding personnel work and professional quality in companies [Nercessian 2011].

"A good working environment means a lot to us. Finally, we would like to work and feel also good," said Managing Director Christine Wedler. "In addition, a like work done usually means a job well done. That is why we are particularly pleased about this good result. It shows us that the staff perceives this as well and agrees with their company. A better compliment we cannot want for us." [Nercessian 2011]

The efforts of the company to *careful and quality-conscious work in all sectors* has also been recognized by a "Special Award for Conscience” [Nercessian 2011].

The decades of experience of older employees in the field of synthetic chemistry are the most important asset of the company. Relatedly, in 2012 ASCA received a formal recognition as a company with farsightedness to employ people of age 50+. When in 2012 ASCA had thirty employees thirteen of them were over fifty years old [ÄMMI 2012].

The Environment, Fight for Survival and Origins of ASCA

GDR authorities had located specifically all non-university research institutes on a huge science complex in Adlershof/Berlin. After Germany’s Re-Unification an arduous and painful process of what was referred to as “Evaluation” started. Which fields of activity should be continued with state funding and which should be phased out?

The process of evaluation, which involved East German scientists being subjected to a critical appraisal by their West German rivals, has left wounds in the German science sector. For instance, of about a thousand chemists in Adlershof around 150 remained, among them the co-founders of ASCA Christine Wedler and Hans Schick [Schmidl 2006].

“We were positively assessed by the Science Council (“Wissenschaftsrat”) in 1990 and were able to continue our research until 1996 with the help of funding by various organizations. But then our research group was settled,” the chemist Christine Wedler recalled [ASCA 2003].

The evaluation of the chemical institutes since November 1990 was difficult for the reviewers as compared with West German proportions the Central Institute was unusually large and complex. They assessed "the scientific performance" as "mostly good". The surveyed groups were positioned "virtually all in the upper half of the review" according to the head of the related working group. He did "classify the majority of the West German university institutes similar to the way we have classified the Academy Institute." Particularly in the area of interface chemistry, for example, there would be an acknowledged international level [Hinte 2013; Wolf 1996]. However, it was much more difficult to integrate the remaining capacity into the overall German "research landscape" [Hinte 2013; Wolf 1996].

It was relatively uncomplicated spinning off the range of Analytical Chemistry of the Central Institute of Physical Chemistry (Zentralinstitut für Physikalische Chemie – ZIPC) embossed by Prof. Heinrich Kriegsmann. Recommended by the Science Council (“Wissenschaftsrat”) in 1990 it was initially allocated to the so-called "Blue List" (“Blaue Liste”, a list of research facilities to be funded by the public). Very early 200 employees were integrated into the Federal Institute for Materials Research and Testing (BAM, Bundesanstalt für Materialforschung und Prüfung) and since August 1992 these became the "Analytical Chemistry, Reference Materials Department”. The first new building of the BAM at the Adlershof location was the new chemical laboratory building (address: Richard Willstätter-Straße 11) [Hinte 2013; Wolf 1996].

The following description of further developments follows essentially Hinte [2013].

The Chemical Central Institutes pursued the idea of four "Chemical Centers" (“Chemische Zentren”, CZs), where the research fields Colloid and Interface Chemistry, Heterogeneous Catalysis and Applied Polymer Research should be integrated as a new Institute. Given the broken chemical industry in the former GDR, the lack of interest of potential supporters (such as the Max Planck Society [Runge:166,168]) and the universities, an agonizing process of implementation of the proposals started.

In mid-September 1991 692 people had followed a call for applications who should be distributed according to the "Scientists Integration Program" (WissenschaftlerIntegrations-Programm, WIP) across the intended CZs. Only in the very last minute, after much back and forth, the funds until 1993 for about 300 employees were secured.

In 1994 this led to a continuation in terms of the Institute of Applied Chemistry Adlershof (ACA) to be dealing with application-oriented research in the field of heterogeneous catalysis for which it also received funding. More than 50 percent of the work was carried out in cooperation with industry. The work with graduate students (doing their diploma or doctotal theses) was meritorious. Other scientists were absorbed by the WIP and then should be transferred to universities. To this end, from 1993 for two years means were available.

It was not possible to anchor ACA with its then only 135 employees in the German research landscape safely, although ACA was certified to have provided "convincing scientific achievements". The Science Council proposed, therefore, ACA to be incorporated into the Fraunhofer-Gesellschaft (FhG, [Runge:167-168]) for three years, with an interim financing by the Federal Government and the State of Berlin. FhG did not agree, but declared to examine the institute in five years again. Ultimately, the Federal Government and the Land of Berlin accepted to finance ACA for two years [Rogalla and Berg 2001].

ACA had a basis financing for ten years. In addition to annually DM10 million (DeutschMark, €5 million), which the State of Berlin and the Federal Government contributed, ACA earned annually about DM8 million DeutschMark (€4 million) third-party funds. It got already nearly DM4 million (€2 million) from the industry by July 2001 [Westphal 2001].

When the City of Berlin founded the Institute for Applied Chemistry Adlershof (ACA) and pledged to fund it for ten years since 1994 both the then founders of ASCA had believed they were in a secure position. Schick, who was then 57 years old, had been appointed head of the

organic synthesis department. But Berlin's coffers were already empty before the decade was out and the City had to introduce tough austerity measures [Grimberg 2009].

The 1994 establishment of ACA occured with a director from the West. Christine Wedler "began 'frohgemut' (cheerfully) and as a scientist she did much "publishing" until the end of 1996. Then the Berlin Senate decided to withdraw from the Institute. The result: Half Budget and many lay-offs. She and her partner did not want to accept that. They were terminated, suffered for nine months from unemployment and were looking for money for a new beginning [Anonymus 2006a].

She must raise funds and allies. She wrote letters, struggled with applications, was on the phone, asked, digged deeper, but did not give up – addressing the EU, the federal government, the Berlin Senate. "Very tedious," she said. "You have to ask one hundred people to find just one who pulls together with you." [Ahlers 2014]

Hans Schick looked for contacts with industry to catch orders. He often encountered ideological resistance. Quite often the former GDR Academy Director was confronted with skepticism. However Christine Wedler said: "But we wanted absolutely to make it!" [Ahlers 2014]

An unusual initiative for unemployed persons or scientists or employees threatened by unemployment was presented already by Dr. Günther, Prof. Niclas, Eberhard Brink and others who founded on March 22, 1991 the "Scientific and Technical Society Adlershof" (WITEGA, Wissenschaftlich-Technische Gesellschaft Adlershof). It comprised 400 employees mainly of former Adlershof AdW Institutes (AdW, Akademie der Wissenschaft – Academy of Sciences) gathered in a network of employment initiatives and modern research and service companies.

But a group of former employees of the ZIOC (Central Institute of Organic Chemistry of the GDR Academy of Sciences) had to follow detours of their former institute director Prof. Hans Schick and the chemist Dr. Christine Wedler who founded today's company "ASCA – Applied Synthetic Chemistry Adlershof GmbH" (Magnusstraße 11).

After completion of the "execution" described above, they worked under the umbrella of the WIP as the "Chemical Center for Selective Organic Synthesis" (ZSOS), in 1994 in "ACA" and in 1997, when the public funds had been cut, were picked up as "WITEGA Applied Materials Research".

The chemistry institute was singled out for closure. "The decision had nothing to do with the quality of our work," recalled Wedler. "It was that our contracts were the easiest to terminate." The laboratories were shut down in mid-1997. Schick, Wedler and their tight-knit team were out of work – for the first time since the fall of the Berlin Wall. During the GDR era, Schick had been head of the Central Institute of Organic Chemistry with about 750 employees at the East German Academy of Sciences [Grimberg 2009].

"You in the East are all just stupid anyway – that was the blatant message repeatedly conveyed to us," said Wedler, still annoyed at the memory. Nevertheless, Schick's field of activity had survived all phases of the audit. Hence, when what had previously been deemed valuable scientific work was sacrificed in a bid to streamline Berlin's budget in1997, the news came as a shock.

"There was such a sense of utter powerlessness," said Wedler. "I could have burst with anger." At that time she said she felt like the frog that falls into a milk can. The frog kicks and kicks until the milk turns to butter and then he can jump out. "That was exactly what it was like for us – but for a long time, it felt as though there was only water in the can," said Wedler. Until that jubilant day in April 1998 [Grimberg 2009]

In April 1998, when after almost eighteen months of navigating her way through the red tape jungle of European and German national science funding, the crucial contracts for a project striven for "Applied Materials Research" were finally signed [Grimberg 2009].

They managed to get money from the EU. After nine months of unemployment, forty-six former colleagues returned to their old labs. There they found everything as before, as they left them. "That was an ecstatic feeling of success," said Wedler. But she knew well these times: It is just a security for a time period. As the subsidies expired after two years, Schick and Wedler had no choice. They started their own business. Out of *necessity*, they said. Otherwise, they would never have become entrepreneurs [Ahlers 2014].

Thanks to the scientific reputation of Professor Schick they addressed successfully the EU Funds with the topic "Qualification": Five million marks (€2.5 million) per year until 2000 were ahead. The theme: Development of drug substances for the pharmaceutical industry [Anonymus 2006a]. Wedler, Schick and their employees were able to reopen the doors to laboratories that had been closed nine months earlier. “You wouldn’t believe what a triumph that was,” said Wedler [Grimberg 2009].

The European and German funding package was tied to a clearly formulated goal, to help the research project become an independent company after two and a half years. Nobody really knew how that was going to work out. But Schick and Wedler were gradually able to increase their contacts with the pharmaceutical industry [Grimberg 2009].

Then, in October 2000 when they approached the end of the funding period, Prof. Schick and Dr. Wedler with fourteen employees founded the private company ASCA. They cooperated with companies in the research-based pharmaceutical industry in the field of medicinal chemistry, elaborated synthesis concepts, preparations and analysis of test substances.

"The fact that this country afforded to let lie fallow such potentials of science is irresponsible," Dr. Wedler outrage still [Schmidl 2006].

Just as Schick and Wedler have asserted themselves in the German science and research sector, a great number of researchers from the former GDR Academy of Sciences have also managed to establish themselves professionally. And in recent years Adlershof has become one of Germany’s leading science hubs [Grimberg 2009].

The Science and Technology Park of Adlershof (Berlin)

The Science and Technology Park of Adlershof is Germany’s largest science and industry cluster. In 2014 1001 firms of various factions generated a total of €1.74 billion of sales and had ca. 16,000 employees [Frost 2015]. Moving the mathematics and science departments of the Humboldt University from the center of Berlin to Adlershof was completed in 2003 [Janositz 2006].

The structure of the overall cluster is presented below (Table 1).

Table 1: Some characteristics of the Berlin Science and Technology Park Adlershof and WISTA Science and Business Location, respectively, [WISTA-MANAGEMENT 2014].

Science and Technology Park	
The scientific institutions and companies in the Technology Park achieved a turnover of €679 million in 2013. Key areas: Photonics and optics; microsystems and materials; information technology and media; biotechnology and environmental technology; photovoltaics and renewable energies. With 5,576 employees in 2013	
Humboldt-University of Berlin: Number of institutes: 6	Department of Computer Science, Mathematics, Chemistry, Physics, Geography and Psychology

Non-university affiliated scientific institutions: Number of scientific institutes: 10	e.g. FhG Fraunhofer-Institut für Rechnerarchitektur und Softwaretechnik FIRST, FhG für Angewandte Polymerforschung IAP, Bundesanstalt für Materialforschung und -prüfung BAM
In 2013 there were a total of ca. 550 companies classified as MEDIA CITY and firms of Trade and Services (2013: Trade sales €213 million, Services sales €595.1 million) *plus*	
Technology centers: 5	Business incubators: 3
Innovations- und GründerZentrum Berlin-Adlershof IGZ – Innovation and Founders' Center Internationales Gründerzentrum Berlin-Adlershof OWZ – International Business Incubator Medientechnologiezentrum (MTZ) – Media Technology Center	

Prof. Schick is certain that the reason why Adlershof has been so successful is "that something was already here before, something that could be built upon." [Grimberg 2009]

In Adlershof in 1912 the German Research Institute for Aviation was established here. On May 12, 1941 Konrad Zuse presented the Z3, the first fully automated, freely programmable computer. On the premises there were nine research institutes of the GDR Academy of Sciences. In autumn 1989 there worked a total of 5,500 people [Janositz 2006].

The Entrepreneurs

Christine Wedler and Hans Schick are two of many GDR- researchers who lost their jobs after the Re-Unification, returned to Adlershof and founded their own company. This has already been described partly including also some references to their personalities.

Leading a firm was not planned at all. "But you have to adapt to the circumstances," Dr. Wedler said. Since 1973 she was active in Adlershof in the field of organic synthesis – at first as a researcher at the Central Institute of Organic Chemistry (ZIOC) of the former Academy of Sciences of the GDR, then as a researcher of the Institute of Applied Chemistry Adlershof (ACA), the successor organization to the ZIOC. When in 1996, after three evaluations, it was decicided to separate the Organic Synthesis and the Polymers field from ACA for cost reasons, the affected employees decided to join forces. Together with Prof. Dr. Hans Schick, former Central Institute Director, Christine Wedler was asked to represent the interests of chemists threatened by unemployment [Wedler 2001].

Christine Wedler (born 1950) grew up in a village in the Harz Mountains, with three siblings and a father who was a biologist and plant breeder. With fourteen years she went to a boarding school in Wernigerode. "Then one is adult and can leave the home," she said, showing her bent for independence. She studied at the Humboldt University in East-Berlin. With twenty-three she was a chemist with a diploma of Humboldt University [Anonymus 2006a].

In the GDR each graduate will also get a job, she mentioned, without wanting to appear "GDR nostalgic". Her first position was in Adlershof at the Central Institute of Organic Chemistry (ZIOC) of the GDR Academy of Sciences. At that time altogether 750 scientists were working at AdW distributed across Berlin, Rostock and Leipzig. She earned her doctorate in 1980 [Anonymus 2006a].

"This was a great place," she said. "The task was challenging." In retrospect there were, of course, many impairments: Chemicals only to be purchased in the West and long waiting for them, restricted access to scientific literature and lacking special instruments. "But the atmosphere was very cooperative," said Wedler. "We did not know any fear of job." [Ahlers 2014]

Christine Wedler spent her entire professional life in Adlershof. Here she experienced descent and ascent, and for some time she had to endure, must be patient. She *never gave up*, she is tough. She became a manager. For her "a company is not much different from a normal household." What do we earn, what do we spend? Not so difficult. She did not need much tutoring in capitalism, she never attended a business seminar [Ahlers 2014].

“You can *learn it simply by doing*," said the woman with the upright posture. She has a solid voice that sounds like tackling, but she exudes friendliness and professionalism at the same time [Ahlers 2014].

Christine Wedler’s past was just around the corner where she worked for thirty years as a chemist [Ahlers 2014]. She lived in rundown small apartments with her then-husband and her two sons. After the fall of the Wall she entered real whitewater [Anonymus 2006a].

Professor Dr. Hans Schick (born 1937) and then Dr. Wedler’s business partner actually could already have been retired. "With sixty I got the notice. But then it really started," he said appearing like someone who outsmarted the fate [Ahlers 2014].

A long history connects him and Wedler. In GDR-times he was her director, she was one of his 750 employees. Today, they are equal managing directors of the company that carries out research into new active ingredients for medicines. He cares about the research, she does the management.

"We've come to terms with the realities and made the best of it – then as now," said Hans Schick, who at the end of the 1960s succeeded in synthesizing an important key intermediate for the production of anti-baby pills – a method that is still used today worldwide [Ahlers 2014].

As director of the Chemistry Institute, he traveled regularly to the West, attended meetings in Sweden, England, USA and Japan. "I had the choice. I could go," he said. He, as the vast majority of Germans in the East or West, could not imagine a fall of the Berlin Wall [Ahlers 2014].

For the ones who were scientists like Professor Hans Schick after the Re-Unification the proximity to the State was the undoing. Back in the sixties, Schick provided millions of hard currency with his inventions for the so-called “Workers’ and Peasants' State” (“Arbeiter- und Bauernstaat”). When he developed a substance that was important for the production of anti-baby pills the GDR Academy of Sciences sold the licensing rights of the patent to the West-Berlin pharmaceutical company Schering AG (later acquired by Bayer AG) [Wassermann 2007]. The method for producing an intermediate product for contraceptives was still used in 2004 by Schering [WISTA-MANAGEMENT 2004].

The chemistry professor with the emblem of the ruling party (SED) represented the GDR at congresses in the “non-socialist economic area”, as was the notion by the official “Party’s German” (“Parteideutsch”) for the West. Prof. Schick’s scientific reputation was uncontroversial among West colleagues – but only until the autumn of 1989. "We all were suddenly under suspicion," Schick recalled the time after the Wall fell. Meanwhile, he has mastered the system change [Wassermann 2007].

Of course, many of the party cadres had to attribute their career slump after the 1989 revolution to themselves. They had served the ruling SED-Party too submissively which is why they had to depart from their posts. Schools, universities and scientific research institutions should consider new, guiltless people for the top in the new era. But some checking was – by the way – also a shakeout. Annoying science competition could be smoothed out by referring to their SED past [Wassermann 2007].

For Schick's Department it was over in 1996, as the public authorities severed the grants. Seventy East German Academy chemist became jobless, including Research Director Schick and chemist Wedler.

The fall of the Berlin Wall surprised Schick and Wedler. In 1991 they feared for the first time to lose their jobs. The “evaluators” came to Adlershof. On behalf of the German Science Council the evaluators should assess the East German researchers for their suitability, judged who is competitive by the standards of the New World. Of the original 5,500 employees of the Academy of Sciences in Adlershof about 1,500 remained [Ahlers 2014].

Schick and Wegner were included. Their institute deemed worthy of preservation. They had survived the evaluation, they were motivated. "Now we want to show what we can do," said Wedler. But things turned out differently as sketched above. Soon Wedler and Schick were unemployed for the first time in their lives. The Berlin Senate wanted to save and shortened the funds for the newly founded institute. Half of their colleagues had to go – despite successful research.

Christine Wedler no longer understood the world. The compensation: Half a month's salary. Wedler then was mid-40s, Schick 60 years old. It is the year 1997. The unemployment rate in Berlin and the new federal states of the former GDR (“Neue Länder”) was at 19.1 percent. “It was awful” said Christine Wedler. She suffered very much from the uncertainty: What does the future hold? What will become of us? Will we find again a job in our age? What about our former colleagues? [Ahlers 2014]

In the chemist and mother of two sons "anger accumulated, zest and the will to survive". "I did not want to go down with mid-40s," she said. Together with Hans Schick she developed the concept of a *private research institution as a company*. The search for funding began. Countless interviews with employees of the Federal and State Governments were conducted and petitions were written to MPs (Members of Parliament, “Abgeordnete”). The tenacious development made her temporarily doubt her idea. In retrospect, Wedler said: "Sometimes I believed I am chasing a phantom." [Wedler and Schick 2007]

Together with her colleagues on July 1, 1997 Christine Wedler closed the door to the lab in the building. For the last time, she thought. Little did she know that they will return a few months later. Actually they had to hand over the rooms empty, well-swept (“besenrein”) according to the arrangement. "But we just did not do it. Everything was kept at its place," said Dr. Wedler [Ahlers 2014].

Presumably it was this defiance that then has preoccupied her, that did not let her lapse into passivity. On the contrary, to receive unemployment benefits made her uncomfortable. "We did not know that, that someone pays the living to someone else," said Christine Wedler. She wanted to continue to work, as soon as possible to get an own independent research project – also for her former colleagues [Ahlers 2014].

In 1997 for Wedler and her today partner and additional seventy other employees there was apparently no use in the new Germany. The scientists were not willing to accept that. First, they organized funding for a model project. When these were exhausted in 2000, they founded their own company in order to save their jobs [Meier and Asche 2010].

What to do if twenty-four years of professional experience are suddenly value nothing? If you will be discarded like an old jacket despite proven performance? Christine Wedler had exactly these issues. At that time, to economize cost her work has been omitted ("weggespart"). But it was clear for the doctorate chemist of the former East German Academy of Sciences, "I am technically top, I cannot accept to give up." *She did not gave up* [Schmidl 2006].

Later with her successful firm luxury is not particularly important for her. If things go well in the company, she is satisfied. For her the question of happiness is not to answer with money. Having accomplished something on her own, she said, that makes happy [Ahlers 2014].

Christine Wedler and her colleague and today partner chemistry professor Hans Schick, had fought with *unshakable tenacity* to be able to continue their internationally recognized research work in the field of organic synthetic chemistry [Grimberg 2009].

"Dealing with people is very important to us," explained the company owners, who took their savings account for the formation of a limited liability company (LLC – GmbH). They started without external financing, but with low salaries and the old laboratory equipment. Now they value their freedom and the possibility to make decisions: "Today I am a happy business-woman," said Wedler who was awarded "Berlin Female Entrepreneur of the Year 2006" [Meier and Asche 2010].

It was always the case that bad experiences spur rather than paralyze Christine Wedler: After she was attacked and robbed in 1993 during vacation in Spain she began with the targeted Karate training. Never again, she said; she did not want to occur scare stiff and powerless to others [Schmidl 2006].

You could call it her credo: "You have to do something, otherwise only frustration and anger remain." "Considering even all the honor for me my greatest satisfaction is that the company is going well. The effort has been worthwhile." [Schmidl 2006]

For relaxing both have their hobbies: Hans Schick likes birdwatching and photographing and Christine Wedler good literature, a theaterplay or a language course abroad [Anonymus 2012].

Remarks Concerning Corporate Culture

Christine Wedler and Hans Schick [Wedler and Schick 2007]:

"Being an entrepreneur means to take responsibility.
Responsibility for the decisions taken,
the results of the work and for the people employed."

As described above (Awards and Publicity) ASCA or Dr. Wedler, respectively, are recognized by several awards which essentially address corporate culture.

"Dealing with people is very important to us," explained the company owners [Meier and Asche 2010]. Dr. Wedler and Prof. Schick execute *genuine* leadership essentially via *influence* [Runge:24,26-27] and regularly *open communication* about ASCA's status.

A principle of its corporate philosophy is to *manage the company with social responsibility*. For the two managing directors it is important "that we have a good *atmosphere*."

ASCA's corporate culture is determined to a large extent by a firm's foundation involving a *large group of persons who knew each other for a rather long time* – as colleagues or privately. Many of the employees shared the same situation as the founders, ups and downs, fear and hope, payments versus social benefits, being jobless and the chance to control one's own fate.

Already during the bad times ASCA's then founders had the role as leaders. Together with Prof. Schick, former Central Institute Director, Christine Wedler was asked to represent the interests of the chemists threatened by unemployment [Wedler 2001].

As entrepreneurs they want to be *social*. They prefer paying more Christmas bonus rather than maximizing profits. In this way it was possible to double the number of employees in five years. Among them were colleagues who went along the path from the GDR era as well as young graduates from the Technical University or Humboldt University of Berlin. In 2005 they hired four of these. Hence, there was a *mix of experience and new knowledge*. This is the recipe to master the difficult syntheses of active pharmaceutical ingredients (APIs), whose preparation on their own is often too expensive to the customers [Janositz 2006].

Modesty is part of the corporate concept as well as *quality-conscious work in all sectors* [ASCA 2003; Nercessian 2011].

ASCA's founders and owners *absolutely want to remain "masters" of their company and their decisions*, and therefore the *firm's expansion will be only in small increments*. This reflects that the two founders prefer "more stability above rapid growth." [Wedler and Schick 2007] That means the entrepreneurs were explicit with their *intention* their firm to follow *only slow growth* [Runge:557-559].

This all is reflected by a recent assessment of ASCA as an employer [Kununu 2014]:

Superiors' behavior: The advance of the company and the continued existence of it is for the leaders self-evident, which gives a certain security. … I appreciate that in weekly meetings the current status is communicated, how is the company; that means transparency.

Colleagues' coherence: The social is the center here. It maintains the interpersonal here so much that a large group cohesion exists – a super big plus. Everyone helps each.

There are more positive comments concerning *interesting tasks*, *working atmosphere*, *career and employee development* and *work-life balance*.

Business Idea, Opportunity, Service Developments and Foundation

Ability is nothing without opportunity (Napoleon Bonaparte)

After Germany's Re-Unification and the closure of all the Academy Institutes the Department of Organic Chemistry was subjected to various structures, such as "Zentrum für Selektive Organische Synthese" (ZSOS, 1992-1993 – Center of Selective Organic Synthesis), Abteilung Organische Synthese im Institut für Angewandte Chemie (ACA, 1994-1997 – Department of Organic Synthesis in the Institute of Applied Chemistry), and WITEGA Angewandte Werkstoff Forschung (1997-2000 – Applied Materials Research). In particular during the last three years increasingly cooperation and contractual relationships with industrial partners were developed which were the basis for founding ASCA [ASCA – Unternehmen].

The following outline covers specifications of previous descriptions of ASCA (in the chapter on "survival" and "entrepreneurs") mainly concerning business idea and opportunity. In so far certain redundancies will show up – but in a reformulated way or put into a different context.

On July 1, 1997 Christine Wedler, Hans Schick and a total of sixty-nine former colleagues became unemployed. The laboratories were sealed. However, Wedler and Schick were picked up by "WITEGA Applied Materials Research". They worked on; WITEGA provided an office to them. This enabled the two to go for funding, mainly from the European Structural Funds (ESF) [Grimberg 2009].

She worked together with Schick to grasp the complicated legislatives, organized press campaigns, wrote a number of petitions, sold from door to door to the deputies of state, federal and EU authorities and filed one application after another to get funds for a project. "As the funds were already in sight it was most difficult to win support for our laboratories," Wedler said in retrospect. Finally, a former colleague helped: Dr. Manfred Günther, Managing Director of WITEGA Applied Materials Research gGmbH, agreed to manage in trust the premises including facilities to prevent a sale of inventory and disposal of chemicals [Wedler 2001].

Christine Wedler will never forget the date on which financing a model project with more than €2.5 million per year was finally fixed in 1998 – two-thirds from the European Social Fund (ESF), one third from various units of the Berlin Senate Administration (the Berlin Senate Departments of Labor and Economics). She rounded up the old colleagues [bga 2007; Wedler 2001].

The model project referred to a "qualification company" ("Qualifizierungsgesellschaft") [Wasserman 2007]. "In April 1998, the lights went on again in the labs," said Wedler full of joy:

Forty-six people found work again. The model project "Structural adjustment of the Berlin Adlershof region" gave them the *opportunity based on employment and their existing skills to acquire additional skills for the job market* – especially in the field of *analytics* and *directly applied research* [Wedler 2001].

Concerning the actual *goal of the model project* Wedler said: "It was from the beginning to *build a powerful and application-oriented institution that offers research and development services for industry and finance itself through contract research*." [Wedler 2001]

Professor Schick strove for the establishment of contractual relations with industrial partners, which were the *basis for founding the company*. With the manual "How do I set up a private limited liability company (LLC – GmbH)" and in cooperation with the Technology Coaching Center (TCC) [2] both worked out a viable business plan and clarified important questions of foundation.

The plan worked – also because *the two founders could rely on a stable network of the old days*: Their clients in the research departments of pharmaceutical companies in Jena and Dresden. These first points of business contact had received their training at the Academy or worked already during GDR-times with Schick's troops. "They knew us and had not to be convinced of the quality of our work," said Wedler [Wassermann 2007].

As the end of project funding was ahead in October 2000, Dr. Wedler and Prof. Schick had to consider how to proceed.

When funding for the “qualification company” (“Qualifizierungsgesellschaft”) actually was depleted, they founded their own company with "the last savings," said Wedler. After plundering their modest savings – with just 50,000 German Marks (€25,000) – in October 2000 Schick and Wedler founded ASCA – Applied Synthesis Chemistry Adlershof GmbH (LLC) [Grimberg 2009]. Both were shareholders, co-owners and managing directors (“geschäftführerende Direktoren”). Soon later with fourteen people and the old laboratory equipment of the institute both began operations [Wassermann 2007].

While it was clear that Schick took over again research, the focus of responsibilities of Dr. Wedler changed during the end of 2000 till the early phase of 2001 according to requirements. First she was cramming the vocabulary of the West – commercial law and marketing strategies to create a private laboratory operation, which should exist from orders of research-oriented pharmaceutical companies [Wassermann 2007].

Dr. Christine Wedler was no longer wearing her lab coat, but became responsible for management and also administering personnel and finances.

Out of the limited project by which a total of eighty-six ex-academy staff temporarily found work "we felt that it will work," Wedler said succinctly [Schmidl 2006]. The model project “qualification company” that was our apprenticeship, said Schick [Janositz 2006].

> It was the only chance I had, said Christine Wedler. "That would have been not to make from a standing start," recalled Prof. Schick. "The experience and contractual partnerships from the project period benefited us." [bga 2007].

"There was no alternative, we had to create jobs for ourselves and our colleagues." For Dr. Wedler the time was over during which she was out of work and got just one month's salary compensation and had to bargain with a skeptical bureaucracy concerning much needed funding [Schmidl 2006].

"We were threatened with unemployment. Hence, we looked for alternatives. But there was really only one way ..." They took the plunge in an own economic existence [ASCA 2003].

Was there a market for synthetic chemistry? But, once it was possible to acquire enough orders, the two chemists in 2001 dared the leap into self-employment with also employing others. "With small salaries", as they emphasized [Janositz 2006]

Several weeks after the firm's foundation a pharmaceuticals company settled its bill and the company was able to pay its first wages [Grimberg 2009].

In January 2001 they ventured a *fresh start* with their own company; the "organic chemists" started regular operations in their ancestral areas. In 2002 ASCA GmbH already made €1.8 million in sales and the planning for 2003 was €2.4 million. The staff was a mix of veterans and young chemists. "We have excellent, handpicked scientists of the earlier Academy-Institute who would otherwise stand jobless in the street," said Dr. Wedler [ASCA 2003].

Christine Wedler was confident and "determined not to go down." Together with Hans Schick and their colleagues from ASCA they looked forward to the next project, the anniversary "50 Years of Synthetic Organic Chemistry in Adlershof" in 2004 [Wedler 2001].

"Professor Schick is responsible for the scientific side, I take care of the finances, personnel and contracts." But she did no longer miss scientific work: "For me it is important that the company is doing well and our businesses is run properly." Her working day was twelve hours and she visited the laboratory barely [ASCA 2003].

"That was the hardest thing we've ever done; accordingly we were happy with the success," said Dr. Wedler. She was proud to have retained the "potential of organic chemists of the site Adlershof." Christine Wedler developed business and liquidity plans and sought to create new business contacts. This was very important because filling the order book of the young company remained still difficult – also because ASCA as a CRO looked for fixed-term contracts [Wedler 2001].

There were contracts with pharmaceutical firms, such as Bayer AG and Grünenthal GmbH. ASCA had 22 employees in 2002. The team was confident. The internal balance was right again. "We are in a situation which we can endure well," said Christine Wedler [Platau 2002].

After the long and checkered journey that many had undertaken together money was a secondary concern. It was the work that mattered. These days, ASCA was able to pay only decent wages. But the company has gone from strength to strength and developed "organically" [Grimberg 2009].

"For the money that we then paid our employees, we would get no one today," said Christine Wedler. But the people were glad that they got a chance. "However, it could also have gone wrong," said Dr. Wedler. It goes well, the company is running – until today. From the start the two founders made no debts, never used external capital [Ahlers 2014].

Modesty was and is part of the corporate concept: Christine Wedler was still sitting in the old institute building in Adlershof Science Park between old shelves from the GDR-time. "I'm not riding an expensive Mercedes, but every morning come here with the commuter train," she said. "*But I am my own boss*, and we can pay salaries, are debt-free and no one is at risk of unemployment." [ASCA 2003]

"In principle, it is what we have previously done well." "We have excellent, handpicked scientists of the former Academy institute," said Christine Wedler. "They are our top performers." The profits earned flow back into the company, for example into technical investments." "*To be technically up to date*, is enormously important." [ASCA 2003]

Thus when ASCA was acquiring a spectrometer for Nuclear Magnetic Resonance (NMR), with a price of about €250,000 one third was steered by the State of Berlin (Land Berlin) with a grant. "With this device, we can analyze the sought molecules in more detail," she said [ASCA 2003].

> "Schick and Wedler are not setting their sights on rapid expansion or maximum returns. So far the company did not need to seek a single euro in the external investment – and that is the way they want it to continue." [Grimberg 2009]

Schick is certain that the reason why Adlershof has been so successful is "that there was already something here before, something that could be built upon." For Schick and Wedler *professional success* has compensated for the many disillusioning and insulting experiences of the years following Re-Unification [Grimberg 2009].

"We could look back on decades of successful professional activity, our website was riddled with our publications and reference projects [ASCA]. In this way you convince potential customers more easily than if you start directly from the university." How well ASCA succeeded is proven not only by numbers: In 2006 ASCA GmbH in Berlin-Adlershof employed thirty-one employees and had an annual turnover of €3.4 million [bga 2007] and Dr. Wedler was awarded as "Berlin Female Entrepreneur of the Year 2006".

On behalf of the pharmaceutical industry ASCA is looking for new active ingredients for medicines. They synthesize molecules that later *may* even be useful for medicine. "*We do not manufacture products, but we'll investigate.*" [ASCA 2003] (Emphases added)

The operation initially used old relationships with pharmaceutical companies in Jena and Dresden in the former GDR [Wassermann 2007]. Looking at old patents involving Hans Schick (Table 5) shows that these companies were VEB Jenapharm (now Jenapharm GmbH & Co. KG, belonging to Bayer) and VEB Arzneimittelwerk Dresden (AMD), one of the largest pharma company of the GDR with ca. 3,000 employees. Jenapharm's emphasis was on steroid hormones and birth control pills. [1]

For the colloquium for the 65th birthday of Prof. Hans Schick there were speakers of the German firms Jenapharm GmbH & Co. KG Jena and Grünenthal GmbH Aachen [ASCA 2002] showing the revived and close relationships. On its Web ASCA also presents a list of patents with Grünenthal as the patent assignee and Hans Schick as a co-inventor [ASCA].

ASCA's initial clients of research-based pharmaceutical companies in the Western part of Germany covered Altana Pharma (in 2007 divested by Altana), Bayer and Grünenthal which it supports in the development of new drugs. By 2006 it was working for five pharmaceutical companies, for which it is financially more advantageous to tranfer specific basic research to contractors. For these contracts were available [Schmidl 2006].

Who wants to pay his rent and his staff reasonably cannot endlessly push the prices down. Therefore, *ASCA GmbH has a different business model*: ASCA goes only for *long-term research contracts with its partners*, from which both sides benefit. By 2006 almost all its clients had become regular customers [tk-adlershof 2006].

If a substance is searched, for instance, with an anti-inflammatory or analgesic effect, ASCA develops corresponding chemical compounds that may be suitable for the particular application for its industry partners. These compounds developed by ASCA are then tested in the research departments of pharmaceutical companies on their efficacy, tolerability and toxic properties and, in the ideal case, further developed to a new drug [tk-adlershof 2006].

Each project usually starts with a comprehensive literature review. This is utilized for a synthesis concept, which is the basis for the preparative work. If the synthesis is successful, ASCA passes the substances – usually no more than 500 mg – to the contracting party who undertakes the further investigations [tk-adlershof 2006]. More details on the process of the preparative work of a CRO/CMO are described for ChemCon GmbH [Runge 2015a].

About half of the thirty employees in 2005 were from the Central Institute of Organic Chemistry of the former Academy of Sciences and this was *ASCA's big selling point*: The team consisted of *highly qualified, experienced chemists and engineers* who, because of their professional

background and their biography, are accustomed to develop original and practicable solutions in all areas of synthetic chemistry. The *young, recently hired employees brought in new synthetic methods* and the experience of working groups of universities [tk-adlershof 2006].

Opportunities to find young talents to be hired is provided by the proximity to the chemistry department of Humboldt University in Adlershof. For graduates of also the Technical University (in Berlin's center), for instance, during the period 2008–2010 ASCA offered 3-months terms for PhD or postdoc activities [TU Berlin].

Looking at the achievements after the first seven years of ASCA's existence Hans Schick and his colleague Christine Wedler had proved the *strong will* and *staying power* for their own corporate foundation. Where did they find the energy and stamina for their own business? From the *fun at work*, from the *very good working atmosphere* and not least from the *growing success* [Wedler and Schick 2007].

As a summary, in 2004 ASCA GmbH was a sought-after partner of the pharmaceutical industry. With twenty-seven employees – in the majority former staff of the Academy of Sciences – and *an apprentice* it reached sales of €2.5 million [WISTA-MANAGEMENT 2004].

> With regard to service and offerings "We have to be fast and above all reliable if we're to make it on the market," emphasized Dr. Wedler [WISTA-MANAGEMENT 2013].

Specifically, concerning its offerings, *ASCA provides industrial partners with expertise in advanced organic synthesis*. In the field of medicinal chemistry ASCA operates as *a partner for research-based pharmaceutical companies* for drug synthesis in *preclinical* research.

For finding and optimizing lead compounds as well as the preparation of related building blocks it has proven expertise (track record) in organic synthetic chemistry (cf. in Table 2 in [Runge 2015a]). It is its *core competency*. It uses state of the art laboratory facilities, the required analytical methods to analyze the structure and the purity of the prepared compounds and has access to all important chemical databases and information systems [ASCA].

Additional offerings include

- Standards for food and environmental analysis
- Synthesis of internal standards (deuterated, 13C-labelled).

ASCA does not only elaborate *concepts* for the synthesis of the customers' targets. It proves also the *feasibility* of these concepts (PoC, Proof of Concept). Original and workable solutions are designed, tested on a *laboratory scale* and carefully *documented*. The preparation and analysis of the test substances and documentation of the results are a sign of *quality* characteristic of the company.

ASCA acts as a team of highly qualified chemists and skilled lab technicians with decades of experience in organic synthesis to offer both *contract research and custom synthesis*. In particular, it applies protection group techniques in multi-stage syntheses (for instance, in the synthesis of prostaglandines) and enzyme catalysis in organic synthesis (enantio- and regioselective acylations and resolutions of racemates by crystallization technologies, desymmetrizations).

But ASCA did not only offered resolutions of racemates by crystallization technologies. In 2003 it applied for a patent also in the US (No. 20030148481 A1) showing also options for kinetic resolutions of racemates (Table 5): Method for kinetic resolution of racemates of alcohols having one or several stereogenic centers (August 7, 2003). In its Description part of the patent one can read:

> "The present invention relates to a method for kinetic resolution of racemates of alcohols with one or several stereogenic centers. The invention is *applicable in particular for manufacturing pharmaceutical agents or plant protective agents*."

Under the heading Publications on its Web [ASCA] and here, for instance, the subheading IX Enzymatic and microbial syntheses 51 publications dealing with enantiomers are given.

This means ASCA also offered options to respond to a trend having emerged in the pharma industry in the early 2000s as described by Runge [2006:162-168].

In fine chemicals, what is fundamental, is the fixed nature of any chemical entity including specifically chiral (enantiomeric) molecules. "*Chiral chemicals*" have emerged to provide a business segment. Chirality (or handedness) expresses a set of two objects or molecules which differ only by a geometrical relationship corresponding to that of the left and the right hand. In chemistry chirality expresses an isomerism with the two isomers being called "*enantiomers*". Sometimes chiral molecules are termed "asymmetric" lacking symmetry aspects. Strictly speaking, however, the objects cannot be superimposed by a rotation.

The 1:1 mixture of left- and right-handed molecules is called a "*racemate*". The proportion of a mixture of enantiomers in percent is a measure of the "enantiomeric purity". Synthesis or production of single chemical enantiomers is mostly through separation of racemates by various technologies.

Pure enantiomers and the related racemate have exactly the same physical and chemical properties except for the "optical rotation" effect. However, via interactions in *living systems*, as in a human or animal body, where the point of interaction in the body itself is chiral, left- and right-handed molecules react differently and may exhibit drastically different activities and effects. This is of outmost importance for pharmaceuticals [Runge 2006:163-164].

Demand for enantiopure chiral ("single-enantiomer") compounds continues to rise, primarily for use in pharmaceuticals but also in three other sectors: flavor and aroma chemicals, agricultural chemicals, and specialty materials. Demand from the drug industry is fueled by regulations governing chiral active pharmaceutical ingredients (APIs). Whereas chiral APIs previously were usually formulated as racemates, the preference now is for single enantiomers. The volume of produced chiral compounds extends a rather broad range, from several kg to thousands of metric tons.

Furthermore, the switch from a racemic to a single-enantiomer API is key to managing the life cycle of drugs. By "*racemic switches*" drug companies manage the life cycles of their own drugs by patenting the individual enantiomers, and then switching the drugs as a means of prolonging total patent life. And there are companies that patent and carry out racemic switches of the drugs of other firms. They make money by licensing the patents back to the innovator firms, licensing to third parties, or marketing the enantiomers themselves.

Types of chemicals, reactions/syntheses and further services by ASCA are given below [ASCA]. In particular concerning steroids ASCA has very deep experiences generated over several decades demonstrated by a list of scientic publications on its Web [ASCA]. The tremendous list of publications covering the past and the present is structured according to the subjects given below.

I Steroides	VIII Further compounds
II Prostaglandines	IX Enzymatic and microbial syntheses
III Nucleosides	X Electrochemical syntheses
IV Further natural products	XI Macrocycles
V Aliphatic, cycloaliphatic compounds	XII Phosphorus containing compounds
VI Nitrogen and sulfur containing heterocycles	XIII Analytical investigations
VII β-Lactones	XIV Reviews

In 2006 thirty-one scientists and lab technicians conducted research on behalf of pharmaceutical companies in thirteen laboratories. This year ASCA had sales of over €3.4 million. The success of the small business was mainly due to the tenacity of Dr. Wedler [Schmidl 2006].

Financing and Organization

The two leaders of ASCA laid already a solid basis for their firm's foundation – contrary to the advices of many friends. These advised particularly that one of the two partners should hold more shares in the company, so that in the event of a dispute just one is in charge. "But, in particular, that was not an option for us," said Wedler. "We wanted to be on an equal footing, as we are elsewhere. There is an obligation to agree." "Of course there is sometimes mutually criticism, but a falling out would never occur." "We know how much for the company is at stake," said Wedler [Anonymus 2012].

With early orders from "old customers" of GDR-times "we started in 2001 with fourteen people and doubled within four years," said Hans Schick. The company had sales of around €3.1 million per year in 2005 (Table 2) and did not need any venture capital or other type of external funding [Schwarzburger 2005]: ASCA financed its development over the first years via own profit and cash flow. But it looked also for public grants or subsidies.

Christine Wedler did without bank loans. ASCA with thirty-two employees in 2012 finances completely itself, apart from a lease agreement for the sole company car. "We prefer to play it safe and like to save us the cost of borrowing she explained the *caution towards bank debt*. For the operation the purchase of laboratory equipment which often cost more than €200,000 is a large-scale project. Nevertheless Dr. Wedler wants to know nothing of loans. "Thus I can sleep in peace." [Schnitzler 2012]

For the period 2000-2003 Dr. Fritz Theil of ASCA captured a research grant of the German Research Foundation (DFG, Deutsche Forschungsgemeinschaft) which could be used as a help for financing the firm (Project: Trennung von Enantiomeren durch enantiomerselektive lipasekatalysierte temporäre Fluorphasen-Markierung – Separation of enantiomers by enantiomer-selective lipase-catalyzed temporary fluorine phase marker) [DFG 2003].

This project typically was a cooperation with an organization located in the former GDR – Institut für Nichtklassische Chemie e.V. an der Universität Leipzig (INC, Institute for Non-Classical Chemistry at the University of Leipzig). The INC is focused on sorption and reactions at solids.

In the context of the project's subject even a patent had been applied for, first in Germany (Verfahren zur kinetischen Racematspaltung von Alkoholen, DE000019963314 (A1), Priority Date: 1999-12-19) and later in the US in 2003 (Method for kinetic resolution of racemates of alcohols having one or several stereogenic centers, US2003148481 (A1), Priority Date: 2001-12-19). Apart from INC the second patent assignee was the one where Prof. Schick was affiliated in 1999 – WITEGA Angewandte Werkstoff-Forschung gGmbH.

In and after 2006 ASCA made use of the Investment Bank Berlin (Investitionsbank Berlin, IBB), for instance, via the TCC GmbH. In the IBB Annual Report 2006 [IBB 2007] it is noted: "Among the customers of TCC GmbH again in 2006 many award winners show up … such as Dr. Christine Wedler of ASCA GmbH, the Berlin Female Entrepreneur of the Year 2006." TCC is a 100 percent subsidiary of the IBB. [2]

Later IBB Beteiligungsgesellschaft mbH obviously became also a financial backer of ASCA. In Elektronischer Bundesanzeiger (Electronic Federal Announcements) [EB] in ASCA's official reports of 2008, 2009, 2010 IBB is mentioned: "The investment grants from the Investment Bank Berlin are subject to certain conditions. In particular complying and usage requirements must be met (Die Investitionszuschüsse der Investitionsbank Berlin sind an bestimmte Voraussetzungen geknüpft. Insbesondere sind Verbleibens- und Nutzungsvoraussetzungen einzuhalten).

Notably, for 2008-2010 ASCA's equity ratio is 64-66 percent, distinctly lower than that for other adjacent years (Table 3, Table 4). This is perhaps due to using grants and equity for investments in ASCA's technical infrastructure.

In 2012 the two founders and owners of ASCA GmbH registered on February 16, 2012 the firm ASCA Management GmbH provided with a share capital of €25,000. This was enlarged to €50,000 on March 19, 2012. The explicit purpose of the firm located at the same address as ASCA GmbH was "The management of own assets" ("Die Verwaltung eigenen Vermögens"). The Company may acquire and manage assets and value investments/systems of all kinds and especially real estate [Handelsregister 2012].

ASCA Management GmbH is a "Holding Company", which is not a separate legal form, but a form of organization and often created to reduce the risk for the owners of the subsidiary. [3]

A similar re-organization is observed for the firm NANO-X GmbH which, however, created the subsidiary SiliXan GmbH putting special emphasis on a specific new kind of offerings derived from the SiliXane group of chemical compounds [Runge 2015b].

SiliXan GmbH was officially registered on February 2, 2013 as a limited liability company (LLC) with Dr. Frank Groß as the Managing Director ("Geschäftsführer") being the single employee of the firm located at the same address as NANO-X and NANO-X being the single owner contributing €25,000 as the share capital.

Further Developments in a New Environment

After 2006 ASCA's core and orientation of the business did not change essentially since the early days. It produced essentially pharmaceutically active substances on behalf of pharmaceutical companies or fine chemicals. It continued to be essentially (if not at all) a company operating with German customers based on long-term contracts.

On the other hand there seems to be an intensification of ASCA's efforts concerning analytical services.

By 2006 ASCA moved into a new building. The related building of Christine Wedler's and Prof. Schick's past was dismantled, as were many other buildings of the GDR-time in Adlershof.

With the opening on February 24, 2006 the Center for Sustainable Technologies in the Berlin Science and Technology Park innovative biotech and chemical companies would have available an excellent address for their research and development work, meaning an improvement of working conditions.

ASCA increased its laboratory capacity by moving from 970 sqm to 1,100 sqm. The previous building that was constructed during GDR-times had only technical resources which are no longer today's standards. The new Center provided a technical infrastructure that is state of the art for chemical ventures [tk-adlershof 2006].

But company growth in terms of revenues or specifically number of employees was rather small (Table 2), almost plateauing. Dr. Wedler is pleased with her present workforce of thirty. "Every extension to the laboratories would mean a significant investment and therefore a great risk," explained Wedler. Her premise is a stable business basis [WISTA-MANAGEMENT 2013].

In Wedler's view, particularly the office/evaluation places were attractive which join directly with the laboratory places in a kind of conservatory. After ASCA's own extensions, for instance, a center line for additional laboratory workplaces and cooling water circuit necessary for the researches meant to work under very good conditions from April 2006 on. In addition to modern laboratories, ASCA has access to extensive literature databases and powerful analytical technique, such as NMR devices [tk-adlershof 2006].

"The rooms are adapted to the needs of the user," said Prof. Schick. Technology, ventilation and safety of modern laboratories require considerable investments. "I sometimes wonder why I with 69 years of age did not emigrate to Mallorca," said Schick. “But the work in the company is just still fun.” [Janositz 2006].

For Dr. Wedler further advantages of the Adlershof location are not only the modern laboratory buildings. Many of their technical staff also live very close and have short distances to the workplace [Von Demandowsky 2008].

We look forward to the new premises, Christine Wedler said. "The employees also like the whole ambience," she said. The founders associate particular importance with the working atmosphere [Janositz 2006].

ASCA keeps laboratory equipment always on the state of the art, with some of the analytical equipment demanding €100,000 a piece or much more, for instance, a new preparative chromatography unit purchased in 2012 [WISTA-MANAGEMENT 2013].

By 2012 Professor Hans Schick and Christine Wedler had been a couple for more than twenty-five years and had been through a lot during this time. The family business is thriving – probably just because it is family run. The couple maintains an open communication, which is a key to their private and professional success. "The partnership must be okay, otherwise private difficulties seep into everyday working life," said Wedler [Anonymus 2012].

Networking

When moving to a new building in 2006 ASCA’s new location meant very large close proximity to the science departments of the Humboldt University and opportunities for networking and hiring new employees.

But to succeed also the atmosphere in Adlershof contributed, the contacts with experts from various disciplines, the short distances between businesses and research institutions of the University and other research institutes, libraries and the proximity to auditoriums [Janositz 2006].

At Adlershoft Christine Wedler appreciated not only the short distances between laboratories and Humboldt University but also good networking among colleagues nearby in the Industry Park [Von Demandowsky 2008].

The very many corridors of the buildings in Adlershof facilitate opportunities for initiating networking. For instance, in the lobby ASCA Managing Director Christine Wedler got talking to her neighbor. The Institut für Produktqualität (Institute of Product Quality) had just moved into a new laboratory in Adlershof. There she learned that reference substances were needed for food analysis. “We could supply them,” explained Wedler. Synergies are the hallmarks of this location [WISTA-MANAGEMENT 2013].

To build networks with colleagues in the industrial park, Wedler is involved in the events of the association "Technology Circle Adlershof" (“Technologiekreis Adlershof”) [Von Demandowsky 2008].

For the future, ASCA was planning to join forces with the Federal Institute for Materials Research and Testing (BAM) in the development of new analytical methods for mycotoxins. These are poisons produced by mildew or fungi, for instance, in feedstuffs [WISTA-MANAGEMENT 2013].

The technology park offers a unique concentration of organizations engaged in analytics. An initiative committee “Analytic City Adlershof” wanted to connect on-site partners, science and business in the field of analytics and develop an internationally visible competence-cluster. First steps have already been taken [Berlin Adlershof 2014].

Analytics is a field of growing importance, for instance, from searching for environmental pollutants or new materials to developing pharmaceutical agents – and new analytic methods and devices are indispensable. There are around 100 firms and research institutions in Adlershof that are acclaimed experts in their fields. Christine Wedler play a visible role here.

The problem: “The expertise cluster 'Analytics' is in no way visible enough, only just being established, and even in Adlershof not yet everyone is familiar with it,” said Dr. Wedler. ”This is an issue which is by no means trivial because many very different methods are represented here.” On site, facilities for material, environmental and process analytics as well as for biology, medicine and food chemistry can be found. Almost all analytical methods currently popular in chromatography, spectroscopy, surface and structural analysis, microscopy and special processes are represented. And Wedler added: ”A great many companies have their own analytical specialization.“ [Berlin Adlershof 2014].

Advertising locally who offers what on the site, increasing networking activities, and making one's expertise internationally visible are the aims of Analytic City Adlershof. Analytics facilities are seeking increased cooperation, for instance, in joint projects, but also with regard to machine utilization and exchange of ideas. Moreover, everybody is concerned with successfully marketing the analytical expertise available on the site.

Vision, Mission, Business Model and Risks

For (technology) entrepreneurship the interconnections of *vision* and *intention and execution* is essential [Runge:9,89,267,282]. Due to threatening of unemployment ASCA’s co-founders could have had the following *vision*:

To found a firm to achieve independence and create jobs for ourselves and selected former colleagues. The basis are strengths and proven competencies in synthetic organic chemistry emphasizing applied research and focusing on contract research and custom synthesis essentially for pharmaceutical firms, but also fine chemicals companies.

The fundamental question was: Is there a market for synthetic chemistry specifically for us?

A *mission* of ASCA may be described as follows.

- Through operations with a *very good working atmosphere*, *managing* the company with social responsibility, a stable business basis and slow and guarded growth be a sought-after *partner of the pharmaceutical industry* synthesizing substances for clinical research for new to be developed drugs and also special chemicals for the *fine chemicals industry*.
- Responding to *customers’ needs* operate fast, careful, reliable and with high quality.

For the leaders *employee orientation is important* as well as generally dealing with people.

Correspndingly, its *value proposition* centers on reliability and quality-conscious work in all sectors of its offerings – as a “laboratory for hire”.

As a CRO with fundamental requirement of *customer orientation* for its services ASCA acts with a team of highly qualified chemists and skilled lab technicians with decades of experience in organic synthesis to offer both contract research and custom synthesis. It elaborates concepts for the synthesis of the customers’ targets and proves also the feasibility of these concepts. Original and workable solutions are designed, tested on a laboratory scale and carefully documented.

Quantities to deliver related products are usually no more than 500 mg.

Customer segments comprise research departments of mainly pharmaceutical and chemical companies and for profit and public organizations active in analytics and materials’ testing.

Customer relationship and marketing:

Rather than following a process that carries from project to project with customers ASCA goes for *long-term research contracts with its partners*, from which both sides benefit. A few years after the firm's foundation almost all the clients had become regular customers [tk-adlershof 2006].

ASCA's track record in terms of many patents (Table 5) and publications [ASCA] generated early on reliability, credibility and trust in ASCA.

Key activities and resources:

In the field of medicinal chemistry ASCA operates as a partner for research-based pharmaceutical companies for drug synthesis in *preclinical* research (cf. Table 2 in [Runge 2015a]). For finding and optimizing lead compounds as well as the preparation of building blocks it has proven expertise in organic synthetic chemistry. It is its *core competency*.

For its activities ASCA is well equipped with analytical instruments including very high priced instruments required for organic synthetic chemistry [ASCA].

Its key resources cover an experienced leadership and highly motivated and skilled employees who continuously generate financial resources – profit and cash flow – for further existence and development of the company.

Networking and key partners:

As ASCA addresses pharmaceutical (and food and agriculture-oriented biotechnology) companies as well as fine chemicals companies as *customers and partners* there is close interaction with customers from defining their requirements and specifications and tracking the further progress of synthetic developments to ultimately provide the "end-product", the targeted molecule and the related documentation about the product and the processes to get it.

Cooperation with other firms from the field of analytics means synthetic organic chemistry for preparing test substances, but also provision of particular analytical processes using ASCA's spectrum of analytical instruments and tools for special analytical services.

As different as the concepts of technology companies and professional development for founders and managers are, they have one thing in common: the concentration on their *core competence*, *intelligent networking* within the scientific and business community as well as *excellent products, processes and services* that are recognized (usually worldwide).

Highest quality standards apply when drafting the synthesis concepts, the preparation of the test substances and the documentation of the results. These were appreciated by the clients through *long-term cooperation agreements*. The shape of the long-term cooperation pays off for both sides: The customer can realize its research projects significantly more flexible and less expensive, and ASCA thereby gains more security and stability [tk-adlershof 2006].

Correspondingly concerning r*isks* ASCA's total services and offered benefits as a "laboratory for hire" need to be cheaper or more valuable than the option of the customer to do it itself – or finding a competitor who provides the same services as ASCA with at least the same value.

An issue is also Prof. Schick who is currently 78 years old. Will there be a smooth transition if he will be no longer available as a "spiritus rector" and leader of research and development?

Key Metrics

Revenues and numbers of employees are generally used as indicators of a company's development or growth, respectively [Runge:562-564]. These are given in Table 2 together with the related productivity (revenue by number of employees per year). Though revenue data after

2006 are lacking employees' data show that after growth until 2005/2006 development of ASCA's numbers of employees plateau and apparently also do revenues. Revenues for 2007-2011 could not be found in publicly available sources.

ASCA was and is *always profitable*. For instance, net income (profit, "Jahresüberschuss") was €736,302 in 2006 and €804,318 in 2005 [EB]. Profit margins (net income divided by revenue) were 22 percent or 26 percent, respectively.

Table 2: Developments of ASCA's revenue and number of employees.

Year	Revenue (€, million)	Number of Employees	Productivity (€ per Employee)	References and Remarks
2000		2		Year of foundation, in October
2001		14		[Wedler and Schick 2007]
2002	1.8	22	81,800	[ASCA 2003]; [Platau 2002]
2003	2.4	25	96,000	[ASCA 2003]; [Anonymus 2003a]
2004	2.5	27, 26	92,600	[Wedler and Schick 2007]; [Schwarzburger 2005]
2005	3.1	30	103,300	[Ronzheimer 2006]; [Anonymus 2006a]
2006	3.4; 3.3	31	108,100	[Wedler and Schick 2007]; [Ronzheimer 2006] estimated
2010		30		[Meier and Asche 2010]
2011		30		[Nercessian 2011]
2012	5.90 a)			Firmenwissen
2013	3.00	32	93,700	Firmenwissen; [Schnitzler 2012; Anonymus 2012]
2014		32; 30		Firmenwissen; [Ahlers 2014]

a) Revenue value unlikely; employees' numbers of 30-32 and existing productivity values contradict the 2012 revenue. Even if there would have been further growth in and after 2007 the Great Recession would probably have reduced revenues in 2008 and 2009. On the other hand, the startup NANO-X [Runge 2015b] provides an example how revenue may double due to one very large order [Runge:736,780].

Productivity of ASCA is comparable to that of the CRO/CMO ChemCon GmbH [Runge 2015a] with €90,000-€100,000 per employee.

Considering that ASCA's financial operations and transactions are to a large extent governed by its own revenues and profits one may take equity, current assets, and total assets of the balance as rough indicators of development or growth, respectively.

Relatedly, looking at 2008 data an incision of ASCA's growth seems to appear (Table 3). This dip is likely to be associated with the global economic problems generated by the Great Recession (Dec. 2007 – June 2009, 1 year, 6 months – as defined in the US).

Table 3: Financial values (€) of ASCA's balance sheets 2005-2008.

Balance Components	2008	2007	2006	2005
Equity (Eigenkapital)	2,780,412	3,389,786	2,820,480	2,103,167
Amount of balance sheet profit (Bilanzgewinn)	2,742,645	3,364,786	2,795,480	–
Related profit carryforward (davon Gewinnvortrag)	2,664,787	2,595,480	2,059,178	1,273,849
Retained earnings, reserves, equity portions (Rücklagen, Rückstellungen, Reserven) a)	748,560	630,869	440,397	608,469
Total assets (Bilanzsumme)	4,346,293	4,959,853	3,819,962	3,430,083
Current Assets (Umlaufvermögen)	3.867,189	4,398,737	3,376.950	3,057,572
Fixed Assets (Anlagevermögen)	373,909	459,618	390,212	319,810
Equity Ratio (Eigenkapitalquote)	64.0%	68.3%	73.8%	61.3%

a) Special items with an equity portion (Sonderposten mit Rücklageanteil), Special items for grants and subsidies (Sonderposten für Zuschüsse und Zulagen), Accruals (Rückstellungen).

Corresponding balance sheet data of ASCA are given in Table 4. Data from 2009 show recovering from the 2008 situation with increasing values, but there is a sharp decrease in 2013 and 2014. As the employee data did not exhibit a notable effect on the number of employees it is likely that the balances for 2013 and 2014 reflect ASCA's re-organization by the establishment of ASCA Management GmbH, which took place in 2012 and related re-organizations of equity and assets are only reflected fully in 2013.

Table 4: Financial values (€) of ASCA's balance sheets 2009-2014.

Balance Components	2009	2010	2011	2012	2013	2014
Equity (Eigenkapital)	3,580,939	3,994,888	4,027,637	3,664,414	1,011,400	1,210,302
Amount of balance sheet profit (Bilanzgewinn)	3,529,665	3,933,804	3,957,062	3,591,038	930,118	1,126,007
Related profit carryforward (davon Gewinnvortrag)	2,642,646	3,289,665	3,333,804	3,407,062	411,038	928,119
Retained earnings, reserves, equity portions (Rücklagen, Rückstellungen, Reserven) a)	919,418	839,459	764,279	597,564	587,312	367,967
Total Assets (Bilanzsumme)	5,483,843	6,030,776	5,545,865	6,688,623	3,033,794	2,020,927
Current Assets (Umlaufvermögen)	5,000,546	5,587,559	5,145,569	6,324,305	2,744,068	1,794,869
Fixed Assets (Anlagevermögen)	469.328	426,255	382,634	346,048	267,516	207,656
Equity Ratio (Eigenkapitalquote)	65.3%	66.2%	72.6%	54.8%	33.3%	59.9%

a) Special items with an equity portion (Sonderposten mit Rücklageanteil), Special items for grants and subsidies (Sonderposten für Zuschüsse und Zulagen), Accruals (Rückstellungen).

Until 2011 ASCA's equity ratio was between 60 and 74 percent. The equity ratio is a financial ratio indicating the relative proportion of equity used to finance a company's assets:

Equity Ratio (Eigenkapitalquote) = Total Equity/Total Assets

It is a share that gives the person who owns it the right to receive part of a company's profits and proportional voting power at shareholder meetings. Following the general trends of other components of the balance the equity ratio exhibits a sharp decrease in 2013 with data in 2012 already indicating this slip.

In Figure 1 the interrelation between ASCA's sales and number of employees for its early development phase exhibits a plateau for 2003-2004 with the number of employees being 25 and 27, respectively.

We attribute this feature to reflect the "10 - 25 - 150" rule [Runge:656-657,747-748]. This empirical rule relates *organizational issues* of startups to often show up by a decrease of productivity. It addresses particularly management and leadership – specialization in terms of new corporate units or functions, respectively, coordination and delegation and communication – when the number of employees of a startup reaches around 10 and then again 25. In this case productivity decreases, but may or may not achieve again previous levels.

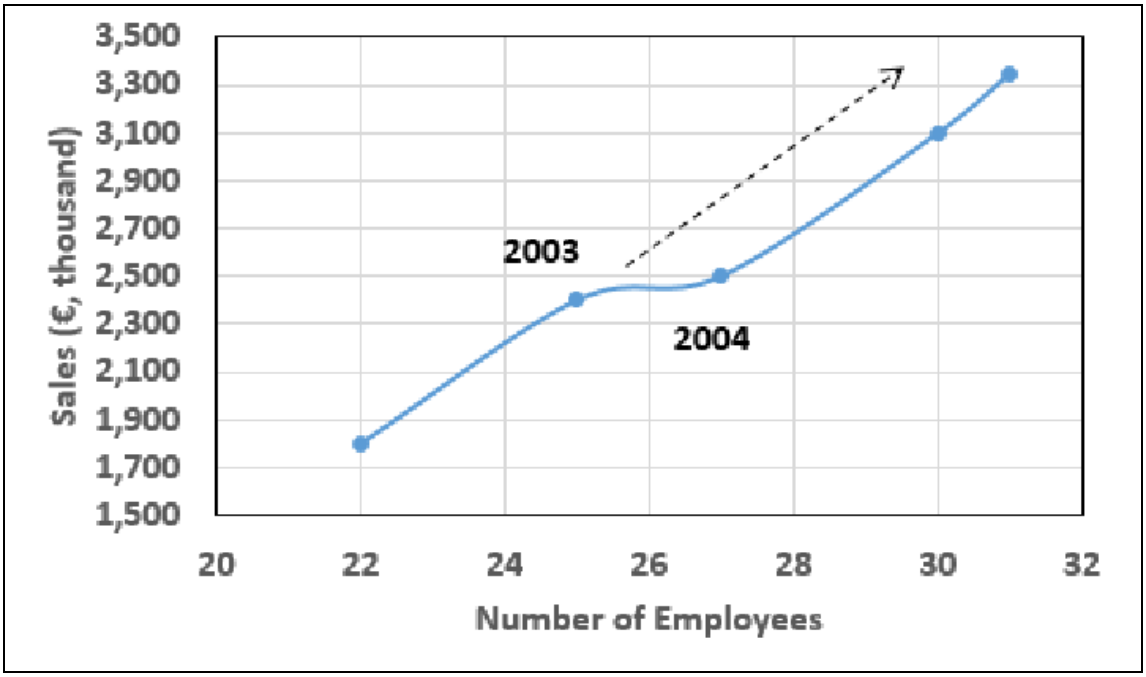

Figure 1: Interrelation of sales and number of employees for ASCA's early development 2002-2006.

Intellectual Properties

A CRO service organization usually does not create own patented research results. However, Prof. Schick or ASCA's employees, respectively, show up as "co-inventors" (IN), but rarely as owners/patent assignees (PA) of patents or patent applications.

However, contrary to ChemCon [Runge 2015a] with no patents Prof. Schick shows an impressive number as co-inventor or assignee. The patent activities of Prof. Schick (Table 5) can be used as an indicator *of research performance and experience*, a *track record* for ASCA.

Correspondingly, Prof. Schick shows up mainly as a co-inventor of GDR-patents (country code DD), sometimes also as one of more patent assignees, specifically the Academy of Sciences (AdW) in East-Berlin, before the German Re-Unification.

Patenting activities of ASCA or its employees can also be used for identifying cooperation partners or customers.

The results of searching the patent databases of the DPMA (Deutsches Patent- und Markenamt, German Patent and Trade Mark Office) [4] and the European Patent Office (EPO) are shown in Table 5.

Table 5: Families of patents or patent applications of Prof. Hans Schick as an inventor or patent assignee with various organizations. [4]

Organization	Number of Patent Families	Period of Application Date
DD [1)]	65	1976-10-27 – 1988-04-25
ASCA GmbH	2 [2)]	1998-01-28 – 2002-12-19
Grünenthal GmbH	31	2001-08-16 - 2011-07-27
Jenapharm	13	1969-09-26 - 1991- 03-02
Arzneimittel Dresden (AMD)	2	1983-05-27 – 1990-02-16

1) Total number of DD-patents/applications of Prof. Hans Schick, many with the Academy of Sciences (AdW) as the patent assignee; 2) one patent of Prof. Schick and Dr. Wedler is granted as a member of a patent family covering even the US (5902886 of May 11, 1999), the other one is by ASCA employees.

Competition

Currently, according to CASID (Chemische Auftragssynthese in Deutschland e.V.) there are 17 members in Germany dealing with contract/customer synthesis [CASID]. Wer Liefert Was GmbH lists 36 firms in Germany and 7 firms in Switzerland [Wer Liefert Was]. For Austria one finds just one company [Wer Liefert Was – internetchemie].

In 2006 ASCA reported that there were about 30 *comparable companies* that are *active in the field of synthetic chemistry* in Germany. Most were focused on *custom synthesis*. This means that the process is carried from job to job. Much in this segment is determined by the price: The company with the lowest bid usually gets the contract. Who offers its services at attractive conditions can succeed perfectly with this strategy. But in the wake of globalization there will be an increasing number of laboratories that operate with much lower cost than is possible for German laboratories, for instance in China or India [tk-adlershof 2006].

More specific, it was reported to exist *nationwide* only about half a dozen companies *similar* to ASCA [Schmidl 2006]. For instance, ChemCon GmbH will not compete with ASCA.

WITEGA Laboratorien Berlin-Adlershof GmbH in the neighborhood of ASCA is more a highly specialized catalogue firm focusing on nitro-derivatives and beta-agonists and on demand preparation.

ratiochem GmbH (Chemicals & Consulting) from Bavaria/Germany offers fine chemicals, intermediates, APIs, metals, custom manufacturing and sourcing. Its offerings seem to be closer to those of ASCA, in particular, with regard to pharma firms as customers – not only from Germany [Wer Liefert Was].

ORGANICA Feinchemie GmbH Wolfen – Fine Chemicals from Wolfen is a fine chemicals company, specializing in hazardous chemical reactions and focused on the exclusive synthesis of fine chemicals. It offers custom synthesis of advanced organic intermediates to major pharmaceutical and industrial companies around the world [Wer Liefert Was – internetchemie]. ORGANICA is established for more than twenty years with currently about 70 employees and sales of about €10 million [Runge 2006:161-162].

ASCA's position in the field is determined by having a competitive advantage via special knowledge of several generations of chemists with deep experiences gained over several decades including young chemists with up-to-date synthetic capabilities. Furthermore, through

long-lasting contracts with permanent customers ASCA has a sound basis for financial management, planning investments and keeping the firm in a stable state.

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Notes

1. *Jenapharm GmbH & Co, KG*. https://de.wikipedia.org/wiki/Jenapharm.

The company is part of Bayer Pharma AG and produces and distributes products for menopausal symptoms, gynecological diseases, dermatology and andrology. The company is the German market leader in oral contraceptives with a market share of 32.4 percent.

In 1952 in the GDR the focus of VEB Jenapharm research was on steroid hormones. In 1965 the birth control pill Ovosiston received certification in East Germany. The company has been the leading manufacturer in Central and Eastern Europe.

The micro pill Valette with the active ingredient Dienogest as contraceptive was launched in 1995. Shortly thereafter the Berlin Schering AG took over the majority of Jenapharm shares. The birth control pill Petibelle with the progestin Drospirenone was introduced in 2000. In 2001 Lafamme for the treatment of menopausal symptoms was launched in the market and Schering AG took over the remaining shares. Finally Schering was overtaken by Bayer.

Arzneimittelwerk Dresden (AMD). https://de.wikipedia.org/wiki/Arzneimittelwerk_Dresden.

On January 1, 1961 the Chemical Works Radebeul (VEB Chemische Werke Radebeul) was integrated into the Pharmaceutical Factory Dresden (VEB Arzneimittelwerk Dresden), which emerged as one of the largest drug manufacturers in the GDR with approximately 3,000 employees.

Until 1989, 27 original developments were brought to the market. The focus of research and production was on the synthesis of psychoactive drugs, biochemicals and cardiovascular effective drugs.

However, after having been acquired in 1991 by Degussa (now Evonik Industries), from 2001 until 2010 AMD was totally segmented into various organizations (cf. also *Wie das Arzneimittelwerk Dresden seit der Wende zerlegt wurde (How Arzneimittelwerk Dresden has been dismantled since Germany's Re-Unification*). Sächsische Zeitung, Sep. 30, 2010. http://www.sz-online.de/nachrichten/wie-das-arzneimittelwerk-dresden-seit-der-wende-zerlegt-wurde-273274.html (last access 11/7/2015).

2. *TCC – Technology Coaching Center*. Nöbel, S. (2007): *Die Idee ist noch kein Produkt (The idea is not yet a product)*. Berliner Zeitung, Apr.19, 2007. http://www.berliner-zeitung.de/archiv/die-idee-ist-noch-kein-produkt,10810590,10471014.html (last access 10/23/2015).

The Technology Coaching Center GmbH Berlin was a wholly owned subsidiary of Investitionsbank Berlin (IBB) and was funded by the EU (EFRE program) and the State of Berlin. In comparison to other consulting institutions it supports through a unique network of over 50 specialized consultants specifically startups and existing companies with headquarters in Berlin which develop, produce and market innovative, technology-oriented products or services.

Since 2012 TCC appears as IBB Business Team GmbH and a 100 percent subsidiary of IBB. On the one hand there is funding of non-monetary benefits, such as the provision of know-how and contact opportunities for startup projects. On the other hand, IBB Business Team GmbH provides grants and subsidies to innovative companies and startups for business management coaching and for cooperation projects in science and technology transfer. http://www.ibb.de/desktopdefault.aspx/tabid-554/.

3. *Holding company*. A "Holding Company" is a parent corporation for the sole purpose of controlling policies and management of another company via enough ownership rather than for the purpose of producing its own goods or services. Holding companies also exist for the purpose of owning property, such as real estate, patents, trademarks, stocks and other assets ("Management-Holding"). If a business is 100 percent owned by a holding company, it is called a wholly-owned subsidiary.

A holding company is not a separate legal form, but a form of organization. Holding companies allow the reduction of risk for the owners of the subsidiary.

For the case of liability a holding company structure protects the current assets and cash of the subsidiary. Provided profits have been transferred from the subsidiary to the parent company, the holding parent will not be liable in general for its subsidiaries. Therefore, only the assets of the subsidiary can be accessed on. Furthermore, also the fixed assets can be protected in a related organization.

4. Primary search was in “Expert Mode” in the German DEPATISnet database which allows deleting patent family members and keeping only the basic (family) patent. https://depatisnet.dpma.de/DepatisNet/depatisnet?action=experte.

Typical issues of (patent or literature) database searches in this context comprise:

Company/Patent Assignee (PA):

Entry – DRESDEN ARZNEIMITTEL rather than ARZNEIMITTEL DRESDEN

Misprints – *GRÜNENTHAL*, GR NENTHAL, GRENENTHAL, GRNENTHAL, GRUENENTHAL, GRUNENTHAL

Author/Inventor (IN):

Entry: SCHICK HANS rather than HANS SCHICK

Name identity, different persons – SCHICK HANS, DE ; SCHICK HANS PROF DR, DE; SCHICK, HANS, PROF. DR., 10115 BERLIN; PROF SCHICK HANS, DE; SCHICK, HANS, 8483 VOHENSTRAUß, DE; SCHICK HANS G, US; SCHICK HANS GUNTHER, US.

And there are many “Hans Schick” affiliated with different companies or organizations.

Typical searches in DEPATISnet for patents with Hans Schick as co-inventor and Grünenthal GmbH or Arzneimittel Dresden as patent assignee using the Messenger retrieval language of DEPATISnet in expert mode were as follows:

(IN=((schick(w)hans)) AND PA=((GR(w)NENTHAL) OR GRENENTHAL OR GRNENTHAL OR GRUENENTHAL OR GRÜNENTHAL OR GRUNENTHAL))

(IN=((schick(w)hans)) AND PA=((ARZNEIMITTEL(L)DRESDEN) or AMD))

Searching for Prof. Schick as an inventor or patent assignee of his GDR (DDR) patents made use of the patent country (code) DD and the proximity operator (L):

PC=DD AND ((PA=(Hans (L) schick)) OR (IN=(Hans (L) schick)))

Deleting family members the search provided 67 hits. However, the list contained 3 hits of the same patent providing a final list of 65 unique hits.

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