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Organizing for breakthrough innovation

Roche's CEO talks about its R&D structure, tough decisions, and long-term mind-set.

Roche, the worldwide pharmaceutical and diagnostics group based in Basel, Switzerland, has enjoyed an innovation run that would make most other large companies envious. On the back of an impressive record of scientific discoveries, the company is today the acknowledged leader in the industry's most profitable category, cancer drugs. Over the past decade, its shares have been among the best performing in the sector. CEO Severin Schwan declares that Roche's continued success will depend on its ability to replenish its pharma and diagnostics pipeline through further innovation breakthroughs. In this wide-ranging interview, he talks with McKinsey partner Joel Claret about how Roche structures its R&D, why he prizes employees who make tough decisions, and what investors with a long-term mind-set bring to the party.

McKinsey: *You've often said you think of yourself as Roche's chief innovation officer as much as its CEO. Why is that?*

Severin Schwan: Looking back over the past 100 or more years, all our periods of strongest growth were driven by breakthrough innovations. This started off with medicines like the heart tonic Digalen,¹ one of the most important medical innovations of its time. Later—between the two world wars, a time of rising concern about public health—we were the first company to synthesize vitamin C. The ability to make it artificially and in industrial quantities, rather than extracting it from plants, transformed the business in the 1930s. Then in the 1960s, we took a major stride forward by developing benzodiazepines, such as Valium, for the central nervous system. This was a true breakthrough innovation because other

¹ Introduced in 1904.

anesthetic medicines, at the time, had serious side effects. If you took too much of them, you could die.

Over the past decade, the growth of Roche has come from different areas—new targeted therapies for cancer and biologics. Our US company Genentech was searching for new antibodies when most people in the scientific community did not believe that compounds such as those that became known as Herceptin and Avastin could treat major diseases, like cancer. The emphasis on breakthrough medicines, which has characterized our history, remains core to our strategy today. If we fail in innovation, we fail as a company.

McKinsey: *Why do you emphasize science-driven innovation so strongly?*

Severin Schwan: Other companies take a broader approach, encompassing activities such as generics, biosimilars, and over-the-counter products, but we have consciously focused on the most innovative areas of pharmaceuticals and diagnostics. There's so much potential here. Two-thirds of diseases in the world still can't be treated, and many others are not treated well. When I became CEO, I thought hard about what makes us distinctive. The first step was to choose which playing field to be on—"soccer" or "basketball"—because I believe it's hard to be good at both. Then the question quickly becomes "How do you win if you play soccer?" Our differentiation is cutting-edge science. The rest we have to do well, though not necessarily much better than others. But on the dimension of science, we must have a real competitive advantage.

On top of this, I believe our combined capabilities as worldwide leader in diagnostics and the largest biotech company give us an important edge to drive a more personalized form of healthcare. We know that different patient groups react differently to the same medicines. A better understanding of the heterogeneity of diseases—and of the differences in people's genetic makeup—will be vital to the future of healthcare.

McKinsey: *As CEO, how close are you to Roche's innovation process and innovation teams?*

Severin Schwan: I passionately believe innovation happens from the bottom up, and I don't believe in the approach of those visionary leaders who try to determine the fate of their companies with their own miracle insights. After all, we have thousands and thousands of brilliant minds closely connected to science and scientific communities. That said, although I am an economist by training, it's important that I have an affinity for the science and a good understanding of disease biology. Lots of the things we talk about—internal projects, partnerships, or acquisitions—hinge on issues of science. Should we go into this or that area? Do we have the capabilities to do so? If I was too detached from science, I wouldn't ask the right questions and I wouldn't have a feel for the management implications of the decisions we make.

Clarity of thinking is key here. In my experience, scientists who really understand what they are talking about can explain even the most complex scientific topics to laypeople. If, on the other hand, scientists can't explain the principles or why they're exciting, I start to have my doubts. I go into the labs and talk to people—sometimes for 30 minutes or an hour—who are often world experts in their fields. And of course I triangulate; I talk to others to pick up the signals. This takes time. It's not as though you have a meeting, somebody tells you about an exciting technology, and the next day you go out and acquire a company. The buildup can literally last years.

McKinsey: *Is that the sort of mind-set you expect from the whole top team?*

Severin Schwan: Absolutely. If you believe in teamwork, as I do, and half of the corporate executive team has no clue about science or medicine, you have a problem. I ask all of the top team to visit patients, to meet physicians, and to engage with the technologies. Sometimes I ask members of the top team to present on topics outside their immediate area of expertise. Like me, they have the privilege of asking any kind of question that might encourage a different perspective. This interest in what we do should go right through the organization. When we bought Genentech, what really impressed me was that you could talk to the receptionists, and they would have an affinity with the patients' stories and be proud of the company's scientific and medical achievements.

McKinsey: *Can you talk about the structure of the Roche R&D function? What is your operating model?*

Severin Schwan: Early-stage research is about insight, understanding, and the quality of people. It's not about scale. The key is to give teams as much freedom as possible. If you put them in little boxes, impose standard operating procedures, and tell them what to do, you achieve nothing. So unlike most of our competitors, we have divided our research into very independent—and I do mean independent—units. The major ones are in San Francisco, in Basel, and in Tokyo,² as well as several within the business areas of diagnostics. There is no global head of R&D. The pharma research units report to me, including the partnering function, which covers external opportunities. The diagnostic ones report to the head of diagnostics.

In my view, the problem with having a global R&D head is that such a person inevitably has biases, prefers one approach over another. He or she will want to impose central guidelines and decision committees. I think a global R&D head is an unnecessary layer that potentially can destroy value by taking away freedoms and stifling diversity. All of us think about the world in our own way, and it takes a lot of discipline to let other views count.

McKinsey: *Do you find that the R&D units, because of their independence, sometimes work on the same things—even compete against each other for resources?*

Severin Schwan: We haven't had too much overlap, but I'm actually fine in principle when people in different units are working toward the same targets. Often, a very small difference in a molecule can dramatically improve its efficiency or safety, so having two teams involved is a good thing. In some cases, one of the two may also become an extremely valuable backup in helping us get to market on time.

That perspective changes, though, when you get to late-stage development, and scale starts to matter. At this point, you may need

² Roche is the majority owner of Chugai Pharmaceutical.

big numbers of patients for trials, and that can be expensive, so you want to leverage your scale and networks. You have to make choices—it doesn't make sense to duplicate. For late-stage development in pharma, we therefore have one global organization.

McKinsey: *How does Roche decide whether to proceed with a project?*

Severin Schwan: Typically, our R&D units apply to the late-stage portfolio committee, the final decision maker, if they want to move a medicine to what we call pivotal studies. There are subcommittees to bring in detailed technical expertise. But, ultimately, it is either the head of global development or the head of product strategy who takes the lead and has the final say. This accountability is important. Some decisions are easy—the data are so clear one way or the other. However, there should be no ambiguity about who calls the shots even when a decision is much more difficult, good arguments can be found on both sides, and tension is in the room.

McKinsey: *How does the company make decisions further down the organization?*

Severin Schwan: It's one of our principles to decentralize and give people the freedom to be creative. But people must also have the courage to use their freedom to take risks. If nobody is willing to take a position, the model doesn't work.

It's important, therefore, to have a culture that attracts the sort of people prepared to act in the face of ambiguity rather than to delegate upward and wait for confirmation from the top. People who make decisions might be proved wrong, of course. But the one thing I know for sure is that those furthest from the science are the most likely to get it wrong. You need committees, of course, to gather information, but those closest to the action will always have the best hunch, and at the end of the day it's a single individual who has to be accountable. In my experience, the quality of a decision gets worse the higher up it is delegated. Every time you delegate upward, even if that turns out to be the right decision, you risk losing time and seeing competitors overtake you.

At Roche, people have to take their own initiative. I always tell them, “You’re not promoted from the top.” We have succession planning, for sure, but the idea that employees have mentors who will take care of their careers is an illusion. If you have a good idea, pursue it. If you wait to be asked, you’ll be lost.

McKinsey: *What other elements of the culture attract and retain the right sort of employees?*

Severin Schwan: Having a sense of purpose about patients is very important. I know that “culture” is a buzzword. The real challenge is how to translate it into something real, not just a PR brochure. It’s a very soft concept. But while people might come to us because they see us as leaders in a certain scientific field, they only stay if they share and understand our core values. People need to be really passionate about making a difference in patients’ lives, no matter which function they work in. They need to have the courage to take risks and go new ways and follow their convictions with integrity. Openness to the outside world is also very important. The reality is that 99 percent of innovation happens outside the walls of Roche, so to succeed you have to treat an innovation that happens out there with the same respect as if it were your own. In an acquisition or a collaboration, you need a culture where people don’t differentiate between the two sides.

McKinsey: *Many experts argue that big companies can best foster innovation by emulating start-ups. Do you try to do this?*

Severin Schwan: I think you have to be careful here. For one thing, statistically, most start-ups fail. For another, it’s hard to emulate something which you’re patently not. Putting people in a different location, just for the sake of it, risks losing the substantial advantages of a big company—access to money, broad expertise, and technology—for little or no gain. Even if people don’t always admit it, I believe that quite a few of those who join start-ups want to get stock and become millionaires. There’s nothing wrong with that. But “disintegrating” people in a large listed company and giving them a few shares in it delivers the worst of both worlds. The thing we want to share with start-ups is the freedom to be creative.

McKinsey: *Do you actively encourage diversity as a driver of innovation?*

Severin Schwan: Breakthrough innovation has a lot to do with things few people believe in, so diversity of thinking is very helpful. I'm always happy when lots of good scientists tell me something is nonsense—because when I hear this, I know it has the potential for a breakthrough. If everyone agrees on an outcome, it's already common knowledge; in other words, we are probably too late.

Diversity is hard to achieve, but at Roche it has to do with our decentralized approach and with our conscious policy of fostering it in different dimensions. Five years ago, we set ourselves a goal to increase the proportion of women in the 400 top leadership positions to 20 percent, from 13 percent. In fact, it's now 22 percent.

Severin Schwan



Vital statistics

Born November 17, 1967, in Hall in Tirol, Austria

Married, with three children

Education

Graduated with bachelor's degrees in economics and law in 1991 and a PhD in law in 1993, all from the University of Innsbruck

Career highlights

Roche (1993–present)

CEO of Roche Group (2008–present)

CEO of Roche Diagnostics (2006–08)

Head of Asia-Pacific region, Roche Diagnostics Singapore (2004–06)

Fast facts

Member of the International Business Leaders Advisory Council for the Mayor of Shanghai (IBLAC)

Member of the Board of Directors of Roche Holding Ltd.

Member of the Board of Credit Suisse Group AG

More recently, we've also set out to increase the number of leaders from emerging markets by 30 percent—an acknowledgment not only of the growing importance of these markets but also of the fact that we are still very Europe- and US-centric at the top. We need to understand markets like China not just from a commercial perspective but from the point of view of all the functions.

It's really important to be inclusive. Bringing, say, a brilliant general manager to Switzerland from Asia is one thing. But you also have to work to bridge the gap between cultures. One individual we'd invested in nearly failed because where he comes from in Asia, people are quiet and don't speak up. This was misinterpreted as an unwillingness on his part to engage.

It's fine to encourage diversity, but you have to create an environment where diversity is leveraged. Otherwise, there's a danger that a lot of diverse people will just sit around the table in a dysfunctional way.

McKinsey: *Will you create more innovation hubs in emerging markets?*

Severin Schwan: We have the full value chain in China already, and there's clearly a lot of innovation coming from emerging markets, but research there is still in its infancy compared with Europe and the US. On the whole, we will continue to follow the science and the places where innovation is taking place, so I have no ambitions to build a hub anywhere in particular. The great thing about clusters like the Bay Area is that they already have the diversity we just mentioned. Like a magnet, they attract the best people from all over the world. You can't force diversity—there has to be something at the center, an initial power that creates the secret sauce. If you try to make it yourself, you'll leave out one of the ingredients or get the temperature wrong.

McKinsey: *To what extent does Roche push for innovation from the top? Are there, for example, particular therapies you target strategically?*

Severin Schwan: In my experience, good scientists always ask for three times the money we have—a sign that they have lots of ideas. But someone still has to allocate resources from the top. Beyond that, I think it's dangerous to intervene too much. If we decide we're only going to focus on oncology, we might miss the next big thing in another field. It was only by chance, for example, that we discovered that the cancer medicine MabThera also works for rheumatoid arthritis. Strategies at Roche follow the science, but the problem is that you just don't know where it's going to take you.

That said, there *are* some special circumstances when we shift resources from the top. Right now, for example, a lot of companies are investing a lot of money in cancer immune therapies. Given our expertise in this area and all the compounds we already have, it's a natural field for us to be playing in. We have to ask ourselves if we would have a greater impact spending more in this area and less elsewhere or if we should increase the budget overall. We had similar discussions before deciding recently to take two Alzheimer molecule projects to the late stage. We know we are only at the beginning of understanding this terrible disease and that the risks are huge. But it would be a major breakthrough if we succeeded, and it would make a huge difference to humanity.

McKinsey: *How many of those really risky projects can you take on?*

Severin Schwan: The amount we invest in really big, high-risk, late-stage projects is a small part of what we spend on projects that reach the late stage. We know we can digest the Alzheimer project if it fails, but I would be extremely uncomfortable if all late-stage projects were like that. These big late-stage projects, of course, are very different from our early-stage clinical research, which comprises lots of smallish, very high-risk activities. We know from the outset the odds of success are low. Our aim is to find things that will one day be breakthrough innovations and to “derisk” them during the early stage, to the point where they are not big gambles if they get to the late stage.

McKinsey: *Do you try to measure R&D?*

Severin Schwan: I have seen companies making statements about how they measure their research productivity and proposals for measuring the internal rate of return on R&D. I find this absurd. If taken to its extreme, this is the sort of bureaucracy—a controller running around a lab getting scientists to fill in spreadsheets—that kills innovation. You can't capture scientific judgment in numbers. You can look at it retrospectively. If you see a deviation from the previous path, you can ask what went wrong. Have we got the right people? Is the governance right? But to do this prospectively is impossible.

Of course, in later stages of development, you have more data, there is less ambiguity, and it's easier to have metrics. On the whole, though, I'm more of a believer in scenario planning—looking at what would happen if everything went wrong, how we would pay for that, how we would mitigate the risks.

McKinsey: *Must there be a trade-off, then, between innovation and productivity?*

Severin Schwan: I don't think they're mutually exclusive—if you waste money, you won't have the flexibility to innovate. But my bias will always be for the decentralized approach. I'd rather have 10 percent more innovation than 10 percent more efficiency. In most cases, you can have both.

McKinsey: *Is it important to have shareholders who think for the long term?*

Severin Schwan: The fact that we are still majority owned by the Hoffmann and Oeri founding families gives us an important edge and allows us to think about the long term. What they care about more than anything is handing the company over to the next generation in a better state than they found it. They think in 30-year cycles, and this works very well with breakthrough science—it gives us the luxury of making decisions that we know may not produce tangible benefits for at least 10 to 15 years.

When I tell the board that something's a long shot, the chances are that if it's digestible and doesn't bet the farm, the directors will think more about their legacy and what they're passing on than about the short-term consequences. That's hardly something the traditional investor community will applaud. This said, I'm not naive. Short-term success is also important, adds to your financial power, and allows you to do the right thing for the long term. Without this long-term mind-set, I'm quite sure we would not have taken over Genentech, nor would we have been able to buy the PCR³ technology in the diagnostics field, a deal which has opened up whole new possibilities in molecular diagnostics. Sometimes people tell me we are mad to do a deal, because it will take 15 years to get a return. I tell them that's exactly why we did it. ○

³ Polymerase chain reaction, a technology used to make copies of individual pieces of DNA, developed in the 1980s.

This interview was conducted by **Joel Claret**, a director in McKinsey's Geneva office, and McKinsey Publishing's **Tim Dickson**, who is based in the London office.