doi:10.2533/chimia.2010.758

"We Want to Unleash More Synergy and Creativity"

Interview with Dr. Ulf Korthäuer and Dr. Tewis Bouwmeester about the Novartis Labs of the Future (LOTF)

SCS: *Did you look for external inspiration when you were designing the Novartis Labs of the Future (LOTF)?*

Korthäuer: A strong source of inspiration for Novartis was the desire to be innovative. Some useful impetus came from Roman Boutellier, a Professor in innovation and technology management at ETH Zurich. He once gave a talk at the Novartis Campus on creativity and innovation, with interesting examples of successful communication constellations.

Bouwmeester: Surely a project like this is not realized in isolation. Just look at some of the top academic institutions in the US for example. They are exploring a number of similar concepts that are cornerstones of the LOTF. Evidence shows us that the activation barrier for people located remotely is considerably higher than when they work in close proximity to one another. Right now my own department is located in four buildings, spread over two sites in Basel.
The LOTF concept emphasizes the informal aspects of getting together as opposed to formal meetings. The second aspect to collocating people with a common objective is that the way they make decisions or exchange ideas becomes more effective. The LOTF is a dynamic open landscape of desks and laboratory. That's the concept. We are now entering the stage of practical experience. In the next months and years we will accumulate real-life experience, which will hopefully resemble what we have anticipated.

The Google model, which includes leisure facilities and free time for other projects, has been a source of inspiration for other companies…

Some facts about the Novartis Labs of the Future (LOFT)

- Year when planning of the LOTF began: 2007
- Consultant: IDEO, a consulting company that helps to develop new concepts for working environments. They helped to analyze the work situation in laboratories today and established a new concept. The design of the custom-made LOTF furniture was shaped in a cross-border collaboration between Vitra (Germany) and Designo AG (Switzerland), in consultation with the users.
- Date when the first researcher moved into the first LOTF building in Basel: June 10, 2010. The architect of the building is David Chipperfield.
- Number of researchers in the LOTF (Basel): about 130 permanent staff, plus about 20 part-time staff.
- Scientific disciplines represented in the LOTF: biologists, chemists, computational biologists, disease area experts, technology experts, and medical doctors.
- Expected advantage of the LOTF: It will improve teamwork and the quality of cooperation, and enhance communication and team effectiveness.

The interviewees

Dr. ***Ulf Korthäuer***, Research Planning Director for Novartis Basel. Ulf Korthäuer is a molecular biologist. He was responsible for coordinating and implementing the scientific strategy behind the Labs of the Future.

Dr. ***Tewis Bouwmeester***, Site Head of Developmental and Molecular Pathways at Novartis Institutes for BioMedical Research in Basel. Tewis Bouwmeester is a trained biochemist. He is head of a research department that will work in the Labs of the Future.

Bouwmeester: Indeed, Google applies an 80-20 model, which means that 80 percent of the working time is reserved for projects within the Google strategy, and for the other 20 percent people can do whatever they want. This has proven to unleash a lot of innate creativity in its employees. To some extent we are already doing this in exploratory projects.

What is the basic concept of the LOTF?

Bouwmeester: Actually there are two parts to it, the scientific concept and the organizational concept. The scientific goal is to discover new therapeutic targets towards which new medicines will be developed. This requires an interdisciplinary setting, including disease area experts, people with a technological background, biologists, chemists, computational biologists and medical scientists. Diversity in terms of training and background is very important.

Korthäuer: Regarding the overarching principles, we identified barriers that are slowing down the creative process and stifling innovation. In the LOTF we try to remove these barriers.

Ulf Korthäuer: "We want to build information technology tunnels between colleagues here and at other Novartis sites, with an open line, so that colleagues can see their peers just walking by and can talk to them for a minute."

What kinds of barriers?

Korthäuer: Communication barriers for example. We want to build information technology tunnels between colleagues here and at other Novartis sites, with an open line, so that colleagues can see their peers just walking by and can talk to them for a minute.

Ulf Korthäuer: "We want to get rid of functional cells such as coffee rooms, writing rooms, lab rooms etc."

What will this look like? Will there be large screens in the building?

Korthäuer: Big screens, placed where people typically pass by. There will be video cameras installed on each laptop, allowing easy and informal contacts. The information technology concept is an important part of it. We have also designed special furniture that serves the same goal. We want to get rid of functional cells such as coffee rooms, writing rooms, lab rooms *etc*. Our aim is to bring the walls down. But of course we still need differentiation. In the LOTF there are still compartmentalized areas with particular qualities, constructed according to people's needs and workflow requirements.

Novartis has conducted much highly successful research to date. Why have you developed a new concept?

Korthäuer: We want to unleash more synergy and creativity. New ideas are often generated when people from different backgrounds come together. Our basic goal is to create innovation to the benefit of our customers, the patients.

Why has this not been done already, say twenty years ago?

Korthäuer: The LOTF concept is an integral part of the Novartis Campus project, which started about ten years ago. Before that time, researchers were mostly working in silos – chemists in one building, biologists in another and the physicians in yet another. In addition, the groups became fragmented when they outgrew their space or when re-organizations took place and when new space was assigned here and there based on availability.
Daniel Vasella wanted to put an end to the patchwork of groups and buildings. He was looking for an overarching concept, which led to the Campus master plan. He received support from Vittorio Lampugnani, an ETH Professor in the history and theory of architecture. The whole planning process is still evolving. We are currently tackling the physical barriers between our Research and Development organizations to improve the flow of projects from early clinical development to full development.

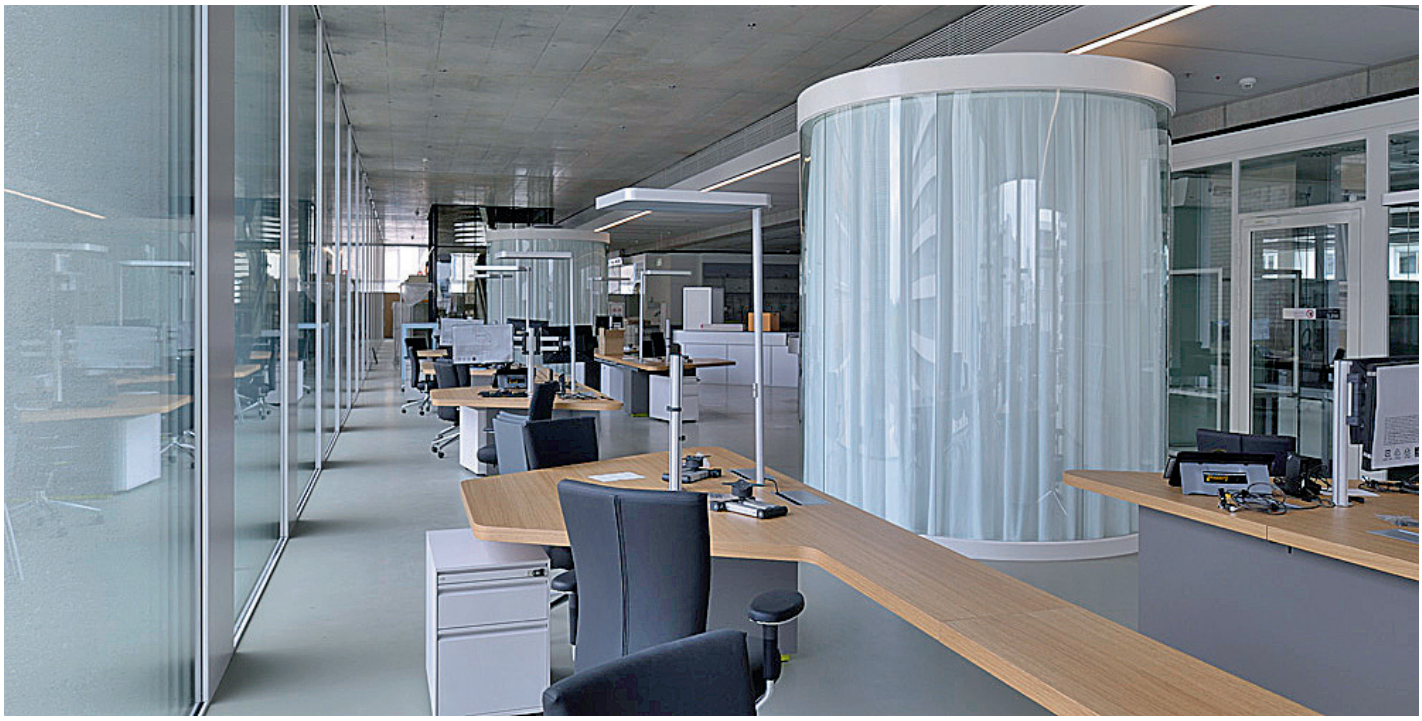
What results do you expect from the LOTF?

Bouwmeester: There are several aspects. Firstly, the way in which the teams work together. We expect more team effectiveness. Obviously the LOTF is part of the larger Novartis organization. Most of our project teams are spread across the different research sites around the world. For example the projects I am leading are conducted in close collaboration with Novartis sites in Cambridge (USA) and Shanghai.

Tewis Bouwmeester: "The ultimate goal of the LOTF for Novartis is unleash creativity and innovation."

How will you evaluate the organizational progress?

Bouwmeester: At a summit with all future LOTF tenants last December, we discussed how to monitor the success of the LOTF. One way is to ask employees at regular intervals about the changes they have observed in their own behavior. The ultimate goal of the LOTF for Novartis is unleash creativity and innovation, with the goal of identifying new therapeutic targets for which we can eventually develop new drugs. The LOTF is one of several elements in Novartis' quest to outperform the competition. There is another project called 'creative teams'. We ask ourselves what constitutes the effectiveness of our teams, and how we can influence it so that teams become more effective. The LOTF will be monitored from an output perspective as well as from a sociological perspective.



View of the Novartis Labs of the Future (source: Novartis)

Will you engage external scientists to do this?

Korthäuer: There is a group within Novartis called Change Management. They organized the summit for the future LOTF staff and will also conduct post-monitoring.

Where are they placed within the Novartis organization?

Korthäuer: They are part of the Novartis' Basel Site Operation team, which oversees the construction and planning of new buildings and the workplaces within these buildings. They are independent from the Novartis research organization. For the monitoring, we again sought assistance from Professor Boutellier and his staff.

Tewis Bouwmeester: "I would be surprised if all concepts materialize exactly as anticipated."

What indicators would you select to measure improvement?

Bouwmeester: That depends on the monitoring period. I am assuming that one or two months after we move into the building, the employees will already be experiencing a new dynamic. If they report a positive difference, that will be a first measure of success. It is important that the people in the LOTF develop some kind of ownership regarding their role in the building. It will be a more active role than usual. The LOTF is basically an open space where you can observe your peers across the hierarchies. This is a different type of social architecture compared to 10 years ago, or even today still. Everybody will be more under observation and observing more than before. The dynamism of the interaction between people will increase. The employees themselves will have to decide what is common practice on their floor. Of course the concept will need to be adapted over time; I would be surprised if all concepts materialize exactly as anticipated.

What else would be a useful indicator for measuring success?

Bouwmeester: The ultimate goal is to contribute to the drug discovery pipeline. The goal is to give Novartis a competitive edge. This is unlikely to be measured within a time frame of three to six months. For the time being, I hope every colleague will see the LOTF as an opportunity. Personally I am very excited about the LOTF, because I envision it to be a dynamic environment. Of course there will be issues that we will have to deal with. It's an evolving concept.

What are the major challenges for Novartis today?

Korthäuer: One challenge is to develop new innovative medicines for patients with unmet medical need. Another challenge is the political and regulatory environment.

Bouwmeester: There are a number of challenges, from competition and marketing to globalization and emerging markets… For us in discovery research, the challenge lies in finding new therapeutic targets towards which to develop efficacious drugs. Look at the achievements in biology over the last 10 years; there has been a revolution. Today we know the blueprint of the human genome. Advances in technology have enabled us to look at disease in a holistic way. Only 10 years ago the majority of scientists homed in on single genes and mostly ignored the physiological and pathophysiological context. Today we can examine the physical and functional properties of all proteins that act in a certain molecular pathway in a normal context and in a disease context.

Ulf Korthäuer: "Our aim is to bring the walls down."

What gadgets will be introduced in the LOTF?

Bouwmeester: In research we employ a number of high throughput technologies that allow researchers to systematically dissect disease-relevant signaling pathways by regulating particular pro-

teins up or down. Next-generation sequencing approaches allow us to determine which genes are differentially expressed in normal and diseased tissue. One major challenge in the pharmaceuticals industry is how to translate information into knowledge. Computational biologists take up the challenge to interrogate information that academia releases into the public domain with our proprietary data in order to best translate this into useful knowledge for drug discovery.

Korthäuer: On the information technology side, we are trying to implement a few applications which really support the concept. There will be videoconferences, 'smart' whiteboards that allow notes to be captured electronically. We focus on proven technologies. Gradually, we will bring new technologies into the building such as haptic interfaces. Removing the walls in a building can bring about big changes. There will be much less storage room. Therefore, a little robot operating in an elevator shaft will transport materials ordered by laptop up from the basement to the floors. Some new tools will be user-driven. We will encourage staff to think about how they would like to shape the working environment.

Bouwmeester: We have already implemented Virtual Reality Rooms with ultra-high-resolution video screens, so that the quality is as though you were in a real-life meeting; the effect is quite spectacular. As with any global project, it will all require a certain attitude, a set of skills that people will have to develop. Much energy and time will be needed to communicate efficiently between places as different as Basel, Cambridge and Shanghai.

Will you introduce new 'house rules' for collaborators in the LOTF? For example, will they still be allowed to speak Swiss German at times?

Bouwmeester: In any transnational gathering, the common language is English. Of course in the coffee corner, people will continue to speak in their mother tongue.

Korthäuer: We are trying not to set too many rules. If rules are needed, the tenants can propose these. We are aware for example that noise could become an issue, since everybody will be working in an open space.

Will employees get some training before they move to the LOTF?

Korthäuer: Yes, they will be trained in safety rules. For example, the biologists will be trained in the risks inherent to chemistry and vice versa. Training will also be offered in the use of new IT and logistical components.

Will you introduce new organizational elements?

Bouwmeester: People will interact not only within their line function, but also between various line functions, which have evolved different working habits and styles. Generally, the working environment will become much more dynamic, offering many opportunities for the employees.

Will you change the formal organization?

Bouwmeester: Traditionally our department was organized in units based on a particular technology or theme. Last year we formally introduced a matrix concept. A highly matrixed environment can be challenging and the concept is still evolving. It can generate conflicts of interest, but it's certainly something that we will explore further. In anticipation of several groups being collocated in one building, we are discussing how to take the matrix model to the next level, across departments.

Korthäuer: While the tenants are still part of and contributing to their particular organizational unit, we encourage the teams to grasp every opportunity for cross-functional collaboration. And we try to support this behavior by introducing the option of cross-functional peer or manager review during the performance evaluation process.

Tewis Bouwmeester: "Everybody from my department is very excited about moving to the LOTF!"

Do you anticipate changes in the behavior of the researchers in the LOTF?

Korthäuer: More openness, certainly, and a greater readiness to share both equipment and ideas. Also increased tolerance, in view of the fact that there won't be any walls…

…and will employees be forced to work in the LOTF? Can they refuse to move?

Bouwmeester: Everybody from my department is very excited about moving to the LOTF!

In your view, what do researchers need to work productively?

Korthäuer: Personal appreciation is certainly important: the feeling of contributing to something meaningful, and the freedom to develop new ideas.

Bouwmeester: The LOTF will create an environment in which specialists from various fields will look at the same scientific challenge from their own perspective and bring their views together. In my understanding, productiveness is not measured in terms of quantity so much as in the quality of the decision-making. If we take on risk, we also have to accept failure. And we need mechanisms for telling people to stop projects if they are not moving forward. Naturally scientists always argue that at some stage their project will deliver results. In fact, most drugs have been developed along this route. The task of the researchers is to contribute novelty to some aspect of the pipeline. Taking risks is part of our culture! Decisions have to be taken, but they have to be rooted in a scientific rationale.

Tewis Bouwmeester: "Taking risks is part of our culture!"

How do you sense when a research project is a waste of time?

Bouwmeester: This is a very important question that is difficult to answer, and an issue that has come up regularly during senior leadership meetings. You have to create a culture in which you can say, "this is a wacky idea, but we will work on it and monitor progress". You have to defend this strategy before the decision-makers.

What are the main barriers to productive interdisciplinary collaboration?

Korthäuer: Things like discipline-specific terminology can definitely be learned quickly and do not impose real barriers. On the contrary, researchers are pretty curious and eager to learn new things. But we need to allow them time to explore this new neighboring territory and to engage.

What are the main barriers to productive collaboration between scientists from different nations?

Bouwmeester: It's hard to generalize, and dangerous too. In general, I observe two types of people: those who are open to new opportunities and those who view 'new' as a threat or a challenge.

Can you describe some typical issues between the Basel and the Cambridge team today?

Bouwmeester: Metaphors are used very differently in different cultures. For instance, if something happens unexpectedly, the Americans tend to say "out of left field". This statement is a reference from baseball which is not really understood in Europe.

What does the Novartis staff expect of the LOTF?

Korthäuer: The expectations can be very different. Some staff members are worried about new aspects that have not been investigated before, such as the noise in an open space or the reduced storage capacity. Yet others view it as a great opportunity because they will be closer to their colleagues from other scientific disciplines.

Bouwmeester: Actually the initial black-and-white expectations have dramatically changed since the summit last December. Today I observe a general convergence towards the perception of the LOTF as a great opportunity for every single person. The more the building becomes a reality, the more I see acceptance and pro-active involvement. Everybody is now participating in shaping the new work environment.

What techniques do you use to gauge the opinions of the staff?

Bouwmeester: We have used surveys and asked people to express their opinions. The information has been forwarded to our Change Management team. There have been some drastic reactions, from "This will never work!" to "Fantastic; what will my role be?"

What occasions do they have to express their views?

Bouwmeester: We have organized town hall meetings, an open house, surveys, one-to-one interviews. We gathered their thoughts and worries and the issues they thought needed to be addressed. These have been relayed to the people concerned, such as the Change Management team.

What do researchers from a university typically lack when they start working at Novartis?

Korthäuer: The fresh and in many ways naïve mindset of young scientists coming straight from university is a very positive thing. At the beginning, young researchers tend to focus on projects. They don't really know the organization itself – who is who, where to find what they need *etc*. For this purpose, we organize information sessions. In some departments we have mentors who help them to find the contacts they need.

What skills do they typically lack?

Bouwmeester: I was an academician for most of my career. A big difference is that in a highly matrixed organization like Novartis, you have to be able to lead by influence. You also have to be able to tap into the knowledge and expertise of others in the organization. You need to be trained in effective communication – to be both persuasive and diligent at the same time in order to bring an idea to fruition!

Interview with Dr. Lukas Weber, Executive Director of the Swiss Chemical Society