Interview: Harald Isemann – Chairman, Vienna Biocenter (VBC) & Managing Director, Institute of Molecular Pathology (IMP), Austria



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Harald Isemann, chairman of the Vienna Biocenter (VBC) - one of the leading life science hubs in Europe - and Managing Director of the Institute of Molecular Pathology (IMP), a VBC member, provides insights into the main tasks of the VBC, the organization of the IMP and the challenges it is facing.

Could you explain what the Vienna Biocenter is and its main mission?

The VBC association was founded in 2001 to align the different life science organisations that developed at this location since the late 1980ies. Today, the VBC is composed of four academic research institutions: the Research Institute of Molecular Pathology (IMP), the Institute of Molecular Biotechnology (IMBA), the Gregor Mendel Institute of Molecular Plant Biology (GMI) and the Max F. Perutz Laboratories (MFPL), which host in total 86 research groups.
We also have 17 biotech companies, 5 service providers and 3 universities – University of Vienna, Medical University of Vienna and FH Campus Wien.
The IMP was the seed for the Vienna Biocenter: 29 years ago, Genentech and Boehringer Ingelheim (BI) pinpointed the need to position a basic research institute. Vienna was chosen as a logical destination – a convenient position for both partners and a supportive environment in terms of both

politics and academia. However, there was no life sciences center in Vienna at that time and so a full renovation of a former industrial site was done. Only three years later, the IMP founding director, Max Birnstiel, signed an agreement with the University of Vienna, allowing five university departments to relocate from the university grounds to the VBC grounds in 1992. The VBC then acted as a catalyst for other institutions to relocate, attracting the likes of the Austrian Academy of Science – now present with IMBA and GMI – and various biotech companies.

The VBC – some might say – is a mini city, with more than 1700 employees and 1300 students of 65 nationalities. Over 11,000 people visit VBC per year, mainly thanks to our “Open Lab”, which was set up to engage and educate school children that show an interest in life-sciences.

What are the areas where you believe the VBC excels in term of R&D?

We conduct research in many areas, from neurobiology to classical cell biology and disease-oriented genetics. In short: we discover biological mechanisms or medical needs and research them. Molecular biology today has a broad international scope and allows us to connect to many other organizations. This international connection is an endeavour of VBC as it allows the scientists who are a part of our nearly 100 research groups to gain diverse knowledge in the industry from a large range of differing perspectives. VBC offers scientific training through the University of Applied Science and the two universities on campus, giving us opportunities to research a variety of topics within the biomedical industry.

What differentiates Vienna Biocenter from other European research centers or R&D departments?

We have a unique combination of high-quality research with 86 research groups, we have a diverse group of biotech companies of various sizes, and we have a strong focus on training. As a result, we are a community with three very important pillars: excellent research, biotech business and scientific training. This makes it a unique place in Europe. It is an intense place where we can have close interaction; the communication aspect here is a very important feature. We have very close collaboration between the four research institutes here. Among other things, we share scientific facilities like microscopes and other very sophisticated research equipment.

We organise the VBC Summer School, which targets undergraduate and master students to come to VBC for two months during summer. They work in a laboratory and socialise within the life science industry. At the end of the program, they have to present a project in front of the faculty here and get feedback. Those students get attached to the place and when they go back to their universities, they spread the word among their friends. Many of them come back later to study a PhD programme.

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We have several different fields within the life-science industry in which the biotech companies here are especially strong. These are mainly vaccines and immunology but also diagnostics, biologicals and reagents. The companies at the VBC have different sizes; from four employees to 150.

We also have the Vienna Biocenter Core Facilities (VBCF), which is an independent entity owned by the VBC association and its members, which runs specific services that are supported by government grants. The other part is reimbursed by fees; thanks to those fees, we can afford to buy new technologies and maintain facilities that put us to the cutting edge of research. These core facilities are accessible to practically every research group and biotech company here.

The VBC is ranked number one in Austria (by the Ranking of Institutions Output Life Sciences of Nature Index. With 22 elected members of the prestigious European Molecular Biology Organisation EMBO among our faculty and 40 highly regarded ERC grants over the last ten years, VBC plays in the top league of European life-sciences research hotspots. 23 percent of VBC publications appear in the ten percent of most-cited journals in their field, according to InCites – a strong indication of the high quality of the research at VBC".

How do you make sure that you get the best students to continue doing outstanding research and keep this impressive collection of awards?

One example is our "Vienna Biocenter PhD Program" which is an international, highly competitive PhD program. We get 1,000 applications from which we recruit 40 new students a year in two calls.

In addition to your role at the VBC, you are also the managing director of the IMP. Can you tell us more about the function of this research center?

The IMP is the Research Institute of Molecular Pathology, we have about 250 employees from around the world. We have 16 research groups: five of them are senior groups, they are larger and have more experienced researchers, and we have eleven junior groups which are led by younger scientists who set up or consolidate their own group. They stay five to ten years and after that, they move on to another place and take up professorships, for example. We want a high turnover in those groups, so new ideas are coming in continuously. We do not offer career paths internally, so when an assignment comes to an end, these scientists move on to continue their research at other leading organisations.

The IMP publishes around 70 publications per year in international peer-reviewed journals and has won many prestigious grants and awards. Since 2007, faculty members have won 13 ERC Grants. Our current faculty comprises 16 principal investigators – of which no less than 11 are ERC grantees. This is exceptional. Apart from the direct investment in our research, the ERC grants are a great endorsement of the high quality of our scientists.

You are funded by Boehringer Ingelheim (BI); what is the difference between the IMP and the R&D department of BI in Germany?

BI funds approximately two thirds of our research. We are committed to a budget of 28 million euros per year, this is the largest private investment in Austria for basic research.

We cannot know where the results of our research will lead us, but even if we are funded by a pharmaceutical company, BI, we are committed to scientific progress. People here are driven by the quest for discovery, for example, we have a researcher here from Australia, he is determined to find out how the molecular mechanism of the orientation systems of birds work. How can birds orient themselves all over the world? For now, we do not know what kind of application this research could lead to, but this could be said about many discoveries that led to important break-throughs.

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We have research in various fields; molecular and cellular biology, structural biology and biochemistry, gene expression, stem cell biology and development; cancer biology; and neuroscience.

The IMP is a subsidiary of BI; you are conducting research without knowing if it is going to be for BI or other pharmaceutical companies. How independent are your operations?

The role and position of BI, through the IMP, is a way to show its appreciation for basic research. BI has the right to be the first to get our intellectual property and develop it. Our main differentiator is that our research is ‘academic’ and not directed towards a commercialisation. This is the reason why we have a different logo, we are not BI, we are independent in our research. We are trying to discover a fundamental mechanisms that could then be taken to the medical field by other actors, such as BI.

BI is still a family-owned company in the fourth generation, and there is a deep understanding that all progress in this company was and continues to be linked to discovery from basic research. Discoveries now being commercialised may have been made 30 or 40 years ago, as the life-science industry is driven by very long cycles. When you have identified a fundamental mechanism, the target, you can then work on making a modification, for example in cancer to stop the proliferation of cells. With certain chemical mechanisms, from the moment you understand the mechanism to the moment you have identified a crack on the market, the average is 10 to 15 years. So, it is a very high-risk adventure and you need to have the full portfolio, including basic science.

Why is R&D so important for the pharmaceutical industry?

Innovation in the pharmaceutical industry brings new products onto the market, and all innovation is tied to basic research. If you do not innovate today, you will not have new products in the future.

That is a simple truth, but it is often not seen by the management of companies lacking the long-term vision of Boehringer Ingelheim.

The IMP inaugurated its new building on the VBC campus last spring; how is this going to help the positioning of the IMP within the network of research centers in Europe?

The old building came to the end of what it could offer in terms of new technologies. New technologies in life-science are being created every day, you need more and more machines, which means more space or rooms with different needs and for that, the old building was no longer suitable. In addition, we wanted an open building for open communication, where people can meet each other, even research groups that don't work together. Here, you see people, you communicate, take a coffee-break. Most of the new discoveries and new ideas come from those breaks! In addition, we have modern meeting rooms, a spacious multi-purpose foyer and a lecture hall that seats up to 280 people, and a modern cafeteria with catering options; facilities that now allow us to host big events such as scientific conferences.

Austria is a pool of innovation and research, why don't we hear more about the Austrian life science industry?

Austria is not that big and other countries, for example Switzerland, have a much bigger tradition in that field. Also, Switzerland did not suffer direct war damages in the 20th century, so it built its industry with long-term continuity. The Swiss also started to invest early in high quality education and science. Vienna was famous before the two world wars for its university and hospitals. Then many doctors and scientists were killed or fled the country and after WWII, basic reconstruction was the priority. It took a long time to come back to the cutting-edge of research and invest in science again. We started 30 years ago, and it takes a while to build it up.

Vienna is working hard to build the reputation in the science life area; we have a lot to offer here and not just in life sciences. It is important because all economy will be built on knowledge in the future. Vienna is not a place for cheap labour, but it has good training, education and research. It has been ranked very highly in terms of quality of life for many years in a row. Moreover, Vienna has 216 pharmaceutical/biotech companies and 218 medical devices companies. Together, they employ 22,125 people and generate almost ten billion euros in revenue per year. In addition, we have 27 hospitals and 18 academic organizations in life sciences. Finally, education is very strong with more than 33,000 students in the life-science field.

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Also, for the past 20 years and still today, Vienna is becoming more international and has built a strong tourism industry. To build the reputation, Vienna is doing more branding. We know our assets, now we need to promote them. It is a good place to live in! We just need to be recognized as a place of the future.

What are your aspirations for the future?

In the next five years, we would like to see more US foundations starting to invest in medical research in Austria and we would like to let them know that we have good places with high quality facilities and we recruit excellent researchers from all over the world, so it would be a good opportunity.

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