

“A network of the second generation”

Interview with GSCN founding president Oliver Brüstle

In a conversation with GSCN's annual magazine, Prof. Oliver Brüstle talks about building a network for stem cell research in Germany, the latest research results and the need for ongoing development, in particular in Germany.

GSCN annual magazine: Professor Brüstle, you have played a leading role in the development of the GSCN over the past year. Did you manage to fit anything else into 2013?

Brüstle: We worked in a team – it would not have been possible without the staff from the central office and other colleagues on the executive board. We also benefited from our experiences in establishing the Stem Cell Network North Rhine Westphalia.

You've been involved for some time in an initiative for a German network for stem cell research. Can you give us some background on its history?

In fact we've been working on this idea for many years. The first discussions with the Federal Ministry of Education and Research were back in 2005. During that period we already had an extremely well functioning network for stem cell research in North Rhine-Westphalia as well as the idea that this could be a good template for a network at a national level.

The German stem cell network comes at a very late time point. Many national and international networks were founded up to ten years ago, and some have already ceased their activities. So why at this moment in time do we need a German stem cell network?

It was a different situation ten years ago. Back then, it was all about getting the field established. Everything was new, there was a strong need to identify and integrate the researchers in and around this area. Many locations around the world have recognized this need and established successful networks and structures. For some of them, this was already 'mission accomplished'. We think this is somewhat shortsighted.

So what can a 'network 2.0' accomplish today?

The need for a network is greater than it's ever been. This is firstly due to the fact that the field has developed enormously. It's no longer only about embryonic versus adult stem cells. With cell reprogramming and direct transcription factor-driven cell conversion, completely new technologies have come into play that open up fascinating biomedical perspectives. Secondly, the field has now reached maturity in numerous application areas. Regulatory issues and clinical studies pose new challenges. Added to this is the dark side of unproven therapies.

“The time is just right to create a second-generation network.”



Oliver Brüstle at the GSCN Annual Conference 2013

These are important questions that have to be discussed in a network and communicated to the public. Furthermore, the now well-established field of stem cell research and its representatives have their own very special requirements, ranging from lobbying for specific funding programs via mentoring in career planning all the way up to professional outreach activities. This amounts to a great many tasks, which is why we believe that now the time is just right to create a second-generation network.

How did you determine the requirements for the GSCN?

Firstly, we went to the community, meaning that we approached potential members and also carried out an online survey. We got great feedback from this, which motivated us enormously and helped us to define the goals and activities of the network.

The GSCN has established a number of working groups. What will be their functions and goals?

From the very beginning, I wanted more than just a network with an annual conference and a website. To as great an extent as possible, the members should be in-

involved in the substantive work as well as be granted the corresponding external visibility. The idea is for these to be accommodated by the working groups. Scientists in all career stages are engaged in these groups, shaping content and structures of the network. This is a bottom-up approach, as opposed to traditional hierarchical structures where many people working in secret with only the board being visible to the outside.

How are the working groups configured?

There are two categories. The scientific working groups focus on specific fields of stem cell research, such as certain classes of stem cells and specific applications. Then there are the so-called strategic working groups, which work on strategic issues that are relevant to scientists and society. Examples are career development, funding programs, regulatory issues, and information on available stem cell therapies. From the patients' perspective there is a huge need for information on what are serious versus unproven therapies. Rapid communication of emerging stem cell technologies to both scientists and the public, too, is an important strategic area of activity.

Stem cell research is considered a technology of the future. What answer would you give to critics complaining that stem cell research has fallen short of expectations?

Therapy development is laborious and demands the greatest possible care. In conventional pharmaceutical research, you expect development work to take at least 10 years until a marketable drug is produced. Just over ten years after the introduction of embryonic stem cells, we are witnessing first clinical studies, for example for the treatment of retinal diseases. Furthermore, stem cells are increasingly employed in the context of drug development, where they provide unique opportunities to test and validate compounds at a very early stage of the pharma value chain, thereby avoiding costly late failures. Looking at all this, there is no need for doomsday mongering at all.

Your own research at the Institute for Reconstructive Neurobiology at Bonn University and at LIFE&BRAIN GmbH focuses on neural stem cells derived from pluripotent stem cells. What can these cells be used for?

We are following two directions. Firstly, we are using these cells to establish cell culture models of neurological diseases, which we exploit for elucidating disease mechanisms and as tools for drug development. This is particularly interesting for neurons derived from reprogrammed patient cells. Using the iPSC cell technology it has become possible to identify and validate pharmaceutical compounds in patient-specific and disease-relevant human cells. On the

other hand we are developing stem cell-based therapies, for example for cell replacement in diseases such as Parkinson's or for stem cell-mediated gene therapies for the treatment of metabolic diseases.

What do you think is the most exciting development in this area?

For me that's the recent advances in direct cell fate conversion – the possibility to convert a somatic cell type straight into another one – without reprogramming the cell to pluripotency. If this works in the living organism, we could

“Scientists in all career stages are engaged in these groups, shaping content and structures of the network.”

think about directly inducing new neurons in the brain – without resorting to cell transplantation anymore.

In an international comparison, what is the current position of German stem cell research? What are our strengths?

As a consequence of the legal situation, we are further ahead in the area of adult stem cells and cell reprogramming than in the use of embryonic stem cells, for which clinical trials have already been conducted in other places. Overall, we are on a par with the other European countries, the US and Asia. For further development of this field it is important that we set up suitable funding programs to ensure that results evolving from basic stem cell research are converted into applications.

What advice would you give to young researchers?

To follow their own interests and their own enthusiasm, and to not pay too much attention to predictions and alleged career opportunities. The field is changing too quickly to be able to plan ahead over a matter of years. You live from your enthusiasm, which is the energy that makes everything possible.

“Therapy development is laborious and demands the greatest possible care.”

Prof. Dr. Oliver Brüstle, born in 1962, is director of the Institute for Reconstructive Neurobiology at Bonn University and co-founder and CEO of LIFE&BRAIN GmbH, which serves as commercial hub of the University of Bonn Medical Faculty. His scientific focus is the use of pluripotent stem cells for research into and treatment of neurological disorders. In his role as founding president of the GSCN, he can capitalize on his ten years of experience on the board of the extraordinarily successful Stem Cell Network North Rhine Westphalia. During his presidency, the GSCN was able to position itself as a fresh force in the research landscape as well as establish the structures that now serve as the basis for the future orientation of the GSCN.