



A new phase for the GSCN:

Dialog Platform

Stem Cell Research

The new GSCN President Hans Schöler is starting a new phase with the stem cell network: beginning in 2021, the GSCN and the Berlin Institute of Health (BIH) will cooperate with each other on a long-term basis and establish the joint „Dialog Platform Stem Cell Research“. For Hans Schöler, the cooperation means new networks and a source for new energies. This fits in well with his hope to emerge from the pandemic times by 2021. The interview was conducted by Stefanie Mahler.

GSCN: On 1 January 2021, the GSCN entered a close partnership with the Berlin Institute of Health (BIH). The two organizations have co-founded the ‘Dialog Platform Stem Cell Research’, which will be attached to the BIH Center for Regenerative Therapies. What does this partnership mean for the GSCN?

Hans Schöler: Through this partnership, the GSCN is gaining a key strategic partner to achieve common goals. Both institutions pursue the goal of fostering the translation of academic insights into medical applications for the benefit of patients. The GSCN promotes and supports a network of German stem cell researchers across a range of disciplines and boasts a wide range of international connections. The BIH is involved in a much broader range of research, but also has a focus on stem cell research and associated technologies. We are both committed to the objective of fostering the translation of academic insights into practical applications and improving the environment for doing so. There is significant overlap between the GSCN and BIH, and the Dialog Platform Stem Cell Research, co-founded by the two organizations, pursues a shared objective. The platform is aimed at forging contacts between a wide range of scientists, promoting networking through conferences and workshops, and enhancing the way science is communicated using a range of formats, of which some have been previously developed by the GSCN. The BIH will benefit from greater depth and internationalization in stem cell research and enjoy networking benefits. The GSCN will gain long-term stability and financial security, which, by enabling to plan ahead with confidence, should endow the network with new vigor.

What are your goals for the Dialog Platform for the next two years of your presidency?

Over the next two years, we want to fill our partnership with the BIH with life. That will include integrating BIH scientists into GSCN working groups to form joint Dialog Platform working groups. We will be setting up and developing joint initiatives aimed at encouraging talented young researchers. These will range from travel awards and poster prizes to training courses. We also want to develop joint projects and organize both scientific and public events.

Photo: Max Planck Institute of Molecular Biomedicine



Hans Robert Schöler has been conducting research as Director of the Department of Cell and Developmental Biology at the Max Planck Institute for Molecular Biomedicine in Münster since 2004. He received his PhD degree from the Center for Molecular Biology at the University of Heidelberg in 1985. In 1999, he accepted a professorship in reproductive medicine at the School of Veterinary Medicine of the University of Pennsylvania, United States, and served in that position for five years. He also holds several full and associate professorships in Germany, the United States, and South Korea. Hans Schöler has received numerous prizes and awards, including the Robert Koch Prize, the Kazemi Prize, and the Max Delbrück Medal. He is an elected member of the German Academy of Sciences Leopoldina and numerous other academies. In 2010, the Hans Schöler Stem Cell Research Center (HSSCRC) was formally inaugurated in his honor at the Ulsan National Institute of Science and Technology in South Korea. Hans Schöler is on the board of the International Society for Stem Cell Research (ISSCR).

Specifically, we are already planning a joint session at the virtual 2021 ISSCR Annual Meeting and want to shape a joint BIH-GSCN presence within the international stem cell research world.

As President through to 2022, I hope to be able to help ensure that the partnership between the BIH and the GSCN is positive and constructive. Over these two years I am looking forward to a further White Paper, hopefully real-life conferences, and tangible mutual benefits.

We also want to take a more detailed, in-depth look at the issue of affirmative action programs for women, fine tune the conceptual basis for such programs and further develop modules aimed at encouraging talented young researchers.

My dream would be to help to remove or at least lower barriers that are impeding the translation of basic research into successful treatments.

How will the GSCN's autonomy be preserved in light of the GSCN's close partnership with the BIH?

In legal terms, the GSCN is a nonprofit organization. It operates as a network of scientists and is open to members. Members include natural persons people – the individual scientists and other people with an interest in stem cell research – and organizations – research institutes and companies involved in stem cell research. From a legal point of view, the GSCN and BIH have completely different structures, with the BIH in 2021 having become part of Charité – Universitätsmedizin Berlin. Through the Dialog Platform Stem Cell Research, we have successfully established a structure that enables us to work together while

maintaining the GSCN's autonomy as a scientific society. The interests of the GSCN will continue to be managed by an elected executive board in consultation with the larger GSCN management board, and its resolutions and activities will continue to be implemented by the GSCN office. As from 2021, however, this office will be largely financed by the BIH. The GSCN's autonomy is not impacted in any way – that was important to both organizations and is explicitly set out in the partnership agreement.

With a look to joint activities, the GSCN and BIH have co-founded the Dialog Platform for Stem Cell Research, which organizes and hosts workshops, conferences, and White Papers.

The coronavirus pandemic meant that the GSCN held most of its events online in 2020. How did you experience this, for example the virtual Annual Conference?

Looking back on 2020 and all those virtual conferences, workshops and meetings, there are, from my point of view, both advantages and disadvantages. For a conference like the 8th Annual GSCN Conference, I found it good that I could easily switch between sessions, put on a pair of headphones and really concentrate, and I found it easier to take notes than I do in most conference rooms. A further advantage is that it's easier to get international speakers on board for virtual lectures. I'm not sure, for example, that all of our keynote speakers would have been able to travel to Ulm for the conference. Speakers like Christine Mummery (Leiden NL), Bertie Göttgens (Cambridge, UK), Shahragim Tajbakhsh (Paris, FR), Jonathan Kimmelman (Montreal, CAN) and Marius Wernig (Stanford, US) are very much in demand and are often drowning in conference invites.

What I certainly missed, however, is the face-to-face discussions after sessions and having a beer with other scientists. And a meet-the-expert session is just a lot more fun when you're sitting around an actual table together. I also definitely missed the GSCN WunderBar at the ISSCR in June, originally scheduled to take place in Boston. It's a wonderful event which has become something of a tradition and enjoys a great reputation. Meeting up virtually just isn't the same, so I'm very much hoping that we will all be able to get together for the 9th GSCN Conference in Ulm. As the conference is not due to take place until October – specifically 6–8 October 2021 – I am cautiously optimistic that it will be able to go ahead. Networking is quite simply crucial, especially for younger researchers, but also with partners in the business sector. Being able to see the latest equipment in the flesh is incomparably better than viewing it virtually.

Which scientific achievements impressed you the most in 2020?

There have been quite a number of interesting advances well worthy of mention, but what has impressed me time and time again is the consistent progress Masayo Takahashi has been making. She has previously performed and published a number of clinical studies involving induced pluripotent stem cells (iPSC). She has published some excellent papers on retinal differentiation and on organoids derived from pluripotent cells. Right from the outset, she has taken the approach that reconstructing the photoreceptor layer will require tissue transplantation. In 2017, she and her team carried out the first successful procedure to transplant iPSC-derived retinal cells into the eye of a patient with advanced neovascular age-related

ThermoFisher
SCIENTIFIC

DID YOU KNOW

**THERE'S
A NEW
DIMENSION
TO PSC
CULTURE?**



Make the
connection

gibco

Learn more at thermofisher.com/stemscale

macular degeneration. During the operation, a sheet of approximately 250,000 retinal pigment epithelial cells from donor-derived iPSCs was transplanted into the patient's eye.

Her next step is both logical and exciting – she is planning a clinical trial using organoids to treat patients with retinitis pigmentosa. She is planning to transplant tiny sheets of retinal progenitor cells cut from retinal organoids. The idea is that, once in the patient's eye, over a period of several months the retinal progenitor cells should mature into functional photoreceptors. She and her team published a paper demonstrating that this is in principle possible in 2018. Their experiments were able to demonstrate functional maturation of human ESC-derived retinal sheets (human embryonic stem cells) following transplantation in mice. Although there are other types of retinal cells that were not produced, this procedure could restore visual function in a retina in which complete photoreceptor degeneration has taken place. I am very much looking forward to seeing the results.

Regenerative medicine repeatedly touted as a vision for the future. Despite this, we still seem to be making slow progress in realizing rapid translation into practical applications and successful treatments. What, in your opinion, are the main obstacles to a more rapid translation process and how can they best be overcome?

I think we're still facing the same problems that were outlined in the German Stem Cell Network's 2018 white paper "Translational Medicine – from stem cells to future technologies". That White Paper described several key problems and potential solutions. The ongoing coronavirus pandem-

ic highlights the importance of being able to move quickly, and that's much easier if you remove unnecessary barriers on the one hand and promote the creation of structures conducive to this objective on the other. I'd like to highlight two examples here – one of unnecessary barriers and one of structures conducive to this objective.

One problem is restrictions on how stem cells can be used. Under the German Stem Cell Act (Stammzellgesetz), hESC-derived cells can be used in clinical trials, as these trials are considered a research activity. But if we got to the point where hES cells were to be routinely used to produce cell products for clinical applications, that would be prohibited under the Stem Cell Act. This restriction is significantly hindering the translation process. The ability to make non-research use of ES cells to manufacture cell products for developing treatments is simply indispensable. Otherwise, we are developing procedures in Germany which will only be able to be used overseas. If the Stem Cell Act is not amended on this point, our only hope is that one day we will be able to generate induced pluripotent stem cells which are equal in quality to hES cells.

It would be conducive to this objective if there were clinical trials units specializing in advanced therapy medicinal products (AMTPs) at German university hospitals. Stem cell researchers, clinicians and regulatory authorities coordinating closely at such clinical trials units would provide a major boost.

I am very much looking forward to seeing what new developments will arise in this exciting research field and, together with GSCN members, hope to be able to contribute to these developments.

Max Planck Institute for Molecular Genetics (MPIMG)

Research at the Max Planck Institute for Molecular Genetics (MPIMG) concentrates on genome analysis of man and other organisms. It is the overall goal of all MPIMG's groups to gain new insights into the development of diseases on a molecular level, thus contributing to the development of cause-related new medical treatments. Work at the MPIMG is characterized by a genome-wide approach to scientific questions. In this context, the very close connection between experimental and computational methods has become a major feature of all departments

and research groups at the institute in recent years. MPIMG researchers are interested in questions of epigenetic regulation and work on a better understanding of gene regulation networks for tissue formation and homeostasis, as their dysfunction may result in numerous diseases. In this context, stem cell research is gaining increasing importance.

Max Planck Institute for Molecular Genetics
 Ihnestr. 63-73 · 14195 Berlin
www.molgen.mpg.de

