

GSCN-News

GSCN moratorium on engineering of the human germline

In view of the extraordinarily rapid development of genetic engineering techniques, especially CRISPR/Cas, the Board of the GSCN resolved in March 2015 to support a moratorium on genetic intervention in the human germline, and published a statement to this effect. The call to postpone the use of gene editing in the human germline was issued in light of the uncertain ethical, social and legal implications of manifest and long-term modification of the human genetic base. The statement on the moratorium can be found on the GSCN website. The International Summit on Human Gene Editing held in Washington in December 2015 also issued a statement on engineering of the human germline. The statement is largely in favor of genetic engineering of embryos and germ cells – although only for research purposes and not in order to induce a pregnancy.

New: GSCN Awards

In 2015 the GSCN established three new awards for German stem cell research: the GSCN Young Investigator Award, the GSCN Female Scientist Award, and the GSCN Publication of the Year Award. The three winners, Julia Ladewig, Magdalena Götz, and Jichang Wang, delivered presentations on their work at the first-ever presidential session, held during the 2015 Annual Conference. The GSCN awards will be presented again in the coming year. Proposals can be submitted to the Central Office now.



GSCN award ceremony: from left Julia Ladewig, Magdalena Götz, Zsuzsanna Izsvák, Jichang Wang and GSCN president Thomas Braun

Network of German Stem Cell Core Units „PluriCore“

On 30 - 31 July 2015, scientists from labs throughout Germany that provide services in the field of PSC research (core facilities) met at the Berlin Institute of Health (BIH) to establish a network, PluriCore, to promote scientific and technical exchange as well as collaboration. A high degree of standardization and harmonization is required when working with pluripotent stem cells (PSC), especially when the work is directed towards clinical



translation. This has motivated scientists to exchange the techniques and protocols they have developed. The “Stem Cell Cores,” facilities at the different institutes, will establish common standards for experiments and exchange knowledge and materials. This will include expertise regarding techniques to reprogram stem cells, stimulate their differentiation, engineer genomes, and characterize cells, and scientists will exchange useful vectors and cell lines. The initiative was launched by Micha Drukker (Helmholtz Center Munich), Harald Stachelscheid (BIH Stem Cell Core, BCRT) and Sebastian Diecke (BIH Stem Cell Core, MDC) and supported by the BIH and the GSCN. PluriCore chose the GSCN Humhub (see below) as communication platform.

New GSCN films in German and English

In 2015 the GSCN produced two more new films covering potential applications of cell therapies – the films are available in German and English on our website www.gscn.org. They can be used free of charge for information purposes.



Humhub: Social Intranet for all of us!

Everyone wants to communicate. Now, we can do it via the GSCN Humhub (gscn.humhub.com), a modern communication platform with social media functions that the Central Office has set up for the network and the working groups. Users can communicate with each other, exchange texts and drafts, upload photos, and discuss papers and reports. What's more, promotional codes for conferences will appear here first. It is currently rather slow to get off the ground in some working groups – so it is worth remembering that all GSCN members are automatically part of the network. If you need help logging on, Stefanie Mahler (stefanie.mahler@mdc-berlin.de) will be happy to assist.





ISSCR 2015 in Stockholm

Networking for GSCN members and guests – the WunderBar Evening

Scientists travel to conferences all over the world to present and listen to presentations. Personal contact with colleagues is equally important. So at the ISSCR 2015 Annual Meeting, the GSCN invented something new: the WunderBar Evening. Its purpose is to allow researchers to meet, celebrate, talk, eat and drink – in short, to network. And that worked wonderfully in Stockholm in 2015, when around 100 GSCN members and friends met above the rooftops of the Swedish capital and spent the midsummer evening enjoying the sociable atmosphere and stimulating chat. Our plan proved a complete success, and we hope a second GSCN WunderBar Evening will take place at ISSCR 2016 in San Francisco.



Lively attendance at the GSCN Meet-up Hub

The GSCN Meet-up Hub has been a popular tradition at the ISSCR since 2013. Many GSCN members and their colleagues from all over the world meet up and get talking, making use of the hour-long occasion to make or renew contacts and exchange news and views. The tradition continued in 2015. Even German journalists turned up, looking to speak to experts and make contacts with compatriots.

21 Travel Awards: “A great and unique opportunity”

Twenty-one young members received Travel Awards from their GSCN working groups to enable them to attend the ISSCR 2015 Annual Meeting. Their feedback was enthusiastic: they commented positively on the special atmosphere, the presence of several thousand scientists from all over the world, the presentations by experts, the options for initiating joint projects, and the interesting discussions and ideas at the poster presentations. Their inspiring reports can be found on our website.



Photos: GSCN

Global politics and science in dialogue: the GSCN at the World Health Summit in Berlin

Since it was first held in 2009, the World Health Summit has become one of the most important forums in international health research. Each October, medics, scientists, social scientists, politicians, and representatives of the private sector and non-governmental organizations gather in Berlin. In 2015 the GSCN organized the session “Stem Cell Research – Paving the Path to Application” A panel of experts discussed the current status of clinical applications of cell therapies and likely developments. Their conclusion was that in many areas including diabetes, neurological diseases and eye and heart disorders, research results are ready for testing in clinical trials. For further details see Daniel Besser’s essay “Stem cells in disease modeling and regenerative medicine – perspectives, challenges and realities” in the WHS Yearbook 2015.



From left to right: Ulrich Martin, Zameel Cedar, Mohan Vermuri, Egbert Flory, Daniel Besser, Fathia Sadallah, Arnd Hoeveler, Daniel Pipeleers, Casja Lindberg, Tim Allsopp, Joachim Müller-Jung

GSCN session at the DGTI in Basel

At the 48th annual conference of the German Society for Transfusion Medicine and Immunohematology (DGTI, 15 – 18 Sept. 2015) in Basel, the GSCN organized a session on the principles of stem cell research, as it did in 2014. The workshop was opened by Benedikt Berninger (Mainz) with his talk “Remodeling and reprogramming the adult brain.” Berninger showed that the formation of presynaptic inputs

Fraunhofer Institute for Cell Therapy and Immunology

Fraunhofer IZI

The Fraunhofer Institute for Cell Therapy and Immunology IZI investigates and develops solutions to specific problems at the interfaces of medicine, life sciences and engineering. One of the institute’s main tasks is to conduct contract research for companies, hospitals, diagnostic laboratories and research institutes operating in the field of biotechnology, pharmaceuticals and medical engineering.

The Fraunhofer IZI develops, optimizes and validates methods, materials and products for the business units Drugs, Cell Therapy, Diagnostics

and Biobanks. Its areas of competence lie in cell biology, immunology, drug biochemistry, bioanalytics and bioproduction as well as process development and automation. In these areas, research specifically focusses on the indications oncology, ischaemia, autoimmune and inflammatory diseases as well as infectious diseases and regenerative medicine. The institute works in close cooperation with hospital institutions and performs quality tests besides carrying out the GMP-compliant manufacture of clinical test samples. Furthermore, it helps partners obtain manufacturing licenses and permits.

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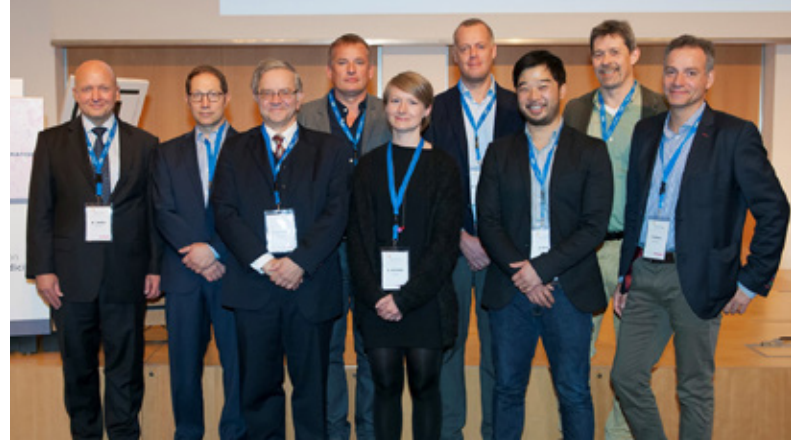
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in newly generated neurons in the adult hippocampus is strongly dependent on experience during a critical period two to six weeks after generation of the neuron. He also discussed data that prove that some neurons generated from glia cells by reprogramming through the use of transcription factors integrate into the pre-existing neural network. In a presentation entitled “Functional profiling of AML stem cells,” Frank Buchholz (Dresden) described data that explain the molecular mechanisms of cancer stem cells in acute myeloid leukemia (AML). Using a comprehensive test system involving interfering RNAs (iRNA), it was possible to identify six genes that are important for the growth and survival of cancer stem cells. Blocking a gene product known as ROCK1 kinase resulted in effective and specific elimination of the leukemia cells, also in a humanized mouse model. By means of single-cell analysis and elegant use of color-marked fusion proteins in mouse lines, Philipp Hoppe (Basel) showed in his talk “Transcriptional control of hematopoietic lineage choice – old paradigms and new insights from single-cell analysis” that the decision on differentiation into either megakaryocytes/erythrocytes or granulocytes/monocytes does not depend on the random fluctuation of two transcription factors, PU.1 and Gata1. These experiments also identified new myeloid hematopoietic sub-cell types. In her presentation “Analyzing human hematopoietic stem cell biology in vivo: Cell cycle progression as mediator of cell fate decisions”, Nicole Mende (Dresden) described data on the regulation of the G1 phase of the cell cycle of hematopoietic stem cells (HSC) by the factors cyclin D1 and the associated kinase CDK4 (cyclin-dependent kinase 4). She showed that shortening the G1 phase of the cell cycle has a beneficial impact on the functioning and maintenance of human HSCs.

World Conference on Regenerative Medicine (WCRM) and GSCN satellite event in Leipzig

From 21 – 23 Oct. 2015, more than 800 scientists met in Leipzig for the World Conference on Regenerative Medicine, an event that has been held in the Saxon city every two years since 2007. For two satellite events, the GSCN working group “Technologies in stem cell research,” headed by Andreas Bosio (Bergisch-Gladbach) and Frank Emmrich (Leipzig), put together an excellent program with six outstanding speakers:

- Walter Brehm, Leipzig University, Germany: “Stem cell techniques in veterinary medicine from clinical application to basic science”
- Jonathan Bramson, McMaster University, Canada: “Engineering white blood cells to kill cancer”
- Nicola Elvassore, University of Padova, Italy: “Endogenous signaling pathways control reprogramming and differentiation in microfluidic environment”
- Agnete Kirkeby, Lund University, Sweden: “Bringing hESCs to the clinic for treatment of Parkinson’s disease”
- Harold Cremer, IBDM, Marseille, France: “Molecular control of neural stem cell determination in postnatal brain”



From left to right: Walter Brehm, Jonathan Bramson, Frank Emmrich, Harold Cremer, Agnete Kirkeby, Nicola Elvassore, Johnny Kim, Daniel Besser, Andreas Bosio

- Johnny Kim, Max Planck Institute, Bad Nauheim, Germany: “Functional systems analysis of prospectively purified adult muscle stem cells”

The GSCN’s European activities: Networking with EuroStemCell

The GSCN is a German partner of the international information portal EuroStemCell, an association of European stem cell research centers. The GSCN has translated many EuroStemCell materials into German, including factsheets containing up-to-date information on stem cell research relating to diabetes, cancer, leukemia, eye diseases and ethical issues, as well as stem cell games for use at public outreach events. The materials, which are suitable both for events and for answering patients’ queries, can be found on the website www.eurostemcell.org and will shortly also be available for download as a PDF from the GSCN website www.gscn.org

Stem cell research for outstanding students

Bright-minded students visit research institutions: Students of STEM (MINT in German) subjects are interested, curious and very well educated. In February 2015, the GSCN took part in the capital forum MINT 400 in Berlin, meeting keen and open-minded students from all over Germany who enthusiastically tried out new things in the laboratory and engaged in scientific and ethical discussions about stem cell research.

UniStem Day – a European stem cell day

In 2016, research institutes across Germany will for the first time take part in UniStem Day – a European day of stem cell research. On 11 March, school students in eight cities will be able to participate in education days organized by the GSCN – with guided visits, presentations, meet-the-scientist tables, games, films, and video transmission between European cities. More than 1,000 senior high-school students specializing in biology at schools in Berlin, Bochum, Bonn, Dresden, Hannover, Heidelberg, Jena and Münster are expected to participate. Last year, 25,000 young people across Europe took part in UniStem Day. For more information visit www.unistemday.de

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