



# GermanStemCellNetwork

## 4<sup>th</sup> Annual Conference

of the German Stem Cell Network (GSCN)

12 – 14 September 2016

Hannover Medical School (MHH)

[www.gscn.org](http://www.gscn.org)



## Program & Abstracts

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# GermanStemCellNetwork

## 4<sup>th</sup> Annual Conference of the German Stem Cell Network (GSCN) 12 – 14 September 2016 Hannover Medical School (MHH)

### **Organizer:**

**German Stem Cell Network (GSCN)**  
c/o Max Delbrück Center (MDC)  
Robert-Rössle-Str. 10  
13125 Berlin

**phone:** +49 30 9406 2487  
**fax:** +49 30 9406 2486  
**e-mail:** gscn.office@mdc-berlin.de  
**web:** www.gscn.org

## Greetings from Stephan Weil, Minister-President of Lower Saxony



As Minister-President of Lower Saxony, it gives me great pleasure to welcome all attendants of the 4<sup>th</sup> International Annual Conference of the German Stem Cell Network (GSCN). Each year this event brings together experts in stem cell research and regenerative medicine to present their work and to discuss their latest research findings.

I am convinced that this year, Hannover Medical School and the Cluster of Excellence “REBIRTH” as host institutions will provide a very stimulating environment to discuss the latest developments in stem cell research and genome and tissue engineering. The State of Lower Saxony is at the forefront of research in these areas, not only with the Cluster of Excellence “REBIRTH”, but also with other research institutions, innovation-minded professionals, and strong enterprises.

I am convinced that this conference represents an outstanding opportunity for national and international scientists to discuss new findings and emerging, cutting-edge advances in a stimulating and interdisciplinary atmosphere. I am proud that Lower Saxony is home to this conference.

During your visit to Hannover, I hope you will take the opportunity to enjoy everything that the capital of Lower Saxony has to offer – from its numerous cultural and scenic treasures, to its fine dining and gracious hospitality. From Hannover Medical School it is only a short trip to the City Center: home to our opera, museums and historic sites including the new and old town hall, and the famous baroque gardens at Herrenhausen.

Finally, I would like to extend a warm welcome to all participants on behalf of the State of Lower Saxony, in particular our international guests and speakers. I wish you lively discussions and active exchanges of experiences in all areas of stem cell research.

Hannover, September 2016

A handwritten signature in blue ink that reads "Stephan Weil".

Stephan Weil  
Minister-President of Lower Saxony

## Welcome address

Dear Friends and Colleagues,



It is a great pleasure to welcome you to the **4<sup>th</sup> Annual Conference of the German Stem Cell Network (GSCN) in Hannover**. This conference is hosted by the Cluster of Excellence REBIRTH and Hannover Medical School.

This year, there will be a particular focus on genome engineering and on “translation” with various relevant aspects including disease modeling and drug development, relevant technologies, clinical trials, regulatory affairs and ethical aspects. The conference will be accompanied by a symposium of ethicists on pressing questions in gene, embryo and stem cell research, will foster the interaction between scientists working in different areas of stem cell research, and aims to bring together basic scientists and clinician scientists.

Supported by the Federal Ministry of Education and Research, the GSCN is now in its 4<sup>th</sup> year. Besides organization of the annual conference and the participation in the European UniStem Day, one key activity of the recent year was the composition and publication of the first White Paper on Stem Cell Research as an updated information source for the public and politics, also aiming at raising additional funds for the German stem cell community.

Meanwhile, the GSCN annual conferences are a “must-go” event for stem cell researchers in Germany and have substantially stimulated networking in the German and European stem cell scene. Remarkably, also the number of international GSCN members and attendees is continuously increasing.

Since promotion of junior scientists is a particular aim of the GSCN, most speakers are selected from the best abstracts that have been submitted. On the other hand, we invited internationally leading researchers to contribute a keynote lecture. We are happy that Alexander Meissner (Cambridge), Sean Morrison (Dallas), Hiroshi Nagashima (Tokyo), Thomas Eschenhagen (Hamburg), Peter Zandstra (Toronto) and Pete Coffey (London) agreed to join us here in Hannover. Again, awardees of the GSCN prizes will present their results during the Presidential Symposium. The final session of the conference will be a Joined Session with the Cluster of Excellence REBIRTH further highlighting translational aspects of stem cell research and providing an outlook by the former REBIRTH member and new president of the GSCN, Lenhard Rudolph. With best wishes for another great GSCN conference,

Yours sincerely,

A handwritten signature in blue ink, appearing to read "U. Martin".

Ulrich Martin (GSCN Acting president)

### For the program committee

- Daniel Besser (Berlin) • Thomas Braun (Bad Nauheim) •
- Tobias Cantz (Hannover) • Tilman Fabian (Hannover) •
- Ulrich Martin (Hannover) • Karl Lenhard Rudolph (Jena) •
- Claudia Waskow (Dresden)

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## Conference Information

### Venue

Hannover Medical School, Building J01  
Carl-Neuberg-Str. 1 | 30625 Hannover, Germany

### Date

Monday, 12 September to Wednesday, 14 September 2016

### Registration

Regular fee:	550 €	Technical assistant fee:	120 €
Regular member fee:	375 €	Day ticket fee (onsite):	200 €
Student fee:	300 €	Day ticket member fee (onsite):	160 €
Student member fee:	200 €		

The registration fee includes attendance at all scientific sessions, poster and industry exhibition, lunch and coffee breaks, the get-together, the networking evening, free internet access and conference documents including badge, final program and abstract book.

### Internet

Internet access via Wireless LAN is free of charge. Please use this login data:

User: Hotspot 1; Password: mh-hannover

### Posters exhibition

Posters will be displayed during the conference in two sessions on the ground floor (S0). Authors are asked to be present at their poster during the poster session. You will find the number of your poster in this abstract volume. Posters in poster session I should be mounted on Monday, 10:00 – 16:00 h and removed latest on Tuesday at 14:00 h. Posters in poster session II should be mounted on Tuesday, 14:00 – 16:30 h and removed latest on Wednesday at 16:00 h.

#### Poster session I (P001 – P077)

Monday, 12 September 2016, 17:00 – 19:00 h

Even numbers will be presented 17:00 – 18:00 h and odd numbers 18:00 – 19:00 h.

- Pluripotency and reprogramming (P001 – P017)
- Somatic stem cells and development (P018 – P039)
- Hematopoietic stem cells (P040 – P053)
- Stems cells and ageing, genome stability and epigenetics (P054 – P060)
- Stem cells in diseases: cancer stem cells (P061 – P066)
- Computational stem cell biology and systems biology (P067 – P077)

The poster session I is supported by BioFroxx GmbH / Biological Industries.



#### Poster session II (P078 – P147)

Tuesday, 13 September 2016, 16:30 – 18:30 h

Even numbers will be presented 16:30 – 17:30 h and odd numbers 17:30 – 18:30 h.

- Tissue engineering and organoids (P078 – P091)
- Genome engineering and gene therapy (P092 – P097)
- Stem cells in regenerative therapies (P098 – P119)
- Stem cells in regenerative therapies: mesenchymal stem/stroma cells (P120 – P124)
- Stem cells in disease modeling and drug development (P125 – P147)

The poster session II is supported by Thermo Fisher Scientific.



## GSCN Awards

### Travel awards

The following participants have been selected for the GSCN travel awards.

- *Birte Baudis*, University Hospital of Cologne
- *Christian Böhme*, University of Leipzig
- *Larisa Condurat*, University of Freiburg
- *Nora Freyer*, BCRT, Charité – Universitätsmedizin Berlin
- *Devy Garna*, Dental Institute King's College London, United Kingdom
- *Florian Murke*, University Hospital of Essen

The travel awards are supported by the GSCN member company Eppendorf AG.



### Poster awards

There will be two poster awards for each poster session. Authors are asked to be present at the poster award ceremony, which will take place on Wednesday, 14 September 2016, 17:45 – 18:00 h in the lecture hall F.

The poster awards are supported by the member company Peprotech GmbH.



### Scientific awards 2016

A top-class commission supported the GSCN in choosing this year's awardees. The three awardees will give a presentation in the Presidential Symposium on Tuesday, 13 September 2016, 14:00 – 16:00 h.

- **GSCN Young Investigator Award:** *Leo Kurian*, Center for Molecular Medicine Cologne (CMMC), University of Cologne
- **GSCN Female Scientist Award:** *Claudia Waskow*, Regeneration in hematopoiesis, TU Dresden
- **GSCN Publication of the Year Award** (July 2015 to June 2016): *Dr. Guangqi Song, Dr. Martin Pacher, Prof. Michael Ott and Dr. Amar Deep Sharma* of the REBIRTH Center and TWINCORE Center at Hannover Medical School. Their publication “Direct Reprogramming of Hepatic Myofibroblasts into Hepatocytes In Vivo Attenuates Liver Fibrosis” appeared in the journal *Cell Stem Cell* (Song, G. et al., 2016, *Cell Stem Cell*, 18, 797 – 808, doi: [10.1016/j.stem.2016.01.010](https://doi.org/10.1016/j.stem.2016.01.010)).



GermanStemCellNetwork



## Social events

### Get-together

**Monday, 12 September 2016**

19:45 – 21:00 h

Hannover Medical School



All participants and exhibitors are invited to a **Get-together** with dinner buffet at the foyer of the MHH (Ground floor).



### Networking evening

**Tuesday, 13 September 2016**

19:00 – 01:00 h

Yukon Market Hall

Hannover Zoo

Experience an extraordinary evening with **polar bear feeding** in the unique **Yukon Market Hall** in the Hannover Zoo. In the 1920's flourishing fish trade was operated in the market hall. Today you can celebrate here like in Canada. Typical North American wood facades, salons, theaters and the Yukon Market Hall let dreams of the 'Wild West' come true. From the large terrace you have a great view to the polar bears and maybe you can hear the whine of the Timberwolves.

**Shuttle buses will leave at 18:30 h from the main car entrance (Haupteingangsfahrt) of MHH.** The **Networking evening** with dinner buffet and DJ is included in the registration fee and open to all participants and exhibitors.



### Address:

Hannover Zoo

Adenauerallee 3

30175 Hannover



supported by



## Public outreach event (in German)

### Moderne Zelltherapien – Stammzellen bei Herz- und Lebererkrankungen

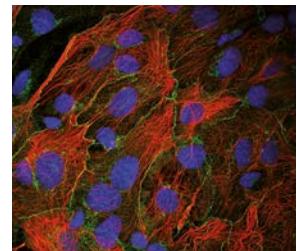
Podiumsdiskussion zur aktuellen Forschung in Labor und Klinik

**Wann:** Mittwoch, 14. September, 19:30 – 21 Uhr  
Einlass: 19 Uhr, Posterausstellung zu Stammzellen

**Wo:** HAZ Anzeiger-Hochhaus  
Goseriede 9  
30159 Hannover

Patienten mit schwerwiegenden Erkrankungen der Leber und des Herzens kann bisher oft nur durch eine Organtransplantation das Leben gerettet werden. Moderne Zelltherapien mit Stammzellen könnten eine Alternative zur Organtransplantation bieten. Wie ist der Stand der Forschung? Welche Aussichten zeichnen sich für die Klinik und die Anwendung ab? Und wie ist eigentlich die ethische und rechtliche Situation beim Umgang mit Patientenzellen in der Forschung?

Hochkarätig besetzt: In der öffentlichen Podiumsdiskussion stellen drei Ärzte und Wissenschaftler der Medizinischen Hochschule Hannover (MHH) und ein Medizinethiker der Leibniz Universität Hannover (LUH) den aktuellen Stand der Grundlagenforschung und den möglichen klinischen Einsatz vor. Kurze Filme veranschaulichen ihre Arbeit im Exzellenzcluster REBIRTH. Anschließend diskutieren sie Einsatzmöglichkeiten von Stammzellen bei Herz- und Lebererkrankungen und beantworten Fragen aus dem Publikum.



- *Prof Dr. Axel Haverich*, Klinik für Herz-, Thorax-, Transplantations- und Gefäßchirurgie, MHH,
- *Prof. Dr. Ulrich Martin*, Leibniz Forschungslabore für Biotechnologie und künstliche Organe, MHH
- *Prof. Dr. Michael Manns*, Klinik für Gastroenterologie, Hepatologie und Endokrinologie, MHH
- *Prof. Dr. Nils Hoppe*, Centre for Ethics and Law in the Life Sciences Hannover, Leibniz Universität Hannover
- **Moderation: Dr. Stefanie Seltmann**, DKFZ, Heidelberg

## Satellite event (in German)

ELSA-Forschungsverbundprojekt „Entwicklungsbiologische Totipotenz: Bestimmung als normatives Kriterium in Ethik und Recht unter Berücksichtigung neuer entwicklungsbiologischer Erkenntnisse“ (Verlängerung)

## Totipotente Nicht-Embryonen und nicht-totipotente Embryonen

## **Normative Herausforderungen durch artifizielle Entitäten**

In deutschen Recht existieren zwei unterschiedliche Legaldefinitionen des menschlichen Embryos: Nach § 8 Abs. 1 ESchG gilt als Embryo bereits die befruchtete, entwicklungsfähige menschliche Eizelle, ferner jede einem Embryo entnommene totipotente Zelle. Hingegen definiert § 3 Abs. 4 StZG den Embryo ausschließlich durch das Kriterium der Totipotenz. Im Hinblick auf artifiziell erzeugte totipotente Entitäten, die nicht durch Befruchtung entstehen, stellt sich damit die Frage, inwieweit diese unter den Begriff des Embryos des ESchG fallen. Da Totipotenz offenbar nicht den Grund für die Schutzwürdigkeit von Embryonen darstellt, sondern als biologisches Kriterium für die Zuschreibung von Schutzwürdigkeit dient, bedarf es für die Definition eines menschlichen Embryos weiterer normativer, ontologischer und lebensweltlicher Annahmen. Diesbezüglich lassen sich Unterschiede zwischen natürlichen Embryonen und artifiziell erzeugten totipotenten Entitäten erkennen, die die Fragen aufwerfen, ob und inwieweit artifizielle Entitäten anders zu bewerten sind als natürliche menschliche Embryonen und welchen Argumenten und Kriterien bei der ethischen und rechtlichen Beurteilung Bedeutung zukommt.

Sofern der Gesetzgeber am Kriterium der Totipotenz für die Schutzwürdigkeit entwicklungsfähiger Entitäten festhalten möchte, ist zu fragen, ob zwischen einer natürlichen und einer artifiziell erzeugten Totipotenz differenziert werden muss. Damit geraten Aspekte wie die Entstehung bzw. Erzeugung, die Finalität und die Eingriffstiefe der Manipulation in das Blickfeld und werfen die Frage auf, inwieweit sich diese als Kriterien einer konstitutiven Abweichung vom natürlichen Embryo qualifizieren lassen.

Teilprojekt Philosophie, Koordination

Thomas Heinemann, Barbara Advena-Regnery

Kathrin Rottländer

Lehrstuhl Ethik, Theorie und Geschichte der Medizin

Philosophisch-Theologische Hochschule Vallendar



Teilprojekt Rechtswissenschaft

Hans-Georg Dederer, Franziska Enghofer, Katharina Böhm

Lehrstuhl für Staats- und Verwaltungsrecht, Universität Passau



Teilprojekt Entwicklungsbioologie

## **Tempo Projekt Entwicklungsbericht**

Reinhard Ebeling, Stephan Giesecke  
Medizinische Hochschule Hannover



## **DIENSTAG, 13. September 2016**

### **Hörsaal N**

**11:00 – 11:15 Begrüßung**

*Thomas Heinemann, Philosophisch-Theologische Hochschule Vallendar*

**11:15 – 12:30 Teilprojekt Entwicklungsbiologie**

*Moderation: Hans-Georg Dederer*

Die „Scoring“-Matrix – biologische Graduierung nach Natürlichkeit und Artifizialität

*Susan Sgodata, Medizinische Hochschule Hannover*

*Kommentar: Michael Ott, Hannover*

**12.30 – 13:30 Mittagspause**

**13:30 – 15:15 Teilprojekt Rechtswissenschaft**

*Moderation: Thomas Heinemann*

Rechtliche Kriterien für die Bewertung von „nicht-totipotenten Embryonen“ und „totipotenten Nicht-Embryonen“

*Franziska Enghofer und Katharina Böhm, Universität Passau*

*Kommentar: Jens Kersten, München*

**15:15 – 15:45 Kaffeepause**

**15:45 – 17:30 Teilprojekt Philosophie**

*Moderation: Tobias Cantz*

Der Embryo zwischen Sein und Sollen. Zum Verhältnis von Naturwissenschaften und Normwissenschaften

*Barbara Advena-Regnery, Philosophisch-Theologische Hochschule Vallendar*

Artifizielle embryo-ähnliche Entitäten. Zwischen Statusdebatte und Handlungskontexten  
*Kathrin Rottländer, Philosophisch-Theologische Hochschule Vallendar*

*Kommentar: Markus Rothhaar, Eichstätt-Ingolstadt*

**17:30 – 18:15 Abschlussdiskussion**

Gefördert vom



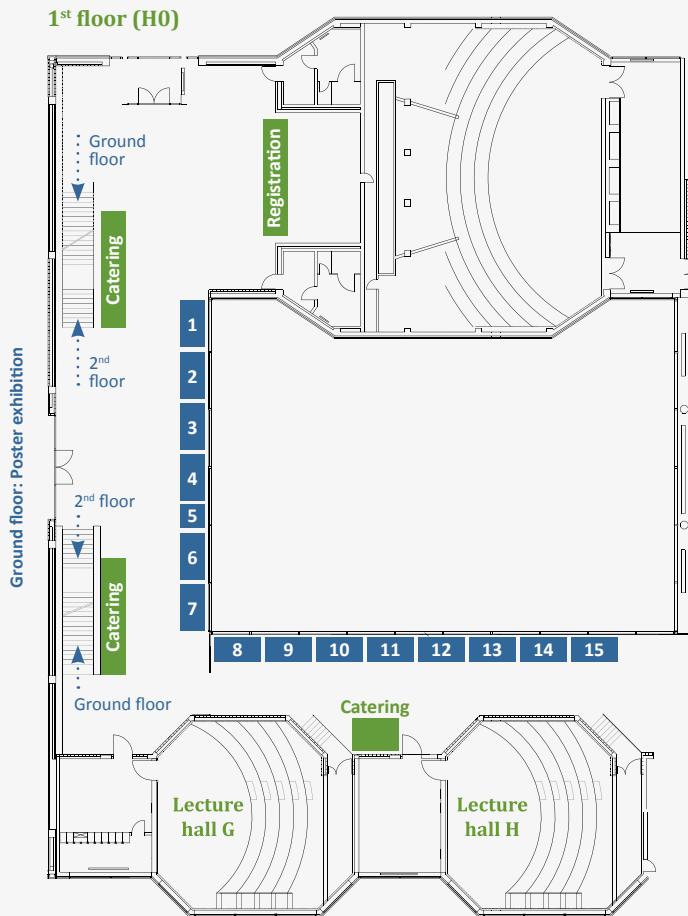
Bundesministerium  
für Bildung  
und Forschung



# Floor plan

## Legend

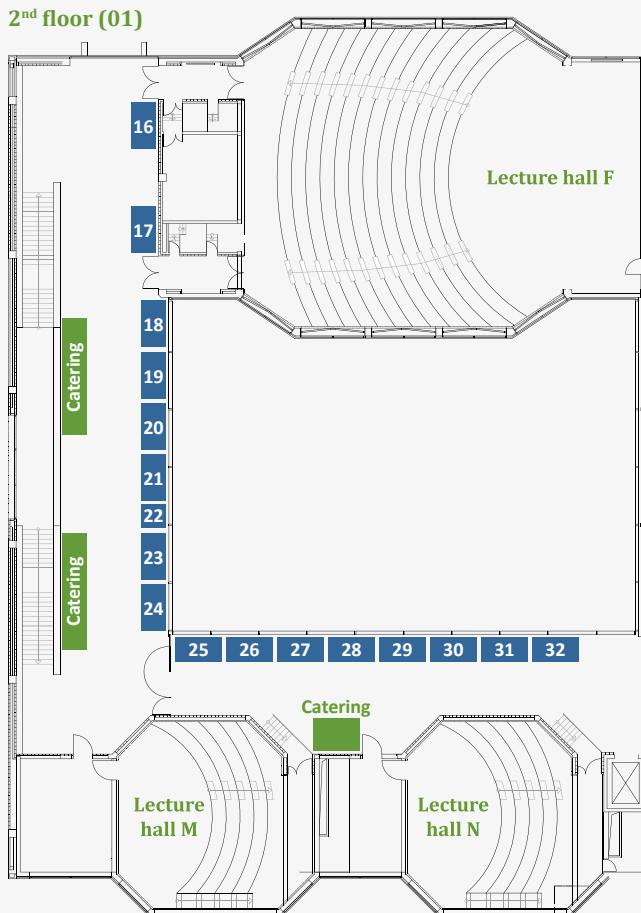
AMS Biotechnology (Europe) Limited	19	Cygenia GmbH	15
Becton Dickinson GmbH	25	eBioscience, an Affymetrix company	11
BioFroxx GmbH/Biological Industries	20	Eppendorf AG	17
BioTek Instruments GmbH	14	Gilson International Deutschland	9
BIOTREND Chemikalien GmbH	26	I&L Biosystems GmbH	8
CellTool GmbH	30	Labotect GmbH	6
Cenibra GmbH	29	LLS ROWIAK LaserLabSolutions GmbH	13
Cyagen Biosciences GmbH	28	Lonza Cologne GmbH	1



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Macopharma International GmbH	23	PL BioScience GmbH	22
Miltenyi Biotec GmbH	21	PromoCell GmbH	27
NanoString Technologies Germany GmbH	2	ReproCell Europe Ltd	31
NEW ENGLAND BioLabs GmbH	4	SERVA Electrophoresis GmbH	12
OLS – OMNI Life Science GmbH & Co. KG	10	STEMCELL Technologies GMBH	7
OSPIN GmbH	32	Sysmex Suisse AG	5
PELOBIOTECH GmbH	3	Takara Bio Europe, SAS	24
PeproTech GmbH	18	Thermo Fisher Scientific	16

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**MONDAY, 12 September 2016**

Lecture hall F	Lecture hall H	Lecture hall G	Lecture hall M	Lecture hall N
10:00 – 11:00	Registration			
11:00 – 11:30	<b>Opening</b>			
11:30 – 12:15	<b>Keynote lecture I</b> <i>Alexander Meissner</i>			
12:15 – 13:00	<b>Keynote lecture II</b> <i>Sean Morrison</i>			
13:00 – 14:00	Lunch break / Industry exhibition			
14:00 – 15:30		<b>Concurrent scientific working group session I</b>		
		Stem cells in regenerative therapies I	Pluripotency and reprogramming	Hematopoietic stem cells
				Tissue engineering and organoids
15:30 – 16:00	Coffee break / Industry exhibition			
16:00 – 17:00		<b>GSCN Members Meeting</b>		
17:00 – 19:00	<b>Poster Session I (P001 – P077)</b>			
17:00 – 18:00	posters with even numbers			
18:00 – 19:00	posters with odd numbers			
19:00 – 19:45	<b>Keynote lecture III</b> <i>Hiroshi Nagashima</i>			
19:45 – 21:00	<b>Informal GSCN Get-together</b> with dinner buffet at the ground floor (S0) of the conference venue			<b>Technology Exchange Workshop</b> (by invitation only)

**TUESDAY, 13 September 2016**

Lecture hall F	Lecture hall H	Lecture hall G	Lecture hall M	Lecture hall N
09:00 – 10:30		<b>Concurrent scientific working group session II</b>		
		Stem cells in disease modeling and drug development	Stem cells and aging, genome stability and epigenetics	Computational stem cell biology and systems biology
10:30 – 11:00	Coffee break / Industry exhibition			
11:00 – 12:35		<b>Industry session: "Technologies from GSCN industry partners"</b>		<b>Satellite event</b>
		PeproTech GmbH	Thermo Fisher	ELSA-Forschungsverbundprojekt
		Eppendorf AG	Miltenyi Biotec	Totipotente Nicht-Embryonen und nicht-totipotente Embryonen
		Takara Bio Europe	Lonza	Normative Herausforderungen durch artifizielle Entitäten
12:35 – 14:00	Lunch break / Industry exhibition / Poster viewing			Interdisziplinäres Symposium
12:45 – 13:45		<b>Meet-the-expert tables in the bistro/ground floor (S0)</b> Please register at registration desk (limited to 10 participants each).		
		Ingo Roeder	Hans Schöler	S. 12 – 13
			Ana Martin-Villalba	
14:00 – 16:00	<b>Presidential Symposium</b>			
14:00 – 14:30	<i>Oliver Brüstle</i>			
14:30 – 15:00	Young Investigator Award <i>Leo Kurian</i>			
15:00 – 15:30	Female Scientist Award <i>Claudia Waskow</i>			
15:30 – 16:00	Publication of the Year Award <i>Guangqi Song</i>			
16:00 – 16:30	Coffee break / Industry exhibition			

Lecture hall F	Lecture hall H	Lecture hall G	Lecture hall M	Lecture hall N
16:30 – 18:30	<b>Poster Session II (P078 – P147)</b>			
16:30 – 17:30	posters with even numbers			
17:30 – 18:30	posters with odd numbers			<b>ELSA-Forschungsverbundprojekt Session</b>
18:30 – 19:00	Bus transfer to Networking evening			
19:00 – 01:00	<b>GSCN Networking evening</b> with dinner buffet and DJ at the Yukon Bay, Hannover Zoo			

## WEDNESDAY, 14 September 2016

Lecture hall F	Lecture hall H	Lecture hall G	Lecture hall N
09:00 – 10:30		<b>Concurrent scientific working group session III</b>	
	Somatic stem cells and development	Stem cells in regenerative therapies II	Stem cells in diseases: cancer stem cells
10:30 – 11:00	Coffee break / Industry exhibition		
11:00 – 12:30		<b>Concurrent strategic working group session</b>	
	Technologies in stem cell research	Career development and funding opportunities	Clinical trials and regulatory affairs
12:30 – 14:00	Lunch break / Industry exhibition / Poster viewing		
12:45 – 13:45		<b>Meet-the-expert tables in the bistro/ground floor (S0)</b> Please register at registration desk (limited to 10 participants each).	
	Marisa Karow Cerebral organoids	Hennar Farin Intestinal epithelial organoides	Ina Gruh 3D bioartificial cardiac tissue
14:00 – 17:35	<b>Joined Session with Rebirth/MHH</b>		
14:00 – 14:45	<b>Keynote lecture IV</b> <i>Peter Zandstra</i>		
14:45 – 15:30	<b>Keynote lecture V</b> <i>Peter Coffey</i>		
15:30 – 15:45	<b>GSCN Outlook 2017</b> <i>Karl Lenhard Rudolph</i>		
15:45 – 16:15	Coffee break / Industry exhibition		
16:15 – 17:35	<b>Rebirth session</b>		
17:35 – 17:50	<b>Poster award and closing ceremony</b>		
	End of conference		
19:00 – 21:00	<b>GSCN public outreach event with panelists</b>		

### Legend

- Opening/Evening events/Members meeting/Rebirth session
- Keynote Lectures/GSCN Awardees/Outlook
- Concurrent scientific working group sessions/  
Meet-the-expert-tables
- Concurrent strategic working group sessions/  
Meet-the-expert-tables
- Industry session
- Technology Exchange Workshop/ Satellite event
- Poster Sessions and Poster award ceremony

## Program

### **MONDAY, 12 September**

10:00 – 11:00 Registration

#### **Lecture hall F Opening**

11:00 – 11:10 Welcome to Hannover Medical School (MHH)

*Christopher Baum*, President, Hannover Medical School

11:10 – 11:20 Welcome to Hannover and Lower Saxony

*MPräs. Stephan Weil* (Minister-President of Lower Saxony)

11:20 – 11:30 *Ulrich Martin*, Acting President, GSCN

#### **Keynote lecture I**

K1 – Mechanisms of epigenetic regulation in stem cells and development

*Alexander Meissner*, Harvard University, Cambridge, U.S.A. (Chair: *Ulrich Martin*)

#### **Keynote lecture II**

K2 – Identification of niches for hematopoietic stem cells and osteogenesis

*Sean Morrison*, UT Southwestern, Dallas, U.S.A. (Chair: *Claudia Waskow*)

13:00 – 14:00 Lunch break / industry exhibition

supported by Nanostring Technologies

### **Concurrent scientific working group session I**

#### **Lecture hall H Stem cells in regenerative therapies I**

supported by Lonza Cologne GmbH

(Chairs: *Wolfgang Wagner* / *Ulrich Martin*)

14:00 – 14:15 Overview

*Wolfgang Wagner*, RWTH Aachen

14:15 – 14:30 T01 – HLA-silenced platelets derived from induced pluripotent stem cells are protected against refractoriness in a platelet transfusion mouse model

*Dorothee Eicke*, Hannover Medical School

14:30 – 14:45 T02 – Immunogenicity of embryonic stem cell-derived cardiomyocytes in recipients mismatched for minor and major histocompatibility antigens

*Birte Baudis*, University of Cologne

14:45 – 15:00 T03 – BSA-free differentiation of hPSCs into cardiomyocytes

*Hanna Möller*, Hannover Medical School

15:00 – 15:15 T04 – A registry of pluripotent stem cells for clinical application

*Andreas Kurtz*, Berlin-Brandenburg Center for Regenerative Therapies, Charité, Berlin

15:15 – 15:30 Working group discussion

#### **Lecture hall G Pluripotency and reprogramming**

supported by Miltenyi Biotec GmbH

(Chairs: *Micha Drukker* / *Mathias Treier*)

14:00 – 14:25 T05 – Pluripotency keynote – Trophoblast stem cells from murine fibroblasts – can the mouse serve as blueprint for the human situation?

*Hubert Schorle*, University of Bonn

- 14:25 – 14:40 T06 – Nanotopography guides morphology and spatial patterning of induced pluripotent stem cell colonies  
*Giulio Abagnale, RWTH Aachen*
- 14:40 – 14:55 T07 – Propagation of the early murine inner cell mass state in cell culture  
*Xiushan Yin, Max Delbrück Center, Berlin*
- 14:55 – 15:10 T08 – Contribution of cynomolgus monkey induced pluripotent stem cells to porcine embryos  
*Monika Nowak-Imialek, Friedrich Loeffler Institute, Mariensee*
- 15:10 – 15:25 T09 – Characterization and potential immunomodulatory properties of human induced pluripotent stem cell (hiPSC)-derived trophoblast cells  
*Svitlana Malysheva, Hannover Medical School*
- 15:25 – 15:30 Working group discussion

**Lecture hall M Hematopoietic stem cells (Chairs: Timm Schröder / Claudia Waskow)**

- 14:00 – 14:25 T10 – HSC keynote – Hematopoietic stem cell fate realized in vivo  
*Hans-Reimer Rodewald, German Cancer Research Center, Heidelberg*
- 14:25 – 14:40 T11 – The bulk of the hematopoietic stem cell population is dispensable for murine steady-state and stress hematopoiesis  
*Kristina Schödel, TU Dresden*
- 14:40 – 14:55 T12 – Heterogeneity and in vivo regulation of dormant hematopoietic stem cells  
*Nina Cabezas-Wallscheid, German Cancer Research Center, Heidelberg*
- 14:55 – 15:10 T13 – Essential role for Setd1a-mediated histone methylation in adult hematopoietic stem cell function  
*Kathrin Arndt, TU Dresden*
- 15:10 – 15:25 T14 – Biomimetic bone marrow analogs as artificial hematopoietic stem cell niches  
*Cornelia Lee-Thedieck, Karlsruhe Institute of Technology*
- 15:25 – 15:30 Working group discussion

**Lecture hall N Tissue engineering and organoids (Chairs: Robert Zweigerdt / Benedikt Berninger)**

- 14:00 – 14:30 Overview  
*Robert Zweigerdt, Hannover Medical School*  
*Benedikt Berninger, University Medical Center, Mainz*
- 14:30 – 14:45 T15 – Stirred suspension culture for the scalable generation of billions of human induced pluripotent stem cells  
*Chee Keong Kwok, University of Würzburg*
- 14:45 – 15:00 T16 – Biofabrication of a perfusable 3D liver tissue construct using organoids  
*Kerstin Schneeberger, Utrecht University, Netherlands*
- 15:00 – 15:15 T17 – Human pluripotent stem cell-derived acinar/ductal organoids generate human pancreas upon orthotopic transplantation and allow disease modeling  
*Alexander Kleger, University Medical Center, Ulm*
- 15:15 – 15:30 T18 – Differentiation of pericytes from hiPSCs for the vascularization of bioartificial cardiac tissues  
*Mónika Szepes, Hannover Medical School*
- 15:30 – 16:00 Coffee break / industry exhibition

## Lecture hall H

16:00 – 17:00 **GSCN General Membership Meeting**

17:00 – 19:00 **Poster session I: P001 – P077**

supported by Biofroxx GmbH / Biological Industries

Pluripotency and reprogramming (P001 – P017)

Somatic stem cells and development (P018 – P039)

Hematopoietic stem cells (P040 – P053)

Stems cells and ageing, genome stability and epigenetics (P054 – P060)

Stem cells in diseases: cancer stem cells (P061 – P066)

Computational stem cell biology and systems biology (P067 – P077)

Even numbers: please present your poster from 17:00 – 18:00

Odd numbers: 18:00 – 19:00

## Lecture hall F

19:00 – 19:45 **Keynote lecture III**

K3 – Generation of human organs in pigs

*Hiroshi Nagashima*, Meiji University, Tokyo, Japan (Chair: *Tobias Cantz*, in collaboration with ELSI project “induced totipotency”)

19:45 – 21:00 **Informal GSCN Get-together for all participants**

with dinner buffet at the ground floor (S0) of the conference venue

## TUESDAY, 13 September

### Concurrent scientific working group session II

**Lecture hall H Stem cells in disease modeling and drug development**

supported by Takara Bio Europe, SAS

(Chairs: *Karl-Ludwig Laugwitz / Oliver Brüstle*)

09:00 – 09:15 Overview

*Karl-Ludwig Laugwitz*, TU München

09:15 – 09:30 T19 – Stiff matrix induces switch to pure beta-cardiac myosin heavy chain expression in human embryonic stem cell-derived cardiomyocytes

*Natalia Weber*, Hannover Medical School

09:30 – 09:45 T20 – A new model to study neurotoxicity of drug metabolites based on chemical conversion to neurons-on-a-chip in tandem with liver-on-a-chip

*Xinlai Cheng*, Heidelberg University

09:45 – 10:00 T21 – Employing rapid phenotypic assays in SPG4 patient neurons for drug discovery and rescue

*Kristina Rehbach*, University of Bonn

10:00 – 10:15 T22 – Patient-specific iPS cell-based modeling of Transthyretin-Related Familial Amyloid Polyneuropathy

*Jeannine Hoepfner*, Hannover Medical School

10:15 – 10:30 Working group discussion

10:30 – 11:00 Coffee break / industry exhibition

**Lecture hall G Stem cells and aging, genome stability and epigenetics**

(Chairs: *Hartmut Geiger / Karl Lenhard Rudolph*)

- 09:00 – 09:15 Overview  
*Hartmut Geiger*, Ulm University
- 09:15 – 09:30 T23 – Dnmt3b-dependent intragenic DNA methylation prevents RNA Polymerase II spurious entry on gene bodies and cryptic transcription initiations  
*Francesco Neri*, Leibniz Institute on Aging, Jena
- 09:30 – 09:45 T24 – Aging shifts the mode and outcome of the hematopoietic stem cell division  
*M. Carolina Florian*, University of Ulm
- 09:45 – 10:00 T25 – Bone marrow niche and hematopoietic stem cell differentiation are regulated by the microbiota  
*Aline Bozec*, University of Erlangen-Nuremberg
- 10:00 – 10:15 T26 – Restricted regeneration of hematopoietic stem cells *in vivo* following chronic inflammatory stress  
*Ruzhica Bogeska*, German Cancer Reserach Center, Heidelberg
- 10:15 – 10:30 T27 – Hoxa9 induced developmental signals impair stem cells and regeneration of aging muscle  
*Simon Schwörer*, Leibniz Institute on Aging, Jena

**Lecture hall M Computational stem cell biology and systems biology**

(Chairs: *Georg Fuellen / Ingo Roeder*)

- 09:00 – 09:15 Overview  
*Carsten Marr*, Helmholtz Center Munich
- 09:15 – 09:30 T28 – Scoring cell identity from transcription profiles  
*Nancy Mah*, Berlin-Brandenburg Center for Regenerative Therapies, Charite, Berlin
- 09:30 – 09:45 T29 – Understanding and predicting regulatory mechanisms in early differentiation of human pluripotent stem cells  
*Erika Gaspari*, University of Bologna, Italy
- 09:45 – 10:00 T30 – FGF/MAPK signaling sets the switching threshold of a bistable circuit controlling fate decisions in embryonic stem cells  
*Christian Schröter*, Max Planck Institute of Molecular Physiology, Dortmund
- 10:00 – 10:15 T31 – Reconstructing lineage branching from single cell RNA-seq in adult haematopoiesis via diffusion pseudo time  
*Maren Büttner*, Helmholtz Center Munich
- 10:15 – 10:30 Working group discussion

**Lecture hall N Genome engineering and gene therapy (Chairs: *Axel Schambach / Hans Schöler*)**

(in collaboration with ELSI project “induced totipotency”)

- 09:00 – 09:15 Overview – Germ Cell Differentiation  
*Hans Schöler*, MPI f. Molecular Biomedicine, Münster
- 09:15 – 09:30 Overview – Gene Therapy & Genome Engineering  
*Axel Schambach*, Hannover Medical School

- 09:30 – 09:45 T32 – Designer-nuclease mediated knockout of HIV co-receptor CCR5 – a promising gene-therapy approach to protect T cells from HIV infection  
*Boris Fehse, UKE Hamburg*
- 09:45 – 10:00 T33 – Efficient introduction of homo- and heterozygous mutations with CRISPR/Cas9 and applications to disease modeling in stem cells  
*Dominik Paquet, The Rockefeller University, New York, U.S.A.*
- 10:00 – 10:15 T34 – Efficient and accurate precision genome engineering of transcriptionally silent disease-related loci by CRISPR/Cas9 nickase  
*Reto Eggenschwiler, Hannover Medical School*
- 10:15 – 10:30 T35 – Generation of HLA depleted human pluripotent stem cell lines for modulation of the immunogenicity of iPSC derivatives  
*Lena Engels, Hannover Medical School*
- 10:30 – 11:00 Coffee break / industry exhibition

### Industry session: "Technologies from GSCN industry partners"

#### **Lecture hall H Main supporter** (Chair: *Michael Cross*)

- 11:00 – 11:05 Introduction
- 11:05 – 11:35 C1 – Simplified dopaminergic neuron and cardiac differentiation of single episome reprogrammed fibroblasts  
*Rick I. Cohen, Rutgers University, Piscataway, U.S.A., representing PeproTech GmbH*
- 11:35 – 12:05 C2 – Expansion of Human Bone Marrow-Derived Mesenchymal Stem Cells in BioBLU® 0.3c Single-Use Bioreactors  
*Aurélie Tacheny, Eppendorf Application Technologies S.A., Namur, Belgium*
- 12:05 – 12:35 C3 – A novel system to generate HPS cell-derived hepatocytes with potential application to drug discovery and metabolism, and hepatotoxicity studies  
*Barbara Küppers-Munther, Takara Bio Europe, Gothenburg, Sweden*

#### **Lecture hall G Supporter** (Chair: *Dirk Strunk*)

- 11:00 – 11:05 Introduction
- 11:05 – 11:35 C4 – Generation of dopaminergic precursor cells and terminally differentiated neurons from human pluripotent cells for drug discovery and cell therapy  
*Mohan C Vemuri, Thermo Fisher Scientific, Frederick, U.S.A.*
- 11:35 – 12:05 C5 – Enabling GMP-compliant iPSC expansion and differentiation on the CliniMACS® Prodigy platform  
*Sebastian Knöbel, Miltenyi Biotec GmbH, Bergisch Gladbach*
- 12:05 – 12:35 C6 – Using Pluripotent Stem Cells in the Age of Genome Editing  
*Theresa Dsouza, R&T Lonza Bioscience, Cologne*

#### **Lecture hall M Supporters** (Chair: *Michael Rieger*)

- 11:00 – 11:05 Introduction
- 11:05 – 11:35 C7 – Translation of cell-based gene therapy into clinical application  
*Elena Meurer, apceth GmbH & Co. KG, Munich*
- 11:35 – 12:05 C8 – Simultaneous single-molecule quantification of DNA, RNAs & Proteins  
*Maik Pruess, Nanostring Technologies, Hamburg*

12:05 – 12:35	C9 – STEMdiff™ Kits for Robust and Efficient Differentiation of Human Pluripotent Stem Cells <i>Katharina Debowski, Stem Cell Technologies SARL, Cologne</i>
<b>Lecture hall N</b>	<b>Satellitensymposium “Totipotente Nicht-Embryonen und nicht-totipotente Embryonen”</b>
11:00 – 18:15	open to GSCN participants (in German, program see page 12 – 13)
<b>12:35 – 14:00</b>	<b>Lunch break / industry exhibition / poster viewing</b> supported by Apceth GmbH & Co. KG
12:45 – 13:45	Meet-the-expert tables (Bistro/ground floor): Ingo Roeder (Bioinformatic analysis of biological data), <i>Hans Schöler</i> and <i>Ana Martin-Villalba</i> ; please register at the registration desk (limited to 10 participants each)
<b>Lecture hall F</b>	<b>Presidential Symposium</b> (Chair: <i>Ulrich Martin</i> )
14:00 – 14:30	PS1 – Engineered human heart muscles for disease modelling and cardiac repair <i>Thomas Eschenhagen, UKE, Hamburg</i>
14:30 – 15:00	<b>Young Investigator Award 2016</b> PS2 – Developmental programming by lncRNA-TF pairs during the induction of the embryonic heart <i>Leo Kurian, University of Cologne</i>
15:00 – 15:30	<b>Female Scientist Award 2016</b> PS3 – Generation and regeneration of human and murine hematopoietic stem cells <i>Claudia Waskow, TU Dresden</i>
15:30 – 16:00	<b>Publication of the Year 2016 Award</b> (June 2015 – 2016) PS4 – Direct reprogramming of hepatic myofibroblasts into hepatocytes in vivo attenuates liver fibrosis <i>Guanqgi Song, Hannover Medical School</i>
16:00 – 16:30	<b>Coffee break / industry exhibition</b>
16:30 – 18:30	<b>Poster session II: P078 – P147</b> supported by Thermo Fisher Scientific Tissue engineering and organoids (P078 – P091) Genome engineering and gene therapy (P092 – P097) Stem cells in regenerative therapies (P098 – P119) Stem cells in regenerative therapies: mesenchymal stem/stroma cells (P120 – P124) Stem cells in disease modeling and drug development (P125 – P147) Even numbers: please present your poster from 16:30 – 17:30 Odd numbers: 17:30 – 18:30
18:30 – 19:00	Bus transfer
19:00 – 01:00	<b>GSCN Networking evening for all participants</b> with dinner buffet and DJ at the Yukon Bay, Hannover Zoo

## **WEDNESDAY, 14 September**

### **Concurrent scientific working group session III**

#### **Lecture hall H Somatic stem cells and development (Chairs: Ana Martin Villalba / Thomas Braun)**

- 09:00 – 09:15 Overview  
*Jan Lohmann*, Centre of Organismal Studies, Heidelberg University
- 09:15 – 09:30 T36 – Fate-restriction precedes stemness during massive post-embryonic growth in the fish branchia  
*Lazaro Centanin*, Centre of Organismal Studies, Heidelberg University
- 09:30 – 09:45 T37 – Visualization of stem cell induction and differentiation in real time  
*Rasmus Freter*, University of Oxford
- 09:45 – 10:00 T38 – Embryo-derived macrophages regulate the dendritic cell pool size in the adult spleen  
*Gulce Percin*, TU Dresden
- 10:00 – 10:15 T39 – A role for YAP and TAZ signaling in human neural crest development  
*Alexandra Larisa Condurat*, Freiburg University
- 10:15 – 10:30 Working group discussion

#### **Lecture hall G Stem cells in regenerative therapies II: mesenchymal stem cells**

(Chairs: *Richard Schäfer / Dirk Strunk*)

- 09:00 – 09:15 Overview  
*Karen Bieback*, Medical Faculty Mannheim, Heidelberg University
- 09:15 – 09:30 T40 – Stepwise maturation of human iPS cells into immunosuppressive mesenchymal stem/progenitor cells  
*Cornelia Scharler*, Paracelsus Private Medical University of Salzburg, Austria
- 09:30 – 09:45 T41 – Cryopreserved or fresh mesenchymal stromal cells: only a matter of taste or key to unleash the full clinical potential of MSC therapy?  
*Guido Moll*, Charité Berlin
- 09:45 – 10:00 T42 – Synthetic niche to modulate regenerative potential of mesenchymal stromal cells (MSCs) and enhance skeletal muscle regeneration  
*Sven Geißler*, Charite Berlin
- 10:00 – 10:15 T43 – Extracellular vesicles – From bench to bedside  
*Verena Börger*, University Hospital Essen
- 10:15 – 10:30 Working group discussion

#### **Lecture hall N Stem cells in diseases: cancer stem cells (Chairs: *Thomas Brabletz / Andreas Trumpp*)**

- 09:00 – 09:20 Overview  
*Andreas Trumpp*, German Center Reserach Center, Heidelberg
- 09:20 – 09:40 T44 – ZEB1 turns into a transcriptional activator by interacting with YAP1 in aggressive cancer types  
*Julia Kleemann*, University of Erlangen-Nuremberg
- 09:40 – 10:00 T45 – Heterotrimeric G-proteins are indispensable for FLT3-ITD autophosphorylation and oncogenic function  
*Michael Rieger*, Goethe University Hospital and LOEWE Center Frankfurt

- 10:00 – 10:20 T46 – A mathematical model approach to study the immunological effects in CML patients during and after TKI treatment  
*Ingmar Glauche, TU Dresden*
- 10:20 – 10:30 Working group discussion
- 10:30 – 11:00 Coffee break / industry exhibition

### Concurrent strategic working group session

- Lecture hall H Technologies in stem cell research (Chairs: Frank Emmrich / Andreas Bosio)**
- 11:00 – 11:25 S1 – Intestinal epithelial organoids – an accessible model for mammalian stem cell niche biology  
*Henner Farin, Georg-Speyer-Haus, Frankfurt*
- 11:25 – 11:50 S2 – 3D bioartificial cardiac tissue from pluripotent stem cells  
*Ina Gruh, REBIRTH, Hannover Medical School*
- 11:50 – 12:15 S3 – Using cerebral organoids for studying human disease modeling and lineage reprogramming  
*Marissa Karow, LMU Munich*
- 12:15 – 12:30 Panel discussion
- Lecture hall G Career development and funding opportunities (Chairs: Insa Schröder/ Hartmut Geiger)**
- 11:05 – 11:40 S4 – Career paths for scientists – suitable application strategies  
*Anke Raloff, ZEIT Verlagsgruppe/ACADEMICS*
- 11:40 – 12:15 S5 – tba  
*tbd*
- 12:15 – 12:30 Panel discussion
- Lecture hall N Clinical trials and regulatory affairs (Chairs: Torsten Tonn / Andreas Kurtz)**
- 11:00 – 11:25 S6 – Investigator initiated trials (IIT) of advanced therapy medicinal products  
*Felipe Prosper, University Clinic Navarra, Pamplona, Spain*
- 11:25 – 11:50 S7 – EU research perspective on advanced therapies  
*Arnd Hoeveler, European Commission, Brussels*
- 11:50 – 12:15 S8 – Mapping the European landscape for patenting stem cell related inventions  
*Aliko Nichogiannopoulou, European Patent Office, Munich*
- 12:15 – 12:30 Panel discussion
- 12:30 – 14:00 Lunch break / industry exhibition / poster viewing** supported by STEMCELL Technologies SRL
- 12:45 – 13:45 Meet-the-expert tables (Bistro/ground floor): *Marisa Karow* (Cerebral organoids), *Henner Farin* (Intestinal epithelial organoids) and *Ina Gruh* (3D bioartificial cardiac tissue); register at the registration desk (limited to 10 participants each)
- Lecture hall F Joined session with REBIRTH/Hannover Medical School (MHH)**
- 14:00 – 14:45 **Keynote lecture IV**  
K4 – Patterning mesoderm and blood development from human pluripotent stem cells  
*Peter Zandstra, University of Toronto, Canada (Chair: Karl Lenhard Rudolph)*

14:45 – 15:30 **Keynote lecture V**

K5 – Stemming vision loss using stem cells – seeing is believing

*Peter Coffey, University College London, U.K. (Chair: Thomas Braun)*

15:30 – 15:45 **GSCN Outlook 2017**

Incoming president: *Karl Lenhard Rudolph*

**15:45 – 16:15 Coffee break / industry exhibition**

**Lecture hall F REBIRTH Session** (Chair: *Ulrich Martin*)

16:15 – 16:35 RB1 – From cell to product: governance issues along the translational pathway

*Nils Hoppe, CELLS – Centre for Ethics and Law in the Life Sciences, Leibniz University Hannover*

16:35 – 16:55 RB2 – Emerging protein- and small molecule-based therapies for cardiac repair

*Kai Wollert, Hans Borst Center for Heart and Stem Cell Research, Hannover Medical School*

16:55 – 17:15 RB3 – Therapeutic noncoding RNA based approaches of heart failure

*Thomas Thum, Institute of Molecular and Translational Therapeutic Strategies (IMTTS), Hannover Medical School*

17:15 – 17:35 RB4 – Manufacturing human pluripotent stem cells and their progenies

*Robert Zweigerdt, Hannover Medical School*

**Lecture hall F Closing ceremony**

17:35 – 17:50 Poster award ceremony and announcement of industry quiz winners

*Daniel Besser, GSCN*

supported by PeproTech GmbH

## End of GSCN conference 2016

**Announcement** (please inform from the registration for transfer)

19:00 – 21:00 **GSCN Public outreach event with panelists:**

Moderne Zelltherapien – Stammzellen bei Herz- und Lebererkrankungen

(in German, see page 11)

