

jGBM SOMMERSYMPOSIUM



20.06.-22.06.2025

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Welcome

Dear Friends and Colleagues,

we welcome you, curious and passionate life science students and scientists, to this year's jGBM Summer Symposium in Hannover. We prove that you do not have to wait until you have made a name for yourself as a researcher to organize scientific lectures or exciting discussions. The Junior-GBM is intended to spark, maintain, and carry forward interest and passion for science and offers the opportunity to establish nationwide contacts through various networking events. In the spirit of the Junior-GBM, the north region collaborated to organize the Summer Symposium 2025 and we chose the promising topic of "Regenerative Science". The search for regenerative therapies encompasses three complementary areas: novel regenerative agents and biomaterials, cell transplants and bioengineering of artificial tissues or cell-enhanced bioimplants. We look forward to discussing the latest developments with you, making new connections, and shaping the future of regenerative science together. You can expect inspiring talks from leading scientists, exciting workshops, discussions on research as well as networking & social events.

Best, The jGBM North Region

Welcome



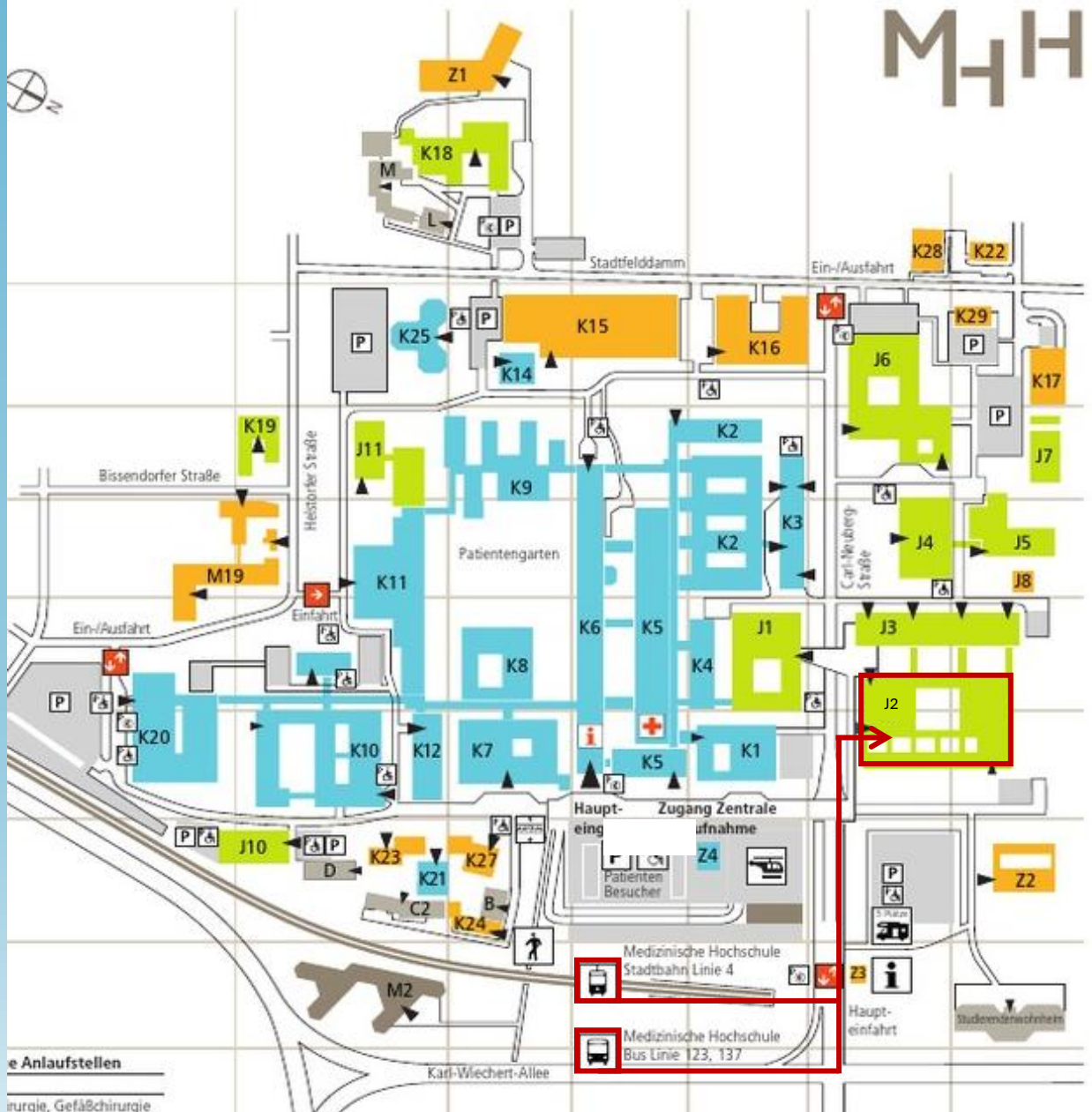
**Join the summer
symposium WhatsApp
community for more
information on the
events!**

Location

At the heart of Germany lies Hannover, which can be easily reached from anywhere via the Deutsche Bahn rail network. It is known to be the greenest city in Germany attributed to its urban forest Eilenriede, the many parks, ponds and the Herrenhäuser Gärten. Hannover is the home of the “last universal genius” Gottfried Wilhelm Leibniz, namesake of the Leibniz University Hannover (LUH). Thus, it is not surprising that many renowned research institutions are located here. At the Hannover Medical School (MHH) the LEBAO focuses its research on regenerative science and the Medical Park harbors the Helmholtz Institute and Fraunhofer ITEM. Furthermore, Hannover is the breeding ground for many successful start-ups, e.g. Zellkraftwerk GmbH, Eco:Fibr, Phaeosynt and Cardior.

The symposium will be held at the Campus of MHH (Carl-Neuberg-Str. 1) which is easily reached by light urban rail transport number 4.

Hannover Medical School



Friday June 20

16:00 - 17:30

Arrival and Registration

17:30 - 18:00

Welcome

18:00 - 19:00

Keynote Lecture

Andrea Hoffmann ~ Stem Cells and Immune Cells -
Conjoined Twins to Solve Challenges in Biohybrid Implants

19:00 - open end

Get together and Dinner

at Waterloo Biergarten

Saturday 21 June

08:30 - 09:30

Breakfast

09:30 - 11:30

Session 1:

Regenerative medicine and stem cells

Shambhabi Chatterjee ~ The role of telomerase in cardiac health, ageing and disease

Maximilian Schinke ~ Engineering immune cells from human induced pluripotent stem cells: new ways in cell-based immunotherapies

Robert Zweigerdt ~ Making and Repairing hearts with human Pluripotent Stem Cells

11:30 - 12:00

AG Sustainability ~ Trash and Trivia

12:00 – 13:00

Lunch

Saturday 21 June

13:00 – 15:00

Session 2: 3R and Ethics

Marco Metzger ~ Novel human in vitro tissue models as alternatives for animal experimentation in preclinical research

Mirko Himmel ~ Ethical implications in Gene Therapy

Carola Voss ~ 3Rs in respiratory health research: lung organoids and inhalation toxicology

15:00 – 15:30

Coffee Break

15:30 – 17:00

Workshops

17:00 – open end

City Tour and Dinner

Sunday June 22

08:30 - 09:30

Breakfast

09:30 - 11:30

Session 3: Bioengineering

Cornelia Lee-Thedieck ~ Bioengineering the bone marrow

Birgit Andrée ~ Cardiovascular tissue engineering – stories about small and large tubular structures

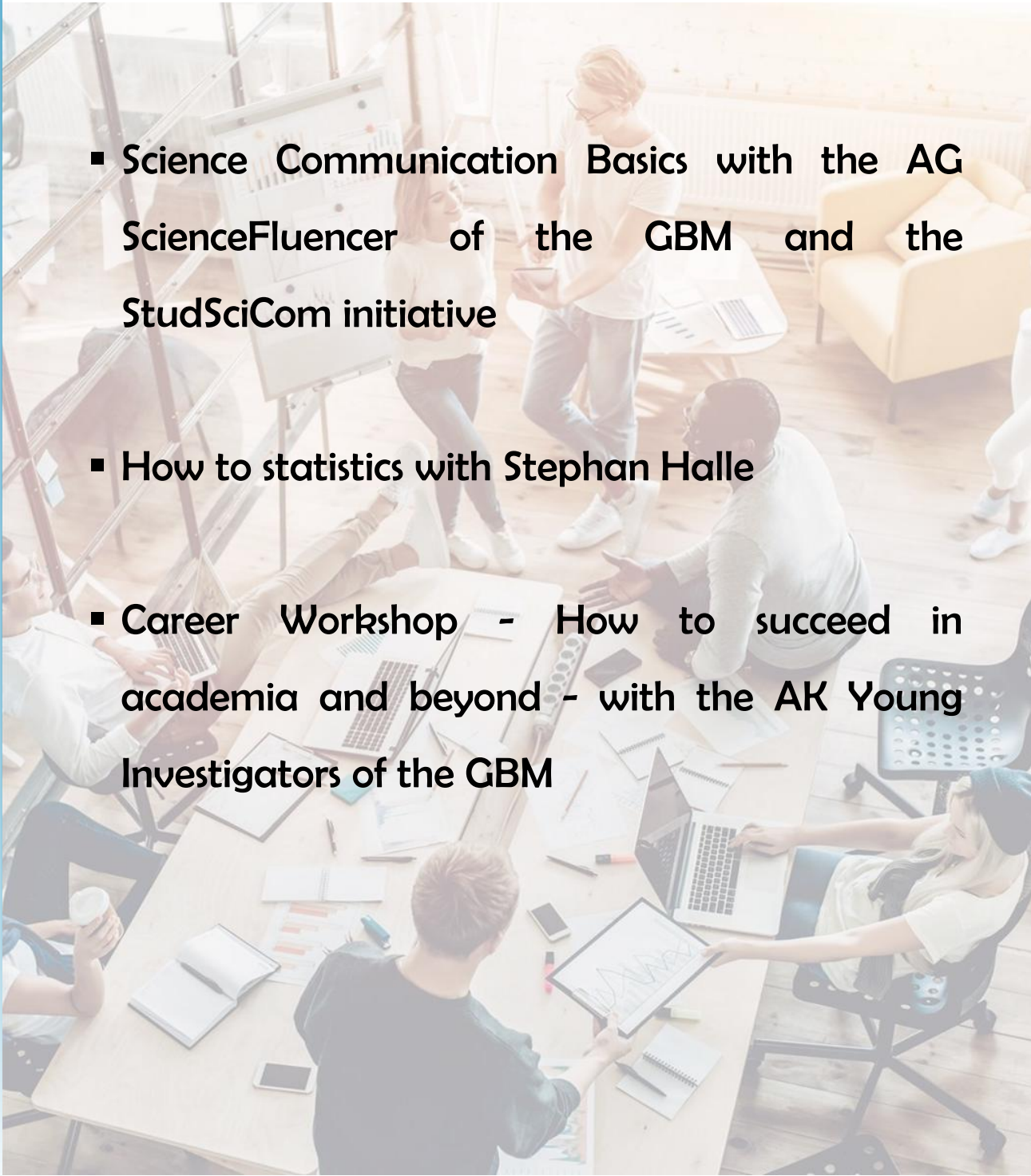
Cornelia Blume ~ An innovative bioartificial graft system

11:30

Closing remarks and goodbye

Workshops

- Science Communication Basics with the AG ScienceFluencer of the GBM and the StudSciCom initiative
- How to statistics with Stephan Halle
- Career Workshop - How to succeed in academia and beyond - with the AK Young Investigators of the GBM



Abstract

Birgit Andrée

Leibniz Research Laboratory for
Biotechnology and Artificial Organs,
Hannover Medical School, Germany



Cardiovascular tissue engineering – stories about small and large tubular structures

Tissue engineering utilizes an interdisciplinary approach to generate biological constructs for the treatment and repair of diseased organs or tissues. A capillary network (small tubular structures) is indispensable for the nutrition of cells and removal of waste products to generate tissues of clinically relevant dimensions.

Another indispensable structure in the cardiovascular system is the heart, but due to its structural and functional complexity, the heart imposes immense physical, physiological and electromechanical challenges on the engineering of a biological replacement. Therefore, to come closer to clinical translation, the development of a simpler biological assist device (large tubular structure) is envisioned.

Abstract

Cornelia Blume

Institute for Technical Chemistry,
Leibniz University Hannover, Germany,



An innovative bioartificial graft system

We aim to optimize the production of tissue-engineered vascular grafts (TEVGs) using biodegradable, non-immunogenic 3D-printed scaffolds colonized with immune-neutral and autologous endothelial progenitor cells. These cells are preconditioned in a custom rotational bioreactor to express anti-thrombogenic markers under arterial shear stress. Compared to porcine scaffolds, the biohybrid grafts show promising biomechanical properties. Two printing methods—fused deposition modeling and melt electrowriting—are tested for scaffold degradation in vivo. The goal is to establish a durable endothelial monolayer that prevents thrombosis and occlusion, enabling safe TEVG implantation in large animal models and future clinical applications.

Abstract

Shambhabi Chatterjee

Institute of Molecular and Translational
Therapeutic Strategies,
Hannover Medical School, Germany



The role of telomerase in cardiac health, ageing and disease

Cardiovascular disease remains the foremost cause of mortality worldwide. A primary contributing factor to this trend is the limited regenerative potential of mammalian cardiomyocytes (CMs) which coincides with the loss of telomerase (TERT) expression. Augmenting the intrinsic capacity for CM proliferation stands as a pivotal objective in regenerative medicine. Yet, the absence of a human translational test platform constrains the screening of potential drug candidates aimed at promoting cardiac regeneration. To address this challenge, we utilize human induced pluripotent stem cell (hiPSC)-derived cardiomyocyte system for evaluating TERT-mediated cardioprotective effects via adeno-associated virus (AAV) gene therapy and CRISPRi technologies.

Abstract

Mirko Himmel

Department for Microbiology and
Biotechnology,
University Hamburg, Germany



Ethical implications in Gene Therapy

Gene therapy is perceived by many as groundbreaking technology allowing for the treatment of severe diseases with (mono-) genetic cause. CRISPR/Cas-based genome editing could dramatically improve feasibility and safety of gene therapies although there are still many methodological obstacles requiring further research and development. From the early stages on, ethical debates about gene therapy as novel, but potentially risky technology pointed to an urgent need of in-depth understanding of inherent risks and benefits as well as societal and legal aspects therapeutical application of this fascinating technology. Key elements of the ethical controversy about gene therapy will be presented and linked to the general debate about synthetic biology.

Abstract

Andrea Hoffmann

Laboratory for Biomechanics and Biomaterials,
Hannover Medical School, Germany



Stem Cells and Immune Cells - Conjoined Twins to Solve Challenges in Biohybrid Implants

The development of biohybrid implants is cumbersome.

What about stem cells? The isolation of mesenchymal stem cells is technically simple and financially affordable but retrospective and non-specific. The cultivation is in non-physiological conditions. I will share my ideas on how to obtain more powerful stem cells.

What about immune cells? There is a huge knowledge gap on interactions between immune cells and implants which needs to be closed. I will show you why and how.

Finally, I will also go into my CV which was never planned to bring me into a professorship, based on four major scientific fields.

Abstract

Maximilian Schinke

Department of applied stem cell and
translational macrophage research,
Hannover Medical School, Germany



Engineering immune cells from human induced pluripotent stem cells (iPSCs) new ways in cell-based immunotherapies

Macrophages are essential for immune defense, tissue repair, and inflammation regulation, positioning them as key targets for innovative therapies. However, their clinical use has been hindered by challenges in sourcing standardized and scalable cells. iPSCs have emerged as a transformative solution, enabling the production of high-quality, patient-specific macrophages. These iPSC-derived macrophages hold significant promise in cell-based immunotherapies, particularly for combating antibiotic-resistant infections and restoring immune function in genetic disorders. Furthermore, they facilitate advanced drug safety testing, such as detecting impurities in injectable medications. By combining macrophages, iPSCs, and immunotherapy, this approach offers scalable, customizable platforms to address complex medical challenges and redefine regenerative and translational medicine.

Abstract

Cornelia Lee-Thedieck

Institute of Cell Biology and Biophysics,
Leibniz University Hannover,
Hannover, Germany



Bioengineering the bone marrow

Stem cells are tightly regulated by their direct microenvironment, so-called niches, through biological, chemical, and physical factors. The bone marrow harbors niches for the stem cells of the blood and the bone regenerating systems, with hematopoietic stem cells as the source of all blood cells and mesenchymal stem/stromal cells from which bone cells are derived. Both regenerating systems interact closely with each other. Using scaffold-based 3D in vitro models of the bone marrow, we investigate the interplay of stem cells with their niches under healthy and diseased conditions with implications for fundamental research as well as pharmaceutical or clinical applications.

Abstract

Marco Metzger

Translational Center for Regenerative
Therapies, Fraunhofer Institute of
Silicate Research, Würzburg, Germany



Novel human in vitro tissue models as alternatives for animal experimentation in preclinical research

A key challenge in biomedical research is replicating human physiology in traditional models. We use advanced tissue engineering—novel biomaterials, dynamic and co-culture systems—to study cellular mechanisms in healthy and diseased tissues. Our ethically accepted 3D tissue models often outperform animal testing in predictiveness. We focus on human barrier organs like the gut, blood-brain barrier, respiratory tract, and skin, which are key interfaces for external substances and pathogens. Additionally, we develop non-invasive assessment methods and automated tissue production to improve quality and access. These innovations enable reliable testing to evaluate the safety and efficacy of new medical products.

Abstract

Carola Voss

Leibniz Research Laboratory for
Biotechnology and Artificial Organs,
Hannover Medical School, Germany



3Rs in respiratory health research: lung organoids and inhalation toxicology

Airborne pollutants contribute to chronic lung diseases such as chronic obstructive pulmonary disease, pulmonary fibrosis, asthma or lung cancer with millions of premature deaths worldwide. The underlying molecular modes of actions (MoA) that cause the damage are largely unknown. Current methodologies for respiratory toxicology mainly involve animal experiments, but they suffer from ethical, cost- and species- related difficulties. We use innovative new approach methodologies (NAM) reflecting the 3Rs strategy to investigate respiratory health affected by airborne toxins. The use of lung organoids offers mechanistic insight and a platform for manipulation of cell circuits with increased relevance to human physiology.

Abstract

Robert Zweigerdt

Research Center for Translational Regenerative
Medicine, Hannover Medical School, Germany



Making and Repairing Heart, with human Pluripotent Stem Cells

Human pluripotent stem cell (hPSC) technology is a versatile approach. This talk will cover a novel multi-tissue Organoid models designated “heart forming organoids” (HFOs) capturing key aspects of early human heart development in culture together with foregut endoderm (lung, liver), vascularization, and blood formation.

Secondly, advanced hPSCs bioprocessing for differentiation into cardiomyocytes will be shown, including strategies for their application for cell-based heart repair. This will include preclinical studies in non-human primate models of myocardial infarction and an in vitro approach for engineering large cardiac tubes, a future device for supporting failing hearts in patients.

Abstract

AG Sustainability

Trash and Trivia



Waste Collection Challenge 2025

When?
May of 2025

Why?
+ Group experience
+ Sustainability
+ Cleaner City
+ Nature

Prizes!
Award ceremony at the
summer symposium
and great prizes for the
most active group!



Where?
In and around
your cities.

How to participate:

1. Collect as many bags full of waste as possible with your city group!
2. Post and share pictures of your waste picking adventures online.



#one2pick

jgbm_nachhaltigkeit

In our waste collection campaign, not only does every cup collected count, but also every smart head. But that's not all: you can look forward to an exciting extra!

Abstract



#studsciCom



AG ScienceFluencer and StudSciCom

Workshop ~ Science communication basics

The workshop will provide insight into the field of science communication for absolute beginners. Together, we will address questions like: What is science communication? What is important for good and effective (science) communication? And how can students and junior researchers actively participate in it?

Throughout the workshop, you will develop your own communication strategy. This includes defining your role as the sender of a message, identifying your potential target audience, and selecting suitable formats to communicate your message effectively.

Whether you already have a specific project in mind or not, this workshop is for you!

Let's put the science into communication.

Abstract



AK Young Investigators

Workshop ~ How to succeed in academia and beyond

The working group young investigators from the GBM presents scientists that give tips to students to start a great career. Stefan Düsterhöft chairs the session and Fatih Noyan (CAR Tregs – The Swiss Army Knife Of Transplant Medicine) and Nora Detering (Changing perspectives - chances & challenges) talk about their studies, career, research, decisions, chances and challenges. Students get the opportunity to ask questions regarding purposeful networking, job applications, job shadowing, mentoring, career fairs, going abroad, getting qualifications and many more.



Stefan Düsterhöft



Fatih Noyan



Nora Detering

Abstract

Workshop Statistics and Science

As researchers in the biomedical sciences and clinical medicine, we spend an enormous amount of time and effort obtaining a detailed understanding of physiological, pathological, or other biological processes. However, we rarely reflect upon the logical thought process that guides us to our conclusions and where this process is vulnerable.

During this workshop, we can discuss the scientific method as it is applied in the life sciences nowadays. Additionally, we will cover some basic statistical practices and present individual research examples. Reflecting on both statistics and the overall scientific process might help us better understand how robust knowledge in biomedicine can be generated.

Speaker:

Stephan Halle,

Immunology, Hannover Medical School,
Germany



Social Saturday Evening

Discover, Dine & Delight

Join us for a vibrant Social Saturday Evening packed with music, fun, and unforgettable experiences!

Fête de la Musique

Celebrate the joy of music as the city comes alive with performances on every corner – from classical quartets to indie rock. Explore Hannover's cultural heartbeat in a relaxed, festive atmosphere.

Tretbootfahren on the Maschsee

Take a break on the water! Rent a pedal boat and enjoy the scenic views of the Maschsee – the perfect spot to unwind, chat, and maybe even race your fellow participants!

Schnitzeljagd: "Leibniz' Ge(o)heimnisse"

Uncover the hidden secrets of Hannover in this geo-based scavenger hunt through the city – creatively organized by our friends from City Group Kiel. Solve riddles, explore landmarks, and connect with fellow explorers!

Social Saturday Evening

Discover, Dine & Delight

Dinner in Small Groups – Explore Local Flavors

Wrap up the evening with good food and even better company. We recommend dining in small groups at one of these local favorites:

Mezzo | Teestübchen | Honey's Pub & Burger Bar | Brauhaus Ernst August | Café Extrablatt | Buddha Bowl | Francesca & Fratelli | Lister Döner

People Bingo @ Pub Crawl

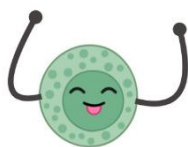
Looking to break the ice and meet new people? Join the People Bingo challenge during the pub crawl! Complete quirky missions like finding someone with a March birthday, spotting funny socks, or asking about a favorite organ. Once you've filled in all the boxes, find a member of the Kiel city group to claim your funny sticker reward! Great conversations guaranteed – and maybe some laughs too. Let the social science begin! Have fun and happy mingling!

A perfect evening to connect, relax, and enjoy the best of Hannover!

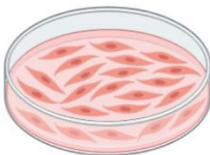
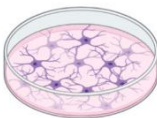


Social Saturday Evening

Discover, Dine & Delight



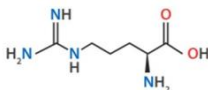
People Bingo



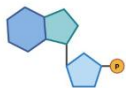
Give one of the federal spokespeople a high five



Find someone who's birthday is in march



Find someone from a city group from the southwest



Find someone who had fruit for breakfast



Take a picture of one of the hidden GFP models



Find someone who is at a summer symposium for the first time



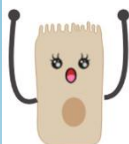
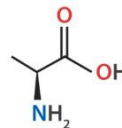
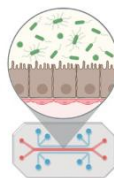
Take a picture with someone from the city group of Hannover



Ask somebody about their favourite organ



Find someone who wears funny socks



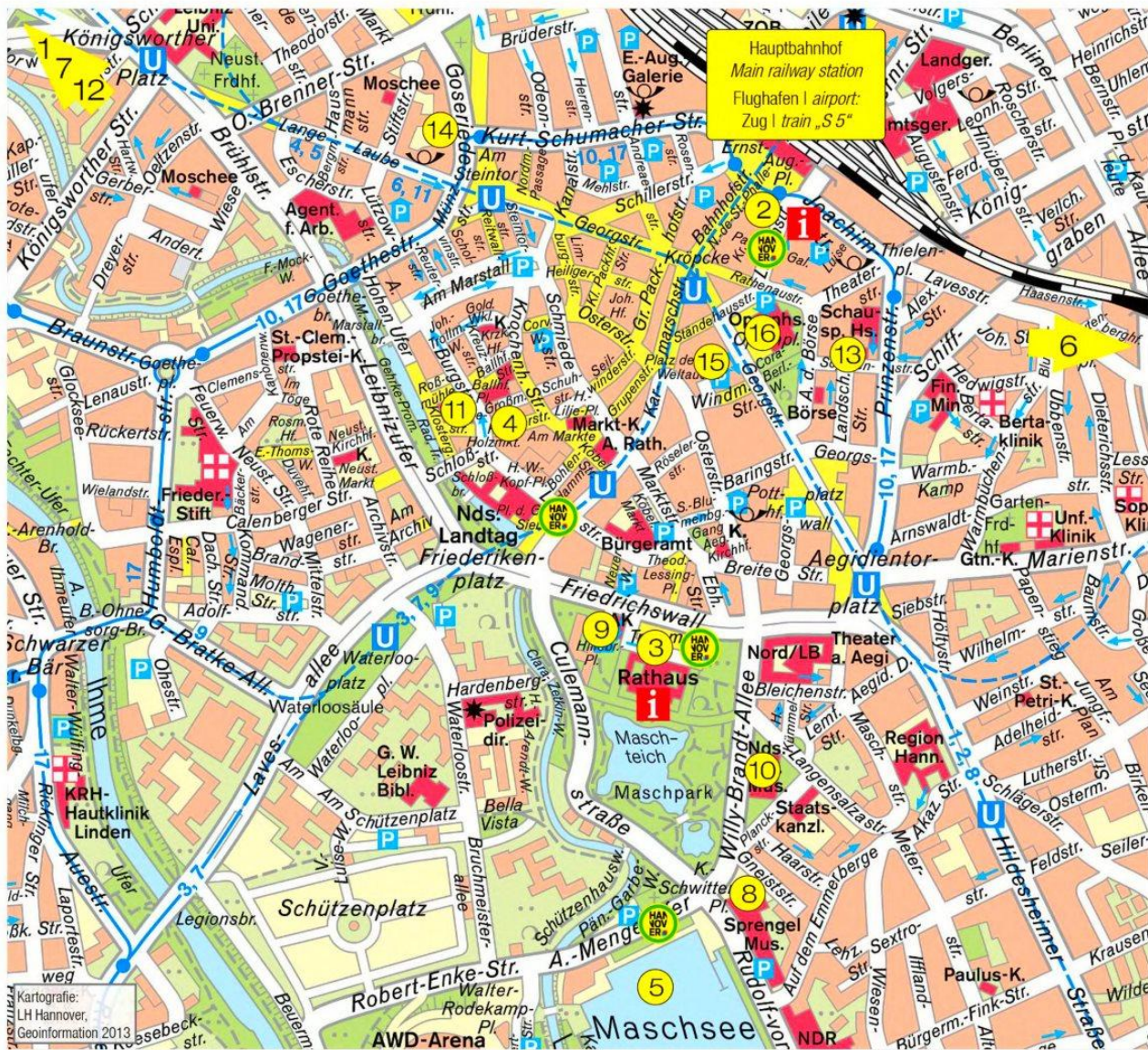
Once you have completed all the quests, find someone of the Kiel city group and get a funny sticker as a reward ☺



Have fun!



Hannover City Map



- | | | |
|--|---|---|
| 1 Herrenhäuser Gärten
Royal Gardens of Herrenhausen | 7 Museum Schloss Herrenhausen
Herrenhausen Palace Museum | 13 Kunstverein Hannover
Hannover Arts Association |
| 2 Startpunkt des Roten Fadens
Starting point of the Red Thread tour | 8 Sprengel Museum Hannover
Sprengel Museum Hannover | 14 kestnergesellschaft
kestnergesellschaft |
| 3 Neues Rathaus
New Town Hall | 9 Museum August Kestner
Museum August Kestner | 15 GOP Varieté-Theater
GOP Variety -Theatre |
| 4 Altstadt
Old Town | 10 Landesmuseum Hannover
Hannover State Museum | 16 Staatsoper Hannover
Hannover State Opera |
| 5 Maschsee
Maschsee Lake | 11 Historisches Museum Hannover
Hannover Museum of History | HANNOVER Haltepunkt der Stadtrundfahrt
Stop of the city tour |
| 6 Erlebnis-Zoo Hannover
Hannover Adventure Zoo | 12 Wilhelm Busch Museum
Wilhelm Busch Museum | i Tourist Information
Tourist Information office |

**Thanks to our
sponsors and
collaborators!**

