

PROGRAMME

SCIENCE EXHIBITION

**transCampus**  
**Dresden-London**  
Science Unlimited



## Imprint

### Concept & Editing

Christina Spirow, Sonja Piotrowski, Lena Herlitzius, Andrea Büschel,  
Felix Klee, Astrid Holzhauer, Eleanor Salt, Amelia Loke

**Photos** Monash Greg Ford (p. 4), R. Jungnickel (p. 6), Universitätsklinikum Dresden (p. 8), J. Simanowski (p. 10, 14 r., 15), S. Wiegand (p. 11, 30 below), Getty Images/iStockphoto/aureapterus (p. 14 l.), A. Pudenz (p. 19), G. Roske (p. 20 above), NMS Headshots (p. 20 below), TU Dresden (p. 21 above), G. Funnell (p. 21 below), T. Vostry (p. 22), S. Döring (p. 23 middle, 24), University of Cambridge (p. 23 below), P. J. Cochrane (p. 26 above), R. Vigh/IÖR (p. 27 above), Earlybird (p. 27 middle), Green City Solutions (p. 27 below), P. Benjamin (p. 28 above), Pui Tse (p. 28 middle), KCL (p. 28 below), F. Bierstedt (p. 29), M. Simon (p. 30 above)

**Layout** Bettina Schmiedel

**Translation** Peter Krüger, Julia Michl

**Editorial deadline** April 2017

Programme may be subject to change

### With special thanks to

Tania Lima (KCL), Denice Thorpe (KCL), Yuchun Chiang Mathews (KCL), Paul Simmons (KCL), Romy Conrad (DRESDEN-concept), Steffi Halgasch (TU Dresden), Anett Besze (TU Dresden), Antje Kolodziejak (TU Dresden), Felicitas von Mallinckrodt (TU Dresden), Astrid Krüger (TU Dresden), Lev Grinstein (TU Dresden), Kim-Astrid Magister (TU Dresden), Daniel Huth (Rakelspektakel), Peter Sängler (Green City Solutions)

*This project is part of TU Dresden's Institutional Strategy,  
funded by the Excellence Initiative of the German Federal and State Governments.*

A Welcome to our Guests	4
<b>PROF EDWARD BYRNE AC</b>	
.....	
A Common Vision for the Future	6
<b>PROF HANS MÜLLER-STEINHAGEN</b>	
.....	
Beyond Traditional Partnership Models	8
<b>PROF STEFAN R. BORNSTEIN</b>	
.....	
transCampus Dresden-London	10
<b>SCIENCE UNLIMITED</b>	
.....	
DRESDEN-concept	12
<b>AN ALLIANCE FOR EXCELLENCE IN SCIENCE AND CULTURE</b>	
.....	
<b>Programme 3-26 May 2017</b>	<b>15</b>
<b>EVENTS, LECTURES &amp; PANEL DISCUSSIONS</b>	
.....	
Contact	31
.....	

# A Welcome to our Guests

PROF EDWARD BYRNE AC

*King's vision is to create an International Community that serves the World through our work in education and research. We benefit from being shoulder-to-shoulder with London's great institutions and this concentration of expertise and connections contributes to our national and global networks. The transCampus initiative is well placed to deliver pioneering medical, engineering and technology solutions to our biggest global concerns.*

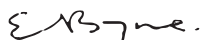


There has never been a more important time in modern history for great universities to make a full contribution to society. King's international engagement is based on partnership and reciprocity. Our commitment to sustainable, long-term institutional relationships enables King's to increase its ability to deliver significant international research impact that changes people's lives for the better.

Our work with Technische Universität Dresden is an example of an innovative and valuable partnership. The transCampus initiative is a 'Star Alliance', creating a partnership that joins our scientific strengths to deliver successful medical programmes and technology collaborations. In Health, colleagues are working on Islet cell, and kidney and bone marrow transplantation. In Engineering, the Centre for Telecommunications Research at King's is engaged in leading 5G research with Ericsson and Vodafone at Dresden. Work in the area is addressing the technical and societal implications of a next generation tactile internet. transCampus provides a wide academic platform for students and academic colleagues in London and Dresden to work together closely and benefit from each other's skill, knowledge, and experience under various joint programmes. These joint efforts create a partnership that benefits our students and academic staff while tackling global challenges.

There are now eight jointly appointed transCampus professors who drive the university partnership and collaborative research initiatives. Recently, transCampus celebrated the success of the joint International Research Training Group on Immunological and Cellular Strategies in Metabolic Disease receiving funding by the German Research Foundation (DFG).

Inaugurated in 2015, the transCampus programme has expanded to include partners from the Dresden research alliance, DRESDEN-concept, and a range of programmes across many disciplines. This exhibition reflects a spirit of innovation and a joint desire to meet the challenges of our world together in a way that will make the world a better place.



Prof Edward Byrne AC

*President and Principal of King's College London*

# A Common Vision for the Future

PROF HANS MÜLLER-STEINHAGEN

*Successful, pioneering science needs close connections, especially at an international level. King's College London (KCL) and TU Dresden are taking this one step further. The transCampus that we have established together bears witness to a genuine commitment to collaboration. It represents combined forces, concerted approaches and profitable synergies – across national and institutional boundaries. We are truly setting an example.*



Today, transCampus can look back on nearly four years of an inspiring and highly successful co-operation. This 'Star Alliance' of two leading universities in Europe strives to stimulate collaborations in various fields of research and exchange. Its goal is to share resources and to promote transnational projects as well as knowledge transfer. An outstanding example is the PhD programme of the International Research Training Group *Immunological and Cellular Strategies and Metabolic Disease*. Delving into different research traditions and cultures enriches (young) researchers and enables them to jointly tackle the most pressing challenges of our present times. The transCampus London-Dresden is one of the largest transplant centres in the world when it comes to islet cell, kidney and bone marrow transplantations. Also engineering has manifold common research topics. At present, KCL and TU Dresden engineers are working together to achieve a world standard in the development of mobile communications. Further fields of research in science, arts and engineering will follow.

All these topics not only reflect the Research Priority Areas of TU Dresden – a German University of Excellence – but also many of our DRESDEN-concept partners! DRESDEN-concept is the essential pillar of TU Dresden's 'excellence concept' and represents a unique cooperative venture of 24 partners from the world of science and culture. Yet, from the very beginning, there has been the desire and the necessity for an intensive networking – far beyond the conventional levels. This is manifested by joint professorial appointments, jointly organised Graduate and

Summer Schools and the joint utilisation of services such as the Welcome Services and the Technology Portal. With its broad research range, DRESDEN-concept provides excellent cutting-edge research opportunities for students, PhD students and postdocs. I am confident that this DRESDEN-concept research alliance also opens new doors for the transCampus partnership and offers interesting opportunities for further networking.

The events presented in this booklet are as diverse as the research fields of DRESDEN-concept. Speakers from the four largest research associations in Germany – Fraunhofer, Leibniz, Max-Planck and Helmholtz – as well as from internationally renowned museums and from a University of Excellence have the honour of sharing their current research topics at King's College London. Immerse yourself and let yourself be inspired by the fascinating world of Dresden and London-based science. Through panel discussions, key note lectures and additional networking events, doctoral students, postdocs and scientists from KCL and from the DRESDEN-concept partners can participate in an active, fruitful exchange and, hopefully, jointly develop some novel research approaches. I expressly encourage you to be innovative, curious and creative!

With our philosophy of co-operation we are on the right track. Especially in times of political uncertainty, transCampus manages to build a bridge between King's College London and the Dresden-based research institutions. The science exhibition and the framework programme is an absolute highlight of our extraordinary co-operation and I sincerely hope there will be many more to follow. In this sense: Let us share the passion for research and let us promote learning from and with one another.



Prof Hans Müller-Steinhagen  
*Rector of Technische Universität Dresden and  
Chairman of the Board of DRESDEN-concept*

# Beyond Traditional Partnership Models

PROF STEFAN R. BORNSTEIN

*The unique concept of our transCampus goes far beyond the conventional strategic advantages of a binational partnership, enabling us to jointly compete with top-level universities worldwide.*



Officially, the transCampus started in March 2015, when I was appointed transCampus Dean by King's College London, to strategically co-ordinate the concerted activities in the field of medicine. Soon after, we received an overwhelming, positive response from academics of all the other disciplines, eager to join our initiative, transforming the transCampus from a grassroots movement to a university-wide partnership. Looking back, this would not have been possible without the strong commitment of all people who helped to shape this vision. University leadership, academics, students, and administrative staff followed the principle of innovative ideas

and solution-oriented approaches, building the transCampus.

The unique aspect of our partnership model is the intense dedication to collaboration in all fields. As of today, there are eight transCampus professors in medicine, all of which have been jointly appointed by both universities, sharing the same rights and duties. Scientists and students on all levels as well as staff members work together in joint projects and missions as if it were one campus. In medicine, our mutual projects highly benefit from the intense sharing of patient samples, access to each other's resources, e.g. with regard to human samples and populations. These possibilities lead to a significant improvement of treatment success and the creation of innovative therapies, moving translational approaches forward.



Within our International Research Training Group in Diabetes (IRTG), funded by the German Research Foundation, we are able to offer our students the best training environment available – you are invited to experience the transCampus spirit and join our IRTG kick-off event on 4 May in London ([transcampus.eu/events](http://transcampus.eu/events)).

All of these aspects add to the attractiveness of both universities, increasing the chances of recruiting world-class scientists as well as highly qualified students. Thus, transCampus is able to compete with top-level universities worldwide.

In times of a rising nationalism, it is becoming even more important to build bridges across national and institutional boundaries as well as to demonstrate their advantages to society. With the transCampus we have established, those bridges become visible through joint professorships, joint research projects, joint degrees as well as the exchange of students and staff.

Looking back at how it all started, I am very proud of what we have achieved and even more excited about the manifold opportunities of shaping this vision further. I would like to invite you to join us and support us in keeping this partnership a success.

A handwritten signature in black ink, reading 'Prof. Dr. med. Bornstein'.

Prof Dr med Stefan R. Bornstein

*transCampus Dean*

*Chair of Medicine and Dean for Development and International Affairs*

*School of Medicine, Technische Universität Dresden*

# transCampus Dresden-London

SCIENCE UNLIMITED

*The transCampus initiative between King's College London and Technische Universität Dresden brings together two European elite universities in an unprecedented and successful way. transCampus represents the first and by far the most unique model of its kind in Europe.*

The transCampus partnership between both universities started in the field of medicine where sharing of expertise and resources quickly led to improvements in treatment strategies and innovative therapies. A range of factors – such as complementary expertise, matching concepts of scientific excellence, a convenient position to jointly attract funding, and geographic proximity – favoured the initiation of the strategic partnership. Mutually appointed transCampus professors as well as a co-ordination office on each site helped to foster collaborative projects, to establish links at academic and administrative levels, and of course to secure joint project funding. The growing success attracted academics from other disciplines, converting the collaboration into a university-wide partnership.



The unique aspect of the transCampus is the intense commitment to collaboration in all fields. For the first time in Europe, a partnership model has been built that enables joint appointments uniting scientists in one campus and mission. The eight transCampus professors, appointed by both universities, are dedicated to driving forward the transCampus in their respective fields of research. Their concerted projects highly benefit from complementary expertise and the sharing of resources. Besides dual appointments, the transCampus allows exchanges on all levels – academics, students and staff – uniting all members of the university in one campus.

Moreover, each partner gains access to the other partner's academic cluster: for example, many projects involve the scientifically outstanding Francis Crick Institute in London as well as DRESDEN-concept partners, e.g. the renowned Max-Planck Institute in Dresden. This environment makes it a lot more efficient and easier to attract funding and establish common academic programmes such as the International Research Training Group *Immunological and Cellular Strategies in Metabolic Disease*, funded by the German Research Foundation (DFG).

All of these aspects add to the attractiveness of both universities, increasing the chances of recruiting world-class scientists and highly qualified students.



→ transCampus stimulates interdisciplinary and translational research collaborations, attracts excellent students, scientists and administrative staff and enables them to tackle the global challenges of tomorrow.

# DRESDEN-concept

**AN ALLIANCE FOR EXCELLENCE IN SCIENCE AND CULTURE**

DRESDEN-concept is an alliance between the Technische Universität Dresden and non-university research institutions in Dresden. Here, 'DRESDEN' is an acronym for **D**resden **R**esearch and **E**ducation **S**ynergies for the **D**evelopment of **E**xcellence and **N**ovelty. The active cooperation and the local proximity of the individual partners from the world of science and culture favour the development of synergies in research, teaching, infrastructure, administration and transfer.

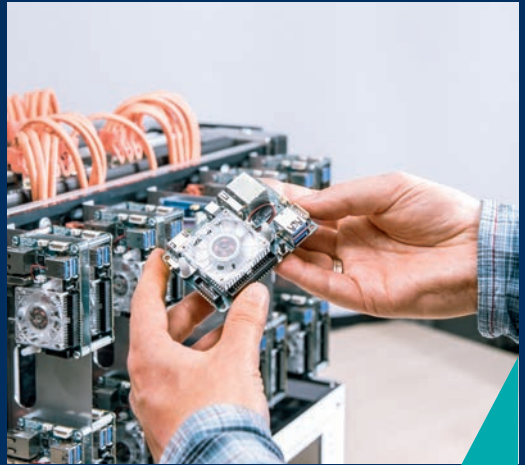
DRESDEN-concept was established in 2010 in the context of the Excellence Initiative. Coming together in the DRESDEN-concept alliance further facilitated cooperations among the partners and promoted a synergistic network which is unique in Germany. A major aim is to develop scientific concepts for research areas where Dresden presently has, or likely will have in the future, a leading position internationally. Furthermore, the alliance implements scientific strategies.

The DRESDEN-concept partners have joined forces in selected priority research fields, with the goal of bundling their diverse strengths and achieving outstanding results. These efforts are in part undertaken in joint research centres. The research focuses are Biomedicine & Bioengineering, Information Technology & Microelectronics, Materials & Structures, and Culture & Societal Change.





BIOMEDICINE & BIOENGINEERING



INFORMATION TECHNOLOGY &  
MICROELECTRONICS



MATERIALS & STRUCTURES



CULTURE & SOCIETAL CHANGE

Programme 3–26 May 2017

EVENTS, LECTURES & PANEL DISCUSSIONS

3 MAY

12–2:30 PM

GUY'S CAMPUS, MEMORIAL ARCH AND  
ROBENS SUITE, GUY'S TOWER

OPENING EVENT

**transCampus Dresden-London**

Science Unlimited

4 MAY

10 AM–12 PM

GUY'S CAMPUS,  
NEW HUNT'S HOUSE, ROOM G4

LECTURE

**Carbon Concrete, a Fascinating Material**

Economical, Efficient, Attractive

*Prof Manfred Curbach*

15 MAY

2–4 PM

GUY'S CAMPUS, HODGKIN BUILDING,  
LARGE COMMITTEE ROOM

PANEL DISCUSSION

**Regenerative Medicine**

*Dr Jochen Rink, Dr Volker Buskamp &*

*Dr Davide Danovi*

22 MAY

12–2 PM

GUY'S CAMPUS, HODGKIN BUILDING,  
LARGE COMMITTEE ROOM

PANEL DISCUSSION

**Novel Treatment Approaches**

in Acute Myeloid Leukaemia

*Prof Martin Bornhäuser, Prof Eric So &*

*Prof Farzin Farzaneh*

4 MAY

12 PM

STRAND CAMPUS,  
STRAND BUILDING, ROOM K50

LECTURE

**Fifth Generation (5G)**

of Mobile Communications Systems

*Prof Frank Fitzek & Prof Mischa Dohler*

16 MAY

12–2 PM

GUY'S CAMPUS,  
NEW HUNT'S HOUSE, ROOM G12

LECTURE

**Regenerating**

Neuronal Function, Cellular Compartments  
and Cell Types

*Dr Volker Buskamp*

22 MAY

12–2:30 PM

GUY'S CAMPUS,  
NEW HUNT'S HOUSE, ROOM G4

LECTURE & WORKSHOP

**The Green City**

Contribution to a more Sustainable Future

*Prof Bernhard Müller, Prof Frank Kelly &*

*Peter Sängler*



BIOMEDICINE & BIOENGINEERING

INFORMATION TECHNOLOGY & MICROELECTRONICS

MATERIALS & STRUCTURES

CULTURE & SOCIETAL CHANGE

12 MAY

10 AM–12 PM

STRAND CAMPUS,  
STRAND LECTURE THEATRE, ROOM 6.63

#### LECTURE

### Melancholy and Despair

The Historia of D. Johann Fausten  
*Prof Marina Münkler & Prof Matthew Bell*

18 MAY

12–2 PM

STRAND CAMPUS,  
STRAND BUILDING, ROOM S2.30

#### LECTURE

### Virtual Experiments

on Wooden Artwork  
*Prof Michael Kaliske*

23 MAY

6 PM

GUY'S CAMPUS,  
NEW HUNT'S HOUSE, ROOM G4

#### LECTURE & ENTERTAINMENT

### DO Play and Drive

Why computer games and self-driving cars help us fight cancer with lasers  
*Dr Michael Bussmann*

15 MAY

11 AM–1:30 PM

STRAND CAMPUS,  
STRAND BUILDING, ROOM K50

#### LECTURE

### Polymers

Designed for Optoelectronic Applications  
*Prof Brigitte Voit*

18 MAY

5–7 PM

STRAND CAMPUS,  
STRAND BUILDING, CHAPTERS ROOM

#### PANEL DISCUSSION

### The Questions Google Can't Answer

On the Relationship between Museums and Science  
*Colleen Schmitz, Emma Markiewicz, tba*

24 MAY

10 AM

GUY'S CAMPUS, HODGKIN BUILDING,  
LARGE COMMITTEE ROOM

#### LECTURE

### Diabetes

Islet Cell Transplantation  
*Dr Barbara Ludwig & Prof Peter Jones*

**3 MAY**

**12-2:30<sup>PM</sup>**

**GUY'S CAMPUS, MEMORIAL ARCH AND  
ROBENS SUITE, GUY'S TOWER**

OPENING EVENT

## **transCampus Dresden-London**

Science Unlimited

DRESDEN-concept Science Exhibition

**12<sup>PM</sup>** Arrival of the guests

**12:15-12:25<sup>PM</sup>** **Welcome address of Prof Byrne**  
Principal of King's College London

**12:25-12:35<sup>PM</sup>** **Welcome address of Prof Müller-Steinhagen**  
Rector of TU Dresden and Chairman of the DRESDEN-concept Board

**12:35-1:30<sup>PM</sup>** **Tour of the exhibition**  
In case of bad weather: Presentation in Robens Suite

**1:30-2<sup>PM</sup>** Transfer to Robens Suite, Guy's Tower, and **drinks reception**

**2-2:20<sup>PM</sup>** **Speech of Dr Eva-Maria Stange**  
State Minister of Science and the Arts of the Federal State of Saxony

**2:30-4<sup>PM</sup>** End of the official programme  
**Open exchange** with drinks & snacks and background music

## Carbon Concrete, a Fascinating Material

### Economical, Efficient, Attractive

LECTURE

Concrete forms the world we live in. Concrete and steel are almost ideal partners and together they ensure the load-bearing capacity of the composite material. Reinforced steel, however, is resource-intensive, environmentally harmful, heavy and especially susceptible to corrosion. Every day, we are confronted with the consequences of corrosion and the increase in the traffic loads of bridges. Construction sites often result in nerve-wrecking and time-consuming tailbacks stretching for kilometres. This situation could soon change thanks to the carbon concrete developed in Dresden. The innovative material is a composite material made of concrete and a reinforcement of carbon. The revolution consists in carbon fibres providing strength, lightness and flexibility. Carbon concrete is corrosion-resistant, easily and freely formable. This creates a market wherever resource- and energy-efficient, durable, space saving and multi-functional construction methods are needed. Why is this material so fascinating? Carbon concrete saves us costs and material, protects the environment and creates beautiful, new designs.



**Prof Manfred Curbach** (1956) studied Civil Engineering at TU Dortmund, specialising in structural engineering. After having obtained his doctorate, he worked in the engineering office *Köhler + Seitz*. Since 1994, he has been Professor and Chairperson of the Institute of Concrete Structures at TU Dresden. His main research areas are lightweight engineering with concrete, textile and carbon concrete. Prof Curbach is member of numerous professional associations and is, among others, chairperson and spokesperson of the association *C3 – Carbon Concrete Composite*.

## Fifth Generation (5G) of Mobile Communications Systems

### LECTURE

Mischa Dohler's and Frank Fitzek's research interest is in the field of the upcoming fifth generation of mobile communication systems named 5G. In contrast to the existing 4G networks, 5G will not target the ubiquitous communication among seven billion humans, but 5G will focus on the control and steering of 500 billion devices known as the Internet of Things (IoT). The technical requirements for 5G is not only higher throughput (per user and per area), but the low latency for the control and steering in the range of 1ms is the most critical technical requirement. Furthermore as we want to steer and control e.g. robots and cars, security and resilience become even more important.



.....  
**Frank H. P. Fitzek** is a Professor and Head of the Deutsche Telekom chair of communication networks group at Technische Universität Dresden coordinating the 5G Lab Germany. His current research interests are in the areas of wireless and mobile 5G communication networks, mobile phone programming, network coding, cross layer as well as energy efficient protocol design and cooperative networking.  
.....



.....  
**Mischa Dohler** is full Professor in Wireless Communications at King's College London, driving cross-disciplinary research and innovation in technology, sciences and arts. He is the Director of the Centre for Telecommunications Research, co-founder of the pioneering smart city company WorldSensing, Fellow of the IEEE and the Royal Society of Arts (RSA), and a Distinguished Member of Harvard Square Leaders Excellence.  
.....

12 MAY

10<sup>AM</sup>–12<sup>PM</sup>

STRAND CAMPUS, STRAND LECTURE THEATRE,  
ROOM 6.63

## Melancholy and Despair

### The Historia of D. Johann Fausten

LECTURE

The Faust figure's emotional ambiguity fascinates writers and readers until today. This fascination is due to the complexity with which the *Historia* of D. Johann Fausten adheres to the discourse of melancholy. The lecture tries to demonstrate how the *Historia* intersects the discourse of melancholy; how it uses different and contradictory aspects to form a biographical narrative that processes and adapts the bipolarity of the melancholic character as well as the oscillation of melancholy between sensitivity and despair.



Following her guest professorships at Humboldt Universität zu Berlin and University of Zurich, **Prof Marina Münkler** has been holding the Chair of German Medieval and Renaissance Literature and Culture at TU Dresden since January 2010. She is a member of the *Centre for Medieval Studies* at the Berlin-Brandenburg Academy of Sciences and Humanities and the *Commission Musicology, Literary Studies and Art History* at the Saxon Academy of Sciences. Her research focus is on the experiences of otherness, inter-culturalism, identity and crisis of the self in early modern times, friendship and community spirit as well as narratives of risk.



**Matthew Bell** is Professor of German and Comparative Literature at King's College London. Since 1997, he has been an officer of the English Goethe Society of which he is currently Joint Honorary Secretary. Prof Bell's teaching and research interests range across 18<sup>th</sup>- and 19<sup>th</sup>-century German and European literature and intellectual history. His current projects include a short introduction to the history of melancholia, literary form in 18<sup>th</sup>-century Europe as well as a large-scale study of the works and thoughts of Goethe. Recent publications include a study of psychology in 18<sup>th</sup>-century German literature and thought (CUP, 2005).

## Polymers

### Designed for Optoelectronic Applications

LECTURE

The field of organic/flexible electronics is rapidly growing and significantly influences our daily life. Yet, persisting problems such as limited performance and long-term stability of large area printed devices lead to a high demand for new, innovative polymeric materials. Besides conducting and semiconducting polymers, also the insulating materials in between – the dielectrics, as well as polymers with special optoelectronic properties are of high importance. They are indispensable for the cost-effective processability and the final performance of devices e.g. organic light emitting diodes (OLEDs) and organic field effect transistors (OFETs). We will demonstrate novel semiconductor polymers that are highly interesting as stable active materials of high performance printed OFETs. In addition, aromatic hyperbranched polymers have been developed as cross-linkable dielectric materials for OFETs and as materials for substantially improving the efficiency in OLEDs by showing *Thermally Activated Delayed Fluorescent* (TADF) properties or high refractive index (HRI) for increased light out-coupling.



**Brigitte Voit**, Scientific Director of the Leibniz Institute of Polymer Research Dresden (IPF), has been Head of IPF Institute Macromolecular Chemistry and Professor of Organic Chemistry of Polymers at TU Dresden since 1997. She obtained a PhD in Polymer Chemistry at the University of Bayreuth, and completed her habilitation at TU Munich.

15 MAY

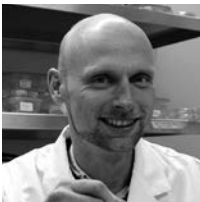
2-4<sup>PM</sup>

GUY'S CAMPUS, HODGKIN BUILDING,  
LARGE COMMITTEE ROOM

PANEL DISCUSSION

## Regenerative Medicine

If we lose an arm in an accident, we will have to do without it for the rest of our lives. However, a special type of salamander (axolotl) simply regrows limbs. As for individual organs, the human liver is able to regenerate, but not the brain. Or why does limb regeneration work in axolotls, but not in us? If we had the answers to these questions, would we then be able to activate brain and limb regeneration even in humans? Research over the past ten years has shown that stem cells grown in a petri dish can create in principle any cell in the human body. The tremendous recent progress has brought these questions to the very forefront. In fact, the field of regenerative medicine emerged on the premise of utilising the endogenous repair capacity of our bodies to replace lost and damaged body parts. So what is the current state of regenerative medicine? Are we still a long way from regrowing an arm after an accident? What knowledge gaps need to be addressed before we can even try?



**Jochen Rink** investigated intercellular transport during the course of his PhD at MPI-CBG. His postdoctoral research in Salt Lake City examined the fascinating regenerative abilities of planarian flatworms. Since 2011, Jochen Rink is a group leader at the MPI-CBG.



**Dr Volker Busskamp** is a Research Group Leader at the Center for Regenerative Therapies at the TU Dresden. He is a 'Freigeist' fellow of the Volkswagen Foundation and an ERC starting grant investigator.



**Davide Danovi** holds an MD from University of Milan and a PhD in Molecular Oncology from the European Institute of Oncology. He works at the Centre for Stem Cells & Regenerative Medicine at King's College London and is Director of the HipSci Cell Phenotyping Programme.

## Regenerating Neuronal Function, Cellular Compartments and Cell Types

### LECTURE

In my first part, I will present a strategy to restore visual function of photoreceptors in blind retinas. For this purpose, persisting cell bodies, which have lost their light sensitive cellular compartments, were tagged with microbial opsins. This optogenetic intervention was successfully tested in blind mice and post-mortem human retinas. In a second approach, we have identified two non-coding microRNA species that maintained the light sensitive compartments of photoreceptors in vivo and induced their generation in photoreceptors of stem-cell derived retinal organoids. Last, I will present our systems biological approach to reveal the biological rules of neurogenesis from human induced pluripotent stem cells. We aim to engineer desired neuronal cell types in high purity, yield and time by selected activation of key transcription factors. We assemble engineered neurons to multicellular neuronal circuits at high precision and reproducibility to obtain multicellular neuronal models for basic and biomedical studies.



**Dr Volker Busskamp** studied biotechnology at TU Braunschweig. He completed his PhD with Prof Botond Roska at the Friedrich Miescher Institute in Basel in 2010. He was a postdoctoral fellow with Prof George Church at the Harvard Medical School in Boston. In 2014, Busskamp was appointed Research Group Leader at the Center for Regenerative Therapies at the TU Dresden. Busskamp was awarded a 'Freigeist' fellowship by the Volkswagen Foundation and he received a European Research Council starting grant.



## Virtual Experiments on Wooden Artwork

### LECTURE

What are the binding climate and loading conditions for a precious historic piano? How to decide objectively whether an instrument is stable enough to be played without being irreversibly harmed in future? What are sufficient climate conditions for valuable panel paintings like the *Mona Lisa*? Of course, real experiments are not permissible in these cases, but computer simulations allow for all kinds of virtual experiments.

The lecture gives insight into computational analysis techniques and how the material wood in its multi-physical complexity is modelled with respect to moisture, failure and long-term behaviour. Numerical simulations of valuable artworks lively illustrate how state-of-the-art engineering simulation technology can be used to gain insight into the structural behaviour of wooden artwork and to support conservation strategies.



**Prof Michael Kaliske** has been Head of the Institute of Structural Analysis at Technische Universität Dresden since 2006. Before, he had been a research fellow at the Institute of Structural Analysis at Leibniz Universität Hannover and Director of the Institute for Structural Mechanics at Leipzig University. Furthermore, he is Chairman of the German Association for Computational Mechanics and Vice Chairman of the research association *Forschungsvereinigung Baustatik-Baupraxis*.

18 MAY

5-7<sup>PM</sup>

STRAND CAMPUS, STRAND BUILDING,  
CHAPTERS ROOM

PANEL DISCUSSION

## The Questions Google Can't Answer

### On the Relationship between Museums and Science

Museums conduct research. They are the guardians of manifold research objects and locations, where research results are publicly presented for discussion. In comparison to universities, its unique characteristic is the contact with visitors via the medium 'exhibition'; thus presenting and communicating research to a wider audience. This aspect needs to be considered when conducting research that is drawn from museum collections; at the same time, exhibiting without researching is impossible. What conclusions do museums draw from their self-image as an institution that conducts research but also conveys scientific expertise? In what way do research questions change if you view them from a museum perspective? What are the expectations of the public, politics and society towards museums, and how can museological science be sustainably financed?



**Colleen M. Schmitz** is the Curator and Head of the Exhibition Office at the Deutsches Hygiene-Museum in Dresden. She is the publisher and author of numerous exhibition publications and has curated a plethora of national and international exhibitions.



**Emma Markiewicz**, PhD, is Head of Advice and Records Knowledge at The National Archives UK where she leads a team of collections specialists, providing advice and research services for a wide range of audiences on using the collections online and on site.

#### With further speakers from the following institutions:

Dresden State Art Collections

Wellcome Collection

## The Green City

### Contribution to a more Sustainable Future

The discussion about 'green cities' is increasingly attracting worldwide attention. The 'greening' of cities, neighbourhoods and buildings plays a key role for urban sustainability. Against this background, the presentation will deal with the following issues:

- Green city development – conceptual elements, experiences and ongoing international discussions
- Good practice – international examples of technological and nature-based solutions
- Perspectives – the need for comprehensive approaches, leadership and inclusiveness



**Bernhard Müller** a geographer and planner, is the Director of the Dresden-based Leibniz Institute of Ecological Urban and Regional Development (IOER) and Professor for Spatial Development at TU Dresden. He is a member of the National Academy of Science and Engineering (acatech), the Saxonian Academy of Sciences, and the Academy for Spatial Research and Planning (ARL). He was a policy unit member for the Habitat III conference in Quito 2016.



**Prof Frank Kelly** holds the chair in Environmental Health at King's College London. He is Director of the Analytical & Environmental Sciences Division. He is also Director of the Environmental Research Group, Director of the NIHR Health Protection Research Unit and Deputy Director of the MRC-PHE Centre for Environment & Health. He is also involved with providing policy support to the WHO on air pollution issues.



With a Master of Science in Horticultural Biology, **Peter Sängner** has over eleven years of experience in working with plants and biological components. His passion for the industry stems from working in his father's horticultural businesses.

22 MAY

12-2<sup>PM</sup>

GUY'S CAMPUS, HODGKIN BUILDING,  
LARGE COMMITTEE ROOM

PANEL DISCUSSION

## Novel Treatment Approaches in Acute Myeloid Leukaemia

Scientific endeavours of the last decades have transformed acute myeloid leukaemia from a hardly treatable to a potentially curable disease. However, even up to these days, chemotherapy strategies, as well as stem cell transplantation undergo constant changes in order to boost the therapeutic success. The lectures will address novel developments, such as immunotherapeutic and molecularly targeted strategies as they evolve from the lab bench to the patient's bedside.



**Martin Bornhäuser** is Professor of Haematology/Oncology at TU Dresden, the Director of the Department of Internal Medicine I at the University Hospital Carl Gustav Carus and the Director of the National Center for Tumor Diseases in Dresden. He has been transCampus Professor for Haematology at King's College London since 2015. His research topics include allogeneic stem cell transplantation, cellular therapy, adoptive immunotherapy, cell biology of mesenchymal and hematopoietic stem cells and targeted therapy.



**Eric So** is Professor of Leukaemia Biology and one of the leading researchers in the field of leukaemia and stem cell biology at the Department of Haematological Medicine, King's College London. He was awarded several Young Investigator Awards and Fellowship Awards. The primary goal of Eric So's research programme is to characterise the mechanisms of transcriptional regulation that are corrupted in leukaemia.



**Farzin Farzaneh** is Professor for Molecular Medicine at the Section of Haemato-Oncology at King's College London. He established and has served as the Director of the Rayne Cell Therapy Suite (RCTS), GMP Production Facility at King's since 2001.

## DO Play and Drive

### Why computer games and self-driving cars help us fight cancer with lasers

Today, computers have become so ubiquitous that it is hard to even recognise their existence in our everyday life. They have changed from being our gaming machines or office typewriters to serving as our everyday companions and assistants. This drove a dramatic increase in available compute power, enabling high performance scientific computing at lower cost than ever before. Today, we can study new particle accelerators on computer hardware previously used by computer gamers. With these new accelerators we plan to deliver beams of particles able to kill tumor cells. High-end laser technology can potentially make these accelerators much more compact and affordable. In turn, more people would be able to get access to this kind of cancer treatment than currently possible.



**Dr Michael Bussmann's** research spans from astrophysics to understanding matter on the atomic scale. His methods range from high performance computing to big data analytics. He likes to use hardware intended for computer games to do his work. He strongly believes that science is not something that should be left to experts, but that a 'scientist is as science does'. His research team is thus comprised of renowned scientists as well as 17-year-old pupils. The latter usually pursue the most ambitious projects. He thinks that everyone is capable of doing science if they just try. He encourages questions and likes the answer 'I have no idea, let's find out!'.

## Diabetes

### Islet Cell Transplantation

LECTURE

Uniting the efforts of researchers at King's College London and TU Dresden, the joint Islet Cell Transplant Program is one of the most prominent projects of the transCampus partnership. During a promising treatment, the availability of surgery is restricted by the shortage of donor pancreases from which islet cells can be extracted. Moreover, cell and organ transplantations are generally at the price of permanent immunosuppression, and thereby make the patient prone to infections and other potentially severe side effects. In this situation, there is an urgent need for novel therapeutic options.



**Peter Jones** is Professor of Endocrine Biology in the Diabetes Research Group at the Guy's campus of King's College London. He was awarded an R. D. Lawrence Fellowship by the British Diabetic Association, followed by a Medical Research Council Senior Research Fellowship to continue his work into stimulus-response coupling in beta cells. He was awarded the British Diabetic Association R. D. Lawrence Lecture and the Diabetes UK Dorothy Hodgkin Lecture in recognition of his work on the regulation of insulin secretion. His research interests are in the field of beta cells with the current focus on improving islet transplantation as a therapy of Type 1 diabetes as well as on novel therapeutic targets for Type 2 diabetes.



**Barbara Ludwig** is an Assistant Professor, physician and staff scientist at the Division of Endocrinology within the Department of Internal Medicine at TU Dresden. She has been Director of the Human Islet Transplantation Programme in Dresden since 2008. Barbara Ludwig was the first woman to ever be honoured with the Rudolf-Pichlmayr-Award from the German Transplantation Society (Deutsche Transplantationsgesellschaft, DTG) for outstanding achievements in the field of transplantation medicine.

# Contact

## PLEASE REGISTER FOR EVENTS AT

→ [www.eventbrite.de/o/dresden-concept-13349352899](http://www.eventbrite.de/o/dresden-concept-13349352899)

### Press and project information

Eleanor Salt (KCL) → [worldwide@kcl.ac.uk](mailto:worldwide@kcl.ac.uk)

Sonja Piotrowski (DRESDEN-concept) → [presse@dresden-concept.de](mailto:presse@dresden-concept.de)

Christina Spirow (TU Dresden)

#### Technische Universität Dresden

01062 Dresden

[www.tu-dresden.de](http://www.tu-dresden.de)

#### King's College London

London WC2R 2LS

[www.kcl.ac.uk](http://www.kcl.ac.uk)

#### DRESDEN-concept e. V.

TU Dresden

01062 Dresden

[www.dresden-concept.de](http://www.dresden-concept.de)

### transCampus

#### Dresden

Department for Development and

International Affairs

Technische Universität Dresden

School of Medicine

Fetscherstraße 74

01307 Dresden

Germany

#### London

Guy's Campus

Henriette Raphael Bld., R. 3.6

King's College London

19 Newcomen Street

London SE1 1UL

United Kingdom

[info@transcampus.eu](mailto:info@transcampus.eu)

[www.transcampus.eu](http://www.transcampus.eu)

**NEXT STOP OF THE DRESDEN-concept SCIENCE EXHIBITON:  
WROCŁAW FROM 22 SEPTEMBER UNTIL 11 OCTOBER 2017**

*This project is part of TU Dresden's Institutional Strategy,  
funded by the Excellence Initiative of the German Federal and State Governments.*

UNDER THE AUSPICES OF

STAATSMINISTERIUM  
FÜR WISSENSCHAFT  
UND KUNST



Freistaat  
SACHSEN



Embassy  
of the Federal Republic of Germany  
London

A PROJECT LINKED WITH

