

German Center for Research
and Innovation – New York



Germany
Land of Ideas

A NEW TAKE ON TRAUMA

BIG DATA, SMALL DEVICES

THE NEXT WALL TO FALL

HUMAN-MACHINE INTERACTION

THE PRINTED FUTURE

ANNUAL REPORT 2016



P R E F A C E

Over the last six years, the Deutsche Akademische Austauschdienst (German Academic Exchange Service, DAAD) and the Deutsche Forschungsgemeinschaft (German Research Foundation, DFG) have jointly led the German Center for Research and Innovation New York (GCRI). Together with our partners from German universities, universities of applied sciences and the non-university research sector, we have benefited greatly from the GCRI – as have German and other researchers in the vibrant academic hub of New York and across North America. It is with pleasure and pride that we have witnessed the GCRI emerge into a focal point of German-American academic and scientific dialogue and collaboration. Science mixed with diplomacy is an important asset for any country; it is certainly alive and well at the GCRI with every podium and panel discussion, and every workshop organized throughout the year.

Germany is well-known for its wealth of research institutions and also for the breadth of its industrial research. It is known for its century-old tradition of academic rigor, as well as for its vigor in innovation and thought-leadership. Our friends in the US and Canada value these strengths, on which rest the manifold and strong transatlantic bonds that bind us together. Through the work of the GCRI, the German research landscape is able to present a detailed picture of itself to the North American research community, with individual events highlighting topical and thought-provoking research projects, bringing together scholars from their respective fields, and sparking new collaboration across the Atlantic.

Academic and scholarly exchange on a global scale, the mobility of ideas and people, is at the heart of science. Germany believes in open, unrestricted scientific discourse and the meeting of great minds around the globe without borders. Germany invests in this belief – not only by funding the five “Deutsche Wissenschafts- und Innovationshäuser (DWIH)” across the globe, but also by providing generous budgets for international research and scholarships.

The GCRI – or DWIH – New York translates the ideal of global science into a concrete program of events. As the two organizations that lead the GCRI in New York, we are very grateful to the German Federal Foreign Office for its unwavering support, without which this important work could not be done. We would like to thank all our partners in Germany, the US and Canada for their active engagement over the past year; and we acknowledge especially the support of the GCRI Foundation and its new initiatives. Last, but certainly not least, such accomplishments are based on the hard work performed by the GCRI staff in New York; their dedication to the ideal of a GCRI is the bedrock of this institution’s success!



Dorothea Rüland

Dr. Dorothea Rüland
Secretary General of DAAD

DAAD

Deutscher Akademischer Austausch Dienst
German Academic Exchange Service



Dorothee Dzwonnek

Dorothee Dzwonnek
Secretary General of the DFG

DFG

Deutsche
Forschungsgemeinschaft
German Research Foundation



P R E F A C E

The German Federal Foreign Office is a proud sponsor of the German Center for Research and Innovation (GCRI) New York. The GCRI, one of five German Houses of Research and Innovation worldwide has, since its opening in 2010, become a strategic component of our foreign science policy and has successfully established itself as a cornerstone of our internationalization strategy.

The GCRI enhances transatlantic collaboration in science and technology. It reaches out to industry representatives and fosters interdisciplinary collaboration by presenting and discussing cutting-edge research and innovation to a diverse audience.

With panel discussions, symposia, and workshops not only in New York, but throughout the United States and Canada, the GCRI provides a platform for researchers, scientists, and businesses from both sides of the Atlantic to exchange ideas, resulting in extensive collaboration between diverse institutions.

The highlights in 2016 included conferences and panel discussions on robotics and artificial intelligence, big data, smart

Since its launch in 2010, the German Center for Research and Innovation (GCRI) has become a multidisciplinary forum, convening leaders in academia, industry, and government to foster strong public-private partnerships, facilitate the authorship of new publications, and address the global challenges of the 21st century. The GCRI, with its robust online presence and its extensive network in North America and Germany, is uniquely positioned to help Germany maximize leverage of its intellectual capital and entrepreneurial creativity.

Our 2016 Annual Report provides an overview of GCRI's activities during the past year and includes articles on cutting-edge developments in German research and innovation. The report also highlights the role of the GCRI in science communication, an area that has grown in importance over the past decade.

One of the highlights of 2016 was New York City's first Falling Walls Lab, which was hosted by the GCRI. Young scientists and entrepreneurs from different parts of the United States pitched their innovative ideas to a distinguished panel of experts at the German House. The first-place winner received a travel grant from the GCRI to compete in Berlin against the finalists from other labs around the world.

In 2016 the GCRI Foundation was able to support university sophomores from the United States and Canada to conduct research in laboratories throughout Germany during the summer. The GCRI Foundation-RISE Scholarship program for sophomores in science and engineering is designed to foster academic

cities, neuroscience, and clean technology. In addition, GCRI's monthly newsletter, E-NNOVATION Germany covered topics, such as translational medicine, the digital future, entrepreneurship, nutrition, mental health, memory, and the future of the oceans.

The Consulate General of Germany in New York has cooperated closely with the GCRI and its consortium leaders, the German Academic Exchange Service, and the German Research Foundation. I am looking forward to continuing this fruitful collaboration.



Brita Wagener

Consul General of the Federal
Republic of Germany in New York

relationships in Germany for promising students early in their careers and, ideally, encourage future scientific engagement. In addition, the GCRI Foundation Engineering Prize was awarded for the first time to outstanding engineering students at universities in the United States and Canada. Both of these initiatives aim to further enhance engagement in STEM fields between North American and German organizations.

I would like to acknowledge the unremitting and generous support of Germany's Federal Foreign Office, the Federal Ministry of Education and Research, the German Academic Exchange Service, and the German Research Foundation. I would also like to thank my colleagues at the GCRI for their relentless commitment and devotion to making our programs the success they have become. Further, I would like to express my sincerest gratitude to the GCRI Advisory Board for its expert guidance and to the GCRI Foundation as well as our partners in North America and Germany for their thoughtful input into our governance and programming.



Dr. Joann Halpern

Director of the German Center
for Research and Innovation

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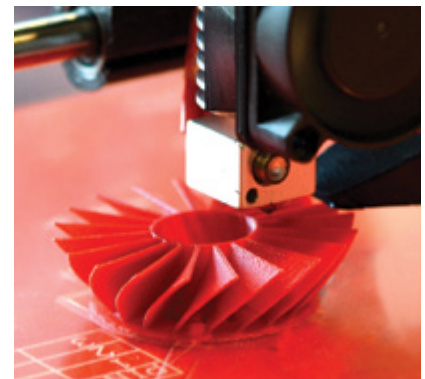
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First Point of Contact for German Science and Technology in North America

The German Center for Research and Innovation (GCRI) is a joint initiative of Germany's Federal Foreign Office and its Federal Ministry of Education and Research. Established as an information and networking platform, the GCRI provides information and support for the realization of cooperative and collaborative projects between North America and Germany.

Since its opening in February 2010, the GCRI has organized more than 180 events in the US and Canada with leading experts from science and industry, including three Nobel Prize laureates, 19 Gottfried Wilhelm Leibniz Prize recipients, and two Kavli Prize laureates.

To date, the GCRI has participated in 158 conferences, published 90 editions of its newsletter E-NNOVATION GERMANY, significantly enhanced its website reach and social media presence, and appeared over 1,080 times in the media.

GCRI's areas of focus mirror those of Germany's High-Tech Strategy and include climate and energy, health and nutrition, mobility, security, and communication. The GCRI has also led the transatlantic dialogue in emerging and evolving areas, such as digital health, smart cities, artificial intelligence, and medical technologies.

The center was created as a cornerstone of the German government's initiative to internationalize science and research and is one of five German Houses of Research and Innovation (Deutsche Wissenschafts- und Innovationshäuser, DWIH) worldwide. It is under the joint leadership of the German Academic Exchange Service (DAAD) and the German Research Foundation (DFG) and receives its funding from the German Federal Foreign Office.



With the goal of strengthening transatlantic communication on the critical challenges of the 21st century, the GCRI:

- **Presents** Germany to the North American market as a land of ideas and innovation
- **Enhances** dialogue between academia and industry
- **Creates** a forum for the initiation and enhancement of transatlantic projects
- **Acts** as an information platform for the German research landscape

Speaking of Science

As science becomes a crucial part of the global dialogue, Germany has made effective science communication a priority.

In every corner of the world, people are talking about science. From the economy and politics, to healthcare, the environment, and even nutrition and lifestyle choices, conversations among policymakers and private citizens alike are increasingly science-centric. Even as daily newspapers trim back their science sections, dedicated science news sites and blogs are gaining in numbers and prominence, and matters of science are increasingly woven into mainstream news. Front-page stories may touch on topics of clean energy, nuclear weapons, or immunotherapy while reporting on elections, trade deals, and healthcare policy.

Science is such an integral part of 21st century life, it is all but impossible to report the happenings of the world while ignoring the context of science. For those in the scientific community, there has never been a more important time to get the message out – and to get it right.

The past decade alone has seen the introduction of innovations that stand to radically reshape the future of the planet and its inhabitants. Technologies like CRISPR-Cas9 and gene drives, which grant the power to irreversibly alter or even abolish species or attributes, or leaps in machine learning that bring a future of truly intelligent systems into view, are just a few examples of innovations too consequential for scientists to grapple with alone. Debates and decisions about the role of such transformative technologies should arguably engage the public, yet reporting complex issues to lay audiences is no simple feat. For

journalists, it is a balancing act between accessibility and accuracy, a struggle to emphasize real-world applicability and human interest while doing justice to the science itself. Misinformation can linger dangerously in the public consciousness, and, conversely, great science stories can inspire and transform.

“Science is such an integral part of 21st century life, it is all but impossible to report the happenings of the world while ignoring the context of science.”

Yet the work of science communication isn't entirely the purview of journalists. Science news often begins with scientists themselves, many of whom view discussing their work – both with other scientists as well as with media and the public – as an increasingly essential part of their job. Ellis Rubinstein, president of the New York Academy of Sciences, believes that part of what draws thousands of people to Academy events and conferences each year are the many opportunities for connection and communication. “Since the Academy's founding 200 years ago, it has been a place where scientists and government and industry leaders from around the world could exchange ideas and learn from one another,” he said. “Today, bringing the scientific community and other stakeholders together is still one of the most important things we do, but just as critical is that we report on the insights and ideas that come from these conversations so that the public, media, other scientists, and policymakers understand how science and technology are being used to address the most consequential issues of our time.”



The ease of self-publishing, whether in print or through digital media, has further expanded the channels through which scientists and science journalists may communicate. Germany has long prized the efforts of scientists who take advantage of such opportunities to share their work – in 2000, the German Research Foundation (DFG) created the annual Communicator Award to honor scientists who make extraordinary contributions in this area.

“When scientists, business leaders, politicians, and the public come together to talk about science, it brings us closer to solutions, but it also teaches us about the process of solving problems.”

An appetite for science information is not universal, and the public cannot be expected to apply scientific rigor when evaluating information in the media. Indeed, Marcia McNutt, former editor in chief of *Science* and current president

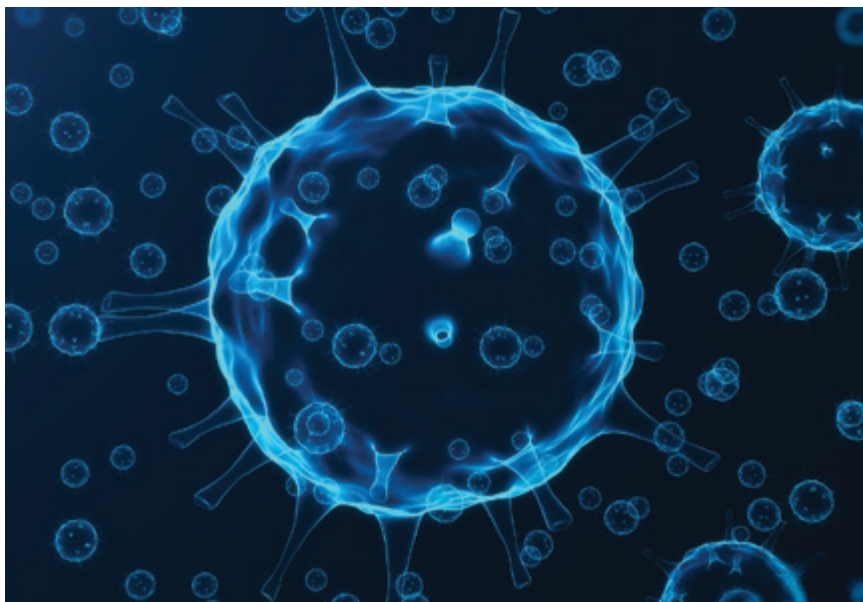
of the National Academy of Sciences, told *National Geographic* magazine that “scientific thinking must be taught, and sometimes it isn’t taught all that well.” Yet evidence abounds that young people in particular view science literacy as an essential skill for navigating the future. The enormous success of citizen science projects like Fold It!, Galaxy Zoo, the Monarch Joint Venture, and hundreds of others affirm that those with no qualifications beyond their curiosity can be meaningful partners in scientific dialogue.

In an increasingly globalized world, fostering international science communication and collaboration is good for the innovation pipeline as well as for diplomacy. In 2009, the German Federal Foreign Office launched the Research and Academic Relations Initiative, creating five German Houses of Research and Innovation around the globe to promote interdisciplinary partnerships and increase scientific dialogue. The German Center for Research and Innovation (GCRI) in New



York contributes to this mission in part by convening dozens of workshops and symposia each year, bringing researchers and industry representatives from Germany and North America together to devise science and technology solutions to address global challenges. In 2016, GCRI events tackled diverse topics ranging from aging and digital health to additive manufacturing, zero-carbon cities, and space robotics. “Creating opportunities for scientific exchange is one of the most valuable aspects of our work,” said GCRI director Dr. Joann Halpern. “When scientists, business leaders, politicians, and the public come together to talk about science, it brings us closer to solutions, but it also teaches us about the process of solving problems,” she said. “Science teaches the fundamental skills for global cooperation: dreaming up ideas, testing them, learning from what doesn’t work, and trying again.” ■

by Hallie Kapner, Science Writer





"The German Center
for Research and
Innovation's events
have been instrumental
in helping me
build and enhance
collaborations with
German researchers."

– Dr. John-Paul Clarke,
College of
Engineering Dean's
Professor, Georgia
Institute of Technology



GCRI EVENTS

2016 Calendar of Events

January 27 – 29

Alberta-Germany eHealth Symposium

Co-Sponsors:

University of Alberta
German-Canadian Centre for
Innovation and Research

February 17

Rethinking Trauma as a Global Challenge

Co-Sponsors:

Ulm University
German Research Foundation (DFG)



February 23

The International Criminal Court and the Crime of Aggression

Co-Sponsors:

University of Cologne
Columbia University

March 7

Big Data - Small Devices

Co-Sponsors:

University Alliance Ruhr (UA Ruhr)
German Research Foundation (DFG)

March 10

EU-USA Research Collaboration and Funding Opportunities in Horizon 2020, the European Framework Programme for Research and Innovation

Co-Sponsor:

Delegation of the European Union to the United States of America

March 15

Financial Decision-Making and Aging: Perspectives from Neuroscience

Co-Sponsor:

WZB Berlin Social Science Center

April 9

International Perspectives on School Governance at Annual Meeting of the American Educational Research Association

Co-Sponsor:

German Institute for International Educational Research (DIPF)

April 28

Bridging the U.S. Skills Gap - A Transatlantic Discussion on Vocational Training and Best Practices

Sponsors:

UAS7 German Universities of Applied Sciences
Consulate General of the Federal Republic of Germany in New York

May 3

Networking Breakfast on Aging and Demographic Change

Co-Sponsors:

University of Cologne
German Research Foundation (DFG)

May 10

Leibniz Lecture: Liver Diseases – A Global Health Challenge of the 21st Century

Co-Sponsor:

German Research Foundation (DFG)

June 2

Urban Energy Systems – Challenges and Solutions for Zero Carbon Cities

Co-Sponsor:

Hochschule für Technik Stuttgart

August 30

Falling Walls Lab New York

Co-Sponsors:

German Federal Foreign Office
German Academic Exchange Service (DAAD)

September 7

The Excellence Initiative as an Instrument to Further University-Industry Collaboration

Co-Sponsor:

German Rectors' Conference



2016 Calendar of Events

September 14

Leibniz Lecture: Photonic Technologies in Human-Machine Interaction

Co-Sponsors:

German Research Foundation (DFG)
Friedrich-Schiller-University Jena
Fraunhofer Institute for Applied Optics
and Precision Engineering (IOF)

September 21

Up There & Way Up There: Robotics in Air and Space

Co-Sponsors:

German American Chamber of
Commerce, Pittsburgh Chapter
Astrobotic
The Webb Law Firm

October 6

Digital Health: A Catalyst for Behavioral Change

Sponsors:

European-American Chamber of
Commerce New Jersey
Transatlantic ICT Forum – DISCOVERY
Project
UNC Center of European Studies

October 10

Smart Data and Digital Health

Co-Sponsor:

German Research Center for Artificial
Intelligence (DFKI)

October 13

Understanding Others: The Person Model Theory

Co-Sponsors:

University Alliance Ruhr (UA Ruhr)
German Research Foundation (DFG)

October 21

Additive Manufacturing: New Horizons in Research and Industry

Co-Sponsors:

University of Bremen, ISIS Sensorial
Materials Scientific Centre and MAPEX
Center for Materials and Processes
NYU Tandon School of Engineering

October 24

Negotiating Security in Europe and the United States

Co-Sponsor:

University Alliance Ruhr (UA Ruhr)

October 26

Energy Democracy – Germany's Energiewende

Sponsors:

Consulate General of the Federal
Republic of Germany in New York
German American Chamber of
Commerce, Inc. (GACC)

November 2

FOCUS: Smart Grid 2016

Co-Sponsors:

German American Chamber of
Commerce, Inc. (GACC)
Consulate General of the Federal
Republic of Germany in New York
Transatlantic Climate Bridge

November 17

Booming Populism - On the Practice and Language of Political Polarization

Co-Sponsors:

German Research Foundation (DFG)
Bremen International Graduate School
of Social Sciences (BIGSSS)



December 5

Learning to Learn – How the Brain Creates Memory

Co-Sponsor:

University Alliance Ruhr (UA Ruhr)



December 6

Meet and Greet Roundtable Discussion: BIO CITY Leipzig - The Future of Biotechnological Innovation in Germany

Co-Sponsors:

Hodgson Russ LLP
BIO CITY Leipzig
Invest Region Leipzig GmbH

Selection of 2016 Event Participants

The following is a selection of 2016 event participants who attended GCRI events in New York and other locations.

Albert Einstein College of Medicine
American Museum of Natural History
Barnard College
BASF Corporation
Bayer Corporation
Bloomberg
BMW Manufacturing Co., LLC
Boehringer Ingelheim
Bosch
Boston Consulting Group
Brookhaven National Laboratory
Carl Zeiss Microscopy, LLC
Carnegie Mellon University
CERN, the European Organization for Nuclear Research
Citigroup Inc.
Cold Spring Harbor Laboratory
College Board
Columbia University
Consolidated Edison, Inc.

Cornell NYC Tech
Council on Foreign Relations
Daimler AG
Dana-Farber Cancer Institute
Dartmouth College
DB Schenker, Inc.
Delegation of the European Union to the United States of America
Deloitte & Touche LLP
Department of Health and Human Services
Deutsche Bank AG
Deutsche Presse-Agentur
Deutsche Telekom Group
Die Zeit
EADS North America
Ernst & Young
Federal Emergency Management Agency
Federal Ministry of Economics and Technology
Federal Reserve Bank of New York
Federal Trade Commission
Food and Agriculture Organization of the United Nations
General Electric
German Academic Exchange Service
German Aerospace Center
German Research Foundation
Goldman Sachs
Google
Handelsblatt
Harlem Biospace
Harvard University
Howard Hughes Medical Institute
IBM



Institute of Electrical and Electronics Engineers
Intel Corporation
International Monetary Fund
Johns Hopkins University
Johnson & Johnson
JPMorgan Chase & Co.
Lufthansa
Massachusetts General Hospital
Massachusetts Institute of Technology
Memorial Sloan-Kettering Cancer Center
Merck
Microsoft
Mount Sinai Hospital
National Academy of Engineering
National Cancer Institute
National Institute of Standards and Technology
National Institutes of Health



Selection of 2016 Event Participants

National Oceanic and Atmospheric Administration

National Science Foundation

Nature Publishing Group

New York City Department of City Planning

New York City Department of Education

New York City Department of Transportation

New York City Economic Development Corporation

New York University

Nokia

Novartis Corporation

Office of Science and Technology Policy, The White House

Office of the Mayor, The City of New York

Pfizer Inc.

Princeton University

Public Broadcasting Service

Reuters

Rutgers University

Samsung

SAP

Science Friday - NPR

Scientific American

Siemens Corporation

Social Sciences and Humanities Research Council of Canada

Spiegel Online

Stanford University

Süddeutsche Zeitung

The Andrew W. Mellon Foundation

The Aspen Institute

The Brookings Institution

The Chronicle of Higher Education

The Earth Institute, Columbia University

The Economist

The Henry Luce Foundation

The Huffington Post

The New York Academy of Sciences

The New York Times

The Rockefeller University

The Wall Street Journal

The World Bank Group

thyssenkrupp AG

U.S. Agency for International Development

U.S. Department of Commerce

U.S. Department of Energy

U.S. Department of Health and Human Services

U.S. Department of State

U.S. House of Representatives

United Nations



University of California, Berkeley

WABC-TV

Weill Cornell Medical College

Wharton School of Business, University of Pennsylvania

World Economic Forum

WQXR - New York Public Radio

Yale University

Zweites Deutsches Fernsehen



2016 Selected Conferences & Symposia

January 11 - 12

Poverty, Inequality, and Global Conflict Conference

Location:

United Nations, New York, NY

January 14

Virtual Enterprises 2016 NYC Business Plan Competition

Location:

New York, NY

February 6

2016 European Career Fair

Location:

Cambridge, MA

February 11 - 15

AAAS 2016 Annual Meeting

Location:

Washington, D.C.

February 26

Columbia University Spring Career Fair

Location:

Columbia University, New York, NY

March 12 - 13

2016 NYC FIRST Regional Competition & Expo

Location:

Javits Convention Center, New York, NY

April 2 - 6

Experimental Biology Annual Meeting

Location:

San Diego, CA

April 8 - 12

AERA Annual Meeting and Conference

Location:

Washington, D.C.



April 9

Career Fair for Scientists in Collaboration with INet NYC

Location:

New York Academy of Sciences, New York, NY

May 13

The Future of Bilingual Education in the U.S. Symposium

Location:

Goethe-Institut, New York, NY

May 26 - 27

9th Charité Entrepreneurship Summit

Location:

Berlin, Germany

June 5

World Science Festival 2016

Location:

New York, NY



2016 Selected Conferences & Symposia

June 10

Second Digital Economy and Cyber Politics Conference

Location:

Berlin, Germany

June 28

German American Smart Cities Symposium

Location:

New York, NY

September 9 – 11

16th Annual German Academic International Network (GAIN) Conference

Location:

Washington, D.C.

September 11

GCRI – Eucor workshop “Entrepreneurship – Career Opportunities in Germany” at German Academic International Network (GAIN)

Location:

Washington, D.C.

September 28

OktoberINVESTFest 2016 - The Annual Investors' Conference

Location:

New York, NY

September 29 – October 2

German Studies Association's 40th Annual Conference

Location:

San Diego, CA

October 14

Engineering Consortium Career Fair

Location:

Columbia University, New York, NY

October 14

Career Day

Location:

Goethe-Institut, Washington, D.C.

October 21

Career Booster German(y)

Location:

Goethe-Institut, New York, NY

November 3

Cleantech Conference New York - Berlin

Location:

New York, NY

November 12 -16

Society for Neuroscience (SfN) Annual Meeting

Location:

San Diego, CA

November 16

Research Opportunities Outside of the US

Location:

New York University, New York, NY



Speakers & Guests at GCRI Events



...in New York and other locations



A New Take on Trauma

Hospitals and universities across Germany are part of a global movement to change the way traumatic injuries are evaluated and treated.

Former professional football player Sean James remembers the day when, at age ten, he realized that the sport he loved was as much about talent as it was about toughness. As young James was praised for using his head to cut a path through blocking players and staying strong after taking a hit, he learned that grit, as much as speed or agility, defined a football player's career prospects. "I knew that if I didn't have that toughness they were looking for, I wasn't going to be able to play," James said. "And as you move up the ladder through high school and college football, people start to drop

off." James made it to the pros, and retired at age 25. Today, at age 47, the youth advocate and anti-bullying crusader worries about the long-term physical and mental health effects he may yet face as a result of his years on the field. Seven surgeries, countless hits to the head, and multiple concussions make James, like so many athletes who play contact sports, more vulnerable to chronic traumatic encephalopathy, depression, suicide, and even early-onset Alzheimer's and dementia.

Professional athletes, combat veterans, and celebrities who suffer injuries in accidents are those likeliest to make headlines simply for getting hurt, but the prevalence of everyday trauma worldwide is both astonishing and underestimated. Trauma is the number one cause of death of people under the age of 45 in the United States, and more than 5.8 million people worldwide die each year following traumatic injuries – nearly one-third more than

malaria, HIV, and tuberculosis combined. Injuries and trauma are on track to become the largest global healthcare expenditure by the year 2020, and in the United States, trauma spending already surpasses both cancer and cardiovascular disease.

"Trauma research is also being bolstered by advances in nanotechnology and microelectronics that stand to transform the way physicians treat injuries."

Around the world, medical professionals on the front lines of trauma – primarily emergency physicians, general surgeons, and orthopedic surgeons – are teaming up with engineers, data analytics experts and mental health providers to create a new paradigm for trauma research and treatment. Germany is a leader in these efforts, said Prof. Dr. Florian Gebhard of Ulm University, as he explained the registry founded nearly 20 years ago by the German Society of Trauma Surgery to capture treatment and outcome data for seriously injured patients in hospitals throughout the country. The TraumaRegister DGU® includes information from more than 200,000 patients, and has provided a wealth of clinical data for researchers to plumb in service of a better understanding of how injury patterns influence outcomes and how to improve treatment decisions.

Critical to this work is an appreciation of the interplay of physical trauma and emotional distress, an aspect of injury that is often overlooked, said Prof. Dr. med. vet. Anita Ignatius, also of Ulm University. "Excessive psychological stress negatively influences the neuroendocrine, cardiovascular and



immune systems, and can influence a patient's ability to heal," she said. "We now know that physical trauma can induce post-traumatic stress disorder (PTSD), and conversely, PTSD from psychological stress can influence how a patient responds to a physical injury." Gebhard and Ignatius are part of Germany's first Collaborative Trauma Research Center, which was founded at Ulm University through a grant from the German Research Foundation to promote interdisciplinary partnerships and attract more young scientists to the growing field of trauma research.

Trauma research is also being bolstered by advances in nanotechnology and microelectronics that stand to transform the way physicians treat and monitor injuries. Ed Harvey, Chief of Orthopedic Trauma Research and Professor of Surgery at McGill University in Montreal, Canada, believes the field is poised for a rush of disruptive technologies that could permanently alter the way healthcare is delivered. He describes a future where the sensors that are now ubiquitous in activity trackers and smart watches are used in orthopedic implants to monitor healing status or detect infection, and nanoscale materials are deployed to facilitate bone and tissue repair. Already, sensor technologies are being used in football and hockey players' helmets and mouth guards to study the force of impacts during play.

"Today's trauma research goes well beyond just looking at physical injuries – we have to take a holistic approach."

The confluence of interdisciplinary trauma research and treatment approaches and the acknowledgment of the lasting dangers stemming from the culture of toughness Sean James and other professional athletes have described, have ushered in a new era for tackling a major global health problem. As Florian Gebhard stated, "Trauma is not about having pain or a broken bone, it's a disease that influences the body and the mind. Today's trauma research goes well beyond just looking at physical injuries – we have to take a holistic approach." ■

by Hallie Kapner, Science Writer

Rethinking Trauma as a Global Challenge

February 17, 2016

Trauma is the leading cause of death for people under 45.

While traumas with major tissue destruction are life-threatening, it is often not the injuries themselves that are fatal, but rather the body's response to these traumas. In almost 50 percent of cases, severe and multiple injuries trigger a complete body reaction. Understanding the body's complex systemic responses to trauma is therefore imperative for developing successful new therapies and reducing long-term damage. Topics addressed included cutting-edge trauma research, disruptive technologies, and individual treatment plans.

Co-Sponsors:



Event Speakers:

Sean James

Former NFL player for the Minnesota Vikings; Founder and President, Sean James Student Athletes (SJSA)

Univ.-Prof. Dr. med. Florian Gebhard

Director, Department of Orthopedic Trauma, Hand, Plastic, and Reconstruction Surgery; Speaker, Centre for Trauma Research (ZTF), Ulm University

Ted Miclau III, M.D.

Professor and Vice Chairman of the Department of Orthopaedic Surgery, School of Medicine, University of California, San Francisco

Edward J. Harvey, M.D.

Chief of Orthopaedic Trauma Research, Professor of Surgery, McGill University Health Centre, Montreal

Prof. Dr. med. vet. Anita Ignatius

Deputy Speaker, Collaborative Research Centre for Trauma Research; Director, Institute of Orthopaedic Research and Biomechanics, Centre of Musculoskeletal Research, Ulm University

Dr. med. Miriam Kalbitz

Young Investigator, Medical Faculty, Ulm University

Ruth Priscilla Kirstein, M.D.

Founder and Director, Middle East Film Initiative (MEFI) New York (Moderator)





Univ.-Prof. Dr. med. Florian Gebhard

Director, Department of Orthopedic Trauma, Hand, Plastic, and Reconstruction Surgery; Speaker, Centre for Trauma Research (ZTF), Ulm University

What are the main types of trauma and how can they be avoided?

The main type of trauma worldwide is still caused by vehicle and traffic-related injuries. The WHO addresses the UN Decade of Action for Road Safety (2011-2020). Their aim is to reduce accident-related injuries and deaths, and to improve road safety. In general, trauma is a life-related event that cannot always be foreseen.

Please discuss some of the research that is being conducted on the link between physical and psychological trauma.

When humans or animals are affected by a trauma, there are basically two different situations. One is the completely unexpected trauma that comes out of the blue. In this case, the body is not aware of the incoming trauma and the body was not able to react to the trauma event in advance. The other situation is being „in action,“ like a policeman, fireman, or soldier. In

this case, the body has an alarm mode on and will have a completely different reaction to trauma coming from the outside.

In both situations, the brain is fully involved in the trauma. So any traumatic effects will affect both the physical and the psychological side of the victim. Individuals will react and respond differently to each of the aforementioned situations. These different situa-

tions have not been addressed so far in trauma research and are currently the main focus areas of the Centre for Trauma Research at Ulm University.

What are some of the most successful strategies you and your colleagues have developed to treat trauma patients with life-threatening injuries?

There is no magic bullet to treat trauma patients. Treating trauma patients is like

attempting to solve a puzzle with hundreds of pieces that fit together. One of the highlights of our research is that patients with chest injuries have completely different inflammatory reactions than patients with other types of injuries. The inflammatory response can disturb bone healing and should be regarded as a very dangerous type of injury. ■



Big Data, Small Devices

Dr. Kristian Kersting spends a lot of time stuck in traffic. Commuting from his home in Bonn to the Technische Universität (TU) Dortmund, where he is professor of computer science, Kersting has stretches of idle time during which he may call a colleague, send an email, or browse a social media or news website. In those moments, Kersting is just one of more than six billion mobile phone users worldwide contributing information about their location, personal interests, and even health and purchasing habits, to the largest cache of data ever collected about people and their behavior.

Just fifteen years ago, the words “Big Data” conjured images of massive server rooms vibrating with the thrum of cooling fans and twinkling with thousands of flashing lights. Today, the data points that feed massive streams of data to all industries, from logistics and manufacturing to media and advertising, are increasingly generated from small, inexpensive devices. These include basic mobile phones and smartphones, as well as sensors customized for tasks such as searching for high energy atmospheric particles and analyzing the traffic congestion that slows Dr. Kersting’s commute. In public health, smart analysis of mobile phone data is transforming efforts to detect and monitor disease outbreaks and improve disaster preparedness by studying human travel patterns.

“Smartphones are human sensors, if you think about it,” said Prof. Dr. Katharina Morik, head of the Collaborative Research Center 876 and professor of computer science at the TU Dortmund University. “Our phones are always with us, and they tell us a lot about human behavior.” The average mobile phone user generates 2,000 data points per day and about 60 GB of data per year – huge volumes of information with little utility unless analyzed correctly. “How you use data to derive insight is everything,” said Morik, explaining how a seemingly straightforward data set – the frequency with which common smartphone apps are accessed – can yield very specific information, such as the gender of the phone’s user, when properly filtered.

For Claudia Perlich, chief scientist at

“Big data allows scientists to model feedback effects between environment and lifestyle factors like diet, smoking or secondhand smoke, and exercise.”



Dstillery, a New York City-based digital media company, such details are key to building predictive models of consumer behavior. Virtually every website has advertising space, and each time a user accesses a page, an invisible action

“In public health, smart analysis of mobile phone data is transforming efforts to detect and monitor disease outbreaks and improve disaster preparedness by studying human travel patterns.”

that takes place faster than the blink of an eye determines which ads they see. Behind the scenes, predictive models based on app usage, URL history, and up to one million additional factors guide the decision about whether to

show an ad, and if so, which one. More than 50 billion of these bidding opportunities hit Perlich’s system each day, and decisions and delivery take place in just 100 milliseconds.

Perlich and her team tap troves of big data to build more than 3,000 predictive models each day – models that fuel sophisticated machine learning algorithms that have grown uncannily deft at deriving correlations between mobile data points and likely purchasing behavior. These models are agnostic and anonymous and highlight correlations that are often missed through traditional behavioral or demographic analysis. Perlich noted that these analyses can be used to great effect in advertising, but also in more globally impactful fields, such as public health, where big data allows

scientists to model feedback effects between environment and lifestyle factors like diet, smoking or secondhand smoke, and exercise.

As the potential applications of big data rise, and devices for data capture diversify and proliferate, one major limiting factor emerges: energy consumption. As Katharina Morik explained, big data insights about mobile app usage patterns, for example, can help make smartphones even smarter. “If we know which apps are being used most often, we can perform file prefetching, which conserves energy,” she said. Additionally, Morik and her collaborators are devising strategies that bring big data analytics capabilities into devices themselves. Envision traffic or smart-container sensors bombarding already-taxed mobile networks with streams of data, most of which is likely irrelevant to the task at hand, be it rerouting commuters or improving a shipping route. “By integrating smart analytics capable of performing data analysis in real-time,” said Morik, “we reduce the amount of data so we keep only the good signal, and not all the noise.”

Dr. Kersting, who uses real-time data to close gaps in models of everything from traffic patterns to the spread of viral videos on the internet, believes researchers are just beginning to tap the full potential of big data. “I compare these advances to the early breakthroughs of microscopes and telescopes – innovations that allowed us to look at places we’d never seen,” said Kersting. “This is the dream of humankind – to catch a glimpse of what wasn’t known before. We are bringing light to dark data.” ■

by Hallie Kapner, Science Writer





Prof. Dr. Katharina Morik

Head of the Collaborative Research Center SFB 876; Professor of Computer Science, TU Dortmund University

What are the key issues related to big data and privacy today? How are these issues being addressed?

Privacy-preserving data mining has a long tradition and many algorithms preserve privacy by design. Regulations that demand privacy-preserving data mining, particularly from commercial platforms, can now become legal guidelines. For the regulation of data storage, the European Union has decided to broaden users' rights, which will allow them to have more control over who stores what personal data. A global data protection law does not yet exist.

How can big data that is produced by smart devices be used to save energy?

Saving energy is one of the most important outcomes of big data analytics. Predictions derived from data lead to optimized processes. My first example addresses traffic and logistics. Sensors embedded into streets and messaging from cars or Smartphone navigators allow for precise and timely predictions, as well as intelligent routing, hence, saving energy and emissions. A second example is engineering. Manufacturing processes can be optimized through predictions, such that production saves

energy. Computing centers analyze their resource consumption and optimize the energy accordingly. Finally, the analysis itself can be conducted in a manner that consumes less energy by algorithms tailored to ultra-low power devices. Innovative algorithms and models are investigated at the Collaborative Research Center SFB 876 with respect to resource-constrained probabilistic graphical models with guarantees.

How will big data transform society in the future?

Many new business models have emerged as a result of big data analytics, which can enhance virtually everything by opening up a plethora of applications. Big data allows for optimized processing to produce high-quality products with minimal resources and human labor. Thus, it could reduce the number of daily working hours considerably while increasing creative and social activities. However, big data services, such as social networks and online news come with the risk of dependency, misuse, fake news, and even cybercrime. It is challenging to develop methods against those attacks, not only for computer scientists, but also for society as a whole. ■

Big Data – Small Devices

March 7, 2016

The amount of digitally recorded information in today's world is growing exponentially.

Massive volumes of user-generated information from smart phones and social media are fueling this big data revolution. As data flows throughout every sector of our global economy, questions emerge from commercial, government, and non-profit organizations interested in the vast possibilities of this information. While big data has the potential to transform how we live and work, others see it as an intrusion of their privacy. Data protection concerns aside, the mere task of analyzing and visualizing large, complex, often unstructured data will pose great challenges to future data scientists. A panel of big data experts convened to discuss how big data creates value and how digital consumers and producers can benefit.

Co-Sponsors:



Event Speakers:

Prof. Dr. Kristian Kersting

Associate Professor of Computer Science, TU Dortmund University

Prof. Dr. Katharina Morik

Head of the Collaborative Research Center SFB 876; Professor of Computer Science, TU Dortmund University

Prof. Dr. Dr. Wolfgang Rhode

Professor of Physics, TU Dortmund University

Dr. Claudia Perlich

Chief Scientist, Dstillery

Dr. Tina Eliassi-Rad

Associate Professor, Department of Computer Science, Northeastern University; Rutgers University (Moderator)

The Next Wall to Fall

The fall of the Berlin Wall in 1989 broke both literal and figurative barriers, and ushered in an era of massive transformation in Germany.

Twenty years later, leaders in the fields of science and business, politics and the arts, came together to found the Falling Walls Conference, an annual forum for research and innovation that celebrates openness and collaboration in Germany and around the world. Scientists spanning dozens of fields, along with artists, historians, journalists and sociologists convene each year to present thought-provoking research and spark dialogue about timely issues. Since its founding, the Falling Walls Conference has branched out from a single annual event to include smaller, year-round gatherings in dozens of countries, where some of the world's most promising young scholars present their work. The question at hand is always the same: *Which will be the next wall to fall in science and society?*

The first such "Falling Walls Lab" event in New York City convened at the German House in 2016, hosted by the German Center for Research and

Innovation. Ten young scientists were invited to present their ideas for creating change in fields ranging from chemistry to cardiac care, tackling issues as diverse as food insufficiency, industrial waste, disaster relief, and refugee assimilation. While the presenters' backgrounds and strategies were vastly different, all shared a common mission to solve the world's most pressing problems through science and innovation.

**"The question at hand is always:
Which will be the next wall to fall
in science and society?"**

The past decade has placed more strain on systems providing global humanitarian aid than at any other time in human history. This includes the Syrian and Yemeni refugee crises, widespread famine, drought and displacement in South Sudan and Nigeria, Ebola and cholera epidemics in West Africa and Haiti, and the long-term economic and social repercussions from natural disasters

including earthquakes and tsunamis. Falling Walls Lab scholars Elisabeth Bahr and Heather Painter proposed surprisingly simple but powerful solutions to improve outcomes for survivors of natural disasters in the developing world, and help refugees fleeing crisis feel truly at home in a new place.

Bahr explained the dismal prognosis for those affected by the most common injuries suffered after natural disasters – limb amputations and spinal cord injuries. In the developed world, patients move from surgery to rehab, regaining strength and learning to navigate the world anew. In low-income countries, however, such rehabilitative services are brief or nonexistent. Bahr envisions a new model for long-term disaster relief rooted in a program that uses foreign aid to train local rehab technicians to deliver hands-on physical and occupational therapy services. "We're empowering citizens in developing countries to help and heal each other," Bahr said. Heather Painter is also tapping local citizen power, but this time for emotional and practical support. In her presentation about breaking the walls of intolerance, Painter described her app, COMMUNITY, which is already pairing German volunteers with Syrian refugees to practice language skills, as well as navigate employment listings and prepare for job interviews.

Other Falling Walls scholars focused on finding new value in waste, be it industrial waste or ideas tossed aside after an initial failed experiment. Entrepreneur and engineer Bertha Jimenez is transforming the waste stream from the beer brewing industry, working with urban brewers to reclaim spent grain and turn it into protein-rich baking flour. Chemist Philip Adler has digitized



the historical laboratory notebooks from his lab at Haverford College into a publicly available online database of every reaction ever tested – successful and unsuccessful, published and unpublished – with the hope of advancing discovery by breaking the traditional siloes in the chemistry field and encouraging collaboration.

As humans live longer, scientists and physicians are increasingly working to break down the walls of chronic disease and improve quality of life through early detection and intervention. The most common form of cardiac arrhythmia, atrial fibrillation, affects more than 35 million people worldwide and is associated with significant decline in heart function and stroke. A non-invasive heart monitor designed by Falling Walls winner Ya-El Mandel-Portnoy tracks pulse deficits in atrial fibrillation patients – an early sign of clinical decline – to facilitate rapid treatment. Researcher Oren Miron has his eye on breaking the barriers that prevent autism diagnosis before overt behavioral symptoms emerge, often not until age two or three. Using existing data from routine newborn hearing screenings, Miron and a group of collaborators are uncovering the correlation between slow auditory brainstem response in the newborn period and later autism diagnoses. “If we can detect high risk of autism at birth, we can intervene much sooner, rather than waiting until age four, when most children are diagnosed,” said Miron. “Early detection can have a huge impact.”

The destruction of the Berlin Wall began through the sweat and effort of determined citizens, pickaxes and hammers in hand. Twenty-seven years later, young scientists are channeling their own determination, and marshalling their own 21st century tools, to eliminate barriers to knowledge and progress. ■

by Hallie Kapner, Science Writer

Falling Walls Lab New York

August 30, 2016

The Falling Walls Conference is an annual gathering of forward-thinking individuals from over 80 countries. Each year twenty of the world’s leading scientists are invited to Berlin to present their current breakthrough research. The aim of the conference is to:

- Identify solutions to global challenges and discover international breakthrough research
- Connect outstanding researchers from different disciplines
- Build bridges between business, academia, politics, and the arts
- Communicate the latest scientific findings to a broader audience
- Inspire people to break down walls in science and society

Ten entrepreneurs, innovators, and researchers presented their ground-breaking projects, business plans, entrepreneurial and social initiatives in three-minute pitches.

Event Speakers:

Dr. Kurt Becker

Vice Dean for Research, Innovation, and Entrepreneurship, Professor in the Dept. of Mechanical and Aerospace Engineering and in the Dept. of Applied Physics, NYU Tandon School of Engineering (Jury Chair)

Michael Chad Hoepfner

CEO, GK Training and Communications

Dr. Joann Halpern

Director, German Center for Research and Innovation (Moderator)



Co-Sponsors:





Dr. Ya-El Mandel-Portnoy

Founder and CEO, Cardea Sciences, New York, USA; Winner of the Falling Walls Lab New York in 2016

What are the most common causes of heart failure, strokes, and cardiac death? How serious of an issue is this?

Heart disease is the leading cause of death in the United States for both men and women, killing one person every 40 seconds. About 610,000 people die of heart disease in this country every year, and the disease costs the United States about 207 billion dollars per year. This includes the cost of health care services, medication, and lost productivity.

There are different types of heart disease, e.g. heart failure, stroke, and cardiac arrhythmias, such as atrial fibrillation. Heart failure affects 5.7 million adults in the United States and is caused by conditions that damage the heart muscle, including coronary artery disease. Ten percent of the world's population above the age of 65 suffers from atrial fibrillation. Factors that may increase the risk of developing atrial fibrillation

are age, heart disease, high blood pressure, alcohol, obesity, and other chronic conditions. Stroke is the biggest concern when living with atrial fibrillation.

What are the current challenges for treating atrial fibrillation patients? How can Cardea Sciences help overcome these challenges?

One of the greatest challenges cardiologists face when treating atrial fibrillation patients is the inability to determine in advance which atrial fibrillation patients would be able to tolerate the arrhythmia well, with minimal impact on their quality of life, and which patients would not tolerate the arrhythmia well and will suffer from severe symptoms and adverse events.

Cardea Sciences is developing a novel, non-invasive heart monitoring device to improve the treatment and quality of life of atrial fibrillation patients. Using an objective metric for characterizing the hemodynamic effect in atrial fibrillation patients (based on physiologi-

cal phenomena), care providers will be able to identify atrial fibrillation patients who are set on a downward trajectory due to compromised hemodynamics and to optimize their course of treatment.

Cardea Sciences' product addresses the need to identify atrial fibrillation patients who will suffer from clinical deterioration early in the course of their disease. Early identification of patients who are at a high risk for clinical deterioration can im-

prove patients' course of treatment and quality of life. In addition, it will save millions of dollars for the health system, hospitals, and patients by reducing costly readmissions.

Tell us about your experience presenting "Breaking the Wall of Atrial Fibrillation Care" at the Falling Walls Lab New York.

The experience of presenting my science and what I am passionate about was outstanding. The concept of pitching your idea in three minutes to complete strangers with different backgrounds was challenging, yet thrilling. You have to make your science approachable so that they can imagine the importance of your work and the magnitude of the problem that you are trying to solve. I competed against very talented, smart investigators and entrepreneurs who are trying to bring value to so many different fields, and I am so grateful for having had the opportunity to do so. ■



A New Vision for Human-Machine Interaction

Communication is one of the most basic elements of survival. Whether it's biochemical communication between plants or among bacteria, or the elaborate courtship rituals of birds, some form of information exchange has been observed among all forms of life. At least 80 percent of human communication is conveyed in gestures, facial expressions, and body language – unspoken messages both overt and subtle that are instantaneously processed and interpreted by the brain. Humans can interact with many people at once, analyze complex cues and spatial information, and respond appropriately. Prof. Dr. Andreas Tünnermann, director of the Institute of Applied Physics and Precision Engineering at Friedrich-Schiller-University Jena and director of the Fraunhofer IOF, believes that exporting these exquisitely sensitive human abilities is key to improving human-machine interaction, and to reaping the economic and environmental benefits of what he calls "Industry 4.0."

The history of industrial production is marked by revolutions. Water and steam, electrical power and mass production, as well as information technology and computing have each transformed production practices and the role of the worker within the value chain. Today, the fourth major industrial revolution hinges on the ability of scientists and researchers to forge collaborations between cyber-physical systems and humans, bridging the communication gap and synergizing the flexibility and creativity of workers with the strength and stamina of automation.

Germany, like many other countries, has benefitted from the advent of 21st century automation technologies. Automation in the automobile industry has allowed for the integration of laser welding processes and new materials, such as high-strength steel that make cars safer, yet lighter and more fuel-efficient. More than 20 percent of Germany's GDP is derived from production technologies, and novel developments in automation have

helped the sector flourish. Similarly, advances in computer vision and machine learning have contributed to the development and continuous refinement of autonomous vehicles, which will dramatically reshape transportation around the world. While the replacement of human workers with automated systems has advantages in some scenarios, experts, including Dr. Tünnermann, argue that greater efficiencies may be gained by reintroducing humans into the automated workplace and bringing the assets of automation into everyday life.

Several key technologies underlie successful human-machine interaction – intelligent systems capable of learning and acting safely in real-time, augmented reality systems that provide haptic feedback, and actuators for motion control and adaptive force, among others. Perhaps the most fundamental technology for human-machine interaction, however, are multimodal sensors that replicate the human sensory system, allowing robotic systems to recognize voices, perceive sensation and pressure through "smart skins," and to detect 3D spatial information and visual cues.

Researchers around the world are working to address these needs, and Tünnermann leads one such group – an interdisciplinary consortium supported by the German Ministry of Research and Technology – that integrates engineering, neuroscience, and the social sciences to develop robotic and automated solutions designed to work with humans.

Tünnermann's own work focuses on improving computer vision – specifically, imbuing automated systems with the ability to recognize and interpret



physical gestures and understand spatial relationships between objects in complex scenarios.

More than three billion miniature cameras for smartphones and other consumer devices are produced each year worldwide. Based on the single-aperture model of the human eye, these ubiquitous cameras are perfect for instant imaging and viewing, yet fall short of the sophisticated optics needed to take human-machine interaction to the next level. According to Tünnermann, "The smartphone cameras we have today are about as good as it gets for this type of application – we can't make them any smaller or shorter without compromising resolution. If we want to extrapolate these technologies to smart machines, we'll need to think outside of the box."

Tünnermann noted that more than two dozen different eye systems exist in nature, many of them fine-tuned over hundreds of millions of years of evolution to perfectly assist the tasks of its owner, be it spider or bee, fly or gecko. Deriving inspiration from common insects and parasites, Tünnermann has adapted the concept of the cluster eye – an array of tiny lenses, each of which transmits a partial image of the field of view – to a next-generation optical device with far greater flexibility than traditional optical sensors. "In an insect, the brain compiles the partial images from each lens into a complete picture, but in a machine, we use image processing technology to stitch them together," Tünnermann explained. This "facet vision" delivers the same optical resolution as a single-aperture camera with far greater flexibility. Lens arrays may be round, square, or arranged in a straight line with no limitation on shape, and can be produced on a wafer-level approach and connected to CMOS sensors. His approach allows for

three-dimensional image capture with a single shot, and any partial image can be further analyzed or refocused to collect additional spatial information.

Machines that can truly see, analyze, and sensitively respond to real-time cues – from human gestures to pedestrians crossing the street against traffic – are a virtual certainty. Interest and investment in automation technologies that synergize with humans

is driven as much by economic and environmental pressures as it is by social needs. From the public health field, where responsive, autonomous helpers could assist the elderly with daily tasks, to military, healthcare, construction, and production applications, the work of Tünnermann and others in the field is shaping a vision of the future. ■

by Hallie Kapner, Science Writer

Leibniz Lecture: Photonic Technologies in Human-Machine Interaction

September 14, 2016

Today, new technologies driven by digitalization and artificial intelligence are changing the way humans interact with machines. In the future, next-generation devices and machines will be more sophisticated, ensuring an even higher degree of collaboration. As a key enabling technology, optics and photonics play a critical role in addressing many of the challenges humans face when interacting with machines. Photonic sensors that measure three-dimensional objects, people, and scenes will empower machines to monitor their environment. Known for his pioneering work in utilizing high power femtosecond lasers for material processing, Prof. Dr. Andreas Tünnermann discussed these novel trends, as well as his groundbreaking experiments in fundamental physics.

Event Speaker:

Prof. Dr. Andreas Tünnermann

Director, Fraunhofer Institute for Applied Optics and Precision Engineering (IOF); Professor and Director of the Institute of Applied Physics, Friedrich-Schiller-University Jena; Leibniz Prize Winner 2005

Co-Sponsors:





Prof. Dr. Andreas Tünnermann

Director, Fraunhofer Institute for Applied Optics and Precision Engineering (IOF);
Professor and Director of the Institute of Applied Physics, Friedrich-Schiller-University Jena; Leibniz Prize Winner 2005

How did you become interested in human-machine interaction?

My interest in human-machine interaction is directly related to demographic changes that are occurring in Germany and many other countries, specifically, aging societies. As a research alliance, we are addressing this particular challenge, as well as many others. People want to have a self-deter-

mined and active life into old age. In order to enhance an individual's ability to live independently as he/she ages, we are developing robots that serve as useful assistants to people. Considering that over eighty percent of human communication is determined by visual perception, it's logical that robots should possess the same visual skills and cognitive ca-

pabilities that allow for natural and intuitive human-machine interaction. Therefore, the aim of one of our largest projects, 3Dsensation, is to enable machines to be true assistants of humans with the aid of optical technologies.

Describe some of the most significant accomplishments of the 3Dsensation project.

3Dsensation is not only about developing technologies. We also address ethical and usability issues. We established a consortium that consists of over ninety interdisciplinary partners from economics, engineering, the life sciences, and other disciplines as an open innovation platform at the national level. Through 3Dsensation projects, a multitude of advanced technologies have been developed. Highlights include a near-infrared (NIR) 3D scanner that enables irritation-free 3D recordings of individuals and dynamic scenery, as well as ultra-compact insect-inspired multi-aperture camera systems.

How are photonic technologies transforming everyday life?

Light is a key enabling technology that has revolutionized production, communication, and medicine. The invention of the laser is one example. Laser beams can diagnose skin or bowel cancer at an early stage. Even the rapid transmission of large data volumes via the internet would not be possible without light signals.

Another example of the importance of photonic technologies in everyday life is the LED, which is currently revolutionizing the lighting market. With greater energy efficiency and improved color reproduction compared to conventional light sources, the LED enables entirely new lighting scenarios while preserving natural resources. This applies to domestic use and also plays a major role in the automotive industry; for example, by increasing the safety in dark streets through bright headlamps or enabling energy-saving lighting solutions for e-mobility. ■





Prof. Dr. Klemens Budde

Director, Medical Department, Division of Nephrology; Head of the Project Medical Allround-Care Service Solutions (MACSS), Charité - Universitätsmedizin Berlin

What are you planning to achieve with the app project Medical Allround-Care Service Solutions (MACSS)?

The aim of MACSS is the systematic integration of a patient app into the treatment of chronic illnesses. This has never been done before. Our goal is to improve care for patients with chronic diseases, for example, after renal transplantation. Although there are many apps for patients on the market, only a few are connected to a doctor bidirectionally. Specifically, we want to exchange data and communicate with the renal allograft recipient. When the patient provides vital signs, such as blood pressure, weight, and eventually data from other health trackers, the doctor sends the latest lab results and medication plan to the patient's mobile phone. There is a constant exchange of data and communication since messages can be shared. Patients should update their medication plan and can perform a drug interaction check if they have been

prescribed a new medication. Furthermore, we want to exchange data and medical reports with the nephrologist at home, so that in the end, all relevant data is collected in a single platform, where the transplant center, patient, and nephrologist in the hometown are always on the same page. As a result, we want to identify critical situations much earlier to prevent hospitalization and prolong

graft survival, which would increase the quality of life, as well as reduce disease burden and costs.

What will be the most significant changes in digital health over the next decade? Which role will patients and hospitals play?

Digital health will become more important due to the increasing use of digital technologies for better patient care. Today we are

focusing on better data exchange between hospitals, home doctors, and patients, which will ultimately lead to better treatment and save costs. In addition, data-driven therapeutic assistants will evolve with big data technologies like machine learning and artificial intelligence. Hence, we will adopt modern communication technologies into clinical care. Emails and text messages are not safe in





most instances, and video conferences are limited due to technological and cost issues. Modern and safe communication tools are already available today and will revolutionize our communication, both between doctors, as well as between doctors and patients. Lastly, medicine depends on knowledge, and future digital tools will make medical knowledge much more accessible. Online education for patients will create novel possibilities for true empowerment. In summary, digital medicine will ease data exchange, communication, and the accessibility of knowledge to a great extent. It is, however, important to maintain high standards of data protection and control of one's own patient data.

How will future digital health practices take Germany's aging population into account?

Aging populations are a huge challenge for all Western societies. Digital health, which includes better risk stratifications, online counseling, video conferences, telemedicine, providing knowledge to patients and doctors, has to provide efficacy gains and cost savings, in order to be able to prevent a financial collapse of the health system. Such cost savings have to be proven in clinical real-life settings and many digital solutions will fail. Successful digital health solutions will create an immediate benefit for patients and doctors, and they are easy to use in daily practice. ■

Smart Data and Digital Health

October 10, 2016

Over the past 30 years healthcare experts have been developing methods to improve data aggregation for patients. Technology has made it possible for virtually anyone to gather health-related data on themselves and the mechanisms to process and analyze data have been improving as well. This promises more and potentially disruptive technologies to change the healthcare landscape as we know it today. A panel of experts discussed what happens with that data and how it can be used to benefit both the patient and the healthcare provider, as well as how to ensure that new types of technology can further evolve while at times sensitive data must be protected and patients' privacy guaranteed.

Event Speakers:

Dr. Andreas Goerdeler

Deputy Director General for Information Society, Media at the German Federal Ministry for Economic Affairs and Energy

Prof. Dr. Klemens Budde

Director, Medical Department, Division of Nephrology; Head of the Project Medical Allround-Care Service Solutions (MACSS), Charité - Universitätsmedizin Berlin

Dr. Sean Zhou

Director R&D, Head of Innovation and Software Development, Siemens Medical Solutions

Dr. Ashish Atreja

Scientific Co-founder and Chief Strategy Officer; Advisor Responsive Health

Dr. Joann Halpern

Director, German Center for Research and Innovation (Moderator)

Co-Sponsor:



The Printed Future

The first consumer inkjet printers to hit store shelves in the 1980s were hailed as a revolutionary leap from the low-resolution dot-matrix printers that preceded them.

It took more than 30 years to perfect the systems that allow inkjet printers to lay down controlled droplets without clogging, but even in the earliest days, engineers had visions of someday deploying the technology to deposit something other than ink. By 1992, inkjet technology had been co-opted to produce inexpensive plastic product prototypes. Using computer guidance to build layer upon layer of liquid polymer, the world's first 3D printers turned out pieces that would be considered crude by today's standards, but their significance was nothing less than historic.

"By 1999, researchers had printed a synthetic scaffold for human bladder, bathed it in cells, and successfully grew transplantable tissue."

The leap from rapid prototyping to science fiction-dream-turned-reality took less than a decade – by 1999, researchers had printed a synthetic scaffold for a human bladder, bathed it in cells, and successfully grew transplantable tissue. Functional, printed blood vessels and customized prosthetics weren't far behind. Today, 3D printing has permeated every industry, upending manufacturing norms and opening limitless possibilities for shaving costs and boosting creativity. It

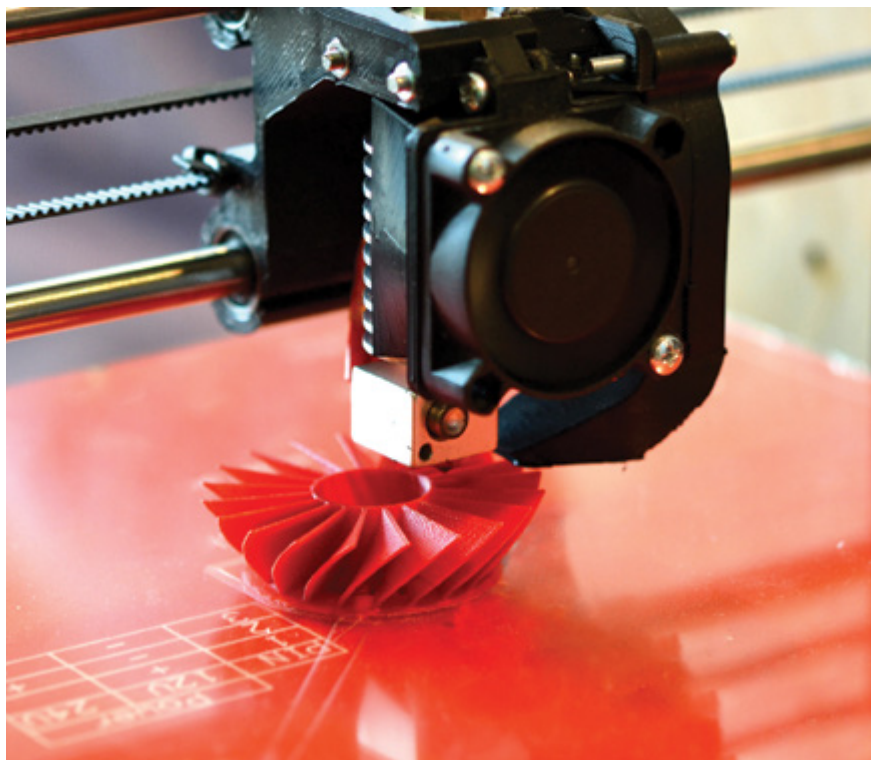
also gained a new name, additive manufacturing, to distinguish its unique approach of layered production from the traditional, "subtractive" manufacturing technologies, where an automobile component or airplane wing would be cut or drilled from a larger piece of material rather than built from scratch.

Additive manufacturing techniques have expanded to include a range of materials and scales, from production-grade plastics to metals in powdered and even nanoparticle form, making the technique as suitable for prototypes and models as it is for finished products. The production benefits are nothing short of epic. Despite the initial investment in implementation and equipment costs, additive manufacturing allows companies to exponentially decrease design and development costs, speed up production time, and make use of both novel materials and novel arrangements of materials within a product. For example, additive

manufacturing techniques can be used to create bone implants or automobile parts that have varying degrees of stiffness or flexibility within a single part, resulting in better performance from products that are lighter, stronger, and more energy-efficient.

The customization possibilities, both for industrial as well as consumer applications, are endless, and 3D printing techniques have been embraced by the public sector for fun as well as function. Most computer users think nothing of downloading a software program or a song, but the novelty of downloading programs to print an iPhone case, model airplane, or musical instrument is still fresh. Some schools and public libraries in the United States have installed Maker Labs complete with consumer-ready 3D printers to help realize such projects.

3D printing isn't just transforming the production of familiar items – it's allowing scientists and physicians to create physical representations of



complex objects previously impossible to render. Mathematicians are using 3D printing to create mathematical shapes that exist in four-dimensional space, and surgeons are deploying the technique to translate 3D images of deeply embedded tumors into lifelike models in order to refine a surgical approach before entering the operating room.

Germany is one of the world's biggest investors in additive manufacturing technologies, outspent only by China and the United States. Research efforts are robust – the Fraunhofer Additive Manufacturing Alliance draws on related research from 17 Fraunhofer institutes – and more companies in Germany use additive manufacturing than anywhere else in the world. Major companies like Siemens, Audi, and Volkswagen are reaping the benefits of 3D printing. In some cases, the technology is even bringing industry back to Germany – an Adidas plant in Bavaria is closing the supply gap in athletic shoes by designing and producing new sneakers on-site, shaving more than a year off traditional processes. EOS, Germany's leading producer of industrial additive manufacturing technologies, not only uses its machines to produce aerospace and automotive engine parts, dental crowns, and robotic components, but also deploys its printers to create parts that are used, in turn, to build more 3D printers.

Even as additive manufacturing has yet to secure a mainstream foothold in most of the world, some scientists are working on the next wave of the concept: 4D printing. The technique, still in its infancy, uses responsive materials to create products that self-assemble, and can change form and function as their environment changes over time. Municipal pipes that can expand to accommodate floods, or bricks that flex to accommodate wall strain, seem like futuristic dreams, but just ten years ago, so did many of the utterly real objects being produced today with additive manufacturing. ■

by Hallie Kapner, Science Writer

Additive Manufacturing: New Horizons in Research and Industry

October 21, 2016

The global symposium brought together researchers, manufacturers, and users of additive manufacturing (3D printing) to discuss their respective interests and insights into future growth trends. The discussion focused on identifying technical areas where future research and development efforts are needed. Topics addressed included the state of the art in additive manufacturing (3D printing) technology research, education, and industrial practice. In addition to a panel discussion, the symposium included a technology demonstration on various 3D printer platforms.

Co-Sponsors:



Event Speakers:

Raj Manchanda

Director, Business Development
- Manufacturing & Robotics, the
American Society of Mechanical
Engineers (ASME)

Dr.-Ing Dirk Lehmkus

Director, ISIS Sensorial Materials
Scientific Centre, University of
Bremen

Khaled Shahin

Senior Lecturer and Coordinator of
Engineering Academic Computing,
Engineering, NYU Abu Dhabi

Dr.-Ing. Axel von Hehl

Head of Lightweight Materials,
IWT Bremen

Dr. Brandon McWilliams

Principal Investigator of Electric
Field Assisted Sintering, ARL

Ohad Meyuhas

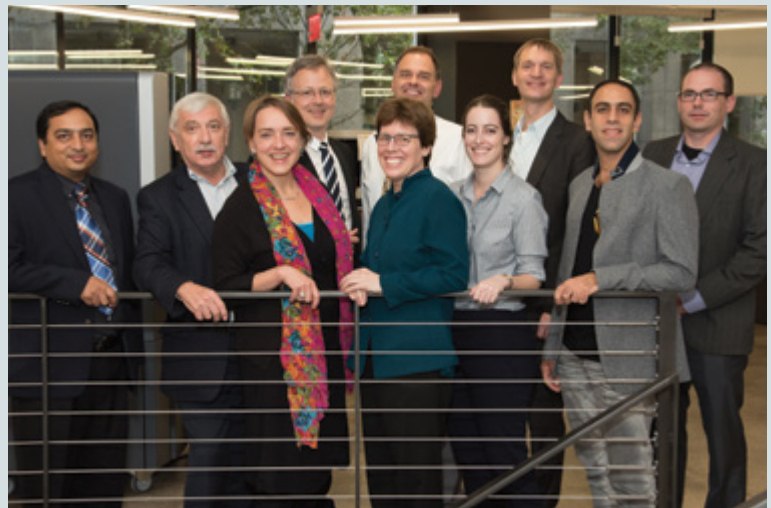
CEO, Hope Lab

Dr. Gary M. Gladys

Senior Technical Advisor, Dixie
Chemical Company, Inc.

Paulo G. Coelho, DDS, PhD

Leonard I. Linkow Associate
Professor - NYUCD; Associate
Professor of Plastic Surgery,
NYU Langone Medical Center;
Associate Professor of Biomaterials
and Biomimetics, NYU





"GCRI's newsletter provides a wealth of information about cutting-edge developments in German science and innovation as well as engaging interviews with thought leaders from Germany."

– Selden Blommer,
Executive Director,
Forbes Custom

GCRI ON THE WEB



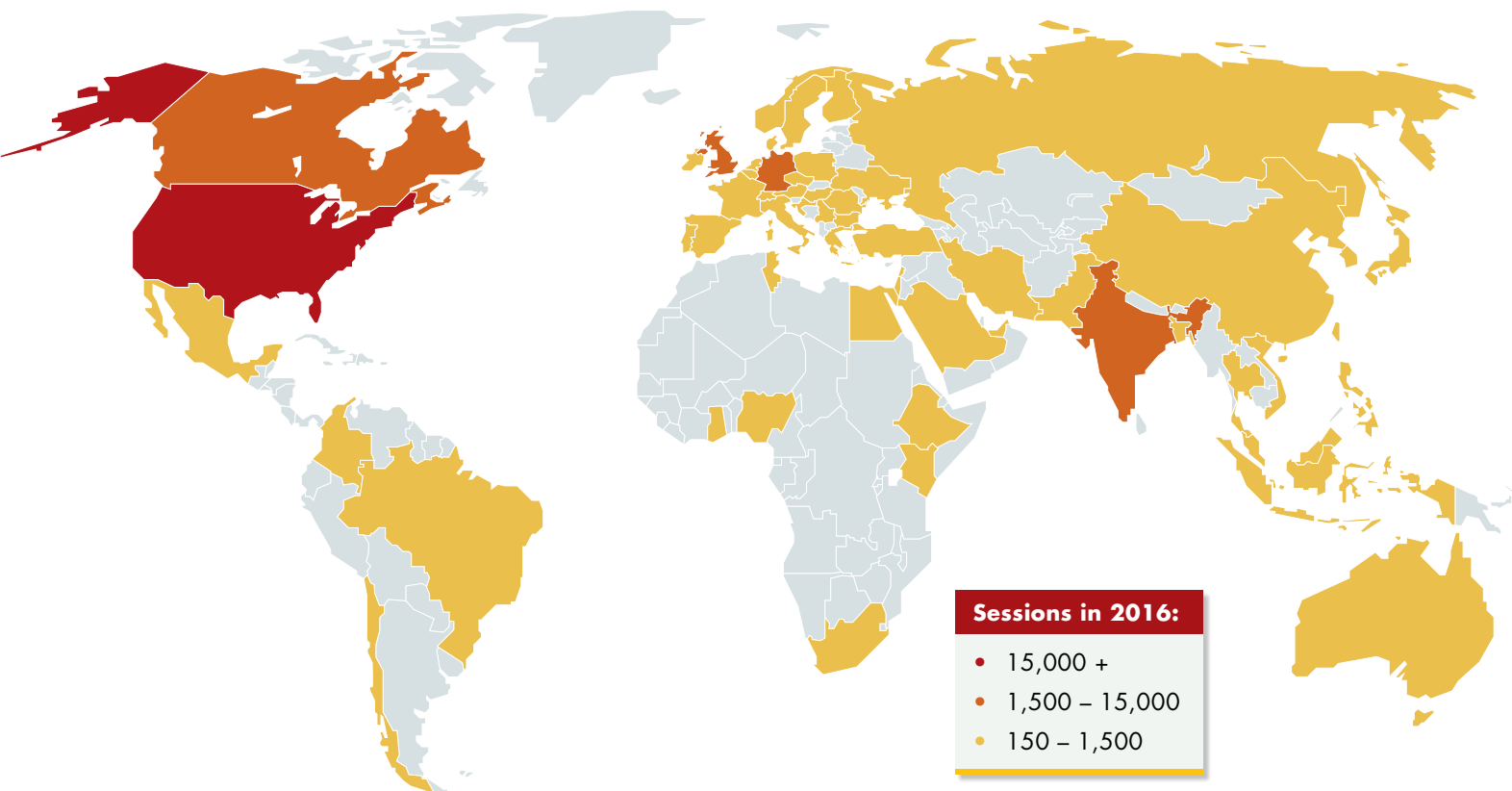
The GCRI Website

www.germaninnovation.org

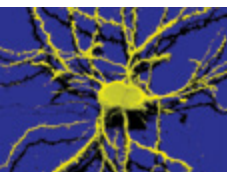
The GCRI's website, a key instrument in fulfilling the organization's mission, provides an information platform for individuals who are interested in the German science and innovation landscape and wish to conduct research or business. In addition to presenting GCRI events and related media, such as videos, podcasts, and photo galleries, the GCRI website features a wealth of programs, funding opportunities, and first points of contact for academia and industry. As a one-stop shop, the website also offers an overview of German research organizations, current research focus areas as well as the German higher education system.

The Most Popular Pages in 2016:

- Home
- Resources for Postdocs
- German Innovations
- Resources for Graduates & Doctoral Students
- Technology Parks & Centers
- Centers of Innovation in Germany
- Events Calendar
- Careers
- Ph.D. in Germany
- Resources for Undergraduates



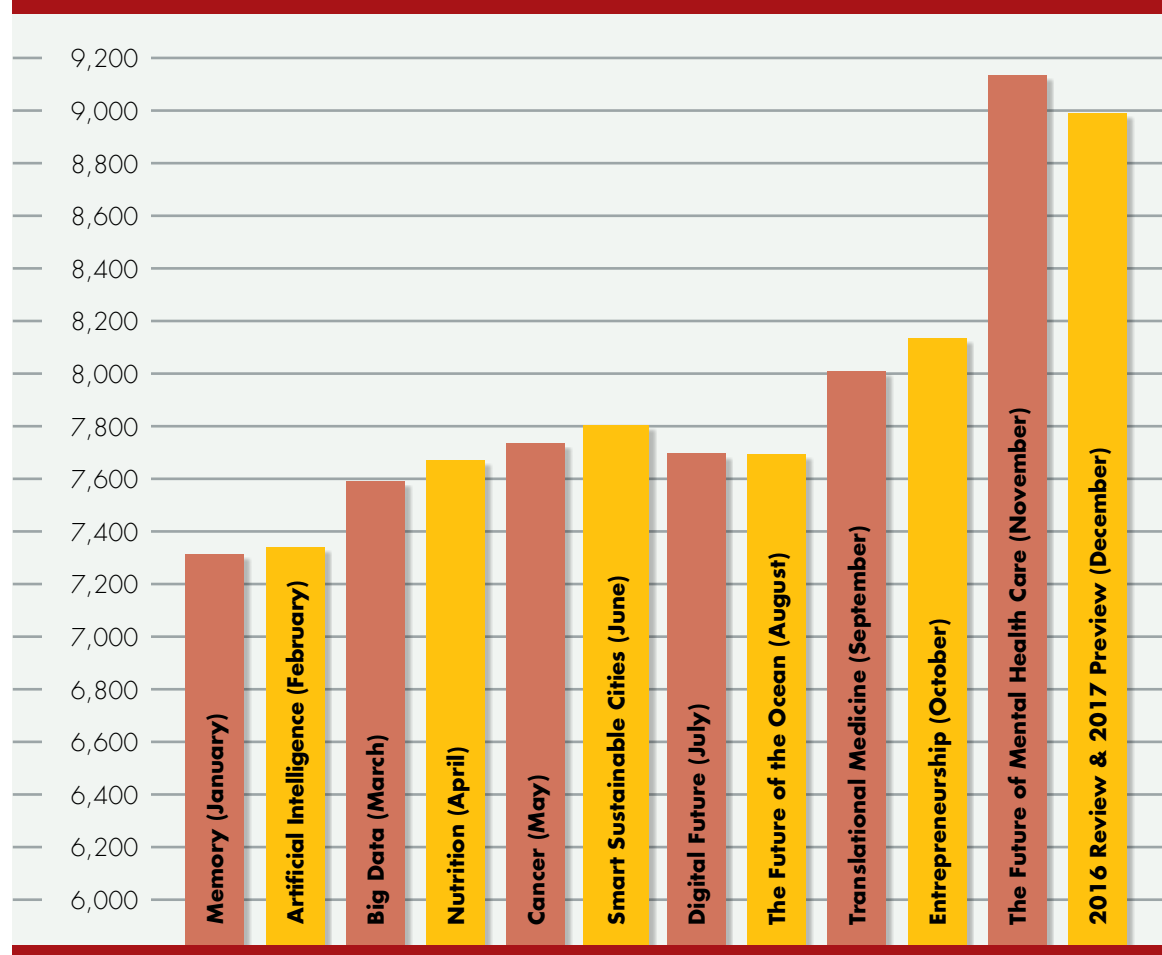
The GCRI Newsletter



Each month, GCRI's newsletter, *E-NNOVATION GERMANY* highlights a different topic from the German science, research, and innovation landscapes. Since its launch in April 2010, *E-NNOVATION GERMANY* has captured the attention of a growing readership in North America and Germany. During the past year, the number of readers increased by 23%.

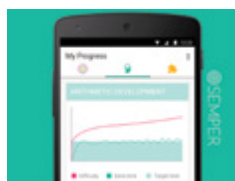
GCRI newsletter articles and interviews have also been published on the *Innovation Daily* blog by *Innovation America*, which reaches over 1,000,000 unique visitors in over 185 countries and was voted fourth Best Blogger in the World by *Blogging Innovation*.

GCRI Newsletter Subscribers in 2016



German Innovations of the Month

Each issue of *E-INNOVATION GERMANY* presents a "German Innovation of the Month," which is also listed on the GCRI website.



January 2016
Semper – A Micro-learning Memory App
UnlockYourBrain GmbH



February 2016
L2TOR: Using Robots to Help Immigrant Children Learn German
CITEC/Bielefeld University



March 2016
Siemens' Forecasting Model for Data-Driven Rail Systems
Siemens



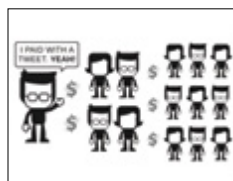
April 2016
Evonik Amino Acids for Eco-Friendly Animal Feed
Evonik Industries AG



May 2016
iManageCancer – A Mobile Platform to Empower Patients & Relatives in Cancer Self-Management
iManageCancer



June 2016
ParkHere – Searching for the Perfect Parking Spot Just Got a Little Easier
ParkHere



July 2016
Pay with a Tweet – Leveraging the Power of Viral Marketing
Firal GmbH



August 2016
Clockwork Ocean – A Unique Marine Research Expedition Utilizing a Zeppelin
Helmholtz-Zentrum Geesthacht



September 2016
Kenkodo Helps You Know Your Body Better
Metabolomic Discoveries GmbH



October 2016
KINEXON – Helping Coaches Measure, Analyze, and Improve Athletic Performance
KINEXON



November 2016
MyTherapy – The App that Improves Medication Adherence
smartpatient gmbh

GCRI Interviews

Each newsletter features an interview with a leading German expert to highlight the month's topic. In 2016, the GCRI conducted interviews with authorities from academia, industry, and government.



Prof. Dr. Dr. h.c. Konrad Beyreuther
Founding Director, Network Aging Research (NAR), Heidelberg University

Memory
Issue 70, January 2016



Reinhard Karger
Corporate Spokesperson, German Research Center for Artificial Intelligence (DFKI)

Artificial Intelligence
Issue 71, February 2016



Prof. Dr. Katharina Morik
Head of the Collaborative Research Center SFB 876, TU Dortmund University

Big Data
Issue 72, March 2016



Prof. Dr. Hans Hauner
Director of the Else Kröner Fresenius Center for Nutritional Medicine, Technical University of Munich (TUM)

Nutrition
Issue 73, April 2016



Prof. Dr. Hans-Georg Rammensee
Director, Department of Immunology, Interfaculty Institute for Cell Biology, University of Tübingen

Cancer
Issue 74, May 2016



Burkhard Horn
Head of the Transport Division, Senate Department for Urban Development and the Environment in Berlin

Smart Sustainable Cities
Issue 75, June 2016



Verena Pausder
Co-Founder & CEO, Fox & Sheep

Digital Future
Issue 76, July 2016



Prof. Dr. Martin Visbeck
Head of the Research Unit, Physical Oceanography, GEOMAR - Helmholtz Centre for Ocean Research Kiel

The Future of the Ocean
Issue 77, August 2016



Prof. Dr. med. Erwin Böttinger
CEO, Berlin Institute of Health (BIH)

Translational Medicine
Issue 78, September 2016



Prof. Dr. Günter Faltn
Co-Founder, Foundation for Entrepreneurship

Entrepreneurship
Issue 79, October 2016



Prof. Dr. Jürgen Margraf
Alexander von Humboldt Professor of Clinical Psychology and Psychotherapy and Director of the Center for the Study and Treatment of Mental Health, Ruhr-Universität Bochum

The Future of Mental Health Care
Issue 80, November 2016



The German Center for Research and Innovation joined the online social networking and microblogging service Twitter on May 31, 2011. By December 31, 2016, the GCRI had sent 15,660 tweets to 3,791 followers. As part of its social media strategy, GCRI's tweets correspond to the monthly newsletter topics of *E-NNOVATION GERMANY*. In addition to these topics, GCRI tweets about funding opportunities for research as well as jobs and internships in Germany.

Most Commonly Used GCRI Hashtags*

d #3D #3Dprinting #aging #AI #award **#Berlin** #BigData
 #biodiversity #biology #biotech **#brain** #BreastCancer #
 er #business #Canadian #cancer #career #cells #chemistry #
 ry #climate #ClimateChange #conference #CyberSecurity #
 ity #data #diabetes #education #eMobility **#energy** #eng
 ergy #engineering #entrepreneurship #EU #Europe #fello
 #fellowships #Frankfurt #funding #gender **#Germany**
 ny #green #Hamburg #health #healthcare #HigherEd #ir
 erEd #industry4 **#innovation** #internship #IT #job #lan
 #job #language #logistics #manufacturing #MaxPlanck #m
 #medicine #MedTech #memory #molecular #Munich #music
 #nanotech **#neuroscience** #NYC #PhD #physics #postdoc
 #renewables **#research** #robot #scholarships #science
 #SkillsGap #SmartCity #SmartGrid #solar #space **#startup**
#STEM #students #study #sustainability #tech #technology
 #universities **#US** #vocational #WearableTech #wind #3D

*As calculated via the measuring tool TweetStats





Twitter Statistics

2,358

Number of Tweets
Sent in 2016

16.8%

Increase in Number
of Followers in 2016

3,791

Number of Followers
Dec. 31, 2016

609

Number of Followers
Gained in 2016

96,600

Average Accounts
Reached per Month*

*Estimated accounts reached as calculated via the measuring tool TweetReach using the @gcri_ny handle

Most Successful Tweets

GCRI New York @gcri_ny - 4 Feb 2016

What are the most important #German inventions? Check them out here: [ow.ly/9QACg](#)

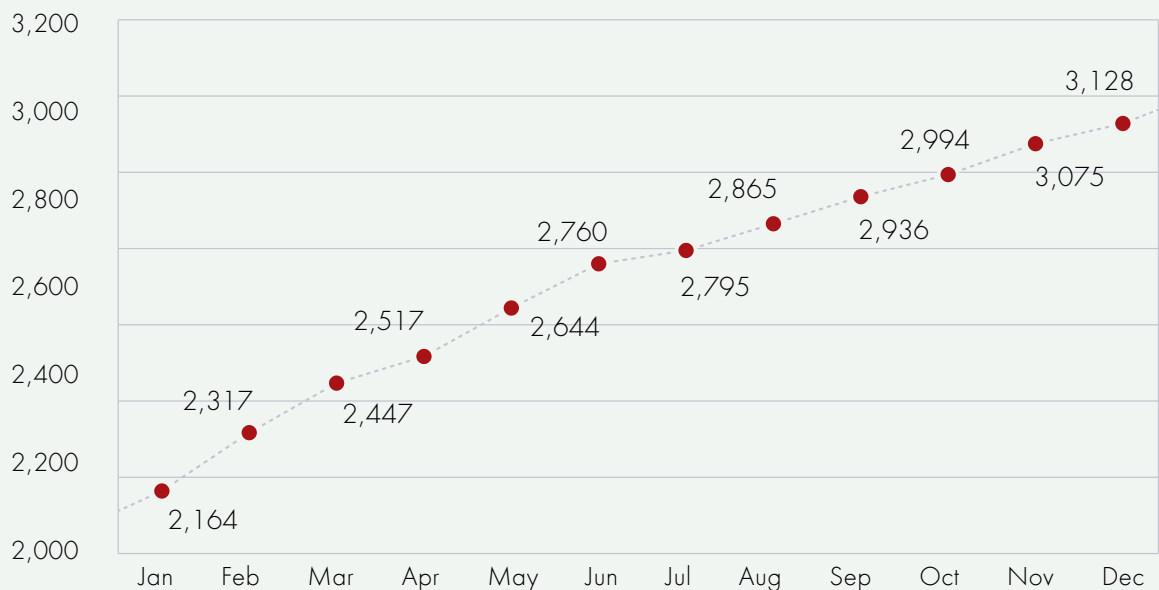



GCRI New York @gcri_ny - 6 May 2016

#Germany is a pioneer in the development of #renewable energies - more here: [ow.ly/1Ndc8](#)



GCRI Follower Development in 2016

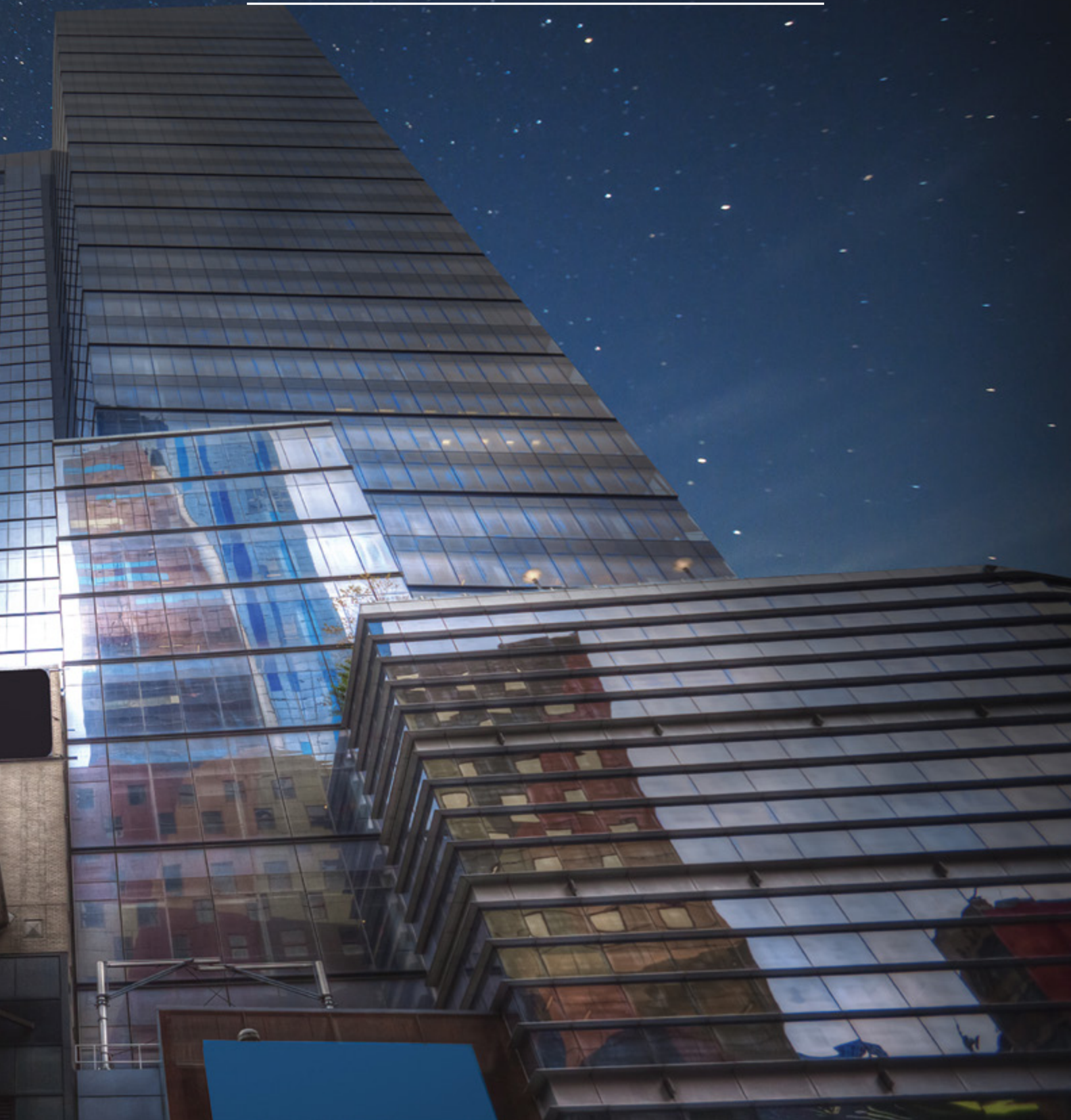




"The German Center for Research and Innovation offers an excellent platform for transatlantic dialogue in science and is also a vibrant marketplace where new cooperation partners can find each other, thus strengthening and sustaining German-US collaboration in science and technology. These days this is more relevant than ever."

– Dr. Berthold Neizert,
Head of the
Department of
Research Policy and
International Relations,
Max-Planck-
Gesellschaft

ABOUT THE GCRI



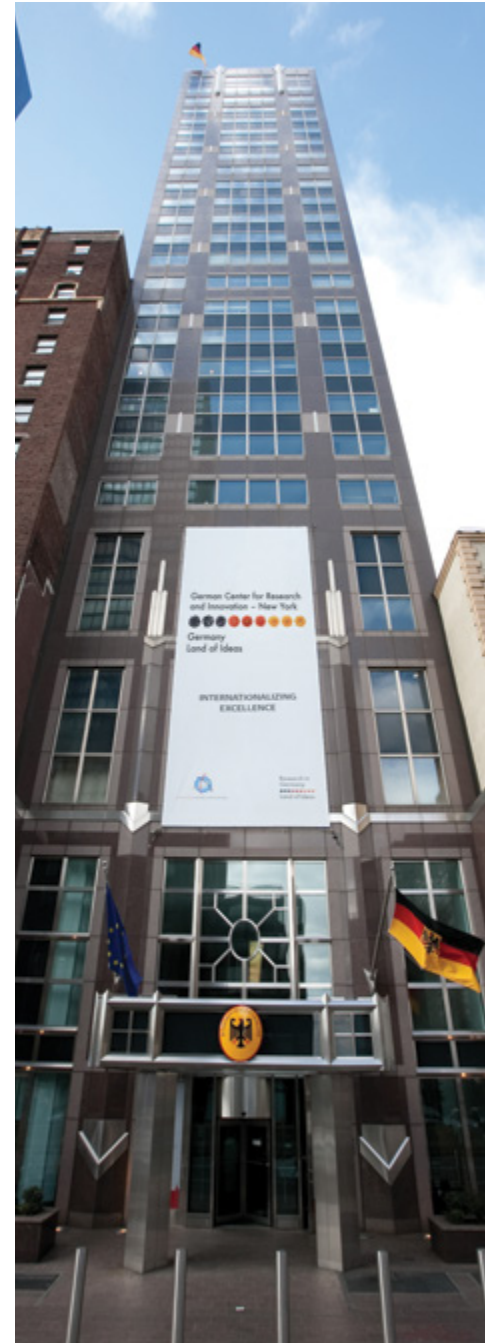
German Houses of Research and Innovation

The German Houses of Research and Innovation (DWIH) are part of the Internationalization Strategy of the German federal government and the German Federal Foreign Office's Research and Academic Relations Initiative. Located in Moscow, New Delhi, New York, São Paulo, and Tokyo, the DWIH facilitate collaboration with Germany by bringing together leaders in science, the humanities, technology, and industry and providing a platform to foster creativity and enhance innovation.

The German Federal Foreign Office has implemented this project in cooperation with the Federal Ministry of Education and Research (BMBF) and in close collaboration with the Alliance of German Science Organizations, which includes the Alexander von Humboldt Foundation (AvHF), Fraunhofer-Gesellschaft, German Academic Exchange Service (DAAD), German Council of Science and Humanities (VR), German National Academy of Sciences Leopoldina, German Rectors' Conference (HRK), German Research Foundation (DFG), Helmholtz Association, Leibniz Association, Max-Planck-Gesellschaft as well as the Association of German Chambers of Commerce and Industry (DIHK).

The houses were created to:

- Promote Germany as a research location
- Provide a forum for international dialogue and scientific exchange
- Offer support and services (advising for international researchers; organizing educational events; facilitating collaboration)



Deutsche Wissenschafts- und Innovationshäuser (DWIH)



New York

German Center for Research and Innovation
Deutsches Wissenschafts- und Innovationshaus
New York

General Questions:
info@germaninnovation.org
www.germaninnovation.org

São Paulo

Deutsches Wissenschafts- und Innovationshaus
São Paulo

Centro Alemão de Ciência e Inovação São Paulo

General Questions:
info@dwih.com.br
www.dwih.com.br

Moscow

Deutsches Haus für
Wissenschaft und Innovation
Moskau

General Questions:
dwih@daad.ru
www.dwih.ru

New Dehli

German House for Research
and Innovation New Delhi

General Questions:
info@dwih.in
www.dwih.in

Tokyo

German Research and
Innovation Forum Tokyo

General Questions:
info@dwih-tokyo.jp
www.dwih-tokyo.jp

GCRI Advisory Council

Under the leadership of its chair, Dr. Kurt Becker, the Advisory Council strongly supports the GCRI's activities and outreach as it presents Germany to the North American market.

The Advisory Council works collaboratively to help the GCRI achieve its mission. The council members' expertise and leadership ensure that the GCRI is well connected to key stakeholders in the United States and Germany across the business, government, academic, and nonprofit sectors.



Dr. Kurt H. Becker

Vice Dean for Research, Innovation, & Entrepreneurship
Professor of Applied Physics;
Professor of Mechanical & Aerospace Engineering,
NYU Tandon School of Engineering



Dr. Annette Doll-Sellen

Director, DFG Office
North America/New York



Dr. Cathleen S. Fisher

President, American Friends of
the Alexander von Humboldt
Foundation



Dr. Nina Lemmens

Director, DAAD North America



Dr. Robin Mishra

Head of the Science & Technology Section,
Embassy of the Federal
Republic of Germany



Dr. Jeffrey Peck

Director, Europe,
AKA | Strategy



Dietmar Rieg

President & CEO, German
American Chamber of
Commerce, Inc. New York



Irmintraud Jost

Executive Director,
Heidelberg University
Association
Representative of the
German Universities Liaison
Offices in New York



Brita Wagener

Consul General,
Consulate General of
the Federal Republic of
Germany in New York

GCRI Team



Dr. Joann Halpern

Director

Main Responsibilities:

- Strategic Planning
- Strategic Outreach
- Program Development



Edwin Linderkamp

Communications Officer (since September 2016)

Main Responsibilities:

- GCRI Web & Social Media Presence
- *E-INNOVATION GERMANY* GCRI's Monthly Newsletter
- Public Relations & Marketing



Jennifer Audet

Communications Officer (until August 2016)

Main Responsibilities:

- GCRI Web & Social Media Presence
- *E-INNOVATION GERMANY* GCRI's Monthly Newsletter
- Public Relations & Marketing



Julia John-Scheder

Program Officer

Main Responsibilities:

- Program Planning & Coordination
- Event Logistics
- Office Administration

GCRI Foundation Board

The GCRI Foundation, Inc. was incorporated in 2012 and held its inaugural board meeting on August 14, 2012, at the German House in New York City. The Foundation supports the mission and work of the German Center for Research and Innovation through activities to expand the center's funding base and enhance the sustainability of GCRI's operations, including its public events, workshops, publications, website, and other relevant projects.



Dr. Annette Doll-Sellen
Treasurer

Director, DFG Office North America/New York



Dr. Joann Halpern
Director, German Center
for Research and Innovation



Dr. Nina Lemmens
Director, DAAD North
America



Wolfgang Renz, M.D., PhD
Co-President

Managing Director, GERENWA GmbH



James Sharp
Chairman

President, Carl Zeiss Microscopy, LLC
President & CEO, Carl Zeiss, Inc.



Joerg Sommer
Independent Industry Advisor



O. Sinan Tumer
Co-President

Senior Director, SAP Co-Innovation
Lab, SAP Research, Technology &
Innovation Platform, SAP Labs, LLC

GCRI Foundation Activities

GCRI Foundation-RISE Scholarships

In 2016, for the first time, the GCRI Foundation funded five summer internships for highly qualified sophomores from North American universities to work in a laboratory at a German university through the RISE (Research Internships in Science and Engineering) program of the German Academic Exchange Service (DAAD). The sophomores were sent to a host university or research institute based on their area of interest (biology, chemistry, physics, earth sciences, engineering, or a closely related STEM field). The GCRI Foundation provided the students with a stipend for three months to help cover living expenses. The scholarship enabled the North American students to learn more about Germany and German research, and to develop international networks in their field.



In 2016, the following individuals received scholarships:

Name	Home University	German University/Institution
Katarina Crystal Bohaichuk	University of Alberta	Ruhr-Universität Bochum
Elena Busch	Rice University	Ruhr-Universität Bochum
Mu-Hsun (Theresa) Chen	Amherst College	Max Planck Institute for Ornithology
Nisrit Pandey	University of Wisconsin	Technische Universität Ilmenau
Clara Wolfe	University of Rochester	Otto-von-Guericke-Universität Magdeburg

GCRI Foundation Activities



GCRI Ambassadors

GCRI Ambassadors are selected students in North America who have studied or conducted research in Germany.

The main responsibility of GCRI Ambassadors is to promote research, scholarship, and internship opportunities in Germany in their professional community, university or organization. GCRI Ambassadors inspire and inform others about the rich and varied opportunities to conduct research, receive funding, and launch collaborative initiatives with colleagues in Germany.

GCRI Foundation Engineering Prize 2016

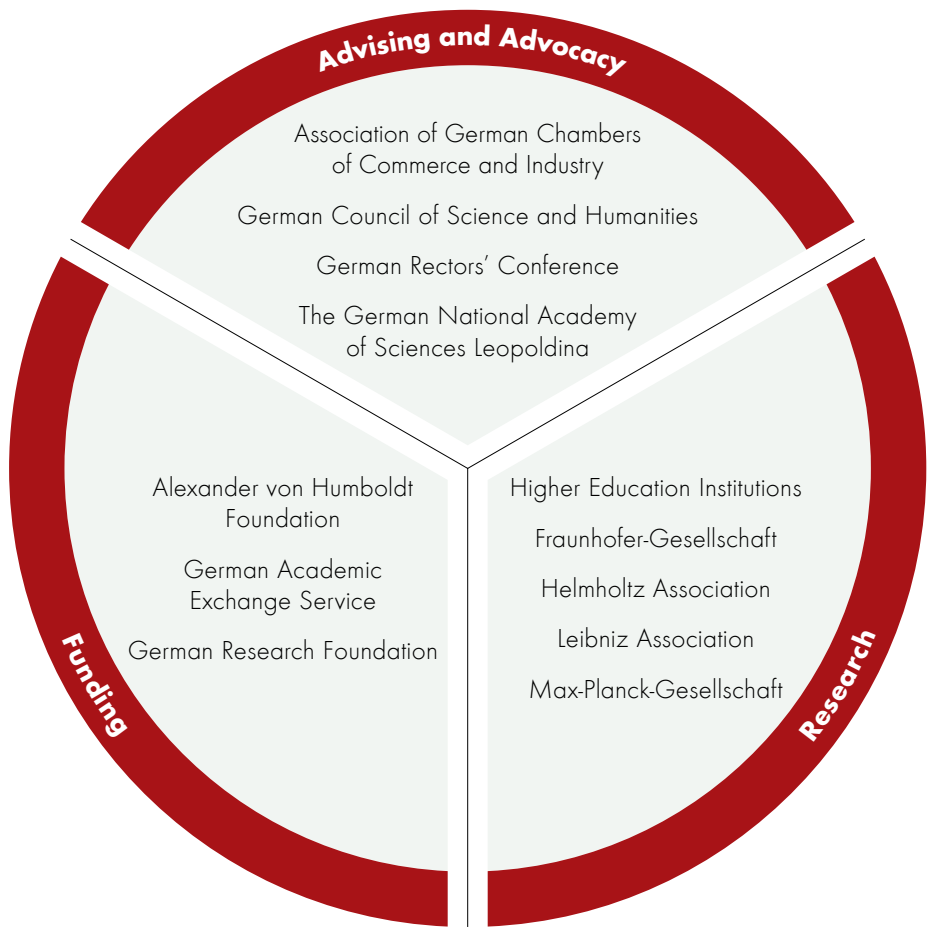
The GCRI Foundation Engineering Prize was created to recognize outstanding engineering students at universities in the United States and Canada. In 2016, three seniors received the award: Sofia Hernandez, Rutgers University; Jacob Flood, McGill University; and Kathleen Coleman, University of Connecticut. These students each received \$1,500. The prize is an opportunity to celebrate student engineering achievement and enhance the visibility of German research and innovation on North American college campuses.



GCRI Partner Institutions

GCRI is under the joint leadership of the German Academic Exchange Service (DAAD) and the German Research Foundation (DFG), and is funded by the German Federal Foreign Office. Additional designated partners are the Association of German Chambers of Commerce and Industry and the Alliance of German Science Organizations, which in addition to DAAD and DFG, also includes the Alexander von Humboldt Foundation, the Fraunhofer-Gesellschaft, the Helmholtz Association, the German Rectors' Conference, the Max-Planck-Gesellschaft, the Leibniz Association, the German National Academy of Sciences Leopoldina, and the German Council of Science and Humanities.

The GCRI works closely with the following organizations, which are also located in the German House New York: the Consulate General of the Federal Republic of Germany in New York, the German Academic International Network (GAIN), and the German Universities Liaison Offices in New York. These include Bucerius Law School, German University Alliance, Heidelberg University Association, UAS7 German Universities of Applied Sciences, University Alliance Ruhr, University of Cologne, University of Freiburg, and Eucor - The European Campus.



Imprint

The German Center for Research and Innovation is a cornerstone of the German government's Internationalization Strategy and its Research and Academic Relations Initiative.

German Center for Research and Innovation – New York



Germany Land of Ideas

Under the Joint Leadership of:

DAAD

Deutscher Akademischer Austausch Dienst
German Academic Exchange Service

DFG

Deutsche
Forschungsgemeinschaft
German Research Foundation

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