

Exposé

Best practice approaches from Hamburg for G20 challenges

Dangerous pathogens

The topic of health is becoming ever more important for the G20. By way of example, the Ebola crisis resulted in the G20 deciding to devote greater attention to combating dangerous pathogens. Since last year, the issue of antimicrobial resistance has been included in the G20 agenda. In this area, work is under way to agree on the appropriate use of antibiotics as well as to coordinate incentives for improved research and development in this regard. (www.g20.org) Companies and research institutions from Northern Germany are among those facing these major global health challenges.

Keywords: infectious diseases, global epidemics, antibiotics, Ebola, Zika,

Infectious diseases

Researchers and businesses from the Hamburg Metropolitan Region contribute in the area of diagnosing and controlling global epidemics such as Ebola and Zika

MERS, Ebola, Zika – these and other threatening infectious diseases came under the spotlight at the recent European Congress of Virology. The event, which took place in Hamburg in October 2016, is considered to be the most important gathering for virus researchers in Europe. Considering the recent advances in the diagnostics of Zika that have been made in the region, Hamburg was certainly an apt location for this global conference. Researchers and companies from Northern Germany’s life sciences sector operate at the forefront of the response to epidemics; they provide tools for detecting and understanding complex viruses and examine e.g. how diseases can be spread by different mosquito species.

When the World Health Organization (WHO) declared the Zika virus infection and its associated congenital and other neurological disorders a Public Health Emergency of International Concern, the company Euroimmun, which is based in the Hamburg Metropolitan Region, was among the first movers worldwide to provide efficient diagnostic tools. Shortly after the company’s assays systems had turned into top sellers available in 50 countries, the WHO included the test as a candidate for its Emergency Use Assessment and Listing (EUAL) procedure. This success story is also attributable to the favourable concentration of expertise in the Hamburg Metropolitan Region. For instance, the company’s R&D team had easy access to pre-characterised blood samples from Zika patients provided by the Bernhard Nocht Institute for Tropical Medicine (BNITM) in Hamburg. Another infectious diseases diagnostics specialist from Northern Germany, Altona Diagnostics, was even one small step ahead of Euroimmun and became the

world's first supplier of a real-time PCR test listed by the WHO. When it comes to deciphering the cell culture of the virus, imaging tools from Hamburg-based companies such as PerkinElmer have enabled scientists to collect 100,000 data samples of cell systems in 3D. In an effort to find the “weak spots” of the virus, the German Electron Synchrotron DESY in Hamburg helped to understand biomechanical structures of the relevant enzymes. Just a few kilometres from DESY, at the Bernhard Nocht Institute, the mosquito itself is in the focus of researchers. At the institute's bio-safety level 3 insectary, a dedicated research team investigates whether both indigenous and invasive mosquito species are able to transmit these tropical viruses. This knowledge will be essential in defining world regions with a high potential risk of Zika.

Full story at LSN Magazine:

http://www.lifesciencenord.de/fileadmin/norgenta/pdf/Magazin/2016/Life_Science_Nord_Magazin_03_2016.pdf

Further information

www.lifesciencenord.de

Picture material

www.marketing.hamburg.de/medienserver-ergebnis/media/270.html

Project-overview

- **Regional hygiene, infection and health network:** The HIHeal (Hygiene, Infection and Health) network connects all of Hamburg's regional players in the field of infectious diseases, such as companies, scientific institutions, hospitals and funding bodies, in order to promote innovation and create value. The range of topics covers new emerging diseases such as Ebola, EHEC and MERS, as well as nosocomial infections (hospital-acquired infections) involving challenges such as antibiotic resistance and hygiene measures. The project is funded by the European Regional Development Fund and the City of Hamburg from 2016 until 2021. www.lifesciencenord.de
- **New vaccines for Ebola:** Germany's Federal Government actively supports the development of new vaccines, and especially for the Ebola virus, by contributing to the public-private partnership CEPI (Coalition for Epidemic Preparedness Innovations). As part of this project, Professor Marylyn Addo of the German Centre for Infection Research (DZIF) at the University Medical Center Hamburg-Eppendorf (UKE) is involved in the development and testing of an Ebola vaccine. Research is conducted in close collaboration with the Bernhard Nocht Institute for Tropical Medicine (BNITM) and the Heinrich Pette Institute for Experimental Virology (HPI), both located in Hamburg. www.cepi.net
- **First Ebola in-vitro diagnostic test:** The Hamburg-based company Altona Diagnostics developed the first Ebola in-vitro diagnostic test for procurement by the United Nations and other partners from Ebola-affected countries. www.altona-diagnostics.com
- **Safe, specific and sensitive detection of Ebola virus infection:** Altona Diagnostics and the Bernhard Nocht Institute are cooperating within a European consortium (MORFINA, a project funded by the Innovative Medicines Initiative) to develop and validate a molecular point of care (POC) system suitable for safe, specific and sensitive detection of Ebola virus infection within the field. The technology is planned to be extended as a general Diagnostic Preparedness Platform for surveillance and monitoring of pathogens with

high epidemic potential. www.bnitm.de

- **World's first evacuation aircraft for Ebola patients:** In November 2011 the world's first evacuation aircraft for transporting and treating Ebola patients was handed over by Lufthansa Technik. At the request of the Federal Foreign Office, Lufthansa Technik converted an Airbus A340-300 at its global headquarter in Hamburg for special humanitarian missions. Under its new name, the "Robert Koch", it now serves as the world's only evacuation facility for highly contagious patients. Unlike the smaller aircrafts that have been sporadically available to date, the facility can provide comprehensive intensive on-board care to infected patients. As a global leader in aviation technology, Lufthansa Technik is also highly experienced in installing a diverse range of non-standard cabin interiors in aircrafts for government officials, VIPs and the business travel sector. It was able to draw on this expertise for the construction and installation of the special isolation unit in the aircraft cabin. www.lufthansa-technik.com
- **First diagnostic test for Zika:** The Hamburg-based company altona Diagnostics launched the first diagnostic test for ZIKA and thus provided a major contribution to combating the outbreaks in the Americas in the past year. The detection test was evaluated under the Emergency Use Assessment and Listing Procedure (EUAL) by the WHO and was accepted in 2016. www.altona-diagnostics.com
- **Groundbreaking drug discovery platform:** New anti-microbials are urgently needed for the efficient treatment of infections caused by pathogens resistant to existing antibiotics. The Hamburg-based biotech company Evotec AG has established a world-class drug discovery platform and is actively pursuing the identification of alternative means of novel anti-microbial substances. www.evotec.com

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About Hamburg and the G20

On 7 and 8 July, the heads of state and government of the world's leading 20 industrialised and emerging economies and their delegations are meeting in Hamburg, Germany. The exhibition grounds of Hamburg Messe in the very heart of the city will serve as the main venue for the summit. Hamburg, the "gateway to the world" with a port that is connected to 950 ports in some 180 countries worldwide, will be the first German city to play host to a G20 summit. In addition to the venues at the exhibition grounds, the Elbphilharmonie Hamburg, the city's new landmark, will also play a special role. The new concert hall officially opened its gates in January. In the context of the summit, Germany's Chancellor Angela Merkel has invited the heads of state and government as well as the representatives of the participating organisations to a concert on the night of the first day of the summit.

As part of its G20 presidency, Germany will be addressing traditional G20 issues relating to the global economy, trade, financial market regulations and fiscal policy, which have been included in the agenda ever since the financial crisis of 2008/2009. In addition, Germany aims to draw public attention to today's global challenges, such as

combating pandemics, work safety, the promotion of women, ways of dealing with displacement and migration, prospects for African economies, as well as policy measures in the areas of climate protection, energy, and sustainable development. In Hamburg all of these topics have been of relevance and the city can offer many best practice examples and innovative projects connected with the G20 topics.

Further information, text material, statements, photos and footage, exposés and comprehensive media services by the City of Hamburg relating to the G20 are available at www.marketing.hamburg.de/g20.html

For G20 accreditation, themes and topics, please visit the official G20 website at www.g20.org

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