

Press Release

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UNIQUE CENTRE TO SCREEN PATHOGEN MOLECULES GROUNDBREAKING CEREMONY FOR NEW CENTER FOR STRUCTURAL SYSTEMS BIOLOGY

Germany is getting a unique new facility designed specifically for the study of pathogens: Beginning in 2016, the Center for Structural Systems Biology (CSSB) will be the place in Germany to study viruses, bacteria, and parasites on a molecular level in order to decode their mechanisms of attack and design customized drugs to fight them.



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Draft of the CSSB building, which will be completed in 2016.

Along with eight other partners, the Helmholtz Centre for Infection Research (HZI) will be constructing and operating the 50 million Euro add-on to the DESY campus, Germany's Hamburg-based electron synchrotron. Construction is slated to be completed by 2016. The German federal government will contribute 73 percent of the investment cost, the Hanseatic City of Hamburg another 17 percent, and the German State of Lower Saxony will contribute the remaining 10 percent. On Wednesday, Federal Minister of Research Prof. Johanna Wanka and Hamburg's Senator for the Sciences Dr. Dorothee Stapelfeldt were both present for the groundbreaking ceremony, which took place on the campus of German electron synchrotron DESY in Hamburg-Bahrenfeld.

"Infection research is gaining in importance in our increasingly global environment, both because of air travel and because of the intensive exchange of goods. Today's bacteria and viruses have so many more venues and ready chances of contact and transmission. Only when we learn how these pathogens work will we be able to effectively protect ourselves against them. With the new add-on, we're paving the way to optimal research conditions," says Federal Minister of Research Prof. Johanna Wanka.

"DESY's highly specialized photon sources will allow us to study molecular processes of infection at previously unheard of temporal and spatial resolutions," explains Prof. Dirk Heinz, the HZI's scientific director.

The light sources, which are based on particle accelerators, produce intense, short-wave radiation with special properties. This way, the researchers are able to examine biological samples using different techniques – from structural analysis of individual molecules all the way to real-time visualization of processes as they occur inside living cells. "Direct access to PETRA III and FLASH, DESY's unique sources for highly intense X-ray light, as well as European X-ray laser XFEL, which is slated to also commence operation in 2016, offers the new center fantastic opportunities," says Prof. Helmut Dosch, head of the DESY board of directors.

Under the CSSB's roof, a total of eleven research groups will be exploring the etiology of infectious diseases and decoding fundamental cell biology processes on a molecular level.

“The CSSB will be instrumental in pushing the envelope in the area of infection biology,” emphasizes Prof Chris Meier of Hamburg University, head of the CSSB task force. The goal is to decode, among other things, the interactions between different kinds of proteins in clinically relevant viral, bacterial, or parasitic infections. According to Meier, a typical question might look something like “How is the malaria parasite able to enter red blood cells?”

“DESY’s existing top-notch infrastructure plus the new CSSB addition will offer a unique opportunity for merging two leading research fields in Northern Germany. Structural and systems biology as well as infection research in Northern Germany will benefit greatly from access to the most cutting-edge radiation sources,” says Lower Saxony’s Minister for Science and Culture, Dr. Gabriele Heinen-Kljajić. “I expect this close collaboration between Northern German scientists will yield new interdisciplinary approaches in the fight against common infectious diseases. Which is precisely the reason why the State of Lower Saxony has opted to provide funding for the CSSB project.”

For construction and operation of the CSSB, the HZI and DESY have joined forces with the University Hospital Hamburg-Eppendorf, the Bernhard Nocht and Heinrich Pette Institutes, the Medizinische Hochschule Hannover, the Jülich Research Center, and the EMBL, the European Laboratory for Molecular Biology.

The three-story CSSB laboratory and office building, which was designed by hanneskrause architects, will offer 13,000 square meters of space to accommodate 180 scientists. The labs, which will cover a total area of 2,800 square meters will house the most cutting-edge equipment including cryoelectron microscopes. Up to one third of the CSSB’s area will be set aside for junior research groups and guest scientists. At this time, a Swedish research group is already involved as part of the X-ray-Ångstrom-Cluster.

The Helmholtz Centre for Infection Research (HZI):

The Helmholtz Centre for Infection Research contributes to the achievement of the goals of the Helmholtz Association of German Research Centres and to the successful implementation of the research strategy of the German Federal Government. The goal is to meet the challenges in infection research and make a contribution to public health with new strategies for the prevention and therapy of infectious diseases.

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