Research Center for Emerging Infections and Zoonoses (RIZ)

The Research Center for Emerging Infections and Zoonoses, or RIZ, will open in 2014 at the Bünteweg Campus of the TiHo and represents an innovative research institution. The RIZ consists of two neighbouring complexes of buildings the Research Laboratory for Infectious Disease Research and the Center for Zoonosis Research. The ideal layout of the buildings facilitates effective work and innovative research. The RIZ meets all legal requirements of the Lower Saxony trade inspectorate. Occupational safety was also a key factor considered in the planning.

Viruses, subviral pathogens, bacteria, fungi or parasites — they all can cause infections in humans and animals. The diseases they cause and their routes of infection are as different as the pathogens themselves. Animals and humans are threatened by a multitude of known but also of new infectious agents. Since 1975, at least a dozen new, relevant viral and bacterial diseases have become known in domestic animals and livestock. The emergence of animal diseases causing extensive animal losses and significant economic damage is of particular concern. The Bluetongue and Schmallenberg viruses are notable examples.

The distinctive feature of zoonotic pathogens is the fact that they can be transmitted from animals to humans and vice versa. Infection occurs either by consumption of contaminated food, contact with infected animals or by transmission via vectors. This includes almost two-thirds of all currently known infectious agents — more than 200 zoonoses are known worldwide. Research and prevention of zoonotic diseases are therefore of central importance in preventative health protection and present a particularly important task for society as a whole. All pathogens are divided into four risk groups in the Ordinance on Biological Substances of the European Union.

The RIZ offers a suitable infrastructure allowing scientists of the TiHo to research infectious agents of risk groups 2 and 3 in collaboration with doctors of human medicine and fundamental researchers. Research projects already underway and national and international networks of the different research groups are brought together in the center.

Establishing such a center at the TiHo is particularly suitable due to the research focuses, the high expertise in the field zoonosis research and infectious medicine and the research environment in the region. Thus, TiHo has many established collaborative partners in the region, including the Helmholtz Center for Infection Research (HZI), the Hannover Medical School (MHH), the Friedrich Loeffler Institute (FLI in Mariensee), the Fraunhofer Institute of Toxicology and Experimental Medicine (ITEM) and the Lower Saxony State Office for Consumer Protection and Food Safety (LAVES). In addition to these regional collaborations, international research programs are important priorities in the RIZ, where guest laboratories are available. The RIZ brings together national and international research networks in order to achieve the best possible results.

Research Laboratory for Infectious Diseases
Infectious diseases have long been one of the research focuses of the TiHo. As early as 2003, several facilities of the TiHo merged to become the Center for Infectious Medicine. The research laboratory for infectious medicine was built to adapt the research opportunities of the Center for Infectious Disease Research at the TiHo to the mandatory need for research. With its security level 3 laboratories, this research facility allows research on infectious agents relevant for humans and animals.

The European Union’s Reference Laboratory for Classical Swine Fever at the Institute of Virology will move into the new facilities. All EU samples suspected as being positive for classical swine fever are examined, typed and archived here.

The aim of the participating scientists is to fight relevant animal diseases and zoonotic infections using modern diagnostics and effective vaccines and to develop prevention strategies.

Center for Zoonosis Research
The research program of the Center for Zoonosis Research is divided in three focuses: food-borne zoonoses, vector-borne...
zoonoses and new zoonotic agents. With subdivision of the clinics according to animal species, food science subject area and the classical infectious disease research institutes, the structure of the TiHo provides ideal prerequisites to address these research focuses. In addition to the scientists of the TiHo, researchers from different disciplines within human medicine and basic experimental research collaborate. This integrative research approach is supported by the formation of three cross-disciplinary fields, where researchers from various projects can exchange information on approaches to prevention strategies, risk analysis and host-pathogen interactions. The cross-disciplinary fields deal with questions relevant to all focuses and ensure an even closer connection.

In order to develop better treatment and prevention strategies for humans and animals, the mechanism of virulence, adaption and resistance of the pathogens, defence reactions in the host and transmission pathways from animal to human must first be studied. Researchers should address issues relevant to health policy in the Zoonosis Center in order to develop new strategies for diagnosis, prevention and therapy of zoonoses. Laboratories of security level 2 are available for these activities at the Center for Zoonosis Research. The main usable area of 2.000 m² is spread over three floors and contains 40 laboratories, 13 offices, three staff rooms and one seminar room.