Bernhard Nocht Institute for Tropical Medicine

Bernhard-Nocht-Strasse 74
20359 Hamburg
Germany

SCIENTIFIC REPORT 2010/2011
BERNHARD NOCHT INSTITUTE FOR TROPICAL MEDICINE
## CONTENTS

- Preface: 03
- Board of Directors, board of Trustees & Scientific Advisory Board: 11
- Research: 15
  - Emerging Infections: 16
  - Poverty-related diseases: 26
    - Malaria: 29
    - Lassa: 49
    - Tuberculosis: 53
    - Leishmaniasis: 59
    - Worms: 63
  - What really interests people: 70
- KCCR – Research in Africa: 72
- Courses: 77
- Facts and Figures: 87
- Staff: 91
- Appendix: 101
  - Publications: 102
  - Lectures: 107
  - Seminars: 109
  - Staff Activities: 110
  - BNI in the media: 115
  - Chronicle: 116
  - Imprint: 120
In recent years, the twofold tasks of the Institute have become more evident than before. The main ambition remains the control of tropical diseases in the endemic areas of the tropics. But the second objective is increasingly gaining importance. While previously it addressed prophylactic measures for travellers and occasional disease cases of returnees and migrants, we now, for the first time since many decades, are facing the import of entire epidemics of tropical diseases into Germany. Accordingly, in the present report, the presentation of the Institute’s research is structured into “Poverty-Related Diseases” and “Emerging Infections”.

The development of the Institute in 2010 and 2011 was very favourable. It began with a strong positive statement of the Senate of the Leibniz Association concluding the official evaluation of the Institute in 2009. The statement emphasized, in addition to the scientific achievements, the good working atmosphere and the Strategic Plan for 2011 and 2012. Due to the tight financial limits of extra-budgetary funds for Leibniz institutes, however, additional research groups could not be established, although the representatives of the Hamburg Ministry of Science and Research and the Federal Ministry of Health strongly supported the Institute. Nevertheless, essential objectives of the Strategic Plan, which envisaged to strengthen the translation of laboratory research into practical application, was successfully implemented in three ways.

An entomological research group could be founded because Egbert Tannich acquired the necessary funds through a special scheme of the Leibniz Association which allows the sponsoring of projects selected in a competitive manner.

Furthermore, the inception of a “Medical Service Centre” (MVZ) was pursued decidedly. For the Institute it will secure, in the long run, special laboratory diagnostics in tropical medicine, which essentially contribute to the national recognition, particularly in the medical community. And, only if the Institute performs laboratory tests itself, it can fulfill its responsibilities as the National Reference Centre for the laboratory diagnostics of all tropical pathogens. Now, according to an amendment of the national law, which passed at the end of 2011, only practitioners and accredited non-profit organisations are allowed to launch an MVZ. Yet,
The third project related to “translation” also involves laboratory diagnostics. The idea came from Dr. Kathrin Adlkofer being director of “Norgenta”, the Hamburg-Schleswig-Holstein agency for the utilisation of research findings in life sciences. She knew that money of the “European Funds for Regional Development” (EFRE) was available to sponsor public-private partnerships. And she thought of the Institute and Altona Diagnostics Ltd, a small company run by former BNI students around Ulrich Spengler. The many homemade diagnostic procedures of the Institute should be developed into easy-to-perform test kits and, aided by Altona Diagnostics, offered for sale worldwide. The request for reliable tests to diagnose tropical infections already now is enormous and is expected to further grow with increasing prosperity and improved medical care in countries like Brazil, India and China. After a two-years period of application and review, all formalities were finished by the end of 2011, and the project “Tropical Diagnostics” will be sponsored with € 4.5 Mio by EFRE and the City of Hamburg. In the end, a non-profit company will be founded whose revenues will boost the Institute’s budget.

All in all the development of the extension building was also positive. At last, the members of the Immunology and Virology departments moved in one after the other. Still there were several unpleasant surprises but, finally, even the high-security laboratories could be signed up for approval by the Environmental Protection Agency. Thus, compared to other public construction projects, our “erratic block” doesn’t stand there all that poorly.

At this point, our sincere gratitude should be expressed to the Hamburg health authorities. Upon changing the affiliation of the Institute in the Hamburg administration from the Ministry of Social and Family Affairs, Health and Consumer Protection (BSG) to the Ministry of Science and Research (BWF) in 2009, the supervision – and also the costs – of the extension building for practical reasons remained with the health authorities. Ms Esser, Ms Rusgiarto, Mr Wittenburg and, in particular, the head of department, Senate Director Norbert Lettau mastered this painful responsibility with unusual engagement and great sympathy for scientific matters. Mr Lettau retired recently. We owe him a great debt of gratitude for thirty years of commitment and remarkable identification with the Institute. We will miss him – not the least as a member of the Board of Trustees.

In May 2010, the Federal Ministry of Education and Research issued a call for the foundation of “German Centres for Health Research”, among others a Centre for Infection Research. Not individual universities or institutes were invited to apply but cities or sites. BWF authorised the Institute to coordinate an application of a Hamburg site. In the end, it became an application of the “Hamburg Region” because, besides the Hamburg University, the University Hospital Hamburg-Eppendorf (UKE) and the Heinrich Pette Institute, the University of Lübeck and the Research Center Borstel also took part. They agreed to the title of “Global and Emerging Infections” and, together with six other application sites, were selected from 23 applicants by an international review board. Although the first joint application of the seven filed by selected sites failed in the same review board, they entered the second round with a lot of optimism by the end of 2011. Alone drafting the Hamburg application was of great value because it showed the strength of infection research
in the region, and the scientists got to know each other much better personally. If everything works out, the participation may yield € 3 Mio per year for the Hamburg site and secure for the Institute an entomology department and a substantial strengthening of epidemiology. Thus, the strategic plan 2011/2012 indeed may largely be finalised in the next years.

Meanwhile a Strategic Plan 2013/2014 has been drafted. Under the title “Complex Systems” it sets the goal to, more than before, focus on entire systems instead of individual components. Robots and the enormously accelerated data processing make it possible. For laboratory research, this means, for example, that screening methods may initially be applied to search in a cellular metabolism for the steps that are critical for the defence against a pathogen and to selectively study such steps thereafter. For epidemiology this means to, more than before, include the complex circumstances of environment and society – one may think of infection control in the informal settlements of tropical megacities. This requires major efforts to attract for co-operations specialists like sociologists, communication scientists, urban developers and many others. Therefore, our ambition to tie up with colleagues of the University of Hamburg is by no means restricted to the natural sciences.

The Board of Directors is grateful to all members of the Hamburg BWF and the Federal Ministry of Health who are responsible for the Institute, in particular to State Secretary Bernd Reinert and his successor, Dr. Kristina Böhlke, who defended the interests of the Institute with great care and sensibility. Our sincere thanks also go to the members of the Scientific Advisory Board, most of all Prof. Klaus Lingelbach, who sacrificed their valuable time to familiarise themselves with our scientific and administrative challenges and gave us competent advice.

Not least we thank our sponsors of the “Association of Friends of the Tropical Institute”. Their chairman, Dr. Günter Bechtler, and his deputy, Prof. Heinz Gretz, resigned from their active engagement in the board. We owe them many thanks for many years of dedicated support. They were followed by Manfred Schüller, one of the most successful advertisers of the country, and

Dr. Lothar Dittmer, Member of the Board of the renowned Körber Foundation. Both bring in many new ideas to attract new members, including public presentations of the Institute through events and promotion campaigns. We are most grateful to them and wish them – not at all unselfish – a lot of success.

Most of all, we are indebted to the members of the Institute for their extraordinary loyalty and corporate feeling and also for their understanding and patience for structural changes. Particular credit goes to those colleagues who have committed themselves to the Institute’s self-administration, for example the works council or one of the many committees.

Rolf Horstmann
Board of Directors, Board of Trustees, Scientific Advisory Board
Board of Directors

Prof. Dr. med. Rolf Horstmann  
(Chair)

Prof. Dr. med. Bernhard Fleischer  
(Deputy Chair)

Prof. Dr. med. Egbert Tannich  
(Udo Gawenda  
(Business Manager)

Members of the Foundation’s Board (from left): Udo Gawenda, Bernhard Fleischer, Egbert Tannich, Rolf Horstmann

Board of Trustees

State Secretary Bernd Reinert  
(Chair until 2010)  
State Ministry of Science and Research  
Free and Hanseatic City of Hamburg

State Secretary Dr. Christina Behlke  
(Chair)  
State Ministry of Science and Research  
Free and Hanseatic City of Hamburg

State Secretary Bernd Reinert  
(Chair)  
State Ministry of Science and Research  
Free and Hanseatic City of Hamburg

State Secretary Dr. Christina Behlke  
(Chair)  
State Ministry of Science and Research  
Free and Hanseatic City of Hamburg

Maria Becker  
(Deputy Chair)  
Federal Ministry of Health  
Bonn

Dr. Kathrin Adlkofer  
(since 2011)  
Norontex GmbH  
Hamburg

Jörn Aldag  
(since 2010)  
Ernisse GmbH  
Hamburg

Prof. Dr. Iris Bruchhaus  
Bernhard-Nocht Institute for Tropical Medicine  
Hamburg

Prof. Dr. med. Dr. rer. nat.  
Silvia Bullföne-Paus  
(Chair since 2011)  
Research Center Borstel – Leibniz Center for Medicine and Biosciences  
Borstel

Prof. Dr. med. Dr. rer. nat.  
Silvia Bullföne-Paus  
(Chair since 2011)  
Research Center Borstel – Leibniz Center for Medicine and Biosciences  
Borstel

Senat Director Norbert Lettau  
(Chair until 2010)  
State Ministry of Social Affairs, Family Affairs,  
Health and Consumer Protection  
Free and Hanseatic City of Hamburg

Dr. Angela Lindner  
(since 2011)  
Federal Ministry of Education and Research  
Berlin

Prof. Dr. Klaus Lingelbach  
(Chair since 2011)  
Philippus University Marburg  
Marburg

Prof. Dr. med. Thomas Löscher  
(Deputy Chair)  
Klinikum der Universität München  
Munich

Prof. Dr. Carmen Buchrieser  
Institut Pasteur  
Paris, France

Prof. Dr. Britta Engelhardt  
University of Bern  
Bern, Switzerland

Prof. Dr. Franz X. Heinza  
Medical University of Vienna  
Vienna, Austria

Prof. Dr. med. Bertram Müller-Myhsoh  
Max Planck Institute of Psychiatry  
Munich

Prof. Dr. med. Martin Zeitz  
Charité Campus Benjamin Franklin Berlin

Scientific Advisory Board

Prof. Dr. med. Dr. rer. nat.  
Silvia Bullföne-Paus  
(Chair until 2010)  
Research Center Borstel – Leibniz Center for Medicine and Biosciences  
Borstel

Prof. Dr. med. Dr. rer. nat.  
Silvia Bullföne-Paus  
(Chair until 2010)  
Research Center Borstel – Leibniz Center for Medicine and Biosciences  
Borstel

Prof. Dr. med. Dr. rer. nat.  
Silvia Bullföne-Paus  
(Chair until 2010)  
Research Center Borstel – Leibniz Center for Medicine and Biosciences  
Borstel

Prof. Dr. med. Dr. rer. nat.  
Silvia Bullföne-Paus  
(Chair until 2010)  
Research Center Borstel – Leibniz Center for Medicine and Biosciences  
Borstel

Prof. Dr. med. Dr. rer. nat.  
Silvia Bullföne-Paus  
(Chair until 2010)  
Research Center Borstel – Leibniz Center for Medicine and Biosciences  
Borstel

Senat Director Norbert Lettau  
(Chair until 2010)  
State Ministry of Social Affairs, Family Affairs,  
Health and Consumer Protection  
Free and Hanseatic City of Hamburg

Dr. Angela Lindner  
(since 2011)  
Federal Ministry of Education and Research  
Berlin

Prof. Dr. Klaus Lingelbach  
(Chair since 2011)  
Philippus University Marburg  
Marburg

Prof. Dr. med. Thomas Löscher  
(Deputy Chair)  
Klinikum der Universität München  
Munich

Prof. Dr. Carmen Buchrieser  
Institut Pasteur  
Paris, France

Prof. Dr. Britta Engelhardt  
University of Bern  
Bern, Switzerland

Prof. Dr. Franz X. Heinza  
Medical University of Vienna  
Vienna, Austria

Prof. Dr. med. Bertram Müller-Myhsoh  
Max Planck Institute of Psychiatry  
Munich

Prof. Dr. med. Martin Zeitz  
Charité Campus Benjamin Franklin Berlin
It isn’t really new. In the past century malaria and severe Dengue outbreaks still occurred in Europe, and in 1870, thousands died from yellow fever in Barcelona. And yet, the threat of presumed tropical infections feels unexpected in our climates. In the past years Chikungunya appeared in Northern Italy, and in Southern France and Croatia people got infected with the Dengue virus. A frightening example was the rapid spread of the West Nile virus across the USA – so far claiming more than a thousand fatalities.

The reason for this development are mosquitoes, first of all the Asian tiger mosquito (Aedes albopictus) and the Japanese bush mosquito (Ochlerotatus japonicus). They are presently spreading worldwide, over long distances by the international exchange of goods – preferred vehicles are used tyres and flower pots – and locally by trucks. The Japanese bush mosquito has meanwhile firmly nationalised in Germany, it is unclear though whether the German representatives bite humans. More importantly, the Asian tiger mosquito is on its way, some specimens have recently been seen in the Upper Rhine valley.

However, mosquitoes on their own don’t make an epidemic. Only if, in addition, an infected human enters the scene, transmission can proceed. For example the Italian Chikungunya outbreak. The tiger mosquitoes had already settled in the Po basin around 1990, when in 2007 a businessman who came from India fell sick with Chikungunya fever in Ravenna and offered Chikungunya viruses in his blood. He was bitten, and the tiger mosquito transmitted the virus to the next human and so on. Nearly 300 Italians came down with Chikungunya fever.

Maps: Spread of West Nile virus in the USA 2000 - 2003 (Centers for Disease Control, Atlanta, GA, USA)
It is Norbert Becker to whom we owe the German mosquito map. He is the scientific director of what may be translated into „community action alliance for mosquito control“ (KABS), which each year clears the Upper Rhine and Neckar valleys from annoying mosquitoes. By helicopter or by foot KABS disperses proteins of the bacteria Bacillus thuringiensis israelensis (BTI), which are deadly specifically for mosquito larvae. The invasion by the Japanese bush mosquito prompted a systematic surveillance and search for pathogens.

The data called for action (pp 21-25). Supported by the Leibniz Association, BNITM, together with KABS and the Senckenberg German Entomological Institute, started the German mosquito map. From now on, mosquitoes will be caught and characterized at more than a hundred collection sites all over Germany. Furthermore, our scientists in the new high-security insect lab will study which of our mosquitoes can transmit tropical viruses (vector competence) and which molecular interactions are the crucial ones.

Karolin Huber, Marlies Badusche, Stefanie Müller, Hanna Jöst, Jonas Schmidt-Chanasit, Christina Czajka, Egbert Tannich

External cooperation partners: Andreas Krüger (Bundeswehr), Norbert Becker (KABS), Christian Melaun, Sven Klimpel (Senckenberg)

Figure: Distribution of the Japanese bush mosquito (Ochlerotatus j. japonicus) in Baden-Württemberg. Red dots indicate collection sites positive for Japanese bush mosquitoes, green dots negative ones (Photography bush mosquito: Centers for Diseases Control, Atlanta, GA, USA).
Usutu virus was discovered in South Africa in 1959. It infects birds and humans and is transmitted by mosquitoes. In humans it causes febrile diseases, in bad cases encephalitis. In birds the infection may be fatal.

In July and particularly in August 2011 a disappearance of blackbirds was noticed in southwest Germany. We examined 223 bird corpses and found Usutu viruses in 86 of them. Ornithologists say that approximately 100,000 birds died from the infection.

One year before we had detected Usutu viruses in mosquitoes from the Upper Rhine valley. This shows that outbreaks like these must not necessarily strike us unprepared and that screenings of mosquitoes may be of great value. What needs to be done is to develop sophisticated strategies to forecast outbreaks and to design targeted prevention measures.

Becker N. et al., PLoS One 2012

Hanna Jöst, Stephan Günther, Jonas Schmidt-Chanasit and external cooperation partners (see publication)

Figure: Blackbird found dead (Image: Stefan Bosch)
Sindbis viruses were detected in Africa in the 1950ies, later also in Europe where they occur in Sweden and Finland. They are transmitted by mosquitoes and may in humans cause febrile diseases, which are often accompanied by joint inflammations and may therefore resemble rheumatic diseases. In 2009, we for the first time found Sindbis viruses in mosquitoes in Germany. To find out whether they had already been transmitted to humans, we in 2010 and 2011 studied 355 samples from patients with febrile diseases and from 3389 blood donors. As we could not expect to still find viruses in the blood we searched for antibodies because these may persist for months or years after an infection. None of the patients were positive but four samples from blood donors. All of them originate from the city of Weinheim in Baden-Württemberg, where in 2009 we had found the virus in mosquitoes.

In humans at last

ANTIBODIES TO SINDBIS VIRUS IN GERMAN BLOOD DONORS


Hanna Jöst, Stephan Günther, Jonas Schmidt-Chanasit and external cooperation partners (see publication)

Figure: The mosquito Culex pipiens is known as the vector of Sindbis virus, which in 2009 was for the first time detected in Germany (Image: Andreas Krüger).
Batai virus was discovered in Malaysia near Kuala Lumpur in 1955. It can cause febrile illness in humans and also in cattle and sheep. We found the virus in Anopheles mosquitoes from Southwest Germany in 2009. In 2010, we examined 195 serum samples from cattle of the region and found antibodies to Batai virus in two cases. The positive samples originated exactly from the area where before we had detected the virus in mosquitoes.


Hanna Jöst, Stephan Günther, Jonas Schmidt-Chanasit and external cooperation partners (see publication)

Figure: Electron micrograph of Batai viruses isolated from mosquitoes in Germany.
Nowadays tropical diseases largely are infectious diseases that can be prevented, be it by vaccination, sanitation, water treatment or efficient control of mosquitoes and other disease-transmitting arthropods. That they continue to prevail in the tropics is less due to climate conditions than to the poverty of societies. The term “poverty-related diseases” hits the point. It might be sensible to also replace the term “tropical medicine” in the meaning of “poverty-related medicine”.

Poverty-related diseases
Recently it was reported that the World Health Organisation WHO in its official communications substantially underestimates the number of malaria fatalities. These were not 655,000 per year as noted by WHO but 1.2 million instead. Unfortunately, misjudgements of this kind is in the nature of things: In regions where children die from malaria health care is poor, otherwise they would be treated in time and not die. Accordingly, there are no reliable estimates of fatalities in these parts of the world, and one should be very cautious as to the accuracy of such numbers. Anyway, they are disturbingly high and once again confirm the urgent need to develop efficient control measures.
Malaria is transmitted by female Anopheles mosquitoes, and thus nearby breeding sites for these mosquitoes greatly increase the risk of malaria transmission. Certain landscapes favour mosquito breeding, others don’t. In a rural area of Ghana we have studied the relationship between land usage and the incidence of malaria. Taking advantage of high-resolution satellite mapping (Ikonos), land usage was assessed in a 2-km radius around 12 villages and correlated to new malaria infections among villagers.

The result: The numbers of malaria infections correlated positively with surrounding swamps and banana farming; conversely, they decreased with nearby forests. These data allow more detailed studies on mosquitoes and larvae in risk areas and may pave the way for targeted control measures.


Denise Dekker, Elina Fechtner, Julius Fobil, Mirko Girmann, Anna Jaeger, Anne C. Krefis, Ralf Krumkamp, Wilke Loag, Oumou Maiga Askoferé, Maja Nielsen, Enusa Ramani, Nimako Sarpong, Norbert Schwarz, Peter Sothmann, Thalea Tamminga, Christof Vinnemeier, Julia Vohwinkel, Jürgen May and external cooperation partners (see publication)

Figure: Land usage (see legend) within a radius of 2 km around the centres of villages in the Ashanti Region, Ghana (Ikonos satellite image)
... for their own reproduction but many get lost. After the bite of an infected mosquito, malaria parasites first reach the liver with the blood stream. Like other cells of higher organisms, liver cells can destroy invading pathogens simply by surrounding them with a membrane and digesting them. Some malaria parasites, however, manage to escape this attack – the liver cells digest themselves instead. The nutrients released are being used by the parasites for their rapid production of thousands of daughter cells. For this strategy they pay a high toll, however, because a large number of parasites are indeed being digested and destroyed.
The invasion of malaria parasites into red blood cells marks the onset of the parasites’ stage that cause disease. In co-operation with scientists of the Burnet Institute in Australia an important step in the activation of the invasion machinery was revealed: First the parasites insert own proteins into the red cell membrane, kind of docking points for a protein named AMA1, which stands out from the parasite’s surface. AMA1 also extends into the inside of the parasite. We have now shown that, to start invasion, the parasites must place a phosphate group at the inner part of AMA1. Such activated AMA1 then outside attaches to its docking points on the red blood cell and inside it starts the invasion machinery of the parasite.

Figure: A single mutation blocks invasion. (A) A malaria parasite (green) enters a red blood cell (red). It uses a number of surface structures of the red cell in a key-lock manner. This process depends on the activation of a single structure of the parasite protein AMA1 (orange), namely the attachment of a phosphate group (P) to the amino acid serine at position 610 of AMA1. (B) If this serine is replaced by an artificial mutation of the AMA1 gene, the phosphate cannot be attached, and the invasion is stopped.

Leykaufer K. et al., PLoS Pathog 2010, 6:e100094

Moritz Treeck, Boris Prinz, Klemens Engelberg, Tim Gilberger and external cooperation partners (see publication)
Although it is believed for more than a century, one couldn’t be sure. Now we succeeded to film a malaria parasite inside a red blood cell in 3D. So far, its development could only be composed from many single snapshots. The movie confirms certain prejudices, others are abandoned. For example, the food vacuole of the parasite is not formed by a single large invagination of the outer cell membrane, and parasite proteins are not secreted into the surrounding red cell as packs inserted into a membrane but one by one entering preformed membranes already present inside the red cell.

Grüring C. et al., Nat Commun 2011, 2:165

Christof Grüring, Arlett Heiber, Florian Kruse, Johanna Ungefehr, Tim-Wolf Gilberger, Tobias Spielmann (see publication)

Figure: Within two days a malaria parasite (green) grows inside a red blood cell (red) until it takes over the entire host cell. It produces daughter parasites, which infect new red blood cells (last image).
Malaria parasites transport certain proteins onto the surface of red blood cells they infect, and make these bind to the walls of small blood vessels. Infected red cells thereby get stuck and avoid being with the circulation pumped through the spleen and being filtered out there - and the parasites survive. At the same time the binding to vessel walls may in the human cause life-threatening organ damage by disturbing the microcirculation.

For our studies we used malaria parasites freshly isolated from patients. We could show that the proteins involved in the binding to vessel walls are being produced at very different time points during parasite maturation. On one hand they were transported to the red blood cell surface, on the other hand they appeared in the daughter parasites, the merozoites. Their functions obviously are manifold. This could not be found using malaria parasites grown in the test tube. For further studies, therefore, we depend on the help of malaria patients and some small blood donations from them.

Bachmann A. et al., Cell Microbiol 2011, 13:1397-1409

Anna Bachmann, Ann-Kathrin Tilly, Susann Ofori, Egbert Tannich, Iris Bruchhaus and external cooperation partners (see publication)

Figure: Localisation of the protein families RIFIN, STEVOR and PfMC-2TM of the malaria parasite during its development inside a red blood cell.

In real life
ONLY IN HUMANS, NOT IN TEST TUBES
The human body can weaken the immune response to infection in order to prevent organ damage by fierce inflammatory reactions. The molecule BTLA has such a function. Unlike similar molecules, which are found on certain immune cells only, BTLA is present on virtually all immune cells. In the course of malaria BTLA is produced at an increased rate thereby reducing the immune responses to the parasites. Mice in which BTLA has been deleted genetically have fewer parasites in their blood. Apparently they combat the parasites more efficiently because their immune system is less weakened.

It is unclear whether it is the parasites, which use the immune brake to protect themselves, or whether the human body itself interferes trying to avoid organ damage by strong inflammatory reactions.

Adler G. et al., J Immunol 2011, 187:5310-9

Guido Adler, Christiane Steeg, Nina Lapke, Bernhard Fleischer, Thomas Jacobs and external cooperation partners (see publication)

Figure: Tissue cells use the molecule HVEM to block immune cells through BTLA.
To be honest scientists don’t have the faintest idea about what is happening although it presumably is the most frequent single cause of death for infants worldwide – severe malaria anaemia. It is the major malaria complication in areas with intense malaria transmission, and it is long known that it cannot be explained simply by direct destruction of red blood cells by invading parasites. The disease largely withdraws from being studied because, when infants being severely anaemic see a doctor, it has happened already, and there is no appropriate animal model – despite contrary statements.

Our genetic studies have now shown that a surface moiety on defence cells which binds inflammatory factors from serum occurs in children with severe malaria anaemia significantly more frequently than in children with other forms of severe malaria. Thus, one way or another the inflammatory reaction in serum has something to do with the acute disappearance of red blood cells – a first hint at least. Apparently, braking of the inflammatory response does not always work perfectly in malaria.


Kathrin Schuldt, Christian Timmann, Jennifer Evans, Jürgen May, Claudia Esser, Christa Ehmen, Wibke Loag, Rolf Horstmann and external co-operation partners (see publication)

Figure: Infant with life-threatening malaria at Komfo Ansokye Teaching Hospital, Kumasi, Ghana.
Patients with malaria often are dehydrated and require infusions. The reasons are several fold. Through profuse sweating and often also vomiting and diarrhoea they lose water. Furthermore, there is a serious risk in malaria that fluids leak from blood vessels into the organs, which is particularly dangerous in the brain and the lungs. Thus, although infusions are needed they may be hazardous. Additional cardiac impairment therefore bears the risk that fluids given by infusions may not all be pumped through the circulation but may aggravate leakage into organs. We have carefully studied the heart function of 28 adult travellers returning with *Plasmodium falciparum* malaria. A new, riskless method was applied which uses breathing air. We found that, also in uncomplicated malaria, cardiac function is reduced by approximately 20%. Thus, the circulation of malaria patients treated with infusions must be monitored carefully.

Herr J. et al., Malar J 2011, 10:160

Jakob Cramer, Johanna Fischer-Herr, Gerd-Dieter Burchard and external cooperation partners (see publication)

Figure: Malaria parasites (*Plasmodium falciparum*) in thin blood films. Round greyish structures are single red blood cells. Inside them, malaria parasites appear as faint dark blue rings, the nuclei of which form dots – a characteristic “signet ring” image.
In contrast to humans malaria parasites are able to synthesise a number of vitamins themselves, for instance vitamin B6, which are vitally important for them as well. They use metabolic pathways which humans don’t have and which, therefore, can be blocked without being afraid of causing side effects on the human metabolism.

In cooperation with the European ScreeningPort in Hamburg we used a high-throughput procedure to screen 250,000 substances for their activities to inhibit the vitamin B6 synthesis in malaria parasites. More than 2,500 compounds had some activity. Ten of them blocked the growth of malaria parasites in the test tube at very low concentrations such that it is worthwhile to work on their chemical structures to search for derivatives, which are active at even lower concentrations and should be tested for their usefulness as medicinal drugs.

Knöckel J. et al., Biochem J 2012, 443:397-405

Birbel Bergmann, Sabine Butzloff, Julia Drebes, Kamila Meissner, Ingrid Müller and external cooperation partners (see publication)

Figure: High-throughput screening for new malaria drugs. Using robots more than 250,000 compounds have been tested at the European ScreeningPort for inhibition of the vitamin B6 synthesis by malaria parasites.
Lassa viruses belong to the pathogens that can only be grown and studied under highest safety conditions – in biosafety level 4 (BSL4) laboratories. The reason is the haemorrhagic form of Lassa fever, which ends fatal in one third of the cases.
Haemorrhagic Lassa fever occurs if Lassa viruses can replicate very rapidly in the human body. To this end, a virus protein called nucleoprotein is of great importance. The viruses produce it to protect their DNA against attacks of the human defence system. Together with colleagues from the European Molecular Biology Laboratory (EMBL) at DESY we have analysed the spatial structure of this nucleoprotein. Using gene technology, we produced large amounts of the protein in high purity. Only then the protein forms crystals. Crystals deviate X-ray beams in a highly specific manner such that from the pattern on the X-ray film one can deduce the structure of the protein down to the location of individual atoms. In addition, 6,000 electron micrographs of the protein were assembled to a single image. Together the findings show that each three nucleoproteins assemble to form symmetrical rings, which can sheath the genetic material of the virus. These structural details may allow to specifically tailor anti-viral drugs, for example, to prevent the reproduction of the virus by blocking the assembly of the nucleoproteins or the sheathing of viral DNA.


Linda Brunotte, Romy Kerber, Meike Haas, Martin Gabriel, Michaela Lelke, Carola Busch, Stephan Günther and external cooperation partners (see publication)

Figure: Crystal structure of the nucleoprotein of Lassa virus: Three protein molecules combine and form a symmetrical ring.
As increasing drug resistance makes tuberculosis (TB) ever more threatening, the need for an efficient vaccine is urgent. Most humans naturally possess powerful defence reactions against TB bacteria, which protect them against the disease. Numerous findings have indicated that a certain type of immune cells, CD4+ T lymphocytes, play an essential role, which mostly is the basis for vaccine development. These immune cells learn to react to certain structural motives of the bacteria. Surprisingly it was now found that these structural motives are strikingly similar in TB bacteria from all over the world. Thus, the recognition by CD4+ T lymphocytes appears not to be dangerous for TB bacteria since, obviously, no selective pressure is exerted on the bacteria to change the essential structural motives. Therefore it becomes even more urgent to solve the question of how to design a vaccine that instructs the immune system to kill TB bacteria in all humans – an apt example for the need of disease-oriented basic research.
It is still unclear why only one out of ten infected persons develop tuberculosis whereas the others prevent or control the infection. So-called T lymphocytes are considered crucial for protection against tuberculosis. But why do they fail to protect certain persons?

We have compared tuberculosis patients and healthy persons regarding all genes activated in T lymphocytes isolated from blood. The gene that encodes a protein called SOCS3 was clearly more strongly activated in tuberculosis patients than in healthy persons who controlled the infection. If we artificially increased the SOCS3 level in CD4+ T lymphocytes, the cells could not any more multiply as before and became exhausted. In addition, their defence functions were altered. It is tempting to speculate that T-cell exhaustion plays an important role in the susceptibility to tuberculosis.


Katja Kleinsteuber, Kerrin Huesch, Stefanie Schartling, Claudia Sander-Jülch, Bernhard Fleischer, Marc Jacobsen and external cooperation partners (see publication)

Figure: On a “microarray”, defined DNA molecules representing all human genes are spotted on tiny dots. The more matching DNA strands bind to a given dot if lysed cells are added, the brighter yellow the dot and the stronger the corresponding gene had been switched on in the cell (Image: Agilent Technologies, Santa Clara, CA, USA).
Mannose-binding protein (MBP) belongs to a group of serum proteins that help immune cells to recognize pathogens. MBP binds to the carbohydrate mannose and causes bacteria with mannose at their surface to be easily taken up by defence cells. Now there are pathogens that profit from being taken up by defence cells because they can survive in the digestive vacuole of these cells. Tuberculosis bacteria are one of them.

Some humans have a gene mutation causing that MBP cannot exert its normal function. We have found that this mutation in Africa protects against tuberculosis – but only against an African variant of tuberculosis, which is caused by the so-called *Mycobacterium africanum*. This makes sense because the African tuberculosis bacteria carried substantially more mannose at their surface than the common tuberculosis bacteria. They seem to substantially more depend on MBP for being taken up by immune cells. Interestingly, the mutation of MBP that protects against African tuberculosis bacteria is found much more frequently in Africans than in other people. It looks, therefore, as if a selective pressure by the African tuberculosis bacteria would have caused the mutation of MBP to be particularly well conserved in the African population.

Thye T. et al., PLoS One 2011, 6:e20908

Thorsten Thye, Christopher Intemann, Ellis Owusu-Dabo, Rolf Horstmann, Christian Meyer and external cooperation partners (see publication)

Figure: Prevalence of an African form of tuberculosis (red oval) and the frequency of a mutation that destroys the function of the mannose-binding protein (size of green segments in white circles).
Apart from Dengue fever, leishmaniasis presumably is the most important of the „neglected diseases“. In the past years, WHO made particular efforts to negotiate with the pharmaceutical industry price reductions for the most needed drugs. Of concern is the increasing drug resistance of leishmania.
As in almost all infectious diseases drug resistances cause increasing problems in the treatment of leishmaniasis. Leishmania are either killed too slowly or not completely by common chemotherapy. Comparisons between the genome sequences of susceptible and resistant isolates have not yielded any clues.

We have introduced into leishmania additional fragments of their genomes and have grown these leishmania in the test tube in the presence of the common drugs. Those leishmania that survived were found to have several copies of a certain additional fragment and of a certain additional gene, the function of which is unknown at present. In drug-resistant leishmania from Peru we found an amplification of the same gene. This finding will now be confirmed in drug-resistant leishmania from India and other countries. And of course we are curious about the function of that gene.

Choudhury et al., Int J Parasitol 2008, 38:1411

Carola Schäfer, Andrea Nühs, Joachim Clos and external cooperation partners (see publication)

Figure: Leishmania infected immune cells. Leishmania (L), engulfed in immune cells besides the dark-coloured nuclei of the immune cells (FK), have much smaller, round nuclei (LK) and extra bar-shaped dark-coloured structures (K).
Under the title „Hygiene Hypothesis“ many scientists ascribe the dramatic increase in allergies and autoimmune diseases in industrialized countries to substantial changes in the colonization of our bodies with harmless microorganisms and, in particular, to the radical elimination of worm infections. Remarkably, the critical US Food and Drug Administration meanwhile approved artificial infections with intestinal worms for the treatment of inflammatory bowel disease.
The few millimeter long larvae of the roundworm Strongyloides ratti penetrate the skin of rats or mice and migrate through their bodies for two days before they reach the small intestine. Once there, they live embedded in the mucosa for two weeks and reproduce. To survive in the gut, the worms have to avoid expulsion by the host’s immune system. To this end, Strongyloides provokes a multiplication of inhibitory defence cells, the regulatory T cells. If we artificially remove those regulatory lymphocytes from the animals during the initial days of infection, mast cells become activated in the intestine. Mast cells are innate immune cells with multiple partly still enigmatic functions. They essentially contribute to the defence against worms in the intestine by releasing toxic compounds and by increasing peristaltic and mucus production. In the absence of regulatory T cells, mast cells release these compounds nearly one week earlier and in much larger quantities. Therefore, without protection by its host’s regulatory T cells, the worm is unable to settle in the intestine and is rapidly expelled.

Blankenhaus B. et al., J Immunol 2011, 86: 4295-4305

Marie-Luise Eschbach, Birte Blankenhaus, Nadia Ben Nouir, Minka Breloer and external cooperation partners (see publication)

Figure: Female Strongyloides ratti from the small intestine of a mouse.
We characterize compounds used by worms to dampen our immune system. In an experimental model of a natural Strongyloides ratti infection, we found 79 proteins specifically released by female worms living inside the intestinal wall. Some of them we produced by genetic engineering and found that they bound to cells of the intestinal mucosa but not to other cell types including lymphocytes. We hope to be able to derive from such compounds new drugs for the treatment of Crohn’s disease and other inflammatory bowel diseases.

Soblik H. et al., Mol Cell Proteomics 2011, 10(12):M111.010157

Hanns Soblik, Abuelhassan Elshazly Younis, Louise Reher, Inga Toborg, Frank Geisinger, Silke van Hoorn, Klaus Erttmann, Norbert Brattig and external cooperation partners (see publication)

Figure: The midget roundworm Strongyloides ratti (red) in the intestinal wall of a rat. Finger-shaped intestinal villi, which serve the enlargement of the mucosal surface to better resorb nutrients, appear as cones. The nuclei of the mucosal cells are stained in dark blue.
Chronic worm infections induce changes in the immune system that can impair vaccination efficacy. The production of protective antibodies in response to vaccination, for instance, is dramatically reduced in mice that are also infected with the roundworm *Litomosoides sigmodontis*. The concurrent worm infection does not suppress the antibody-producing B cells themselves but targets T helper cells that are central providers of help for the B cells. In order to achieve this suppression, *Litomosoides* induces the production of the inhibitory messenger interleukin-10. Interleukin-10 impedes the replication of T helper cells and converts some of them to become regulatory T cells that counteract inflammatory reactions. Following malaria vaccination, worms also suppress the induction of killer T cells that could detect and kill malaria-infected cells. Currently, we try to design vaccines that induce protective responses despite pre-existing worm infections.

Hartmann W. et al., J. Immunol 2011, 187:4088
Marie-Luise Eschbach, Wiebke Hartmann, Julia Kolbaum, Irma Haben, Minka Breloer and external cooperation partners (see publication)

Figure: Comparison of antibody responses to a vaccination in healthy and worm-infected mice
The death of the young pharaoh

In 2010 the former Egyptian „Secretary General of the Supreme Council of Antiquities“ Zahi Hawass together with some scientists published a study on the cause of death of pharaoh Tutankhamun (~1332-1323 BC) in a renowned medical journal. They had found in the mummy DNA of the malaria parasite Plasmodium falciparum and concluded that Tutankhamun had died from malaria. X-ray studies in addition showed bone lesions, which were interpreted as signs of a rare bone disease called „Köhler II“. Reading the article it appeared that the findings presented, in conjunction with the family history of the pharaoh, much better fit the interpretation that Tutankhamun had died from sickle-cell anaemia. Sickle-cell anaemia or sickle-cell disease is caused by an abnormal genetic variant of the oxygen-transporting protein haemoglobin of red blood cells. The abnormal haemoglobin makes the red blood cells obstruct capillaries, and this results in tissue damage including bone lesions, which in the X-ray may resemble „Köhler II“.

A person suffers from sickle-cell disease only if he has inherited the abnormal haemoglobin from both parents, i.e. if both genes we have for haemoglobin are abnormal. Persons that have only one abnormal gene are healthy and even protected from fatal malaria – this is why the sickle-cell haemoglobin occurs in malaria areas only. This had to apply to Tutankhamun’s parents. At least from his presumed father Akhenaten it is known that he became 50 years or older and thus could have been protected against fatal malaria.

Our interpretation of Tutankhamun’s death appeared convincing to many experts and caused a surprising echo in the public – probably the cheapest public relations campaign the Institute ever experienced.

Timmann, C. and Meyer C.G., JAMA 2010, 303: 2473

Christian Timmann and Christian Meyer
The Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR), a joint venture and platform for research of the Ghanaian Ministry of Health, the Bernhard Nocht Institute for Tropical Medicine (BNITM) and Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, hosted projects from overseas partners and their Ghanaian counterparts. KCCR serves as the biomedical research outfit of KNUST and in 2011 was awarded Centre of Excellence for Applied Biomedical Research under the auspices of the African Network for Drug Discovery and Diagnostics (ANDI)/WHO/TDR.

KCCR boosted its laboratory capacity in getting a safety level three (BSL 3) laboratory operational and a microbiology unit to fit its purpose to investigate environmental and human samples. KCCR hosted and supported projects receiving funds among others from the European Union, Volkswagen Foundation, German Research Council (DFG), Malaria Vaccine Initiative (MVI), German Ministry of Education and Research and the European Mosquito Research Association. There are long term projects running in collaboration with several departments at KNUST. KCCR continued its onchocerciasis and elephantiasis research programs which are running since its inception in 1997. The continued success of these projects is based on applied approaches at research goals to serve the communities affected. To this end, they are oriented in the most refined antibiotic treatment for both helminth infections, tackling Ivermectin resistance in onchocerciasis and also putting on the research agenda the alleviation of the often underestimated suffering of elephantiasis patients. Further funds towards these goals have been secured for the future. A novel approach to alleviate the disease burden aims at the identification of vaccine candidates to be used in future clinical trials.

Research on tuberculosis with its aim to identify human genetic variants involved in protecting individuals from the disease started in 2000 and has found several phases of extension towards advanced
methods in characterization of mycobacterial strains for antibiotic resistance. The success of Buruli ulcer research, which started in 2003, is based on novel molecular methods introduced into routine diagnostics in centres as KCCR but also to be standardized for dissemination in the district hospitals of endemic areas. Recent research advances revolutionized the treatment of mostly young children by administering antibiotic treatment prior to surgical intervention. Another aim of the projects is to identify vaccine candidates. This applied biomedical research again underscores KCCR’s capabilities to ensure that research benefits those affected, achievements that resulted in the earlier nomination of KCCR as a reference centre for Buruli ulcer. KCCR’s partnering of the RTS’s vaccine study since its inception in 2006 has supported the program’s phase 3, which revealed promising results of 58% protection from childhood malaria. The continuation of the phase 3 trial taking place in 5 more African countries will pave the way for better understanding of when vaccines will be made available to the entire population at risk, to lower the impact of infection. The Clinical Department of BNITM has several projects, mainly with partners from the Komfo Anokye Teaching Hospital (KATH), Kumasi. The Child Development Study (CDS) is to look into the impact of infectious diseases, e.g. malaria and worm infestations, in affecting child development. Other programs centred on co-infections of HIV positive patients. The ESTHER (Ensemble pour une Solidarité Thérapeutique Hospitalière – En Reseau) partnership between KATH and BNITM and the University Medical Centre Hamburg-Eppendorf aims at the improvement of medical care for patients with HIV and tuberculosis. The Typhoid in sub-Saharan Africa Project (TSAP) aims to characterize potential causes of febrile illness other than malaria in children with the aim of quantifying the effect of a typhoid vaccine in the population under study. The International Vaccine Initiative (IVI) is co-ordinating and sponsoring this programme. Virus research investigating respiratory infections in infants under 5 years started at KCCR by introducing real time PCR and cell biological methods in collaboration with the University of Bonn. This research was in the framework of a Neglected Tropical Diseases program investigating febrile illness with emphasis on bacterial and viral infections of patients at the Presbyterian Hospital of Agogo. A further project started to investigate the ecology of virus infections of humans and bats, a novel research program at KCCR which included wildlife to look into zoonotic aspects of common-cold virus and related zoonoses. KCCR is committed to graduate training and is currently training a total of 10 Master’s and 3 PhD students. Students took part in workshops of immunology, cell biology, molecular biology (PCR technology) and ecology (bat ecology) held at KCCR in cooperation with the Department of Biochemistry, Allied Health Sciences, Department of Wildlife and Range Management and other international organisations. In the last year, several workshops were conducted at KCCR to facilitate student participation in research, including but not limited to that organised by the Volkswagen young scholar initiative and that by the American Society of Cell Biology (ASCB). Dr. Ellis Owusu-Dabo, Scientific Director, KCCR
The objective of the Diploma Course on Tropical Medicine is to prepare physicians for professional missions in tropical and subtropical countries and to enable them to preventively care for visitors of warm climates and to diagnose and to treat tropical diseases.

The central topics of the Diploma Course are human diseases characteristic for warm climates. Teaching focuses on the pathogenesis, diagnosis, clinical presentation, treatment, epidemiology and prophylaxis of parasitological, bacterial, viral and non-communicable tropical diseases. At the same time, the biology, epidemiology, as well as measures to control infectious agents, vectors and reservoirs are addressed. Further topics include the characteristics of the various clinical disciplines in tropical environments, problems of health care in poor countries and structures and performance of developmental cooperation and disaster missions.

The curriculum is divided into twelve sections of one week each. Differential diagnosis is the major guideline for the curriculum. Taxonomy is an additional criterion in order to facilitate systematic learning. Entomology is considered in its relation to the etiology and transmission of disease and therefore follows clinical classifications. Malaria, tuberculosis and HIV/AIDS, because of their outstanding relevance, are regarded as separate topics.

Scientific coordinator:
Prof. Christian G. Meyer
Week 1: Introductions and essentials: incl. immunology, haematology, tutorials

Week 2: Systemic infections 1: Malaria incl. entomology, principles in epidemiology, laboratory methods, tutorials

Week 3: Systemic infections 2: Viral and bacterial infections incl. entomology, laboratory methods, tutorials

Week 4: Systemic infections 3: Protozoal infections and systemic mycoses

Week 5: Intestinal diseases by stresses, bacteria and protozoa incl. laboratory methods, tutorials

Week 6: Helminth infections

Week 7: Skin and venereal diseases, mycobacteriology, ophthalmology

Week 8: Tuberculosis, HIV infection/AIDS

Week 9: Specific problems in certain disciplines incl.: parasitology, neurology, surgery, gynaecology, psychiatry, malnutrition, environmental medicine, haematology and malignancies in infections in the tropics, poisons, animal

Week 10: Public Health, planning, financing and implementation of health projects, essential drugs, international co-operation

Week 11: Epidemiology and disease control in travel medicine, mother-child-care, reproductive health, vaccination programmes, disaster management, hospital hygiene

Week 12: Differential diagnosis and repetitions

Week 13: Repetitions, final examination (practical and theoretical)
The course provides basic knowledge and skills in tropical medicine and explicitly addresses the topics of Public Health and health care management. The courses of the years 2010 and 2011 were both held in February.

TARGET GROUPS:
Medical staff (nurses, technical assistants, midwives, health economists) preparing for professional assignments in warm-climate countries; in addition medical staff wanting to acquire or deepen tropical medicine skills.

Course for medical support staff 2011

MEDICINE IN THE TROPICS

Contents
- Tropical infectious diseases: malaria, leprosy, tuberculosis, schistosomiasis and other helminth diseases, viral infections
- Insects as vectors
- Malnutrition
- Basic epidemiology
- General aspects: obstetrics, family planning, paediatrics venereal diseases, dermatology, HIV/AIDS, travel medicine etc.
- Physical examination of patients, laboratory techniques microscopy
- Socio-cultural comparison of health systems
- Intercultural competence
- Hygiene, drinking water
- Nursing practice in the tropics
- NGOs
- Information systems, literature and internet search
- Teamwork

Scientific coordinator: Prof. Christian G. Meyer
The regulation on occupational health care (ArbMedVV) includes an obligatory examination of employees when activities in the tropics, subtropics and abroad are executed and associated with climatic stresses and risk for infectious diseases. This examination is required for all employees who are working at least three months per year in these areas. The German Society for Tropical Medicine and International Health (DTG) has developed a curriculum „Occupational Medicine in the Tropics“ which is the basis of the course curriculum. The main objective of the course is to provide physicians of occupational medicine without prior knowledge of tropical and travel medicine with the necessary tools.

Scientific coordinator:
Prof. Gerd D. Burchard, Dr. Helmut Jäger
Facts and Figures
STAFF
236 including 99 scientists (2011)

FUNDING

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public core funding</td>
<td>11.1 Mio.</td>
<td>12.2 Mio.</td>
</tr>
<tr>
<td>Public funding of investments</td>
<td>1.1 Mio.</td>
<td>0.7 Mio.</td>
</tr>
<tr>
<td>Third-party funding</td>
<td>3.5 Mio.</td>
<td>3.8 Mio.</td>
</tr>
<tr>
<td>Third-party funding forwarded to cooperation partners</td>
<td>3.4 Mio.</td>
<td>1.6 Mio.</td>
</tr>
<tr>
<td>Other income</td>
<td>1.3 Mio.</td>
<td>1.5 Mio.</td>
</tr>
</tbody>
</table>

Third-party funding has been received from the following organizations:
(public funding from DFG, federal, state / country and EU funding from foundations, private donors and other research funding as well as other income from orders, economic cooperation, services, licenses)

Alexander von Humboldt-Stiftung, Bill & Melinda Gates Foundation (BMGF), Bundesministerium für Bildung und Forschung (BMBF) / Deutsches Zentrum für Luft- und Raumfahrt (DLR), Bundesministerium für Wissenschaft und Forschung (BWF), Universität Hamburg (UHH), Deutsche Forschungsgemeinschaft (DFG), Deutscher Akademischer Austauschdienst (DAAD), Deutsche Lepra- und Tuberkulosehilfe (DAHW), Deutschen Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Else-Kröner-Fresenius-Stiftung, Europäische Union (EU), European and Developing Countries Clinical Trials Partnership (EDCTP), European Federation of Immunological Societies, Foundation for the National Institutes of Health, GeoSentinel-Netzwerk, Health Focus GmbH, Helmholtz-Zentrum für Infektionsforschung (IZKF) GmbH, International Vaccine Institute, Leibniz-Gemeinschaft, Robert Koch-Institut (RKI), SeaPro Theragnostics International BV, TECHLAB, INC. - Virginia Tech Corporate Research Center, UBS Optimus Foundation, Umweltbundesamt (UBA), Vereinigung der Freunde des Tropeninstituts Hamburg e. V., VolkswagenStiftung, Werner Otto Stiftung.

Performance Indicator 2010 2011

| Publications in peer-reviewed journals | 104 | 99 |
| average impact factor | 84 | 84 |
| in others | 4.95 | 3.76 |
| Qualifications | 35 | 32 |
| Diploma / Master’s theses | 14 | 17 |
| Dissertations | 10 | 15 |
| Habilitations | 2 | 0 |
| Teaching, education and training | 122 | 138 |
| University (SWI*) | 79 | 114 |
| Education and training events (days) | 114 |
| Technology transfer (ongoing) | 8 | 10 |
| Patents and licenses | 2 | 1 |
| Inventions | 30074 | 7756 |
| Library | 58217 | 47789 |
| Number of cases | 20474 | 27161 |
| Number of tests | 46234 |
| Journals | 173 | 173 |
| Inter-library loan | 3439 | 2832 |
| KCCR Total projects at KCCR | 14 | 13 |
| of these external projects | 10 | 7 |

Notes: Lessons per semester week, *Kumasi Centre for Collaborative Research in Tropical Medicine
A) SCIENTIFIC STAFF

(* = end of employment during the reporting period)

**Molecular Parasitology Department**

**Scientific Staff**
Prof. Dr. Egbert Tannich; Dr. Anna Bachmann; Prof. Dr. Iris Bruchhaus; Dr. Thomas Kruppa; PD Dr. Hannelore Lotter; Dr. Sven Poppert*

**Doctoral and Graduate Students**
Johanna Amige*, Anna Bachmann; Anna-Karin Rat*; Hannah Beutin (NIH); Christina Csizsik (DFG); Helena Dzulodz; Gisela Felix* (KAAD); Elena Halk (DFG); Denise Mauer* (Werner-Otto-Stiftung); Jenny Matthiesen (DFG); Sabine Pohled; Steff Becks*; Olga Spiegelman*; Anna-Kathrin Tilly

**Technical Staff**
Lisa Hunning, Claudia Mairgraff (DFG); Susanne Ofori; Heidrun von Thien; Laurenne Veit* (Bundeswehr)

**Student Trainees**
Kristin Frommann*; Bianca Krause*; Sabrina Osterhof*; Patrick Schulz*; Lena Taulien*

**Visiting Scientists**
Amir Bairami* (Iranischer Staat), Tehran University, Iran; Dr. Nathaniel Christy* (NIH), Arizona State University, USA; Sohie Dohse* (DFG); Dr. John Talaat* (INSTAND), Al Shams University, Cairo, Egypt

**Associated Scientists in the Molecular Parasitology Department**

**Scientific Staff**
Prof. Dr. Rolf Garms

**Research Group Biochemical Parasitology**

**Scientific Staff**
Prof. Dr. Rolf D. Walter; PD Dr. Carsten Wrenger*; Dr. Ingrid B. Müller

**Doctoral and Graduate Students**
Sabine Brunhoff; Julia Döhses (LENI-SDI); Julia Knodell (DFG / TMIE); Karina Mönner*; Maria Röcker (DAAD-Sandwich); Anna J. Schiffer-decker

**Technical Staff**
Bärbel Bergmann

**Visiting Scientists**
MSc Xi Audrey Chan* (DAAD-GoEight), The Australian National University, Australia; Prof. A.I. Louw*; University of Pretoria, South Africa; Eva M. Sosovet* (World Bank); University of Dar es Salaam, Tanzania; Shaar B. Rocker* (NFR); University of Pretoria, South Africa

**Clos Group (Leishmaniasis)**

**Scientific Staff**
PD Dr. Joachim Clos

**Doctoral and Graduate Students**
Eugenie Bild, Marieke Chrobak*; Anja Hoffmann; Paulina Kowalik; Sarah Mayer*; Kajal Ojiga*; Carola Schäfer; Wei-Lok Yau*(DAAD)

**Technical Staff**
Andrea Macinod; Dorotha Zander

**Student Trainees**
Anja Blüher; Frank Fischer*; Linda Heinz*; Leo Krampen*; Rosina Pfeferkorn*; Alison Russell*; Sophia Schmidt*; Frank Wiggers

**Visiting Scientists**
Wei-Lok Yau*, Institute Pasteur, France
B) SUPPORT STAFF

(*) end of employment during the reporting period

Administration

Business Management
Udo Carowdow, Business Manager; Gerold Schütze, Chief Administrator*

Financing
Jörg Englebert, Head; Horst Götz, Head; Harun Bünke*, Susanne Czok, Simon Gale, Irena Kühnert; Camilla Kurt; Anja Stuhl; Silvia Voigtmann*, Mark Vortmann

Personnel
Heinrich Peters M.A., Head; Renate Adler*, Anna Görtzche; Ulrich Koendmor, Birgit Maack*, Carsten Schable

Purchasing and Operations
Thomas Sturlud, Head; Werner Bormann; Manuela Bologn; David Campbell; Stephan Goldow; Rita Götze; Birgit Hauck; Rainer van Hoeven; Oliver Kienzle; Stefanie Meftah; Ingo Neuberg*, Anna Özmink; Reinhard Pollok*, Heidi Ruge; Christian Schulz; Yann Segge; Sylvia Seigle; Heidrun Treffinger; Jens-Peter Vol; Christine Zieckert

Technical Service
Michael Jacobs; Head; Claus Ahrens; Peter Beutler; Rainer Fromm; Paul-Gerhardt Kämpfer; Rene Loose; Joachim Zieckert

Cleaning
Marie Collado; Serap Demir; Manuela Dessender; Maria Fernandes; Fermla Gäh; Cevahir Güven; Petra Hartmann; Immuhan Kuscu*; Sandy Mohr; Birgit Mohr-Flügge; Ayse Özcan; Gabri Pehlivan*; Claudia Scharloth; Annette Schwarzbach; Corinna Stallbaum; Kudret Sügök; Meral Tüzcan; Regina Trimbos*, Kudret Ulger; Gülbaahir Ucaan; Tatjana Uluscan; Sylvia Zanzer

Scientific Services and Secretarial Staff

Library
Marina-Christine Kochscheer; Irene Michael

Photography
Klaus Jüri

Scientific Services
Dr. Katja Barth, Assistant to the Board; Dr. Eleonora Setiadi, Scientific Coordinator / Public Relations

Occupational Safety
Dirk Pflämm, Coordinator*; Reinhard Pollok*

Quality Management
Marion Lintzel

Secretarial Staff
Biliana Kondolnhof, Clinical Research; Elfrida Muri, Curator; Daniela Schlage, Board of Directors, Tropical Medicine Section; Petra Stanzloehs*, Courses; Elke Wiemov, Parasitology Section, German Society for Tropical Medicine and International Health; Elke Witto, Immunology and Virology Section, Tropical Medicine Section, Assistance, Association of the Friends of the Institute for Tropical Medicine Hamburg e.V.

Staff Committee

Works Council
Iris Dobson, Chair; Helmut Arac; Beate Becker-Zaia; Werner Bormann; Dr. Thomas Jacobs; Camilla Kurt; Marian Lintzel; Birgit Rauchsdorf; Cornelia Thoma-Boldsch.

C) SUPPORT STAFF KCCR, GHANA

Management
Thomas van Kampen (Director); Dr. Ellis Owusu-Dabo (Deputy Director)

Administration
Heresia Addai (Sr. Admin. Secretary); Gifty Ado-Olaa, Receptionist; Jeffrey Agyemang, Systems Operator; Francis Dormen, Accounting Assistant; Sebastian Kamps, Accountant; Stephen A. Kwamtn, Logician; G. A. Mensah-Agboh, Administrator

Transport
Samuel Osamuyi (Superintendent); Gabriel Ousah-Achampong; Robert Achampong; Kennedy Avosgy Dowed; Paul Miele Recky; Philip Fompong; Emmanuel Lea; Anthony Mensah; Joseph Tev; Sneh Wirth

Security
Dominic Adongo (Head); Andrew Bantu; Alido Agyemang; John Amadi; Samuel Apuru; Joshua Asemapo; Francis Ayeyabo; Yaw Darkw; Felisa Kankong; Samuel Manu; Evan Mensah; Kasidow Tsowodosh; Lawrence Yilew, Thomas V. Ziba

Field / Cleaning
Helena F. K. Aasaming-Casnor; Eric Baha Amsuch; Immaculata Kluvna; Christopher Tan; Comfort Yame

A) Animal Facilities
Dr. Thomas Schüler

Staff
Arshad Ali; Meral Arac; CONSTANTIN PERNAR; Alex Adams; Doris Karsic; Maryam Kacih; Beate Richter; Yvonne Richter

Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR), Ghana

Doctoral and Graduate Students
Dr. Otchere Addai-Mensah; Anthony Adjoa-Adjo; Francis Addai; Priscilla Addo; Mitchell Agether; David Asum-Boh; Augustina Angelina Asum; Elenouez Badie; Sanita Baffour-Awia; Linda Bira; Lawrence Amosan; Dr. Albert Dopeh; Alexander Kwarteng; Rita Nanyo; Evans Enyih Nnabna; John Onye Menma; Kenneth Bournou Ouaib; Emilia Osung-Sofiah; Michael Owusu; Michael Adjoa-Poku

Technical Staff
Kerstin Shand (Head of Laborotories); Esmaila Aghofichi; Richard Latzi


Johann Peter Frank and social medicine.


Infect Dis 16 (7): 1143-6.

Infect Dis 16 (7): 1143-6.
Bachelors Theses


cokokken: Virale Krankheiten

Olonro O (2011). Immunologie der pathogenen Alpha-Herpesviren

Pellicer J (2011). Immunologische Aspekte der halophilen Interaktionen

Silvestre J (2011). Phokal-polymerase im Rétropath, in: Leonor-Luis und Staphylo-
cokokken: Virale Krankheiten

Diploma and Master Theses

Nagel A (2011). Herstellung genetisch attenuierter Plasmodien zu


Kowalsky K (2010). Untersuchungen zur Malaria-assoziierten Anämie mit

Kono M (2010). Molekulare Charakterisierung der Invasionsmaschinerie von Plasmo-
dium falciparum. Fakultät für Mathematik, Informatik und Naturwissenschaften, Department Biologie. Universität Hamburg.


Wiemer D (2010). Entwicklung einer Real-Time multiplex PCR zum Nachweis von Salmo-


Schmidt-Chanasit J (2010). Genotypisierung und molekulare epidemiologie von human-

Breloer M (2010). Die Regulation von Lymphozyten. Reifung, Aktivierung und Homöo-

Neuhoff R (2011). Diagnostik, Prävalenz und Komplexität der Plasmodieninfektion

Schäfer M (2010). Phokal-polymerase im Rétropath, in: Leonor-Luis und Staphylo-
cokokken: Virale Krankheiten

Epidemiology and control of tropical diseases; 2 hours

Jürgen May, Norbert Schwarz, Christian Meyer, Christian Timmann, Rolf Horstmann

Practical course in immunology; 14 days

Thomas Jaques, Maria Brauer, Bernhard Fleischer, Friedrich Nolte, Marc Jacobsen, Hans-Willi Mittrücker, Friedrich Haag, Stephan Ehrhardt

Current results of basic research in parasitology; seminar, 2 hours

Jürgen May, Christian Timmann, Bernhard Fleischer, Friedrich Nolte

Introduction into molecular parasitology, 2 hours

Egbert Tannich und MitarbeiterInnen

Introduction into immunology for medical students, lecture, 1 hour

Bernhard Fleischer, Marc Janssen, Hans-Wili Mittrücker, Friedrich Nolte, Stephan Ehrhardt

Introduction into immunology and add on study molecular biology, seminar, 2 hours

Bernhard Fleischer, Friedrich Nolte, Thomas Kreger, Friedrich Nolte

Immunological Weston, seminar, 1 hour

Bernhard Fleischer in co-workers

X
x

X

X

X

X

X

X

X

X

X

X

X

X

LECTURES AND SEMINARS OF BNM STAFF AT THE UNIVERSITY OF HAMBURG

Faculty of Medicine

winter

summer

Elective course: Tropical and travel medicine, 12 weeks

Barns Oren, Guido Berndt

Introduction into tropical medicine / Basic knowledge on tropical medicine, seminar, 1 hour

Barns Oren, Christine Timmann, Jürgen May

Human genetics of infections and other common diseases, seminar, 2 hours


Introduction into molecular parasitology, 2 hours

Egbert Tannich and colleagues

Current results of basic research in parasitology, seminar, 2 hours

Egbert Tannich and colleagues

Introduction into immunology, seminar, 1 hour

Bernhard Fleischer and co-workers

Introduction into immunology for medical students, lecture, 1 hour

Bernhard Fleischer, Marc Janssen, Hans-Wili Mittrücker, Friedrich Nolte, Stephan Ehrhardt

Introduction into immunology and add on study molecular biology, seminar, 2 hours

Bernhard Fleischer, Friedrich Nolte, Thomas Kreger, Friedrich Nolte

Immunological Weston, seminar, 1 hour

Bernhard Fleischer in co-workers

Practical course in immunology, 14 days

Thomas Jaques, Maria Brauer, Bernhard Fleischer, Friedrich Nolte, Marc Jacobsen, Hans-Willi Mittrücker

Immunological aspects of host-pathogen interactions in infectious diseases, 2 hours

Paul Rac, tying toddler-Rac

Cross-disciplinary subject immunology / infectious diseases, 2 hours

Bernhard Fleischer, Marc Janssen

Practical vaccines and travel medicine, course, 2 hours

Jakob Cramer
for medical students at the University of Hamburg

Tutors
Prof. Dr. Hans-Dieter Baechler (clinical tropical medicine)
Prof. Dr. Jürgen Tietze (hematological tropical medicine)

Elective course Tropical and Travel Medicine

This course provides students who show a special interest in tropical and travel medicine the opportunity to focus their course work. Therefore, this option has been offered for several years in cooperation with the University Medical Center for a maximum of six selected medical students. The subject of tropical and travel medicine is particularly suited for an interdisciplinary lecture because:

- it is not related to one organ, tropical diseases generally affect many organ systems.
- tropical medicine is a typical cross-disciplinary subject, which involves not only external medicine training but also theoretical, diagnostic, surgical and microbiological aspects.
- it addresses not only aspects of curative medicine but also of public health.

The course runs over 12 weeks and takes place twice a week starting in October and January.

SEMINARS

- Dr. Marcus Knopf (10.02.2011)
- "Novel vaccine strategies adapted from cancer therapies against Schistosoma mansoni infection" (03.02.2011)
- Dr. Maximilian Gatterer (11.02.2011)
- "A novel system for cancer therapy: photodynamic eradication" (21.02.2011)
- Prof. Dr. Michaela Vasta (SS 2011)
- "Practical course, 6 hours; Tropical and Travel Medicine; Molecular and protein chemistry of the human malaria parasite Plasmodium falciparum, practical course, 2 hours" (23.02.2011)
- Prof. Bernhard Fleischer and co-workers (10.03.2011)
- "Current problems in immunology; seminar, 1 hour" (10.03.2011)
- Prof. Dr. Claudia Reiner (19.03.2011)
- "Post-translational modifications of cruzipain, the major cysteine protease of Trypanosoma cruzi" (29.03.2011)
- Dr. Adrian Luty (07.04.2011)
- "Where do untranslated mRNAs go to? Diversity of RNA granules in the malaria parasite Plasmodium falciparum" (07.04.2011)
- "Investigating Neutrophils at Work: Mobilization, NET formation and communicative behaviors of the amoebae-resistant bacterium" (12.04.2011)
- Prof. Dr. Stefano Müller (16.04.2011)
- "Vaccines that mobilize dendritic cells" (11.05.2011)
- Prof. Dr. Michaela Schuster (24.05.2011)
- "Insect-Microbe Interactions" (12.04.2011)
- "Understanding intracellular persistence of mycobacteria using a cell-based model" (22.11.2011)
- Dr. Kevin B. Worth (30.11.2011)
- "Entwicklung von Impfstoffen mit innovativen Adjuvanssystemen am Beispiel der Malaria" (30.11.2011)
- "Echinococcosis: Many species, only few diseases? A century-old parasite" (24.09.2010)
- "An novel role for sortilin in phagosomal maturation" (21.07.2010)
- Prof. Paul Walter (07.12.2010)
- "A new reporter mouse reveals development and fate of TFH cells, the biological role of membrane trafficking in the immune system" (19.05.2011)
- Dr. Beatrice Muller (19.10.2010)
- "The biological role of membrane trafficking in the immune system" (19.10.2010)
- "The Quest for immune correlates of protection against HIV" (27.09.2010)
- "Virulence and communication of the amoebae-resistant bacterium" (15.02.2010)
- "Functional consequences of polyamine perturbation in the malaria parasite Plasmodium falciparum infected erythrocytes" (19.05.2011)
- "System-wide phosphoproteomics to identify novel proteins at the parasite-host interface and signalling events in organs of infectivity" (23.03.2011)
- Dr. Adrian Luty (24.09.2010)
- "Insect-Microbe Interactions" (12.04.2011)
- "An IL-21 reporter mouse reveals development and fate of TFH cells, the biological role of membrane trafficking in the immune system" (19.05.2011)
- "A new reporter mouse reveals development and fate of TFH cells, the biological role of membrane trafficking in the immune system" (19.05.2011)
- "The biological role of membrane trafficking in the immune system" (19.10.2010)
- "The Quest for immune correlates of protection against HIV" (27.09.2010)
- "Virulence and communication of the amoebae-resistant bacterium" (15.02.2010)
- "Functional consequences of polyamine perturbation in the malaria parasite Plasmodium falciparum infected erythrocytes" (19.05.2011)
- "System-wide phosphoproteomics to identify novel proteins at the parasite-host interface and signalling events in organs of infectivity" (23.03.2011)
- Dr. Adrian Luty (24.09.2010)
- "Insect-Microbe Interactions" (12.04.2011)
- "An IL-21 reporter mouse reveals development and fate of TFH cells, the biological role of membrane trafficking in the immune system" (19.05.2011)
- "The biological role of membrane trafficking in the immune system" (19.10.2010)
- "The Quest for immune correlates of protection against HIV" (27.09.2010)
- "Virulence and communication of the amoebae-resistant bacterium" (15.02.2010)
- "Functional consequences of polyamine perturbation in the malaria parasite Plasmodium falciparum infected erythrocytes" (19.05.2011)
- "System-wide phosphoproteomics to identify novel proteins at the parasite-host interface and signalling events in organs of infectivity" (23.03.2011)
- Dr. Adrian Luty (24.09.2010)
- "Insect-Microbe Interactions" (12.04.2011)
- "An IL-21 reporter mouse reveals development and fate of TFH cells, the biological role of membrane trafficking in the immune system" (19.05.2011)
- "The biological role of membrane trafficking in the immune system" (19.10.2010)
- "The Quest for immune correlates of protection against HIV" (27.09.2010)
- "Virulence and communication of the amoebae-resistant bacterium" (15.02.2010)
- "Functional consequences of polyamine perturbation in the malaria parasite Plasmodium falciparum infected erythrocytes" (19.05.2011)
- "System-wide phosphoproteomics to identify novel proteins at the parasite-host interface and signalling events in organs of infectivity" (23.03.2011)
- Dr. Adrian Luty (24.09.2010)
- "Insect-Microbe Interactions" (12.04.2011)
- "An IL-21 reporter mouse reveals development and fate of TFH cells, the biological role of membrane trafficking in the immune system" (19.05.2011)
- "The biological role of membrane trafficking in the immune system" (19.10.2010)
- "The Quest for immune correlates of protection against HIV" (27.09.2010)
- "Virulence and communication of the amoebae-resistant bacterium" (15.02.2010)
- "Functional consequences of polyamine perturbation in the malaria parasite Plasmodium falciparum infected erythrocytes" (19.05.2011)
Prof. Dr. Iris Bruchhaus
Parasitology Department
Emilienstrasse 140 (BNI) (09/2010)
E-Mail: iris.bruchhaus@bni.de

Invited Speaker
The 24th Annual Meeting of the German Society for Parasitology (03/2010)
Clinical and Developmental Immunology (05/2011)

PD Dr. Christian Dorschner
Immunolgy & Virology Section
Bundeswehr/Wehrwissenschaft Munich (05/2011)

PD Dr. Jochen Hess
Associate Professor, Immunology & Virology Section
Bundeswehr/Wehrwissenschaft Munich (05/2011)

PD Dr. Philipp L. Reichling
Immunolgy & Virology Section
Bundeswehr/Wehrwissenschaft Munich (05/2011)

PD Dr. Martin Schmiedt
Immunolgy & Virology Section
Bundeswehr/Wehrwissenschaft Munich (05/2011)

PD Dr. Heiko Willems
Immunolgy & Virology Section
Bundeswehr/Wehrwissenschaft Munich (05/2011)

PD Dr. Christiane Ziegler
Immunolgy & Virology Section
Bundeswehr/Wehrwissenschaft Munich (05/2011)
Es erwarten Sie historische Filme, populärwissenschaftliche Vorträge, aktuelle Informationen, Hyänengrillen, Reggae und vieles mehr.

CHA R O N I C L E

Ⅰ Spring 2010
Virologists of the institute identify sindbis viruses for the first time in Germany and detect the pathogen in three different mosquito species. The viruses can cause febrile illnesses with rheumatic symptoms.

Ⅰ 01.01.2010
As part of the international project “BuruVKali”, Prof. Bernhard Fleischer, project coordinator, raises €75,000 from the European Commission. The focus is on the development of a vaccine against Buruli ulcer.

Ⅰ 01.02. – 19.02.2010
Course for medical support staff “Medicine in the Tropics” with 19 participants.

Ⅰ 01.04.2010
Prof. Tim Gilberger, a cellular biologist and malaria researcher at the institute, accepts a position as an Associate Professor at McMaster University in Hamilton, Ontario, Canada.

Ⅰ 06.04. – 30.06.2010
The diploma course “Tropical Medicine”, designed for physicians and scientists, hosts 56 students.

Ⅰ 01.04.2010
Prof. Stephan Gauder receives a grant from the German Research Foundation (DFG) of a total of €57,810 for the development of diagnostic tests for Lassa fever.

Ⅰ 01.04.2010
Biologist Dr. Monica Hagedorn starts as head of a new research group to study the cellular biology of TB bacteria. Her findings on the structured egress of pathogens from host cells have gained international recognition.

Ⅰ 23.04.2010
“Girls’ Day/For Boys”, Molecular parasitologist Prof. Iris Bruchhaus gives a seminar about amebae and malaria parasites. Then, the 55 students are being guided by scientific staff godfathers and godmothers to perform small experiments.

Ⅰ 10.05.2010
Prof. Monique Kamranvahantaosaotra, Vice President for International Relations of the University of Antananarivo, Madagascar, visits the institute. By signing a contract both institutions aim to seal their cooperation. The aims are joint research projects as well as teaching and the training of the exchange of scientists.

Ⅰ 20.05.2010
Since six years, the institute organizes a sports festival. Nine teams take part in the beach volleyball tournament including 55 players from the institute, the Diploma Course “Tropical Medicine” and the Army Department of Tropical Medicine and were cheered by 50 fans. The cups go to a team of immunologists.

Ⅰ 19.06.2010
For the ISGH Nordbank Run the institute organizes a highly motivated and even-successful team.

Ⅰ 23.06.2010
Three young scientists receive the Doctoral Prize of the “Association of Friends of the Tropical Institute Hamburg”. Dr. Annika Reinenberg (Heussler Group) studied the survival of malaria parasites in liver cells and Dr. Moritz Treek (Gilberger Group) the entry of malaria parasites into red blood cells, and Dr. Laura Miller (Molecular Parasitology) compared all proteins of pathogenic and harmless amebae.

Ⅰ 25.06.2010
Entitled “Insights and Impressions”, the Institute organizes a summer party in its backyard. Among the invited guests is Bernd Revert, State Secretary of the Hamburg Ministry of Science and research and Chairman of the Board of Trustees.

Ⅰ 08.07.2010
The Senate of the Leibniz Association publishes the evaluation report of the institute. The institute is certified excellent scientific achievements as well as a “convincing strategic plan” and an extraordinarily good working atmosphere. Federal and State governments will continue the funding of the institute as an institution of national importance.

Ⅰ 15.10.2010
A delegation from the Ministry of Health of the Republic of China Taiwan, led by the Deputy Minister of Health, visits the institute.

Ⅰ 01.01.2011
To study the genetic resistance of humans against tuberculosis Prof. Christian Meyer from the Department of Molecular Medicine is awarded €725,000 by the Federal Ministry of Education and Research.

Ⅰ 26.01. – 27.01.2011
Eutroforum is the topic of the first international symposium of the Leibniz Center Infection (LCI), a consortium of the institute with the Heinrich Pette Institute and the Research Center Borstel. In the historic auditorium over 140 scientists and interested persons from industry discuss recent findings and new treatment options, if infections such as malaria, tuberculosis and HIV / AIDS occur concomitantly.

Ⅰ 31.01. – 18.02.2011
Course for medical support staff “Medicine in the Tropics” with 28 participants.

Ⅰ 01.08.2010
Prof. Volker Heussler, cellular biologist and malaria researcher, accepts an offer and becomes Full Professor at the University of Bern, Switzerland.

Ⅰ 24.08.2010
The Federal Minister for Health, Dr. Philipp Rösler, visits the institute. Topic for discussions is the recommendation of the Leibniz evaluation to transfer the responsibility for the institute from the Federal Ministry of Health to the Federal Ministry of Education and Research.

Ⅰ 03.09. – 06.09.2010
As part of an initiative to support young African scientists - with Prof. Bernhard Fleischer as coordinator - the institute organizes an international symposium. This year, the Volkswagen Foundation and four other European foundations extended the funding of the initiative by 1 Mio. Euro.

Ⅰ 10.10.2010
A delegation from the Ministry of Health of the Republic of China Taiwan, led by the Deputy Minister of Health, visits the institute.

Ⅰ 01.08.2010
Prof. Volker Heussler, cellular biologist and malaria researcher, accepts an offer and becomes Full Professor at the University of Bern, Switzerland.

Ⅰ 24.08.2010
The Federal Minister for Health, Dr. Philipp Rösler, visits the institute. Topic for discussions is the recommendation of the Leibniz evaluation to transfer the responsibility for the institute from the Federal Ministry of Health to the Federal Ministry of Education and Research.

Ⅰ 03.09. – 06.09.2010
As part of an initiative to support young African scientists - with Prof. Bernhard Fleischer as coordinator - the institute organizes an international symposium. This year, the Volkswagen Foundation and four other European foundations extended the funding of the initiative by 1 Mio. Euro.

Ⅰ 10.10.2010
A delegation from the Ministry of Health of the Republic of China Taiwan, led by the Deputy Minister of Health, visits the institute.

Ⅰ 01.01.2011
To study the genetic resistance of humans against tuberculosis Prof. Christian Meyer from the Department of Molecular Medicine is awarded €725,000 by the Federal Ministry of Education and Research.
Prof. Karl Ulrich Mayer - since July 2010 President of the Leibniz Association - visits the Institute and in several personal conversations he interviews young scientists on their work.

Dr. Norbert Schwarz from the “May Group” coordinates the international project “African Field Epidemiology Training” (AFENET), which will support African scientists in their own epidemiological research plans. For this purpose, the European Commission provides the Institute and the nonprofit organization “African Field Epidemiology Network” (AFENET), Uganda, with funds of almost 2 Mio Euro for four years.

In 2010, Dr. Dorothee Stapelfeldt, Deputy Mayor of the City of Hamburg and Senator for Science and Research, visits the Institute. The diploma course “Tropical Medicine”, designed for physicians and scientists, hosts 48 students.

New record at the 11th Girls’ and 1st Boys’ Day. 34 girls and 27 boys participate in the nationwide campaign and visit the Institute. As in 2010, Prof. His Brauthaus answers questions concerning human parites. Twenty staff members of parasitology, virology and immunology present their research and offer small experiments to be performed by the pupils.

The newspaper “Broadcast with the Mouse” on national TV celebrates its 40th birthday, calling for new high-security laboratories to a delegation from the University of Nagasaki, Japan.

The virology department presents the new high-security laboratories to a delegation from the University of Nagasaki, Japan.

New record at the 11th Girls’ and 1st Boys’ Day. 34 girls and 27 boys participate in the nationwide campaign and visit the Institute. As in 2010, Prof. His Brauthaus answers questions concerning human parasites. Twenty