Cover picture:
Two malaria parasites inside a red cell. Parasites (red with blue nuclei) install new structures (green) in the host cell. (Image: Tobias Spielmann)
After more than a hundred years as a department of the Hamburg government, the institute was released into independence on January 1st, 2008—the beginning of the reporting period. Since then it is a Foundation Under Public Law. Of course, it remains a member of the Leibniz Association, which unites research institutions of supraregional importance, and its funding continues to rely on a joint financing scheme of the Federal and State Governments. Important to note that the great strength of the institute to combine under one umbrella research, training and health care now is sustainably secured by the phrasing that “The mission of the Foundation is to perform research, teaching, continuing training and education as well as consultation and health care in the fields of infection and tropical medicine.” Including infection medicine in general allows to address newly emerging infections as often requested by the public in cases—like SARS or swine flu—not being tropical diseases in the narrower sense.

As expected the transition from a government department to a foundation was not at all noticed by most colleagues. A notable change occurred at the directors’ floor only, instead of one Director there is now a Board holding weekly meetings, realizing after two years that all decisions had been taken unanimously. One year later supervision in the Hamburg administration was moved from the Ministry of Social and Family Affairs, Health and Consumer Protection (BSG) to the Ministry of Science and Research (BWF), a just as soft transition. State Secretary Bernd Reinert of BWF took over the chair of the Board of Trustees from State Secretary Dietrich Wersich of BSG, who would not have continued anyway because he meanwhile had become the Senator. For the first time, two external experts joined the Board of Trustees. The vote was for Helmuth Weisser, owner of the largest SME of the country—as he once called himself—and Jörn Aldag, chairman of Hamburg’s most prominent biotech company Evotec. Also new were two representatives of the institute. The staff elected the scientist Prof. Iris Bruchhaus, doing an important service to the institute by serving as ombudsman, and chairman of works council Dirk Plähn.

Major parts of the administration and, in particular, of the Technical Department of the institute have been kept busy with the extension building. The capstone was laid in summer 2009, and inauguration was celebrated including speeches of the Federal Minister of Health and Hamburg’s First Mayor. Followed by laborious and time-consum-
ing customisations of electronic and mechanical control systems. Highest safety standards are taking their toll.

The directors drafted a development plan 2011/2012 for the institute. “Translation” is the word of the year. Reference to practical application is to be strengthened. More epidemiology to ensure that experimental research keeps track with changes of diseases, pathogens and environments, and more intervention studies to enable a rapid transfer of laboratory findings into health care. The additional emphasis must, however, not go at the expense of laboratory research because cellular and molecular biology form the basis for the international reputation of the institute and, according to the directors, hardly reach the “critical mass” required for sustainable excellence in science.

In order to acquire additional funding for “translational” research the institute was keen to foster collaborations with Hamburg University. Initially, the epidemiologists in 2008 participated in grant applications of the Asia-Africa Institutes in a national call on regional studies, i.e. studies on the peculiarities of certain regions of the world. Even greater engagement was dedicated to the Hamburg Excellence Initiative. Together with members of the Natural Sciences a proposal was drafted on medicinal drug development, and in addition, joint projects were designed with colleagues from the Humanities – addressing cultural, social and legal aspects of infectious diseases of global relevance and their control in the endemic areas. Unfortunately the initiatives were mostly unsuccessful. The major reason was the lack of joint preliminary work. It won’t be easy to establish this kind of co-operations without financial incentives.

Above all in 2008/2009 was the review of the institute by the Leibniz Association, which assesses every seven years whether or not an institute deserves the joint funding by the Federal and State budgets. The report, which had to be prepared for the reviewers, filled a large Leitz folder. The paper work by itself forces to look into every corner of the institute and to reconsider each detail of its organization. This alone justifies the exercise, many say. In November 2009 then the site visit of the reviewers. The spirit felt positive, and half a year later it was announced officially that the feeling was right.

The directors are indebted to all staff members for their extraordinary identification with the institute, which showed so nicely during the reviewers’ site visit. Particular credit goes to our colleagues who engage themselves in the many bodies of the institute’s self-administration, just to mention the works council and the numerous committees. We are grateful to all our supporters in the Hamburg State administration and the Federal Ministry of Health, most of all Senator Dietrich Wersich and subsequently State Secretary Bernd Reinitz, Chairmen of the Board of Trustees, who always served the institute with great prudence and sense of responsibility. Special thanks go to the members of the Scientific Advisory Board, in particular the chairperson Prof. Silvia Bullone-Paus, who spent their valuable time to familiarize with our scientific challenges and to help us with expert advice.

Last but not least we are most grateful to all members of the “Friends of the Tropical Institute” association for their continuous support.

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An estimated 500 million humans suffer from malaria each year, one million die from it, most of them African infants. Since decades there is an ongoing race between the development of new drugs and drug resistance by the parasites. A vaccine is needed to control the disease effectively because health care is insufficient in most malaria areas and many victims do not get to the doctor in due time. Recently it was found that a new vaccine reduces the number of malaria episodes of babies by half. The degree of protection surprised experts and cannot be explained immunologically. Therefore it is unknown how to further increase the efficiency.
After a bite of an infected Anopheles mosquito, malaria parasites enter the blood vessels of our skin and rush to the liver. They infect liver cells and multiply inside into tens of thousands of daughter parasites. This happens in an obviously fine tuned and synchronized process: First the cellular organs (organelles) of the parasites sprout, the nuclei reduplicate many fold and finally the daughter parasites surround themselves with an own cell membrane.

Rebecca Stanway, Nancy Müller, Ulrike Froehlke, Anne MacDonald and Volker Heussler (Malaria I)

**Figure:** Development of nuclei (green) and mitochondria (red) from a single malaria parasite during intense multiplication inside a liver cell.
To protect us from pathogens which try to take possession of our cells, our cells have developed the ability to commit suicide. Accordingly, a massive multiplication of malaria parasites would be expected to cause the suicide of the infected liver cell. To prevent this, parasites flood the cell with a protein that inhibits certain enzymes, including those crucially involved in the regulation of the cell’s suicide. After the daughter parasites have multiplied massively, they dissolve the cell membrane of the mother parasite and move freely inside the liver cell before they cause the liver cell to release parts of the cell body (merosomes) to be carried away with the blood. Only in the streaming blood the daughter parasites are being released to then infect red blood cells.


Rebecca Stanway, Christina Deschermeier, Kathleen Rankin, Anriika Rennenberg, Andreas Nagel, Susanne Helm, Stefanie Grüwe, Christine Lehmann, Ulrike Froehlke, Anne MacDonald, Silke Renzäuff, Nancy Müller, Gerina Vollmers and Volker Heussler (Malaria I)

Figure: Parasite (green) releases inhibitor (red) into the liver cell; nuclei of liver cells and parasites are stained in blue.
After multiplying inside liver cells malaria parasites infect red blood cells, and the symptoms of malaria set in. The parasite releases hundreds of proteins into the red blood cell and restructures the cell vigorously – an enormous effort of cellular biology. An estimated half of the proteins involved in invasion and restructuring are presently unknown. We have lined up with colleagues in Singapore to combine informatics, genetics and cell biology approaches to predict the functions of these unknown proteins. Our data have been displayed on a website which is frequently visited so that we believe our predictions have an impact on malaria research worldwide.

**Figure:** Description of functional protein networks: The interplay of 418 proteins of malaria parasites forms the initial step of an unfriendly occupation of our red blood cells. Yellow dots mark proteins newly characterized in the present study (Hu, Cabrera et al., 2009).
Following invasion, malaria parasites introduce into red blood cells new structures and manage to transport proteins – trespassing three membranes – onto the surface of the red blood cells. We have collected a number of data on how the parasites make sure that their proteins reach the right compartment inside and at the surface of host cells.


Silvia Haase, Susann Herrmann, Christof Grüring, Anett Heiber, Christine Langer, Moritz Treck, Ana Cabrera, Caroline Bruns, Nicole Struck, Maya Kono, Klemens Engelberg, Ulrike Ruch and Tim-Wolf Gilberger, Tobias Spielmann (Malaria II)

Figure: Two malaria parasites inside a red cell. Parasites (red with blue nuclei) install new structures (green) in the host cell.
Malaria parasites transport their own proteins onto the surface of infected red blood cells to make the cells stick to the walls of small blood vessels. This process is considered crucial for the development of cerebral malaria, the most dangerous form of the disease. The attachment to vessel walls results in microvascular disturbances in the brain and other organs causing organ failure. To escape the human antibodies that they elicit the parasites exchange their proteins on the red blood cells time and time again.

We have examined parasites freshly isolated from malaria patients and found that—unlike previously reported from studies on long-term cultured parasites—each generation of parasites replaces these surface proteins and nearly all individual parasites of one generation produce the same protein. Presently we try to understand the replacement mechanism and to learn about the structure of these proteins to provide a basis for the development of a vaccine against life-threatening malaria complications.

Iris Bruchhaus, Anna Bachmann, Sabine Predehl and Egbert Tannich (Molecular Parasitology)

Figure: Red blood cells infected with malaria parasites carry new surface proteins and bind to cells of the vessel wall.
Immune cells can defeat pathogens but the inflammation this may cause can be harmful. This apparently holds true for malaria, at least for mouse malaria, which serves as a model for the life-threatening form of human malaria. T lymphocytes are immune cells that become specifically trained to fight against a given pathogen. We have shown that malaria-infected mice show substantially less inflammation of the brain and the liver if T lymphocytes are blocked. It remains to be shown whether similar damage may be caused by these cells in human malaria.


Christiane Steeg, Guido Adler, Iris Gaworski, Bernhard Fleischer and Thomas Jacobs (Immunology)

Figure: Brain of a mouse with cerebral malaria. Section of a small blood vessel containing numerous inflammatory cells.
Certain T lymphocytes recognize from the outside whether other cells are infected in the inside, and are able to kill such cells. This also affects liver cells infected by malaria parasites. The T lymphocytes must, however, learn this kind of killing for each type of pathogen specifically, which each time takes one to two weeks. Vaccinations are meant to provide this form of training beforehand.

CSP is a protein which is released by malaria parasites in infected liver cells and which as the RTS’S vaccine has reached a protection rate of 50% in African children. In the mouse malaria model, we have tried to further improve the vaccine by channeling CSP inside the cells. We have applied two methods: For the first vaccination we have genetically introduced CSP into harmless bacteria which are able to inject CSP through a tiny channel into the mouse cells. For the second vaccination we used the poison of whooping cough bacteria to inject CSP into the cells: The toxic part of the poison had genetically been replaced by CSP, the other part of the poison as usual opened like a jackknife and instead of the toxin shifted CSP through the cell membrane. The twofold introduction of CSP into mouse cells in our experiments has increased the protection rate of CSP to 100%.

Tartzi S. et al., Vaccine 2008, 26: 5935-43

Susanne Tartzi, Bernhard Fleischer and Thomas Jacobs (Immunology)

Figure: A fragment of CSP protein of the malaria parasite Plasmodium berghei is injected into mouse cells by an ACT-CSP vaccine construct.
Malaria parasites - but also bacteria - have metabolic pathways that are absent in humans or different from those in humans. These are attractive drug targets because chemical compounds that block them would not affect our metabolism. We focus on the biosynthesis of polyamines and on pathogen-specific enzymes synthesizing vitamins B6 and B1 as well as on a secreted phosphatase that is used by the parasite to acquire nutrients from the host cell. Key enzymes of vitamin synthesis in plasmodia and staphylococci are evaluated for rational drug development by cell biological studies as well as by crystal structure analyses (in collaboration with EMBL and UniHH) for their potential as new strategies to combat the pathogens. Furthermore, by applying a high-throughput drug screen (in collaboration with the European ScreeningPort) we identified compounds inhibiting the respective enzymes as well as the pathogen's growth. Such lead compounds will be further improved in structure and activity to develop a new drug.

Müller I.B. et al., PLoS ONE 2009, 4:e4406

Carsten Wienger, Ingrid. B. Müller, Julia Knöckel, Bärbel Bergmann and Rolf D. Walter (Biochemical Parasitology)

Figure: Intracellular transport of a phosphatase (GFP) via the cell surface into the food vacuole (Lysosensor™) of the parasite, images superimposed (Merge). (Image: Ingrid B. Müller)
Numerous mutations in our genomes make us differ from each other not only the way we look but also the way our body functions. Such genetic differences can be used to find out which functions of our body can contribute to resistance to an infectious disease. For example, if a mutation is clearly found more frequently among healthy persons than among patients with a certain disease, one can conclude that this or a nearby mutation protects against the disease under study and that the gene to which it belongs has a function in protecting against the disease. Meanwhile it is known that the courses of infections are particularly prone to influences by host genetics albeit by many mutations with weak effects each. Therefore, these mutations can only be found by studying large groups of patients and controls, but independent of the weakness of their effects they can hint at entirely new ways of treatment and prevention.
Genome-wide scans for mutations and genes which influence susceptibility and resistance to diseases are laborious. But they allow a systematic analysis that is not based on the present state of scientific knowledge and therefore is independent of incidental historical developments in science. In an international consortium we have performed such a study including thousands of children with life-threatening malaria and healthy counterparts. Besides confirming the unique protective effect of the sickle-cell trait — see page 37 — and an influence of blood group O we found an additional gene and a chromosomal region for gene regulation with as yet unknown functions in malaria protection. As in other genome-wide searches it has become apparent that many undetected mutations must exist which substantially contribute to the manifestation of disease, further extensions of the study groups and refinements of genetic markers are needed to once get the full picture of human genetic influences on the course of malaria.

__Figure:__ Genome-wide search for mutations that protect against severe malaria. The graph shows the location of nearly one million mutations in the human genome ordered chromosome by chromosome and for each of them the statistical significance of the difference between children with severe malaria and healthy ones. Confirmed signals indicating the mutations of the sickle-cell trait and the ABO blood groups are marked (Timmann C. et al.).
Sickle cell anaemia and the sickle cell trait are the paradigm of what is called “balanced evolution”: While heterozygote carriers of the HbS variant of the beta-hemoglobin gene (sickle-cell trait, HbAS) are protected against severe malaria, individuals homozygous for HbS (sickle-cell anaemia, HbSS) have an increased childhood mortality. In a population, the disadvantage of the HbSS homozygotes is “balanced” by malaria protection of the HbAS heterozygotes.

The protective effect of HbAS against severe malaria is well known. By conducting a cohort study in a malaria-endemic area we found that children with HbAS were significantly protected not only against malaria but also against stunting. This observation closes an important gap in the reasoning of the “balanced evolution” theory.

Kreuels B. et al., Blood 2010, 22:4551-8

Samuel Adjei (Ghana)*, Benno Kreuels, Christina Kreuzberg*, Iris Langefeld*, Robin Kobbe*, Wilke Loag and Jürgen May (Infection Epidemiology, *staff member before 2008)

Figure: The distribution of sickle cell disease (left) and malaria (right) is similar because carriers of the sickle-cell trait have a better chance to survive malaria.
Amoebae (*Entamoeba histolytica*) are single-cell parasites which are endemic in most tropical and subtropical countries and which, after being ingested with contaminated food or water, dwell in the human colon. Interestingly, the vast majority of infected persons do not fall sick, only a small proportion of less than 10% do so, they develop bloody diarrhea (colitis) or large abscesses, mostly in the liver.

AMOEBIASIS
Studying mice we have found that amoebae, after leaving the intestinal tract and invading the tissue, may be recognized and killed by immune cells. Certain sugar structures (lipophosphoglycans) present on the amoeba surface are recognized by certain immune cells (NKT cells), which then stimulate other cells (macrophages) to kill the amoebae. Now we are trying to find out why this does not work in all humans infected with amoebae.

Lotter H. et al., PloS Pathog 2009, 5:e1000434

Hannelore Lotter, Nestor Gonzalez-Roldan, Claudia Marggraff and Egbert Tannich (Molecular Parasitology), Thomas Jacobs (Immunology), Otto Holst (Research Center Borstel)

Figure: Amoebae (purple) in human intestinal tissue (Image: Paul Racz).
Leishmania parasites are found in almost all tropical and subtropical regions of the world, and even in the Mediterranean. Humans are infected by the bite of sandflies. While most leishmaniae cause disfiguring boils at the site of entry in the skin, others migrate to the liver and spleen and cause life-threatening generalised infections. Treatment relies on chemotherapy and is hindered by growing drug resistance and severe side effects. There is no safe vaccine.
During the transmission from sandflies to humans, leishmania parasites change their form and their metabolism to adapt to their new host. This impressive change is largely triggered by the different temperatures encountered in sandflies and humans and is mediated by so-called heat shock proteins. In the mammalian hosts, leishmaniae dwell inside immune cells. Recently, it was discovered that they release into the host cells small parts of their cell bodies, so-called exosomes, filled with parasite proteins. This process, too, requires several heat shock proteins. While the exact function of the exosomes and their payload is not yet understood, they influence the host’s immune response for the parasite’s benefit.

We have simplified the method to genetically engineer leishmaniae, and we are in the process of using this technique to unravel the function of heat shock proteins in the processes described above.


*Gabi Ommen, Mareike Chrobak, Martina Wiesgigl, and Joachim Clo, (Leishmaniasis), Neil Reiner, Judith Maxwell Silverman (University of Vancouver)*

*Figure: A schematic model of Leishmania parasite stage conversion: Elevated temperature causes – through exosome-based export and binding to damaged proteins – a shortage of critical heat shock proteins (HSPs) and thus triggers the change towards the mammalian form.*
Chagas disease is exclusively found in Latin America. Characteristic symptoms are severe widenings of the heart, the oesophagus or the colon, which develop over several decades. The causative agent *Trypanosoma cruzi* is classically transmitted by blood sucking bugs and nowadays increasingly by blood transfusions. Drug treatment is unreliable and has severe side effects, and a vaccine is not available.
All pathogens one way or the other manage to escape the host’s immune defence. *Trypanosoma cruzi* cleaves certain carbohydrates (sialic acid) from human cells and transfers them onto their own surface, presumably to appear like human cells. This does not only impair the generation of antibodies. We found that the stolen sialic acid coat also binds to regulatory molecules (SIGLECS) on the surface of immune cells thereby preventing the release of Interleukin 12 – a soluble compound which plays a crucial role in the activation of immune responses.

*Erdmann H. et al., Cell Microbiol 2009, 11:1600-11*

Hanna Erdmann, Christiane Steeg, Bernhard Fleischer and Thomas Jacobs (Immunology)

*Figure: Trypanosoma cruzi* is able to infect almost any human cells and manages to remain undetected by the immune system for decades.
CD83 is a transmembrane glycoprotein that is expressed on the surface of many cells of the immune system upon activation. Investigating the function of this molecule we found that CD83 regulates antibody production by B lymphocytes and inhibits the over-activation of these cells. Mice that are genetically engineered to over-express CD83 produce drastically reduced amounts of antibodies of all subtypes while blockade of CD83 on B lymphocytes results in an enhanced production of antibodies. By manipulating the function of CD83 the effect of vaccines could be enhanced.

Kretschmer B. et al., J Immunol 2009, 182:2827-34
Birte Kretschmer, Katja Luehrje, Svenja Ehrlich, Ulricke Richardt, Jessica Rausch, Anneli Sagar, Bernhard Fleischer, Minka Breloer, Anke Osterloh (Immunology)

Figure: In comparison to normal mice (A), animals made to express an excess of CD83 (CD83tg) produce strongly reduced amounts of antibodies (immunoglobulins, Ig) (B). Conversely, a blockade of CD83 results in an increased release of antibodies of the IgG1 subtype (C).
Due to their high pathogenic potential, Lassa, Ebola, Marburg, and Crimean-Congo haemorrhagic fever viruses must be propagated and investigated in laboratories of the highest biosafety level. Lassa virus is endemic in West Africa while Ebola and Marburg virus cause local outbreaks in Central and East Africa. The natural host of Lassa virus are small rodents, which transmit the virus to humans via contaminated food. Antiviral treatment with the drug ribavirin is effective only at the early stage of infection. A vaccine is not available.
Like all viruses, Lassa virus reproduces inside a host cell and exploits the cellular machinery for protein synthesis. The largest protein of Lassa virus — the L protein — plays a central role in virus reproduction. At one end of this protein, we have discovered a region that is involved in the generation of virus messenger RNA and thereby the production of virus proteins. In the middle part of L protein, we identified the region mediating replication of the virus genome. Both regions represent potential targets for the development of new antiviral drugs.

Michaela Lelke, Linda Brunotte and Stephan Günther (Virology)

Figure: Distribution of the fist (left in red) and middle (right in green) part of the Lassa L protein inside an infected cell.
In recent years, we learned that immune cells may play a dual role. On the one hand, they may prevent and clear infections, on the other hand, the inflammatory response they generate may cause serious illness. An impressive example is Lassa fever where the response of the human body to the virus is thought to be mainly responsible for illness and death. Normal mice are not susceptible to Lassa virus infection. However, if mice contain a certain protein of human immune cells which presents fragments of pathogens to other immune cells, so-called T lymphocytes, they also succumb to Lassa virus infection. We conclude that T lymphocytes play a dual role in Lassa fever: they are early mediators of disease; while at a later stage they help to clear the virus.

Flatz L. et al., PLoS Pathog 2010, 6:e1000836

Toni Rieger and Stephan Günther (Virology), Lukas Flatz and Daniel Pinschewer (Zurich, Switzerland)

Figure: Lassa virus particle as it is formed in the blood of a patient.
Two sides of a coin: approximately two thirds of the world’s population are infected with worms. That these worms continuously modulate our immune system may be both beneficial and harmful.
Worm infections in general are known to dampen immune responses, which may prevent successful vaccinations. We model this situation in mice by showing that concurrent infection with a roundworm (*Litomosoides sigmodontis*) suppresses antibody responses. Interestingly, the roundworm does not suppress the antibody producing immune cells (B lymphocytes) directly but rather interferes with the function of helper immune cells (T lymphocytes). These cells are needed to help B lymphocytes to mount a potent antibody response. Roundworm infection induces properties in these helper cells that are usually present in anti-inflammatory immune cells and silence our immune responses. First results showed that concurrent worm infection indeed suppressed the efficacy of an experimental malaria vaccine in mice.

Wiebke Hartmann, Julia Kolbaum and Minka Breloer (Helminth Immunology)

*Figure: Litomosoides sigmodontis* fourth stage larvae, which dwells in the thoracic cavity of infected mice (Image: Marie-Luise Eichbach).
We use the murine model of a *Strongyloides ratti* infection as an example for a successful immune response against worms, as mice terminate this infection spontaneously and remain protected against subsequent infections. We found that this protective immune response was enhanced if we neutralized anti-inflammatory immune cells (regulatory T-lymphocytes) or proteins on the surface of these cells (CTLA-4) that usually silence immune responses. The worm burden was drastically reduced and mice were better protected against a second infection upon elimination of these silencing cells and proteins.

**Eschbach M. et al., Parasite Immunol 2010, 32:1-14**

Ulrike Klemm, Birte Blankenhaus, Julia Kolbaum, Marie-Luise Eschbach and Minka Breloer (Helminth-Immunology)

**Figure: Strongyloides ratti infective larva, which infects its host by penetrating the intact skin** (Image: Melanie Pidavent).
By dampening the host immune response worms can also be of great value. Crohn’s Disease and colitis ulcerosa are inflammatory bowel diseases (IBD) which show a dramatic increase in prevalence in industrialized countries. Artificial infections with intestinal worms are already in use for IBD treatment despite the fact that the basis of the therapeutic efficacy is still unknown.

Using an infection model of *Strongyloides ratti* in rats, we identified 78 proteins released from *S. ratti* females, which normally are embedded in the mucosa of the small intestine. These proteins are now under investigation to pinpoint those responsible for the therapeutic down-regulation of the host’s immune response.

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**Figure:** Strongyloides – embedded in the intestinal mucosa – stained in red using an antibody to a worm protein.
Tuberculosis (Tb) continues to spread worldwide, mostly because of the HIV pandemic as persons at later stages of HIV infections become particularly prone to Tb. An increasing threat is posed by Tb bacteria which are resistant to virtually all available drugs ("XDR resistant"). The Tb vaccine BCG does not provide reliable protection.
Similar to malaria – see page 35 – we have in tuberculosis screened entire human genomes for systematic differences between affected and unaffected persons by determining nearly 1 million mutations in each genome. Only a joint analysis with colleagues from Oxford University studying a total of 4,000 patients and controls yielded a hit: Mutations in a region of chromosome 18 which contains no gene assigned so far, showed a statistically robust difference. The challenge is now to find out what mutation exactly is responsible and what the functional effects are.

**Figure:** Schematic drawing of chromosome 18 (top) and the region where mutations were found associated with tuberculosis. Shown are the positions of the mutations analysed in the region and for each of them the statistical significance of the difference between patients with tuberculosis and control persons. Mutations which are significantly associated are colour-coded (Graph: Thorsten Thye).

**All genes screened**

**THE SEARCH FOR NATURAL PROTECTION AGAINST TUBERCULOSIS**

Thorsten Thye, Gerd Ruge, Jürgen Sievertsen, Christian G. Meyer and Rolf Horstmann (Molecular Medicine), Andreas Ziegler (University of Lübeck), Fredrik Vannberg, Adrian V. Hill (Oxford University), African TB Genetics Consortium, Wellcome Trust Case Control Consortium

*Thye, T. et al., Nat Genet 2010, 42:739-41*
HIV causes one of the globally most relevant infectious diseases, in particular in developing countries. Worldwide more than 33 million people are infected. They become highly susceptible to other infections, which commonly take a severe and often fatal course.
Our histological and molecular studies have shown that HIV infections very early on cause a gross destruction of the immune system of the intestinal tract. In approximately 70% of infected persons the damage cannot be cured by effective antiretroviral treatment. This is a focus of our research in humans.

Studying SIV-infections in monkeys as a model for human HIV, we have applied vaccine candidates through the intact intestinal mucosa and followed their way to the regional lymph nodes. We found that they are successfully transported into the germinal centers of the intestinal immune system – an important observation regarding vaccination strategies. Application of vaccines by the mucosa abrogates the risk of contaminations by injection needles, which is of great importance in resource-poor settings.

Falkensammer B. et al., Retrovirology 2009, 6:60 doi:10.1186/1742-4690-6-60
Jill Knips, Christine Stempel and Klara Tenner-Racz, Paul Racz (Pathology)

Figure: Vaccine candidate against monkey AIDS (labelled green) after oral application reaches the germinal centre (GC) of a lymphatic organ, where important immune mechanisms are set into motion.
When the Bill and Melinda Gates Foundation and other international funding agencies ended the 1990s started to focus their programmes on the “big 3” most important global infections AIDS, tuberculosis and malaria, “Médecins sans frontières” coined the term “Neglected Diseases”. The World Health Organisation took over the term and in 2002 listed 14 diseases as being “neglected”: Buruli ulcer, Chagas disease, Cholera, Dengue, dracunculiasis (guinea-worm disease), endemic treponematoses, soil-transmitted helminths, leishmaniasis, leprosy, lymphatic filariasis, onchocerciasis, schistosomiasis, sleeping sickness, and trachoma. It was not acknowledged that certain poverty-related diseases might exist but not be realized because they could have escaped detection so far and which, therefore, may be considered particularly “neglected”.

NEGLECTED DISEASES

Painting: Hl. Martin, Konrad Witz, Successors, around 1450
‘Kunstmuseum Basel’
We and others have shown that many African children who present with febrile illness may die because they are misdiagnosed as malaria and treated against malaria although they have a bacterial infection instead and need antibiotics.

A state-of-the-art microbiological facility including a biosafety level 3 laboratory has been established at Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR) in Ghana in order to subject all children who report in a rural hospital with febrile illness to a vigorous diagnostic procedure comprising all bacteria, viruses and parasites we are able to detect. Clinical syndromes, possible sources of infection, pathogen drug resistance, and options for prevention are being investigated with an initial focus on typhoid fever and other salmonella infections.

**Marks F. et al., Emerg Infect Dis 2010, 16:1796-7**

Denise Dekker*, Julius Fobil, Caroline Krefis, Wiske Loag, Nimarko Sarpong*, Norbert Schwarz and Jürgen May (Infection Epidemiology, *stationed in Ghana)

Figure: Interviews of villagers on infection risks in the Ashanti Region, Ghana.
KUMASI CENTRE FOR COLLABORATIVE RESEARCH IN TROPICAL MEDICINE (KCCR)

RESEARCH IN THE ENDEMIC AREA

The Kumasi Centre for Collaborative Research in Tropical Medicine (KCCR) is a joint venture of the Institute with the Ghanaian Ministry of Health and Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. It was founded in 1998 and serves as a platform for research projects jointly conducted by Ghanaian and international scientists. Approximately half of the projects have involved members of the Hamburg institute. Since 2003, KCCR is equipped with state-of-the-art laboratories and offices located on KNUST campus, which were established with funds of the public BNI stakeholders, the Volkswagen Foundation and the Association of Friends of BNI. Recently, the microbiological facilities were upgraded including a BSL-3 laboratory. KNUST officially appointed KCCR as the research centre of its College of Health Sciences in 2006.

The close scientific cooperation with Ghanaian partners provides great opportunities for capacity building. In addition to 40 staff members, a further 70 employees are assigned to the various research projects. KCCR promotes young scientists through long-term projects offering Master and PhD positions, which receive additional promotion through laboratory training, workshops and seminars.

Ongoing projects address Lymphatic Filariasis, Onchocerciasis, Malaria, Buruli Ulcer, salmonelloses, the search for underestimated childhood infections and the investigations of bats as reservoirs for emerging human infections. Under the umbrella of KCCR, the Gates Foundation established a vaccine study centre participating in testing the first promising malaria vaccine in a programme led by members of the KNUST School of Medical Sciences. In 2006, KCCR was appointed reference centre for Buruli Ulcer for Northern Ghana by WHO.

Further cooperative projects have been conducted by Institute members with partner institutions in Nigeria, Madagascar, Togo, Benin, DR Congo and Vietnam.
COURSES
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 separate topics.
**Week 1:**
- Introductions and essentials:
  - incl. immunology, haematology, tutorials

**Week 2:**
- Systemic infections 1:
  - Malaria incl. entomology, laboratory methods, tutorials

**Week 3:**
- Systemic infections 2:
  - Vascular and bacterial infections incl. entomology, laboratory methods, tutorials

**Week 4:**
- Systemic infections 3:
  - Protozoal infections and systemic mycoses
  - incl. laboratory methods, tutorials

**Week 5:**
- Intestinal diseases by protozoa, bacteria and viruses
  - incl. laboratory methods, tutorials

**Week 6:**
- Helminth infections
  - laboratory methods, tutorials

**Week 7:**
- Skin and venereal diseases, mycobacteriology, ophthalmology

**Week 8:**
- HIV infection/AIDS, tuberculosis

**Week 9:**
- Specific problems in certain disciplines
  - incl. pediatrics, neurology, surgery, gynaecology, psychiatry, malnutrition
  - environmental medicine, haematology and malignancies in the tropics, poisonous animals

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

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

**Week 12:**
- Differential diagnosis, repetitions

**Week 13:**
- Repetitions, final examination (practical and theoretical)

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**Institute Lecturers / External Lecturers**

**LECTURERS OF THE DIPLOMA COURSE ON TROPICAL MEDICINE**

**INSTITUTE FACULTY**
- PD Dr. Norbert Brätting
- Prof. Dr. Iris Bruchhaus
- Prof. Dr. Gord D. Burchard
- Dr. Jakob Cramer
- Dr. Stephan Ehhardt
- Prof. Dr. Bernhard Fleischer
- Prof. Dr. Rolf Garms
- Prof. Dr. Stephan Günther
- PD Dr. Volker Heusler
- Prof. Dr. Rolf Horstmann
- Ute Lippert
- Prof. Hans Matthei
- Prof. Dr. Jürgen May
- Prof. Christian G. Meyer
- Prof. Dr. Sven Poppert
- Prof. Dr. Paul Racz
- PD Dr. Jonas Schmidt-Chanasit
- Prof. Dr. Herbert Schmitz
- Prof. Dr. Justus Schöttelius
- Dr. Michael Scheulek
- Prof. Dr. Egbert Tannich
- Dr. Klara Thenner-Racz
- Prof. Christian Timmann

**GUEST FACULTY**
- Dr. Matthias Brockstedt
- Dr. Rolf Garms
- Dr. Ute Lippert
- Dr. Michael Leichsenring
- Prof. Dr. Bernhard Fleischer
- Prof. Dr. Christian G. Heussler
- PD Dr. Volker Klauß
- Dr. Sabine Rüsch-Gerdts
- Dr. Mark Schmiedel
- Prof. Dr. Norbert Brattig
- Prof. Dr. Iris G&S Gesundheit und Sicherheit für Bevölkerung, Freie Universität Berlin
- Dr. Christoph Dehnert
- Medizinische Klinik und Poliklinik, Universität Heidelberg
- Prof. Dr. Christian Drosten
- Institut für Virologie, Universitätsklinikum Bonn
- Dr. Alois Dörlemann
- Institut für Medizinische Mikrobiologie und Parasitologie, Universität Heidelberg
- Prof. Dr. Hartmut Graßl
- Institut für Medizinische Mikrobiologie, Universitätsklinikum Göttingen
- Dr. Sabine Rüsch-Gerdts
- Ärzte der Zukunft für Datenverarbeitung, Freie Universität Berlin
- PD Dr. Christian Döring
- Zentraleinrichtung für Rechtsmedizin, Universitätsklinikum Hamburg-Eppendorf
- Dr. rer. med. Klaus J. Volkmer
- Zentrum für Innere Medizin, Klinikum der Universität Göttingen
- Dr. Michael Wöhe
- Institut für Allgemeinmedizin, Universität Hamburg
- Dr. Stanislaw Borchert
- Zentrum für Psychiatrie, Landesklinikum Hamburg-Eppendorf
- Dr. Rico Müller
- Institut für Medizinische Mikrobiologie, Universität Heidelberg
- Prof. Dr. Bernhard Fleischer
- Institut für Medizinische Mikrobiologie und Parasitologie, Universitätsklinikum Bonn
- PD Dr. Achim Hörauf
- Institut für Medizinische Mikrobiologie und Parasitologie, Universitätsklinikum Bonn
- PD Dr. Thomas Fenner
- Institut für Medizinische Mikrobiologie, Universität Heidelberg
- PD Dr. Andreas Döring
- Zentrum für Rechtsmedizin, Universitätsklinikum Hamburg-Eppendorf
- Dr. Mathias Schmiedel
- Universitätsklinikum Hamburg-Eppendorf
- Prof. Dr. Achim Hörauf
- Institut für Medizinische Mikrobiologie und Parasitologie, Universitätsklinikum Bonn
- Dr. Mathias Schmiedel
- Universitätsklinikum Hamburg-Eppendorf
- Prof. Dr. Achim Hörauf
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- Institut für Medizinische Mikrobiologie und Parasitologie, Universitätsklinikum Bonn
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- Universitätsklinikum Hamburg-Eppendorf
- Prof. Dr. Achim Hörauf
- Institut für Medizinische Mikrobiologie und Parasitologie, Universitätsklinikum Bonn
- PD Dr. Andreas Döring
- Zentrum für Rechtsmedizin, Universit...
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 2008 and 2009 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.

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
STAFF
216 including 95 scientists (2009)

FUNDING

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Third-party funding has been received from the following organizations: Alexander von Humboldt Foundation; Arthur und Aenne Feindt Foundation; Australian Education; Boehringer Ingelheim Fonds; Bundesamt für Bevölkerungs- schutz und Katastrophenhilfe (BKK); Bundesministerium für Bildung und Forschung (BMBF); Bundesministerium für Gesundheit (BMG); Bundesministerium für Verteidigung (BMVg); Centrum für Internationale Migration und Entwicklung (CIME); Chica und Heinz Schaller Foundations; Deutsche Forschungsge- meinschaft (DFG); Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ); Deutsche Krebshilfe e.V.; Deutsche Lepa und Tuberkulose Hilfe (DAHF); German Academic Exchange Service (DAAD); Dr. Mildred Scheel Foundation for Cancer Research; European Commission; Evangelisches Studienwerk e. V. Villingen; Institut Virion/Serion GmbH, Würzburg; Freie und Hansestadt Hamburg (Europäischer Fonds für Regionale Entwicklung); GeoSentinel; Gesellschaft zur Förderung der Qualitätssicherung in medizinischen Laboratorien e.V.; Health Focus GmbH; Instand e.V.; Internationale Behörde für Wirtschaft und Arbeit; John Wiley & Sons, Inc (Blackwell Publishing Ltd); Jung-Stiftung für Wissenschaft und Forschung; National Institutes of Health (NIH), USA; Nationales Genomsforschungsnetz; Senior Expert Service; Provecs Medival GmbH; Robert Koch-Institut; Stiftung der Deutschen Wirtschaft für internationale Zusammenarbeit gGmbH; Stiftung für medizinische Grundlagenforschung; Studienstiftung des Deutschen Volkes (German National Academic Foundation); TECHLAB®, Inc.; The International Vaccine Institute; UBS Optimus Foundation; Vereinigung der Freunde des Tropeninstituts Hamburg e. V.; Volkswagen Stiftung; Wettbewerbs- durchsetzungsverfahren der Leibniz-Gemeinschaft (Pakt für Forschung und Innovation)

Performance Indicator

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1Lessons per semester week, 2Kumasi Centre for Collaborative Research in Tropical Medicine
Department Molecular Parasitology

Scientific Staff
Prof. Dr. Egbert Tannich; Prof. Dr. Iris Bruchhaus, PD Dr. Hannsolf Lotter (DFG); Dr. Simon Harz (Karl-Enigk-Stift); Dr. Sven Poppert

Associated Scientists
Prof. Dr. Rolf Gerner (Medical Entomology)

Doctoral and Graduate Students
Anna Bachmann; Laura Biller (DFG); Babette Drescher; Nestor Gonzalez-Roldan (National Polytechnic Institute, Mexico)*; Ghassan Handal (KAAD); Martin Helmkampf (DFG)*; Dennis Marien (Werner-Otto-Stift.); Jenny Matthiesen (DFG); Maximilian Nesnidal (DFG); Karin Agnes Ulicka*; Sabine Predehl

Technical Staff
Lisa Huntig; Claudia Menggraff; Susann Ofori; Hadimune van Thian

Student trainees
Jasmine Hubrich*; Ruth Suchowsky; Karin Urge*; Lea Kaminska*; Julia Abe*

Visiting Scientists
Dr. Melanie Flore Gondam, University of Yaounde, Kamerun (International Foundation for Science (IFS), Stockholm, Schweden); Nestor Gonzalez-Roldan (National Polytechnic Institute, Mexico), National Polytechnic Institute, Mexico; Ghassan Handal (KAAD), University of Bethlehem, Plästina; Dr. Karin Hjort (EU), Institute for Cell and Molecular Biosciences, Newcastle upon Tyne, England*; Miruduraja Sedurama, Karl-University Prag, Technochin

Research Group Biochemical Parasitology

Scientific Staff
PD Dr. Rolf D. Walter; PD Dr. Carmen Whinger; Dr. Ingrid B. Müller

Doctoral, Graduate, Master and Bachelor Students
Julia Knöckel (DAAD)

Technical Staff
Birgit Burgmann

Visiting Scientists
Dr. Kevin J. Saliba, The Australian National University; MSc Shaun Reeksting, University of Pretoria, South Africa

Research Group Leishmaniasis

Scientific Staff
PD Dr. Joachim Clos

Doctoral, Graduate, Master and Bachelor Students
Mareike Chrobak; Andrea Nühs (DAAD, EU)*; Gabi Omont* (DAAD)

Technical Staff
Matthieu Reiter, Laborant*; Darinka Zander

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

(* = end of employment during the reporting period)

Administration
Udo Genzien, Business Manager, Gerald Schlütemann, Chief Administrator

Financing
Joan Englund, Head; Harmut Blöcker; Susanne Crohen; Herbert Groß; Simone Gilt; Maih Wormann; Anja Smiekel; Silvia Voigtmann

Personnel
Heinrich Peters M.A., Head; Renate Adler; Ulrich Kutschmer; Birgit Maack; Carmen Schable

Purchasing and Operating
Thomas Strebel, Head; Wimor Bornmann; Christine Roen; David Campbell; Stephan Gadow; Rita Götz; Onder Kazako; Cuncah Kurr; Inger Neuburg; Anna Orman; Reinhard Perlitz; Kudre Radde; Heidi Ruge; Christa Schulte; Heidrun Treffinger; Jöns-Peter Voll

Cleaning
Maria Collado; Serpil Demir; Monika Dreessen; Maria Fernandes; Fatma Gül; Cevahir Güven; Petra Hartmann; Immuhan Kuscu; Sandy Mohr; Birgit Mohr-Flügge; Ayse Özcan; Güler Pehlivan; Annette Schwarzbach; Corinna Stallbaum; Kudret Sügök; Yasin Sügök; Mevl Turcan; Regina Tombran; Kudret Ülger; Türkün Ulucan; Ingrid Walde; Sylvia Zanner

Scientific Services
Assistance to the Board, Public Relations
Dr. Karin Burth, Assistant to the Board; Dr. Barbara Hertt; Assistant to the Director; Eva Königsmann; Martina-Christine Koschwitz

Occupational Safety
Dirk Plicht, Coordinator; Reinhard Perlitz

Quality Management
Manon Lintzel

Secretarial Staff
Bintanora Kanschibone, Clinical Research
Dana Schlag, Board of Directors, Tropical Medicine Section
Ursula Schütze, Tropical Medicine Section, Courses
Peta Stuhlmann, Courses
Elke Werner, Section Parasitology, German Society for Tropical Medicine and International Health
Elke Wiese, Medical Microbiology Section; Assistance, ‘Association of the Friends of the Institute for Tropical Medicine Hamburg e.V.’

Works Council
Iris Gaworski, Chair; Claus Ahrens; Werner Bornmann; Dr. Joachim Close; Dr. Volker Heussler*; Dr. Thomas Jacobs; Manfred Krömer**; Cumali Kurt; Maren Lintzel; Irene Michael; Dirk Plicht**; Birgit Railand; Claudia Sandor-Adler*; Christel Schmetz*; Thomas Strebel

** until May 2009

Library
Martina-Christine Koschwitz; Irene Michael

Photography
Klaus Jürgens

C) KCCR STAFF, GHANA

Administration / Logistics
Thomas von Kampen, Business Manager; Henrieke Adami; Gifty Adu-Okoe; Jeffrey Agosman; Francis Dermain; Solomam Kantam; Stephen A. Kwarteng; G. A. Mensah Agboh; Frank Drempsey

Transport
Robert Aschampong; Paul Marfo Bolye; Isaac Senyo Dompney; Philip Frimpong; Emmanuel Lasco; Kofi Tawiah; Emmanuel Tetteh; Joseph Tey; Seth Wusah

Field work / Cleaning / Security
Stephen Admara; Joseph Adetarmah; Dominic Afordje; Isaac Agneta; Addo Agosman; John Amandu; Kenneth Amsaah; Mark Arthur; Francis Ayariboa; Etio Amedzah Bana; Lydia Nana Bude; Ruth Bestowu; Anthony Brabu; Bawu Berekri; Isaac Gervia; Immunavatu Kadimaya; Felix Kunkeng; Samuel Manu; Evans Mensah; Yaw Nana Mensah; Tenzie Odonkor; Sophia Opoku; Fati Seidu; Christopher Tan; Cornelius Ynmon; Lawrence Yelewal; Stephen Y. Ziba
Appendix


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 course has been offered for several years in cooperation with the University Medical Center for a maximum of six select-ed medical students. The subject of tropical and travel medicine is particularly suited for an interdisciplinary lecture because:

1. It is not related to one organ; tropical diseases generally affect many organ systems.
2. Tropical medicine is a typical cross-disciplinary subject, which includes not only internal medicine training but also theoretical, surgical, and medical biological aspects.
3. It addresses not only aspects of curative medicine but also of public health.

The course runs over 12 weeks and takes place twice a year starting in October and January. Registration on the website of the medical faculty: www.uke.uni-hamburg.de/studierende.

SEMINARS

Professor Dr. Thomas Pawlikowski
Institute of Microbiology, University of Hohenheim, Stuttgart, Germany
"The role of the central nervous system in the detection and response to pyrethroid insecticides" (22.08.2008)

Dr. Oliver Bode
Institute for Medical Microbiology, Immunology and Hygiene, University of Münster,
"Genetics of hsp27 in bradyzoites of Toxoplasma gondii" (09.09.2008)

Professor Dr. Gisa Tiegs
Philipps-Universität, FB Biologie, Marburg
"Invasion ligands and inhibitors for the study of the mechanism of red blood cell invasion by the Apicomplexa" (30.06.2009)

Dr. Marcel Deponte
Ludwig-Maximilian-Universität, München
"Posttranslational modifications in Plasmodium falciparum-infected red blood cells and downstream effects" (09.06.2009)

Dr. Stefan Borrmann
Kenya Medical Research Programme/Wellcome Trust, Kilifi, Kenya
"Protein trafficking in Plasmodium falciparum-infected red blood cells and downstream effects" (09.06.2009)

Dr. Monica Hagedorn
University of Munich, School of Medicine
"Virus-encoded microRNAs" (02.06.2009)

Dr. Prof. Christian Maercker
Institute for Medical Microbiology, Immunology and Hygiene, University of Münster
"Early events mediating invasion into erythrocytes by the malaria parasite" (07.05.2008)

Dr. Brenton Calil
Research School of Molecular Biology, University of New South Wales, Sydney
"Early events mediating invasion into erythrocytes by the malaria parasite" (07.05.2008)

Dr. Daniel F. McFadden
University of Washington, Seattle
"Recent advances in the molecular biology of malaria pathogenesis" (11.05.2008)

Dr. Carmen Falcón
Burnet Institute, Melbourne
"Towards improved vaccine design for malaria" (02.10.2008)

Dr. Monika Hauser
Robert Koch-Institut, Berlin
"DDT use to fight malaria and its effects on agriculture" (30.09.2008)

Dr. Eberhard Zschenderlein
Heidelberg University School of Medicine, Institute of Infection Medicine
"Invasion biology: a new perspective on infection and disease" (27.06.2008)

Dr. Dr. Henning Ulrich
Institut für Med. Mikrobiologie, Virologie und Hygiene, UKE Hamburg
"Exploiting dendritic cell biology to define new adjuvants for vaccination strategies" (30.08.2008)

Dr. Karl-Heinz Hengel, MD
Ludwig-Maximilian-Universität, München
"Malaria: The most successful of human parasitic diseases" (01.09.2008)

Dr. Martin Schelling
Institute for Medical Microbiology, Immunology and Hygiene, University of Münster
"Learning from one another: The cytoskeleton of Alveolates" (01.07.2008)

Dr. Eberhard Zschenderlein
Heidelberg University School of Medicine, Institute of Infection Medicine
"Invasion biology: a new perspective on infection and disease" (27.06.2008)

Dr. Dr. Henning Ulrich
Institut für Med. Mikrobiologie, Virologie und Hygiene, UKE Hamburg
"Exploiting dendritic cell biology to define new adjuvants for vaccination strategies" (30.08.2008)

Dr. Karl-Heinz Hengel, MD
Ludwig-Maximilian-Universität, München
"Malaria: The most successful of human parasitic diseases" (01.09.2008)

Dr. Martin Schelling
Institute for Medical Microbiology, Immunology and Hygiene, University of Münster
"Learning from one another: The cytoskeleton of Alveolates" (01.07.2008)
STAFF ACTIVITIES
PD Dr. Norbert Brattig
Medical Microbiology Section
Dr. Norbert Brattig
Institut für Biochemie, Lausanne, Schweiz (04/2009)
Dr. Stephan Einhardt
Medical Microbiology Section
Dr. Stephan Einhardt
Institut für Medizinische Mikrobiologie und Infektionsforschung, Universität Ulm (2001-2008)
Mitglied der Evaluierungskommission, SFB 544, Universität Heidelberg (09-10/2009)
Mitglied der Evaluierungskommission, SFB 544, Universität Heidelberg (seit 2000)

Dr. Tim-Wolf Gilberger
Medical Microbiology Section
Dr. Tim-Wolf Gilberger
Universität Dresden (06/2008)
Universität Würzburg (05/2008)

Dr. Stephan Heinrich
Medical Microbiology Section
Dr. Stephan Heinrich
Institut für Medizinische Mikrobiologie und Infektionsforschung, Universität Ulm (2001-2008)
Mitglied der Evaluierungskommission, SFB 544, Universität Heidelberg (09-10/2009)
Mitglied der Evaluierungskommission, SFB 544, Universität Heidelberg (seit 2000)

Dr. Petra Emmerich
Medical Microbiology Section
Dr. Petra Emmerich
Istituto Superiore di Sanità, Rom / Italien (2008)
Istituto Superiore di Sanità, Rom / Italien (seit 2008)

Dr. Sindy Böttcher
Medical Microbiology Section
Dr. Sindy Böttcher
Universität Würzburg durch die DFG (09-10/2009)

Dr. Ger van Zandbergen
Medical Microbiology Section
Dr. Ger van Zandbergen
International Centre for Infectious Diseases, Burkina Faso (01/2008)

Dr. Annika Rademacher
Medical Microbiology Section
Dr. Annika Rademacher
Universität Heidelberg (04/2009)

Dr. Norbert Brattig
Medical Microbiology Section
Dr. Norbert Brattig
Institut für Biochemie, Lausanne, Schweiz (04/2009)

Dr. Guido Hegasy
Medical Microbiology Section
Dr. Guido Hegasy
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Dr. Rolf Horstmann

Medical Microbiology Section

Chairman, Board of Directors
Head, Department of Molecular Medicine
Chair for Tropical Medicine, M. Medical Faculty, University of Hamburg

Membership in Committees and Advisory Boards
Scientific Committee, AGW, Wissenschaftlicher Beirat, Deutsche Gesellschaft für Tropenmedizin und Internationale Gesundheit, Hamburg (since 2006)
Nordrhein-Westfalen Jugendrat, St. Antoniuskrankenhaus, Hamburg (2009)
Nordrhein-Westfalen Jugendrat, St. Antoniuskrankenhaus, Hamburg (2008)

Invited Speaker

9th Symposium Reisemedizin, Auswärtiges Amt, Berlin (06/2009)
Bund Deutscher Internisten, Berlin (03/2009)
Biomerieux Symposium, Köln (01/2009)
Fortbildungskongress der MEDICA (11/2008)
Landesfeuerwehrschule Hamburg (11/2008)
Akademie für Rettungsdienst und Gefahrenabwehr der Bundeswehr, Hamburg (07/2008)
Auswärtiges Amt, Berlin (04/2008)
Internationale Gesundheit e.V., Hamburg (12/2009)
Chemotherapie und der Deutsche Gesellschaft für Tropenmedizin und Internationale Gesundheit, München (11/2009)

Teaching
University of Hamburg, Faculty of Medicine
PD Dr. Thomas Jacobs

Medical Microbiology Section

Membership in Committees and Advisory Boards
Scientific Committee, AIP, Mikrobiologie-Programm, Centre national de la recherche scientifique, Mulhouse, France (2006)
Bibliotekarische Stelle, Seminars zur geordneten Studienführung, Institut für Medizinische Mikrobiologie, Freiburg, Deutschland (2007)

Invited Speaker

Academic Medicine: Seminar on Immunology, Medicine, Sciences Po, University of Manchester, UK (05/2009)

Prof. Dr. Christian G. Meyer

Medical Microbiology Section

Invited Speaker

American Society for Microbiology, San Diego, USA (05/2008)
Laboratorio Nacional de Enfermedades Infecciosas, Madrid, Spain (10/2008)
Young Academy of Europe (YAE), Berlin (11/2008)
Akademie für Risikobeurteilung, Berne, Switzerland (11/2008)

Teaching
University of Hamburg, Faculty of Medicine
PD Dr. Rolf D. Walter

Medical Microbiology Section

Invited Speaker

Department of Pharmacology, San Paulo Medical School, Brazil (10/2008)
Editorial board, Vaccines (since 2006)
Editorial board, Vaccine (since 2006)

PD Dr. Christian Wrenn

Medical Microbiology Section

Invited Speaker

Institute of Public Health and Prevention, University of Göttingen (09/2009)
Horizons in Molecular Biology 2009, Universität Göttingen (09/2009)
Australien (02/2008)
Menzies Research Institute, Hobart, Australien (02/2008)

Teaching
University of Hamburg, Department of Biology
Studium generale
Wissenschaftliche Hochschule für Unternehmensführung Vallendar, Deutschland (2006)

Fachberater, Ringversuchsleiter, Institut für Standardisierung und Dokumentation im medizinischen Laboratorium (since 2005)

Head, Department of Molecular Parasitology

Prof. Dr. Egbert Tannich

Medical Microbiology Section

Editorial Activities

Editorial Board, Current Topics in Parasitology (since 2006)
Editorial Board, Parasitology International (since 1998)
Editorial Board, Molecular and Biochemical Parasitology (since 1994)

Teaching
University of Hamburg, Faculty of Medicine
Dr. Michael Scheibler

Medical Microbiology Section

Invited Speaker

American Society for Parasitology, Arlington, USA (06/2008)

Teaching
University of Hamburg, Faculty of Medicine
Dr. Michael Schmidt-Chanasit

Medical Microbiology Section

Invited Speaker

American Society for Parasitology, Arlington, USA (06/2008)

Teaching
University of Hamburg, Faculty of Medicine
Dr. Jonas Schmidt-Chanasit

Medical Microbiology Section

Editorial Activities

Seminario sobre amíbiasis, Guanajuato, Mexico (02/2009)

Teaching
University of Hamburg, Faculty of Medicine
Dr. Jonas Schmidt-Chanasit

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American Society for Parasitology, Arlington, USA (06/2008)

Teaching
University of Hamburg, Faculty of Medicine
04.02. – 15.02.08   “Medicine in the Tropics” 01.04. – 27.06.08   Diploma course “Tropical Medicine”

07.11.08   Visit from Shanghai 21.11.08   Meeting of the Board of Trustees 28.01.09   Prof. Rietschel visits the Institute, accompanied by his German colleague, Lieutenant General, Medical Corps, Dr. Kurt-Heribert Nakaath.

28.05.08   Visit of a delegation from Shanghai, China, led by Vice Mayor and scientist Shen Xiaoming.

22.04.09   Meeting of the Institute’s Board of Trustees

28.01.09 Ernst Rietschel, president of the Leibniz Association, visits the Institute.

23.04.09 “Girls’ Day” and “For Boys” – Boys for the first time are invited to the institute, 53 girls and boys attend. Molecular parasitologist Iris Bruchhaus gives a seminar on parasites.

07.11.09 Visit of a delegation from Shanghai, China, led by Vice Mayor and scientist Shen Xiaoming.

20.02.09 – 22.02.09 The course “Medicine in the Tropics” for medical support staff is extended to three weeks”, 20 students are recorded.

01.04.09 – 26.06.09 The Diploma Course “Tropical Medicine” hosts 40 participants.

22.04.09 Prof. Bernard Lafont, Inspector General of the Medical Services of the French Army, visits the institute, accompanied by his German colleague, Lieutenant General, Medical Corps, Dr. Kurt-Heribert Nakath.

09.05.09 – 13.05.09 Rolf Horstmann is part of a delegation of the Leibniz Association travelling to Taiwan.

14.05.09 “BNI open” 2009. A total of 90 athletes from the Institute, the Bundeswehr Department for Tropical Medicine and the Diploma Course take part in the Institute’s sports festival. New attendance record of 51 fans.

01.01.08 The Institute becomes a Foundation under Public Law and thereby is granted greater autonomy and freedom to operate. The supervisory function of the Board of Trustees and in-depth examinations of the annual budget allocations safeguard a continuing careful and close guidance by the public stakeholders.

04.02.08 – 15.02.08 Training of 22 medical support staff in the course “Medicine in the Tropics”.

01.04.08 – 27.06.08 Diploma course “Tropical Medicine” designed for physicians but including a number of veterinarians, pharmacists and natural scientists – hosts 42 students.

04.02.08 Girls’ Day: Guided by scientific staff godmothers and godfathers, about 50 school children of Hamburg gain some insight into the work of the Institute. Virologist Petra Emmerich gives a seminar on dangerous viruses.

08.05.08 The Board of Directors welcomes Ms. Maria Becker, the administrator in the Federal Ministry of Health responsible for the Institute.

22.05.08 The annual sports festival “BNI open” brings together 50 institute members, 23 students of the Diploma Course and 7 members of the Department of Tropical Medicine of the Federal Armed Forces – the favorite is beach volleyball with a tournament of 9 teams cheered by 43 fans.

28.05.08 Humboldt Fellow Prof. Suman Dhar from New Delhi spends a three-month’s sabbatical in the Institute, studying in Tim Gilberger’s group the cell biology of malaria parasites.

11.07.08 Participating in a consortial grant application to the National Genome Research Network NIGRplus “Systematic Genomics of Chronic Inflammatory Barrier Diseases – A Network on Environmental Disorders” (coordinator S. Schreiber, Kiel), Christian Meyer and Rolf Horstmann are awarded 450,000 € from the Federal Ministry of Education and Research (BMBF) for genetic studies on tuberculosis.

06.10.08 A symposium organized by the Armed Forces for active and former general phy-sicians, admiral doctors, pharmacists and general stage manager of veterinary medicine takes place in the Institute.

12/2008 Together with scientists of the Robert Koch Institute, Jonas Schmidt-Chanasit represents Germany at an international workshop on viral haemorrhagic fevers in Winnipeg, Canada. The challenge is to reliably diagnose viruses of the Biosafety Levels 3 and 4 categories. It was reported that the German delegation performed best.

20.02.09 – 22.02.09 “Medicine in the Tropics” – A Network on Environmental Disorders hosts 40 participants.

22.05.08 Annual sports festival “BNI open”

06.10.08 Symposium organized by the Armed Forces

07.11.08 Visit of a delegation from Shanghai, China, led by Vice Mayor and scientist Shen Xiaoming.

21.11.08 Meeting of the Institute’s Board of Trustees

01.04.09 – 26.06.09 Diploma Course “Tropical Medicine” hosts 40 participants.

14.05.09 “BNI open” 2009. A total of 90 athletes from the Institute, the Bundeswehr Department for Tropical Medicine and the Diploma Course take part in the Institute’s sports festival. New attendance record of 51 fans.

02.02. bis 20.02.09 “Medicine in the Tropics”

01.04. bis 26.06.09 Diploma Course “Tropical Medicine”

11.07.08 Visit of a delegation from Shanghai, China, led by Vice Mayor and scientist Shen Xiaoming.

02.02.09 – 20.02.09 The course “Medicine in the Tropics” for medical support staff is extended to three weeks”, 20 students are recorded.

22.04.09 Meeting of the Institute’s Board of Trustees

12/2008 A symposium organized by the Armed Forces for active and former general phy-sicians, admiral doctors, pharmacists and general stage manager of veterinary medicine takes place in the Institute.

28.11.08 Visit from Shanghai 21.11.08 Meeting of the Board of Trustees

01.04.09 Visit of a delegation from Shanghai, China, led by Vice Mayor and scientist Shen Xiaoming.

22.04.09 “Girls’ Day” and “For Boys” – Boys for the first time are invited to the institute, 53 girls and boys attend. Molecular parasitologist Iris Bruchhaus gives a semi-nar on parasites.

01.05.09 Dr. Kathleen Rankin from the USA joins Vincenzo Inezi’s group with a Humboldt fellowship studying host cell factors in the development of malaria parasites in the liver.

23.04.09 “Girls’ Day” and “For Boys” – Boys for the first time are invited to the institute, 53 girls and boys attend. Molecular parasitologist Iris Bruchhaus gives a seminar on parasites.

14.05.09 “BNI open” 2009. A total of 90 athletes from the Institute, the Bundeswehr Department for Tropical Medicine and the Diploma Course take part in the Institute’s sports festival. New attendance record of 51 fans.
03.07.09
50 members of the German Journalists’ Association and the association “Free and Young Journalists” visit the Institute.

09.07.09
Capstone laid in the extension building.

13.07.09
Inauguration of the extension building celebrated by the Federal Minister of Health Ulla Schmidt, Hamburg’s First Mayor Ole von Beust and many other honourable guests.

14.09.09
Kick-off event of the “Leibniz week of biodiversity” in the Institute – one of the most important contributions to the “Year of Science”.

25.09.09
Members of the deputation of the Hamburg Ministry of Health and the Hamburg Ministry of Science and Research visit the Institute.

01.10.09
Humboldt Fellow Dr. Nadia Ben Nouir from Monastir, Tunisia, starts a research project in the Immunology Department. Her focus is the heat shock protein HSP60 of the nematode Strongyloides ratti and its influence on the host’s immune system.

09.10.09
Visit of a group “Hospital Management Asia” of the InWent agency for international capacity building and development.

07.11.09
“3rd Science Night of Knowledge” in Hamburg. More than 2,000 visitors are offered a varied programme by 90 helpers and speakers of the Institute.

10.11.09
Evaluation by the Leibniz Association, 19 reviewers pay a two days’ site visit to the Institute.

17.11.09
Jointly with colleagues of the European ScreeningPort, Carsten Wrenger receives a grant of 400,000 € from the Hamburg Ministry of Science and Research for “Drug development for the prevention and treatment of malaria”.

27.11.09
At the annual meeting of the Leibniz Association Angelika Sturm receives the Leibniz Newcomer Award endowed with 3,000 € in the category of natural and technical sciences. In her doctoral thesis she describes a previously unknown developmental stage of malaria parasites.

04.12.09 – 05.12.09
The 7th Malaria Meeting of the Paul Ehrlich Society and the German Society for Tropical Medicine and International Health is held in the historic lecture hall of the Institute. Jürgen May organizes the scientific programme on malaria, malaria parasites and their vector mosquitoes.

02.06.09
Dr. Stephan Ehrhardt will conduct the first multicenter controlled clinical trial organized by a member of the Institute. He is granted funding of over 1,100,000 € by BMBF to study the effectiveness of the commonly used yeast preparation Perenterol® - "Probiotic Saccharomyces boulardii for the prevention and treatment of antibiotic-associated diarrhoea – a randomised, double blind, placebo controlled trial". It is the largest clinical study funded by the BMBF thus far.

06/09 – 12/09
In the “Year of Science” 2009 the Institute contributes a public lecture series to the “Research Expedition Germany”.

09.05. bis 13.05.09
Leibniz-Delegation travels to Taiwan

14.05.09
"BNI open" 2009

06/09 – 12/09
Public lecture series of "Year of Science"

09.07.09
Capstone laid

13.07.09
Inauguration with Federal Minister of Health Ursula Schmidt and Hamburg’s First Mayor Ole von Beust

09.10.09
Visit from Asia

07.11.09
3rd Science Night of Knowledge

10.11.09
Evaluation by the Leibniz Association

27.11.09
As part of a collaborative research initiative "Inflammation of the Liver: Infection, Immune Regulation, and Consequences" (SFB 841, coordinator A. Lohse, UKE) three projects with a total funding of 1,100,000 € are granted to Volker Neussler, Thomas Jacobs and Egbert Tannich.

18. 12.09
Dr. Birte Kretschmer is awarded the "Heinrich Pette Doctoral Thesis Prize for Neurology and Immunology 2009". In her award-winning doctoral thesis, she showed the influence the CD83 protein on the activity and in particular the influence on the production of antibodies by B lymphocytes.
RESEARCH – CURE – TEACHING