Swiss Tropical and Public Health Institute

Annual Report 2017
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Preface

“It improving people’s health internationally and nationally through excellence in research, teaching and training, and services.” Swiss TPH effectively pursues this mandate day after day and produces measurable results, outputs and impact. For example, in 2017, Swiss TPH researchers published 500 articles in peer-reviewed journals. Our staff taught more than 3,500 in-class hours at the University of Basel alone and offered over 250 days of postgraduate training in more than 40 specialised courses. We expanded the portfolio of medical and diagnostic services offered in Basel and helped to strengthen clinical services and health systems in many parts of the world. At the heart of this success lies the deep commitment of Swiss TPH’s staff and the valuable support we receive from local and national governments, from the University of Basel and from our partners and funders in Switzerland and abroad – many thanks to all!

It is my pleasure to present to you the Swiss TPH Annual Report 2017. Please take a moment to put your busy schedules aside and read on. I promise there is something here for everybody. Check out the selected highlights of last year, delve into our insight stories, get acquainted with the progress made in the key areas of activity that cut across the institute, learn about the latest departmental developments or peruse our latest financial figures.

State treaty for bi-cantonal support in place

On 1 January 2017, after more than two years of meticulous preparation and negotiations, the state treaty for bi-cantonal support from Basel-Stadt and Basel-Landschaft came into effect. The contract came adapted governance, reporting and controlling structures, and additional financial support from the local governments. Contributions from the State Secretariat for Education, Research and Innovation (SERI) increased slightly, while support from the University of Basel remained stable. Taken together, core contributions in 2017 amounted to 22 per cent of Swiss TPH’s total financial turnover of CHF 86 million. The remaining 78 per cent were acquired through third-party competitive bids in research and services, as well as fellowship grants. Of note, we were able to put aside a first tranche of financial resources for “Belo Horizonte” – our new, modern and multi-functional building in Allschwil, where we will move towards the end of 2021.

Strategic and structural developments

The Swiss TPH strategy has been further consolidated and incorporates recommendations put forth by our external review board and outcomes from the annual project leaders’ retreat. The Swiss TPH Board of Governors commissioned Carol Vlassoff from Canada and her team to carry out a three-day external review in February 2017. Key recommendations were discussed and addressed during the project leaders’ retreat in March 2017 and guided scrutiny of our project portfolio, grouped into 13 key areas of activity. Actions were formulated and approved by the Board of Governors in May 2017. We will follow the same process next year in an effort to constantly improve management and reporting quality.
Guided by our strategy and by the successful recruitment and promotion of key staff, Swiss TPH’s structure was further adapted. Most importantly, the Department of Medicine, led by Daniel Paris, now consists of five units: Clinical Operations, Clinical Research, Diagnostics, Medical Services, and Medicines Implementation Research. In addition to offering clinical, diagnostic and medical services in Basel and abroad, this department provides unique opportunities for research and will foster collaboration across units and departments. Within the Department of Epidemiology and Public Health, led by Nicole Probst-Hensch, the large Health Systems Research and Dynamic Modelling unit was split into two separate units: Infectious Disease Modelling, led by Tom Smith, and Household Economics and Health Systems Research, led by Günther Fink. We are delighted that Günther Fink and his family transitioned smoothly from the Harvard T.H. Chan School of Public Health in Boston to Swiss TPH in Basel, where he took up the Eckenstein-Geigy Professorship. Let me also use this opportunity to wholeheartedly congratulate Melissa Penny who, in March 2017, was awarded a highly competitive SNSF-Professorship. This personal career development grant will allow her to further develop and utilise mathematical models to deepen the understanding of parasite-host and intervention dynamics, with a particular emphasis on malaria.

We are equally delighted that Jennifer Keiser was awarded a Professorship in Neglected Tropical Diseases in November 2017; I wish her and her group success in advancing the development and clinical testings of new drugs and combination therapies against parasitic worm infections. A host of additional promotions were granted during the reporting period, and these are summarised in the respective departmental sections of the report. (See: p. 56)

**Key achievements**

I am proud to announce that – for the first time – researchers from Swiss TPH, in partnership with scientists from other universities, international organisations and a broad range of stakeholders, reached our ambitious publication goal of “500 – no less!” Indeed, 503 papers were published in peer-reviewed journals. The main areas of scientific inquiry pertain to (i) infectious diseases; (ii) public, environmental and occupational health; (iii) tropical medicine; and (iv) parasitology. It is worth noting that the University of Basel is ranked among the top ten universities worldwide for two research areas – tropical medicine and parasitology. It goes without saying that Swiss TPH, as an associated institute of the university, is at the root of this achievement.
With regard to services, Swiss TPH offered more than 3,000 clinical and diagnostic consultations and provided some 12,000 people with expert travel advice and vaccinations against yellow fever and other tropical diseases in 2017. Teaching and training activities at the bachelor, master and doctoral levels progressed smoothly. Another 32 students successfully completed their master studies in epidemiology and infection biology, bringing the total number of graduates to 248 since the launch of these specialised master courses, 13 years ago. On a related note, the board of the University of Basel approved the decision to expand the master programme in epidemiology from 90 European Credit Transfer and Accumulation System (ECTS) credits to 120 ECTS credits. Hence, from 2018 onwards, Swiss TPH offers one of the most comprehensive epidemiology programmes worldwide. At the doctoral level, 36 students successfully defended their PhDs in the faculties of science and medicine. Our master and doctoral students have passports from 17 and 16 different countries, respectively, underscoring the diversity of Swiss TPH’s student body and the institute's ability to attract students from around the world.

Stefan Mörgeli – Thanks and “Belo Horizonte”

Before concluding this preface, I must single out one individual: Stefan Mörgeli, the administrative director of Swiss TPH. For almost a decade, he led the administrative department with great commitment, oversight and strategic flair. On 31 December 2017, he took an early retirement and handed over the department, in perfect shape, to Matthias Schmid-Huberty, who was appointed after a rigorous selection process lasting more than six months. On behalf of the entire institute, I would like to express our profound thanks and appreciation to Stefan Mörgeli for his outstanding contributions and loyalty to Swiss TPH. When I took the helm of Swiss TPH in mid-2015, Stefan Mörgeli was my counterpart from day one and our collaboration was built on mutual trust. Fortunately, Stefan Mörgeli will remain with us as the project leader for our new building, “Belo Horizonte”.

Talking about “Belo Horizonte”, it is my pleasure to report that this project – the single largest project the institute has undertaken thus far – is on track. The various committees at Swiss TPH have worked hand-in-hand with the architects, Philipp Kunz and Renato Mösch and their team, who submitted a complete pre-proposal shortly before the end of 2017. We will keep you posted about further developments, as we prepare the grounds for our move to Allschwil in 2021.

I hope that you will find the Swiss TPH Annual Report 2017 a refreshing and inspiring read. Deepest thanks to all of you for your support, contributions and commitment. Comments and suggestions are welcome over a cup of coffee, by phone, e-mail, twitter or other means of social media. Help us spread the word, disseminate key achievements and further improve our products. Together, we can make a difference to improving the health of populations locally, nationally and internationally.

Prof. Dr. Jürg Utzinger
Director, Swiss TPH
“Swiss TPH will have an important role in Allschwil”

Since 1 January 2017, Swiss TPH has been jointly sponsored by the Cantons of Basel-Stadt and Basel-Landschaft. Doris Fellenstein Wirth and Joakim Rüegger, both members of the Board of Governors, discuss the collaboration between the two cantons on higher education policy and the expectations for Swiss TPH when it moves to the BaseLink area in Allschwil.

The local press often reports on complications concerning collaboration between the Cantons of Basel-Stadt and Basel-Landschaft, particularly in the area of university education. How is it that the decision to jointly sponsor Swiss TPH was reached so rapidly and by mutual agreement?

Doris Fellenstein Wirth: “Not everything that circulates in the local press should be taken at face value. The way in which the relationship between Basel-Landschaft and Basel-Stadt is portrayed in the media rarely corresponds to the actual reality. One key driving force behind the collaborative solution for Swiss TPH was certainly the institute’s outstanding reputation. The significant benefits offered by its research, teaching and service activities were clear to all concerned, and this has since been clearly underlined by parliamentary consultation. Another benefit was the fact that Swiss TPH was already well known to the general public in the Canton of Basel-Landschaft due to its travel clinic.”

Joakim Rüegger: “It wasn’t as if the idea was to cancel the agreement with the university of Basel and come up with a new one for Swiss TPH. There was one agreement for the university and one for the university of applied sciences, so a joint agreement for Swiss TPH was a logical development. One of the milestones along this path was the fact that we involved those responsible for economic development in Basel-Landschaft in the process at an early stage. A second important point was that Swiss TPH decided on the Switzerland Innovation Park in Allschwil as its future location.”

So it was all very harmonious?

Fellenstein Wirth: “My experience is that whenever the debate revolves around the issues of science and economics in the region, cantonal interests step back and make way for a regional perspective. Especially when it comes to discussions surrounding an organisation like Swiss TPH, which serves a public purpose on a worldwide scale, it would have been short-sighted to have focused on cantonal interests only. This broader perspective called for abstraction from all sides, and this was definitely achieved.”

So the somewhat tense financial situation in the Canton of Basel-Landschaft did not hinder agreement?

Rüegger: “There was a little convincing required here and there. But – Swiss TPH not only has an extremely good reputation as a teaching, research and service organisation – it is also an organisation with a very good cost-benefit ratio. Swiss TPH’s high financial autonomy due to its above-average level of third-party funding is testimony to the institute’s outstanding performance.”

Fellenstein Wirth: “Both the Department of Education and the Department of Health and Economic Affairs of the Canton of Basel-Landschaft see significant practical benefit in this new arrangement. There are many connections with cantonal medical care, especially in the area of vaccinations, epidemic prevention and medical training. I also anticipate that the planned relocation to Allschwil will be another factor that supports identification.”

From 2021, Swiss TPH will relocate to Allschwil as an “anchor institution”. What will be the expectations placed on such an institution at the BaseLink area?

Rüegger: “Several start-ups will be taking up residence at the BaseLink area in Allschwil. Some of them will stay the course, while others will disappear in time. It is ideal, therefore, that traditional establishments, such as Swiss TPH, will act as anchoring institutions, to bring a certain continuity and even out the “seasonal” fluctuations. Swiss TPH will be an important
knowledge bearer when it comes to supporting innovation, all the way from conception to implementation.”

Fellenstein Wirth: “With the relocation of Swiss TPH to this dynamic environment, I hope to see effective networking with other scientific establishments that will enable business ideas to mature and each side to inspire the other. We hope that Swiss TPH will take on a vital role and enable us to make a concrete contribution to economic development in the region.”

Joakim Rüegger

Joakim Rüegger completed a degree in history, German and English studies at the University of Basel before going on to hold junior management positions in both the private (consulting) and public sector. He has worked for the Department of Education of the Canton of Basel-Stadt since 1995, and has been Head of Higher Education since 1997. Until the end of 2017, he was also Secretary of the University Council (in parallel). Joakim Rüegger is married, with two adult sons and one daughter, and has two grandchildren.

Doris Fellenstein Wirth

Doris Fellenstein Wirth is Head of Higher Education, Research and Innovation at the Canton of Basel-Landschaft. After studying economics at the University of Münster (Germany), she wrote her doctoral dissertation at the Faculty of Business and Economics at the University of Basel. She began her professional career as General Secretary of Basler Kantonalbank. After 10 years in this role, she joined UBS as Head of Marketing for north-western Switzerland, and subsequently moved on to become Head of Communications at the Association of Swiss Cantonal Banks. In view of her affinity for teaching and research, she continued to lecture at the University of Basel, Bern University of Applied Sciences and as an expert at the Wirtschaftsgymnasium Basel, before becoming programme director for business studies at the School of Management and Law at the Zurich University of Applied Sciences. Fellenstein Wirth is married and has two teenage sons.
The Swiss Tropical and Public Health Institute (Swiss TPH) is a world-leading institute in global health, with a particular focus on low- and middle-income countries. By uniquely combining research, services, and education and training, we aim to improve the health and wellbeing of populations through a better understanding of disease and health systems and by acting on this knowledge.

Five departments working across research, services, and education and training

**Medical Parasitology and Infection Biology (MPI)**
- page 56

**Medical (MED)**
- page 58

**Swiss Centre for International Health (SCIH)**
- page 60

**Epidemiology and Public Health (EPH)**
- page 57

**Education and Training (ET)**
- page 59

- **MED** provides clinical and diagnostic services for travellers and conducts clinical research in low-resource settings.
- **MPI** studies diseases of poverty and develops diagnostics, drugs and vaccines to combat them.
- **SCIH** provides policy advice, project design and management in the area of national and global health.
- **ET** offers local, national and international training programmes and courses at graduate and postgraduate levels.
- **EPH** studies health and diseases in relation to their social, ecological and genetic determinants.
A diverse, specialised and highly motivated workforce

More than 800 employees and students work at Swiss TPH, focusing on infectious and non-communicable diseases, environment, society and health as well as health systems and interventions. Our expertise spans from the bench to the field, from basic to operational, from molecular to spatial, and from genes to health systems. On page 41 you find an overview of our key areas of activities.

823 people from 79 nations

Based in Basel

Women

Men

444

379

196

823 people from 79 nations

Based in 39 countries

Key figures education and training

Teachers at Swiss TPH

Faculty members, University of Basel

PhD students

Master students in 2 Msc-programmes

Short courses

Post-graduates

743

170

57

45

118

34

2100 Teaching hours at the University of Basel (bachelor-, master-, PhD-programmes)

2600 Teaching hours at postgraduate level

Scientific reach: 503 peer-reviewed publications

Distribution of “research areas” of Swiss TPH publications in 2017, according to Web of Science (accessed: April 2018)
Worldwide activities

Our translational approach, from innovation and validation to application, enables us to bring novel diagnostics, drugs and vaccines directly to people and communities. Throughout, we pursue a spirit of mutual learning for change working with partners in 334 projects in over 100 implementing countries.

**Innovation**
Discover novel drugs, vaccines and diagnostics and develop new approaches and tools

**Validation**
Generate evidence in the field and under real-world conditions

**Application**
Integrate new treatments and approaches into policy and health systems

Using comprehensive health data to study chronic diseases (page 37–39)

Establishing smartphone surveillance systems for zoonotic diseases in Maya communities in Guatemala

Smartphone applications to improve the health of children in Nigeria and Tanzania (page 31–33)
Integrated care for the treatment of non-communicable diseases in Romania

Validating safety and efficacy of tribendimidine against hookworm and liver fluke infections in Lao PDR (page 25–27)

Exploring the health impact of air pollution in Vietnam

Treating HIV patients at the Chronic Disease Clinic in Ifakara (CDCI), Tanzania
Transitions

A new administrative director for Swiss TPH

Stefan Mörgeli served as administrative director at the Swiss TPH for almost 10 years. On 1 January 2018, he handed over the reins to his successor, Matthias Schmid-Huberty.

When Stefan Mörgeli was appointed administrative director of Swiss TPH in 2008, the institute had a turnover of CHF 42 million and a headcount of around 450 staff. Swiss TPH went on to grow rapidly under former Director, Marcel Tanner, with turnover rising to CHF 77 million by the end of 2015. This figure has continued to increase in the last two years, reaching CHF 86 million at the end of 2017. In parallel, the number of employees has risen to more than 800. Mörgeli had the huge task of creating structures that would facilitate such growth, together with all the associated responsibilities. “‘Consolidation’ was a word we barely dared to mention,” he says, smiling.

People, systems and properties

With an extensive to-do list, he approached each task systematically and with dedication. Mörgeli and his team established a new pay structure that categorises employees according to clear criteria and functions, and does not allow for wage discrimination between women and men. Swiss TPH’s IT technology was brought into the twenty-first century, and rigorous data security was introduced in an age of daily hacker attacks. The new Intranet platform with improved data quality allows for the exchange of information between Swiss TPH’s departments.

Mörgeli provided valuable input into strategic discussions, kept a close eye on the institute’s budget and made sure that structures and processes remained lean. He also served as a bridge to the local government. Thanks to his in-depth knowledge and the respect he enjoyed among administrators for the Cantons of Basel-Stadt and Basel-Landschaft, he played a significant role in negotiating the treaty securing bi-cantonal sponsorship for Swiss TPH.

Moreover, there was the new building project. In October 2021, Swiss TPH will move to its new premises at the BaseLink area in Allschwil. Mörgeli initiated the feasibility study in 2012, and will, in future, lead this major project. “In my professional career of over 40 years, my position at Swiss TPH was probably the most challenging but also the most satisfying of my roles,” says Mörgeli. Staff at Swiss TPH owe a debt of gratitude to their former administrative director. “On behalf of the directorate and all of the staff at Swiss TPH, I would like to thank Stefan Mörgeli wholeheartedly for his long-standing, determined and judicious commitment to our institute,” says Director Jürg Utzinger. “His tireless dedication, great acceptance and loyalty, combined with excellent leadership qualities and outstanding strategic thinking meant that impeccable administration was ensured during a sustained period of rapid growth,” comments Utzinger. “We are delighted to be able to hold on to Stefan Mörgeli as project leader in the ‘Belo Horizonte’ new building project.”

New administrative director, Matthias Schmid-Huberty

In summer 2017, the Swiss TPH Board of Governors unanimously elected Matthias Schmid-Huberty as the institute’s new administrative director. He brings long-standing experience in
Günther Fink has held the Eckenstein-Geigy-Foundation professorship in Epidemiology and Household Economics at Swiss TPH since 2017. His appointment signalled Swiss TPH’s decision to strengthen health economics as a core field of research.

Günther Fink points to the small screen of his mobile phone. Parallel lines perform a gentle wave-like movement. The growth curve is populated with what appear to be randomly cast dots. Roughly 40 per cent of children in Zambia are undernourished, the economist explains, with significant consequences for the children and for the economy of the African country. The principal focus of Fink’s work at Swiss TPH is analysing the effects of poor health on the economies of low-income countries, and analysing the effects of economic factors on health. “We want to better understand how people and markets behave,” he says. He is particularly concerned about the health of young children. “Even just from an economic perspective, what happens in the early years of a child’s life is extremely important,” says Fink.

Fink is familiar with this lesson from his own experience. Now aged 45, Fink grew up on a farm in Austria. None of his relatives had ever gone to university. He, too, seemed destined to learn a “proper” trade. But a boy who had moved from the city, and who was soon to become a friend of Fink’s, persuaded him to go to highschool college.

Examples are always more illuminating. Let us take the case of two children of the same age, with identical genetic characteristics. One of the children grows up in a sheltered family. They drink milk and honey and recite Goethe poetry in front of a warming open fire. The parents of the other child are alcohol-dependent. They live on credit, and are lucky if they manage to have a balanced diet. Both children start school at the age of six. But the second child’s chances of doing well at school are much lower than those of the first child. “It’s always possible to catch up,
but it’s very difficult to make up that amount of lost ground.”

Things were not always easy at highschool college. The school’s motto was: “toe the line or you’re out.” Of the 24 children who started together, only seven passed the school-leaving examination. Fink had a flair for languages. He flirted with the idea of studying languages and dreamt of becoming an interpreter. But a good friend of his sister argued against his plans. Do you really want to spend your life in the dole queue? And then the University of Innsbruck came up with a new international economic programme. “Can’t do any harm,” thought Günther Fink. And he was right. Fink was a brilliant student. After graduating, he managed to snap up a Fulbright scholarship, allowing him to study in the United States.

Fink analyses large data sets relating to entire countries. He and his team at Swiss TPH test new interventions at the level of individual households in countries in Africa and Latin America. What are children’s long-term educational opportunities if we establish new healthcare programmes? What influence do health insurance schemes have on the well-being of African households? And how is it at all possible to motivate poor people to put money aside for health insurance schemes?

Günther Fink absorbed the entire canon of work in the field of economics: microeconomics, macroeconomics, environmental economics. He also worked in the finance department of automobile giant, Ford. But there was never any question of building a career at Ford. “It was all too hierarchical. Staff were too hell-bent on advancing their careers,” he recalls. Fink’s job was to prepare reports on the markets of Eastern European countries. And then one day, he chanced upon a PhD advertisement from the university of Milan – an enticing prospect for a young academic who had never really planned out a career path for himself. His professors in the United States turned up their noses; Milan – for renowned economists, that sounded almost as bad as Petropavlovsk. “The decision may have been a little uninformed,” Fink recalls. But he had no regrets. In Milan, Fink focused on social insurance, the economics of education and, time and again, on social inequality issues. The United States did not have to do with him for very long. At an annual meeting for economists, the Harvard School of Public Health offered him a postdoctoral position in Boston. “That doesn’t sound too bad,” Fink thought. and he accepted the position. Again, he was right; it was not bad at all. The University of Harvard is one of the most renowned institutions in the world in the field of healthcare. Fink studied the effects of poor health on the economies of low-income countries – a research focus that he now pursues at Swiss TPH.

Fink does not accept the notion that it might be frustrating for a health economist to suggest improvements for poor households that people are unable to put into practice. “It is precisely in areas where people are poor that we can use simple methods to achieve a great deal,” he says. Consider Zambia, for example, where many young children follow a dangerous growth curve. Rather than pushing the idea of a new superfood with national authorities, Fink is more concerned with providing parents with straightforward information. He and his team have developed a simple poster showing the outlines of three different children. One represents an undernourished child, another the norm and the third, a child who is too big for its age. Parents can stand their children up against the poster and see if their youngsters deviate from the norm. If they do, the poster offers some simple suggestions that even poor households can implement. One example is to add the protein-rich husk to the pot when cooking their daily maize ration. “Global health experts tend to promote technical solutions from the outside. What makes a difference, however, is using small-scale human solutions to improve healthcare systems from the inside.”

Selected Publication
A translational approach to medicine

The new Department of Medicine at Swiss TPH operates according to an internationally recognised system for quality and data management. By integrating clinical services and research, the institute can create new synergies to develop and test drugs, vaccines and diagnostics.

“I’m a clinician through and through,” says Daniel Paris, Head of the Department of Medicine at Swiss TPH. “The physician and the researcher in me act together at all times.” Last year, however, Paris faced a great challenge in his role as a manager. Together with his team, he refined and restructured the institute’s medical department to create an internationally unique centre of competence for evidence-based, patient-relevant clinical research.

Swiss TPH tests compounds, vaccines and diagnostic products in many regions of the world. It does so with a view to answering scientific questions about communicable and non-communicable diseases – from tuberculosis to diabetes – and to improving medical treatments for patients. “The systematic interaction between diagnostics, clinical research and therapy means we are now well positioned at an international level,” says Paris.

The Centre Suisse de Recherches Scientifiques en Côte d’Ivoire (CSRS) is an important Swiss TPH partner.

Translational medicine

The aim of translational medicine is to promote the discovery of new diagnostic tools and forms of treatment, using an interdisciplinary approach – “from bench to bedside” or from the research laboratory to application in patients. In short, translational medicine involves translating research into action for the individual.
Introducing a professional quality and data management system was an important component of the reorganisation process. The system enables Swiss TPH to meet internationally recognised standards, such as those for good clinical practice (GCP) (the ethical, scientific and operational standard for clinical research in humans), ISO certification and standard operating procedures (SOPs) (the correct steps, checks and documentation for clinical processes with regard to their possible impact on health).

Communicating in a global context

To ensure the quality of clinical research in other regions of the world, Paris believes that communicating clinical processes is vital. “There’s no point in us developing a professional clinical approach to tropical medicine here in Switzerland if it can’t then be implemented accordingly in Africa, Asia or Latin America.” With its global network of partner organisations, Swiss TPH is well placed to ensure clinical research quality in countries with low to moderate incomes. The institute aims to extend this well-functioning, global research network beyond Africa and into Asia and Latin America. The move would allow Swiss TPH to be “even more connected with the world,” says Paris, who spent many years working in Southeast Asia.

Nurturing a new generation of doctors

By integrating clinical services and research and worldwide fields of application, Swiss TPH offers an ideal platform for training a new generation of physicians. Paris is convinced that “we help to reinforce their professional competence by promoting analytical, evidence-based medicine and asking the right questions.” The institute, he says, is thus able to offer an alternative to a conventional medical career, whereby one moves from research in the laboratory and work in a clinic abroad to a return home and an appointment to a teaching post.

Improved collaboration within Swiss TPH

The reorganisation of the Department of Medicine at Swiss TPH was made possible by means of a combined effort of all team members, says Paris in retrospect. The new structure, in place since October 2017, reinforces synergistic collaboration with the institute’s other departments. Now, research questions in the areas of epidemiology and infection biology can be answered in a clinical context. At the same time, important findings and discoveries in the two research departments can be implemented more effectively by using a translational approach on the clinical side, and thus contribute to patient well-being. A diagnostic product or drug developed at Swiss TPH can, for example, be put through the entire clinical testing process in the Department of Medicine.

“It’s worthwhile to carry out fundamental research when the findings can then be carried over into the field or into a hospital,” says Paris. “The introduction of translational medicine enables us to fill a gap in the system, and we hope we can train our doctors in a way that brings about an increase in quality in medicine and an improved understanding of disease.”
2017 – In Retrospect

Günther Fink, Associate Professor of Epidemiology and Household Economics

The University Council of the University of Basel appoints health economist Günther Fink as Associate Professor of Epidemiology and Household Economics at the Faculty of Sciences. The professorship is based at Swiss TPH, and is funded by the Eckenstein-Geigy Foundation with CHF 14 million over a period of 10 years. It will also create synergies with the Faculty of Business and Economics of the University of Basel. As a renowned health economist, Fink combines epidemiological, economic and social science issues in his research. He develops quantitative and qualitative models for strengthening healthcare systems worldwide, placing a particular emphasis on the health of children in low-income countries. (See: pp. 14–15)

Results announced in competition for new premises in Allschwil

The Basel-based architectural firm, Kunz und Mösch GmbH, wins the competition for constructing the new Swiss TPH building at the BaseLink area in Allschwil. The jury, headed by Marco Frigerio, Cantonal Architect for the Canton of Basel-Landschaft, was impressed by the “Belo Horizonte” project design. The five-storey building offers functionality and connectivity in an architecturally appealing design, expertly combining laboratory, office and teaching spaces.

Swiss TPH evaluates UN healthcare programmes for young people

The United Nations Population Fund (UNFPA) acknowledges the evaluation report drafted by Swiss TPH on its worldwide activities to improve young people’s health. The results of the evaluation will serve as a basis for strategically reorienting a number of programmes between 2018 and 2021, and will help many countries to achieve the UN’s Sustainable Development Goals.

Conference on integrated healthcare in Kosovo

Numerous healthcare specialists attend the Moving Towards Integrated Care conference, co-organised by Swiss TPH in the Kosovo capital, Pristina. They discuss how general practitioners can offer better treatment for patients with chronic diseases. The conference forms part of the Accessible Quality Health Care project, financed by the Swiss Agency for Development and Cooperation (SDC), which aims to improve healthcare through integrated services in 12 municipalities in Kosovo.

January

February
2017 – In Retrospect

SNSF professorship for Melissa Penny

The Swiss National Science Foundation (SNSF) awards Melissa Penny a professorship. The Australian mathematician has been a project leader at Swiss TPH since 2013. In 2017, she completed her postdoctoral thesis (Habilitation) and was promoted to senior lecturer in the Faculty of Sciences at the University of Basel. In her project, funded over four years, Penny and her team will model interactions between parasites, drugs and vaccines in connection with malaria and neglected tropical diseases. The aim of the project is to develop more effective strategies for controlling poverty-related diseases and for the public healthcare system.

Spring symposium on evidence for better health

The Swiss TPH spring symposium attracts more than 130 health specialists from all over the world to Basel. Xavier Bosch-Capblanch from the Swiss Centre for International Health at Swiss TPH organises the scientific conference on the subject of evidence for better health. Experts discuss new possibilities for improving the quality of health data and consider how scientific results can be incorporated even more efficiently and effectively in health policy.

Swiss TPH becomes a WHO collaborating centre for malaria

The World Health Organization (WHO) names Swiss TPH a collaborating centre for malaria control, acknowledging the institute’s long-standing expertise in developing new vaccines and compounds, managing vector control and implementing and evaluating health interventions. Christian Lengeler, the new President of the Swiss Malaria Group, and Konstantina Boutsika will head the malaria collaborating centre.

Fredros Okumu receives renowned research prize

Fredros Okumu, Director of Science at the Ifakara Health Institute (IHI) in Tanzania, a long-standing partner organisation of Swiss TPH, is awarded an international research prize for young talent. The prize is awarded jointly by philanthropic organisations, such as the Bill & Melinda Gates Foundation, the Wellcome Trust and the Howard Hughes Medical Institute. The prize money of USD 650,000 will enable Okumu to expand his research in the field of vector control against malaria.

The SDC supports the Summer School in Public Health Policy, Economics and Management

The Swiss Agency for Development and Cooperation (SDC) agrees to fund the Summer School in Public Health Policy, Economics and Management for another four years. Every year, the summer school in Lugano attracts around 40 participants from Africa, Asia and Eastern Europe seeking to improve their knowledge in the field of public health. The Summer School is a joint project of the Università della Svizzera italiana (USI) in Lugano, Swiss TPH, the Swiss School of Public Health (SSPH+) and the SDC.
Swiss TPH in the flesh

In 2017, Swiss TPH once again presents its activities to interested audiences in Basel. At the Umwelttage Basel environment event in June, staff from the institute talk about the impact of noise pollution and mobile phone radiation on human health. On National Future Day in November, teenagers immerse themselves in the fascinating world of molecules and parasites.

30th anniversary of the EEPE

In honour of its 30th anniversary, the European Educational Programme in Epidemiology (EEPE) launches the Rodolfo Saracci lecture for young scientists. In its first edition, Maria Carolina Borges (University of Bristol, UK) talks about the epidemiological challenges of today. Swiss TPH is responsible for the financial administration of the EEPE and organises three lectures.

Science of eradication malaria course in Basel

Together with Harvard University in Boston and the Barcelona Institute for Global Health (ISGlobal), Swiss TPH organises the Science of eradication malaria course in Basel. The week-long intensive course in management brings together the world’s best malaria experts and allows for an in-depth exchange about progress and challenges in the global fight against malaria.

Eggs of the Asian tiger mosquito identified in Basel

At the end of July, eggs of the Asian tiger mosquito are identified in Basel for the first time. While there are no indications of an established population in the Canton of Basel-Stadt, the Asian tiger mosquito is advancing. Since 2013, Swiss TPH has been monitoring the spread of the mosquitoes in Switzerland on behalf of the Federal Office for the Environment and the Basel-Stadt health department.
2017 – In Retrospect

Basel award for former director, Marcel Tanner

The Sperber-Kollegium in Basel names Marcel Tanner, director emeritus of Swiss TPH, “Ehrenspalebarglemer 2017”. Scientists have not been very well represented on Spalenberg’s “walk of fame” in the past, but Tanner’s appointment changes that. The Sperber-Kollegium recognises his pioneering role in the fight against malaria and various neglected diseases, as well as his great achievements for Basel, for Switzerland and for many countries in the global south.

Malaria course in Tanzania

The fourth edition of the malaria course welcomes 16 participants from 14 different countries. Experts from all over the world pass on relevant knowledge for researching and controlling malaria, using new teaching methods, such as e-Learning modules.

Jennifer Keiser appointed Associate Professor of Neglected Tropical Diseases

At its meeting on 28 November 2017, the University Council of the University of Basel names Jennifer Keiser of Swiss TPH Associate Professor of Neglected Tropical Diseases at the Faculty of Sciences. The professorship is based at Swiss TPH. Keiser is a renowned scientist both in Switzerland and abroad. Her area of work comprises research and development of new drugs to treat parasitic worm infections, such as Schistosomiasis and soil-transmitted helminthiasis. (See: pp. 25–27)
Swiss public health conference in Basel

Around 300 health specialists meet in November at the Swiss public health conference in Basel to examine personalised health from scientific, ethical and economic perspectives. Participants discuss the opportunities and risks presented by personalised medicine, balancing protection of and access to personal data, and the significance of prevention when it comes to improving the health of people in Switzerland and in a global context. Nicole Probst-Hensch from Swiss TPH (the host organisation) set the scientific programme.

Health under extreme conditions

Twenty-three participants from 11 countries attend the health in detention course, designed to highlight health and healthcare issues among detainees in prisons and camps. The course participants work together to find solutions to and avoid commonly observed problems. The course is offered jointly by Swiss TPH and the International Committee of the Red Cross (ICRC) and is generously funded by the Canton of Basel-Stadt.

Winter symposium on parasitic worm infections

Around 200 scientists meet for the Swiss TPH Winter Symposium in Basel. Led by Jennifer Keiser, Hans-peter Marti and Peter Giger, more than 20 speakers examine innovations in diagnostics and pharmaceutical research, and discuss measures to prevent the spread of parasitic worm infections. These infections affect more than a billion people worldwide, and have major implications for public health.

Marcel Tanner concludes his successful professorship

On 15 December 2017, Marcel Tanner, director emeritus of Swiss TPH and possibly one of Basel’s most influential scientists, gives his final lecture at the University of Basel. University president, Andrea Schenker-Wicki, pays tribute to Tanner’s great achievements. Under the title, “No roots, no fruits”, Tanner looks back at an exceptional career and summarises the key lessons learnt while improving human health worldwide.
Swiss TPH is an international trailblazer when it comes to researching and controlling parasitic worm infections. In recognition, The World Health Organization [WHO] nominated the institute as a collaborating centre for epidemiology and control of helminth infections in 2014. Activities in this area range from developing new drugs and combination therapies, to strengthening health systems.

There is nothing particularly unusual about Jennifer Keiser’s office at Swiss TPH – that is, if it weren’t for the picture of the oversized hookworm adorning the office wall. The parasite has a round head, a large mouth and teeth that would make your blood freeze.

“These are fascinating creatures,” says Keiser, Professor of Neglected Tropical Diseases. “They are visible to the naked eye, and by using a microscope we can observe the direct effect that a potential drug has on the pathogen.” The search for new compounds to combat parasitic worm infections is Jennifer Keiser’s passion; a passion shared by Swiss TPH, one of the most highly regarded institutes in the world when it comes to the battle against worm infections and other neglected tropical diseases.

Entire life cycles cultivated

The Helminth Drug Development unit’s laboratories are located in the basement of the institute. Researchers in white lab coats are visible through the small windows in the door, peering through microscopes and working with pipettes. Swiss TPH is one of the few institutes anywhere in the world that still cultivates entire life cycles of pathogens, such as hookworms (Ancylostoma ceylanicum and Necator americanus) and blood flukes (Schistosoma mansoni). This allows researchers to test individual molecules and active substances, both in vitro and in vivo (in animal models, such as mice). Swiss TPH’s expertise is, therefore, much sought after internationally.

New combination therapies

More than a billion people worldwide suffer from parasitic worm infections. Yet, a mere handful of drugs have been developed in the last few decades against chronic infections. Financial reasons account for this failure. From the pharmaceuticals industry’s perspective, investing in the development of new drugs to combat worm infections does not pay. Thus, perfecting existing drugs is just as crucial as searching for new compounds.

The team working with Jennifer Keiser is currently involved in clinical studies testing combination therapies against parasitic worm infections on Pemba Island in Tanzania financed by a prestigious ERC Consolidator Grant and the Bill & Melinda Gates Foundation. The research team there recently conducted a clinical trial using the Chinese compound, tribendimidine. The study proves that tribendimidine is just as effective against hookworms as the standard therapy using albendazole. When used in combination with ivermectin or oxantel pamoate, tribendimidine is also a reliable counter against whipworm. “We hope tribendimidine will be granted approval soon,” says Wendelin Moser, who led the clinical study on Pemba Island. The decision to approve now rests with the US Food and Drug Administration (FDA), in a process that is expected to take another three years, at the earliest.

Knowledge from China

The Chinese have known about the effectiveness of tribendimidine for quite some time. But the Western world only came to recognise this...
within the last ten years or so, following Shu-Hua Xiao’s visit to Swiss TPH from the National Institute of Parasitic Diseases in Shanghai. During his visit, Xiao reported on the drug’s effectiveness against hookworm infections. Keiser and Swiss TPH Director, Jürg Utzinger, first described the compound to an English-speaking specialist audience in 2004. “We subsequently used our models to test the compound and discovered that it wasn’t just effective against hookworms and other nematodes,” explained Keiser, “but also against trematodes such as liver fluke.”

Successful campaign against liver fluke in Lao PDR

The properties of tribendimidine have also been confirmed by more recent studies in Lao PDR. Swiss TPH has been active in the Southeast Asian country for more than two decades, and is an important partner of the National Institute of Public Health in the Laotian capital, Vientiane. Up to 90 per cent of people living in rural areas suffer from hookworm and liver fluke infections. The latter are capable of causing fatal bile duct cancer. Scientific findings show that just 100 milligrams of tribendimidine can cure patients with liver fluke infections. The compound, therefore, has a good chance of replacing the conventional praziquantel preparation. “New compounds are urgently needed,” says Keiser, “not least because parasites are developing resistance to traditional drugs.”

Improvement of healthcare systems

New drugs, combinations of existing compounds and the optimal dosage of tried and tested drugs – none of these initiatives is sufficient in its own right to get rid of the troublesome worms. This is why Swiss TPH is also active at the level of healthcare systems. By adopting an integrated approach, efforts are being made to sensitize populations to improve their day-to-day hygiene, for example by using latrines or by washing their hands with soap and water before eating. “Investment and action are needed at all levels,” says Keiser. Only when this happens will the fearsome creature on her office wall cease to be as terrifying as it is at present.
Research consortia for new drugs

The aim of the Tribendimidine Consortium led by PATH is to seek approval of tribendimidine to treat hookworm infections. Apart from Swiss TPH, members include the National Institute of Parasitic Diseases and the Shandong Xinhua Pharmaceutical Company (both in China).

The Pediatric Praziquantel Consortium aims to develop a pediatric formulation of the drug praziquantel for the treatment of schistosomiasis in preschool children. In addition to Swiss TPH, Merck, Astellas, Lygature and the Schistosomiasis Control Initiative at the Imperial College in London are involved.

Selected Publications


Antibiotic resistance in tuberculosis – a race against time

Around 250,000 people die every year from multidrug-resistant tuberculosis (TB), yet the threat posed by this infectious disease is vastly underestimated.

Without action, some 10 million people will die as a result of antibiotic resistance in 2050. This is the grim forecast made in 2016 by British economist, Jim O’Neill, in a well-researched study. All over the world, bacteria are developing resistance to common antibiotics. As a result, more and more patients require treatment with complex and expensive combination therapies. In some cases, none of the existing drugs are effective anymore. In 2017 alone, 700,000 people worldwide died from bacterial infectious diseases due to unsuccessful treatment – and this figure is on the rise.

An underestimated killer

*Mycobacterium tuberculosis*, the pathogen responsible for TB, is a notorious example of bacterial resistance to antibiotics. Bacteria continually find ways to defend themselves against new compounds. With 1.7 million deaths per year, TB is the most common cause of death among all infectious diseases, even ahead of HIV/AIDS and malaria. As much as one-third of all deaths caused by antibiotic-resistant bacteria are attributable to TB. “It is shocking to see how the threat posed by this infectious disease continues to be underestimated,” says Sébastien Gagneux, Head of the Department Medical Parasitology and Infection Biology at Swiss TPH.

How TB develops resistance is one of the questions Gagneux and his team explore in their research. Gagneux receives TB samples from all over the world. Genetic tests enable the team to study the origin and evolution of various strains of bacteria. Their research has revealed that resistant TB bacteria are spreading rapidly, particularly in former Soviet countries such as Georgia. Migration, global business activities and incorrect use of antibiotics facilitate the spread of resistance worldwide.

Highly resistant strains of TB in Switzerland

Last year, researchers at the Swiss National Centre for Mycobacteria in Zurich discovered the same highly-resistant strain of bacteria in several patients. Scientist Astrid Knoblauch questioned seven patients carrying this strain. Thanks to Europe-wide collaboration, coordinated by the European Centre for Disease Prevention and Control (ECDC), 29 TB patients across Europe were identified with the same multidrug-resistant bacteria profile. Questions posed to the patients revealed that all of them came from the Horn of Africa and that many of them had been infected at a refugee camp in Libya. “This study showed us that the battle against antibiotic resistance must also be fought in the migrants’ countries of origin – an approach that will help to improve health all over the world, Switzerland included,” says Astrid Knoblauch. TB treatment normally lasts six months, but patients with this multidrug-resistant strain were required to undergo a two-year period of treatment, in some cases with severe adverse events. “Successful completion of such treatment needs considerable perseverance, especially because the TB symptoms disappear early in the therapy, but the adverse events may continue,” says Knoblauch.

Partnership between universities and industry

A committee to develop new drugs researches the problem of antimicrobial resistance (AMR) in Switzerland, using a national and interdisciplinary approach. Together with experts from universities and industry, the committee works to raise awareness of AMR, to develop a research programme and to generate the necessary financial resources. “Without the joint efforts of universities and industry, an efficient AMR strategy will not be possible,” says Daniel Paris, Head of the Department of Medicine at Swiss TPH. Product development partnerships (PDPs) make it possible to develop new antimicrobial drugs and bring them to market in a timely manner. Klaus Reither, Head of the Clinical Research unit at Swiss TPH, stresses the importance of developing not only individual drugs but also new combination therapies. Reither evaluates and validates new and innovative drugs and compounds in clinical studies.
and is a member of the Pan-African Consortium for the Evaluation of Antituberculosis Antibiotics (PanACEA), an EU-funded organisation that brings together researchers from a wide range of disciplines to devise innovative strategies for TB control.

New diagnostic products

In addition to developing new antibiotics, researchers at Swiss TPH also increasingly focus on new diagnostic products, which form the basis of targeted and appropriate antibiotic therapies, particularly in rural areas in Africa. These areas suffer from a lack of drugs, well-trained healthcare professionals and appropriate diagnostic tests. Diagnostic tests that provide a result in only a few minutes and offer specific algorithms for treatment could help healthcare professionals limit the use of antibiotics to cases for which they are really needed. “As much as necessary, as little as possible,” states Daniel Paris, advocating a cautious approach to antibiotics use to contain the risk of further resistance development.

AMR is one of the greatest health challenges of the twenty-first century. In particular, the spread of multidrug-resistant TB bacteria in recent years has created the need for closer collaboration between research, policy and industry. Through conducting fundamental research and developing and validating new combination therapies and diagnostic tests, Swiss TPH helps

Humans and animals

Increased antibiotic resistance in humans is closely associated with the use of antibiotics in agriculture. In countries such as China and Vietnam, antibiotics are used in huge quantities in animal breeding, which increases the pressure on bacteria to develop resistance. Some of these bacteria also cause disease in humans. Swiss TPH monitors resistance development and the transmission of resistant pathogens from animals to humans in Vietnam.
to promote better understanding and improved treatment of multidrug-resistant TB. But time is running out. “If the threat posed by this infectious disease continues to be underestimated, the development of effective therapies may come too late,” warns Sébastien Gagneux.

Selected Publications


How resistance develops – biological mechanisms

Antibiotics attack highly specific cellular components of bacteria, but some bacteria display greater resistance than others to a given antibiotic. If a course of antibiotic therapy is terminated too early, for example, these bacteria may survive, multiply and take the place of the destroyed bacteria. Resistance to a given antibiotic is based on spontaneous, random mutations in genetic material. These mutations can, for example, cause the bacteria to change its surface and prevent the antibiotic from recognising its target. Bacteria multiply by means of cell division, so the mutations are passed on to the subsequent generation. Resistant bacteria can, however, also transfer a copy of the mutated gene to other bacteria, with the latter becoming resistant to the relevant antibiotic as a result. Surprisingly, such horizontal gene transfer can also take place between unrelated species of bacteria. Horizontal gene transfer does not take place with the TB pathogen Mycobacterium tuberculosis, however.
Smartphone applications to improve child health

New technologies are progressively transforming healthcare. Swiss TPH developed two generations of digital point-of-care systems that support clinical personnel in the diagnosis and care of sick children.

Ten years ago, when worried parents brought their febrile children to a health facility in Tanzania, the diagnosis they received was very often the same: malaria. “This wrong assumption meant that many children were sent home with antimalarial medicines without being properly diagnosed,” said Valérie D’Acremont, medical doctor and fever management specialist at Swiss TPH and Policlinique Médicale Universitaire de Lausanne.

The introduction of malaria rapid diagnostic tests in 2008 drastically reduced incorrect prescriptions of antimalarials. However, it also resulted in what was soon to be called the “negative syndrome”. That is, for the 90 per cent of malaria-negative children that presented with a fever, health workers could not always establish the cause of the fever with the available tools. As a result, they prescribed antibiotics to almost every patient out of fear of missing a severe bacterial infection.

How to manage malaria-negative children

Several studies conducted by Swiss TPH since 2008 revealed that out of 10 febrile children presenting at a health facility in Tanzanian cities, one had malaria, treatable with an antimalarial, and one had a bacterial infection, requiring an antibiotic. The remaining 8 out of 10 children suffered from a variety of viral infections, such as viral respiratory infections, roseola or stomach flu. “Although the study results meant that fewer children suffered from a deadly disease than assumed, they actually posed a new challenge for health workers,” said D’Acremont. To pick out the few bacterial infections among the 90 per cent of malaria-negative children poses a challenge to health workers, especially given the lack of diagnostic tests and clear guidelines for how to proceed.

Only one in ten children taken to hospital in Tanzania in 2008 was correctly diagnosed with malaria.
Viral infections have to be managed appropriately to avoid complications or even death. “We have seen, for example, that health workers prescribe antibiotics for bronchiolitis, a common viral lung infection in small babies,” said Kristina Keitel, paediatrician at Swiss TPH. “However, truly needed treatments, such as oxygen and rehydration, are not given.”

Innovative tool to improve diagnosis and treatment

Integrated Management of Childhood Illness (IMCI) is a symptom-based assessment scheme developed by WHO in the 1990s to enable diagnosis and treatment of sick children. To improve child health and facilitate the use of IMCI in daily work, Swiss TPH, in collaboration with the Policlinique Médicale Universitaire in Lausanne and the Ifakara Health Institute in Tanzania, developed ALMANACH (ALgorithms for the MAAnagement of CHildhood illnesses), a tablet-based clinical decision-support tool. ALMANACH is now being implemented through collaboration with the International Committee of the Red Cross (ICRC).

“ALMANACH very much simplified the diagnosis and leads me step-by-step through the assessment,” said Christy Lazarus, midwife in the Adamawa state in Nigeria. “It has also increased my knowledge and gives me more self-confidence as a health worker.” ALMANACH has been piloted in war-torn areas in both Afghanistan and Nigeria and is currently being scaled up in Adamawa state, Nigeria.

Combining consultation support and laboratory tests

To improve diagnosis even further, Swiss TPH developed a next generation tool, ePOCT (electronic Point-Of-Care Tool), funded by the Swiss Programme for Research on Global Issues for Development (r4d programme). “IMCI has important limitations in that it over-relied on clinical assessments,” said Kristina Keitel. “Simple, point-of-care laboratory tests can help detect children with severe infections and those requiring antibiotic treatment.”

ePOCT not only guides health workers through the consultation but also integrates point-of-care laboratory tests for bacterial infections and severe diseases (low oxygen, anaemia, and low blood glucose), in addition to the malaria rapid diagnostic test.

“It is high time that healthcare benefits from digital technologies, not only in high-income countries but also in low-resource settings.”

Martin Raab, Head of the Health Technology and Telemedicine Unit at Swiss TPH
“Improved health outcomes and fewer antibiotics”

Results of a clinical trial in Tanzania, published in PLoS Medicine in 2017, showed improved health outcomes and a reduction in antibiotic prescriptions. The trial, conducted in collaboration with the Ifakara Health Institute (IHI) and the Dar es Salaam City Council, compared the clinical outcomes and antibiotic prescription between ePOCT, ALMANACH and routine care among more than 3000 children.

“Children treated with ePOCT had a better health outcome compared to the reference algorithm,” said Josephine Samaka, assistant medical officer at Amana Hospital, Tanzania, and co-author of the study. “In addition, we could further reduce antibiotic prescription by two thirds.” Based on these promising results, the next step will be to start implementing ePOCT in Tanzania, with the aim of integrating the tool into routine care for children. This work will be carried out in close collaboration with Swiss TPH’s Tanzanian partners.

Thanks to ePOCT the prescription of antibiotics for feverish children could be reduced to 11 per cent.

“[ALMANACH is] a very powerful revolutionary plausible replacement of IMCI that guarantees high clinical accuracy and reporting […]”

Abdullahi Belet, Adamawa Primary Health Care Authority, Nigeria
Swiss TPH offers a number of programmes and courses based on the concept of lifelong learning, whereby individuals can build skills and knowledge at later points in their personal and professional lives. Bernadette Peterhans, head of unit for Professional Postgraduate Training (PPT) at Swiss TPH talks about the changing landscape of continuous education in the field of public and international health.

How does professional postgraduate training differ from other educational offerings at Swiss TPH?

“Professional postgraduate training (PPT) is different from what we call our Bologna master and doctoral programmes in that it caters to professionals with a first degree and at least two years of work experience, and can include practical applications, in addition to covering the relevant theories and concepts. PPT is similar to what is known as ‘continuous education’ in other parts of the world.”

What are the benefits of PPT to a health professional or practitioner?

“PPT programmes and courses are relevant to anyone working in the field of health, including anthropologists, lawyers, economists, etc. To solve problems in the field, one needs to draw from different perspectives and consider different ways of looking at an issue. That’s the beauty of these courses – they really bring together all of these different skill sets and perspectives in the training. Learning on the job is not always possible, thus PPT offers an alternative to enhancing the skill sets needed for professional success. Within PPT we are usually able to offer a broader range of courses in areas not always served by traditional academic programmes. Likewise, students have the flexibility to learn while they work and to learn in small interactive groups. We are also uniquely positioned at Swiss TPH to engage facilitators from both research and service departments, which offers a up-to-date and rich learning experience for participants and teachers alike. The geographic and professional variation in our student body allows participants to achieve “mutual learning for change”. In our Health in Detention course, for example, Irish participants shared experiences about using peer education for community-based health in prisons; the Panamanian participants heard it and will try to implement something similar. We learn from each other how to solve different issues.”

Swiss TPH has a rich and diverse portfolio of PPT offerings; how did these evolve?

“Indeed, we offer certificate, diploma and master programmes, as well as short courses, with some focussing nationally and others internationally. The portfolio has developed following the needs in the field and based on our in-house expertise and practical experience in research and service provision. For this reason, we have longstanding courses like the General Tropical course (now International Cooperation and Global Health) alongside more recent ones like the MBA in International Health Management or Medical Priorities and Clinical Tropical Medicine in Southeast Asia.”

What are some of the most prominent changes you see happening in the PPT or health landscape?

“Many changes are taking place, particularly in the number of crisis situations that arise around the world. This has led to more focus on humanitarian aid rather than development cooperation for health. We have always focused more on the latter, strengthening local capacities through partnerships. We can support those in the humanitarian aid field to consider sustainability even in their short-term actions and encourage support for local structures. Career paths are less straightforward now and do not always follow a logical hierarchical progression, thus there is a constant need for people to pick up new skills and knowledge. We also see a tendency towards registering for shorter courses, rather than long-term degree programmes and have responded to this need by adopting a more modular approach and offering greater flexibility in the courses. There are also fewer scholarship funds from traditional
sources, so we search for new financing models. In this field, it is necessary to adapt and update offerings according to the changing environment and to meet employers’ and employees’ needs. This is something I think we do rather well.”

What is your vision for further developing PPT at Swiss TPH?

“I started my career as a nurse, working in the international field, when I realised that I had the technical skills, but not the skills needed to manage, supervise and implement projects or strengthen health systems in this context. It led me to pursue the General Tropical course and later the Health Care and Management diploma course (HCM) – both at Swiss TPH. Over the last 25 years, I’ve had the chance to share my practical and academic experience to support the development of PPT. It is an important field that offers the institute a network of alumni around the world that we can work with nationally and internationally. Our students really become ambassadors for the institute and our way of thinking and many have advanced their careers through PPT. We also learn a lot from the students. Exchanges between the facilitators and our students allow all parties to update their knowledge and perceptions and to gain insights from other parts of the world that can be valuable in their own context. To keep these benefits, it will be important for Swiss TPH to ensure that its offers remain interesting and adapt to evolving needs and circumstances. Likewise, the institute will have to find new ways to support students to attend the courses.

At national and international level, we bring a lot of experience to influence the various networks in which we participate, where we constantly seek ways to improve quality and innovate within our offerings. We have learned a lot about student mobility – that is, both receiving students from and sending them to other contexts.

“In order to solve health problems, one has to adopt different perspectives”, Bernadette Peterhans, Swiss TPH.
This is one aspect we try to make easier through our networks. This movement allows students to gain experience from different institutions – each has its own way of approaching a topic or problem, focusing more on research or implementation, so students can tailor programmes to their needs.”

**What are the major challenges you face in PPT?**

“Higher education regulations in Switzerland require PPT to be completely financially self-sufficient, which is not the case in most other countries. Thus, we face very strong international competition. To remain attractive despite the high prices, we will continue to look at each programme systematically to make specific adaptations – what works for the course International Cooperation and Global Health or MBA does not necessarily work for the Master of Insurance Medicine or HCM. At Swiss TPH, we have in-house expertise and connections that don’t necessarily exist in other places. We will certainly continue to use these to develop and update our offerings and make them even more attractive.”

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**Bernadette Peterhans**

Bernadette Peterhans is a trained nurse, specialised in emergency care, holding an MSc in Public Health for Developing Countries. She heads the Professional Postgraduate Training unit at Swiss TPH where she coordinates and teaches in the Master in International Health programme, among others, and supervises master students during the thesis phase. Her professional activities include consultancy work assessments, evaluations and reviews of health systems strengthening projects with a special focus on community-based healthcare in conflict / post-conflict countries. She has conducted expert missions for the International Committee of the Red Cross, the Swiss Red Cross and Solidarmed in Afghanistan, Eritrea, Ethiopia, Ghana, Pakistan, Sierra Leone, Somalia, South Sudan, Tanzania, and Zambia.
A reference for personalised health

Swiss TPH has considerable expertise in analysing comprehensive biodata for research in public health. The institute uses data to study the causes of chronic and infectious diseases worldwide – with a view to helping to control them in the long term.

The volume of data available to measure individual and collective health is constantly increasing. Epidemiologists all agree, however, that we still know much too little about diseases and about the complex interplay of a wide range of factors that facilitate and trigger their outbreak.

Comprehensive data, holistic picture

“When it comes to understanding and, ideally, preventing disease, researchers need comprehensive biodata relating to healthy reference populations,” says Nicole Probst-Hensch, Head of the Department of Epidemiology and Public Health at Swiss TPH. She explains that biobanks make it possible to determine whether new biomarkers from personalised-health research may be of use to public health, in terms of facilitating risk prediction, early detection and diagnostics. “Thanks to systems epidemiology and biology, we can study disease risks and their biological fingerprints as a whole.”

From a public health perspective, keeping the general population as healthy as possible is the primary aim of personalised health. Long-term studies make it possible to observe biological processes in the body, various sources of risks (such as sitting for long periods or traffic noise) and disease risks over a longer period of time. Research from the national long-term cohort, SAPALDIA (Swiss Cohort Study on Air Pollution and Lung and Heart Diseases in Adults), was able to demonstrate, for example, that around half of the people with high blood pressure knew nothing of their condition, and that control could be improved for half of the people with diagnosed high blood pressure.

Pioneering SAPALDIA study

For over a quarter of a century, Swiss TPH has been collecting biological data on healthy members of the Swiss population in a biobank. These data facilitate the analysis of chronic diseases (e.g. cancer, cardiovascular diseases, diabetes and the lung disease, COPD) and infectious diseases (e.g. tuberculosis, Campylobacter gastrointestinal infection and measles). In 2017, Swiss TPH expanded its unique nationwide biobank infrastructure, adding a centre for conducting long-term epidemiological studies. According to Probst-Hensch, this makes Swiss TPH “well-equipped to compete in this promising area of research.”

The biobank forms the sample pool for the SAPALDIA study, carried out on behalf of the Swiss National Science Foundation (SNSF). Since 1991, SAPALDIA has permitted the study of the implications of environmental risks (e.g. air pollution and traffic noise); lifestyle, psychological and social factors; as well as genetic risks for health and the ageing process. Around 5,000 of the original 10,000 volunteers still actively...
take part in the research project today. SAPALDIA laid the scientific foundation for achieving a dramatic improvement in air quality in Switzerland over the past 20 years. Data from the SAPALDIA study showed that people living in more polluted areas had poorer lung health, leading to the introduction of legal limits and improved air quality. Subsequently, SAPALDIA researchers were able to prove that the improved air had a positive effect on lung function.

A new cohort with 100,000 participants

The SNSF plans to support SAPALDIA until 2020: “The value of a long-term study with biosamples over time is irreplaceable,” emphasises Probst-Hensch. At the same time, Swiss TPH, together with the Swiss Biobanking Platform and the Institute of Social and Preventive Medicine at the University of Lausanne, is carrying out a feasibility study for a more comprehensive cohort, on behalf of the Swiss Federal Office of Public Health (FOPH). Such cohorts are already common in some Central European countries. “Our aim is to build up a national reference cohort and biobank with at least 100,000 healthy subjects,” says Probst-Hensch. “This will enable Switzerland to remain competitive in public health research, following the example of the Precision Medicine Initiative, launched by former US President Barack Obama, which declared cohorts to be one of its central pillars.”

Biobanks in Africa and Asia

Low-income countries are still a long way away from achieving personalised medicine. Here too, however, reliable epidemiological data are needed to record and successfully control diseases. The need is even greater in view of the fact that people are increasingly mobile in general, as are the pathogens they carry with them. For this reason, Swiss TPH, with its extensive experience and expertise in the field of global health, collaborated with three long-standing partner organisations in Côte d’Ivoire, Lao PDR and Tanzania to develop biobanks for research into the relationship between chronic and infectious diseases.

Human biomonitoring

When conducting research with biobanks and methods of personalised health, it is important to monitor chemical exposure by means of human biomonitoring – i.e. measuring the concentration of chemical substances and their metabolic products in body fluids and tissue – and by taking environmental measurements. Swiss TPH actively participates in human biomonitoring worldwide, coordinating activities in Switzerland (as a partner in the European Human Biomonitoring Network, HBM4EU) and planning a nationwide chemicals and pesticides study. Swiss TPH studies in Costa Rica, South Africa and Uganda explore the effects of very high levels of pesticide exposure on the development, behaviour and health of children and adults. “Our research is based on the latest methods of exposome research, an integrated approach to investigating environmental risks,” says Nicole Probst-Hensch of Swiss TPH.
Personalised health

Personalised health is a booming field of research, with the aim of finding the best therapy for each and every individual patient. Swiss TPH also seeks to ensure that people are fit and well from the public and global health perspective, and uses a range of personalised health measures to strengthen primary prevention.

Along these lines, Swiss TPH is interested in answering questions such as: what are the genetic predispositions in the human body? What lifestyle choices and environmental influences (ecological, economic and political) determine whether a person stays healthy or becomes ill? What is the link between diabetes and tuberculosis? And, are people from particular regions of the world more susceptible to some chronic diseases than others?

Selected Publications


Swiss TPH currently focuses on 13 fields of operation, with all staff working along the entire research value chain, from the initial idea and results in the laboratory, to validation in real-world settings and broad application among people on site. All activities aim to improve the health of populations worldwide, and marginalised communities, in particular.

- **KAA #1**: Basic Research in Infection Biology
  - Innovative research for poverty-related diseases

- **KAA #2**: Preclinical Research and Development
  - Discovering and developing diagnostics, drugs and vaccines

- **KAA #3**: Clinical Research and Development
  - Testing and monitoring new therapies in low-resource settings

- **KAA #4**: Molecular and Genetic Epidemiology
  - Defining markers for disease control and surveillance

- **KAA #5**: Emerging Infectious Diseases
  - Tackling viruses such as dengue, Ebola or Zika

- **KAA #6**: Statistical and Mathematical Modelling
  - Capturing and projecting health data

- **KAA #7**: Personalised Health
  - Research on cohorts and biobanks

- **KAA #8**: Health in Human-Environment Systems
  - Studying the impact of environmental factors on health

- **KAA #9**: Society, Culture and Health
  - Studying social and cultural determinants of health

- **KAA #10**: Sexual and Reproductive Health and Gender
  - Enabling access to sexual and reproductive health

- **KAA #11**: Health Systems and Policy
  - Translating evidence and strengthening health systems

- **KAA #12**: Travel and Tropical Medicine
  - Managing health risks of tropical diseases

- **KAA #13**: Migration and Health
  - Improving health of mobile populations and migrants
Key Areas of Activity

KAA #1

Basic research in infection biology

The biological research of pathogens and their transmission is one of the core activities of Swiss TPH. Work focuses on poverty-related diseases, such as malaria, African sleeping sickness, parasitic worm infections and tuberculosis. The latest findings are used to develop new drugs, vaccines and diagnostic tests.

<table>
<thead>
<tr>
<th>Number of projects</th>
<th>28</th>
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</thead>
<tbody>
<tr>
<td>Research projects</td>
<td>96 %</td>
</tr>
<tr>
<td>Implementation projects</td>
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</tbody>
</table>

A milestone in malaria control

Mosquitoes transmit malaria parasites from person to person. To do so, the mosquitoes must ingest a special form of the parasite – known as a gametocyte – when taking a blood meal. Researchers have discovered that a molecule in human blood, lysophosphatidylcholine (LPC), plays a key role in this process. In the presence of low LPC concentrations, the parasites no longer multiply but switch to the gametocyte stage. These findings are an important step forward in the fight against malaria. If the parasite can be prevented from forming gametocytes, the transmission of this tropical disease can be prevented.


Protein protects DNA

Malaria is caused by the exponential multiplication of single-cell parasites in human blood. Telomeres, the ends of chromosomal DNA, play an important role in these countless cell divisions. Researchers have demonstrated that the protein, PTHRZ, helps to protect these ends from degradation. PTHRZ is also responsible for the expression of important genes in the parasite. These findings pave the way for further analysis of the molecular mechanisms that are so vital for the survival of the malaria parasite.


How resistance develops

While the drug, Suramin, continues to be a reliable treatment for African sleeping sickness, the trypanosomes that cause the disease can develop resistance to the compound. A laboratory study of the molecular mechanisms found that trypanosomes are surrounded by a coat of proteins, which the parasites can modify. Genetic experiments have proven that a certain modification of the proteins causes rapid Suramin resistance.


A better understanding of Buruli ulcer

Mycolactone is a toxin produced by Mycobacterium ulcerans and causes the typical skin lesions seen in Buruli ulcer cases. Experts identified the cellular signal pathway, mTOR2, as the toxin’s target. Mycolactone inhibits this pathway, resulting in the death of affected cells and leading to lesions on the skin. These results improve our understanding of the disease mechanisms of Buruli ulcer.

Preclinical research and development

Swiss TPH is one of the world’s leading university laboratories for developing new drugs, vaccines and diagnostic tests for diseases like malaria, African sleeping sickness, Buruli ulcer and parasitic worm infections. In collaboration with external partners, the institute makes a significant contribution to the development of new therapies.

<table>
<thead>
<tr>
<th>Number of projects</th>
<th>37</th>
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<tbody>
<tr>
<td>Research projects</td>
<td>81 %</td>
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<tr>
<td>Implementation projects</td>
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</tbody>
</table>

**Plasmodium and its Achilles’ heel**

The protein, CyRPA, could be a component in an efficient vaccine against *Plasmodium falciparum*, the deadliest of the parasites that cause malaria. Specific antibodies against CyRPA prevent the *Plasmodium* from invading red blood cells and multiplying. Researchers are in the process of deciphering the structure of the protein domain, to which the protective antibodies bind. This domain could prove to be part of a promising vaccine candidate in the future.


**Fighting animal trypanosomiasis**

Animal trypanosomiasis, which occurs in sub-Saharan Africa, is caused by trypanosomes and leads to significant losses in livestock. Due to the risk of resistance to existing drugs, new therapies are desperately needed. One study has shown that certain diamidines can heal mice infected with animal trypanosomiasis. The results of the study offer a new approach to combatting the disease.

Clinical research and development

In clinical studies, experts develop and validate new drugs, vaccines and diagnostic products to aid in the fight against poverty-related diseases, such as African sleeping sickness, malaria, tuberculosis, parasitic worm infections and Buruli ulcer. Swiss TPH has extensive expertise in designing, implementing and monitoring clinical studies, especially in low-income countries. By adhering to the highest ethical, scientific and technical standards, clinical researchers ensure patient safety and reliable research data.

Number of projects

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Research projects</td>
<td>87 %</td>
</tr>
<tr>
<td>Implementation projects</td>
<td>13 %</td>
</tr>
</tbody>
</table>

A promising treatment for sleeping sickness

The standard course of treatment for sleeping sickness is lengthy and must be administered in a hospital. The compound, fexinidazole, which can be taken orally, offers a promising alternative. A clinical study compared the standard therapy (nifurtimox/eflornithine) with the efficacy and safety of fexinidazole among patients in the late stages of African sleeping sickness. The positive results support the further development of fexinidazole as a treatment for this devastating disease.


New combination therapies against parasitic worm infections

New drugs and combination therapies to treat parasitic worm infections are desperately needed, as many of the pathogens have developed resistance to conventional compounds. A study including 636 hookworm-infected children in Tanzania and the Côte d’Ivoire demonstrated that a combination therapy, with conventional anthelmintics plus tribendimidine, is highly efficacious. Researchers have concluded that tribendimidine could play a major role in combination therapies for parasitic worm infections in future, thereby minimising the risk of resistance development.

Researching risk factors and pathophysiological mechanisms of communicable and non-communicable diseases can lead to the development of new therapies and to early disease detection. Genetic analyses of pathogenic microbes and patient groups in large, multi-country field studies provide results that are important for understanding the development of drug resistance, for example.

<table>
<thead>
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<tbody>
<tr>
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<td>91%</td>
</tr>
<tr>
<td>Implementation projects</td>
<td>9%</td>
</tr>
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</table>

**Highly virulent meningococci**

Meningococci are capsulated bacteria that have caused epidemics in the African meningitis belt for decades. While the recent introduction of a capsule conjugate vaccine has successfully driven down the incidence of serogroup A meningococcal disease, other serogroups are behind an increasing number of outbreaks. Genome analysis of the new pathogen variants has helped researchers understand the significance of the considerable genetic momentum of the meningococci in more recent epidemics. Burkina Faso and Ghana recently experienced outbreaks with a new meningococcal clone, in which gene transfer altered the structure of its capsule. A better understanding of these processes is essential to developing a broadly effective vaccine.


**Malaria in Papua New Guinea**

Not all infections with the malaria pathogen, *Plasmodium*, actually result in disease. Often, chronic, asymptomatic infections persist for considerable periods. Detailed molecular biological analysis is needed to identify new malaria infections. A study in Papua New Guinea revealed significant differences in the frequency of new infections between neighbouring villages. Such differences make effective malaria control difficult, as control measures must be adapted according to the local intensity of transmission. A special study design enabled researchers to examine dormant (and periodically reactivated) *Plasmodium vivax* liver stages in great detail. These stages play a significant role in spreading *P. vivax*, and are responsible for most of the malaria cases caused by *P. vivax*.

Key Areas of Activity

KAA #5

Emerging infectious diseases

Newly or re-emerging pathogens can spread quickly, resulting in global pandemics. Thus, Swiss TPH has strengthened its expertise in diagnosing and investigating the clinical implications and spread of infections, such as dengue fever, Zika, Chikungunya and Japanese encephalitis. The aim of these activities is to develop new diagnostic products for clinical studies in various endemic regions, for rapid and safe diagnosis of travellers returning to Switzerland, and for establishing a monitoring system for pandemics.

<table>
<thead>
<tr>
<th>Number of projects</th>
<th>21</th>
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</thead>
<tbody>
<tr>
<td>Research projects</td>
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<tr>
<td>Implementation projects</td>
<td>79 %</td>
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</table>

Scrub typhus (tropical rickettsioses) underestimated worldwide

To date, the global spread of scrub typhus has been significantly underestimated. Recent studies show that countries in Asia, South America and Africa are affected by the disease. Increases in the incidence of this sometimes fatal disease have been observed in both rural and urban areas; in fact, it is now the most common treatable cause of febrile illnesses in many regions of South-east Asia. It is vital that greater attention be paid to this neglected tropical disease, particularly in terms of health policy.


KAA #6

Statistical and mathematical modelling

Analysing large amounts of data and predicting disease risks are key aspects of epidemiology and public health. Mathematical and statistical models can help us better understand the transmission and spread of communicable and non-communicable diseases and make it easier to assess the impact of health measures, such as introducing a new drug or vaccine. Research results are made available to decision-makers, donors and local health authorities and can help them to better target the limited financial resources in the healthcare system.

<table>
<thead>
<tr>
<th>Number of projects</th>
<th>31</th>
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</thead>
<tbody>
<tr>
<td>Research projects</td>
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<tr>
<td>Implementation projects</td>
<td>9 %</td>
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</tbody>
</table>

Using models to evaluate air pollution

Many studies use statistical models to evaluate the distribution of volatile hydrocarbons in the air. Researchers have shown that, in addition to traffic volumes, these models can also consider other factors [number of chimneys, geographical location, etc.] and take local conditions into account. What is more, these models are based on European and North American data sets, meaning that they cannot simply be applied on a global scale. Rather, measurements must be carried out in in other parts of the world to develop locally adapted models of air pollution.


Diagnostic experts at Swiss TPH unmask tiny parasites with modern techniques.
Mass treatment of malaria

A new mathematical model was developed to demonstrate the conditions under which mass treatment of malaria can result in local elimination of the disease. Mass treatment may be successful in eliminating the malaria pathogen if it covers the majority of a small, stable population or if only a few are infected with malaria.


Swiss TPH researches various aspects of personalised health. Experts rely on genomic methods to develop new diagnostic products, to optimise vaccines and to better understand the interaction of pathogens and hosts. Other research areas also benefit from using new techniques in the areas of biomarkers and big data. Environmental and exposome research, for example, links environmental and disease sensors with genomic biomarkers to investigate the causality of response relationships. Likewise, mathematical modelling and statistical prediction of disease and risk factor distribution benefit from the availability of large data sets and powerful computers.

Number of projects 18
Research projects 88 %
Implementation projects 12 %

Night-time traffic noise raises blood sugar levels

One study has proven that night-time traffic noise raises blood sugar levels, especially in diabetics. Certain gene variants in diabetics increase the risk of traffic noise having an effect on metabolic processes. These genes regulate the circadian rhythm, which, in turn, influences the release of insulin.


Development of macrophages

Macrophages are a type of white blood cell that plays an important role in infection control. A new method now makes it possible to develop macrophages from blood stem cells and monitor them. The macrophages developed in this way are identical in structure and function to cells obtained from blood samples. This method may enable researchers to clarify whether changes to macrophages are the cause or consequence of disease.

Polluted air, electromagnetic radiation and noise influence our health and can lead to or exacerbate chronic diseases, cancer or diabetes. Current research projects highlight, for example, the influence of noise on physical activity, weight and diabetes, as specialists strive to understand health from a holistic perspective. The well-being of both humans and animals is closely associated with their social and natural environments. Swiss TPH adopts a systemic approach to make health links from the molecular level to the social domain.

Number of projects 80
Research projects 72 %
Implementation projects 28 %

Mass vaccination of dogs to combat rabies in humans

Researchers have shown that mass vaccination of dogs in Chad succeeded in eliminating the rabies virus. Vaccination campaigns lasting several weeks were carried out in the Central African country in 2012 and 2013, and rabies transmission fell significantly during this time. Infected dogs from rural regions found their way into the city following these campaigns, however, enabling the fatal virus to return. Future vaccination campaigns will only succeed in locally eliminating the disease if they are also applied to dogs in other regions.


Noise affects our health

Traffic noise increases the risk of cardiovascular disease and diabetes. This has been demonstrated by several long-term studies carried out as part of the interdisciplinary research project, SIRENE (Short and Long Term Effects of Transportation Noise Exposure). On one side, traffic noise affects our sleep, leading to increased stress levels that, in turn, have a negative impact on our metabolism and vascular system. On the other, people who feel affected by traffic noise are less active. In Switzerland, traffic noise costs the economy 1.8 billion Swiss francs every year.


School programmes to promote health among children

Polluted water, poor hygiene and unbalanced diets cause many children in Burkina Faso to suffer from malnutrition and parasitic worm infections. The Vegetables Go to School project supports schools in educating children about the risks of disease, providing balanced meals through school gardens and promoting hygienic behaviour. After one year, researchers noted that...
Swiss TPH is active in ensuring a well-founded knowledge of sexually transmitted diseases, safe pregnancies and births worldwide, and in strengthening the autonomy of men and women to make decisions regarding sexuality and fertility. Specialists investigate the influence of various gynaecological approaches on patients’ health. They research gender aspects in the acceptance of vaccination programmes and the impact of midwife networks on newborn health in Switzerland.

### Number of projects

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research projects</td>
<td>29</td>
</tr>
<tr>
<td>Implementation projects</td>
<td>29</td>
</tr>
</tbody>
</table>

### Helping to improve mental health among pregnant women

Social and emotional support for pregnant women in South Africa is critical, in light of the stress and anxiety caused by social isolation, and by the lack of a relationship with the father-to-be. The women surveyed in one study would like to be able to access support from social institutions to discuss relationship problems in a protected environment.


### Promoting resilience to prevent unwanted pregnancy

In Tanzania, many women under the age of 20 experience unwanted pregnancies. A survey of 750 young women revealed that awareness campaigns could play an important role in preventing these pregnancies. The ability of pregnant young women and young mothers to organise financial or social support is essential to their health and to the well-being of their children. The aim, therefore, is to promote the resilience of young women by means of information, education and communication, for example.


### Breastfeeding promotion is a success

A study in Switzerland showed that babies born in certified Baby-friendly Hospitals are breastfed for longer than those delivered in hospitals without a certificate. The Baby-friendly Hospital Initiative was launched by the World Health Organization (WHO) and UNICEF to distinguish hospitals that implement measures to promote breastfeeding, thereby improving newborn health. The results of the study support the continuation of the initiative.


> Schoolchildren washed their hands more frequently before eating, and that the incidence of parasitic infections had fallen.


> Children who were born in “baby-friendly” hospitals are breastfed longer than others.
Swiss TPH offers support to countries with insufficient healthcare provision around the world. Experts develop and reinforce health insurance schemes for poor rural populations in Tanzania and Cameroon, draft IT solutions for improving treatment for patients, invest in strengthening primary healthcare and training healthcare professionals in Eastern Europe, evaluate development projects and monitor the allocation of money provided by the Global Fund in many countries in Africa and Asia.

**Health systems and policy**

Swiss TPH is one of the world’s leading centres for travel and tropical medicine. More than 12,000 travellers from Basel and the region approach Swiss TPH every year to receive advice about possible disease risks in the tropics and subtropics, get vaccinations or receive treatment for undesirable bacteria, viruses or parasites following their return. Experts search for the smallest disease carriers with state-of-the-art technology and extensive experience. Diagnostic samples are sent to Swiss TPH from all over the world as a result of the institute’s internationally recognised expertise.

**Travel and tropical medicine**

Eliminating river blindness in Africa would not only prevent severe human suffering – it would also help the economy by achieving significant cost savings. According to the latest calculations for the period 2013 to 2045, around five million DALYs (disability-adjusted life years) would be saved, together with total health costs of 50 million US dollars. These results could help to promote elimination programmes.


**Health insurance subsidies required**

In Cameroon, the man, as head of the family, traditionally makes decisions regarding the use of household funds. Women are increasingly taking over responsibility for the household, and a study in Northwest Cameroon investigated whether this development has influenced the uptake of voluntary health insurance. The study shows that older and more educated men are more likely to take up health insurance than younger ones, because they are better able to assess the costs of a possible illness. Women, however, base their decision on the household budget. Thus, better access to information and subsidised health insurance for poor populations is essential to achieving broad-based coverage against the risk of disease.


**Cutting health costs through eliminating river blindness**

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**Number of projects**

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
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<tbody>
<tr>
<td>Total</td>
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<tr>
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<td>35 %</td>
</tr>
<tr>
<td>Implementation projects</td>
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</tr>
</tbody>
</table>

**Malaria drug less effective in travellers than in residents of endemic regions**

A study has revealed that the standard dose of combination malaria therapy, artemether-lumefantrine, is less effective in European travellers infected with malaria than in those living in a malarious region. Some five per cent of travellers experience a malaria relapse following completion of their treatment, most likely due to the lack of partial immunity among travellers. The findings indicate that the therapy regime for travellers should be reconsidered.


Life expectancy in Côte d’Ivoire is about 50 years.
Migration and health

The precarious situation of refugees, migrants, seasonal workers, nomads make them especially susceptible to disease. Swiss TPH researches and develops new concepts to improve the health of these marginalised populations. Specialists in Basel work together with partners, such as the cantonal authorities, to introduce special health clinics for migrants. Projects around the globe focus on improving the health situation of refugees. These activities aim to achieve a more just health and social policy.

Number of projects 8
Research projects 40 %
Implementation projects 60 %

Hidden diseases

More than 40 per cent of migrants from Eritrea tested positive for the parasitic worm Schistosoma mansoni that is responsible for causing bilharzia. In view of the long-term consequences of bilharzia, such as liver fibrosis, researchers recommend routine testing for Schistosoma infection among migrants from endemic regions.


Accurate diagnosis of Schistosomiasis

Refugees from Eritrea can be infected with the parasitic flatworms (Schistosoma) that cause bilharzia without actually suffering from the common symptoms of the disease. One study found that combining two diagnostic tests enables detection of asymptomatic Schistosoma infection with a high degree of sensitivity, making it easier to treat all those affected, using a systematic approach.


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Committees & Departments

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Director
Stefan Mörgeli
Administrative Director until 31.12.2017
Matthias Schmid-Huberty
Administrative Director from 1.1.2018
Prof. Dr. Nino Künzli
Deputy Director

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Prof. Dr. Daniel Paris
Prof. Dr. Nicole Probst-Hensch
Prof. Dr. Kaspar Wyss

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Janssen Operations, Bern
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Prof. Dr. med. François Chappuis
Medical superintendent, Tropical and Humanitarian Medicine, Hôpitaux Universitaires Genève
Dr. Nicole Schaad
Observer, State Secretariat for Education, Research and Innovation, Bern
Prof. Dr. Jürg Utzinger
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Secretary of the Board (ex officio)

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Director emeritus, Swiss TPH
Jean-Marc Joerin
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Managing Director
Dr. Lukas Meier
Deputy Managing Director
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Managing Director, Berger Liegenschaften
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Architect, ETH SIA
Prof. Dr. Jürg Utzinger
Director, Swiss TPH
Organigram 2018

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- Department Heads: Sébastien Gagneux, Daniel Paris, Nicole Probst-Hensch, Kaspar Wyss
- Administrative Director: Stefan Mörgeli (until 31.12.2017)
  Matthias Schmid-Huberty (as of 1.1.2018)

Departments

Administration
- Stefan Mörgeli
  (until 31.12.2017)
- Matthias Schmid-Huberty
  (as of 1.1.2018)
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- Human Resources: Iris Haeteter
- Informatics: Alain Bertolotti
- Infrastructure: Paul Haas
- Project & Grant Service: Michael Käser

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  Deputy: Jakob Zinsstag
- Biostatistics: Penelope Vounatsou
- Chronic Disease Epidemiology: Nicole Probst-Hensch
- Ecosystem Health Sciences: Guéladio Cissé
- Environmental Exposures and Health: Martin Röösli
- Health Interventions: Christian Lengeler
- Household Economics and Health Systems Research: Günther Fink
- Human and Animal Health: Jakob Zinsstag
- Infectious Disease Modelling: Thomas Smith
- Society, Gender and Health: Elisabeth Zemp Stutz

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  - Clinical Immunology
  - Claudia Daubenberger
  - Gene Regulation
  - Till Voss
  - Helminth Drug Development
  - Jennifer Keiser
  - Molecular Diagnostics
  - Ingrid Felger
  - Molecular Immunology
  - Gerd Pluschke
  - Molecular Parasitology and Epidemiology
  - Hans-Peter Beck
  - Parasite Chemotherapy
  - Pascal Mäser
  - Tuberculosis Research
  - Sébastien Gagneux

Organigram valid 1.1.2018
The Department of Medical Parasitology and Infection Biology (MPI) researches pathogens and their transmission. MPI researchers develop new diagnostic products, drugs and vaccines against neglected tropical and poverty-related diseases, such as malaria, worm infections, Buruli ulcer, tuberculosis and sleeping sickness. Activities in 2017 ranged from conducting fundamental research in the laboratory to validating new therapies in clinical field studies.

Researching the biology of pathogens, host–pathogen interaction and immunity
Researchers study the molecular and cellular mechanisms underlying pathogen survival, transmission and host–pathogen interaction. They study the factors that trigger an immune reaction and influence the disease, using various infection models and human samples from clinical studies. By improving our understanding of these biological processes, researchers help tackle poverty-related diseases, such as malaria, tuberculosis, sleeping disease, dengue fever, Buruli ulcer and worm infections. Recently, for example, the study group led by Professor Till Voss identified a new cell cycle component of the malaria pathogen, *Plasmodium falciparum*. This important discovery was published in the renowned *Nature Microbiology* journal in 2017.

Researching pathogen development and transmission
MPI specialists study how pathogens undermine the immune reaction of the host or develop resistance to drugs, and how these strategies influence the spread of microbes. By using different approaches in molecular epidemiology, they analyse the dynamics of infection and transmission and the impact of health interventions, such as vaccinations or therapies, on the spread and population structure of pathogens. In 2017, Professor Ingrid Felger’s study group developed a new method to detect minute quantities of the malaria parasite in the blood of those infected. This method will undoubtedly play an important role in the global fight against malaria.

Developing diagnostic products, drugs and vaccines
Researchers also use their knowledge of pathogens and hosts to develop new diagnostic products and test selected potential compounds and vaccines in preclinical and clinical studies. They also develop new animal and infection models in order to review interventions, working together several international institutions, including long-standing partners from endemic countries. In the case of Buruli ulcer, for example, the study group led by Professor Gerd Pluschke has been working together with partners in Côte d’Ivoire and Cameroon for many years. Two new studies were funded in 2017 by Medicor Foundation and the Find organisation, to develop new diagnostic and treatment methods and to test them in the field.

Promotions
During the year under review, Jennifer Keiser was promoted to Professor for Neglected Tropical Diseases at the University of Basel. (See: p. 22) Jörg Möhrle was granted the authorisation to teach (venia docendi) by the University of Basel.
Epidemiology and Public Health (EPH)

Head: Prof. Dr. Nicole Probst-Hensch

By conducting observational and analytical studies on humans, animals and the environment, and by undertaking large-scale interventions, researchers in the Department of Epidemiology and Public Health (EPH) contribute to optimising people’s health and well-being. EPH’s systemic and comparative activities have one central goal: to identify inequalities in healthcare and to take steps to reduce them.

Epidemiological studies – culturally well-embedded

EPH personnel are based in the locations they study, ensuring that investigations are aligned with local, socio-cultural and medical needs. Studies go beyond simply asking study participants questions. Rather, surveys cover environmental, lifestyle and health factors, and high-quality biological samples are taken. Swiss TPH possesses an internationally competitive biobanking infrastructure. In the year under review, the department carried out a number of major projects. For the Swiss Programme for Research on Global Issues for Development (r4d), experts research liver pathologies in Lao PDR, caused by chronic infection with Opisthorchis viverrini liver fluke; analyse how to optimise benefit/risk profiles when extracting raw materials in four countries; and study zoonotic diseases in Mayan communities in Guatemala. Other projects address how best to promote early-childhood development in low-income countries and how to improve the lives of women and mothers through better protection against sexually transmitted diseases and better access to healthcare during pregnancy. An investigation into healthy ageing was carried out among study participants in Switzerland’s only population biobank, SA-PALDIA. The Swiss Federal Office of Public Health has commissioned two projects: a cohort on illnesses caused by diarrhoea and a pilot project with a major national biobank comprising 100,000 participants.

Fighting malaria

Multiple research teams in EPH focus on the battle against malaria. Malaria specialists coordinate global networks, formulate health policy and guidelines, and conduct relevant educational programmes. The CARAMAL project in the Democratic Republic of the Congo, Nigeria and Uganda examines the reduction of infant mortality by means of rectally administered artesunate in populations greater than 1.5 million. The latest technology is used to fight insect infections, in an effort to curb the spread of the deadly malaria pathogen. Video technology helps to examine the insects’ movements, while laboratory analyses allow researchers to test mosquitoes’ infection status and insecticide resistance on site. Within the framework of her ERC Advanced Grant, Penelope Vounatsou uses Bayesian modelling techniques to predict the geographic distribution of malarial infection among children under-five years of age in Uganda.

Poverty-related diseases

Funds provided by the Bill & Melinda Gates Foundation are used by EPH personnel to explore whether urogenital schistosomiasis can be controlled, or even eliminated, by means of integrated control methods. Two perennial, large-scale, cluster-randomised studies are currently underway in Côte d’Ivoire and Zanzibar. Researchers are simultaneously tracking the cost of the interventions with the aim of producing a cost-benefit analysis.

Communicable and non-communicable diseases

A biobank comprising around 1,000 adults has been created in Côte d’Ivoire and helps researchers understand the impact of frequently occurring infections (e.g. malaria) on the risk of contracting non-communicable diseases. An intervention study in South Africa promotes physical activity in school children who are frequently subject to worm infections. Physical activity is important for preventing chronic diseases that take root in childhood. The findings resulted in the launch of a larger study, with interventions in Côte d’Ivoire and Tanzania, as well as South Africa. In Switzerland, the Jugend+Sport (youth and sport) programme has promoted physical activity among children, for several decades. An evaluation strategy is being developed for the Swiss Federal Office of Sport.
The new Department of Medicine (MED) was founded in 2017 and is home to a Swiss centre of excellence for travel and tropical medicine, the National Diagnostic Reference Centre for Imported Parasitic Diseases and a fully-fledged centre for clinical research. Its unique structure encompasses both service provision and clinical research within one department. The department’s five units reflect specialisations in clinical medical services, diagnostics, clinical trials support, clinical research and medicines implementation research. Collectively, the experts within each unit bring to bear a broad range of skills and expertise to synergistically benefit the whole department. Recently, MED implemented new quality and data management systems, resulting in a higher level of autonomy and fulfilling top international quality requirements, especially in clinical research. (See: pp. 16–17)

The medical centre of excellence for travel and tropical medicine maintains a prominent position, providing pre-travel advice, post-travel clinical care, therapeutic services for patients, as well as consultancy advice on tropical infectious diseases for medical practitioners and hospitals all over Switzerland. The integrated general medicine practice has been strengthened by new staff and the medical spectrum has been broadened to include non-infectious diseases, with an increased focus on migration health. The Swiss TPH Travel Clinic sees more than 12,000 people every year for pre-travel advice and vaccinations. The National Diagnostic Reference Centre for Imported Parasitic Diseases – renowned for its expertise in diagnosing helminthic and protozoan tropical infectious diseases [EN ISO/IEC 17025 accredited] – continues to serve hospitals and practising doctors across Switzerland. It also processes clinical samples sent to the diagnostic laboratory from around the world. The diagnostic laboratory provides a dedicated emergency service for diagnosing malaria and sees approximately 200 malaria and more than 1,200 schistosomiasis cases per year.

Clinical trials for the most neglected populations
The Clinical Operations Unit (COU) is a seasoned team with more than 15 years of experience in managing, assisting and conducting clinical trials through contract research for a wide range of clients, including pharmaceutical companies, product development partnerships, and non-governmental and academic institutions. The focus here is mainly on (but not limited to) poverty-related and neglected diseases. The Clinical Research Unit (CRU) operates in resource-limited settings and conducts academic clinical trials of new drugs, vaccines and diagnostic products for humans. CRU also carries out studies related to clinical epidemiology and health services, and conducts research at the intersection of animal and human health. Currently, major efforts are underway to advance clinical tuberculosis research at MED, in close collaboration with the Department of Medical Parasitology and Infection Biology (MPI) as well as with colleagues from Ifakara Health Institute (IHI) in Tanzania. The Medicines Implementation Research Unit (MIRU) aims to strengthen access to and improve the understanding of drugs, vaccines and diagnostic products for humans and their appropriate use at scientific, operational and regulatory levels. Together, the clinical research units interact synergistically to evaluate, apply and validate innovative and relevant interventions, ranging from Phase I to Phase IV and implementation studies.

A worldwide net of collaborators
MED, in collaboration with the institute’s other research departments, is putting more effort into developing fewer study sites with a broader spectrum of applied research and larger teams on the ground. This move should lead to larger research hubs with more mutually beneficial activities with local partners. Proposed sites in Africa include Tanzania, Côte d’Ivoire, Democratic Republic of the Congo and Lesotho. Lao PDR (SE-Asia) and Peru (S-America) are also being considered, as the ongoing activities of the Department of Epidemiology and Public Health (EPH) can be fortified with clinical translational components. Consolidating study sites in this way would support concerted research efforts, intensify cross-specialisation activities and enable focused and high-quality training of scientists and doctors from all parts of the world. Young clinicians, in particular, should have the opportunity to gain expertise in conducting clinical research and to acquire work experience in different endemic regions. The majority of our translational research addresses issues in malaria, HIV, tuberculosis, causes-of-fever studies, parasitic worm infections, sleeping sickness and zoonoses (i.e. rickettsia and leptospirosis). Also in 2017 the Chronic Disease Clinic in Ifakara, Tanzania (CDCI) has remained an important collaborator. The CDCI is substantially supported by the Canton of Basel-Stadt.

Contributions to education and training
MED is also very active in teaching and training at various academic and non-academic levels. Numerous courses and updates are offered in the areas of travellers’ health, clinical training, diagnostic methodologies in tropical and geographical medicine (for health professionals) and Good Clinical Practice. MED staff also participate regularly in graduate and postgraduate lectures and training courses at the University of Basel.
The Department of Education and Training (ET) develops and coordinates one of the four strategic pillars of the institute, namely learning and capacity building. Some 120 staff lecture at Swiss TPH, the University of Basel and institutes of higher education in countries around the world. Teaching activities include all three “Bologna” cycles (bachelor, master and doctoral level) and programmes and courses at the professional postgraduate level. In 2017, ET invested in didactic developments, while the library remained a hot-spot for students and staff alike.

In its second year, ET has shown the advantages and benefits of coordinating all Swiss TPH teaching and training via a lean and effective departmental structure. Despite substantial changes in the teaching load and faculty, due to retirements and to the extension of the Master in Epidemiology, transitions were smooth and successful. The expansion of the MSc, from 90 to 120 ECTS, doubled the in-class lecturing load, requiring coverage for around 450 additional in-class hours. Retirements among the teaching faculty between 2016 and 2018 call for the reallocation of some 900 lecturing hours per year.

Didactics for the future
By investing in didactics, ET continues to make innovative contributions to shaping future learning environments. The University of Basel’s medical school launched online course modules in biostatistics, to support medical students at any stage of their studies in a flexible manner. These modules – all in English – were developed by Swiss TPH lecturers and are hosted on our eLearning platform.

In 2017, ET started to streamline and harmonise course evaluation procedures to further improve the quality of all teaching and training products at Swiss TPH. ET will also invest in audio-visual tools for teaching to enhance the range of learning resources.

The Swiss TPH library as learning centre
The Swiss TPH library is a learning and research resource centre that supports teaching, learning and research at Swiss TPH by providing access to electronic and print information for staff members and students. The library is an important place where students can individually learn and exchange and symbolises the academic beating heart of the institute. The library team has been heavily engaged in planning the future library space of the new building, “Belo Horizonte” in Allschwil.

Every day is a postgraduate teaching day
Our professional postgraduate training (PPT) programmes and course offerings have set an impressive record: with 45 courses, lasting anywhere from a few hours up to 14 weeks, PPT is responsible for 273 successful course days. A total of 743 participants filled our classrooms for an average of 20 days, each. All our certificate (CAS), diploma (DAS) and master (MAS) programmes are accredited by the University of Basel. Despite the trend toward choosing shorter programmes, our flagship MAS programmes – namely the Master in Insurance Medicine and the MBA in International Health Management – and the joint MPH offered by the universities of Basel, Bern and Zurich, continue to attract health professionals. (See: pp. 34–36)

PhD track at Swiss TPH – a role model for a future Graduate School?
To support and strengthen the PhD track, Swiss TPH established structures for guidance, support, quality assurance and tracking, decades ago. Meanwhile, our PhD community has grown to approximately 180 PhD students from more than 60 countries. No matter on what topic or in what faculty your students do their PhD, the ET Student Office makes sure they are well informed, guided and supported. After a rigorous internal review process, students submit and present their research proposal and learning plans to the Swiss TPH Research Commission (RC) for final approval. Students get advice on all matters related to their life as a PhD student. Twice a year, we update the Student Handbook.

Thanks to international guidelines on how to strengthen the PhD track, similar structures have become very popular in many faculties and universities. Some 10 years ago, feder-
al funders and the University of Basel started to invest in structured PhD programmes; Swiss TPH leaders were at the forefront of this movement. As of 2017, some 75 per cent of our PhD students are enrolled in at least one of four structured PhD programmes relevant to Swiss TPH research, including the largest – the inter-university SSPH+ PhD Program in Public Health. One third of the more than 170 PhD students from seven universities enrolled in SSPH+ come from Swiss TPH. The University of Basel seeks to strengthen the PhD track by consolidating PhD programmes into graduate schools. Swiss TPH welcomes these new initiatives. Swiss TPH, PhD programme leaders and a medical faculty working group, led by the Head of ET, work with enthusiasm on elaborating the vision of an inter-faculty and inter-university Graduate School in Health Sciences.
The Swiss Centre for International Health [SCIH] is a leading and highly-respected consulting agency in global health. The department hosts a multi-disciplinary team working in Basel and in many places around the world. The department offers services such as backstopping, consultancy and policy advice, economic evaluations, project design and implementation, operations research, organisational capacity assessments and performance monitoring and controlling.

**Services to the Global Fund, GAVI and UNITAID**
The department provides comprehensive Local Fund Agent (LFA) services to the Global Fund and monitors programme implementation related to HIV/AIDS, tuberculosis and malaria control, in a number of countries and regions. SCIH reinforces the Global Fund’s approach to programmatic quality assurance and improvement by conducting health facility assessments [multiple countries] and a supply chain assessment in Côte d’Ivoire. Recently, the Global Alliance for Vaccines and Immunization (GAVI) granted a monitoring mandate to SCIH to track the implementation of vaccination activities in Burundi. For UNITAID, the department is conducting external evaluations of various initiatives, such as one on expanding new drug markets for tuberculosis.

**ICT for insurance management**
In Tanzania, Swiss TPH is rolling out a community health-insurance scheme to informal sector workers and rural populations, on behalf of the Swiss Agency for Development and Cooperation (SDC). In this context, the SCIH team developed an internet-based Insurance Management Information System (IMIS). Based on very positive initial results and its relevance to other countries, IMIS is now not only being used in Tanzania, but also in Nepal, Cameroon and parts of the Democratic Republic of Congo. Given the system’s success in improving the efficiency and transparency of insurance operations, IMIS has great potential for scale-up through the openIMIS initiative, funded by the Swiss Agency for Development and Cooperation (SDC) and the Federal Ministry for Economic Cooperation and Development in Germany (BMZ) and coordinated by the German Corporation for International Cooperation (GIZ).

**Various mandates for key players in the Swiss health sector**
The department continues to operate as a trusted partner and implementing agency, with long-term mandates for SDC in the Republic of Tajikistan, Albania, Kosovo, Chad, the United Republic of Tanzania, Moldova and Rwanda. These mandates focus on strengthening primary and secondary healthcare services [including medical education reform and quality improvement, respectively] and improving their financial, cultural and geographical accessibility to the population. In 2017, SDC commissioned SCIH to implement a major project to improve the nutritional status of children through action research in Rwanda. For the Swiss Federal Office of Public Health, the department completed and contributed to various mandates, including an analysis of influenza vaccination practices at cantonal level and outbreak investigations of food-borne disease and MDR-TB in Switzerland, among others. The results allow the office to optimise influenza prevention activities, as well as to ensure a timely response to potential disease threats.

**Strengthening fragile health systems**
SCIH successfully supports health systems development in countries with fragile health systems, with a focus on Africa, Eastern Europe and Central Asia. Key topics covered are: maternal and newborn health, health promotion and community health, family medicine and integrated care models, district management, human resource development, health insurance and health information systems.
The Department of Administration supports the institute’s operations and staff through five service units: Finances/Controlling, Infrastructure, Informatics, Project & Grant Service and Human Resources. The administrative directorate coordinates activities at the unit level and advises the director in strategic matters, particularly in regards to financial matters.

Administrative directorate
2017 saw a change of leadership in the division, with Matthias Schmid-Huberty taking over as Administrative Director on 1 January 2018, following a three-month transition period. (See: pp. 13–14)
The treaty between the cantons of Basel-Stadt and Basel-Landschaft regarding the joint sponsorship of Swiss TPH came into effect on 1 January 2017. At the same time, the two cantonal governments approved the opening balance sheet, including the list of investments, with equity capital of CHF 6,555,376, and a payment of CHF 3,277,688 from the Canton of Basel-Landschaft to the Canton of Basel-Stadt.
The results of an employee satisfaction survey were particularly encouraging. The survey, carried out in the context of implementing the 2017–2020 strategy, solicited feedback on the services provided by the administration division. The cross-sectional surveys were carried out over a period of two years and revealed an overall improvement of 15 per cent, from 5.1 to 5.4 on a scale of 1 (very dissatisfied) to 7 (very satisfied). The number of dissatisfied employees [result: <4] fell below 10 per cent. The results show that the administration division was able to respond appropriately to employee needs and demands by means of effective action plans.

Finances/Controlling
With a turnover of CHF 86 million, Swiss TPH once again covered around 78 per cent of its required financing from third-party funds provided by foundations and private and public clients, in 2017. Some 22 per cent of these funds came from core contributions from the public sector, which are based on service agreements. Employees accounted for less than 85 per cent of the institute’s total expenses. The effect of negative bank interest rates during the year under review made cash management especially challenging. The damage was kept in check thanks to negotiations with important creditors that allowed Swiss TPH to forgo dedicated project accounts, and with the banks concerning exemption thresholds. International payment transactions continue to present a challenge, as does the preparation of financial reports, which must adhere to the varying rules observed by our partners.

Informatics
A project leaders’ retreat was held in March 2017 to identify the IT demands for research. The discussion revealed that the term, “IT” is associated with a wide range of ideas. In order to focus discussions in a relevant and effective way and to ensure that the institute’s management receives the necessary support in IT-strategic matters, a decision was made to revive the IT Technical Committee (ITTC), which had been dormant since 2016. The committee brings together representatives from all departments.
The Informatics unit takes care of the overall IT needs of the institute and was able to resolve all pending issues from the internal control system (ICS). At over 99 per cent, network and server availability remains extremely high, and all cybersecurity attacks were successfully defended against. Protecting our systems calls for increased alertness and resources. The unit was involved in numerous projects in 2017, including the change from the @unibas.ch e-mail addresses to @swisstph.ch. The unit’s management also looked closely at the issue of the IT workplace 2020, in the context of the new construction project.

Project & Grant Service
The Project & Grant Service unit (PGSU) maintains close contact with donor organisations and supports project managers in the preparation of project applications in cooperation with external partner organisations. It also contributes to contract management and quality development at Swiss TPH. In 2017, the unit established a grant management system for partners of the Swiss consortium involved in a major EU initiative, Human Biomonitoring for Europe (HBM4EU). The PGSU expanded the travel safety guidelines, introduced a tandem of country-specific focus persons and a briefing/debriefing system, established crisis management teams (CMTs) and held safety training and information events for Swiss TPH employees.

Human Resources
The new Real Time Management (RTM) timekeeping system was introduced throughout the institute on 1 July 2017. The system ensures that legal requirements are met, in terms of timekeeping, and that institute-wide absence statistics can be collected as required for the calculation of hourly rates in the context of EU projects. Managing the different formats of employment contracts, with their varying conditions in the areas of social insurance and taxation, continues to present a challenge. HR business partners were involved in recruiting several new staff and supported management in implementing the strategic objectives.
### Finances

#### Funding 2017

<table>
<thead>
<tr>
<th>Category</th>
<th>Mio CHF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core funding</strong></td>
<td></td>
</tr>
<tr>
<td>University of Basel</td>
<td>7.1</td>
</tr>
<tr>
<td>National government</td>
<td>7.8</td>
</tr>
<tr>
<td>Canton Basel–Stadt</td>
<td>2.0</td>
</tr>
<tr>
<td>Canton Basel-Stadt (Swisslos-Fonds)</td>
<td>1.6</td>
</tr>
<tr>
<td>Canton Basel-Landschaft</td>
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<tr>
<td><strong>Subtotal</strong></td>
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</tr>
<tr>
<td>Deferred income new building “Belo Horizonte”</td>
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<tr>
<td><strong>Total Core funding</strong></td>
<td>18.9</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Category</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Competitively acquired funds</strong></td>
<td></td>
</tr>
<tr>
<td>Research (i.e. SNSF, EU, R. Geigy-Foundation)</td>
<td>26.1</td>
</tr>
<tr>
<td>Services (i.e. SDC, Global Fund, BMGF)</td>
<td>31.6</td>
</tr>
<tr>
<td>Education and training (i.e. postgraduate courses)</td>
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</tr>
<tr>
<td>Medical services (i.e. travel medicine and diagnostics)</td>
<td>4.5</td>
</tr>
<tr>
<td>Other income</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Total competitively acquired funds</strong></td>
<td>66.8</td>
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<tr>
<td><strong>Total</strong></td>
<td>85.7</td>
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#### Funding 2016

<table>
<thead>
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<th>Mio CHF</th>
</tr>
</thead>
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<tr>
<td><strong>Core funding</strong></td>
<td></td>
</tr>
<tr>
<td>University of Basel</td>
<td>7.1</td>
</tr>
<tr>
<td>National government</td>
<td>6.8</td>
</tr>
<tr>
<td>Canton Basel–Stadt</td>
<td>3.5</td>
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<tr>
<td><strong>Total Core funding</strong></td>
<td>17.4</td>
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<table>
<thead>
<tr>
<th>Category</th>
<th>Mio CHF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Competitively acquired funds</strong></td>
<td></td>
</tr>
<tr>
<td>Research (i.e. SNSF, EU, R. Geigy-Foundation)</td>
<td>27.2</td>
</tr>
<tr>
<td>Services (i.e. SDC, Global Fund, BMGF)</td>
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<tr>
<td>Education and training (i.e. postgraduate courses)</td>
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<tr>
<td>Medical services (i.e. travel medicine and diagnostics)</td>
<td>4.0</td>
</tr>
<tr>
<td>Other income</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Total competitively acquired funds</strong></td>
<td>64.1</td>
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<tr>
<td><strong>Total</strong></td>
<td>81.5</td>
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### Annual Accounts

#### Income Statement

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<thead>
<tr>
<th></th>
<th>2017 in 1000 CHF</th>
<th>2018 in 1000 CHF</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-managed income</td>
<td>64 104</td>
<td>60 812</td>
<td>74.8%</td>
<td>74.6%</td>
</tr>
<tr>
<td>Core funding from national and local government</td>
<td>18 900</td>
<td>17 356</td>
<td>22.0%</td>
<td>21.3%</td>
</tr>
<tr>
<td>Other operating income</td>
<td>2 268</td>
<td>2 587</td>
<td>2.6%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Change in unbilled services</td>
<td>472</td>
<td>746</td>
<td>0.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td><strong>Total income</strong></td>
<td>85 744</td>
<td>81 501</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Expenditure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel expenses</td>
<td>–52 916</td>
<td>–51 625</td>
<td>62.1%</td>
<td>63.5%</td>
</tr>
<tr>
<td>Material expenses</td>
<td>–3 960</td>
<td>–3 956</td>
<td>4.6%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Depreciation of tangible assets</td>
<td>–1 322</td>
<td>–1 228</td>
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<td>1.5%</td>
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<tr>
<td>Amortisation of intangible assets</td>
<td>–307</td>
<td>–103</td>
<td>0.4%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>–4 379</td>
<td>–3 667</td>
<td>5.1%</td>
<td>4.5%</td>
</tr>
<tr>
<td>Other operating expenses</td>
<td>–22 318</td>
<td>–20 767</td>
<td>26.2%</td>
<td>25.5%</td>
</tr>
<tr>
<td><strong>Total expenditure</strong></td>
<td>–85 202</td>
<td>–81 346</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Operating result</strong></td>
<td>542</td>
<td>155</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial result</td>
<td>–190</td>
<td>–51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordinary result</td>
<td>352</td>
<td>104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraordinary result</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall results</strong></td>
<td>352</td>
<td>104</td>
<td></td>
<td></td>
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</table>

#### Balance

<table>
<thead>
<tr>
<th></th>
<th>2017 in 1000 CHF</th>
<th>2018 in 1000 CHF</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>23 435</td>
<td>24 411</td>
<td>41.7%</td>
<td>48.3%</td>
</tr>
<tr>
<td>Receivables</td>
<td>16 823</td>
<td>10 768</td>
<td>29.8%</td>
<td>21.3%</td>
</tr>
<tr>
<td>Prepayments and accrued income</td>
<td>5 096</td>
<td>4 927</td>
<td>9.1%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Inventories</td>
<td>115</td>
<td>127</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td>45 469</td>
<td>40 231</td>
<td>80.9%</td>
<td>79.5%</td>
</tr>
<tr>
<td>Non-current assets</td>
<td>10 743</td>
<td>10 342</td>
<td>19.1%</td>
<td>20.5%</td>
</tr>
<tr>
<td><strong>Total non-current assets</strong></td>
<td>10 743</td>
<td>10 342</td>
<td>19.1%</td>
<td>20.5%</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>56 212</td>
<td>50 573</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Liabilities and equity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-term financial liabilities</td>
<td>0</td>
<td>900</td>
<td>0.0%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Payables from goods and services</td>
<td>3 077</td>
<td>1 830</td>
<td>5.5%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Other payables</td>
<td>1 490</td>
<td>1 167</td>
<td>2.7%</td>
<td>2.3%</td>
</tr>
<tr>
<td>R. Geigy Foundation – short term loan</td>
<td>0</td>
<td>2 000</td>
<td>0.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Accrued liabilities and deferred income</td>
<td>36 335</td>
<td>33 547</td>
<td>64.6%</td>
<td>66.3%</td>
</tr>
<tr>
<td>Short-term provisions</td>
<td>1 618</td>
<td>1 253</td>
<td>2.9%</td>
<td>2.5%</td>
</tr>
<tr>
<td><strong>Total current liabilities</strong></td>
<td>42 520</td>
<td>40 497</td>
<td>75.7%</td>
<td>80.1%</td>
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<tr>
<td>Long-term liabilities</td>
<td>432</td>
<td>566</td>
<td>0.8%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Mortgages</td>
<td>1 550</td>
<td>1 500</td>
<td>2.7%</td>
<td>3.0%</td>
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<tr>
<td>Long-term provisions</td>
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<td>1 455</td>
<td>2.9%</td>
<td>2.9%</td>
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<tr>
<td>Long-term deferred income</td>
<td>3 200</td>
<td>0</td>
<td>5.7%</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Total non-current liabilities</strong></td>
<td>6 784</td>
<td>3 521</td>
<td>12.1%</td>
<td>7.0%</td>
</tr>
<tr>
<td><strong>Equity</strong></td>
<td>6 908</td>
<td>6 555</td>
<td>12.2%</td>
<td>13.0%</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td>56 212</td>
<td>50 573</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
### Income Statement by Activities 2016

<table>
<thead>
<tr>
<th>Activity</th>
<th>Income in 1000 CHF</th>
<th>Total costs in 1000 CHF</th>
<th>Balance in 1000 CHF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Parasitology and Infection Biology</td>
<td>11 644</td>
<td>–11 770</td>
<td>–126</td>
</tr>
<tr>
<td>Epidemiology and Public Health</td>
<td>21 942</td>
<td>–21 906</td>
<td>36</td>
</tr>
<tr>
<td>Institutional projects</td>
<td>2 865</td>
<td>–2 865</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total research</strong></td>
<td>36 441</td>
<td>46 %</td>
<td>–36 531</td>
</tr>
<tr>
<td><strong>Teaching and Training</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education and Training</td>
<td>4 040</td>
<td></td>
<td>–4 320</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Services &amp; Diagnostics</td>
<td>5 780</td>
<td>–5 780</td>
<td>0</td>
</tr>
<tr>
<td>Medicines Research</td>
<td>3 739</td>
<td>–3 739</td>
<td>0</td>
</tr>
<tr>
<td>Swiss Centre for International Health</td>
<td>28 287</td>
<td>–28 214</td>
<td>73</td>
</tr>
<tr>
<td><strong>Total services</strong></td>
<td>37 806</td>
<td>48 %</td>
<td>–37 733</td>
</tr>
<tr>
<td><strong>Total activities</strong></td>
<td>75 995</td>
<td>100 %</td>
<td>–75 891</td>
</tr>
<tr>
<td>Management</td>
<td>70 63</td>
<td>–8 808</td>
<td>275</td>
</tr>
<tr>
<td><strong>Income statement</strong></td>
<td>81 501</td>
<td>–81 397</td>
<td>104</td>
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Management and infrastructure costs included in total activities

-6 264

### Income Statement by Activities 2017

<table>
<thead>
<tr>
<th>Activity</th>
<th>Income in 1000 CHF</th>
<th>Total costs in 1000 CHF</th>
<th>Balance in 1000 CHF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Parasitology and Infection Biology</td>
<td>11 644</td>
<td>–11 770</td>
<td>–126</td>
</tr>
<tr>
<td>Epidemiology and Public Health</td>
<td>21 942</td>
<td>–21 906</td>
<td>36</td>
</tr>
<tr>
<td>Institutional projects</td>
<td>2 865</td>
<td>–2 865</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total research</strong></td>
<td>36 441</td>
<td>46 %</td>
<td>–36 531</td>
</tr>
<tr>
<td><strong>Teaching and Training</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education and Training</td>
<td>4 414</td>
<td>–4 320</td>
<td>94</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Services &amp; Diagnostics</td>
<td>5 780</td>
<td>–5 780</td>
<td>0</td>
</tr>
<tr>
<td>Medicines Research</td>
<td>3 739</td>
<td>–3 739</td>
<td>0</td>
</tr>
<tr>
<td>Swiss Centre for International Health</td>
<td>28 287</td>
<td>–28 214</td>
<td>73</td>
</tr>
<tr>
<td><strong>Total services</strong></td>
<td>37 806</td>
<td>48 %</td>
<td>–37 733</td>
</tr>
<tr>
<td><strong>Total activities</strong></td>
<td>78 661</td>
<td>100 %</td>
<td>–78 584</td>
</tr>
<tr>
<td>Management</td>
<td>70 63</td>
<td>–8 808</td>
<td>275</td>
</tr>
<tr>
<td><strong>Income statement</strong></td>
<td>85 744</td>
<td>–85 392</td>
<td>352</td>
</tr>
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</table>

Management and infrastructure costs included in total activities

-6 423
Finances

Funding Partners and Clients

Core Funding

Beitrag Kanton Basel-Stadt
Beitrag Kanton Basel-Stadt (Swisslos-Fonds)
Beitrag Kanton Basel-Landschaft
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Cordaid, NL
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Global Fund, CH
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