

From the STI to the Swiss TPH

Spotlights on the history of the Swiss Tropical Institute

Lukas Meier and Niklaus Weiss



Swiss TPH 
Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut
Institut Tropical et de Santé Publique Suisse
Associated Institute of the University of Basel

**From the STI to the Swiss TPH:
Spotlights on the history of the Swiss Tropical Institute**

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English translation by Jennifer and Isobel Jenkins

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Foreword

"It is not things that remain unchanged by the passage of time that endure, but rather those that change intelligently as time moves onwards." (Anonymous)

In 2014, the Swiss Tropical Institute – now the Swiss Tropical and Public Health Institute – can celebrate 70 years of intensive activity. To mark the event, Niklaus Weiss and Lukas Meier have assembled an admirable series of pictures, with short commentaries, to cast light on the history of our Institute. We are delighted and grateful that a Scientist and a Historian – representing two generations of people working in our Institute – have been able to look together at the way we have changed over the years, to adapt to a world that has undergone many global and local transformations. They have analysed the changes and exploited the picture libraries with a transnational perspective.

Since its foundation, the STI has been one of those Basel institutions whose history has been closely linked to that of the whole world, and especially to developments in Africa. By turning these "spotlights" on the past, we want to show our colleagues, our partners all over the world, and the general public, the way our Institute has grown. It has been influenced by many internal and external factors, and above all it has been enriched, shaped and developed by the experience of innumerable

partnerships crossing international borders and spanning cultural differences. I often say, "No roots – no fruits". It is a simple statement, but it gives an insight into what sustains and supports our work. A deeply critical and far-sighted analysis of our roots, and of what we have become today, makes it possible to approach the future with coherent plans, consistently put into practice, and to develop our work harmoniously. The insight becomes an outlook – a wide-ranging view beyond the boundaries of our Basel world. It is not the number of years that the Institute has existed that is significant – it is rather the years in which we have lived and worked in it, and have been able together to form it as it is today.

We are grateful to the authors, Lukas Meier and Niklaus Weiss, and the whole team that has worked on the production of this inspiring book with its many "spotlights" that can light our way into the future. We hope that it will above all stimulate its readers to work together in teaching, research and the provision of services, and their direct application to health problems and health services worldwide, bringing sustainable benefits to all the people affected – who are often very much neglected – all over the world.

Marcel Tanner
Director, Swiss TPH

May 2014

Rudolf Geigy on the occasion of the 25th anniversary of the STI:

"A Tropical Institute – more than any other University institution – will be affected and influenced by the vicissitudes of World History, and thus by both international developments and internal changes in the Motherland. Therefore it must adjust repeatedly to new circumstances, and seek for new possibilities for activities, if it is to stand the test of time. The people in charge of it will enjoy an exciting and perhaps unsettling existence, with a wealth of attendant risks."

Annual Report of the STI, 1968

Authors' Preface

Seventy years ago, on May 4th 1944, the Swiss Tropical Institute (STI) was founded in Basel. The Kuratorium – the name given to the Board of Governors – met to finalise the plans for an Institute whose aim was to contribute to improving health through teaching, research and the provision of services.

To this day, the STI's mission has not altered. However, over 70 years of history there have been major developments in the global context that have stimulated many changes in the Institute as well. A specialised small institution has grown into the Swiss Tropical and Public Health Institute (Swiss TPH), a modern scientific Institute. The research, teaching and service activities of the TPH are carried out in the service of people in many countries, and receive world-wide recognition. For a long time the Institute has not only been concerned with "the Tropics". The Swiss TPH is active in every continent.

The 70th Anniversary is a welcome opportunity for us to look back on the eventful history of the Institute. The present book – published in German and in English – is intended for the general reader, and especially for people who are, or have been, involved in the history of the STI. There are many of them. There are those

who have worked for the Institute in Basel or overseas; scientists from other organisations working on joint projects; generous members of the Board and Foundations; far-seeing politicians and critical evaluators. We also particularly want to give the students of the Swiss TPH some knowledge of the Institute's roots.

Considering the great variety of the Institute's ever-changing activities, we clearly cannot give a comprehensive account of its history. We can do no more than sketch the history, and turn a "spotlight" on to some key events, people and activities. We apologise for the fact that we have had to omit so much. Readers who would like more complete descriptions can find them in the Institute's Annual and Biennial Reports.

The book is organised according to themes. It begins with an introduction to the way the Institute's structure and services have changed over the years, and the "spotlights" are then directed towards themes in teaching and research, and finally the evolution of the Tropical Institute into the Swiss TPH. Today, as in the past, teaching, research and services

cannot be clearly separated. Neither can we separate the activities into those "at home" and "abroad". The story is not only the story of the founding of an institution in landlocked Switzerland, but of the development of partner institutions in Africa, and projects in partnership in many parts of the world.

We want to express our gratitude to all those who have helped to make this book a reality. Marcel Tanner, Director of the Swiss TPH, was encouraging from the start. The publication was made possible through contributions from the Swiss TPH and the Geigy Foundation. We thank the Ernst Göhner Foundation for a contribution to the cost of printing. Many present and past members of the Institute's staff have made helpful comments on particular themes, and the library team was always ready with advice and practical help. We thank them all most sincerely. Finally, we thank Christian Heuss for editorial comments; Jennifer Jenkins and Isobel Jenkins for their professional translation into English; Markus R. Weber (Weber Werbung, Böttmingen) for the graphic design, and the printing firm, Kreis Druck AG, Basel, for their advice and for their high-quality printing.

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70 years in the service of health

Basel and Africa

Basel and Africa have been closely interlinked for a long time. In the 18th and 19th centuries, travellers from Basel explored the vast spaces of the African continent then unknown to Europeans. One of them was Johann Ludwig Burckhardt, better known as "Sheikh Ibrahim".



Members of the Fédération des Etudiants de l'Afrique Noire (Federation of Students from Black Africa) in front of the original building of the STI, "zur Föhre", 1951. Photo E. Siegrist

He not only rediscovered the city of Petra in Jordan, but also left detailed descriptions of the countries that are now Sudan and South Sudan. The advance of new academic disci-

plines, like anthropology, intensified the contact between Basel and Africa. The collections of the Basel museums were enriched by objects of anthropological and scientific interest from Africa, and the African wilderness was displayed for all to see in the zoological gardens. A central role in scientific exploration and trade was played by the Basel Mission, which was founded in 1815 and is now one of the oldest missionary societies in Europe. Alongside India, present-day Ghana was a geographical centre of the Mission's work. In the 20th century, the Basel chemical industry grew rapidly as a result of its activities in the areas of textiles and artificial dyestuffs, and Africa became more and more important as a market for its products.

Education creates jobs (1944–1961)

In December 1943, the parliament of the City of Basel voted to support the foundation of a Tropical Institute. In view of the close connections between Basel and the African continent, this does not seem especially surprising. However, when one compares the background of the Swiss Tropical Institute (STI) with that of other Tropical Institutes in Europe, it does become evident that the STI was founded under rather unusual circumstances. The Tropical Institutes of Paris, London, Liverpool or Antwerp were established by the Imperial Powers of the 19th century. Tropical Medicine devel-



Title-page of the proposal made to the Cantonal Parliament of Basel City in 1943.

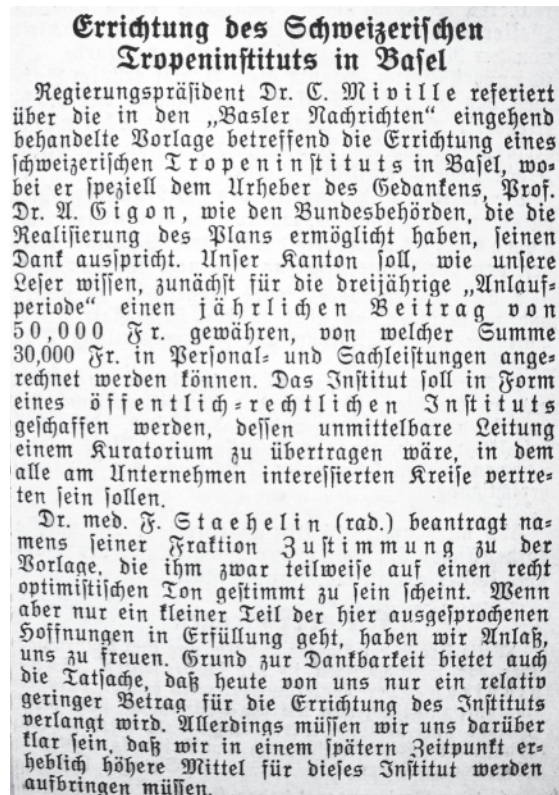
oped to protect the health of European armies abroad, and was a necessary precondition for European expansion. Switzerland had largely kept itself out of the "Scramble for Africa", and the STI was founded comparatively late, at the end of the Colonial period, as a result of Switzerland's special situation during the Second World War.

In Switzerland, the war years were a period of collective paralysis. Both the population at large, and the political decision-makers, were gripped by the fear that there would be massive unemployment when the war was over. The Government tried to reduce the threatened shortage of jobs by promoting scientific programmes which would lead to new employment opportunities, activities that would "be useful to industry, trade and agriculture, would provide more work and profit, and encourage exports and tourist traffic".

Swiss universities were invited to make proposals, and the University of Basel suggested a Tropical Institute. The project was proposed by Alfred Gigon, the founder of the Swiss Academy of Medical Sciences, who was

"We're off to the Tropics". Painted lantern used by the Carnival Society "Schnurebегge" in Basel, 1946. The fact that one society chose the founding of the Tropical Institute as a subject for witty comment indicates that there was considerable public interest in it. Photo N. Weiss

Professor of Internal Medicine in Basel. In his proposal, Gigon stressed the value of such an Institute for the export industry and the tourist trade. His arguments convinced the Federal Government, and in a meeting of the Board of Governors (called the *Kuratorium*) on May 4th 1944, the Swiss Tropical Institute (STI) was officially founded.



Extract from a newspaper report on the meeting of the Parliament of Canton Basel-Stadt on December 9th 1943. *Basler Nachrichten* 10.12.1943.



The house "zur Föhre" and the Sonnenrain Clinic on the Socinstrasse in Basel. Photo Archive STI

Education for the Tropics in Basel

Alfred Gigon's proposal played an important part in the founding of a Tropical Institute, but the driving force behind the STI's growth and development was the Basel zoologist Rudolf Geigy. Geigy came from a wealthy Basel family engaged in the chemical and pharmaceutical industry, but already as a young man he had decided not to make a career in the family firm but to devote himself to research in zoology, especially developmental biology (see Box). Geigy's vision of the STI was not only of an Institute that would educate students and carry out original scientific research. It was important to him that scientific knowledge should be applied to practical problems.

Rudolf Geigy (1902–1995, Director of the STI 1944–1972)

Rudolf Geigy was born in 1902 into a family of wealthy Basel industrialists. The Geigys were members of the economic and political elite of the city. The family had built up a highly successful pharmaceutical firm, J. R. Geigy Ltd. One of the firm's achievements was the development of DDT, the insecticide that revolutionised the fight against tropical diseases carried by insects. Rudolf Geigy studied zoology in Basel under Friedrich Zschokke, and then moved to Geneva, where Emile Guyénot introduced him to a more physiological approach to the subject. His dissertation, published in 1931, brought him international recognition. In 1935, back in Basel, Rudolf Geigy was appointed to a University lectureship in Experimental Embryology and Genetics. Three years later he became an associate Professor, and in 1952 he was awarded a personal Professorship. He was regarded as the pioneer of developmental physiology and the founder of experimental zoology in the University of Basel. The high point of his career in the University was his appointment as Rector in 1962. Geigy was also an honorary member of the Royal Society of Tropical Medicine, and was awarded an honorary doctorate by the University of Zürich.

Selected Publications: **1931** Rudolf Geigy, *Action d'ultraviolet sur le pôle germinal dans l'œuf de Drosophila melanogaster*, Thèse. (Action of ultraviolet light on the germinal pole of the eggs of *Drosophila melanogaster*, Thesis). *Revue Suisse de Zoologie*, 38, 187–288. **1941** Rudolf Geigy, *Die Metamorphose als Folge gewebespezifischer Determination* (Metamorphosis as a result of tissue-specific determination). *Revue Suisse de Zoologie*, 48, 483–494. **1945** Rudolf Geigy, *Malaria in der Schweiz* (Malaria in Switzerland). *Acta Tropica*, 2, 1–22. **1950** Rudolf Geigy, *Beobachtung einer an einem Bantu-Neger vorgenommenen Beschneidung* (Observations of the circumcision of a Bantu). *Acta Tropica*, 7, 357–366. **1955** Rudolf Geigy & Adelheid Herbig-Sandreuter, *Erreger und Überträger tropischer Krankheiten* (Causative agents and vectors of tropical diseases). *Acta Tropica* (Supplementum 6), Basel, 472 pp. **1962** Rudolf Geigy, *Der Sprung in die Selbständigkeit. Entwicklungshilfe und Menschheitsproblem*. Speech at the annual *Dies Academicus* of the University of Basel on November 23rd 1962 as Vice-Chancellor. **1967** Rudolf Geigy, M. Kauffmann & R. Beglinger, A Survey of Wild Animals as Potential Reservoirs of Trypanosomiasis in the Ulanga District (Tanzania), *Acta Tropica*, 24, 97–108.



Research work in the first laboratories, ca 1950. Photo Archive STI

In the STI, teaching, research and the provision of services should be closely linked. The fact that it also offered services to the public made the STI different from other institutions in the University of Basel, but from the beginning it was connected with the Alma Mater, and the collaboration became closer over the years. In 2010, the Agreement of Association with the University of Basel was revised. The Swiss Tropical and Public Health Institute (Swiss TPH), is now an Associated Institute of the University of Basel, and in addition it is a nationally-recognised Reference Centre.

The STI offered various courses (see Chapter 2). From the beginning, the **General Tropical Course** (*Allgemeiner Tropenkurs*),

originated by Rudolf Geigy, was offered to anyone who wanted to prepare for going to work in the tropics. The course rapidly became a hallmark of the Institute – and remains so to this day. It covered a broad spectrum of themes. Lectures in the university lecture rooms on the Petersplatz in Basel, on “Countries and people in tropical regions” did not only cover the geographical features and the varied natural history of the Tropics. The listeners were introduced to the world of religious customs, and to the history of European colonisation. The most important tropical diseases were discussed, as well as subjects like “Adjusting a European life-style to the Tropics” or “The distribution and physical characteristics of tropical races”. The listeners were not expected to be

passive consumers of information, but were encouraged to take part in numerous practical exercises in map-reading and land-surveying. A first-aid course provided knowledge that could save lives, and the numerous language courses – of which Swahili, Hausa and Malay were perhaps the most exotic – were designed to ensure that the students would have no problems with communication when they were overseas.

There was also a **Course in Tropical Medicine** (*Tropenmedizinischer Kurs*). This was designed for medical students, biologists and doctors. The course was more specialised than the General Tropical Course, and described the major infectious diseases found in tropical countries, and their prevention and treatment.

The **Tropical School** (*Tropenschule*) was set up within the Cantonal Business School (*Kantonale Handelsschule*). The emphasis in its courses was on agriculture, and they were designed for people who hoped to become managers of plantations overseas.

Research in the service of Africa

The research done in the early years of the STI was very much influenced by Rudolf Geigy’s own interests. As a zoologist, he was fascinated by the living organisms that he once described as the “tormenting spirits of the Tropics” (*tropische Quälgeister*) – the organisms that cause tropical diseases, and those that carry the infection. He was also very much aware of what the burden of these diseases meant for the population, and he was



The Centre Suisse de Recherches Scientifiques (CSRC) in Adiopodoumé, Côte d'Ivoire, opened in 1951. Photo Archive STI

convinced that their transmission could only be properly understood through research that combined studies in the laboratory with those in the field (see Chapter 3).

The STI was still young, and its research capacity was limited. Unlike the Tropical Institutes of the European colonial powers, the STI could not fall back on a well-established tradition of research on tropical diseases. In addition, the Institute had no collection of scientific materials as a basis for research and teaching. So Geigy and some of his colleagues set off as early as 1945 for an extended journey in West and Central Africa. There, they could study tropical diseases in the field, and profit

from discussions with scientists working for the Belgian and French colonial governments. From 1949 onwards, there were regular expeditions to Tanganyika (now Tanzania) in East Africa.

The scientific research soon ceased to be based on exploratory expeditions. As African countries became independent in the 1950s, the STI founded its own research laboratories in Africa. In West Africa there was the Swiss Centre for Scientific Research (*Centre Suisse de Recherches Scientifiques, CSRS*) in Côte d'Ivoire, under the Swiss Society for Scientific Research (*Schweizerische Naturforschende Gesellschaft, SNG*). In East Africa there was

the Swiss Tropical Institute Field Laboratory (STIFL) in Tanganyika. Both these institutions were to be of central importance for the growth and development of the STI. Côte d'Ivoire and Tanzania were much more than merely destinations for expeditions for Swiss scientists. In Rudolf Geigy's vision both centres of research were foci of the cooperation between African and Swiss scientists, and places where people from different cultures could learn to live together. Research in these centres never lost sight of its aim; to find practicable measures that could improve the health of the local people. Thus the STI also became a pioneer in the growing movement for development aid and development cooperation between Europe and Africa.



Rudolf Geigy (right) in a transport plane on the flight to Libreville, 1945. Photo Archive STI

Rudolf Geigy (bare-headed) waiting for take-off in Brazzaville, 1945. Photo Archive STI





Building of the STI Field Laboratory in Ifakara, in Tanganyika in 1956, directed by Thierry Freyvogel. Photo T. A. Freyvogel

The Journal *Acta Tropica*

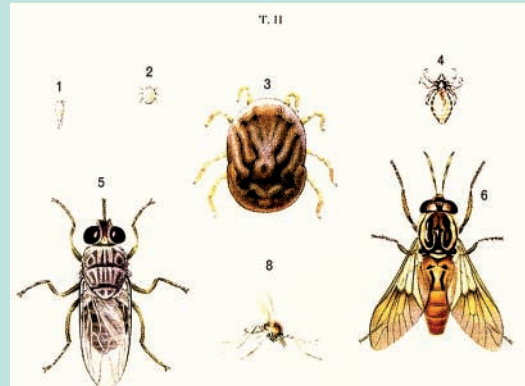


Photo N. Weiss

Mitsou Stehelin's beautiful drawings of the malign vectors of tropical diseases, from the textbook "Erreger und Überträger tropischer Krankheiten" (*Agents and Vectors of tropical Diseases*) by Rudolf Geigy and Adelheid Herbig-Sandreuter, published in 1955 as a Supplement to *Acta Tropica*. The three larger pictures show, from left to right, a tsetse fly, the vector of sleeping sickness, a soft tick, carrier of tick relapsing fever, and a horsefly, whose bite can infect humans with the filarial worm *Loa loa*.

The first issue of *Acta Tropica* was published in 1944. The editors were four Basel Professors, from three Faculties – Rudolf Geigy, Alfred Gigon, Felix Speiser and Rudolf Tschudi. At the

beginning, the editors were supported by colleagues from other Swiss universities and medical doctors in Switzerland who were specialists for tropical diseases. This changed very quickly, and after five years half of the collaborators came from outside Switzerland. *Acta Tropica* was intended to be an international scientific journal for the whole area of scientific research on tropical countries. This reflected Rudolf Geigy's manifold interests. For him, this was a very important channel for publishing his results promptly and without complicated procedures. In those days, journals rarely used the peer-review process. Most of the dissertations of Geigy's students appeared in *Acta Tropica*. Until the mid-1960s, most papers were published in either German or French. After 1970, English papers were in the majority.

The original publisher was the *Verlag für Recht und Gesellschaft* (Law and Society). In 1977 it ceased to exist, and from 1977 *Acta Tropica* was taken over by another Basel publisher, Schwabe & Co. It was given a new design, and the contents were limited to biomedical science. Schwabe hoped with this focus to attract more readers – and above all, more subscriptions from individuals and institutions. The five editors were on the staff of the STI; besides the Director, Thierry Freyvogel, they were Antoine Degrémont, Hermann Hecker, Leo Jenni and Niklaus Weiss.

Despite the enthusiastic work of the editors, and its worldwide network of collaborators, *Acta Tropica* was not able to survive independently. Rising production costs, the small number of copies sold, and the tight finances of the STI finally led to the journal being taken over by the publishing group Elsevier in the Netherlands. At present, two members of the Swiss TPH staff, Christoph Hatz and Jürg Utzinger, are members of its Editorial Board.

The scope of *Acta Tropica* (1977)

"*Acta Tropica* is an international journal of biomedical sciences [which] gives attention to every aspect of this field relevant to human health, including veterinary medicine and biology in the tropics. The subjects dealt with range from medicine and community health to epidemiology and the biology of parasites and vectors as well as to toxinology."

Moving towards the future (1961–1972)

Even after 20 years, the STI was still full of the enthusiasm of the early years. The old house, “zur Föhre” – a large town house that had originally belonged to a doctor – was bursting at the seams. In 1961, an extension to the building was formally opened. It provided space for a new lecture-room and the library, and new laboratories and animal facilities. The

STI developed into a modern research station, investing in new technology. In 1964, it installed the first electron microscope in the University of Basel. The 1960s, when the STI’s activities were expanding, were also a period when there was a growing concern with the task of supporting development in Africa, and the Institute was soon a strong supporter of this movement (see Chapter 2). With their experience of research in both East and West African countries, the STI scientists were experts on progress in this field, and the Institute



Research laboratory, 1961. Catherine Jaquet and Gedeon Sarasin working with ticks infected with relapsing fever. Photo Atelier Eidenbenz, Basel

was recognised by the Swiss Government as an important actor in the area of development cooperation. Important STI projects in the field of development were the training of African personnel for the health services in independent Tanzania, and projects to modernise agriculture.

The extension to the house “zur Föhre” was opened in 1961. Photo Atelier Eidenbenz, Basel





Hoisting flags in front of the Rural Aid Centre in Ifakara, just before Tanganyika's independence, 1961. Photo Archive STI

First course for Medical Assistants at the Rural Aid Centre in Ifakara, Tanganyika, 1961. Photo T. A. Freyvogel

The Lumemo Project in Tanzania

On a September day in 1962, Rudolf Geigy, his assistant Thierry Freyvogel and the engineer Max Freimann are climbing a steep path on a hillside on the edge of the Ulanga Plain. Clearings in the thicket provide glimpses of the meandering River Kilombero and the pattern of rice fields and fallow land. From time to time, Freimann bends over to pick up a stone, holds it for a while in his hands and nods with satisfaction, as though the rough surface of the stone could reveal secrets about the structure of the soil and the development possibilities of the whole region.



Rudolf Geigy and Max Freimann on a tour of inspection, Kilombero District, Tanzania, 1962. Photo T. A. Freyvogel

This hike was part of the "Lumemo" development project. This started as a vague idea of Rudolf Geigy's but no sooner had it entered his head, than he was determined to put it into practice. The aim was to build a dam to direct water to places where it was needed, so that with better irrigation, agriculture could become more productive. It was not a new idea. The fertile Ulanga District had already occupied agriculturalists from the colonial government during World War Two, and in the 1950s it had attracted the interest of international development experts. Geigy's Lumemo Project met with no success. Already at the planning stage, the Basel zoologist discovered that Germany wanted to carry out a similar project in the same region. So the STI – the richer for its experience, and with the realisation that Switzerland could not always keep up with other countries in the international competition to provide development aid – decided to concentrate on its own research projects, and the education of personnel for the Health Services in Africa.

Maintaining a broad range of activities (1972–1987)

In 1972, the zoologist Thierry Freyvogel took over the post of Director of the STI from Rudolf Geigy. He had struggled energetically and with determination against the idea, which various voices had been suggesting, that the Institute should be closed down when Geigy



Thierry Freyvogel (left) takes over as Director, 1972. Photo Archive STI

retired. Freyvogel's style of leadership was quite different from his predecessor's. The "shauri la wazee" (Council of Elders), now made the final decisions about the direction the Institute should take. Freyvogel's scientific policy was based on maintaining the wide spectrum of activities that Geigy had introduced in the STI. Projects should result from the scientists' own interests, and they should have the maximum possible liberty to pursue them. The results could, of course, also be of practical relevance for society. In a lec-

"We should not deceive ourselves: any sustainable effort to promote research in developing countries will demand profound changes in research and teaching in the universities of the industrialised countries."

Thierry Freyvogel, Speech at the 50th Anniversary of the STI, 1994.

ture which was also published in *Acta Tropica* (1996, Vol.23 pp. 97–107), entitled "The double task of parasitology" (*Von der zweifachen Aufgabe der Parasitologie*), Freyvogel said: "Parasitology stands between zoology and medicine. Therefore, it has two tasks. First, it has to carry out pure basic research and secondly, to participate in the solution of practical problems of great importance for the development of humanity." Parasitology started with a "desire to know", which gave the individual scientist a sense of purpose and achievement. But wanting to know was accompanied by wanting to help, as a moral duty towards society. The basis of the desire to help was not least the result of Thierry Freyvogel's experience in Tanzania. Before he was thirty, he had been in charge of building up the STI Field Laboratory (STIFL) in Ifakara. It was the time when the Tanzanian Independence Movement was becoming more and more vigorous, and beginning to reach even remote places like Ifakara. It was evident to the Swiss scientists in Tanzania that simply doing pure research could not be an adequate response to the profound political changes going on around them. With its training programmes for health service personnel, the Institute made a contribution to development. It was to a large extent as a result of its engagement in Ifakara that the STI was taken seriously by other European Tropical In-



In 1983 the STI celebrated its 40th anniversary with an Open Day. Photo R. Dürr

stitutes and by the World Health Organisation (WHO). As Director of the STI, Freyvogel was a strong advocate for the maintenance of the STIFL, and the extension of its work. In the early 1980s, there was a change of emphasis in Ifakara from studies of parasites to the analysis of health systems. The staff of the STIFL worked towards clearly-defined objectives, and their results were directly used to implement concrete measures.

Thierry Freyvogel (1929, Director of the STI 1972–1987)

Thierry Freyvogel was born in 1929 in Basel, and educated at the Humanist Gymnasium and the University of Basel, where he studied zoology from 1948 to 1955. Under Rudolf Geigy, he carried out a PhD project on the influence of the climate at high altitudes on the course of malaria infection. Having obtained his doctorate, he went to Tanzania (1955–1958), where he was responsible for building up the STI Field Laboratory (STIFL). Back in Basel, Freyvogel worked as a scientist in the STI from 1959 to 1965, and later became Head of the Department of Biology (1966–1985). In 1966 the University of Basel appointed him as Associate Professor. Thierry Freyvogel occupied leading positions in a variety of national and international bodies. For many years, as Secretary General of the Association of Directors of the European Schools and Institutes of Tropical Medicine and Hygiene (TROPMEDEUROP), he made important contributions to intellectual contact between people on both sides of the Iron Curtain during the Cold War, and also to the idea of medical development aid that was current at the time. He was a member and later Chairman of the Expert Advisory Committee of the WHO for the Onchocerciasis Control Program in West Africa. As President of the Swiss Commission for Research Partnership with Developing Countries (KFPE), and of the Federal Commission that awarded scholarships to overseas students, he worked on the compilation of Guidelines for the planning of North-South partnerships in research so that the projects would benefit all the participants. Freyvogel was awarded the Science Prize of the City of Basel in 1974 and became an Honorary Member of the Swiss Academy of Sciences in 1999.

Selected Publications: 1956 Thierry Freyvogel, *Zur Frage der Wirkung des Höhenklimas auf den Verlauf akuter Malaria* (On the effect of the climate at high altitudes on the course of acute malaria infections). *Acta Tropica*, 13, 1–57. 1965 Thierry Freyvogel & E. Hofmann, *Schlangenbisse und ihre Behandlung* (Snake bites and their treatment). *Acta Tropica*, 22, 11–36. 1966 Thierry Freyvogel, Shape, Movement *in situ* and Locomotion of Plasmodial Ookinetes. *Acta Tropica*, 23, 201–222. 1966 Thierry Freyvogel, *Die zweifache Aufgabe der Parasitologie, Habilitationsvorlesung* (The dual task of Parasitology). *Acta Tropica*, 23, 97–107. 1972 Thierry Freyvogel, Poisonous and Venomous Animals in East Africa, *Acta Tropica*, 29, 401–451. 1993 Thierry Freyvogel, *Forschungs-Partnerschaft mit Entwicklungsländern* (Research Partnership with Developing Countries). *Annuaire Suisse-Tiers Monde, Institut Universitaire D'Etudes de Développement*, 215–224.



Thierry Freyvogel hands over to the new Director, Antoine Degrémont, 1987. Photo R. Dürr

Health as a System (1987–1997)

In 1987 Antoine Degrémont, a medical doctor, followed Thierry Freyvogel as Director of the STI. Before, as Head of the Department of Tropical Medicine (TRAB), he had been responsible for the rapid expansion of the medical services offered by the STI. It was a period when more and more people were travelling to tropical countries, and many of them made use of the services of the TRAB before they went on a journey or after they had returned. In 1973, the Government passed a new law promoting universities. The STI was recognised as an institution qualified to receive grants, but this recognition was linked to a requirement that the medical services of the STI should be extended. Since then, many people working for the Swiss Agency for Development and Cooperation (SDC) have come to the STI to check whether they had any health problems as a result of living in the tropics. The expansion of the medical services altered the balance between service activities and research. Some of the scientists regarded the money the services earned for the Institute simply as a way of financing research. Some of the medical doctors, on the other hand, were irritated by the fact that the scientists were free to pursue research for its own sake, without any practical goal. So when he became Director, Antoine Degrémont initiated a careful consideration of basic concepts, and introduced a Master Plan. The STI's scientific activities would be strategically planned. The scientists were asked to formulate the objectives of their research, and the strategies they planned to use. This was the end of the openness to all

"The transmission of tropical diseases is so complex that it is not enough to study only the parasite and its strategies. We must learn to understand the disease as a system, in relation to its socio-economic environment. Only then will it be possible to propose a cluster of integrated control measures that can attack the disease from different aspects. That requires collaborative work."

Antoine Degrémont, Basler Zeitung, 1994

kinds of research topics that had characterised the "Freyvogel era". According to the Master Plan for the period from 1990 to 1995, research, teaching and services should become more interwoven. The number of research projects was reduced, so that the STI could

"In international health, at least as I conceive it, there will no longer be a niche for every discipline or speciality, but just one niche; that of the part of a system or even of a sub-system which a team will explore together. We should note that there is nothing in this approach which will prevent most of the team members doing pretty much the same things as they did before. The difference is in the spirit in which they do them; they will be conscious that they are taking part in an analysis of a system and will take account of the fluxes of variables leaving and entering the system from other systems, either biomedical or socioeconomic."

Antoine Degrémont, 50th Anniversary Celebration, 1994

concentrate on a small number of interdisciplinary and practice-oriented projects of undoubted quality. Degrémont did not only introduce changes in the STI's research activities. He encouraged a way of thinking that is still a key concept underlying the work of the Swiss TPH: to prevent disease and to create sustainable improvements in the health of people in the South requires one to look at health as a whole. Degrémont led the STI away from classical tropical medicine towards an understanding that health is a complex system. With this in view, he changed the syllabus of the classical

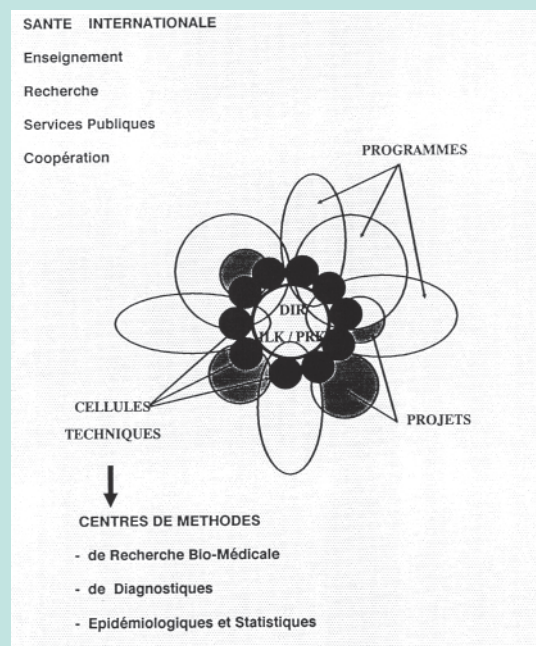
course in Tropical Medicine (see Chapter 2). Research into health systems and epidemiology became increasingly important, and a steady expansion in this field was led by Marcel Tanner, who returned to Basel in 1988, after working in Tanzania and attending a course in England. The use of these new "tools" in the scientific "tool-box" was strongly promoted by Don de Savigny. He and his collaborators put the new concept of concentrating on health systems as a whole into practice in Tanzania, where he succeeded Marcel Tanner as the Head of the STIFL (1985–1987).

Antoine Degrémont (1938, Director of the STI 1987–1997)

Antoine Degrémont was born in 1938 in Le Cateau in northern France. He studied medicine in Paris, and had a Diploma in Tropical Medicine, and Master's degrees in Parasitology and in Bacteriology and Immunology. After he graduated he gathered experience of the treatment of tropical diseases in Iran and in Congo. From 1966–1971 he directed the large-scale Mangoky Project for the control of Schistosomiasis in Madagascar. In 1972 he came to the STI as Head of Medical Research, and from 1974–1987 he was Head of the Medical Department. When he became Director of the STI he also became Associate Professor for Tropical Medicine in the Faculty of Medicine in the University of Basel. Internationally, Degrémont was a sought-after expert. He was a member of the WHO's Expert Committee on Schistosomiasis within the Special Programme for Research and Training in Tropical Diseases (TDR). In addition, he was Programme Director of the SDC's health projects in Chad and a member of the Advisory Committee of the World Bank for the Development Report of 1993. He is an honorary member of the American Society of Tropical Medicine and Hygiene.

Selected Publications: **1968** Antoine Degrémont et al., *Le niridazole dans le traitement des quatre bilharzioses à S. haematobium, S. mansoni, S. japonicum et S. intercalatum* (Niridazole in the treatment of the four types of schistosome infections due to *S. haematobium*, *S. mansoni*, *S. japonicum* and *S. intercalatum*). Presse médicale, 78, 797. **1973** Antoine Degrémont, *Projet Mangoky. Lutte contre les schistosomiases dans le Bas-Mangoky (Madagascar)* (Control of schistosomiasis in the Bas-Mangoky, Madagascar). Institut Tropical Suisse, 273 pp. **1985** Antoine Degrémont et al., Value of Ultrasonography in Investigating Morbidity due to *Schistosoma haematobium* Infection. Lancet 1, 662–665. **1986** Antoine Degrémont & Marcel Tanner, Monitoring and Evaluating Schistosomiasis Control within a Primary Health Care Programme, Trop. Med. Parasitol. 37, 220–222. **1990** Antoine Degrémont, *Conditions et problèmes rencontrés dans la transmission d'un projet à des nationaux* (Conditions for transferring a project to nationals, and problems encountered), Ann. Soc. Belg. Med. Trop. 70 (suppl), 60pp. **1995** Antoine Degrémont, *La médecine tropicale en Europe. Plaidoyer pour un nouveau rêve* (Tropical Medicine in Europe; plea for a new dream). Méd Trop (Mars.), 55, 221–222.

The Master Plan 1990–1995



This “flower” is a diagram from the Master Plan for 1990–1995. It illustrates Antoine Degrémont’s vision of the future organisational structure of the STI. In the centre are the Directorate, the Conference of Heads of Departments (Institutsleitungskonferenz, ILK) and the Project Committee (Projektkommission, PRK). The inner “petals”, which last for a long time, represent the technical departments, which support the projects in the areas of laboratory techniques and diagnostic methods, and specialists in epidemiology and statistics. The outer “petals” are projects and programmes planned for a definite period. In the course of time new “flowers” will open.

In March 1990, Antoine Degrémont distributed copies of the Master Plan to all the Department Heads and then to the Kuratorium. The 100-page document contained a detailed analysis of the development of the STI. With broad strokes, Degrémont sketched the planned development and reorientation of the STI. For all

the nine “functional units”: Directorate; Administration; Polyclinic; Diagnostics; Epidemiology and Health Services; Medical Parasitology; the Biomedical Method Centre (new); International Health and Development (also new), and Teaching and Training, he analysed the starting situation, and planned their development and their requirements for personnel and financing over the next five years. The financing included income both from grants and from service provision. Staff posts were designated either as “core positions” which were covered by the STI’s long-term Government subventions, or as jobs in projects planned for a limited period.

The Master Plan defined **5 Guidelines** for future development

1. Strengthening of Interaction and Co-operation:

The original basic principle, that research in the STI should be based on the interplay of “Field” and Laboratory, was affirmed. The STI should be a “*courroie de transmission*”, a “drive-belt” for solving problems.

2. Fundamental Biomedical Research and Applied Research

should both continue. A new programme in Molecular Biology was proposed, supported by a “Methods Centre” which would meet the requirements of modern research. The first external analysis of research demanded a reduction in the number of areas of research.

3. International Health and Development

was to be the main theme of the STI. To supplement the Department of Epidemiology and Public Health, founded in 1987, a unit called, “International Health and Development” was proposed. In view of the new orientation of the STI, Degrémont considered giving it a new name; “*Centre de Développement de Santé Internationale*” (Centre of Development of International Health).

4. Funding: The automatic increases in the salaries of employees as they got older would

require an adjustment of the subvention. Without this, some activities could not continue.

5. Evolution of the Organisational structure

to provide greater flexibility. Degrémont saw the proposed organisation with five Departments as a temporary structure. His vision was that two institute-wide programmes, one in the area of Biomedicine and one in Public Health, would develop into the central activities of the STI, and the separate Departments would disappear. An organisation based on projects would be more flexible, and make it possible to have a “flatter” hierarchy. He foresaw a number of Coordination Committees in the various areas of activity.

A present-day view of the Master Plan

Degrémont’s vision of a new orientation was very largely successfully fulfilled. Particularly the focus on the area of International Health – understood today as “Global Health” – was a big impulse moving the Institute forward. However, the reduction of funding from the Federal Government in 1993 meant that the Master Plan had to be adjusted. The organisational structure was reduced to four disciplines, and the building-up of research capacity in molecular biology was postponed for several years. In addition, Degrémont’s plans for a new “flat” organisational structure and a flexible and easily adjusted portfolio of projects led to insecurity and anxiety among the staff. Especially the suggestion of abolishing the middle-management level was something the other members of the ILK found unthinkable. And the time was not yet ripe for a change of name!

Global Health (from 1997 onwards)



Antoine Degrémont congratulates his successor, Marcel Tanner, 1997. Photo R. Dürr

"Today, the chief aim of field work is no longer to collect data about a population, their environment and their health problems, and carry the results back to a desk or a computer in some university. Nowadays, the aim is that every project in the field should be directed at studying an important practical problem, with the aim of finding solutions together with the people directly affected."

These words are from a speech made by Marcel Tanner on the occasion of the 50th anniversary of the STI in 1994, and expressed the basic principles that he would put into practice later as Director of the STI. Research was not only to be judged on its scientific quality; it was equally important for it to have a positive impact on the health of the communities living in the regions of Africa, Asia or South America where the work was done. Tanner sketched

a chain of innovations. New knowledge from fundamental research should flow into novel approaches to interventions to improve health. New kinds of interventions and new technology should be tested, and if they were found to be effective, they should be put into practice in health programmes. With this strategy the Swiss TPH is still making a concrete contribution to improvements in human health.

In 1997, Marcel Tanner replaced his predecessor, Antoine Degrémont, as Director of the STI. Under his leadership the STI had a period

"Our tasks start and end in the field, i.e. the place where we have to address and solve the health problems of the population concerned."

Marcel Tanner (1994) 50th Anniversary Celebration of the STI

of rapid growth. Staff numbers and student numbers increased year by year, as did the number of scientific publications. At the same time, the STI was more and more successful at an international level in the competition for grants for research and for service projects. In



The STI is 50 years old! Celebration in the City Hall in Basel, 1994. Photo R. Dürr

the old villa “zur Föhre”, about 10,000 people are seen in the travel clinic every year. The STI became the second largest medical centre in Switzerland for vaccinations and health advice for travellers, and a national Reference Centre for parasitic diseases. In 2009, the Institute for Social and Preventive Medicine of the University of Basel (ISPM), and the National Cohort study SAPALDIA (page 88) were integrated into the STI. This strengthened the areas of environmental epidemiology, and the study of chronic diseases – which are an increasing threat to health all over the world. Marcel Tanner systematically promoted the STI’s

global orientation. The scope of the Institute’s research and service activities expanded beyond Africa to Asia and South America. Furthermore, since the collapse of the USSR, the Swiss Centre for International Health (SCIH), initiated by Antoine Degrémont and now led by Nicolaus Lorenz, has extended the Institute’s activities into Eastern Europe and Central Asia. Staff members of the SCIH are active in every continent as “Local Fund Agents”. They examine the use of the financial resources provided by the Global Fund for the fight against malaria, tuberculosis and HIV/AIDS and ensure that the money is being correctly used (page 28).

A contribution to improving health world-wide

Today, the Swiss TPH’s achievements in research and service provision under the heading “Global Health” stretch around the world, from South-East Asia and the Pacific region, across India and as far as Latin America. But “Global Health” is not purely a geographical concept. It is much more an expression of the fact that teaching, research and the implementation of projects can only function in close cooperation with partner institutions and with the people of the country concerned.

Marcel Tanner (1952, Director of the STI/Swiss TPH since 1997)

Marcel Tanner was born in 1952 in Basel. He studied medical zoology in the University of Basel and was awarded the degree of PhD in 1980 with a dissertation on the cultivation of trypanosomes, the causative organisms of African sleeping sickness. From 1981–1984 he was an innovative Head of the STI Field Laboratory in Tanzania. He then went to London for further studies, and obtained the degree of Master in Public Health (MPH), and finally returned to the STI, where he was responsible for building up a new Department of Public Health and Epidemiology (Gesundheitswesen und Epidemiologie, GWE). Tanner became a Professor of the University of Basel in 1993. Four years later he was appointed to the Chair of Medical Parasitology and Epidemiology in the Faculty of Natural Sciences in Basel, and in 2010 he also became a Professor in the Faculty of Medicine. Between 2002 and 2004 he was Dean of the Faculty of Natural Sciences. Tanner is active in many significant organisations promoting Global Health, like the “Drugs for Neglected Diseases Initiative (DNDi), the INDEPTH Network and the INCLEN Trust. Marcel Tanner is author of more than 500 original papers, and he has been honoured with Guest Professorships and Honorary Professorships. He is an Honorary Member of a number of Swiss Academies (SCNAT, SAMW, ASTMH), and has received an Honorary Doctorate of the University of Neuchâtel.

Selected Publications: **1980** Marcel Tanner, Studies on the Mechanisms Supporting the Continuous Growth of *Trypanosoma (Trypanozoon) brucei* as Bloodstream-like forms in vitro. *Acta Tropica*, 37, 203–220. **1989** Marcel Tanner, From the Bench to the Field. Control of Parasitic Infections within Primary Health Care. *Parasitology*, 99, 81–92. **1994**, Marcel Tanner, Andrew Kitua and Antoine Degrémont, Developing Health Research Capability in Tanzania. From a Swiss Tropical Institute Field Laboratory to the Ifakara Centre of the Tanzanian National of Medical Research. *Acta Tropica*, 57, 153–173. **1995** Marcel Tanner and Trudy Harpham (eds.), *Urban Health in Developing Countries. Progress and Prospects*, Routledge, London. **2008** Marcel Tanner et al., Safety and Immunogenicity of RTS,S/AS02D, Malaria Vaccine in Infants. *New Engl J Med*, 359, 2533–2544. **2010** Marcel Tanner and Robert Bergquist, Controlling Schistosomiasis in Southeast Asia: A Tale of Two Countries. *Adv Parasitol* 72, 109–144. **2011** Marcel Tanner et al., From “One Medicine” to “One Health” and Systemic Approaches to Health and Well-Being. *Prev Vet Med*, 101, 148–156.



Research partnership for sustainable development (NCCR North-South): discussing environmental sanitation in Vientiane (Laos), 2006. Photo J. Zinsstag

Teaching and Training: In the area of teaching, the Institute has always been very active in helping students from the South to obtain further education at all levels. Between 1997 and 2009, on average 12 of these students per year completed a PhD in the University of Basel, and since 2010 there have been 20 each year. Many of these graduates have



already returned to their home countries, and are established in key positions where they are working for the maintenance and improvement of health. The fundamental principle underlying the teaching activities in the Institute is “mutual learning for change”. Sustainable improvements in health services can only be achieved by people working together.

Building-up of Institutions: Cooperative projects are closely linked to the strengthening of scientific institutions in countries with limited resources. Marcel Tanner started work as Director of the Field Laboratory (STIFL) in Tanzania in 1981, but even before that, inspired by Antoine Degrémont and a first visit to Tanzania with Thierry Freyvogel, he had begun to think about making the STIFL into a Tanzanian institution. With Degrémont, as Director of the STI, and in partnership with institutions in Tanzania, he put the idea into practice. Today, the Ifakara Health Institute (IHI) is one of the most important research institutes in East Africa. About 800 people are working in the IHI, in a variety of projects in cooperation with other countries, like the development of new vaccines – for instance against malaria – or the strengthening of the Tanzanian health services. As a sister institution of the present-day Swiss TPH, the Ifakara Health Institute is making contributions at many levels to the improvement of health in East Africa. Thanks to the support of the STI, the Swiss Centre

Women in northern Mali discussing health problems. Project in the framework of the National Research Project, NCCR “North-South”, 2006 . Photo J. Zinsstag

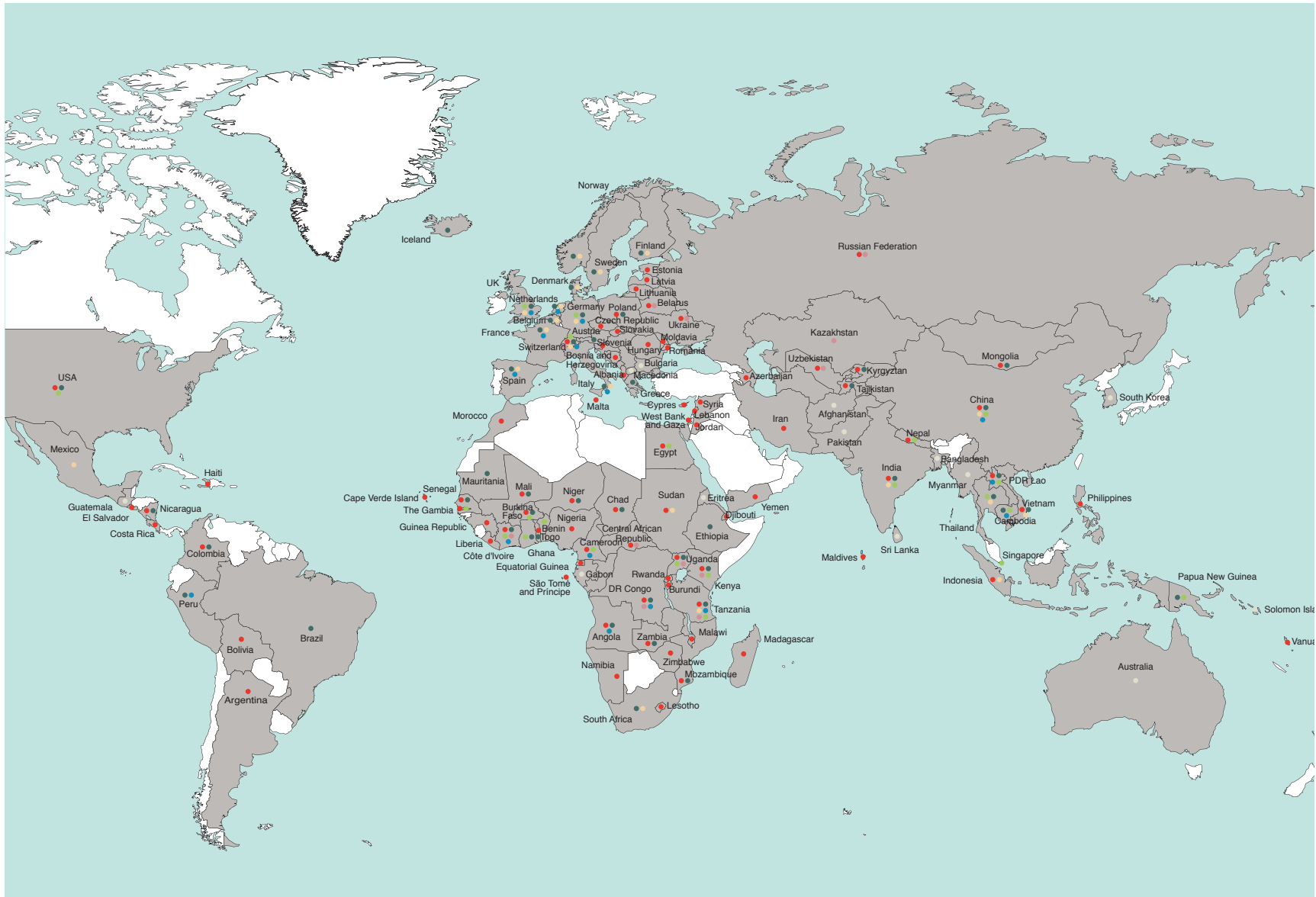


In the laboratories of the Ifakara Health Institute the most up-to-date techniques for biomedical research are available, 2009. Photo J. Pelikan

for Scientific Research (CSRS) in Côte d'Ivoire has gone through a similar development and has become a significant institution for research and implementation for Côte d'Ivoire and in the whole West African region.

Global Networks: Marcel Tanner represents the Swiss TPH in leading international

consortia working for health on a global scale, like the Roll Back Malaria Partnership, the Medicines for Malaria Venture (MMV), the Drugs for Neglected Diseases initiative (DNDi) and the Bill & Melinda Gates Foundation. At the same time, he is ensuring that the Institute is much more firmly anchored in organisations in Switzerland and in the European Union. Connections with the two Federal Polytechnics in



The world-wide activities of the Swiss TPH in Teaching, Research and Service Provision. Short Interim Report 2013.

Zürich and Lausanne and with the University of Basel have become closer over the years. Tanner promotes cooperation between different organisations and individuals in North and South, and also between widely different academic disciplines.

Interdisciplinary Research: The networking between disciplines initiated by De-grémont has led to the establishment of a strongly interdisciplinary scientific culture over the last 20 years, and in the Swiss TPH today there are not only biologists, medical doctors and specialists in the study of infections, but there are also cultural epidemiologists, medical anthropologists, economists and specialists in gender studies. These specialists work together in a variety of projects to solve the most urgent health problems.

**Between Tradition and Change:
“No roots, no fruits”**

The Institute has not taken up all the rapidly-changing ideas and fashionable concepts in the field of Global Health, but has remained faithful to many of the activities it has pursued since the days of its foundation. Research on “neglected diseases” like African sleeping sickness or schistosomiasis and other worm infections, and their control, goes back to the time of the founder, Rudolf Geigy, and is still important today. In contrast, there are other areas where the Institute has taken up new challenges and responded dynamically. The expansion of molecular epidemiology and molecular immunology was unavoidable if the Institute was to remain competitive on an international level. Two further diseases, HIV/AIDS



The Ifakara Health Institute (IHI), 2009. Photo J. Pelikan

and tuberculosis have been added to malaria as the three biggest health problems that the Institute is tackling by means appropriate to the situation. Since the integration of the Institute for Social and Preventive Medicine of the University of Basel (ISPM) and the National Cohort study SAPALDIA were integrated in the STI in 2009, chronic diseases like diabetes, and research on the effect of the environment on health have become part of the Institute’s spectrum of activities. A new name – the Swiss Tropical and Public Health Institute (Swiss TPH) – is intended to show people outside the STI that there have been changes.

It is this combination of going back to the roots with the ability to respond dynamically to rapid global developments, and to help to determine the form they will take, that sets its special stamp on the Institute. From a modest institution – almost a family firm – it has developed into a major actor in the arena of international health.

Expanding the medical services

The desire not only to teach and to do research, but also to offer medical services, existed in the STI from its foundation. Even before the end of the Second World War the STI opened a Department for Tropical Medicine in the Auxiliary Hospital (*Hilfsspital*) on Burgfelderstrasse in Basel. Three years later, the private Sonnenrain Clinic at Socinstrasse 55 opened its doors, with departments for surgery and for tropical medicine. The clinic



The new Sonnenrain Clinic opened in 1969.
Photo Archive STI

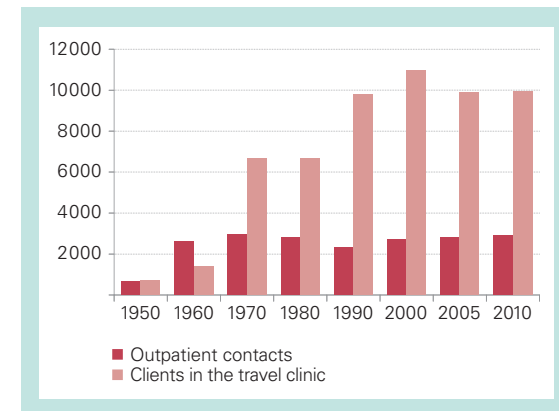
treated released prisoners of war, military personnel from internment camps who were suffering from malaria, and people who had returned from the tropics. However, in the post-war period the stream of patients slackened, and the clinic was forced to give way to the Neurological Clinic of the University. It was another 10 years before Rudolf Geigy was able to make his dream of having his "own" Tropical

Clinic come true, when the new Sonnenrain Private Clinic was opened in 1969. However, only rarely did people who had returned from the tropics need to be admitted as in-patients. The main emphasis in the clinic was on surgery and obstetrics. The new clinic survived for 20 years, but after that the building was needed by the expanding STI.

The Department of Tropical Medicine (TRAB)

The Department of Tropical Medicine (*tropenmedizinische Abteilung, TRAB*) was opened in 1960 in the house "zur Föhre". The time-point was no coincidence. In Switzerland, as elsewhere, the 1960s were a period of political and social opening. The period of post-war isolation, where every nation was preoccupied with its own concerns, seemed to be blown away. Many Swiss citizens were gripped by an acute desire for travel, and left the country to go South. These emigrants and travellers took advantage of the services of the TRAB, which is still well-known as a place for travellers to find competent travel advice and get necessary vaccinations. Swiss "Development Experts" working for the DEZA and other organisations visited the TRAB as a matter of course for health checks during and after their work in tropical countries. As a result of this, the STI's income from medical services multiplied many times. The expansion of Travel Medicine is still continuing. It is not only the number of consultations that underlines the growing importance of the Medical

Polyclinic; it has also acquired a national reputation in the area of Tropical Medicine. Under the leadership of Christoph Hatz, the Institute has built up consulting services in a number of Swiss hospitals over the last 20 years. During his time as President of the Tropical Medicine section of the Swiss Medical Association (*Federatio Medicorum Helveticorum, FMH*), he obtained increasing recognition in Switzerland, from which the STI has also profited. For the last five years, Hatz has also had a 50% post as Head of the Department of Epidemiology and the Prevention of Infectious Diseases at the Institute for Social and Preventive Medicine of the University of Zürich.

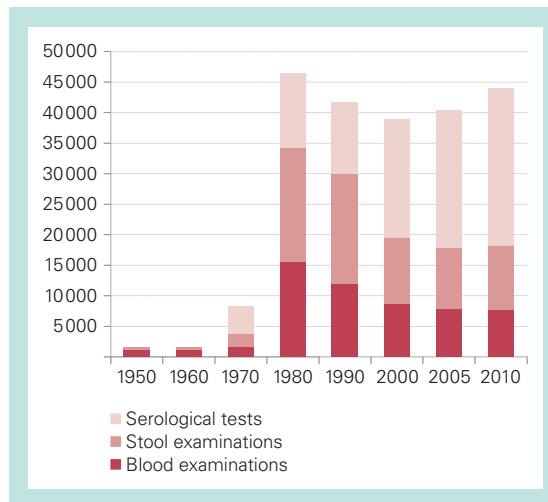


Development of the numbers of outpatients and vaccinees since 1950. Diagram N. Weiss

The STI becomes a Reference Centre for the diagnosis of parasitic diseases

For the many routine clinical examinations performed, and the health tests carried out to ensure that people were fit to work in the tropics, the Medical Department needed speedy and specific diagnostic methods. Until the end of the 1960s, diagnosis was limited to the examination of appropriately-stained blood or stool samples under the microscope. Very soon, these methods were not adequate, and in 1967 Ardy Kielmann, the doctor in charge, convinced Rudolf Geigy that the STI needed a serological laboratory. Serology can assist in the diagnosis of infectious diseases by demonstrating specific antibodies in the patient's blood. The range of serological tests carried out was constantly enlarged. In 1973, Niklaus Weiss became Head of the new Immunological Laboratory. He was responsible for the routine serological tests and for applied research. Every serological result had to be confirmed by at least one other method, so a major task in the 1970s was to develop a powerful and reliable battery of diagnostic methods. New methods were introduced in the STI. An ELISA (enzyme-linked immunosorbent assay) was introduced as early as 1976, and this novel test was established as a routine method by Felix Speiser in 1979. It was not least because the STI became a leader in parasite diagnostics that a year later the Federal Office of Health granted the Institute recognition as the national Reference Centre for malaria diagnosis.

The expansion of diagnostic work resulted in a structural change within the STI. In 1987 a new Department of Diagnostics was estab-



Development of the Diagnostic Services since 1950. Diagram N. Weiss

lished, with Niklaus Weiss at its head. The department included the Diagnostic Centre, with laboratories for parasitology, serology, haematology and clinical chemistry, and a research laboratory where research into new methods was carried out.

The Diagnostic Centre developed rapidly. The earnings doubled between 1987 and 1995. In that year the income was 1.8 million Swiss francs. From 1988, there were more requests from external sources (doctors, hospitals and private laboratories all over Switzerland) than from the STI's own Medical Department. In 1993, the Diagnostic Centre was integrated in the laboratories of the Medical Department, and in 1995 Hanspeter Marti became responsible for its management. This was also the time when new molecular biological methods

were being introduced for the diagnosis of infections. In 2000 a new laboratory of Molecular Diagnostics was established, with Ingrid Felger as its head. The laboratory develops highly sensitive diagnostic methods, and with the help of gene technology, new antigens are being produced for use in serological tests. Since 2004, the Department of Medical Services and Diagnostics has been officially recognised as a National Reference Centre for imported human parasitic diseases.

The Swiss Centre for International Health (SCIH)

The medical services of the STI laid the foundation for long-term research on health systems, and on the provision of health services. This is nowhere more evident than in efforts to improve health services in African cities.

In the 1990s, the influence of urbanisation on human health became an important new focus of work in the STI. African cities were growing explosively as more and more people moved into them, looking for a better livelihood and a secure future, and their Health Authorities were confronted with problems that looked almost insoluble. With funds from the SDC and the World Bank, and in collaboration with local partners, they supported the building up of decentralised health facilities in the cities of Dar es Salaam in Tanzania, and N'Djamena in Chad. The aim was to make it easier for city people to make use of health services. The success of these projects encouraged Antoine Degrémont to expand the Institute's capacity to accept health mandates and projects.

The collapse of the Soviet Union

The collapse of the Soviet Union contributed significantly to a broadening of the STI's international involvement. With the fall of the Iron Curtain, increasing democratisation and the collapse of health systems in many parts of the ex-USSR, the STI began to work on the improvement of health systems in many new parts of the world. It was no longer "only" a

Mission Statement of the SCIH

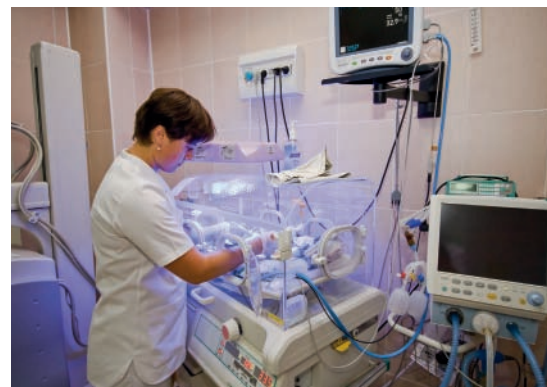
The Swiss Centre for International Health (SCIH) contributes to improving health systems and population access to effective health services worldwide. It combines scientific knowledge and practical expertise to reduce health inequalities.

In strengthening health systems, our approach is to offer comprehensive, interdisciplinary and multi-sectoral services, covering project or programme identification, planning, implementation, monitoring and evaluation. Our services are based on evidence developed by the Swiss Tropical and Public Health Institute (Swiss TPH) and its wider network of collaborators. The experiences of our collaborators feed into the teaching provided by the Swiss TPH.

Our guiding principle is to work with partners to respond to local needs, thus tailoring our services to the contexts and countries in which we work. The SCIH combines the state-of-the-art knowledge of a multidisciplinary academic institution with the industry standards of a consulting agency.

The SCIH is a department of the Swiss TPH in Basel, Switzerland, and works on a non-profit basis. Any benefits generated are reinvested in creating knowledge and providing training in the field of international health.

Mission Statement of the Swiss Centre for International Health. STI Biennial Report 2009/10



Project for Neonatal Care, implemented by the SCIH in Romania. Photo N. Fota

tropical institute, but was concerned with the development of functioning health systems in countries of Eastern Europe and Central Asia. Projects that were promoted by the DEZA and implemented by the STI included the improvement of the health of mothers and children, and the introduction of new technology in the administration of hospitals in the Ukraine. In Tajikistan in Central Asia, experts from the STI worked on the introduction of grassroots health services, to create a sustainable new health service for this one-time Soviet Republic.

Moving into new fields of work in Eastern Europe and Central Asia brought a need for more staff, and this led to the founding in 1996 of a new Department within the STI, the Swiss Centre for International Health (SCIH). (Its original name was "Support Centre ..."). The SCIH was not only active in countries that had been part of the Soviet Union; its staff also offered their experience and expertise to the Swiss health system. The fear of a "cost-ex-



The SCIH project "Technical Resources Management" in Burkino Faso lasted for 8 years, and came to an end in 2005. Photo R. Werlein

plosion" made Swiss politicians and planners more and more interested in reforms of the kind that the SCIH had implemented in countries of the East and the South. A specialised branch of the SCIH is the Department of Medicines Research (MedRes), which organises and supervises clinical trials as a service for partners from industry and from scientific organisations. Nicolaus Lorenz, the Head of the SCIH, has constantly led the Service Centre in the

direction of developing a broader and broader portfolio of activities on an international scale. Today, the activities range from advisory functions through project planning and evaluation to the development and introduction of new technologies, with the aim of improving health systems world-wide.

Services on a global scale

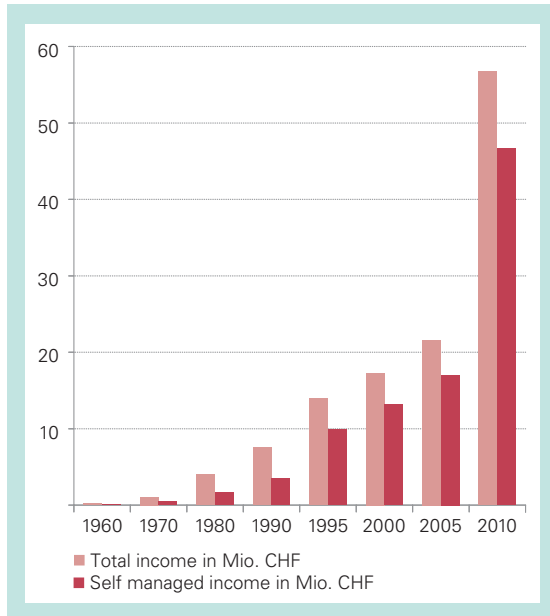
The SCIH rapidly became an important actor in the area of the development of health systems in Eastern Europe and in health projects in Switzerland. Nevertheless, projects financed by the European Union or the European Economic Area (EU, EEA) were largely inaccessible to the SCIH. As a Swiss institution the SCIH could apply for research grants from the EU, but not for the implementation of projects of development aid. However, the founding of the "Global Fund to fight AIDS, Tuberculosis and Malaria" in 2002 helped the Centre to become better-known on a global level. Nicolaus Lorenz considers 2002 to be a key point in the history of the department. For its efforts in disease control and eradication, the Global Fund transferred large sums of money to the countries where AIDS, tuberculosis and malaria were prevalent. The control of the financial resources and the cash flow was



Preparatory work for a drug trial of the SCIH in Zanzibar, 2006. Photo M.-L. Mittelholzer

entrusted to independent Controlling Agents, referred to as Fund Agents. At the beginning, the Global Fund mandate was shared between two internationally active firms of chartered accountants, KPMG and PricewaterhouseCoopers (PwC). However, these firms were not always prepared to work in politically unstable regions. This was a niche that the SCIH – thanks to its experience of working in such areas – was well able to fill. Today, the SCIH is active as the Local Fund Agent in 19 countries in Africa, Asia and South America, and earns a major share of the income of the Swiss TPH.

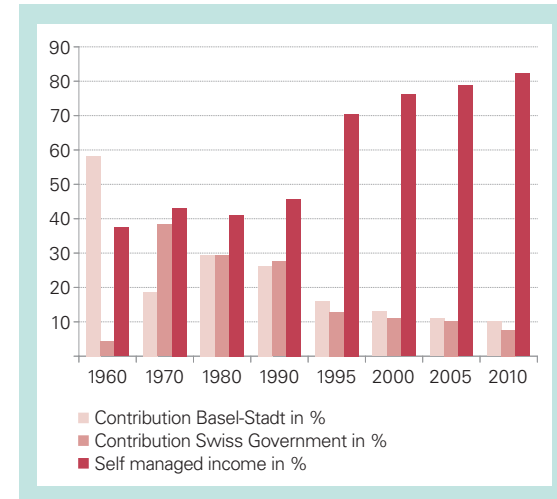
Some figures for the STI/Swiss TPH



Total income in millions of Swiss Francs (CHF) and income from provision of services.
Diagram N. Weiss

The financial position of the STI has changed dramatically over the years. In 1944, a sum of 250,000 CHF was available for the three years of the start-up phase. After 20 years, the annual budget was half a million Swiss francs, of which the Canton of Basel City and the Federal Government each contributed around 200,000 CHF. After 25 years (in 1968), the annual budget passed the 1-million mark. It was more than 7.5 million CHF in 1990 – and in 2010 it had grown to 56 million CHF.

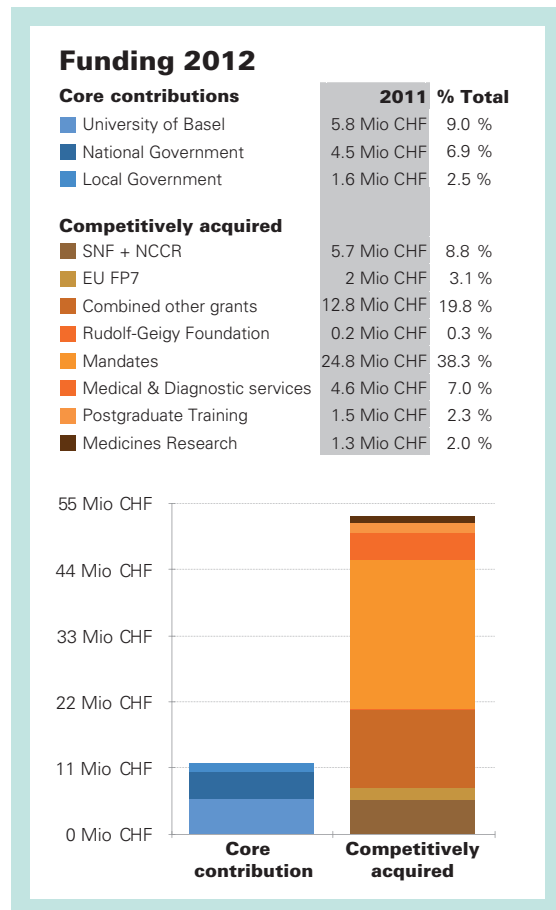
This development could only be achieved through an increase in earnings for services provided. Income mainly from the medical services, and later also from the Department of Health Services and Epidemiology, enabled the STI to increase its level of self-support to 40%. The founding of the Swiss Centre for International Health (SCIH) in 1997 increased the level of self-support dramatically. By 2010 the percentage had doubled to 80%. This income came from competitively-acquired research projects (55%), the Swiss Centre for International Health (30%), medical services (10%) and courses (5%). Subsidies from the Swiss Federation and the Canton of Basel City amounted to only 18% of the total income.



Percentage of the annual income of the STI from subventions from the Cantonal and Federal Governments, and self-generated income, 1960–2010. Diagram N. Weiss

These numbers speak for themselves. But they tend to obscure the fact that the STI nevertheless had to struggle repeatedly with financial exigencies. An annual deficit guarantee was provided – but the amount was decided year by year. This made mid-term planning in the 1970s and 1980s impossible. Thierry Freyvogel made great efforts to establish the STI's finances on a secure basis during most of his time as Director. But it was only in 1987 that a first agreement for subvention over a 5-year period was successfully negotiated with the Canton of Basel City, and not until 1992 that the Swiss Federal Government recognised the STI as an institution worthy of receiving support under Article 16 of the new law to promote research. Basel's Cantonal Parliament (*Grosser*

Rat) was always a reliable partner of the STI, and repeatedly granted special credits for renovations and investments. The STI also had financial help at decisive moments from Foundations within and outside the Institute, which covered certain personnel and other costs.

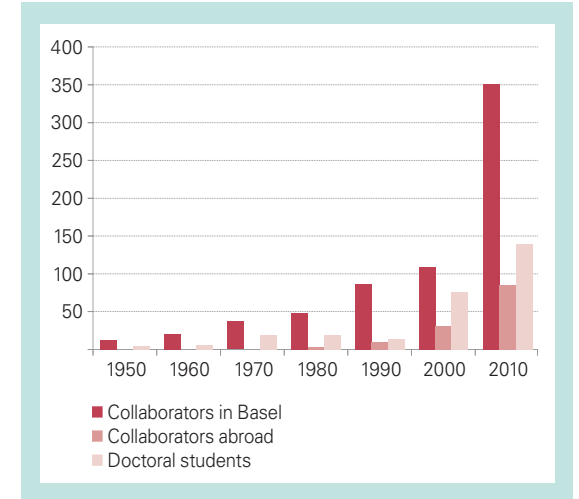


Short Interim Report of the Swiss TPH, 2013

Die finanziellen Grundlagen des Tropeninstituts sind gefährdet

Das Schweizerische Tropeninstitut führt Tage der offenen Tür durch, den ersten am kommenden Samstag, 22. Oktober. Damit soll nicht nur sein vierzigjähriges Bestehen gewürdigt werden. Es soll auch aufgezeigt werden, dass die finanziellen Grundlagen dieses Instituts gefährdet sind. So drohen Abstriche in Forschung und Lehre, die die Qualität der ganzen Arbeit in Frage stellen.

The headline of an article in Basel's main newspaper (*Basler Zeitung*) on October 18th 1983 announced that the financial position of the STI, which was celebrating its 40th anniversary, was by no means secure. The Institute might have to make economies in research and teaching that could threaten the quality of the work as a whole. The STI had had to survive two big financial crises. At the beginning of the 1980s, the Federal Government cut the subvention by 10%, which suddenly put the STI into a difficult position. For a year, there were salary reductions and short-time working, but none of the employees lost their jobs. Economies on the part of the Government also triggered a second financial crisis – from 1993 the subvention was cut by half a million francs per year. Thanks to the adjustment of the Master Plan to the new situation, and to successful “Change Management”, the STI survived this difficult period – only to be surprised in 1998 by a bill from the tax authorities for the payment of several million francs in VAT (value added tax). Fortunately, this demand was at least partially withdrawn, but only some years later. The fact that significant amounts of funding for projects came in Euros or US Dollars, but salaries were paid in Swiss francs, was also reflected in the STI's accounts when the exchange rates fluctuated.



Changes in number of staff and PhD students since 1950. Diagram N. Weiss

This diagram illustrates changes in the number of employees and PhD students in the STI from 1950 until 2010, after the Institute for Social and Preventive Medicine (ISPM) had been integrated in the STI. The “small private institute” took 20 years to reach a point where there were 20 employees – including the doctoral students. In the periods when Freyvogel and Degrémont were the Directors the number of staff positions rose to 80 and then to 170. This increase in personnel resulted in crowded conditions in the Socinstrasse. The closing of the Sonnenrain Clinic in 1990 improved the situation – but not for long; under Marcel Tanner the Institute grew rapidly. In 2008 the STI already had 450 employees, and the integration of the Institute for Social and Preventive Medicine added 54 jobs. In 2013 there were 700 people working for the Swiss TPH.



Teaching and Training: Mutual learning for change

It is 1947 and the Swiss Tropical Institute (STI) is running its General Tropical Course. Microscopy is on the programme. Our eyes are drawn to the catholic sister in the centre of the front row. She is flanked by two further ladies, protestant missionaries as we see in the list of course participants. The other rows are tightly packed with male participants – missionaries, sales people and engineers – all of whom are preparing themselves for a spell in the tropics. Working with microscopes was a significant part of the various specialist courses offered by the STI such as the General Tropical Course and the Course in Tropical Medicine.

Education has played a central part in the Swiss Tropical Institute (STI), ever since its foundation in 1944. Preparatory courses were run for Swiss people who were planning a stay in the tropics. Indeed, the main argument for the foundation of a tropical institute in Switzerland was the widespread fear of rising unemployment at the end of the war. It was hoped that the relevant training would encourage and support the emigration of young professionals, and that their presence overseas would open up new markets for Swiss industry. This was stated in the proposal issued by the parliament of the Canton of Basel City in 1943. From its early days, the STI offered a General Tropical Course, a Course in Tropical Medicine, and a training course in Tropical Agriculture on a separate site.

The development decade

The 1960s brought a fundamental change to this educational focus. The STI became a central actor in the landscape of Swiss development work overseas and played an influential part in the Swiss Federation's policies on development. Offering local training for health professionals in the field was an important aspect of development aid for Africa, and Ifakara, a town in rural Tanzania, became an innovative centre where the STI provided education, research and service provision all in one. African governments and stakeholders in civil society have never been simply the recipients of western aid, but have always collaborated in development projects, redesigning and reorganising them to meet their needs. The constant dialogue and debate on the nature of development aid has helped to bring about a change, the transition from a one-sided relationship between donors and recipients to a cooperative relationship between equal partners.

At the STI in Basel too, a change in emphasis was brought about by experience in the field. Whereas in the 1940s and 1950s it was mainly Swiss people who benefited from training courses at the STI, ten years later they were joined by African students who were being prepared for work in African health services. Nowadays students come from all over the world to participate in the postgraduate programmes

offered by the Swiss Tropical and Public Health Institute (TPH) at both Master and PhD levels.

This collection of "Spotlights" illustrates the shifts and changes in the area of education and training towards today's basic principle that improvements in global health can only be achieved through mutual learning.

Extract from the proposal presented to the Parliament of Canton Basel-Stadt, 1943

The Swiss Tropical Institute aims to provide the necessary additional training for men and women of all professional classes, and all nationalities, who are interested in any type of activity in the tropics. Swiss citizens should also be offered the opportunity to obtain a Diploma of the Swiss Tropical Institute, based on the knowledge they have acquired, to facilitate their progress in tropical countries. The aim must be for this certificate to receive as comprehensive international recognition as is possible.

An Encyclopaedia for the Tropics: the General Tropical Course



Photo Archive STI

The lecture theatre in the villa "zur Föhre" towards the end of the 1940s, with Rudolf Geigy in a characteristic pose. He is lecturing on the development of the malaria parasite in the mosquito. The words "Malaria" and "Sporogonie" (sporogony) are just about decipherable on the blackboard. The microscopes standing ready on the desks allow all the participants to take a look at the complex life-cycle of these unicellular organisms whenever they want to.

The first General Tropical Course (*Allgemeiner Tropenkurs, ATK*) was held in the University of Basel in the winter term of 1943/1944. The course, which initially ran over two semesters and led to a diploma, aimed to provide the necessary additional training for people from all professional backgrounds who were interested in working in the tropics. At the time, the course was justified by economic considera-

Intended Learning Outcomes for the General Tropical Course (1944)

"The content of the curriculum is not limited to Tropical Medicine and Tropical Hygiene, but addresses many other questions and issues which Europeans of all professions, who are emigrating to the tropics, should be familiar with at least in general terms."

tions. The anticipated rise in unemployment at the end of the war was to be reduced by an increase in emigration and it was hoped that the upwardly striving countries of the tropics would provide new markets for industry.

The course provided wide-ranging knowledge about the tropics, including lectures on geography, ethnography, the study of religions and colonial history, as well as introductions to

Intended Learning Outcomes for the General Tropical Course (2013)

The course aims to provide basic training and continuing education, addressing the need for information on economic, ecological, cultural, geographical and socio-cultural issues and their global connections and interactions, as well as on health aspects of life in the tropics, sub-tropics and other regions with extreme scarcity of resources.

subjects such as tropical hygiene, the work of missionary societies, and tropical biology. The more theoretical knowledge was complemented by language courses and first aid training.

The shift from "the tropics" to "struggling economies"

The name General Tropical Course was maintained for seven decades. The intended learning outcomes (see boxes) also stayed much the same, though they were adapted continually in accordance with social and economic changes. What also changed were the ideas and perceptions that people associated with the tropics. Whereas immediately after the war the tropics were seen as commercially prosperous regions, and were even expected to outstrip war-damaged Europe in economic terms, these hopes soon evaporated. The tropics became countries of slow development and poor resources.

The General Tropical Course is still, to this day, a great success. For some years now two four-week modules have been on offer: a basic module and a biomedical module. The University of Basel has accredited the General Tropical Course, and the Diploma is accepted as a Certificate of Advanced Studies (CAS).

Experts for the tropics: the Tropical School



Photo Archive STI

Pure concentration: Students at the Tropical School bend their heads over small glass dishes containing unspecified agricultural products. Every now and again they reach into the containers to investigate the consistency of the contents. This archive photo, which (sadly) is not labelled, was taken in the late 1940s.

Employment policy and economic considerations played an important part in the decision to establish a Tropical Institute in Switzerland. In the years after the war, leading economic powers had started developing their trade connections with “undeveloped” tropical regions and Switzerland wished to ensure it was in a favourable position in this com-

petition by offering targeted training courses. There was also a hope that emigration of well-educated Swiss nationals would counteract the anticipated rise in unemployment at the end of the war.

The student of the Tropical School – an entrepreneurial type

The Tropical School opened its first preparatory course on February 7th 1944 in the classrooms of an independent Basel school, Minerva. The first specialised diploma courses, the Sugar Course and the Planters’ Course, started that same year. Among the 54 students there were 23 Dutch refugees who were preparing for their future work in the Dutch East Indies (later Indonesia). In the following years up until 1980, between ten and fifteen students were enrolled every year. The Tropical School deliberately disassociated itself from the colonial image of “explorers and adventurers”. The students were capable, entrepreneurial types, hoping to prove themselves on plantations or in trading posts overseas. The Association of Alumni of the Tropical School (VESTI) played an important part in supporting new candidates. The former students offered help both in finding appropriate employment overseas and also later, when it came to reintegration into professional life back in Switzerland.

The Tropical School, a cogwheel in development

The chances of gaining advantageous employment in Africa, Asia or Latin America were not always good. In the 1950s and 1960s increasing numbers of students complained that they were being passed over by potential employers. Also, the independence movement in many countries of Africa and Asia was altering the views and convictions of many who took the course in the Tropical School, so that in

the 1970s it moved increasingly towards becoming a training centre for development aid workers. In 1973, the cantonal Department of Education of Basel City applied to the Swiss Federal Administration for recognition of the Tropical School as a Higher Institute of Technical Education (*Höhere Technische Lehranstalt, HTL*). This recognition was finally granted seven years later.

The Technical School for Tropical Agriculture

The first course at the Technical School for Tropical Agriculture in Basel started in 1981 with 21 students. However, it only had temporary accreditation by the Federal Government at this point. The plan was to introduce a course lasting for six semesters, but this was never implemented in Basel due to lack of financial means and continuing discussions regarding the site on which the course was to be run. In the autumn of 1989 the school in Basel was closed down and training for agriculture in the tropics was taken over by a Higher Education Institute in Zollikofen (Canton Berne). Today, the aims of the erstwhile Tropical School live on in the programme for a bachelor’s degree currently being offered by the School of Agricultural, Forest and Food Sciences in Zollikofen, which includes a specialist study option on “international agriculture”.

Training in the Tropical School

“The Tropical School is tasked with preparing young people between the ages of 17 and 25 who are planning to live overseas for a period of time. Besides general preparation for life overseas, it also offers them professional training for work in the tropics as planters, chemists in the tropical sugar industry or sales people.” Brochure about the history of the STI, ca 1944/45.

Education as Development Aid: the Rural Aid Centre (RAC) in Tanzania

The scenery is modest: a wooden table with two microscopes surrounded by Tanzanian RAC-students and dark green foliage. Any moment now Thierry Freyvogel or his student will raise their eyes and announce the result of their analysis. The picture is a typical illustration of the period following independence when young Tanzanians needed to be prepared for work in the health sector.

Even before Tanganyika's independence in 1961 Rudolf Geigy visited the country along with the Vice-President of CIBA Ltd., Arthur Wilhelm, and his wife, and a young CIBA engineer, Albert Meier. They were looking for opportunities for development projects that

"For the continuing effectiveness of a development project of this kind, it is probably not sufficient to settle in successfully in a locality. It must also be made clear that the presence is temporary and that the initiators are prepared to retreat and hand over responsibility for the task as soon as people are ready to meet their own needs."

Rudolf Geigy, Lehrzentrum in Ifakara, in Südtansania, Völkerverbindende Entwicklungshilfe (A Teaching Centre in Ifakara, South Tanzania – development help that brings people together): Basler Nachrichten, 31.01.1976

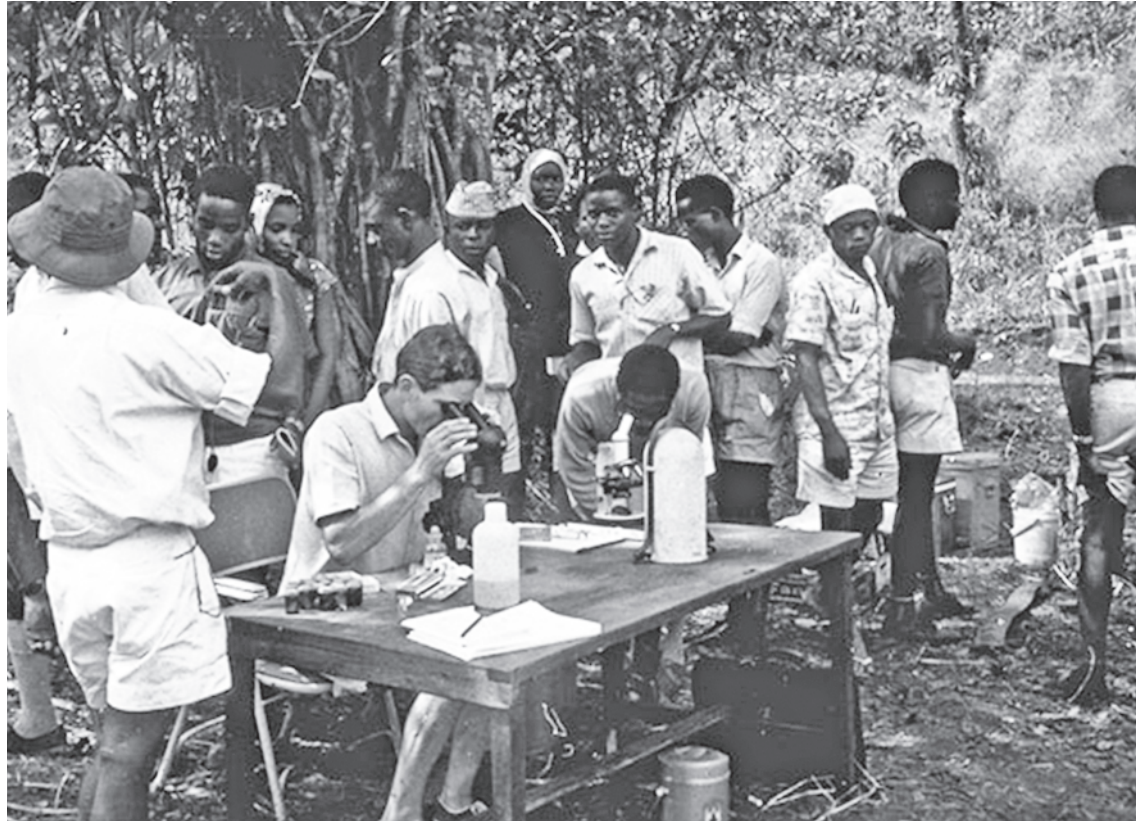


Photo D. Grobe 1961

would fit the programme of the "Basel Foundation for the Advancement of Developing Countries" which Geigy had recently launched. It was a collaboration between the Tropical Institute and six Basel chemical companies. The foundation's aim was to support developing countries in the areas of health, hygiene and agriculture. The outcome of Geigy's visit, which included meetings with British administrators as well as with Julius Nyerere, leader of TANU (Tanganyika African National Union)

who was later to become Tanzania's first President, was his proposal to build a "Rural Aid Centre" (RAC) in Ifakara.

Training on the Spot

The RAC was intended to be a training centre for 'Rural Medical Aids', healthcare assistants capable of running a rural dispensary after a three-month training programme. It was

an innovative and promising model for development support. Improving on the lack of rural health provision was consistent with the priorities of the newly independent state and was a departure from the colonial tradition of health-care provision centred on cities. Geigy's idea of "training on the spot" was also a major change from the prevailing efforts to fetch young Africans to Switzerland for their education. The director of the STI was sure that it was only by training in their own country that well-educated and ambitious young Africans could increase their awareness and knowledge of local issues and be encouraged to stay rather than migrating to other parts of the world.

Ifakara was well suited to a development project of this kind. As well as the field laboratory which the STI had already established, there was also the St Francis Hospital, run by the Capuchin Mission, and the surroundings offered a wide array of tropical diseases. This made it possible to offer a training course which combined theory and practice in equal



The Rural Aid Centre (RAC) in Ifakara, Tanzania, 1966. Photo Archive STI

measure. Dividing their time between the theory rooms of the RAC, the hospital bedside and the villages surrounding Ifakara, the students had the opportunity to gain a wide understanding of the infectiousness of tropical diseases, the conditions under which they spread and the possibilities for disease control.

Thirty new Rural Aids were enrolled in the training programme every year. Later on, there was a three-year programme which enabled students to train as Medical Assistants, and in 1973 the Rural Aid Centre was upgraded to become the Medical Assistant Training Centre (MATC). By the time the MATC was handed over to the Tanzanian government in 1978 almost eight hundred students had completed their training in Ifakara. Julius Nyerere himself was very appreciative of the Swiss support. During the inauguration of a new Medical School in Dar es Salaam he thanked the Swiss initiators for the successful public-private partnership and "for their continuing interest and activity in Ifakara".

From the Medical Assistant Training Centre (MATC) ...

The ceremonial gravity of the moment shows in the faces of the people present in 1972 at the signing of the agreement to transform the Rural Aid Centre (RAC) in Ifakara into a Medical Assistant Training Centre (MATC). In turn, the representatives of the Swiss Foundation and the Tanzanian Minister of Health add their official signatures. Behind them – shoulder to shoulder – stand the representatives of science and industry.

The preponderance of Europeans among the people in this photograph suggests a one-sided relationship between donors and recipients. This, however, was not the case. Tanzania was far from being a passive recipient of Swiss development aid. In 1967 Nyerere outlined his vision for African Socialism in the Arusha Declaration. The Declaration includes sections on the nature of development and strategies for development in rural areas. Based on the concepts of “ujamaa” (familyhood) and self-reliance. Nyerere created a vision of health provision that did not focus on well-equipped hospitals but was provided by numerous decentralised health services, able to reach the most remote villages. This new vision for Health Services also included new priorities – hygiene, improved water supply, and balanced nutrition. In short, there was increased emphasis on disease prevention.



Photo Archive STI

Changes in Swiss development policy

This reorientation of the health policy of Tanzania had an impact on Swiss development and relief organisations. The Rural Aid Centre was unique in the way it introduced students from Dar es Salaam to the health problems of the rural areas of their country. However, the curriculum still focussed largely on biological questions. The Ministry of Health and the members of the Medical Faculty in Dar es Salaam called for the School to be upgraded to a Medical Assistants Training Center (MATC), in which more weight would be given to the areas of Community Medicine and Public Health. In addition, the medical students from the Uni-

versity of Dar es Salaam were to be sent to Ifakara for three months every year to become familiar with the realities of health services in rural and peripheral areas. Members of the STI regularly participated in this aspect of teaching.

Medical Assistants had a crucial role in the Tanzanian Health Service. Within the hierarchy they ranked just below the doctors and the Assistant Medical Officers and they took on many curative and preventive responsibilities. The difference between the RAC and the new MATC, which opened its doors to students in 1973, could hardly have been greater. The new set of students did not just spend



*Tanzania's President Julius Nyerere (1922–1999) opens the MATC in Ifakara, 1973.
Photo H. Stricker*

three months in Ifakara, but stayed for three years. This enabled much closer collaboration with the surrounding community, and more work could be done in the area of prevention of infectious diseases. The Basel Foundation made it clear from the start that they would only support the school financially for a period of five years. After this, responsibility for the school was to be transferred to the Tanzanian Government.

... to the Tanzanian Training Centre for International Health (TTCIH)

Even after responsibility for the MATC had been handed over to the Tanzania Government, Switzerland did not withdraw completely from education in Ifakara. The successor of the Basel Foundation, the Novartis Foundation for Sustainable Development (*Novartis Stiftung für Nachhaltige Entwicklung*), continued to take an interest in the survival of the training centre. Swiss contributions were mainly given for the maintenance of the buildings, which were ageing rapidly in the hot and humid climate, and for support at the management level. In the early 1990s, when the centre became the Ifakara Clinical Officer Training Center (ICOTC) and needed renovation and extension to accommodate 120 students, capital from the Swiss Foundation was used to support the project. However, four years later, when the centre again required extensive renovation and refurbishment, a more sustainable solution had to be found. The Novartis Foundation commissioned the Swiss relief organisation SolidarMed to build up a support team of local craftspeople and skilled workers who could tackle any maintenance work efficiently on the spot.

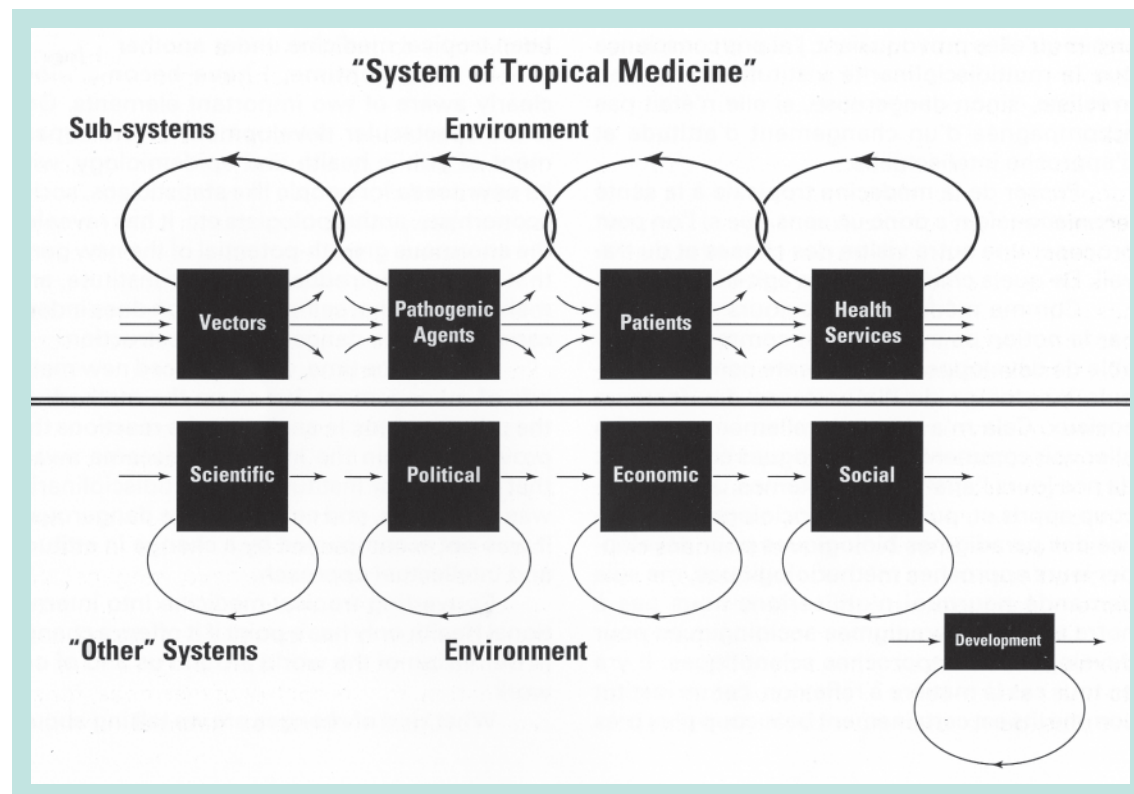
Changes were also introduced on the strategic level. With the help and expertise of the STI and the Swiss Agency for Development and Cooperation (SDC), the Novartis Foundation and the Tanzanian Ministry for Health supported further development of the centre on two levels. On the national level, the centre now offers training for Assistant Medical Of-

ficers and prospective nursing staff as well as courses in District Health Management. And on an international level, the centre attracts students from all over the world with the offer of short courses on various themes related to Public Health. Geigy's concept of training on the spot has stood the test of time. The Tanzanian Training Centre for International Health (TTCIH), as the centre is now called, has developed into a modern educational institution, under Tanzanian leadership, which is of local, national and international importance in Africa.



Accommodation for students of the Tanzanian Training Centre in International Health in Ifakara, 2013. Photo J. Pelikan

The Course in Tropical Medicine – a master of change



The diagram illustrates the sub-systems of tropical medicine, as they were outlined by Antoine Degrémont, then Director of the STI, for the Institute's 50th anniversary in 1994. International Health, in his concept, consists of a complex

system built up from different sub-systems, that are all linked together. Factors that play a role in the system include politics, economics and social systems – especially since the process of the decolonialisation of Africa began.

Antoine Degrémont's systems approach and the new research into health systems had a profound impact on teaching in the STI. The Tropical Medicine Course (*Tropenmedizinerkurs, TMK*) is an example of this. Its content over the years has changed from the teaching of classical tropical medicine to training in international health. Degrémont re-designed the course for the first time towards the end of the 1970s. From 1981 it became the Course for Medicine and Health Services in the Tropics (*Kurs für Medizin und Gesundheitswesen in den Tropen, KMG*) and since 1992 it has been offered under the title, Health Care and Management in Tropical Countries (HCMTC). Many medical and biological lectures disappeared from the curriculum and were replaced by general public health themes.

The Course in Tropical Medicine was first run in the winter term of 1946/47 with 25 students. It was primarily designed to be a training course for doctors, but parts of the course could also be attended by biologists, nurses and laboratory technicians. The curriculum focused mainly on classical tropical medicine as it was practised in the colonial era, and much of the course was modelled on teaching offered by the Liverpool School of Tropical Medicine, in which the control of tropical infectious diseases, and the provision of medical care for settlers, missionaries and military personnel during and after a stay in the tropics were central. In the STI, the programme included lectures on the pathology and chemotherapy of infectious diseases prevalent in the tropics, lectures and practical work on the causative organisms, and a lecture on poisonous animals in the tropics and their venoms. The lectures and practicals were held in German or French.

From tropical medicine to international health

In the 1960s many African countries achieved independence. The progressive decolonisation of Africa had an effect on tropical medicine as well. With the independence of these new states the rich, industrialised countries in the north were confronted with new responsibilities: development aid was needed, both on a private and on a state level. The traditional tropical institutes were part of these changes and began to adapt their education and training within the new context.

In addition, new concepts of Public Health in the 1970s and 1980s had a profound impact in the field of tropical medicine. It was no longer sufficient to study specific pathogens. The new generation of specialists had to be capable of analysing the entire health system as members of an interdisciplinary team. The road towards international health also brought changes to medical practice in the field. One of the developments advocated by Degrémont was increased collaboration between doctors and nurses in their everyday work – a departure from the hierarchical structures which were the norm in Europe.

Education as an instrument for the improvement of health systems

In the 1990s the financial situation of the STI was such that the KMGT had to become financially more self-sufficient. One possibility was to recruit participants from developing countries, who could be financed by Swiss Government scholarships. However, the course was being taught in three languages, and this was a barrier for international students. So, from 1991, the three-month diploma course was run entirely in English under the title “Health Care and Management in Tropical Countries” (HCMTC). The aim of the new course, to prepare participants for work in a District Health Management Team, has been maintained up until the present day. In the course of the Bologna reforms, and the restructuring of postgraduate programmes and continuing professional development in the University of Basel, the HCMTC course was accredited as a Postgraduate Diploma Course in 2000, and has been accepted as a DAS (Diploma of Advanced Studies) programme since 2011.



41 *Group work during the HCMTC course, 2006. Photo R. Dürr*

Teaching for the University of Basel



Photo Archive STI

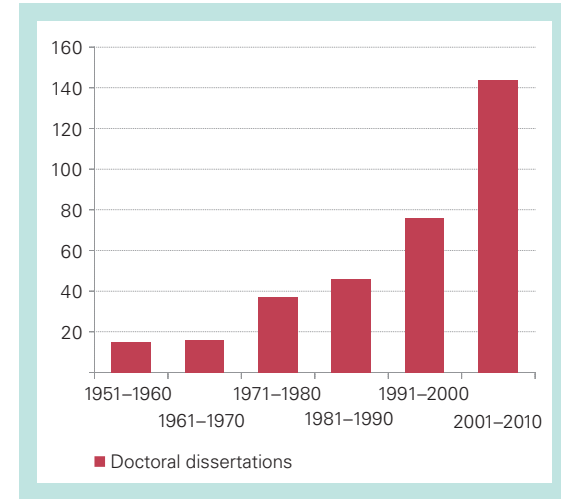
On our journey back to 1949 we are looking over Willy Burgdorfer's shoulder as he examines soft ticks, looking for infestation with spirochaetes (spiral-shaped bacteria) which cause tick-borne relapsing fever (TBRF) in humans. He is one of Rudolf Geigy's first doctoral students, and his thesis is devoted to the development of the infection in the vectors and its mode of transmission. After gaining his doc-

*torate at the University of Basel in 1951 he moved to the USA and continued his research at the Rocky Mountain Laboratory in Hamilton, Montana. In 1981 he identified the causative organism of Lyme Disease which was named *Borrelia burgdorferi* in his honour.*

In contrast to the other Tropical Institutes in Europe, at the STI it was mainly zoologists rather than medical scientists who taught and carried out research. From the start, they were also involved in teaching at the University of Basel. Besides teaching in the STI, and supervising doctoral students, Rudolf Geigy was responsible for a practical course in developmental biology which was part of the undergraduate zoology curriculum, and he also offered a course in cytology and histology. Geigy's engagement was rewarded, and he climbed up the academic ladder step by step (see chapter 1).

The STI becomes an Associated Institute of the University of Basel

When the STI first began to grow bigger in the 1970s and 1980s, and more and more members of its staff became lecturers in the University, not only were more courses offered within the STI, but the Institute contributed more and more to the teaching for degree courses in the University (MSc. and PhD in Biology, specialised courses in Medicine). From the 1990s, the STI extended the postgraduate courses especially in the areas of Public Health and International Health.



Number of dissertations in ten-year steps since 1950. Diagram N. Weiss

At first, teaching was expanded mainly in the subjects Epidemiology and Public Health. In 1992, an inter-faculty degree course was established in the University. In 1997, Marcel Tanner was appointed to the Chair of Medical Parasitology and Epidemiology in the Faculty of Natural Sciences, and in 2010 he also became a Professor in the Faculty of Medicine. Between 2002 and 2004 he was Dean of the Faculty of Natural Sciences, which consolidated the cooperation between the STI and the University. When the "Bologna Reform" was introduced in the University of Basel, a new curriculum was developed for biological sciences, in which the STI was even more involved. The Institute extended the courses offered in Medical Parasitology, and STI staff offered a 6-week block course in Infection Biology and Epidemiology. Medical students also profited from the association between the

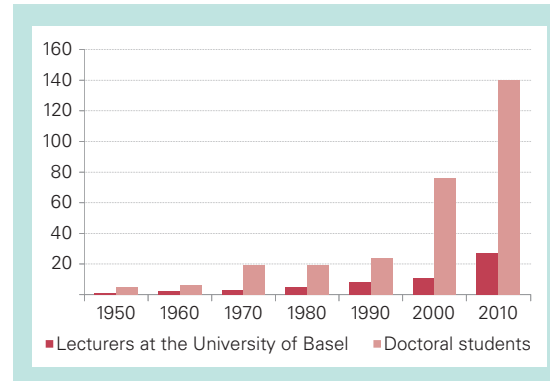
University and the Tropical Institute. Today, the Institute is also responsible for two specialised MSc courses, in Infection Biology and in Epidemiology.

With the integration of the STI and the Institute of Social and Preventive Medicine (ISPM), two more University Professors became members of the Institute's staff: Nino Künzli, Professor of Social and Preventive Medicine, and Nicole Probst-Hensch, Professor of Epidemiology. More courses could be offered in Tropical Medicine and Social and Preventive Medicine.

Today, the Swiss TPH is heavily involved in teaching at both undergraduate and postgraduate levels in the University of Basel. The close contact and constant interchange between teaching, research and service provision, and the use of modern teaching methods using group work or e-learning make the Institute an attractive place to study for students from the whole world.

Lifelong Learning

Even with a degree in one's pocket, one has not finished learning! That statement sums up an initiative taken by the Swiss Government to promote further and continuing education in the 1990s. The Institute reacted promptly to this new endeavour. The special courses run by the STI were accredited by the University. Further and Continuing Education – Life-Long Learning – has remained an important concern of the STI and the Swiss TPH. In 2008, 83 students were registered for



Numbers of university lecturers in the STI/Swiss TPH and of doctoral candidates since 1950. Diagram N. Weiss

the degree of Master of International Health in the University of Basel, and 39 had already completed the degree. In the last 20 years, the Institute's Further Education programme has been enlarged. The General Tropical Course (*Allgemeiner Tropenkurs*) has become eligible for a Certificate of Advanced Studies (CAS), and the course on Health Care and Management in Tropical Countries (HCMTC) leads to a Diploma of Advanced Studies (DAS). The first course for a Master of Business Administration (MBA) in International Health Management started in the Swiss TPH in 2013.

The Centre for African Studies in Basel (CASB)

The STI played a significant role in establishing interdisciplinary research on Africa in Basel. The Institute was a founding member of the Centre for African Studies Basel (CASB) in 2001, which is attached to the Faculty of Hu-

manities. Member-organisations include the Basel Museum of Cultures, the Basel Mission /mission 21, and the Basel Africa Bibliography. Besides a Master's Degree, there are PhD programmes and a module in a programme for a Certificate of Advanced Studies. Since 2007, the Federal Government has supported a bilateral Research Agreement between Switzerland and South Africa, for which the Swiss TPH is the "leading house". Collaboration with the Faculty of Humanities in fact started earlier, to 1999, when the medical anthropologist Brigit Obrist van Eeuwijk (Associate Professor since 2007) started to collaborate on various STI projects.





Education in the service of international organisations

A spectacular event is taking place in the garden of the STI, a demonstration of the use of insecticides to combat mosquitoes. Rudolf Geigy (in the background) appears to be enjoying himself. In 1958 the STI organised an international course on malaria in Basel on behalf of the World Health Organisation (WHO). Presumably dichlorodiphenyltrichloroethane, better known as DDT and produced by the chemical firm Geigy in Basel at the time, was used. This course can be seen as the forerunner of a whole series of further international training courses in which the STI was involved.

Global health

The Institute's involvement with education and training was not restricted to the University of Basel. It included courses for international organisations, and expanded in the course of time to work with partners all over the world. An example of this is the World Health Organisation's course on the immunology of infectious and tropical diseases which was held regularly in Lausanne from the 1970s onwards and which was co-financed by the Swiss Federal Government. In the 1980s the STI collaborated with other European tropical institutes to develop the European Course in Tropical Epidemiology (ECTE), a course which aimed to help people who work in the health sectors in countries of the South to improve their knowledge of epidemiology. To this day the ECTE is run at the various different tropical

institutes in turn. It was first run by the STI in Basel in 1988. A decade later the cooperation of the European tropical institutes reached a new level when they designed a joint Masters programme in International Health, which included the participation of increasing numbers of other teaching and research centres both from industrialised nations and from countries of the South. Axel Hoffmann, the head of Teaching and Training, currently represents the Swiss TPH (Tropical and Public Health Institute) as executive secretary of tropED, the Network for Education in International Health.

The teaching and training activities at the Tropical Institute have continued to develop and grow in recent years. Since 2006 the STI has participated in a joint Master's degree programme in Infectious Diseases, Vaccinology and Drug Discovery, which is run by the National University of Singapore, the Novartis Institute for Tropical Diseases and the Biozentrum of the University of Basel, and is currently being developed into a PhD programme.

While in the past training was offered to African health professionals, and training courses were designed for developing countries, the role of the countries of the South has changed a great deal over the years. Today, the courses and curricula are designed jointly. Only close communication between all participants and contributions from all sides can hope to achieve and sustain real improvements in the health services.

Changing approaches to teaching

The rural district of Kilombero in Tanzania, 15,000 km² with 400,000 inhabitants, stretches from one edge of the table to the other. Red, green and yellow counters are spread across the area apparently at random. But nothing is being left to chance here: the participants in the HCTMC course (Health Care and Management in Tropical Countries) are learning the basics of health planning in an African healthcare district. How can scarce resources best be used to improve people's health in the long run? Through independent group work the doctors, nurses and health planners are prepared to tackle real-life health problems and enabled to act on their own initiative and responsibility. The teamwork of students from different cultural backgrounds and with a variety of experience contributes to the vision of "mutual learning for change".

Teamwork among students has not always been such an important part of teaching at the STI. In the early decades, classical "ex cathedra" lecturing was predominant. But Rudolf Geigy and Thierry Freyvogel always knew how to supplement their lectures with unforgettable practical exercises and field trips, so that theoretical knowledge was enriched by practical experience.

Didactics at university level – bringing the teaching methods up to date

Until the 1980s, evidence of competence in research was the only requirement for teachers at the University of Basel. Training



Photo J. Pelikan, 2010

in teaching methods was not expected – nor was it available! This changed in the following decades, a development which prompted the STI to redesign various training courses. A first development concept for teaching and training was introduced in 1989. The curriculum for Medical Parasitology was reorganised as part of Biology I (Biology of Organisms), which could be a major or minor subject. Every course offered was now expected to define its teaching objectives and intended learning outcomes, which could then form a basis for evaluation of students and tutors.

All roads lead to Bologna

With the year 2000 came the restructuring of university courses in line with the Bologna process. Previously, Swiss universities offered only 5-year courses leading to the equivalent of a Master's degree. The reforms introduced basic BSc and BA courses. The STI designed and developed a BSc module on Epidemiology and Infection Biology, with the support of the Department for Higher Education at Griffith University in Brisbane. From this point onwards, teaching and training were firmly



Group work in the BSc course, Infection Biology and Epidemiology (IBE), 2003. Photo N. Weiss

based on a learner-centred approach. The students' learning was to be supported by various methods (lectures, practicals, group work and tutorials) during face-to-face teaching time, expanded and reinforced by individual study with the aid of appropriate learning software, and monitored through self-evaluation.

Digital learning

The era of information technology has brought further changes in teaching. The computer has become an increasingly important learning tool. The first computer learning programmes developed by the STI were learning software with exercises to accompany the course in Parasitology and Parasitism, and the Health Resources Allocation Model in the area of health planning. In 2002, the STI created an open-access, web-based learning platform for tropical medicine and parasitology (TropEdu-

Web) as part of the Swiss Virtual Campus. The Institute is now part of a whole network of national and international universities making use of the newest learning and teaching tools such as e-learning, blended learning (e-learning combined with classical teaching) and MOOCs (Massive Open Access Online Courses).



Students at the Tanzanian Training Centre for International Health (TTCIH) making use of e-learning, 2013. Photo J. Pelikan

Building new competence for improving health – nationally and internationally

Interview with Axel Hoffmann, Head of the Department of Teaching & Training in the Swiss TPH

What are the most important changes you have seen in teaching and training in the Institute in the last 20 years?

Teaching has always been one of the three main pillars of the Institute, alongside research and medical services. And nowadays it is organised to cater for the needs of students from different countries, at all levels, for University students in BSc, MSc or PhD programmes or in further education or postgraduate training. The STI was one of the first institutions in Switzerland that offered modular programmes for Master's degrees, for students who could not afford to give up their jobs for a year or more of full-time study. The courses we offer are always based on a foundation of solid academic and practical expertise that can be applied in the students' professional activities. We – to-

gether with the Faculty of Medicine – are the first Institute in the University of Basel to offer a course for the degree of Master of Business Administration (MBA) in International Health Management. This indicates how necessary competence in this field has become in the field of international and global health.

People frequently complain that as a result of the "Bologna Reform" universities are becoming more like schools, with a fixed curriculum and less room for the students' own initiatives. What do you think about this?

The structures that were created as a result of the Bologna Reform can mean that university courses are over-organised and leave the students much less time to follow their

special academic interests, as they could in the past. But the most important thing is not only the content of curriculum, but the way in which it is communicated – and ensuring that the quality is steadily improved. In the Swiss TPH these concerns are uppermost in our thoughts. Our students are not passive listeners, but are actively involved in what we do together – and in our international environment they often come with knowledge, skills and experience from which both their fellow-students and the teachers can profit. "Mutual Learning for Change" means that teachers and students have a common goal – to bring about change. This is the basis of all our teaching and learning. The students are no longer seen as pupils, but as colleagues. The positive feedback we get from our students confirms that this concept is the right one. Furthermore, whenever possible, we react to criticism of the courses offered, and their content, by positive changes.

What effects have globalisation and commercialisation had on teaching and training in the Swiss TPH?

One effect is that we have to be competitive. That stimulates us to make a continuous effort to ensure the excellence of our teaching. But globalisation also means that we support partners all over the world in their efforts to develop first-class courses in the area of Health in their own countries – especially in countries that are a priority for Swiss development cooperation. This is achieved by assistance with curriculum development and through the exchange of students and teachers. However, there is a negative aspect of globalisation as well. Switzerland is often called a "high-price island", and this applies to education, too. As

Postgraduate Training and Courses (2008)

Master of Advanced Studies (MAS)

- *Master of Public Health (Universities of Basel, Zurich and Bern)*
- *Master of International Health*
- *Summer School in Public Health Policy, Economics and Management (SSPH+)*

Diploma of Advanced Studies (DAS)

- *Health Care and Management in Tropical Countries (HCMTC)*

Certificate of Advanced Studies (CAS)

- *Allgemeiner Tropenkurs (ATK)*
- *Health District Management*
- *Clinical Priorities in Tropical Countries*
- *Travellers' health*

Various short courses



Axel Hoffmann (far right) and Bernadette Peterhans, Course Coordinator (seated third from right) with students of the HCMTC course, 2006. Photo R. Dürr

dents. Furthermore, our courses are constantly evaluated and revised. A new challenge is to respond to the trend towards “distance learning” (e-learning, including Massive Open Online Courses, MOOC) in such a way that these courses – which already exist in the Swiss TPH – also have a really high quality.

a Swiss institute we often have problems in competing financially with other European institutions. The most recent political developments have unfortunately done nothing to mitigate this situation. The moratorium on Swiss participation in the Inter-European Erasmus programme, and the threat of exclusion from the research programme “Horizon 2020” are serious problems we now have to face.

Are the available instruments for the evaluation and control of the quality of teaching and training adequate?

Even when something is of good quality, it can always be improved – as can the instruments for evaluation. However, on the whole I can claim that in the Swiss TPH we have established very good instruments for assuring quality. The members of our teaching staff are not only excellent academically but, as a rule, they have a lot of experience in working in the field, which they can pass on to their stu-



Knowledge put to good use: Research for better health

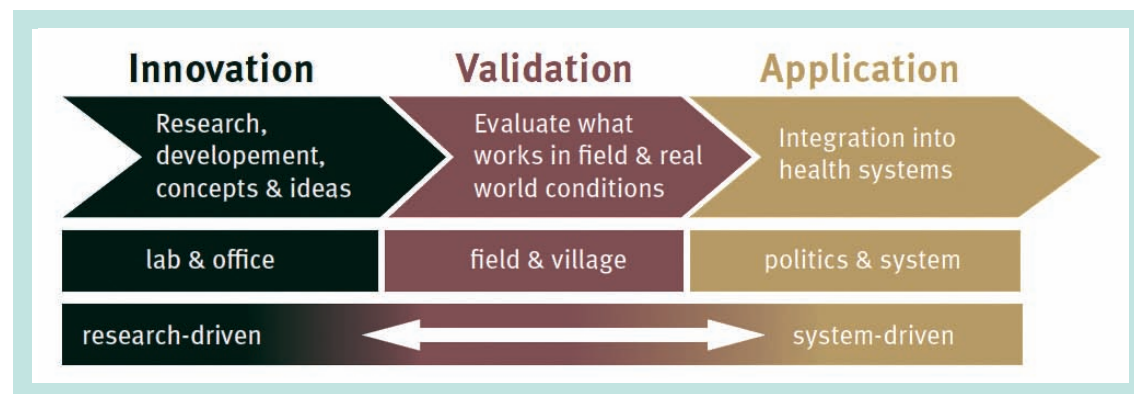
Rudolf Geigy, in the bush in Tanganyika, is pointing his camera at something we can't see. Was it perhaps a wart-hog? In the 1950s, Geigy believed that the wart-hog could be a "reservoir" for African relapsing fever, which is transmitted by ticks. Observation, detailed description, and the collection of materials for scientific study, were one of the main scientific tasks of the biological scientist. But it didn't stop there. The path from the field leads without fail back into the laboratory. For example to Stephen Biringi from Tanzania looking after his mosquitoes, or Jutta Marfurt in the molecular biology laboratory. But knowledge that claims to be relevant for the community does not end in the research laboratory. Back in Tanzania, medical students from the Rural Aid Center are investigating the health status of the villagers of Kikwawila, and are looking for evidence of schistosome eggs in urine samples. The collection of clinical data in the 1980s was the foundation of the big intervention studies later. Now, the target is to improve the health of communities. So we see the villagers of Idete registering to take part in a vaccine trial, and the members of the ACCESS Team propagating the use of mosquito nets.

These six pictures represent three principles that are fundamental for research activities at the Swiss TPH: close contact and communication between the laboratory and the field; the step from scientific observation to health interventions, and the effort to use scientific results systematically and in partnership for the benefit of the people who are actually affected by a particular problem. The connection between the laboratory and the field was already central for Rudolf Geigy. It was the impulse for research programmes that were always directed towards application and to definite goals. Work in the field made the scientists more aware that research results should also benefit human health. Knowledge on its own was not enough. The founding of the Department of Public Health and Epidemiology, in the late 1980s, is a good example of the move from pure scientific description to health interventions.

Innovation, Validation, Implementation

The Swiss TPH is creating new knowledge to improve human health. This vision means that it is not enough "only" to do excellent science. Rather, new knowledge from the laboratory must stand the test of being appropriate and widely applicable in the field, to benefit the people actually affected. Especially in economically weak countries, that can be a difficult balancing act. Many things must come together – not only scientific and medical factors, but also social, cultural and economic ones. If a new approach has been successful in trials, it can be implemented. Since the 1980s, the Institute has been making a contribution to the improvement of public health systems in urban and rural areas.

This chapter describes the change outlined here, from scientific observation to intervention and implementation in partnership. The first part is devoted to the early days of exploratory expeditions, and research on dis-

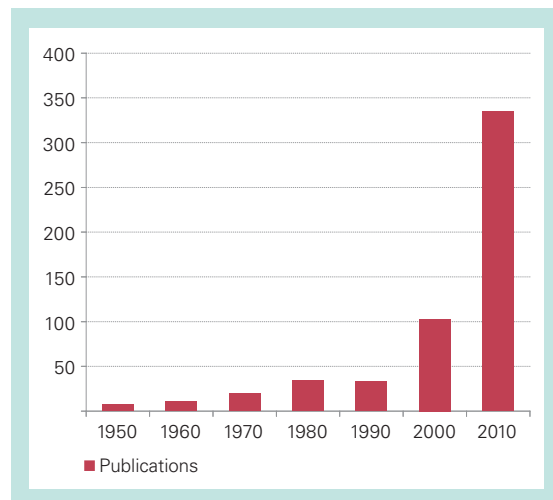


Research concept of the STI, 2005.

Photos from top left to bottom right:
T. A. Freyvogel, 1962. Archive STI, 1964.
R. Dürr, 1993. T. A. Freyvogel, 1965.
F. Matthies, 1995. M. Hetzel, 2005.

eases like African relapsing fever or sleeping sickness in Tanzania. A second part leads back from the field into the laboratory, where since the 1970s technical changes have resulted in “high-tech” diagnostic methods. The third part is concerned with the STI’s field research in the early 1980s – which is only faintly reminiscent of the days of descriptive field studies. Instead, the idea became more and more firmly established that disease was not only a biological phenomenon, but part of a system with social, cultural and ecological components. The STI moved finally into the present with trans-disciplinary intervention studies, carried out with partners in the country concerned. The examples of work on “neglected diseases”, or malaria control in Tanzania, show how closely laboratory and field research are interlocked, and how research into health systems is orientated towards achieving improvements in health systems. The last sections look at the new challenges that result from chronic diseases. With the integration of the Institute of Social and Preventive Medicine of the University of Basel and the STI in 2010, themes like the influence on health of air pollution or exposure to radiation due to mobile telephones, or research on the influence of gender, have been given a lot of impetus. They have enriched the

research portfolio of the Swiss TPH at the local, national and international levels.



*Number of STI publications in selected years.
Diagram N. Weiss*

The number of peer-reviewed publications is frequently used as a measure of scientific productivity. From 1990 to 1999 the STI produced on average 185 publications per year. By 2013 the number had climbed to more than 400.

Exploring the World



Photo M. Kauffmann/R. Beglinger, 1966

The label on the box has no connection with the contents! Pius Hermes is not balancing a case full of whisky on his head – welcome though that might be – but a box of hypodermic syringes. Together with the white mice that his colleague Ambros Mganda is carrying, they are among the essentials for research on African sleeping sickness.

The scientific research done in the first years of the Tropical Institute was strongly influenced by the education and interests of Rudolf Geigy. He was a master at having a foot in two worlds. As a zoologist, with degrees from the universities of Basel and Geneva, Geigy was fascinated by the physiology of development, and the possibility of manipulating this under laboratory conditions. On the other

hand, for him the laboratory was always directly linked to Nature. He was convinced that any “Life Scientist” deserving of the name must commute tirelessly between the cool, predictable laboratory and the natural, often pathless outdoors.

Struggling through tropical thickets

Expeditions and journeys were an absolute necessity. Unlike Tropical Institutes in European countries that had colonies, the new Institute in Switzerland did not have the advantage of long experience of scientific work in tropical countries, and nor did it have access to a collection of material for the research and teaching on tropical diseases and their causative organisms

and vectors that Rudolf Geigy and his students hoped to do. It was essential to set off into the wide expanses of Africa – still largely under Colonial rule – to explore and to collect specimens. Science was a movement, and its results were the description of a hitherto unknown world.

Rudolf Geigy and his companions made their first expedition in 1945, just after the end of World War II, to the French and Belgian colonies of Western and Central Africa. The high point was a visit to Albert Schweitzer in Lambarene. Only four years later, the Basel zoologists set off on their travels again, this time to Tanganyika (now Tanzania) in East Africa. The expeditions not only supplied the still-young tropical institute with a wealth of material for teaching and research. They were also important in establishing contacts with Colonial governments and with Swiss missionary societies like the Capuchin Mission in Tanzania, which very soon helped the STI to build up its own research institute in Africa.

“... [It is] my conviction that biological research needs experimental research questions, and therefore requires a laboratory – as modern and well equipped as possible. But it is also vital that research should not lose its relationship with the actual sequence of events in their natural setting. Research should see its real purpose in uncovering something of this mysterious clockwork – even though we know from experience that our efforts will make us more and more conscious of the impenetrability of its structure, and our curiosity will have to be satisfied with mere crumbs.”

Rudolf Geigy, “Pressing Forward into the Impenetrable” (*Vom Vordringen ins Undurchdringliche*), Basel 1967 (R.Geigy; private publication)

From the Field back to the Laboratory



Photo Archive STI

Rudolf Geigy takes a look into his incubator. Have the tsetse flies developed as he hoped? In 1949, Rudolf Geigy brought a number of tsetse flies from Tanganyika to Basel, and successfully bred them in the STI. This was pioneer work. The special cages for breeding the flies were known as "Geigy cages", and are part of the history of research on trypanosomiasis.

From 1947 to 1961, the research departments of the STI were in the villa "zur Föhre" (the Pine Tree). In the cellars, Rudolf Geigy set up rooms with different climates in which to breed parasites that caused tropical diseases, and their vectors. This opened up many possibilities for research in medical entomology and parasitology. The main research interest was in parasites and their life-cycles, the biology and behaviour of the vectors, and the complex mechanisms involved in the transfer of infection to humans. In 1951, Ralph Gander wrote

his doctoral dissertation on the hatching-ability of the larvae of *Aedes* mosquitoes. Further dissertations in the 1950s were on the effect of the climate at high altitudes on malaria infections (T.A. Freyvogel, 1956) and the analysis of the course of infection of a bird-malaria parasite in the intestine of the yellow-fever carrier, *Aedes aegypti* (Harro Stohler, 1957). Besides mosquitoes and tsetse flies, soft ticks, kissing bugs and termites were kept in the laboratories. Willy Burgdorfer wrote his dissertation in 1951 on the course of infection in tick-borne relapsing fever, and the doctoral work of André Aeschlimann in 1958 described the transfer of the causative organism (*Borrelia*) to the next generation of ticks. Martin Lüscher's studies included research on the "fungus gardens" in termite mounds, and the results were published in the well-known journal *Nature*. He was in charge of the termite laboratory from 1948 until he moved to the University of Bern in 1953.

Until the beginning of the 1960s, descriptive microscopic studies were in the foreground of research, but they were always supplemented by laboratory work and animal studies.

Research “made in Africa” I: The CSRS in Adiopodoumé



Photo Archive STI

On a grey day in January 1952, at the edge of a tropical lagoon near the City of Abidjan in Côte d'Ivoire, a lorry is being unloaded and box after box carried into the new Swiss Field Laboratory. The boxes are from Switzerland, filled to the brim with laboratory materials for the Swiss Centre for Scientific Research, the first Swiss field laboratory in Africa, founded in 1951.

The Swiss Centre for Scientific Research (*Centre Suisse de Recherches Scientifiques, CSRS*) was built in Adiopodoumé, near Abidjan, in the grounds of the extensive research station of the French organisation ORSTOM (*Office de la Recherche Scientifique et Technique d'Outre-Mer*). The Centre owed its founding to many people and a series of fortunate circumstances. For example, there was the energetic Swiss Honorary Consul in Côte d'Ivoire, Edgar Wimmer, who campaigned enthusiastically for the project. There was the close

friendship between a botanist from Neuchâtel, Claude Favarger, and Georges Mangenot, the first Director of ORSTOM in Adiopodoumé. And last but not least there was Rudolf Geigy, who knew how important such a laboratory was for Switzerland, and who supported the idea both with scientific arguments and with funding. The CSRS was the responsibility of the Swiss Academy of Sciences (SCNAT). The Centre was administered by a Committee of the Academy, with the Neuchâtel parasitologist Jean-Georges Baer as President.

Explorations in Côte d'Ivoire

For Swiss scientists, the CSRS was the door to an unknown world waiting for scientific study. Urs Rahm, the zoologist who was the first Director of the CSRS, once said of this early exploratory stage, “We had no goal for our research.” Geigy had suggested looking at changes in the ecology of the Ebrié Lagoon, but this did not satisfy the enthusiasm of the zoologists for long; the animal world of Africa was far too rich and varied for them to concentrate simply on one objective. For a time it was pangolins that received Rahm’s undivided attention; then he moved on to the multitude of snakes and monkeys waiting to be described and catalogued. This constantly shifting emphasis in scientific research would remain characteristic of the CSRS for a long time. Every new Director who found himself in the Côte d'Ivoire brought a new scientific focus, so the research agenda tended to change from botany to zoology or parasitology and back again. The success of the scientific research depended a great deal on the African staff members. Boukary Porgo, from Burkina Faso, was the first, and he worked for the CSRS for



Chiefs invited to the 50th Anniversary of the CSRS, 2001. Photo N. Weiss

more than 40 years. He not only had a gift for scientific research, but because of his knowledge of local languages and customs he was a bridge-builder between the different cultures of Switzerland and Côte d'Ivoire.

A centre for research partnership

In the last three decades, the CSRS has come to occupy a key place in research part-

nership between Switzerland and West Africa. The aim of educating Ivorian scientists was explicitly stated in a written Memorandum of Understanding (*Protocole d'accord*) in 1988. Science should be a process of the exchange of knowledge between researchers from North and South working in partnership. The veterinary surgeon Jakob Zinsstag, who became Director of the CSRS in 1994, and the epidemiologist Marcel Tanner, succeeded in making the idea of partnership into reality. They were

strong supporters of the idea of scientists working together and sharing knowledge and resources. Tanner was following the example of the Field Laboratory in Tanzania that the STI had already successfully incorporated step by step into Tanzanian structures. In 1997, at the same time that he became Director of the STI, he also became a member of the Committee of the CSRS, and a year later he became its president. Under his auspices, the CSRS developed into an internationally recognised centre for research and teaching, under African leadership. At present, key areas of research at the CSRS are Biodiversity and Food Security, Environment and Health, and Valorisation/ Resources/Application.

In spite of recent political crises, the Centre has successfully achieved the change from a laboratory directed towards Swiss needs to a place where partnership is practised. Even during the recent period of civil war, the CSRS staff steadily continued their work, and this earned the Centre great respect. The CSRS is now an important research institution not only for Côte d'Ivoire but also for the whole of West Africa.

Research “made in Africa” II: The STIFL in Ifakara



Photo M. Lüscher, 1949

There's a lot going on in the little field laboratory that Rudolf Geigy built up in a residential wing of the Capuchin monastery. Geigy and his student, Ralph Gander, are looking pleased at the results of their work. In the background, an African research worker is bent over his test-tubes. In the foreground canisters and tins are lined up, and a termite mound expertly bridges the borderline between the laboratory and the natural world of Africa.

The Swiss Tropical Institute Field Laboratory (STIFL) was the fulfilment of a dream that Rudolf Geigy had harboured for a long time. It first took on a concrete shape in 1954, the year of his second expedition to Tanganyika, to the little town of Ifakara in the Kilombero Plain in the South, where there was a Swiss Capuchin mission station which included the St Francis Hospital. In the local language, “Ifakara” meant, “The place where you die”. That

was a sad comment on the burden of malaria in the area, and the prevalence of many other tropical diseases. Geigy was fascinated by the Kilombero Valley and its people; by the great River Kilombero and its numerous small tributaries, that could flood the whole area in the rainy season – and by the wealth of animals and plants in the Selous National Park, East of Ifakara, which occupies an area so large that the whole of Switzerland could fit into it without difficulty.

An offer with ethical implications

During Geigy's visit to Ifakara, the Head of the Capuchin Mission, Edgar Maranta – who later became Archbishop of Dar es Salaam – invited him to set up a small field laboratory for the STI in one wing of the hospital. This was a gesture of gratitude and solidarity. Many members of the mission staff had prepared themselves for their work in East Africa by attending the STI's General Tropical Course. Geigy's student Thierry Freyvogel was entrusted with the work of building the Field Laboratory and starting the first research. The main topics in the early years were malaria, sleeping sickness and relapsing fever, and studies of poisonous animals.

In 1961, Tanganyika became independent. There were a number of Swiss development initiatives in the newly-independent country, now called Tanzania, and these included projects in Ifakara, which led to a fundamental change in emphasis for the STIFL. Together with the Basel Foundation and the St. Francis Hospital, the STI founded the Rural Aid Centre (RAC) for training Health Service staff (p. 36).

For decades, the RAC continued to foster an educational concept that was new at that time, based on close cooperation and exchange between the laboratory, the field and the clinical setting.

From description to intervention

The late 1970s brought new changes to the “Field Laboratory”. The RAC was handed over to the Tanzanian Government, but the Swiss Agency for Development and Cooperation (SDC) was still prepared to contribute to the financial support of the STIFL – on condition that the research on health concentrated more on serving the rural population, as a form of development aid. This link between aid for developing countries and health research was not a new idea on the part of the SDC, but fitted in with a general change in approaches to development. In 1978, in the Declaration of Alma Ata, the WHO called for its member-



The molecular biologist John Wigayi of the Ifakara Health Institute (IHI), 2009. Photo I. Felger

states to build up primary health services, especially in rural areas. The goal was, “Health for all by the year 2000”. The Declaration emphasises health promotion for the whole population, rather than the provision of sophisticated medical services in only a few centres. Tanzania served as a model for the WHO. The first President, Julius Nyerere, had already made rural health services a key element in his policy for achieving African Socialism.

Integration of the STIFL in the Tanzanian Health System

For the STIFL, the change in emphasis meant that research was no longer devoted to examining the mechanisms of transmission of particular tropical diseases, but also to looking at how the health system as a whole could be improved. The STIFL had to work closely with the local population. This new approach was exemplified by the Kilombero Health and Research Project (KIHIRE). This combined basic biological research with research on health systems, and tried to improve primary health care. The biologist Marcel Tanner was Director of the Field Laboratory from 1981 to 1984, and he devoted more energy to this reorientation than anyone else. He made contact with local and national government officials, and he recruited Tanzanian scientists who occupied an important position in helping the scientists and the local population to understand each other. Tanner tried to ensure that the STIFL was responsive to the real needs of the country. Finally, together with the Director of the STI in Basel, Antoine Degrémont, he laid a solid foundation for the integration of the Field Laboratory into the Tanzanian institutions responsible for health and scientific research.

The transformation of the Field Laboratory of the STI into a Trust, in which many partners worked together, contributed substantially to the success of the present-day Ifakara Health Institute (IHI). The responsibility for the Institute was gradually placed in African hands. The first Tanzanian Director, Andrew Kitua, was followed by Hassan Mshinda in 1997. Under his leadership, the Institute made great advances, and this development has been systematically continued by Salim Abdulla, Director since 2007. Today, the Tanzanian Government relies on the results of the IHI’s research in formulating and implementing national policies for health.

Now, the original STI Field Laboratory has become one of the most successful institutions for scientific and health research and education on the Continent of Africa. The era when scientists concentrated on describing and investigating natural systems is definitely over. Today, the IHI is making an active contribution to the improvement of health and health systems in Tanzania, and enjoys a world-wide reputation.

Beyond the light microscope: Modern laboratory methods



Photo Schürch, Bern

It is June 18th 1970, and Hermann Hecker and his PhD student Olivier Grandjean are working at the electron microscope (EM). This instrument is making it possible for the two scientists to obtain quite new information about the structure of the tick's digestive tract. But the fascination of the technique was equalled by the complications of using the equipment. Is the Head of the Electron Microscopy Department correcting the way his student has set up the apparatus?

In 1961, 11 scientists and six PhD students moved into a new building. The research departments not only got new laboratories, but also new instruments for doing up-to-date research. In 1964, the STI started work with the very first electron microscope in the University of Basel. With it, much more could be learned about the ultrastructure of parasites and disease vectors. Hermann Hecker and Werner Rudin and their team also developed methods for the quantitative analysis of ultrastructure (morphometry), and also immunohistochemistry at the ultrastructural level. These new techniques made a better understanding of host-parasite relationships possible.

Quantum leaps in diagnostic methods

A freezing microtome made detailed histochemical investigations of tissues and cells possible. Eugen Gander, a PhD student working with Thierry Freyvogel, used it to make frozen sections of the mosquito gut, and stained particular structures. He could then study the process by which the mosquito digested its blood-meal (dissertation 1968). Frozen sections are still used today in the serological diagnosis of worm infections. The necessary immunofluorescence techniques had already been introduced in the STI in the mid-1960s.

In 1969, the building of a new Sonnenrain clinic, adjoining the STI's original premises, provided more space for research facilities. There were new laboratories, with cold-rooms and animal facilities, in the basement of the

clinic. Four years later, Niklaus Weiss built up an immunology laboratory, which provided a basis for the introduction of new techniques for studying the cellular immunology of parasites. This new branch of research made it possible to understand the relationship between host and parasite better. The main focus of research was on helminth (parasitic worm) infections in laboratory animals.

The new immunological methods meant that parasitic diseases in humans could also be better diagnosed. The result was that the STI became a Swiss Reference Centre for parasitic infections. Diagnostic services were added to the range of medical services offered, and were used by more and more clients: specialists in tropical medicine, polyclinics, and private laboratories.



Two African trainees in the serology laboratory of the STI, 2002. Photo N. Weiss

Breakthrough to the molecular level



Photo T. Schuppisser, 2010

Measuring minute volumes – down to a thousandth of a millilitre – needs practice, as well as the right kind of pipette. But it is a necessary skill for working in molecular biology.

Pictures of scientists in white laboratory overalls, working with reagents at the bench, have never been unusual in the STI. However, it was only in the late 1990s that the Institute began to build up expertise in molecular biology. If the STI was to play a leading role in the fight against tropical diseases, it needed the capacity to use the new methodology that was being developed. Strategic new investments were made to develop molecular biology and molecular immunology. The collaboration among the research teams within the Institute was strengthened, and so was cooperation in international partnerships and with other organisations and groups. During this phase of radical change, the STI burst out of the straitjacket of classical parasitology. Instead of investigating “only” protozoa, worms and insects, modern

infection biology asks other questions. For example, how different infectious organisms – from viruses to multicellular worms – evade the host’s immune response, or how an infection becomes established. In 1998, the microbiologist Gerd Pluschke started research on *Mycobacteria* and *Menigococci*.

From Tanzania to Basel – new impulses from the field

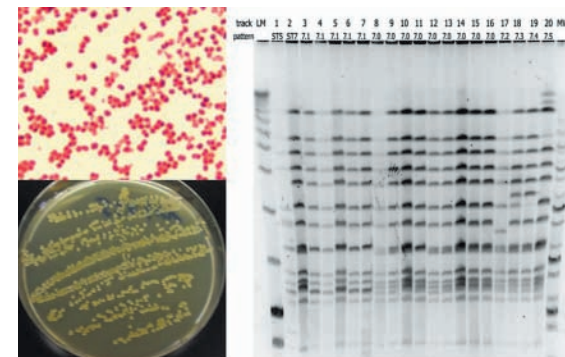
An important impulse for the new emphasis on molecular biology came from large-scale intervention projects on malaria in Tanzania in which scientists from the STI were active. A very important one was a long-term study of the interaction between infection, immunity and nutrition that started in 1982. Later there were the Kilombero Malaria Project (from 1989) and the Kilombero Vaccine Project (from 1992). In all these projects, the scientists were compelled to build up their expertise in working at the molecular level. A great challenge in

the laboratory was to find methods to evaluate the immune status of children before and after vaccination. If they suffered from malaria after vaccination, was it a new infection or a relapse?

The new emphasis required some sacrifices

The emphasis on molecular biology meant that some sacrifices had to be made. The new scientific orientation – and also problems of finance – meant that in the course of time the work on termites, and on poisonous and venomous animals, had to come to an end, and the Biochemistry Laboratory and the Electron Microscope Station had to be closed.

Looking back, the 1990s are clearly a turning-point in research policy. The changes have brought rewards. The Swiss TPH has advanced to become one of the important “global players” in the struggle against both infectious and chronic diseases.



Menigococci under the light microscope (top left) and growing on an agar plate (bottom left). Right: Electrophoresis of DNA-fragments for analysis of gene variation, 2005/06. Photo J. Leimkugel



Malaria: from Mosquito to Man

*Ralph Gander is busy looking after his colony of mosquitoes – to be more precise, of the yellow fever carrier *Aedes aegypti* – the incessantly buzzing actors in his PhD project. In 1950 Gander became the first student in the STI to earn his doctorate under Rudolf Geigy.*

In 1949, soon after the STI was founded, Rudolf Geigy and Urs Rahm published a first paper on the influence of antimalarials on the development of plasmodia in the intestine of the mosquito. Research on malaria was carried out on the parasite species *Plasmodium gallinaceum*, which causes malaria in birds, and is carried by mosquitoes of the genus *Aedes*. In the middle of the 1950s, two other doctoral students were busy with entomological and parasitological studies. For more than 20 years, research theme Number 1 was the digestion of blood by insects. Sophisticated laboratory methods, like electron microscopy or histochemistry, were available to Thierry Freyvogel, Hermann Hecker and their students. In 1961, Freyvogel published a review on the digestion of blood-meals by mosquitoes.

In the 1970s there was a change. Scientists were becoming aware that it was not enough simply to do pure research. Research should bring direct benefits to the people affected by tropical diseases. An important event was the founding of the special WHO programme called TDR, which stands for "Research and Training in Tropical Diseases". TDR aimed at developing new medicaments, vaccines and strategies for disease control. In the STI there was some discussion about concentrating research activities on a few key topics instead of the current broad spectrum of research.

Photo Archive STI, 1947

Malaria was clearly important, but scientists at the STI were unanimously of the opinion that the small Institute was simply not in a position to compete with the many institutions in other countries working in this field. However, in the next decade there was a change.

Malaria becomes the focus of research

The stimulus to widen the scope of malaria research at the STI, and work more intensively on the disease, came at the end of the 1980s from the STI Field Laboratory in Tanzania and from the new research department, "Public Health and Epidemiology" (*Gesundheitswesen und Epidemiologie, GWE*) in Basel. In 1989 the Kilombero Malaria Project started, followed in 1992 by the Kilombero Vaccine Project (KIVAC). The questions that arose in the field, and the new results from longitudinal and intervention studies, were a challenge to the scientists in Basel. A particularly important question was how to determine the immune status of children before and after vaccination. It also became clear that if malaria control was to be successful, new methods of collecting and analysing data would be needed. Thomas Smith and his team developed new statistical models for the transmission and spread of malaria. Another advance was Bruno Betschart's new, simple method of demonstrating the presence of antimalarial drugs in urine samples under field conditions using thin-layer chromatography.

In 1995 new appointments strengthened the research on malaria. Gerd Pluschke became Head of Molecular Immunology. Hans-Peter Beck and Ingrid Felger built up the laboratories

of Molecular Parasitology and Molecular Epidemiology. With them, the STI acquired competence and expertise for tackling more complex immunological and molecular biological questions.

The search for better ways to prevent and treat malaria

Further projects in Tanzania stimulated research back in Basel. 1996 saw the start of a second vaccine trial on small children with the vaccine SPf66 (INFANVAC), and a large-scale project on the use of insecticide-impregnated mosquito nets (KINET). A year later, the STI took over the screening of antimalarial drugs from the Basel firm Hoffmann-La Roche, which had stopped working on malaria. Jacques Chollet, who had been working for Roche on the development of new antimalarial drugs, was able to continue to work in the STI. In 2004 he was awarded an Honorary Doctorate by the University of Basel. The transfer of technology and know-how from Roche to the Tropical Institute created a favourable starting-point for other developments; the STI became an active partner in the founding of the Medicines for Malaria Venture (MMV).

Malaria research and control on a global scale

In the new millennium, the STI has developed into one of the world's leading centres for malaria research. The Institute consistently follows up its basic research with programmes for the control and elimination of the disease. Not only has the number of scientific publications on malaria steadily increased, but members of

the Institute's staff are more and more often present in the most important international malaria-programmes and advisory bodies. Furthermore, the Institute's malaria research is moving into other parts of the world. In the Pacific Region, especially in Papua New-Guinea, STI scientists are confronting a particularly complex situation regarding malaria.

As further "spotlights" show, malaria research in the Institute contributes to the ongoing process of movement from innovation to validation and then to application; from basic studies of the molecular characteristics of host-parasite interactions to the development of new medicaments and vaccines, and finally to new strategies for integrated programmes for fighting and finally eliminating the disease.

Malaria survey in the province of West New Britain, Papua New Guinea, 2009. Photo M. Hetzel





Epidemiology – an addition to the STI’s scientific tool-box

Interview with Marcel Tanner, Director of the Swiss TPH

Professor Tanner, you founded the Department of Public Health and Epidemiology (*Gesundheitswesen und Epidemiologie, GWE*) in the Tropical Institute in 1989. Why did you do this?

Traditionally, in the STI we had always concerned ourselves with questions about the biology of infections, and disease systems, rather than with health systems. In 1979 I went to Cameroon with Niklaus Weiss, to collect samples of antigens for a new diagnostic test for the worm-infection onchocerciasis (river blindness). For me, the journey was a key experience. I became aware that the villagers had many different needs, and we had to try to understand and respond to them. It was one thing to know about parasitic worms and infectious micro-organisms, but it was another matter to understand how infection spread, and what were the risks of becoming ill – and to see it all in the context of different health systems and in a particular cultural setting. I have been convinced ever since that health- and disease-systems must be studied together with the socio-ecological system in which they are embedded. For me, that is what epidemiology means.

What does that mean in practice?

It is not enough to study the fascinating life-cycle of a malaria parasite in an individual host. We need to ask ourselves what is happening when this cycle is repeated day in, day out, in thousands of people living in a particular area. It was vital to add expertise in epidemiology to the STI tool-box. The Institute had a lot of good tools, but that one was missing.

What was the political context of the health services in the South in the 1990s?

At that time, very little public money was being spent on health services. At the beginning of the 1990s a new paradigm “Good health at low cost” had become widely accepted. It was explicitly formulated in the World Health Report of 1993, to which the STI also contributed. The important insight was that health services should not concentrate on making individuals as healthy as possible, but on reducing the overall burden of disease, which is heaviest for the poorest and most neglected people. The aim of this paradigm-change was to achieve more justice in the sharing of resources.

What distinguishes the epidemiological research in the Swiss TPH?

Epidemiology is the right arm of Public Health. For one thing, it provides the scientific basis for doing evidence-based medicine, which is not derived from political or moral concepts and discussions, but depends on collecting facts. Epidemiology is the science that can provide a firm foundation for the decisions politicians make about health policy. At this level the biomedical and sociological aspects are extremely important. An epidemiological study that confines itself to numbers, and does not include sociological and economic evaluation, is incomplete. If we only assess risks, without understanding a particular risk factor in the social and cultural context of a community, we will not have understood very much. Therefore in the Swiss TPH we live with a mixture of disciplines: medical anthropologists and cultural epidemiologists work closely together with medical doctors, biologists, mathematicians and biostatisticians.

Why was the Institute for Social and Preventive Medicine (ISPM) integrated into the Swiss Tropical Institute in 2010?

The possibility for more cooperation between scientific disciplines was the background for the decision. As a result of integrating the two Institutes we reached the “critical mass” of expertise that was needed to go on fulfilling our research goals of “innovation, validation and implementation” successfully. Our competence has been strengthened especially in the areas of environmental epidemiology and the epidemiology of non-infectious diseases. This new expertise is particularly relevant

Ifakara, as seen by a Tanzanian “Tinga Tinga” painter. Photo J. Pelikan

for Switzerland. Themes like the effect of aerial pollution on the development of chronic disease of the lungs and respiratory system, the influence of radiation from cell phones, or gender research, are now very well represented in the Institute.

What are the main challenges for epidemiology today?

The greatest challenges are certainly those that result from epidemiological transition and demographic change. People are living longer and longer, and this has far-reaching results for health. In many African and Asian countries, non-infectious diseases as well as the “classical” infectious diseases have become a burden for whole communities. In addition, there is something that we are apt to forget – the dramatic acceleration of change in populations. Not only are there vast migratory movements, but the changes affect the dynamics of every area of human life, and the co-existence of humans and animals. Earlier, we talked about the contrast between town and country. Today, everything has been stirred up. People can no longer be assigned to one setting – they move around. Air journeys between

countries and continents have increased in the last decades – but so has mobility within countries, or even within one slum district. Epidemiology does not yet have any really effective methodology for taking account of this dynamic. Indeed, epidemiology needs to make some major advances. Among other things, it must make more use of the achievements of information technology – both in qualitative and in quantitative research.

Will epidemiology be able to meet the challenges?

Of course! It will always do so – just as human beings have always found new solutions to their problems. Whether the solutions found will always be the most sustainable ones is another question. But that is the fascinating thing about epidemiology. Finally, epidemiology is not a single discipline, but is typical of trans-disciplinary work. It is not important for epidemiology how big a contribution each of the disciplines involved makes. The only important thing is what is finally achieved, and that the efforts provide a basis for societies to become healthy and remain healthy.

SPf66 – a first malaria vaccine for Africa



Photo F. Matthies, 1995

You only have to look at his face to see how tense he is! The Colombian scientist Manuel Patarroyo is giving his full attention to administering a dose of the malaria vaccine SPf66 to a small patient.

SPf66 is a synthetic molecule (a small peptide) developed in Manuel Patarroyo's laboratory in Bogota, Colombia. SPf66 was the first vaccine against malaria whose efficacy

had ever been tested in Africa South of the Sahara. It was a substance that could be politically explosive. In the late 1980s, Patarroyo had astonished the scientific community in Europe and the USA with his announcement that he had found a safe and effective means to combat malaria. Many people found the idea that the long search for a vaccine against malaria had come to an end in a research laboratory in the "third world" very hard to believe.

Not a success story

Soon after the publication of the first report, voices were raised casting doubt on Patarroyo's research methods. So the World Health Organisation (WHO) demanded an independent and conclusive trial of the vaccine in a place where malaria was highly endemic. As a result of a suggestion from Pedro Alonso in Barcelona, the STI agreed to test the vaccine. In collaboration with the WHO, the Hospital Clinic i Provincial in Barcelona, and the Ifakara Health Research and Development Centre (IHRDC), the Institute organised a clinical vaccine trial in Tanzania. The trial with children in the age-group 1–5 gave a result of 31% efficacy, which was of borderline significance. The next study, with infants, showed no success at all.

New standards for clinical studies of malaria

Nevertheless, even if SPf66 could not redeem the promises Patarroyo had made for it, the efforts were not wasted. The vaccine trial in Tanzania resulted in the formulation of new Best Practice Standards for clinical studies of malaria, which are internationally recognised and have been used in all the clinical trials carried out since, up to the present day. One of the requirements is that the various phases of a trial should follow each other without interruption, to save time and reduce costs.

Networks of success; mosquito nets for Tanzania



Photo T. Schuppisser, 2007

The whirring of innumerable sewing machines echoes and re-echoes from the walls of the "A to Z Textile Mills Ltd". The workers in the factory in Arusha in Tanzania are making mosquito nets. The process involves a lot of handwork – but nevertheless, this firm is one of the world's biggest producers of these important weapons against malaria.

Today, insecticide-treated nets are a central pillar of malaria control. Not only does the net soaked in insecticide provide a physical barrier between humans and mosquitoes, but it kills any mosquito that touches it. Together with African and European partners, the STI has been doing intensive research since the 1990s on the effects of using mosquito nets. In the Kilombero District, a rural area in South-

ern Tanzania, the use of nets has resulted in a reduction of the prevalence of infection, and a 30% reduction of infant mortality. There is no doubt that insecticide-impregnated mosquito nets can provide good protection against malaria and other tropical diseases carried by mosquitoes.

The question of how the nets can be distributed to people with no money, living far away from cities and towns, is more difficult. The STI looked carefully into the question of distribution, and created a structure that made use of the advantages of a free market economy. Wholesalers bought the nets direct from the factory in Arusha. Small-scale traders took them to village shops and markets in distant places, where they were offered for sale.

The members of the groups most vulnerable to malaria – pregnant women and children – were given tokens that allowed them to buy nets for less than one US-Dollar each. However, it turned out that even this was too much for the poor people in rural Tanzania. Today, mosquito nets are distributed free to every Tanzanian household. The research done in the STI has been fed directly into the policies of the Tanzanian health authorities. Together with the Swiss Agency for Development and Cooperation (SDC), and Tanzanian partners, the present-day Swiss TPH is actively involved in the implementation of the national Mosquito Net Programme of Tanzania.

A new strategy against malaria in small children



Photo C. Flierl, 2005

A routine day in the Mother and Child Health Clinic in Ifakara, Tanzania. A nurse is doing health checks on the children and giving information to the mothers. Key activities are vaccinating the children according to the correct time-table, and preventive treatment against malaria.

Little children are the group most likely to die of malaria. Their immune system is not yet well developed, so their defence mechanisms are too weak to withstand a severe attack by malaria parasites. For a long time, however, there was also a fear that if small children were given prophylactics they would not build up their own immunity against the parasite.

In 2000, in Tanzania, the STI carried out the first study of the use of prophylactics to protect children at the age when they are most

vulnerable. It was an international collaboration in which the STI's partners were the Hospital Clinic i Provincial in Barcelona, the London School of Hygiene & Tropical Medicine, and St. Francis Hospital and the Ifakara Health Research and Development Centre in Ifakara. The antimalarial drug Sulfadoxine-Pyrimethamine (SP) was given in prophylactic doses to infants three times in the first nine months of life. This strategy – known as Intermittent Preventive Treatment of Malaria in Infants (IPTi) – was successful. It achieved a massive decrease of 59% in malaria episodes in small children.

From science to health politics

After this success, the Bill & Melinda Gates Foundation provided financial support for international consortia to confirm the re-

sults in other parts of Africa. The research consortium in Tanzania concentrated on a study in the southern part of the country. The questions in the foreground were particularly about sustainability. Are weak health systems in a position to maintain interventions like this systematically, even after the research project is over? Another concern was to ensure that the research findings were translated as soon as possible into a well-planned policy. So that IPTi could become a routine part of the activities of the Dispensaries and Health Centres, the intervention was combined with the successful Expanded Program on Immunisation (EPI) of the WHO. Thanks to this programme, the vaccine coverage among children has increased every year since the 1970s. In the study, when infants were brought for the usual vaccinations against diseases of childhood like diphtheria, tetanus, polio and measles, they were given an IPTi-SP dose. The scientific investigations showed that IPTi is a safe and cost-efficient intervention that drastically reduces the risk of the child getting malaria. Furthermore, the health systems of poor countries are in a position to offer IPTi over long periods. After a thorough examination of the results of scientific studies, the WHO decided in 2010 to recommend IPTi-SP as a new strategy for the control of malaria in regions where the prevalence is high. When the strategy was first suggested, there were fears that the parasites might develop resistance to the drug Sulphadoxine-Pyrimethamine. However, studies up to the present have not shown any evidence of this. The other potential problem discussed is that prophylaxis might interfere with the development of acquired immunity as the children grow older. This can only be shown by long-term studies.



Joint effort to develop new medicines against malaria

A ray of sunlight coming through the window of the little pharmacy illuminates the face of the pharmacist and the shelves filled with medications. Soon there will be a queue of patients standing in front of the counter asking for remedies for fever, coughs or diarrhoea. Sadly, although the shelves look full, many necessary drugs may be out of stock.

The development of new medicaments against diseases of poverty, like malaria, is an urgent undertaking. But it is expensive, and carries considerable financial risks – which is why many pharmaceutical firms gave up developing drugs against malaria in the 1990s and turned to the treatment of health problems in more lucrative markets. The decision was devastating for the South. Not only did millions of people still die of malaria every year, but in many places in Asia and Africa parasites had begun to appear that were resistant to the available drugs. The economic logic of the pharmaceutical industry threatened to wreck the progress that had already been achieved in malaria control. New strategies were urgently needed.

Medicines for Malaria Venture

In 1997 a working group was set up that included the Swiss Tropical Institute, the Swiss Agency for Development and Cooperation (SDC), and representatives of Science and In-

dustry. Their vision was to create a new model of partnership between the public sector, the universities and the pharmaceutical industry. It would utilise the strengths of both sides, and promote the discovery and development of new remedies for diseases of poverty and neglected tropical diseases. Two years later the Medicines for Malaria Venture (MMV) was established. The founding members included the World Bank, the Rockefeller Foundation, and Government Agencies of Switzerland, the United Kingdom and the Netherlands.

The original strategy of MMV sounds a little Utopian: to bring a new medicine against malaria on to the market every five years, at a price that would be affordable even in the poorest countries. The MMV model for achieving this was designed not to be at the mercy of purely market forces. The pharmaceutical industry would contribute its technology and experience of drug development, but the funding would come from Governments and philanthropic institutions. The development process, from preclinical research to drug registration, would no longer take place within the confines of an individual pharmaceutical company. Research teams from industry would work together with public institutions. Each would contribute its special expertise.

From the beginning, the STI was an important pillar of MMV. The Institute had already been testing substances from the store-cupboards of the pharmaceutical industry for their efficacy against malaria parasites. In 1997,

the Basel firm Hoffmann la Roche decided to hand over the whole of its infrastructure for research on malaria to the STI. This technology transfer contributed to making the STI into one of the world's leading institutions in the fight against malaria.

MMV worked exclusively on malaria, but it was not the only tropical disease where new drugs were needed, and in 2001 Médecins sans Frontières (MSF) started the "Drugs for Neglected Diseases Initiative" (DNDi), with a similar approach. The STI has been an active partner since the start.

The Vision of MMV: *"A partnership between the pharmaceutical industry and the public sector... On a practical level, valuable synergies could be generated if this incorporated the focus and managerial rigor that industry applies to drug discovery and development, together with the public health approaches and expertise in basic research that are the strengths of the public sector. Such partnership would show that the pharmaceutical industry has not abandoned tropical diseases and would be a visible indication of its willingness to cooperate with the public sector internationally on issues of public health."*

The Vision of DNDi: *"The best science for the most neglected."*

Research on African Sleeping Sickness and ways to control it



Driving with an open roof over the dusty roads of East Africa. The quality of the road surface doesn't allow high speeds – but anything moving at walking pace does have a magical attraction for tsetse flies. So they can be caught very conveniently when they come to rest on the Landrover.

It is a dangerous virtuoso, the parasite *Trypanosoma brucei*, that causes African sleeping sickness. The parasite is transferred to the human host by the bite of a tsetse fly. Once they are in the human body, the trypanosome cells take on a new, slender and mobile form, enter the blood vessels and begin to multiply rapidly. Then they invade the nervous system and cause the typical symptoms of sleeping sickness. Patients become confused, apathetic and sleepy; they have problems with coordination, and lose weight. If the disease is not treated it is fatal. According to the World Health Organisation (WHO), 30,000 people are infected at present, but the number of new infections has recently fallen below 10,000 per year. The unfortunate country with the largest rate of infection is the Democratic Republic of Congo, followed by the Central African Republic.

A neglected disease

Colonial governments put sleeping sickness at the top of the list of priorities for their health systems. Their control measures had far-reaching consequences for African societies. To prevent contact between humans and flies, whole villages were moved into so-called “sleeping sickness camps”. For a long time, the only drugs available for doctors treating infected patients were the arsenic-containing compounds Atoxyl and, from 1949, Melarsoprol. These often had very serious side-effects. The various control methods used did reduce the prevalence of infection, which is one reason why, in the 1960s, sleeping sickness was largely forgotten. However, after many African countries had become independent, in many places political upheaval led to population movements and neglect of control measures. The result was an increase in new infections from the mid-1970s. Nevertheless, in the 1980s neither pharmaceutical companies nor governments were willing to invest in research on sleeping sickness or in control measures. The lowest level of interest in the disease was reached in the 1980s. Despite greater efforts in recent decades, trypanosomiasis is still one of the “neglected diseases”, unable to raise anything like the amount of funding that is available for the fight against malaria, tuberculosis or HIV/AIDS.

A major research area in the STI

The history of the STI is closely linked to research on sleeping sickness and its control. Already in the 1940s, Rudolf Geigy and his colleagues succeeded in breeding tsetse flies in the laboratory – the first time this was achieved



Preparations for a drug trial in South Sudan, 2005. Photo G. Pohlig

in Europe. This laid the foundation for intensive research activity, which continues today. The work in the STI has always been distinguished by an intensive interaction between the laboratory and the field. From the 1950s to the 1970s, Rudolf Geigy travelled back and forth over the wide plains of East Africa, looking for possible reservoirs of the parasites in wild animals, and learning more about tsetse flies and their behaviour. He and his colleagues isolated strains of trypanosomes and made them available to other institutions doing research on sleeping sickness. Technical innovation in the

1970s and 1980s brought new possibilities for fundamental research in the laboratory. Reto Brun performed a great service by developing new culture media for maintaining trypanosomes and other protozoan cells in vitro, which opened the way for many fundamental studies. As a result of its expertise in this field, the STI is now a major player in the field of the multinational search for new drugs. In 1986, Leo Jenni and his team discovered that within the tsetse fly the parasites can “mate” – that means that they can exchange their genes, and create new genotypes. This could result



*Monica Cal evaluates an in vitro drug test against Sleeping Sickness, 2006.
Photo M. Kaiser*

in the spread of dangerous characteristics like virulence or drug-resistance.

A special feature of trypanosomes is that the parasite cell is covered by a “coat” of large molecules (glycoproteins) that can change their structure constantly. This mechanism allows the parasite to “escape from” the host’s immune system – and makes it unlikely that a vaccine against the disease can be produced. Not surprisingly, in the last decades the emphasis in research has been on looking for new drugs, and also developing better treatment regimens for the existing ones. Christian Burri and his team have developed a therapeutic scheme for treatment with Melarsoprol that reduces the time needed from 25–32 days to only 10 days. This not only reduces the cost of treatment, but increases its acceptance, because patients are less anxious about possible severe side-effects. In 2004 the new scheme

was introduced by WHO as the standard therapy for most African countries.

Networks of cooperation

Research on sleeping sickness and its control is only possible in cooperation with partner-countries in the South and the people who are actually suffering from the disease. Reto Brun has created a basis for this; in 1993 he initiated a successful collaboration with the Uganda Trypanosomiasis Research Organisation (UTRO) and the Kenya Trypanosomiasis Research Institute (KETRI). His research group supports the scientific work of both organisations, and invests in the training of young African scientists. Thanks to his initiative, the original North-South cooperation has developed into an Eastern Africa Network for Trypanosomiasis (EANETT), which includes Kenya, Uganda, Tanzania, Malawi, Zambia and Sudan. The Network enables the fight against the disease and its gradual elimination to be better coordinated. It also provides an important platform for the “South-South” exchange of ideas and experience among African countries.

The search for effective drugs

The research agenda of the trypanosomiasis research group in the Swiss TPH is determined by the search for new medicaments. In the framework of the Drugs for Neglected Diseases initiative (DNDi) thousands of substances have been screened for their effectiveness against trypanosomes, in collaboration with university research groups in many countries and pharmaceutical firms. This is the continuation of the work that started 20 years ago when Reto

Brun started to build up the Screening Centre for compounds active against parasitic protozoa that now plays a leading role world-wide in the development of new drugs against trypanosomiasis and also malaria. One promising candidate, developed in collaboration with DNDi, is Fexinidazole. This has been tested in clinical studies with sleeping sickness patients and found to be effective. Important advantages of this new drug are that it can be administered in tablet form, and is well tolerated. It could play an important role in the hoped-for elimination of sleeping sickness.

Schistosomiasis: Diagnosis and Control of a neglected worm disease



Photo A. Degrémont, 1970

A small table has been set up in the middle of a remote village. It separates the scientists and the villagers. Two girls are posing in front of the camera as though they do this kind of thing every day. The photograph is a reminder of the first big control project under the supervision of the STI. The Swiss-Malagasy "Projet Mangoky" (1966–1971) aimed at eliminating schistosomiasis in the valley of the River Mangoky in South-West Madagascar.

The project was led by Antoine Degrémont. The approach was to use a new medicine, Ambilhar[®] (Niridazol) from CIBA to treat

humans, and Frescon[®], a molluscicide from Shell, to kill the snails which serve as an intermediate host. In spite of the great effort made, the project was only moderately successful. It proved difficult to eliminate the snails, and in addition it was hard to control infected migrants coming in from the South of Madagascar.

Schistosomiasis is an important tropical disease of humans. It is a worm-infection that is transmitted by water snails. For many decades, the disease was a central theme of research on infection biology, immunoparasitology

and epidemiology in the Institute. STI scientists developed serological diagnostic methods which were especially valuable for detecting mild infections, or infections with severe symptoms in an early phase. The STI carried out field studies in Liberia early in the 1980s, until civil war made further research impossible. The studies were resumed a few years later in Tanzania.

Diagnostics in the field

After the experience in Madagascar, the scientists were less ambitious about the control of schistosomiasis. Instead of aiming at elimination, the goal was to reduce the burden of disease. Antoine Degrémont and his colleagues were the first researchers to use ultrasound examinations under "field conditions" to evaluate the prevalence of infection with urinary schistosomiasis and its severity. As the disease is very localised, it was necessary to identify the villages where the risk of infection was high, so quick and economical methods of diagnosis were needed. At the beginning of the 1990s, Christian Lengeler developed a simple, two-stage diagnostic strategy. In the first stage, schoolchildren filled in a questionnaire which could screen for possible infections. If the child had observed blood in his or her urine – a symptom of urinary schistosomiasis – the presence of blood could then be confirmed using a simple test with a reagent-strip on a urine sample. This diagnostic strategy proved to be useful in many endemic areas, and was recommended by the WHO for large-scale surveys in Africa.

Buruli ulcer – the mystery disease



Photo G. Pluschke, 2002

School is out – though the children do not look particularly cheerful about it! Besides the ordinary school subjects, today's lessons included one about Buruli ulcer, a disease that occurs in the region of Ghana where they live – and that still presents scientists with many puzzles.

Buruli ulcers are caused by *Mycobacterium ulcerans*, a relative of the bacteria that cause leprosy and tuberculosis. It occurs locally in many countries – mostly tropical ones – particularly in West and Central Africa, and is associated with wetlands. Nobody yet understands all the factors that contribute to the spread of this disease, but it is quite clear that the results for people who are infected can be disastrous. The infection begins with a small,

hardly noticeable swelling. If this is not recognised as an *M. ulcerans* infection, and is neglected for too long, the bacteria destroy the surrounding tissues and leave massive open sores. Victims – usually young – often cannot work and are a major burden to rural families. Treatment of Buruli ulcer infection involves a tedious course of medication with antibiotics and long stays in hospital. Healing is slow and the disease may leave permanent disability.

Buruli ulcer: A neglected disease

Because of its local occurrence and the relatively small number of infections, Buruli ulcer is one of the “neglected” diseases, for

which less money is available than for other health problems. Scientists have only recently started to study the disease more intensively. That is one reason why the Swiss TPH has established a many-sided programme for research on Buruli ulcer and its control. Research in the field is designed to throw light on the mechanism of transmission of the infection. For this purpose a genetic fine typing method has been developed that makes it possible to follow the distribution of different lineages of *M. ulcerans*. Laboratory studies support the search for new compounds with potential for drug development and the design of a simple diagnostic test to identify early infections.

Heat to accelerate wound healing

Another important aspect is to improve the healing of the ulcers. Together with the University of Heidelberg, the Swiss TPH has been involved in the development of a procedure called “thermotherapy”, which has been validated in Cameroon. Thermotherapy may develop into a second treatment option besides drug treatment, which relies on the one combination of available antibiotics that is really effective against the disease. The basis of the thermotherapy is simple; a heating pad produces enough warmth to kill the bacteria, and also speeds up the healing process.

In the future, developing a vaccine against *M. ulcerans* will be one of the most important tasks. But before this can be done, more basic and applied research will be needed to solve the “Buruli puzzle”

A contribution to Prevention, Control and Treatment of HIV/AIDS in rural Africa



Photo C. Heuss, 2013

The HIV-Specialist Emilio Letang in front of the Chronic Disease Clinic (CDC) in Ifakara, Tanzania. With broad gestures, he is explaining the day's programme in the clinic to a member of the staff. It is only 8 o'clock in the morning, but dozens of women, men and children are already waiting in the corridor outside.

and around 80,000 people die of AIDS every year. Since the beginning of the epidemic, the STI/Swiss TPH has been engaged in the struggle to prevent its global expansion, in South Asia, Central Asia, Eastern Europe and Africa. In Tanzania, the Institute – together with the Ifakara Health Institute (IHI) and the University Hospital in Basel – is maintaining a Chronic Disease Clinic, for which the Development Aid fund of the Canton of Basel-Stadt has given generous financial support. Since 2005, an

HIV/AIDS Clinic has been integrated in this facility. The fact that the clinic offers HIV therapy at the level of a rural district, that is only on the periphery as far as the Tanzanian health system is concerned, makes this a pioneer project for the national HIV/AIDS programme. The scientists and doctors in the clinic treat patients, and are doing research on the development of resistance to the drugs used. They are also investigating the connection between HIV and other diseases (opportunistic infections) like meningitis or tuberculosis. The research here is directed towards improving prevention and treatment effectively and economically. People living with HIV are often stigmatised, and social hurdles can prevent them visiting a clinic. This is particularly a problem for women, and in Ifakara the problem was mitigated by setting up a drop-in centre, where women could get advice and treatment, within the Mother and Child Health Clinic (MCH). Thanks to practical solutions like this the HIV/AIDS clinic has been able to treat more than 6000 people since 2009.



One Health: Health for humans and animals

For the Zebu cattle there is no escape. One by one, the animals are driven through a narrow passageway between roughly-made fences. Staff of the Ministry of Health and members of a nomadic tribe are vaccinating the cattle against diseases like anthrax, which can also affect humans.

For nomads in Chad, cattle represent wealth. They provide food, they display the social status of the owner, and they can be turned into cash when necessary. Domestic animals and humans live closely together. They share food and water – but unfortunately, they also share parasites and diseases. The nomadic groups in Chad often fall through the cracks in the Government's health provision. Health centres are far away from the routes they travel, and are often poorly equipped and expensive. Because of their way of life, nomads face a high risk of becoming ill. Besides the diseases that are prevalent all over Africa South of the Sahara, like malaria, nomads are vulnerable to the infectious diseases called zoonoses, that can infect both animals and humans. One of these is brucellosis, caused by the bacterium *Brucella abortus*, which can be transferred from animals to humans through contaminated foodstuffs. Symptoms are fever, chills and nausea. As well as zoonoses, climate change and the resulting changes in the environment are also endangering the health of nomads.

From “One Medicine” to “One Health”

Scientists working with the veterinary surgeon and epidemiologist Jakob Zinsstag are trying to do away with the artificial division between human and animal medicine. Already at the end of the 1960s, the American veterinarian Calvin Schwabe was propagating the idea of “One Medicine”. Since 1998, Zinsstag and his group in the STI have developed

Mission Statement of the One Health Initiative

“Recognizing that human health (including mental health via the human-animal bond phenomenon), animal health, and ecosystem health are inextricably linked, One Health seeks to promote, improve, and defend the health and well-being of all species by enhancing cooperation and collaboration between physicians, veterinarians and other scientific health and environmental professionals and by promoting strengths in leadership and management to achieve these goals.”

Vision Statement of the One Health Initiative

“One Health (formerly called One Medicine) is dedicated to improving the lives of all species – human and animal – through the integration of human medicine, veterinary medicine and environmental science.”

Mission Statement Swiss TPH

“One health aims at demonstrating the added value of a closer cooperation of human and animal health and related fields.”

the concept “One Medicine” further, to the more comprehensive “One Health”. Humans, animals and the environment are parts of the same system. Today, this integrated approach to health is seen all over the world as a groundbreaking concept, and is being promoted by international initiatives.

The research being done by Zinsstag and his colleagues in Central Africa is part of a long-lasting partnership between the STI and Chad. It goes back to 1987, when the Institute had a mandate from the Swiss Agency for Development and Cooperation (SDC) to promote improvements in the health system in both urban and rural areas, and to build up local research structures and activities. With the change from development aid to active partnership in research, the STI has been more and more concerned with the health of nomadic groups. Today, the Swiss TPH is in action both in research and in project implementation in rural and in urban areas. Recently, a team from the Swiss TPH organised and implemented the vaccination of 20,000 dogs in the capital, N'Djamena, against rabies, to stop the transfer of the disease from the animals to humans. Here, too, the “One Health” concept bore fruit. Since the spring of 2013, there has “only” been one case of human rabies in N'Djamena.



The Access Project: Better access to the health services is of central importance

Interview with Brigit Obrist, Medical Anthropologist. Prof. Obrist works in the Ethnology Department of the University of Basel, and in the Swiss TPH

Malaria still kills millions of people. The situation in Africa South of the Sahara is critical. For example, in 2010, in Tanzania there were 40,000 deaths from malaria. It is above all the poorest people who are affected, because the necessary medicines often fail to find their way to the places where they are most urgently needed. The ACCESS programme, a joint project of the Swiss TPH, the Novartis Foundation for Sustainable Development and the Ifakara Health Institute (IHI), is attempting to make health services more accessible to people in rural areas.

Professor Obrist: in recent years more effective treatments and new strategies have been developed to fight malaria in Africa. Why are they still not reaching people in rural areas?

This question was the starting-point for the ACCESS programme in the rural districts of Kilombero and Ulanga in Tanzania. The answer is complex. We felt it was important not just to pick out a few individual aspects to study, but to look at health as a system. So ACCESS investigated the availability of drugs, the de-

mands of the population, the supply-chain, the situation of individual health facilities, and how ordinary people think about health.

What are the particular problems?

At the first sign of fever, people generally go to a dispensary. Villagers do everything possible to take their children there as fast as possible. But they may have to go a long way, and we were struck by the fact that people often needed a lot of time to raise the necessary money for the journey and the treatment – time that in cases of malaria could mean the difference between life and death.

What about the quality of the medical services offered? Do people go to the health facilities too late or not at all because they are afraid that the treatment will not be satisfactory?

I would prefer to put this the other way round. People go to places where medicines are available. They clearly see good facilities for diagnosis, and a supply of drugs, as something of central importance.

What concrete benefits did the ACCESS programme bring to people in Kilombero and Ulanga?

To bring improvements that we hope will be sustainable, we have to approach the problem at different levels. At the population level, we initiated microcredit savings groups. We promoted health insurance programmes, called Community Health Funds. The aim was to reduce the strain on very limited family budgets and stimulate the building-up of insurance protection in rural areas. At the level of the Health Services, the improvement of the quality of the services offered was central. Both measures were successful. Our model for insurance protection, and the instruments we developed for quality improvement, are now being used at the national level.

What remains, now that the programme has come to an end?

We were able to show that child mortality resulting from malaria can be reduced by 20% when supply and demand are well attuned to each other. And the work is continuing, and our results being used, in another project in Tanzania, the Health Promotion and Systems Strengthening project (HPSS) being implemented in Dodoma by the Swiss Centre for International Health (SCIH).

A group of women participating in an Access workshop in Namawala, Tanzania. They are holding up their membership cards for the Community Health Fund. Photo J. Pelikan, 2012

Strengthening Health Systems



Photo C. Heuss, 2013

Registering in the local Health Insurance organisation only takes a few minutes. For a payment of the equivalent of CHF 5.60, six people can enjoy free treatment for a year. The registration process uses the latest technology. Photographs and registration numbers are recorded on a mobile telephone, and insurance identity cards are issued immediately.

The introduction of health insurance at the village level in the district around Dodoma in Tanzania is part of the Health Promotion and Systems Strengthening Project (HPSS) that has been implemented since 2010 by the Swiss Centre for International Health (SCIH) of the Swiss TPH, with a mandate from the Governments of Tanzania and Switzerland. The project is aimed at strengthening the rural

health system at different levels. The project has not only introduced a new Health Insurance model, but is also working on the question of supplies of medicines and equipment to health facilities and the maintenance of medical equipment in hospitals. Another important aspect is a campaign to inform and involve the people of the area. Health can only be achieved when the various elements of a system interlock. People must define their own priorities, and they must be able to pay for treatment. Health centres, for their part, must be able to ensure that medicaments are available and that their medical equipment is properly maintained.

A tradition that goes back a long way: From scientific research to health policy

The strengthening of health systems and the application of the results of scientific studies to health policy and strategies for health has a long tradition in the STI. It goes back to the early 1990s. At that time, the catastrophic effects that the structural adjustment programmes of the World Bank and the International Monetary Fund were having on African health systems were evident. In Tanzania, the liberalisation of the Health Services and the introduction of “user fees” had made it difficult or impossible for many people to obtain the treatment they needed. In 1993, the World Development Report from the World Bank, entitled “Investment in Health”, showed that change was on the way. The very institution that a decade earlier had prescribed budget cuts and economy measures as the sovereign remedy for the ills of African health systems,

was now promoting investment in health as a foundation for economic development. But perhaps more important than the provision of adequate funds was a fundamental conceptual change. Instead of maximising the health of healthy people, the important thing was to minimise the burden of disease for everybody. One result of this would be a more just sharing of resources – more equity in the health system – because the burden of disease is heaviest for the poorest people. For the STI, these developments in the 1990s were the stimulus for making a contribution to the strengthening of the health systems of African countries.

The Tanzanian Essential Health Interventions Project

One important contribution was the Tanzanian Essential Health Interventions Project (TEHIP) in the rural districts of Morogoro and

“The policy implication we draw from this is that institutions and agencies concerned with improving the currently grim health outlook in Africa must take a more systemic approach – turning at least some of their attention to apparently mundane matters within the health system, such as infrastructure, training, capacity building, human resources, and health planning, that form the foundation for future advances in the well-being of Africa’s citizens.”

Don de Savigny et al., 2008.
“Fixing Health Systems”, International Development Research Centre, Ottawa (Canada)

Rufiji. It was supported by the Canadian Government, and directed by Don de Savigny. For him and his team one thing was clear. Only when health planning is carefully thought out, and the performance of the health system is improved, can the burden of disease and the mortality rate be reduced. TEHIP’s activities were a mixture of science, health economics, health planning and the training of local health service personnel. Scientific research was especially important in investigating the disease pattern. What health problems did the people of Morogoro and Rufiji suffer from most often? What were the causes of death? TEHIP drew up an “intervention profile”, which showed that diseases of childhood, malaria and sexually transmitted diseases (including HIV/AIDS) were the most urgent health problems. The members of the project team implemented various measures to reduce the burden of disease. Their approach was different from that suggested by the World Bank. Instead of simply injecting capital, TEHIP established new structures, so that funds could be used quickly and unbureaucratically for specific health projects. One of these was the so-called “basket fund” at the District level. The introduction of this new instrument fitted in well with the efforts of the Tanzanian Government to give District authorities more financial autonomy. A new feature of the “basket fund” was that the various international donors no longer negotiated their health projects bilaterally with the Tanzanian Government, but that the different stakeholders in a district defined the priorities for the health services together, and the donors gave their financial support in one lump sum. On the basis of the results of scientific research, the District authorities could then use the money directly to combat clearly-

defined health problems. Five years after the TEHIP project started in 1997, infant mortality in the two districts had been reduced by more than 40%.

The work of TEHIP was complementary to similar approaches and efforts in a project in an urban area; the Dar es Salaam Urban Health Project (DUHP), implemented by the Swiss TPH for the Tanzanian and the Swiss Governments in the Tanzanian capital. The systemic approach of TEHIP and the DUHP to strengthening health systems has proved to be rewarding, and not only from the financial point of view. Tanzania was already able to reach the Millennium Development Goal Number 4 (reduction of child mortality) in 2010 – the first African country to do so.



1936

مكة المكرمة

Staying healthy in the city

A sea of houses stretches away to the coast of the Indian Ocean. Dar es Salaam, the economic metropolis of Tanzania, has been growing at a dizzying pace for the last decades. In 1990 there were still "only" 2 million people living there – today there are already 3.5 million.

African cities are still growing at an unstoppable rate. They are magnets for people uprooted from rural areas, who hope to find a better livelihood in the city. This growth has far-reaching results for the health services. Urban health systems find it difficult to keep pace with the crowds of people streaming into the city. City-dwellers are exposed to a double risk. The polluted air leads to diseases of the lungs and respiratory system, and many middle-class people suffer from "diseases of civilisation" like diabetes or diseases of the heart and circulatory system. At the same time, the "classical" infectious diseases remain, and are rapidly propagated in an urban environment. Every possible space in and near cities is used to grow food. The crops need irrigation, and the farm plots and market gardens frequently offer ideal breeding conditions for *Anopheles* mosquitoes, the vectors of malaria. The lack of clean drinking water is a cause of diarrhoeal disease, and the complex sociocultural environment of the city makes it an area of high risk for infection with HIV and tuberculosis.

From town to country and back again

The health situation in African cities also has historical roots. Colonial Governments invested in the development of health systems in the cities above all for the benefit of European immigrants. In the 1960s, however, when many African countries had become independent, the well-being of the rural population stood highest on the strategic agenda for health. The widespread international popularity of concepts like "Primary Health Care" should not only be interpreted as a development strategy for rural areas, but also as a rejection of the colonial past. However, the promotion of rural health services could not stop people migrating into the cities, and international development cooperation began to focus on urban areas again. The strengthening of urban health systems also became a major concern of the STI, with urban health projects in Chad, Burkina Faso, Cameroon, Mauretania and Tanzania, where the Dar es Salaam Urban Health Project (DUHP) started in 1990 and lasted for more

"The underlying assumption of the project was that before starting interventions that would address specific burden of disease or environmental health problems, a functional system would have to be put in place that would be able to handle the complex managerial tasks needed to effectively tackle these problems."

Nicolaus Lorenz, Deo Mtasiwa, Health in the Urban Environment, 2004

than 12 years. The results were published in the book, "Urban Health for Developing Countries", which in its turn served as a basis for the World Health Report of the World Bank, "Investing in Health", in 1993.

The Dar es Salaam Urban Health Project

The Dar es Salaam Urban Health Project (DUHP) was financed by Switzerland and by the Tanzanian Government (20%), and implemented by the STI. The DUHP activities were based on a simple but convincing argument. The foundation of any fight against disease must be a functioning health system. Without this, interventions will never be sustainable. The project leader Nicolaus Lorenz and his team therefore concentrated on the structural and functional renovation and equipping of Health Centres, and on providing them with essential drugs. The project's staff also invested considerable efforts in management training for the staff of the Ministry of Health, so that planning would be easier. As in the complementary Tanzania Essential Health Interventions Project (TEHIP), DUHP did not aim to force changes. It was more important to support reforms in the Tanzanian health system that were already being introduced, and to offer the population comprehensive care. The introduction of Health Boards at the community level was an important additional step towards the strategy of decentralisation that enabled local residents to have a voice in decision-making about health.

On the way to the Swiss TPH

The history of the STI is a story of maintaining traditions, and of new beginnings. The original small Institute – almost a family affair – has grown into an institution that enjoys worldwide recognition. Nevertheless, many of the basic principles that were characteristic of the Institute in the 1940s have survived to this day. For example, there is still a close connection between teaching, research and service provision. And there is still a close relationship and constant iterative exchange between laboratory research and its application in the field or in the fight against neglected diseases.

In spite of this continuity, Rudolf Geigy and his colleagues from the early days would hardly recognise the Institute today. The changes have been too far-reaching, with especially rapid development over the last 20 years. There has been change at all levels. The enthusiasm for travel has meant that the polyclinic, still in the original villa, “zur Föhre”, has seen a huge increase in the number of people coming for travel advice or vaccinations. The volume of services provided in the framework of global health initiatives has grown enormously. The research activities have kept pace with the lat-

est technological developments – and not only in the laboratory. The observation of the natural world carried out in the early days has given way to the application of scientific results in partnership with other organisations and institutions, and the implementation of large intervention studies and clinical trials, leading to real and sustainable improvements in health. The idea of “mutual learning for change” is clearly the foundation of today's teaching. The Institute has actively contributed to the planning of teaching in Biology and Epidemiology in Basel. Over the years, it has integrated new methods of teaching and learning into its courses, and the broad range of programmes of training and further studies attracts students from all over the world to Basel.



Ursula Ackermann-Liebrich (1943, Head of the Institute of Social and Preventive Medicine of the University of Basel 1988–2005)

Ursula Ackermann-Liebrich was born in Basel. After studying medicine in Basel she was drawn to the wider world, and went to South America, where she worked in various hospitals, and realised what a central role Social Medicine has in improving health. From 1973 to 1975 she studied for an MSc in Social Medicine at the London School of Hygiene and Tropical Medicine (LSHTM) in London. As Associate Director of the Christian Medical Commission of the World Council of Churches, and later working for them as a consultant, she evaluated a number of health systems, especially in African

countries. Back in Basel, she systematically developed the Department for Social and Preventive Medicine, which was originally part of the School Medical Services, and in 1992 the Department became an independent University Institute. In 1993, Ursula Ackermann-Liebrich was the first woman to be appointed to a Chair in the Faculty of Medicine. She carried out extensive research on the influence of the environment on health, and the health of mothers and children. In a branch of science dominated largely by men, she actively promoted the scientific careers of women. Ackermann-Liebrich was a member of numerous national and international bodies. She was Associate Director of the Christian Medical Committee of the World Council of Churches in Geneva (1976–1977, and Head of the Swiss National Research Programme 26A (1989–1995). She was President of the Federal Clean Air Commission (1997–2007), and a member of the Swiss Federal Commission on the regulation of health insurance benefits. From 1995 to 2004 she was a member of the WHO Expert Committee for Revision of for Air Quality Guidelines, and from 2009 to 2012 of the Scientific Committee on Health and Environmental Risks (SCHER) of the European Commission for Public Health.

Integration of the Institute for Social and Preventive Medicine (ISPM) of the University of Basel

Some very important changes are quite recent. The STI came to realise that it needed a stronger basis at local and national levels, if it was to meet the new global challenges like environmental hazards or the dissemination of non-infectious diseases.

When the University of Basel decided to strengthen the discipline Public Health, this offered an opportunity to bring the most important experts in Basel together in the STI. The concentration of the complementary areas of expertise developed in the STI and in the Institute of Social and Preventive Medicine (ISPM) promised an up-to-date strengthening of Public Health and a coherent further development of the STI. In 2009, Nino Künzli was appointed as Professor of Public Health in Basel (as the

successor of Ursula Ackermann-Liebrich), and in the same year the ISPM was integrated into the STI, and the STI was renamed Swiss Tropical and Public Health Institute (Swiss TPH). In addition, the discipline of Public Health was strengthened by the creation of a further professorship, which made it possible to appoint Nicole Probst-Hensch to the staff of the STI. With the integration of the two Institutes, the expertise of the STI was increased in several areas: research on environmental health and on the epidemiology of non-infectious diseases, genetic epidemiology, and gender studies.

In the early 1970s, social and preventive medicine in Basel was the responsibility of the Cantonal School Medical Department.



Small is beautiful! Steinengraben 49 soon became an internationally-known address for Health Research. It was the address of the ISPM until the Institute moved to Socinstrasse in 2009. Photo N. Künzli



Charlotte Braun-Fahrländer (1949, Director ad interim of the Institute for Social and Preventive Medicine of the University of Basel 2005–2009)

Charlotte Braun-Fahrländer was born in 1949 in Basel, and studied Medicine in Basel and Heidelberg, with further studies of epidemiology and medical statistics at the London School of Hygiene and Tropical Medicine. She is a specialist in Preventive Health, and was appointed to a Professorship in the Faculty of Medicine of the University of Basel in 2002. Her first research project in the Institute for Social and Preventive Medicine was on the influence of airborne pollutants on children's health. This research interest continued in her further scientific work. An important study was on the effect of an urban environment on children's motor behaviour. Braun-Fahrländer received international recognition for a study of the influence of the environment on the development of allergies and asthma in children. Since then, she has had a leading position in large European research projects. Besides her research work, she has been very actively engaged in education and in the promotion of young scientists. Since 2007 she has been Head of the PhD Programme in Public Health, an inter-university Programme of the Swiss School of Public Health, and she is a member of various universities' Doctoral Committees. She is a member of the Directorates of the Swiss TPH and the Swiss School of Public Health.

Its Head, Günther Ritzel, was also Professor of Social and Preventive Medicine, from 1968. The teaching and research that he and his students did in the 1970s was mainly on aspects of occupational health, and concentrated very much on Switzerland. In the 1980s, Ursula Ackermann-Liebrich was able to establish strong international collaboration and new research directions, especially in the areas Gender and Health, and Environment and Health. In the 1990s, studies on air quality, on asthma and on women's health were carried out in the ISPM. For example, Charlotte Braun-Fahrländer was able to show that children who grew up on farms suffered less from asthma than city children.

The environmental health research agenda was strongly influenced by what was hap-

pening outside the Institute. A key event was a catastrophe in the immediate neighbourhood of the city, in the industrial area called Schweizerhalle. On the night of November 1st 1986 a warehouse situated close to the Rhine, belonging to the chemical firm Sandoz, went up in flames. Clouds of gas drifted over the city, and the water used to put out the blaze flowed unhindered into the river, carrying all kinds of pollutants with it, which had disastrous effects on plant and animal life. One result was that the Canton of Basel Land created a foundation called "Man-Society-Environment" (*Mensch-Gesellschaft-Umwelt, MGU*), in which both the STI and the ISPM played an active role in teaching and research, and in putting the results into practice. The programme of the MGU Foundation, which was later integrated in the University of Basel, was directed by Leo

Jenni, previously Deputy Director of the STI. In 2005/6 the programme was developed into an inter-faculty Master's degree course in Sustainable Development.

When the environment makes people ill

In the 1980s, environmental questions were being discussed more and more, and the "Schweizerhalle" catastrophe made many more people aware of environmental problems, and gave a new impetus to research on the environment. A year after the catastrophe the Swiss National Science Foundation initiated the National Research Programme NFP26, "Mankind, Health and Environment". This programme, directed by Ursula Ackermann-Liebrich, laid the foundations for the careers of many scientists who are now contributing to the development of research in environmental epidemiology, the study of chronic diseases,



Intense communication in the Missionsstrasse in Basel. The ISPM initiated studies on the damage to health that can result from environmental stresses like aerial pollution, electromagnetic radiation, noise or passive smoking. Photo M. Rösli



Motor traffic influences health in many ways: through aerial pollution, noise, physical inactivity and accidents. Foto N. Künzli, 2012

or gender-related aspects of health, in the Swiss TPH. Among the scientists who were responsible for the programme, and paved the way for others, were Charlotte Braun-Fahrlander, Elisabeth Zemp Stutz, Nino Künzli, Nicole Probst-Hensch, Regula Rapp, and soon after, Christian Schindler. They were followed by Martin Rösli, who wrote his doctorate in the new Department of Environmental Science. The theme, "air pollution", had generated new resources, and made it possible for an institu-

tional framework to be created. In 1988, Social and Preventive Medicine became a section of the City Health Department, and four years later an Institute of the University of Basel.

The 1980s were the starting-point of two major studies: SAPALDIA, the Swiss Study on Air Pollution and Lung and Heart Diseases in Adults, and SCARPOL, the Swiss Study on Childhood Allergy and Respiratory Symptoms.

The SAPALDIA study is well known internationally. It has data from a sample of more than 10,000 people, from all regions of Switzerland, and demonstrates the influence of aerial pollutants on the development of chronic diseases of the lungs and the respiratory tract. Today the study led by Nicole Probst-Hensch, which is the only national population-based longitudinal study, is an important base for research on health and disease in old age. Particularly with regard to the similar platforms that exist in Africa and Asia, which the STI has already helped to develop, SAPALDIA is an important example of the kind of synergy that integration can

provide, and that is convincingly documented by comparative studies in North and South.

In the Swiss TPH the traditions of two institutions, the STI and the ISPM, are united under one roof. There is nowhere else in Switzerland that brings together so many experts on health from a great range of academic disciplines. With this mass of knowledge behind it, the Swiss TPH can offer innovative research programmes and services, and turn its knowledge to good account both locally and globally, to improve human health. If there is anything

to be learned from the history of the Swiss TPH it is this: what will happen in the future is an open question! However, what is certain is that the members of the Institute's staff will continue to work with head, heart and hand to improve the health of people all over the world.



Nino Künzli (1957, Director of the Institute for Social and Preventive Medicine, 2009, and Deputy Director of the Swiss TPH since 2010)

Nino Künzli was born in Scuol, and grew up in Davos. He studied Medicine in Basel, and in 1989 he moved to the Department of Social and Preventive Medicine, where he started his scientific career as Project Assistant to Charlotte Braun-Fahrländer in the area of air pollution and health. He then joined the newly-formed team of epidemiologists formed by Ursula Ackermann-Lieblich to build up the SAPALDIA study, in which he became the Study Coordinator. He was awarded a PROSPER research scholarship

by the Swiss National Foundation, which made it possible for him to go to the University of California, Berkeley, (1992–1995) where he obtained the degree of Master in Public Health. He earned a PhD in Epidemiology (1996) for work on the long-term effects of ozone on the lung capacity of young people. He then worked on a project for the Swiss Federal Government on the quantification of risks due to air pollution in Switzerland, and developed methodological instruments further. He was appointed to Professorships in the University of Southern California (USC), in Los Angeles (2002), and in Barcelona at the Institutio Catalana de Recerca I Estudis Avançats (ICREA). In Barcelona, he participated in the development of a new Centre for Environmental Epidemiology (CREAL) and its research in the area of aerial pollution and health. Künzli is now Head of the Department of Epidemiology and Public Health, which is at present the largest in the Institute, with a staff of more than 180, of whom about 80 are studying for PhDs. He is engaged in international research activities and risk-analyses in the field of Air Pollution and Health, and also works in an advisory capacity in various national and international bodies. Since 2012 he has been President of the Federal Commission for Air Hygiene (FCAH).



Science on the borderline between infectious and non-infectious diseases

Interview with Nino Künzli, Deputy Director of the Swiss TPH

Professor Künzli, you were called to a Professorship in Basel in May 2009 at the ISPM, and one month later, the Institute no longer existed. Did you not feel a little alienated?

You may be surprised to hear it, but I can say that I was delighted – and, in fact, the matter was already being intensively discussed before I was offered the Chair. The integration of the ISPM in the STI didn't happen overnight. It was planned by the various partners long in advance. The main purpose was to strengthen my own area of expertise, Public Health, in Basel, and I welcomed the integration of the two Institutes as a positive signal. It has opened up new opportunities for Basel as a centre for research. I was convinced that it would make a lot of sense to combine the complementary skills and knowledge of the two institutions concerned with Public Health.

How do the activities of the two institutes complement each other?

The STI has had many years of experience in investigating and controlling infectious diseases, and in the strengthening of health systems – above all in countries of Africa, Asia

and Eastern Europe. The ISPM in Basel, and Nicole Probst-Hensch's team, which came from Zürich, has made itself a name in research on non-infectious diseases and their causes – especially when they are related to environmental factors, or to gender. The world's biggest challenge in the area of health is exactly at the interface of all these fields of expertise. What does that mean in practical terms?

World-wide trends in disease distribution show a clear displacement from infectious diseases to non-infectious, chronic diseases. Diabetes, diseases of the heart and the circulatory system, chronic respiratory problems and mental illness are some of the biggest challenges for ageing communities. This change is happening not only in the prosperous North, but in many countries in the South, which have to grapple with the additional problem that infectious diseases, like malaria and various neglected tropical diseases, also still play a major role. A partnership between the STI and the ISPM offers great scientific and strategic advantages.

What difficulties are involved in a process of integration like this one?

It is a great challenge to bring together different research cultures within the Swiss TPH. Research in the areas of health systems, infectious diseases or chronic diseases often exists in different worlds. I don't only mean that

geographically! These themes – although they are all connected with health – are often the concern of widely separated networks and donors of funds. Money for research on chronic diseases and the effect of environmental factors is still flowing in the North – despite the fact that in the South and East, particularly, the pollution of the environment has often reached threatening proportions. The Swiss TPH is in an excellent position to build bridges and to confront the “dual burden of disease”. It is also interesting that the internationally recognised research done by the ISPM has been very clearly influenced by women, whereas the STI themes are firmly anchored within men's networks.

How receptive are African and Asian countries to environmental themes like air pollution?

The pre-eminent importance of the environment for human health is being recognised more and more, world-wide. People can perceive the extremely high air pollution with all their senses, for example in the big cities of Asia. They can see it, smell it and feel it. In addition, the Internet enables a transfer of knowledge that has never been known before. As a result, the population is clearly bringing more and more pressure to bear on the political decision-makers. This process was largely responsible for the new trend that only started in Europe and North America in the last 50 years. Sadly, one result has been that firms

*No idyll: Urban environmental pollution by noise and exhaust gases.
Photo Archive Swiss TPH*

in rich countries have transferred many of their polluting activities to the South. However, it is only a question of time before it is recognised in the countries of the South that a clean environment is not just a luxury of the West, but that a polluted environment is something that a country cannot afford on purely economic grounds.

What are you doing in practice to achieve this integration of research approaches?

For decades, the Tropical Institute has been working closely with countries in the South. We are well known in many places as fair and reliable partners. The important thing is to develop a joint research agenda that gives due weight to the local health problems. In some places the fight against infectious diseases needs to be better integrated with efforts to control non-infectious disease, and environmental issues relevant to health. The training of local scientists and the strengthening of local research capacity are of central importance if research programmes and implementation measures are to be adjusted appropriately to local needs.

What does the integration of the two institutes mean for science in Switzerland?

Since the integration, the Institute is playing a more prominent role in the Swiss research scene. The research agenda includes the study of the effects of electromagnetic fields. This is a big concern at present in Switzerland, and the knowledge generated will also be important in the South, where the use of mobile telephones is extraordinarily widely distributed. One good example of our commitment to improving the health of the Swiss population is the big SAPALDIA study. On the basis of more than 20 years' experience, the Swiss TPH is campaigning at national level for Switzerland, like most Western countries and many of our partners in the South, to decide at last to establish a really big cohort study – ten times bigger than SAPALDIA – that will investigate the health, illness and ageing of the Swiss population under real conditions for the coming decades. Furthermore, we are firmly committed to advocating that political and social aspects of health policy, especially the fair sharing of resources, should be considered in the “personalised medicine” that is being developed today.

The chronology of the STI – in time-lapse

1942

Proposal from Alfred Gigon (Professor of Medicine in the University of Basel) to the Federal Government for the founding of a Tropical Institute in Basel.

1943

The Parliament of the Canton of Basel City decided to create a Swiss Tropical Institute.

1944

The Board of Governors (*Kuratorium*) of the Swiss Tropical Institute (STI) met for the first time.

Rudolf Geigy was elected as Director.

Patients with malaria were hospitalised in Basel: they came from internment camps or were prisoners of war.

The first General Tropical Course (*Allgemeiner Tropenkurs, ATK*).

Founding of the Tropical School (*Tropenschule*) in Basel.

Publication of the first volume of *Acta Tropica*, a journal for tropical science and tropical medicine.

1945

Establishment of the first Clinic for Tropical Medicine in the Auxiliary Hospital (*Hilfsspital*) in Burgfelderstrasse in Basel.

Rudolf Geigy's first expedition to West and Central Africa.

1946

Second proposal of the Government of Basel City to the Cantonal parliament. The Institute was awarded an annual grant of CHF 90,000.

1947

The STI moved into the house "*zur Föhre*" (the Pine tree), a villa in Socinstrasse, which was equipped with a small lecture room, a library and laboratories for parasitological and entomological research.

Opening of the (first) Sonnenrain Clinic in a neighbouring building with departments for Surgery and Tropical Medicine.

1949

First research studies on trypanosomes, mosquitoes, termites and sand-fleas in Ifakara, Tanganyika.

1951

The STI became an official institution with a clear legal status (ordinance of the City of Basel).

Centre Suisse de Recherches Scientifiques (CSRS) founded in Côte d'Ivoire.

1957

Swiss Tropical Institute Field Laboratory (STIFL) founded in Ifakara.

1960

Opening of the Department of Tropical Medicine (*Tropenmedizinische Abteilung, TRAB*) in the "*Föhre*" with an outpatients' clinic, a laboratory and a Vaccine Centre.

First course for apprentice laboratory technicians.

Assistance for developing countries mentioned for the first time in the Annual Report as a new task for the STI.

1961

A new building (later called the "*Mittelbau*": central building) was ceremonially opened. It provided a new lecture room, a library and research laboratories.

The biological research departments had 11 scientists and 6 doctoral students.

Opening of the Rural Aid Centre (RAC), a training-school for "Rural Medical Aids", in Ifakara, Tanzania.

1962

Rudolf Geigy appointed as Rector of the University of Basel.

1964

The STI introduced the first electron microscope to be used in the University of Basel.

1965

Rudolf Geigy appointed to a Chair of Medical Zoology in the University of Basel.

1968

The new clinic "*Sonnenrain*" opened in the new building.

The STI celebrated its 25th anniversary.

For the first time, the yearly expenditure exceeded 1 million CHF.

1972

Thierry Freyvogel followed Rudolf Geigy as Director.

1973

Antoine Degrémont enlarged the Department of Tropical Medicine (TRAB).

The STI was recognised by the Swiss Government as an institution entitled to receive Federal funding.

Opening of the Medical Assistant Training Centre (MATC) in Ifakara.

1974

New curriculum for Biology in the University of Basel. The STI began to be more involved in University teaching.

1976

Establishment of the Rudolf Geigy Foundation for the benefit of the STI.

1977

Participation in courses organised by the World Health Organisation (WHO) in Lausanne.

1978

Handing-over of the MATC to the Government of Tanzania.

1980

Financial crisis resulting from the reduction of funding from the Swiss Federal Government by 10%.

1981

Course for Medicine and Public Health in the Tropics (*Kurs für Medizin und Gesundheitswesen in den Tropen, KMG*) replaced the "classical" course in Tropical Medicine.

The "Tropical School" (*Tropenschule*) developed into the Technical School for Tropical Agriculture (*Technikum für tropische Landwirtschaft, TTL*).

Conversion of the laboratory "Mosquitoes and Malaria" into the Biochemistry Laboratory, under Bruno Betschart.

1982

First Seminar on Goal-Oriented Teaching Methods for STI teaching staff.

Symposium for the 80th birthday of Rudolf Geigy.

1983

The STI celebrated its 40th anniversary.

1987

Antoine Degrémont succeeded Thierry Freyvogel as Director.

First operational analysis of the STI and introduction of goal-oriented management.

1989

Master Plan 1990–1995 presented by A. Degrémont.

The Department of Public Health and Epidemiology was opened. Closure of laboratories for Toxinology, Biochemistry and Electron Microscopy.

Technical School for Tropical Agriculture transferred from Basel to Zollikofen.

1990

Clinic "Sonnenrain" closed.

1991

The Swiss Tropical Institute Field Laboratory (STIFL) was renamed the Ifakara Centre and established as a Tanzanian institution.

1992

Course Health Care and Management in Tropical Countries (HCMTC) replaced the KMG course.

1993

50th anniversary of the STI.

Reduction of the annual subvention from the Federal Government by 500,000 CHF. Resulting financial constraints meant that the Master Plan could not be carried out.

1994

Start of the "Age of Informatics" in the STI, and establishment of a Computer Support Services unit.

1995

Expertise in Molecular Biology expanded with the founding of the Department of Medical Parasitology and Infection Biology (MPI).

1996

Establishment of degree course Master in International Health (MIH), a joint programme founded by a federation of institutions in Europe and in Africa (tropEd).

Foundation of the Swiss Centre for International Health.

1997

Marcel Tanner replaced Antoine Degrémont as Director.

The Ifakara Centre became the Ifakara Health Research and Development Centre (IHRDC).

The STI participated in a new national degree course, Master of Public Health (MPH).

1999

First Research Retreat of the STI in Bad Ramsach.

First projects in “e-learning”.

2000

First official Performance Agreement with the Swiss Federal Government.

Workshop on “Teaching for Learning, Learning for Teaching” in preparation for the new BSc course, “Infection Biology and Epidemiology”.

New curriculum for Biology introduced in the University of Basel (BSc and MSc).

Master of International Health (MIH) course accredited by the University of Basel.

2001

The STI developed a web-based learning platform for Tropical Medicine, together with Hanspeter Rohr.

Fred Binka, a one-time doctoral student of the STI, received the first Rudolf Geigy Award.

2002

Symposium *100 Jahre Rudolf Geigy* (Rudolf Geigy Centenary) organised by the STI.

First Block Course in “Infection Biology and Epidemiology” for BSc students of the University of Basel.

The STI was a co-founder of the Centre for African Studies (*Zentrum für Afrikastudien, ZASB*) of the University of Basel.

Appointment of Marcel Tanner as Dean of the Faculty of Science of the University of Basel.

2004

First 3-Semester MSc course “Infection Biology and Epidemiology”.

First award of a career development professorship of the Swiss National Foundation for a member of the STI staff (Jürg Utzinger).

2006

First Joint MSc course “Infectious Diseases, Vaccinology and Drug Discovery” taught at the STI, in collaboration with the University of Singapore, the Novartis Institute for Tropical Diseases and the Biozentrum, Basel.

The STI is a co-founder of the Tanzanian Training Centre for International Health (TTCIH) in Ifakara, and participates in teaching there.

2007

HCMTTC course is the first course of the University of Basel to be evaluated and accredited by the Swiss Centre of Accreditation and Quality Assurance in Higher Education (OAQ).

2008

STI participates in courses of the Swiss School of Public Health (SSPH).

New Performance Agreement with the University of Basel.

2010

Integration of the Institute for Social and Preventive Medicine of the University of Basel in the STI to form the Swiss Tropical and Public Health Institute (Swiss TPH).

