



The Swiss Tropical and Public Health Institute: Past, present and future

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ABSTRACT

Compared internationally, the history of the Swiss Tropical and Public Health Institute (Swiss TPH) is unusual. Founded in 1944, at a time of utmost isolation, it was a response to specific needs of the government of Switzerland during the Second World War. In 1943, the Swiss Federal Council approached universities in Switzerland and asked them to submit project proposal that had the potential to mitigate possible post-war unemployment and threatening economic isolation. Members of the University of Basel proposed to establish a Swiss Tropical Institute (today: Swiss TPH). With its harbour at the River Rhine, Basel was an important international transport hub. The city was and still is the headquarters of important pharmaceutical companies, such as Novartis Pharma AG and F. Hoffmann-La Roche AG, which were looking for new markets overseas. Last but not least, scientific expeditions to Africa were rather common in the 19th and the beginning of the 20th century for members of Basel's bourgeoisie. Initially, Swiss TPH focused primarily on basic research into diseases of poverty, but over the years it has developed into an important player in public, international and global health. This article sees the development of the institute as a reflection of the visions of its directors from the founder Professor Rudolf Geigy to Professor Jürg Utzinger, who is the current Swiss TPH director. It includes interviews with the four latest of them, discussing their experiences and attempts to adapt the institute to an ever changing global environment. From these lessons learnt we hope to gain insights that could be relevant for today's leaders of scientific institutes; foster public-private partnerships and contribute to solve some of the most pressing global health challenges.

1. Introduction

In early 1944 – World War II was still ongoing – the Board of Trustees of the Swiss Tropical and Public Health Institute (Swiss TPH; formerly Swiss Tropical Institute) met for its first constituent meeting. The initial idea of establishing a tropical institute in Switzerland stemmed from Professor Alfred Gigon (Löffler, 1963), a social physician at the University of Basel, and Professor Rudolf Geigy, a zoologist and offspring of a rich industrial family in Basel (Janner, 2008). With courage and foresight, they responded with their proposal to a federal initiative to dispel the spectre of anticipated unemployment once the Second World War (1939-1945) should be over and to prepare for adequate prevention and management of numerous refugees with various "tropical diseases". In the initiators' view, the establishment of a tropical institute in Switzerland was an effective answer to the approaching independence of many African colonies; to the burgeoning desire of many Swiss to travel and discover the world; and to the growing need of the pharmaceutical

industry to find new markets for their products (Geigy et al. 1944, Meier 2014).

This article is dedicated to the eventful 77-year history of Swiss TPH. It focuses on the strategic developments, the main achievements and challenges the directors faced while steering the institute (Figure 1). Literature review and detailed analysis of archives are complemented by interviews of the current and three preceding directors. Selected quotes from these encounters are provided. Experiences and lessons for other institutes operating in the global health arena are offered for consideration.

2. 77 years of Swiss TPH and five directors

2.1. Rudolf Geigy (1902-1995; director 1944-1972): A tropical institute for Basel and Switzerland at large

Professor Rudolf Geigy was the driving force behind the founding

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and development of the Swiss Tropical Institute. Contrary to his father's wishes, Rudolf Geigy resisted a career in the family-owned chemical company J. R. Geigy AG (today: Novartis). Instead, he studied zoology at the Universities of Basel and Geneva, and was fascinated by parasites, bacteria and viruses and their complex life cycles. Again and again, Geigy took his students to the field, to Lake Sempach in central Switzerland, Alsace in neighbouring France and later to Africa, where they studied the pathogens in real life. As soon as the Swiss government had decided in favour of establishing a tropical institute and the Board of Trustees met for their inaugural meeting in early 1944, Geigy chartered a plane and set off for Central Africa. He established relations with the scientists of the European colonial powers and collected scientific specimens and disease vectors, which he intended to analyse at the newly established institute in Basel. Some of the collected specimens would later prove to be significant: a handful of tsetse flies, the carriers of the dangerous African sleeping sickness. Indeed, Geigy and his team succeeded for the first time in breeding tsetse flies under laboratory conditions (Geigy, 1948). Together with the successful *in vitro* cultivation of trypanosomes and other single-cell parasites in the 1970s and 1980s, this paved the way for a series of major achievements in drug development and control of human African trypanosomiasis (Brun and Jenni, 1977; Brun and Schöneberger, 1979).

Worth mentioning are Swiss TPH-led clinical trials in the Democratic Republic of the Congo (DRC), which resulted in a new and shorter treatment regimen of the drug melarsoprol from 30 to 10 days. In 2004, it was introduced as the new standard therapy by the World Health Organization (WHO) (Burri et al., 2000; Bernhard et al., 2007; Schmid et al., 2004). In partnership with the Drugs for Neglected Diseases initiative (DNDi), Swiss TPH researchers were deeply involved in drug development projects, such as the nifurtimox-eflornithine combination therapy (NECT), fexinidazole and, more recently, oxaborole. The latter two drugs are major drivers in the quest to eliminate human African trypanosomiasis (Priotto et al., 2009; Kaiser et al., 2011; Mesu et al., 2018).

Professor Rudolf Geigy was born on 20 December 1902 into a family of wealthy Basel industrialists. The family had built up a highly successful pharmaceutical firm, J. R. Geigy Ltd. One of the firm's achievements was the development of dichlorodiphenyltrichlorethane (DDT), the insecticide that revolutionised the fight against tropical diseases transmitted by insects, particularly malaria (Läuger et al., 1944). Geigy studied zoology in Basel and Geneva. His dissertation put forward in 1931 entitled "Action de l'ultra-violet sur le pôle germinal dans l'oeuf de *Drosophila melanogaster* (castration et mutabilité)", brought him international recognition (Geigy, 1931). In 1935, he was appointed to university lectureship in experimental embryology and genetics in Basel. In 1938, he became Associate Professor. In 1952, he was awarded a full professorship and promoted to Chair of Medical Parasitology and Infection Biology. He was regarded as the pioneer of developmental physiology and the founder of experimental zoology at the University of Basel. One of the highlights of his career at the University of Basel was his appointment as President during 1962. Geigy was also an honorary member of the Royal Society of Tropical Medicine and Hygiene in the United Kingdom and was awarded an honorary doctorate by the University of Zurich in 1973.

2.2. Thierry A. Freyvogel (1929-2019; director 1972-1987): Keeping research diverse

In 1972, Professor Thierry A. Freyvogel, a trained zoologist from Basel, took over the directorship of the Swiss Tropical Institute following Geigy's departure. He was successful and persistent in combating the forces that tried to dissolve the institute after Geigy's retirement. Freyvogel had a completely different leadership style compared to his predecessor. The *shauri la wazee*, or Council of Elders, acted as the highest management body, determining which direction the institute would take (Box 1).

Freyvogel intended to keep the broad research portfolio that had been introduced by Geigy. Science, he believed, should be guided by curiosity and conducted with the greatest possible degree of freedom. The findings should also be practical and relevant to society as a whole. Freyvogel delineated his academic philosophy in more detail in his habilitation lecture entitled "About the twofold task of parasitology". According to Freyvogel, parasitology arises from the "will to knowledge" and serves the self-actualisation of scientists as individuals. This "will to knowledge", however, is joined by the "desire to help", understood as a moral duty. In this regard, parasitology is like medicine, which, according to Freyvogel, is "only a science at a secondary consideration" (Freyvogel, 1966). This desire to help arose from Freyvogel's experiences in Tanzania. In the 1950s, aged below 30 years, he established the Swiss Tropical Institute Field Laboratory (STIFL) in Ifakara, in the south-eastern part of the country. During this time, the Tanzanian independence movement was in full action and had also reached the remote town of Ifakara. It was clear to the Swiss researchers in Tanzania that fundamental research alone would not be a satisfactory answer to the local political turmoil. The STIFL ran a training programme for medical personnel as a contribution to development aid. Thanks in part to Ifakara, Swiss TPH was taken seriously by other European tropical institutes and WHO. In his role as director, Freyvogel campaigned heavily for the continued existence and development of the field laboratory in Tanzania. In the early 1980s, the laboratory underwent a transformation from the prime focus of parasitology to analysing health systems. As a result of this transformation, members of STIFL more and more aligned their research interest with the Tanzanian national health priorities offering primary health care to the neglected populations in remote areas.

Box 1

Interview with Professor Thierry A. Freyvogel (conducted on 28 January 2019; Professor Freyvogel passed away on 24 April 2019)

What were your goals when you took over the reins from your predecessor Rudolf Geigy?

"I actually 'only' endeavoured to continue running the institute, although I had taken the liberty to simplify certain things. We stopped addressing each other by title and instead created a *shauri la wazee*, a Council of Elders. I wanted to sit down once a month with trusted members of staff and discuss things with them, democratise the structure a little bit."

Maintaining Geigy's legacy... What kind of resistance did you face?

"I have the impression – and I don't know whether it is true – that there were forces inside the Faculty of Humanities and the Faculty of



Fig. 1. Photo gallery of the five Swiss TPH directors. A: Rudolf Geigy (1944-1972); B: Thierry A. Freyvogel (1972-1987); C: Antoine Degrémont (1987-1997); D: Marcel Tanner (1997-2015); E: Jürg Utzinger (2015-present).

Science that wanted to see the institute disappear. But this is a totally subjective impression that I can't prove in any way. Another problem was the constant cost cutting pressure. It was like the sword of Damocles constantly hanging over the institute."

To what extent did the financial situation inhibit new directions in teaching and research?

"I was a strong advocate internally for conducting research with venomous animals. I also campaigned especially hard for the field laboratory that I set up in Tanzania. One great challenge at the time was convincing delegates from the Swiss Agency for Development and Cooperation (SDC) that conducting on-site research in Africa can also be a form of development aid."

What would you say are your greatest successes?

"The field laboratory in Ifakara and my efforts for development cooperation, in the broadest sense of the term. This also includes developing 11 research principles for the Commission for Research Partnerships with Developing Countries (KFPE), which forms part of the Swiss Academy of Sciences (SCNAT). These principles have stood the test of time and still attract worldwide attention" (Table 1).

Thierry A. Freyvogel was born on 4 May 1929 in Basel, and educated at the Humanist Gymnasium and the University of Basel, where he studied zoology from 1948 to 1955. Having obtained his doctorate, he went to Tanzania (1955-1958), where he was responsible for building up the STIFL. Back in Basel, Freyvogel worked as a scientist at the Swiss Tropical Institute 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. Freyvogel occupied leading positions in a variety of national and international bodies. He was Chairman of the Expert Advisory Committee of WHO for the Onchocerciasis Control Programme in West Africa. As the first President of the Swiss Commission for Research Partnership with Developing Countries (KFPE), he worked on the compilation of guidelines for the planning of fair North-South research partnership. Freyvogel was awarded the Science Prize of the City of Basel in 1973 and became an honorary member of the Swiss Academy of Sciences (SCNAT) in 1999.

2.3. Antoine Degrémont (1938-present; director 1987-1997): Disease systems within health care systems

In 1987, Professor Antoine Degrémont was named Freyvogel's successor. Degrémont is a trained biologist and physician who had previously served as Head of the Department of Tropical Medicine at the Swiss Tropical Institute. In this role, Degrémont had been a proponent of expanding the medical services offered by the institute (Box 2).

At the time, travel activity had increased sharply, and many travelers and returnees from the tropics and subtropics made use of the department's services. With the passage of the Higher Education Funding Law of 1973, the institute was recognised by the Swiss Federal Government as an institution eligible to receive funding. The Federal Government made their funding contingent on the institute expanding its medical services. Many development aid specialists at SDC made use of

Table 1

11 principles for research partnership with developing countries (1998 and 2014; SCNAT 2018).

Original version (1998)	2 nd edition (2014)
1. Decide on objectives together	1. Set the agenda together
2. Build up mutual trust	2. Interact with stakeholders
3. Share information; develop networks	3. Clarify responsibilities
4. Share responsibility	4. Account to beneficiaries
5. Create transparency	5. Promote mutual learning
6. Monitor and evaluate the collaboration	6. Enhance capacities
7. Disseminate the results	7. Share data and networks
8. Apply the results	8. Disseminate results
9. Share profits equitably	9. Pool profits and merits
10. Increase research capacity	10. Apply results
11. Build on the achievements	11. Secure outcomes

the institute's expertise to clarify the possible health consequences of a prolonged stay in the tropics and subtropics. The marked expansion of medical services led to an increasing discrepancy between research and services at the institute. Some researchers saw the income from medical services merely as a means of financially securing their scientific work. On the other hand, the free style of research that Freyvogel had sought to maintain was a thorn in the eye of some physicians. This is why Degrémont, as Director, put increased emphasis on conceptual thinking and introduced a master plan to serve as a new strategic basis for research at the institute. Scientists were called up to formulate strategies and goals for their research activities. Degrémont followed a more strategic approach to research, education and services at the institute. The master plan for 1990 to 1995 aimed for teaching, research and services to increasingly infuse each other. Degrémont reduced the number of research projects, concentrating on a few interdisciplinary research projects with practical applications and uncontested quality. He brought about not only a change in how research was structured, but also promoted a way of thinking that continues to be central to the institute's *modus operandi* today: in order to prevent diseases and ensure the health and wellbeing of people in countries in the southern hemisphere over the long term, it is necessary to conceive health in a holistic manner. He led the institute away from traditional tropical medicine towards an understanding of health as a complex system. An important branch of research was health care and epidemiology, which was continually built up by Professor Marcel Tanner following his return from Tanzania and the United Kingdom in 1988 (Box 2).

Box 2

Interview with Professor Antoine Degrémont (conducted on 14 May 2019)

What were your goals when you took over the reins from your predecessor Thierry A. Freyvogel?

"Before being elected to the post of Director of the Swiss Tropical Institute, I not only headed the Department of Tropical Medicine at the institute, but had already gained many years of experience working in Africa. Therefore, my goal was to open up the institute beyond research in parasitology to include research into health care systems and primary care. I simply believed in the utility of studying health care systems and working together with other countries in this field and wanted to steer the institute in the direction of international health."

What did this new direction mean for the institute internally?

"This process of course brought about institutional changes. The new Department of Public Health and Epidemiology, built up by Marcel Tanner, was established under my leadership. The Swiss Centre for International Health was also established, whose staff offered numerous services and consulting activities. In general, I understood services to mean not just medicine but also many other areas, from travel consulting and diagnostics to evaluating and implementing projects for partner institutions."

How did employees react to these changes?

"For the sake of the strategy, I had to make the right decisions, but these were sometimes unpopular: closing the tropical clinic, ceasing research into termites and venomous animals, discontinuing our own *Acta Tropica* journal. This was balanced out by the establishment of new and excellent branches of niche research, for instance clinical research, migration medicine and women's and children's health. These changes did not all take place painlessly. But I always had the feeling that I acted with the appropriate amount of sensitivity. And looking back, a lot of these decisions turned out to be the right ones."

What were your management ideals?

"I was an adherent of the management by objectives philosophy. I wanted to establish this concept not only in projects and programmes, but within the institute as a whole. This would have meant dissolving rigid departmental structures and replacing them with flexible, interdisciplinary ones. Even today, I still think this wasn't totally utopian. At most it was perhaps a bit ahead of its time."

What would you say are your greatest successes?

“Opening the Swiss Tropical Institute up to the field of international health is surely one of them, and developing the institute further in a coherent way. I am also thankful that during my time at the institute it developed into an important training venue for health care specialists both from Switzerland and abroad. Furthermore, it gives me great satisfaction to see that the Centre de Support en Santé Internationale (CSSI) in Chad, which I poured a lot of my heart and soul into, and the Ifakara Health Institute (IHI), which received major support from Marcel Tanner, now exist as independent organisations that closely collaborate with Swiss TPH today. This is how I see the future of the institute in general: working in partnerships and in fruitful exchanges with partners all around the globe.”

Antoine Degrémont was born on 15 October 1938 in Le Cateau in northern France. He studied medicine in Paris, and obtained a diploma in tropical medicine, and an MSc degree in parasitology and in bacteriology and immunology. He gathered experience of the treatment of tropical diseases in the Islamic Republic of Iran and in DRC. From 1966–1971, he directed the large-scale Mangoky Project for the control of schistosomiasis in Madagascar (Degrémont, 1973). In 1972 he came to the institute as head of medical research, and from 1974–1987 he was head of the Medical Department. When he became Director he also was elected as Associate Professor of Tropical Medicine at the University of Basel. Internationally, Degrémont was a sought-after expert in the field of tropical medicine and international health. He was a member of WHO expert panels, Programme Director of SDC’s health projects in Chad and a member of the Advisory Committee of the World Bank for the World Development Report “Investing in Health” of 1993 (World Bank, 1993). He is an honorary member of the American Society of Tropical Medicine and Hygiene.

2.4. Marcel Tanner (1952-present; Director 1997-2015): Health on a global scale

“Today, the goal is to link all of our fieldwork with practical measures, significant problems and collaboration with the people affected,” stated Professor Marcel Tanner in 1994 at the 50-year anniversary of the Swiss Tropical Institute, setting the stage for the approach he would later take as Director (Box 3). Scientific activities would no longer be measured simply by the number of publications and the impact factors of journals, but also by their “real” impact on improving the health and wellbeing of people. Tanner developed a value chain whereby new innovations and technologies were systematically analysed and integrated into actual health care programmes if found to be effective. To this day, this strategy has allowed Swiss TPH to make a concrete contribution to improving human health.

In 1997, Tanner succeeded Degrémont as Director of the Swiss Tropical Institute. During Tanner’s tenure, the institute experienced considerable growth, with the number of staff, students, partnerships and academic publications growing rapidly year-after-year. At the same time, the Swiss Tropical Institute became increasingly successful in applying for international research projects and service mandates. The experts of tropical and travel medicine cared for about 10,000 customers per year, making it the second largest medical centre for travel and vaccination advice in Switzerland and the national centre for consulting on parasitic diseases. Tanner systematically drove the international direction of Swiss TPH forward: he expanded the institute’s research and service activities in African countries to Southeast Asia and South America. With the collapse of the Soviet Union, the Swiss Centre for International Health, run for almost 20 years by Dr. Nicolaus Lorenz and, since 2015 by Professor Kaspar Wyss, expanded its geographical remit to Eastern Europe and Central Asia. Today, the staff of the Swiss Centre for International Health work on a global scale, evaluating health projects, advising governments and implementing projects for numerous national and international donors and partners.

2.4.1. Swiss Tropical Institute to the Swiss Tropical and Public Health Institute: 2009–2019

In 2009, the former Institute of Social and Preventive Medicine (ISPM) of the University of Basel was integrated into the Swiss Tropical Institute. Since then, topics such as air pollution, noise, non-communicable diseases and climate change have been high on the agenda of Swiss TPH. Thanks to this step, Swiss TPH is in a unique position to offer comprehensive solutions for the health challenges of the 21st century – worldwide.

At the same time that the integration of ISPM into the Swiss Tropical Institute was done, the national SAPALDIA cohort, led by Professor Nicole Probst-Hensch, was integrated into the institute expanding the research agenda to include a growing focus on non-communicable diseases and an expertise in biobanking. For nearly 30 years, SAPALDIA has been collecting rich data from nearly 10,000 people from all over Switzerland to deepen the understanding of risk factors for health and wellbeing and governing national and international health policies (Thun et al., 2013; Adam et al., 2015; Eze et al., 2017; Imboden et al., 2019). Thanks to this cohort study linked with a biobank, we know, for example, the impact that smoking, nutrition, high blood pressure and stress have on the health of the elderly. These results have had a substantial impact on Swiss health policy. The study also made a critical contribution to the stringent legal limits on particulate matter that are in place in Switzerland today. At the international level, the results were included in the air quality guidelines issued by WHO. In order to promote further research into non-communicable diseases, Swiss TPH and its partner networks have invested in the development of long-term cohorts studies Côte d’Ivoire (Eze et al., 2019), Tanzania (Letang et al., 2017; Vanobberghen et al., 2017), Lao People’s Democratic Republic and is about to set up such a study in Peru.

South Africa has become another focal point of public health and environmental research conducted by Swiss TPH and partners in recent years. The country has been a strategic focus of research and technical collaboration with Switzerland since 2007. Swiss TPH, in collaboration with the University of Basel, act as a so-called “Leading House” for Africa, mandated by the State Secretariat for Education, Research and Innovation (SERI). In this context, the joint Research Chair for Global Environmental Health was established in 2015 at the University of Cape Town and Swiss TPH. Professor Martin Röösli, head of Environmental Exposures and Health unit at Swiss TPH and his team, in collaboration with Professor Aquiel Dalvie at the University of Cape Town look into the detrimental effects of noise exposure and the effects of pesticide residue on human health (Curchod et al., 2020; Fuhrimann et al., 2020, Sieber et al., 2017). The fact that Swiss TPH will be able to make an active contribution to addressing topics such as air pollution and climate change is due in part to the successful integration of the former ISPM into Swiss Tropical Institute more than a decade ago.

Box 3

Interview with Professor Marcel Tanner (conducted on 6 March 2019)

In 1981, just before you turned 30 years old, you became the Director of STIFL in Tanzania. Afterwards, you went to London for your MPH. In 1987, you turned down a job offer from the WHO and returned to the institute. Why is that?

“I was inspired by my time in Tanzania, where I had the opportunity to work together with African partners to expand the field laboratory into a health research and development centre. My predecessors Rudolf Geigy and Thierry A. Freyvogel inoculated me both with their fascination for those stunning pathogens, in particular parasites, and with our responsibility towards the countries in the southern hemisphere. Sir Austin Bradford Hill (1897–1991) gave me insight with his statement that one never has enough evidence to understand something, but one always has enough evidence to take action. I was able to bring these convictions with me to the institute when I set out to establish the Department of Public Health and Epidemiology. In this endeavour, I was encouraged and supported by my predecessor Antoine Degrémont.”

In the endeavour of using the understanding of diseases to improve health care systems?

“Yes, you have to see it as a harmonious development. My direct predecessor Degrémont was also important for me. He had opened the institute up towards health care system research and public health. When Degrémont came to Basel in 1972, he realised and understood that he couldn't just be treating Swiss tourists or employees of the SDC in their preparation to go abroad. He had to bring something to the health systems of the countries in the southern hemisphere. This was the spark that affected me as well: the knowledge that we as an institute could use our experience to do something concrete for improving health care and become an international leader in global health in the process.”

Could you give some examples that illustrate this connection between science and practical implementation?

“In 1989, Degrémont handed over the responsibility for developing the Dar es Salaam Urban Health Project to me. Co-financed by the Swiss and Tanzanian authorities, the idea was to rehabilitate the municipal health care system for 4.5 million people. This involved three district hospitals, four large health centres and around 100 mother and child clinics. The project was a big challenge from a public health perspective, but also required a solid scientific foundation.”

Did this new value chain – innovation, validation and application – bring about changes to processes within the institute?

“I wanted to make sure that staff members didn't just remain in their silos but instead worked together. Health problems are always multi-disciplinary. Different disciplines have to work together, in an interdisciplinary way, to develop a solution. And solutions are intrinsically transdisciplinary, meaning that it doesn't matter what academic disciplines the solutions or parts of the solution come from.”

What does that mean on an institutional level?

“This meant that we established key areas of activity (KAAs). All KAAs were interdisciplinary and contained components of innovation, validation and application. You have to imagine it as a juicy sandwich. The slices of bread on the bottom are the different departmental units. The activities of these units are assigned to the KAAs – this is the actual filling of the sandwich. The results and 'products' from the KAAs refer to the overarching goals and mandate of the institute – this is the slice of bread on top. This is how the goals of all activities get fleshed out, which helps the institute as a whole to raise its profile and helps us put our value chain from innovation to application into practice. Internally, this means that the staff really live for and enjoy the 'sandwich' – this elaborate matrix concept – and that they engage fully in their work for the institute.”

During your time as Director, the institute grew from less than 100 to 750 staff. What was your growth strategy?

“Using foresight to invest in the next challenges and issues. Meaning not only having a vision but tackling what you see in front of you. This means, due to the size of the institute, avoiding just doing the same project over and over or doing 'me too' projects. I often took decisions without knowing where and how we would come up with the money. But I gladly took on the responsibility of seeking out these paths and perspectives. It's the only way an institution can grow. The second important point is that the institute had never changed its constitution or bylaws since 1944. This meant that you could make an impact with a few clearly defined guidelines without constantly having to amend the bylaws. Today we work more the other way around, constantly changing the guidelines and bylaws, boxing ourselves in and really blocking creativity on every level. In 1944, our founding fathers displayed a great degree of openness. They established the guidelines and said: take it and run. And this gave me the freedom to do exactly that when I was named Director in 1997.”

Marcel Tanner was born on 1 October 1952 in Basel. He studied medical zoology at the University of Basel and was awarded a PhD in 1980. From 1981-1984, he was the head of STIFL in Ifakara, Tanzania. After obtaining a MPH in London he returned to the Swiss Tropical Institute, where he was responsible for building up the new Department

of Public Health and Epidemiology. Tanner became a full Professor and Chair of Medical Parasitology and Epidemiology of the University of Basel in 1993. Between 2002 and 2004 he was Dean of the Faculty of Science. Tanner has been awarded an honorary doctorate by the University of Neuchâtel (2005) and the University of Zurich (2020). For 10 years, he has been chair of the board of governors of the Drugs for Neglected Diseases initiative (DNDi). In 2016 he was elected President of the Swiss Academy of Sciences (SCNAT) and, in 2020, President of the Swiss Academies of Arts and Sciences (a+).

2.5. Jürg Utzinger (1968-present; director since 2015): Towards the UN Sustainable Development Goals

Professor Jürg Utzinger has been heading up the Swiss TPH since 2015 (Box 4). During his tenure thus far, the institute has seen a change of generations in departmental leadership and in the Directorate. One structural change has been the establishment of the Department of Medicine, led by Professor Daniel Paris. The new department has brought all medical activities, ranging from clinical research and diagnostics to travel and tropical medicine, under one roof. Political developments in north-western Switzerland, where the institute is based, have played an equally important role. In 2015, the Cantons of Basel-Stadt and Basel-Landschaft decided to enter into a joint sponsorship structure of Swiss TPH on the basis of a bi-cantonal treaty. This opened up the prospect of Swiss TPH moving into a newly constructed building on the BaseLink site in Allschwil towards the end of 2021 (Figure 2). Since then, the institute has been preparing for the move, which has also sparked questions about management and institutional identity.

In January 2016, the member states of the United Nations (UN) signed the new global 2030 Agenda for Sustainable Development. The 17 Sustainable Development Goals (SDGs) derived from the agenda offer guidelines for building a more just and equitable world. The 2030 Agenda links sustainable development and the fight against poverty for the first time. Swiss TPH currently runs more than 300 projects in 135 countries (Figure 3). These projects contribute to 16 of the 17 SDGs (Figure 2). Of course, the primary focus of Swiss TPH is on SDG 3 (*Ensure healthy lives and promote well-being for all at all ages*), but there are other SDGs that play a hugely important role, such as SDG 17 (*Strengthen the means of implementation and revitalize the global partnership for sustainable development*) and SDG 4 (*Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*, Galli et al., 2020). Figure 3 indicates that there are numerous Swiss TPH projects that relate to more than just one SDG. Strong interlinkages are proven between SDG 3 and SDG 17 and between SDG 4 and SDG 10 (*Reduce inequalities within and among countries*). Going forward, Swiss TPH will stick to its mission that is “To make the world a healthier place.” This is achieved by the disciplined pursuit of the three strategic goals, namely (i) excellence in science; (ii) taking science to impact; and (iii) mutual learning for sustainable development. Research, education and services will make seminal contributions to the 2030 Agenda (Dietler et al. 2019).

Towards the end of 2020 SERI and the cantons of Basel-Stadt and Basel-Landschaft approved Swiss TPH's new strategy (2021-2024). At the heart of the new strategy are the eight strategic topics (STOs), which replaced the former KAAs and reflect Swiss TPH's ability to constantly answer to newly emerging global health challenges in a highly inter- and transdisciplinary manner.

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- STO #1: Infection biology and molecular epidemiology
 - STO #2: Diagnostics, vector control, vaccines and new drugs
 - STO #3: Personalised and digital health
 - STO #4: Environment and health
 - STO #5: Society and civic engagement
 - STO #6: Health systems and interventions
 - STO #7: Mobility, migration and outbreak investigation
 - STO #8: Statistical and mathematical modelling
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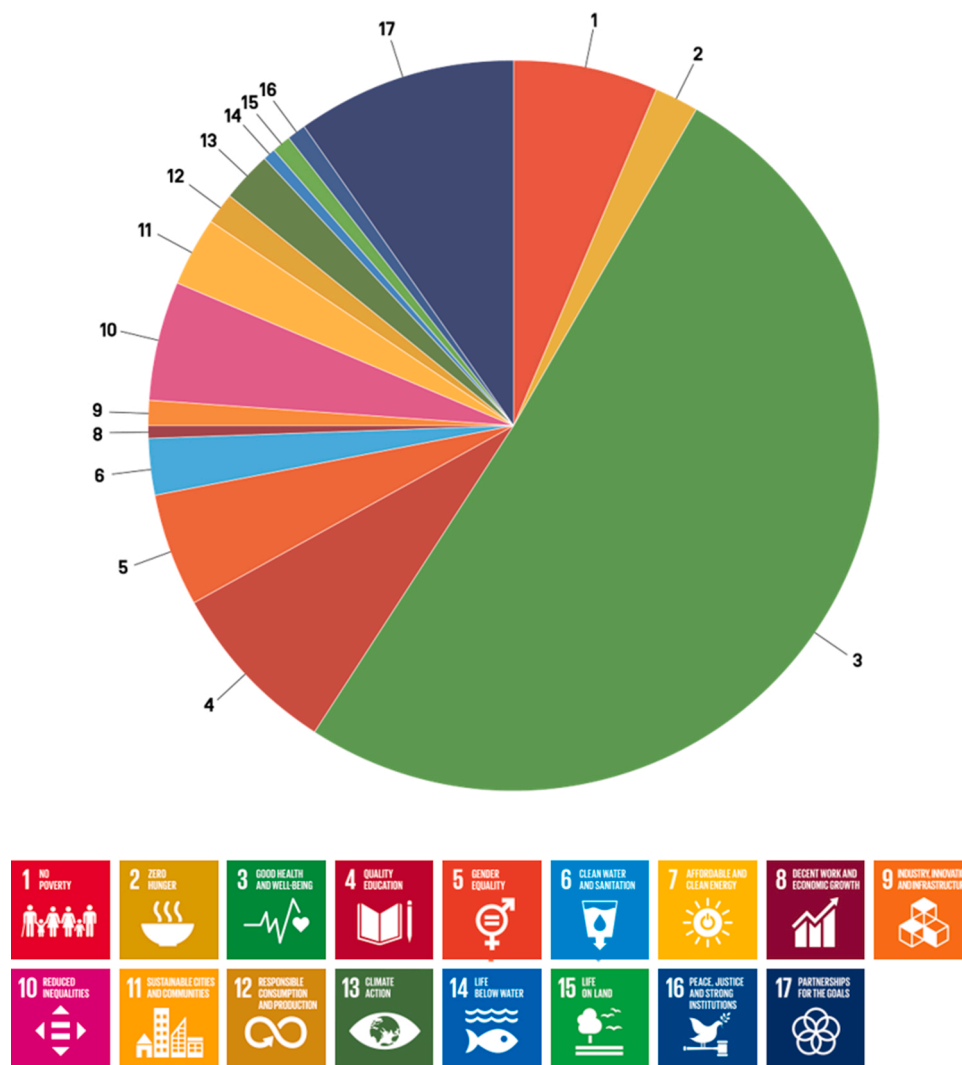


Fig. 2. Chart indicating the frequency of SDGs addressed by the more than 300 active projects pursued by Swiss TPH in 2020.

Since the beginning of 2020, Swiss TPH has been active in containing the local, national and international coronavirus disease 2019 (COVID-19) pandemic. Swiss TPH experts are contributing to the Swiss National COVID-19 Science Task Force, a national scientific advisory board set up specifically for the COVID-19 pandemic. Initially, Swiss TPH supported the University Hospital in Basel in setting up local test centres and are actively involved in myriad research projects ranging from developing new and easy-to-use antibody tests to investigate the level and extent of the Swiss population’s immunity against the corona virus and evaluations of international COVID-19 projects financed by the World Bank, Gavi - the Vaccine Alliance, among others.

Box 4

Interview with Professor Jürg Utzinger (conducted on 6 May 2020)

Since 2015 you have been Director of Swiss TPH. What were and are the main objectives?

"The chief objective thus far was to consolidate Swiss TPH’s role as a world-leading institute in global health that pursues excellence in research, education and services. This not only includes generating innovative research results, but also approaches that address specific problems and are both applicable and scalable. Partnership is key, because together is better!"

What are the challenges here?

"Taking science to impact not only requires cooperation, but also a long-time horizon. The latter often contradicts the logic of many funding

bodies, which often expect quick fixes in a short time. Our successes in the field of major diseases of poverty (malaria, tuberculosis, HIV/Aids and neglected tropical diseases) as well as non-communicable diseases and environmental health are only possible through long-term commitment and perseverance, in a spirit of mutual learning for sustainable development."

The Agenda 2030 for Sustainable Development has created a global framework to which the Swiss TPH also feels committed. What is the institute’s contribution to the 17 SDGs?

"With more than 300 active projects, we make a vital contribution to almost all of the 17 SDGs. This also reflects our strong wish to "leave no one behind": In partnership, we work in the most remote areas of Africa, Asia and the Americas with the poorest people who are particularly affected by malnutrition, diseases of poverty but, increasingly so by non-communicable diseases and impacts due to climate change. In my view, the Agenda 2030 is, above all, a commitment to global solidarity."

Is there not a danger of subordinating oneself to the goals formulated in Agenda 2030 - at the expense of strategic research niches and one’s own strengths?

"This is indeed a field of tension. But I think the opposite is true: only those who are aware of their unique selling proposition and do not opportunistically orient themselves only towards the money pots will be able to make the greatest contribution to the SDGs. One of the important success criteria for the SDGs will be whether we manage to build a knowledge society with fair and equitable knowledge circulation

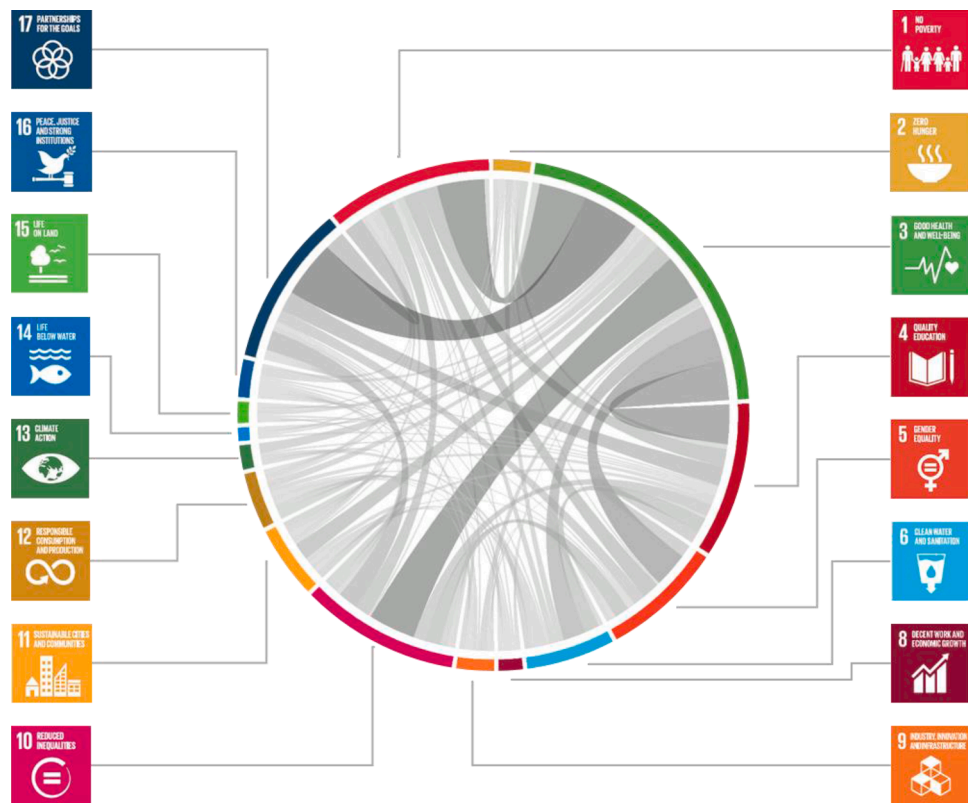


Fig. 3. Circular plot indicating frequencies and interactions of SDGs assigned from all the Swiss TPH projects in 2020.

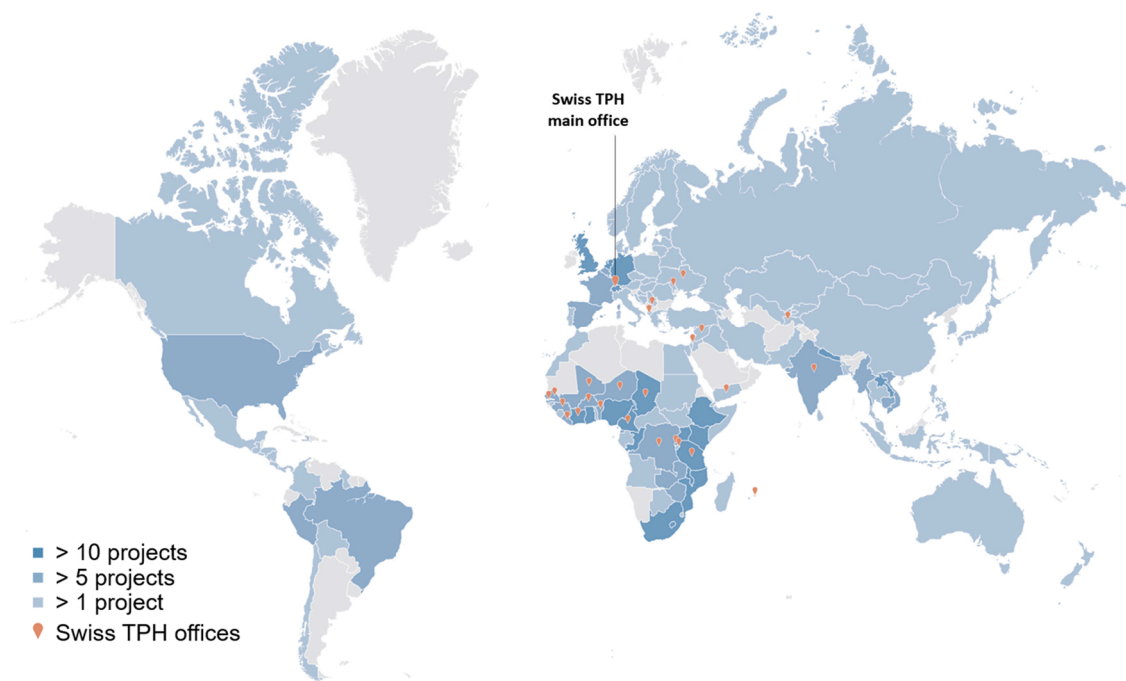


Fig. 4. Together with its partners, Swiss TPH works on 319 projects in 135 countries.

through partnership: Only then can we work together to identify and solve some of the most pressing global health challenges."

Jürg Utzinger was born on 20 August 1968 in Zurich. He graduated in Environmental Sciences from the Swiss Federal Institute of Technology Zurich (ETHZ) in 1993 and, two years later, he completed a post-graduate course at the Center for Development and Cooperation also at

ETHZ. In 1999, Jürg Utzinger got a PhD in Epidemiology from the University of Basel, following extensive research work at the Centre Suisse de Recherches Scientifiques en Côte d'Ivoire (CSRS). After spending several years as a Visiting Research Fellow at Princeton University in the US, in 2004, he was awarded a Swiss National Science Foundation (SNSF) professorship at Swiss TPH and the University of



Fig. 5. Laboratory Ifakara 1957 New solar plant Bagamoyo 2021.

Basel. As Professor in Epidemiology at the University of Basel, Utzinger was head of the Ecosystem Health Sciences unit at Swiss TPH until his appointment as Director. Jürg Utzinger is an internationally renowned expert in epidemiology and integrated control of parasitic diseases, with an emphasis on schistosomiasis and other helminth infections. Further areas of research and teaching include spatiotemporal predictions of neglected tropical diseases and health impact assessments of large development projects. Utzinger is a member of various national and international committees, editorial boards of scientific journals and transnational research consortia in the areas of health and development cooperation.

3. Conclusion

Today, the research, education and service portfolio of Swiss TPH is united under the banner of global health and spans the globe from Southeast Asia and the Pacific region to India and Latin America. Global health refers not only to the geographic remit, but more to the fact that teaching, research and implementation on site can only take place in close collaboration with local partner institutions and populations. As amply demonstrated in this article, the history of Swiss TPH is rich, and the following aspects of its legacy deserve special mention.

3.1. Translating innovation into improving health worldwide

Swiss TPH validates the latest innovations from the laboratory and works with local partners to implement them on site – not in the fuzzy philanthropic sense of “doing good” in a random village, but rather in ways that are tailored to local societies and health care systems. One example: Swiss TPH’s research activities into mosquito nets treated with insecticides – part of Tanzania’s national malaria control programme – has brought about a 50% reduction in child mortality due to malaria in the Kilombero district since the end of the 1990s. Additionally, the malaria vaccine RTS,S, which was validated in collaboration with the Ifakara Health Institute, is now being introduced to Ghana (Abdulla et al. 2008, (Niyohé et al., 2018).

3.2. Investing in people and institutions

Research, education and services – these have been the three pillars of Swiss TPH for 77 years. The institute invests heavily in training and further education for up-and-coming researchers. The majority of the many successful Swiss TPH master and doctoral students from low- and middle-income countries (LMICs) return to their home countries upon completing their studies and take on leadership positions where they can help improve and protect public health. In politically delicate contexts, it is especially important to support scientists in their individual careers. Setting up partner institutions in LMICs is similarly important. Swiss TPH has been investing in scientific organisations in Tanzania and Côte d’Ivoire since the 1950s. This has given rise to IHI in Tanzania, CSRS in Côte d’Ivoire and CSSI in Chad, all three of which are scientific hotspots

in Africa that are making a difference when it comes to improving health care on the continent (Tanner et al., 1994; Bonfoh et al., 2011; Saric et al., 2018aa).

3.3. Neglected diseases, people and systems

Since the early years, Swiss TPH placed particular emphasis on diseases of poverty and neglected tropical diseases; thus issues that receive little international attention from scientists while disproportionately impacting the poorest segments of the population (Utzinger et al., 2012). This includes parasitic worm diseases, Buruli ulcers and human African trypanosomiasis. Swiss TPH develops diagnostics, drugs and vaccines for these diseases. However, these can only be put to effective use in well-functioning health care systems. “You don’t just need a magic bullet. You need a magic gun,” says Director emeritus Tanner. In other words, it is not sufficient to have a vaccine, but you also need a health care system that can deliver it to the population. And just as it is not enough to concentrate solely on developing compounds and vaccines, it is also not enough to concentrate solely on infectious diseases. Non-communicable diseases have been on the rise in many African and Asian countries: high blood pressure, diabetes and cardiovascular disorders, to name but a few. These are all on the agenda, but many people require long-term treatment. Therefore, it is important to focus on the interdependencies between chronic and infectious diseases. The link between diabetes and tuberculosis is well-known (Yorke et al., 2017). It requires not only new preventative measures and treatment approaches, but also poses new questions to science that require, above all, interdisciplinary cooperation.

3.4. From inter- to transdisciplinary approaches

Experts of all stripes are working at Swiss TPH – doctors, biologists, epidemiologists, geographers, biostatisticians, mathematical modellers, veterinarians, medical anthropologists, economists and gender researchers – to solve the world’s most pressing global health issues. Over the past few years, transdisciplinary research approaches have also taken their place alongside the institute’s strong interdisciplinary focus. The goal is to foster open/open-ended discussions between researchers and a wide variety of stakeholders, including politicians and practitioners, in order to generate new knowledge and long-term solutions in an interactive way.

Partnership as vital key to success Research partnership has turned out to be crucial for the success of Swiss TPH. At the end of the 1940s and the beginning of the 1950s, STI was building up health research and implementation organizations in Africa. The former Swiss Tropical Institute Field Laboratory in Ifakara/Tanzania has developed into the prestigious Ifakara Health Institute (Figure 5, Box 5). The same applies for the Centre Suisse de Recherches Scientifiques en Côte d’Ivoire (CSRS) which works at the interface between health, nutrition and

biodiversity (Box 6).

From the Swiss Tropical Institute Field Laboratory (STIFL) to the Ifakara Health Institute (IHI)

In 1949 Rudolf Geigy, founder of the Swiss Tropical Institute in Basel, initiated the field laboratory in Ifakara, Tanzania. To this day, it has developed into an important pillar of the Tanzanian health system. Today, the IHI is one of the most renowned research organizations in Africa. At times, it employed more than 1,000 people. They all develop and validate new vaccines and active substances against diseases of poverty such as malaria, tuberculosis or HIV/Aids and new instruments to strengthen rural and urban health systems. Over time, the former field laboratory was continuously handed over to Tanzania (Tanner et al., 1994). The Ifakara Health Institute (as the former Swiss Tropical Institute Field Laboratory is called today) was at the forefront of many crucial malaria interventions (Abdulla et al., 2008; Schellenberg et al., 2001), which resulted in a marked improvement in human health. In 2008 the IHI, together with the Manhiça Health Research Centre in Mozambique, was awarded the renowned Prince of Asturias Prize. Thanks to the collaboration of the Swiss TPH and the IHI, Tanzania already achieved the Millennium Development Goal 4 (reduction of child mortality) in 2010 (Niyeha et al. 2018).

Centre Suisse de Recherches Scientifiques en Côte d'Ivoire (CSRS)

CSRS was founded in 1951 on the premises of the French Office de la Recherche Scientifique et Technique Outre-Mer (ORSTOM) in Adiopodoumé, in close proximity to Abidjan. Particularly in the early years, Swiss Tropical Institute repeatedly sent scientists to CSRS: their research interests ranged from ecology, zoology, botany and nutrition science to health research. Structurally, however, the CSRS belonged to the Academy of Natural Sciences (today: SCNAT). This situation did not change when ORSTOM was dissolved in 1987 and many Frenchmen left the field. After their return to France, the CSRS remained the only research institution in Adiopodoumé, strengthening its relations with the Ivorian authorities and scientific bodies. It underwent a process of "Ivoirization" and recruited local researchers. The CSRS did not close its doors when Côte d'Ivoire was threatened by a civil war between 2002 and 2007 (Bonfoh et al. 2011). Today, CSRS is regarded as a showpiece for the Swiss-Ivorian research partnership. Its 300 employees work in strategic fields such as "health", "food security" or "ecology/biodiversity" and implement projects in Côte d'Ivoire and the entire sub-region. A recently published study shows that the CSRS has the second highest research output (measured by the number of publications in the peer-reviewed literature) in Côte d'Ivoire after the Université Félix Houphouët-Boigny (Sarıc et al., 2018ab).

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