

# The Swiss Tropical Institute – improving health worldwide

by Marcel Tanner and Joachim Pelikan

Prof. Marcel Tanner, PhD, MPH  
Swiss Tropical Institute, Basle, Switzerland



Dr. Joachim Pelikan, PHD  
Swiss Tropical Institute, Basle, Switzerland



Contributing to the improvement of the health of populations internationally and nationally through excellence in research, services, and teaching/training is the goal of currently more than 300 staff members and their international networks of the Swiss Tropical Institute (STI). Founded in 1943 as a public institution, STI is today firmly established as an institute for International Health with a portfolio characterized by academic excellence, national as well as international standards of high quality, accredited services and consultancies.

The STI follows a broad interdisciplinary approach and an iterative process between the laboratory, clinical work and Public Health action. Consequently, research, training and services are performed at the level of innovation (developing concepts, methods and products), validation (providing evidence for what works), and application (strengthening Public Health systems and policies). The cornerstone to achieve STI's mission is formed by broad national and international collaboration and partnership guided by the principle of mutual learning for change.

The STI has a major focus on working on 1. disease systems; mainly malaria, trypanosomiasis, mycobacteria, meningitis, TB, HIV/AIDS, helminths (schistosomiasis, food-borne trematodes) and 2. health systems; mainly the strengthening of equitable health systems. STI is effectively linked to most Global Health Initiatives, which helps to ensure that results generated through research are taken into account by decision makers at the policy and implementation level.

STI's activities in the field of malaria research and control currently represent a typical example on how STI works. The malaria portfolio ranges from innovation to effective Public Health application. This is reflected in the contributions to innovating new malaria

vaccines as well as to clinical development plans for existing vaccines, drugs and diagnostics. STI has also contributed either directly or supportively to policy formulation and Public Health action as evidenced, for example, by the role in scaling up the use of insecticide-treated bednets to the national level, in developing new diagnostic strategies, in improving access to treatment, and in integrating control activities in urban and rural areas in Africa and Asia. STI also sees the concentrated activities in malaria as a response to and a support of the paradigm shift from malaria control to malaria elimination/eradication.

## STRUCTURES AND ACTIVITIES

Within the »Department of Medical Parasitology and Biology of Infection« studies on host-parasite relationships and determinants of infection and morbidity at the molecular, cellular, clinical and population levels are central. Important projects include research on variable antigens and their corresponding genes of the malaria parasite in the »Molecular Parasitology and Epidemiology Unit«. The »Molecular Diagnostics Unit« is engaged in the development of new genotyping tools for highly sensitive detection of the malaria parasite *Plasmodium falciparum* in blood donations. One important project of the »Molecular Immunology Unit« is the research of *Mycobacterium ulcerans* infections (Buruli ulcer), towards improving control, diagnosis and therapy of this typically neglected tropical disease. The »Parasite Chemotherapy Unit« is engaged in drug discovery of new antiprotozoal compounds as well as in malaria drug discovery. The team of the »Gene Regulation Unit« is working on epigenetic regulation of the var gene family to better understand the regulation of this gene family of the malaria parasite. The »Helminth Drug Development Unit« is interested in identifying and developing novel, broad-spectrum, orally active drugs for helminth diseases caused by parasitic worms.

The »Department of Public Health and Epidemiology« explores new approaches in epidemiology, assesses interventions for disease control, and studies determinants of health seeking and the organisation and planning of health systems in Africa, Asia and Europe. The team of the »Biostatistics and Epidemiology Unit« has comprehensive experience in the modelling of malaria epidemiology and control as well as in the modelling of the geographical distribution of parasitic infections. One major project within the »Interventions and Health Systems Unit« – in collaboration with STI's long term partner institution, the Ifakara Health Institute« (IHI) in Tanzania – is the involvement in the large-scale phase III multicentre trials in Africa of the promising malaria vaccine candidate RTS,S/AS. The »Ecosystem Health Sciences Unit« covers a wide array of basic and applied research and disease control interventions, mainly focusing on the so-called neglected tropical diseases. The work of the »Health Social Sciences Unit« is related to medical anthropology as well as cultural epidemiology. Access to health services plays a major role as well as research on illness behaviour, disease control and mental health. The »Human and Animal Health Unit« brings together animal and human health services in the »one health« concept. Assessments of human benefits of interventions in livestock especially among pastoralists are central for this work.

The »Medical Service Department« is a centre of competence in travel and tropical medicine and the area of emerging diseases and zoonoses. It provides parasitological and diagnostic services. The Travel Clinic offers advice for travellers to tropical and subtropical countries, vaccination services and a 24-hour emergency service. In recent years STI further developed its competence in clinical and diagnostic services within the national health care delivery system as an official reference centre for parasitology, travel and tropical medicine. At an international level, the »Medical Department« and the »Diagnostic Centre« are very actively involved in training courses at all levels. Most courses take place in disease endemic areas and therefore drive home to participants the realities of resource-constrained health systems. Another important area of work is the development of new diagnostic tests, especially in serology.

The »Swiss Centre for International Health« (SCIH) as a strongly service-oriented department of the STI provides assistance in the implementation of health projects, acts as executing and support agency for health development and offers short- and long-term consultancies and expertise in all aspects of health services management, planning, risk analysis and evaluation. The SCIH provides advisory and implementation services in developing health systems worldwide and is engaged in short- and long-term projects globally, with a focus on Africa, Asia, Central and Eastern Europe, and Switzerland. It consists of the »Reproductive Health/HIV/AIDS Unit«, the »Health Systems and Economics Unit«, the Systems Performance and Monitoring Unit« and the »Health Technology and Telemedicine Unit«.

The »Department for Pharmaceutical Medicine« (DPM) of the Swiss Tropical Institute (STI) was founded in 2008 and started operations in 2009. The aim is to contribute effectively to bridge the »translational gaps« in the Research and Development process for drugs, vaccines and Public Health interventions between promising research outcomes and their validation and implementation for impact in resource limited economies. Within the overall mission and strategy of the STI, the DPM sees its role in providing high quality services, research and training in the field of pharmaceutical medicine, in the validation of new interventions, as well as at the interfaces between innovation & validation and validation & application.

#### TEACHING AND TRAINING

STI is an associated institute of the University of Basel. Teaching responsibilities at the university include the macro focus Life Sciences with the new biology curriculum and the Medical Faculty for Public Health and clinical areas. STI also contributes to the MA in African Studies. In addition, STI's teaching and training activities entail a range from general introductory courses for the informed public to specialised post-graduate training arrangements. Thus, STI offers a large range of courses for health professionals who wish to prepare themselves for work in Public Health at a national or international level. Currently STI has around 80 PhD and 40 MSc positions per year populated with students from all parts of the world brought together in the spirit of mutual learning.

Since 1998 the STI is offering a postgraduate Master of Advanced Studies in International Health (MIH), accredited by the University of Basel and at a national level. The STI MIH constitutes a jointly developed degree programme in the field of international Public Health and is recognised and offered by nine European universities (tropEd).

All STI courses encourage a student-centred learning and problem-solving approach which entails group work, field and laboratory practicals, round-table discussions, seminars and tutorials.

Seven universities – Basel, Bern, Geneva, Lausanne, Lugano,

Neuchâtel and Zurich – established cooperation in Public Health and health economics to become the Swiss School of Public Health (SSPH+). The role of SSPH+ is to facilitate exchange, collaboration and networking between the various programs and to promote the development of new public and international health training.

#### THE FUTURE

STI is looking confidently into the future. The mandate and jointly developed strategies, as well as the numerous creative and innovative contributions of the staff, provide a sound basis for the conduct of the daily work. Within the context of being an associated institute of the University of Basel the STI is currently integrating the university's Institute of Social and Preventive Medicine into the STI, which creates a new Swiss centre bringing together international and national Public Health expertise and experience in research and training, as well as services. These developments and future positioning at a national and international level will govern the strategic orientation and activities in the coming years. ■

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## Abstract

#### SCHWEIZERISCHES TROPENINSTITUT

Seit seiner Gründung im Jahr 1943 hat sich das Schweizerische Tropeninstitut (STI) zu einer weltweit anerkannten Institution im Bereich Internationale Gesundheit entwickelt. Eine gelebte Interdisziplinarität und eine kontinuierliche gegenseitige Beeinflussung von Aktivitäten und Erfahrungen aus wissenschaftlichen Laborstudien, klinischer Arbeit und praktischer Umsetzung im Bereich öffentlicher Gesundheit sind die Grundpfeiler des Erfolgs.

Heute arbeiten über 300 Mitarbeiterinnen und Mitarbeiter für das STI in den Bereichen Forschung, Lehre und Dienstleistungen und unterstützen so die Gesundheitsentwicklung in den Ländern des Südens und Ostens sowie in der Schweiz. Ein wichtiger Grundsatz ist dabei die partnerschaftliche Zusammenarbeit auf der Basis von gegenseitigem Lernen mit dem Ziel, Gesundheitssysteme zu stärken und zu verbessern.

Studien über Wirt – Parasitenbeziehung auf molekularer, medizinischer und populationsbiologischer Ebene stehen dabei ebenso im Fokus wie Interventionen bei der Bekämpfung von Krankheiten und die Organisation und Planung von Gesundheitssystemen in Afrika, Asien und Europa. Als Kompetenzzentrum für Reise- und Tropenmedizin werden diagnostische Dienstleistungen ebenso wie reisemedizinische Beratungen angeboten. Ein weiterer Schwerpunkt im Bereich Dienstleistung ist die Planung, Analyse und Evaluation von Gesundheitsprojekten sowie die Erforschung und Entwicklung neuer Medikamente und Impfstoffe.

Das Schweizerische Tropeninstitut ist ein assoziiertes Institut der Universität Basel und nimmt umfangreiche Lehrverpflichtungen an insgesamt drei Fakultäten der Universität Basel wahr. Im Bereich der postgraduierten Aus- und Weiterbildung offeriert das STI zahlreiche von der Universität Basel akkreditierte mehrwöchige Kurse für Gesundheitsfachpersonal aus Europa und Ländern mit begrenzten Ressourcen. Im Verbund mit anderen Instituten in Europa und Übersee kann ein Master of Advanced Studies der Universität Basel angestrebt werden. Komplettiert wird das Angebot des Instituts durch zahlreiche Kurse für spezifische Berufsgruppen sowie Kursangebote für die Swiss School of Public Health (SSPH+).

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