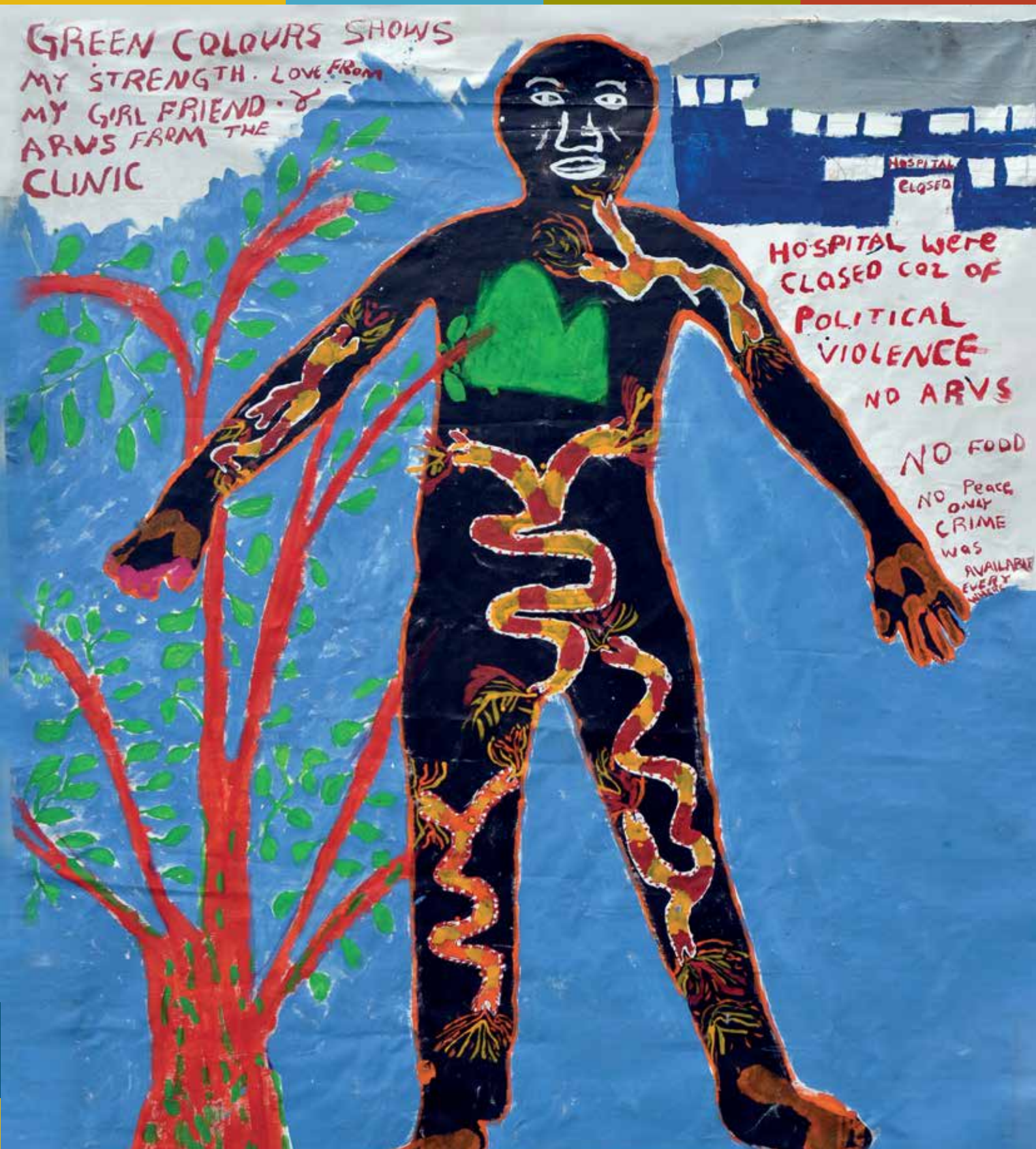
Institute of Tropical Medicine

Foundation of public utility

Annual Report 2012



Institute of Tropical Medicine

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The Institute of Tropical Medicine aims at:

- Advancing the sciences related to tropical, infectious and poverty-related diseases in humans and livestock and to medical and veterinary public health in developing countries
- Strengthening the rational basis of medical and veterinary health care in developing countries
- Providing reference medical care and public health expertise for tropical, infectious and imported diseases of humans and animals in Flanders, Belgium and Europe
- Its main activities are scientific research, advanced education, provision of reference services and policy support, worldwide collaboration and capacity strengthening.

Foreword by the Chair

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The far-reaching internal reforms that became effective on 1 January turned 2012 in a very challenging year for the Board, the management, and most of all, the staff of ITM.

The Board of Governors of ITM welcomed two new members in 2012. Mr Robert Voorhamme, City Counsellor for Education, took over the seat of the City of Antwerp from Mrs Monica de Coninck, who joined the federal government as Minister of Labour. Prof Jan Phillipé is the new representative of the University of Gent, succeeding Prof Marleen Temmerman who became Director of WHO's Department of Reproductive Health.

The Board's Bureau, which is composed of the chair and vice-chairs, two members, the professors' representative and and the director, usually limits its task to a preparatory review of the agenda items prior to Board meetings. In 2012, the Bureau also convened separately at several occasions, among others to meet directly with the new department heads and with a delegation of the academic board. The profound changes of the ITM2020+ strategic plan are naturally met by insecurity, doubts and resistance. While the Board is unanimous about the underlying vision and the inevitable reforms, many senior academics do not yet fully embrace the new structure and culture. The open and constructive dialogue of the Bureau with middle management and staff strengthened the internal support base for the reforms, and allowed to accommodate several concerns in their concrete implementation.

It was also essential to translate the vision and principles of ITM2020+ in effective and tangible improvements. The Bureau therefore took advantage of its special meetings to thoroughly review the directors' proposals for new policies and regulations on academic staff, internal governance, budget allocation, research strategies and educational flexibility. All these far- and long-reaching reforms eventually found a broad consensus within the organisation and were, upon recommendation of the Bureau, approved by the full Board.

The Board's agenda was also filled with more regular items, which however already reflected renewal and progress. The accounts for 2011 and the budget for 2013 showed a healthy financial situation and pave the way for more financial autonomy of the departments. Young, enthusiastic professors and research leaders were recruited from a highly competitive international field. Long-serving, irreplaceable collaborators were internally consolidated in senior staff positions; many others saw their insecure short-term contracts transformed in stable employment. Solid and forward-looking investments continued in upgraded laboratories as well as a third, large student hall.

The Board was also closely involved in two rather testing episodes in the course of last year, i.e. the political insecurity of continued funding by the Belgian Ministry of Development Cooperation, and the external audit of the research commissioned by the Flemish Ministry of Sciences. Both had a gratifying happy ending, but also showed unequivocally that ITM2020+ is the right and timely basis for ITM's future.

Once more, this annual report illustrates the impressive productivity and quality of ITM's staff to its academic triad, even in times of change and insecurity. It is a privilege to be on board of such a dedicated organisation.

Cathy Berx
Chairperson, Board of Governors of ITM
Governor of the Province of Antwerp

Director's note


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Last year we presented on these pages the vision and components of the strategic reform plan ITM2020+. In summary, it prepares for a future in which individuals and institutes in the developing countries take over many of the tasks and resources that make up ITM's current portfolio. Our raison d'être will ever more be derived from scientific and academic excellence, which will remain global and eternal values in an era "beyond aid".

These thoughts were developed and refined over a two-year period of internal reflection, following the external management audit of 2010. The resulting "ITM2020+" reforms were fully implemented as of 1 January 2012, after a six-month try-out period.

A first major reform was the restructuring in three departments along disciplinary lines i.e. biomedical, clinical and public health sciences, replacing the previous five thematic ones (parasitology, microbiology, animal health, clinical, public health). This reshuffling intends to enhance scientific excellence, critical mass and operational efficiency. A second (r)evolution was the appointment of department heads with full line responsibilities, replacing the time-honoured "collegial" departmental management. The purpose is to promote decisiveness, priority setting and accountability, and to establish unambiguous hierarchic lines as part of managerial professionalization. As a third measure, the permanent academic staff will be considerably strengthened in order to relieve overburdened professors, promote scientific renewal and improve postdoctoral career perspectives.

If anything, the year 2012 that "2020+" implies an overly optimistic time perspective. In fact, the anticipated future is taking shape right now, against a background of geographical power shifts, the European fiscal crisis and national decentralisation. As part of the ongoing constitutional reforms in Belgium, the new federal government decided early in the year to devolve a number of competences to the regional level, including university development cooperation - without the resources, that is. Such devolution would have meant the end of our framework agreement with the Directorate-General for Development (DGD), a major pillar of ITM's activities. The stated objective of our programme is strengthening national health systems through scientific capacity strengthening, however, rather than academic cooperation per se. Thematically, it belongs thus under health care, which largely remains a federal matter. Moreover, although ITM is part of the Flemish academic landscape it plays a unique national and international role. Finally, these and other arguments led the government to keep ITM's development programme in the federal portfolio. Centrifugality remains a constant feature in Belgian matters of state however, and we must remain prepared for a full devolution of development cooperation and even health care.

In this respect, ITM does entertain excellent relations with the Flemish Departments of International Cooperation and of Welfare and Health. As an example, by the end of 2012 we started up, with Flemish support, an innovative capacity building collaboration with the National Institute of Health of Mozambique. Moreover, this project builds strongly on the spirit and experiences of the DGD-supported "Switching the Poles" programme.

But also within DGD, new policies are taking shape that confront ITM and other development actors with existential thoughts and challenges. Following peer review by the OECD's Development Assistance Committee (DAC), the fragmented "indirect aid sector" in Belgium (NGO's, Universities and Institutes, Cities & Municipalities, Labour Unions, Teaching Organisations…) was asked to seek more coherence and focus at country level. The declarations on aid effectiveness of Paris, Accra and Busan do not evidently match the objectives and culture of civil society organisations, however. Throughout 2012, we participated in a long series of difficult meetings preparing a new conceptual and legal framework for the Belgian indirect aid sector but by the end of the year a consensus remained elusive. Negotiations will continue, and the new framework may still be several years off. It is clear, however, that also at the national level ITM2020+ has come right in time for preparing our future.

Another all-important event in 2012 was the external audit of ITM's research, commissioned by the Flemish Ministry of Economy, Sciences and Innovation (EWI), a first in institutional history. The preparatory self-evaluation was not evident, as the evaluation window covered the "old ITM", with a different structure and governance, and had to take place while the research units were seeking their position and course in the new departments. The external consultants and the international expert panel, that visited the ITM in June 2012, found an institute in an interesting state of transition. Nevertheless, most of their findings were highly positive (see also Chapter on Research). The ITM was considered a unique asset to Flanders' research capacity and international impact, of which the rich potential and autonomous position needed to be preserved. In terms of scientific output and quality, the ITM ranks at par with European and international benchmarks. The evaluators supported the ongoing reforms, as they felt that ITM needed adapting to a rapidly changing world and increasing competitiveness. In this respect, they argued for even more changes in ITM's research culture, including competition for internal research resources. The overarching institutional research policy plan for 2013-2017 was found adequate and visionary, be it still short in concrete detail at the departmental level. The auditors also made several other recommendations, not least for a "substantial increase of ITM's research subsidy".

Following the audit, EWI agreed to a new covenant for a new six-year period, with a funding increase from 1,750,000 to 2,030,000 euro, in spite of the budgetary crisis. It should be noted that this subsidy represents only 3% of ITM's total budget, but in agreement with other ministries and the Board of Governors, the EWI audit and policies apply to its entire research programme. The Board fully accepted the conclusions and recommendations of the audit, including those on the competitive allocation of

Group picture of the directors of institutes involved in the DGD/ITM Framework Agreement Programme "Switching the Poles", during the Partner Meeting in November 2012. For more details, see Chapter Development Cooperation.

A great deal of time and energy went to the follow up of various European networks, such as EDCTP (European Developing Countries Clinical Trial Partnership), and advanced Article 185 joint programme (www.edctp.org); HIVERA, an ERA-Net for HIV/AIDS research in Europe (www.hivera.eu); and ERINHA, a preparatory ESFRI (European Strategy Forum on Research Infrastructures) for high-containment research on infectious diseases (www.erinha.eu). On the picture with other General Assembly Members of EDCTP, during the High Level Meeting in Cape Town, November 2012.

institutional research resources. The departments were requested to develop their research policy plans accordingly by May 2013, so we put off a full report on ITM's research policy plans until the next annual report.

Amidst these and other pressures, most management efforts went to the refinement and coaching of the new structures, governance and procedures within the ITM. This first full year was extremely challenging, to say the least.

The three new departments have gradually found their own ways and identity. The "3P" aide-memoire has been wonderfully helpful: the Department of Biomedical Sciences focusses on Pathogens, the Department of Clinical Sciences on Patients, the Department of Public Health on Populations. The advantages of the disciplinary divisions have become increasingly apparent, in terms of research culture, technological and methodological platforms, quality assurance, project management and collaborative partnerships. There are still many strategic choices to be made, however, in function of available resources and external competiveness. As mentioned, the departments will further develop their plans over the next few months.

The second main component of the reforms, the introduction of departmental line management, is by all means the most difficult. The newly appointed department heads must walk thin lines between leadership and collegiality within the departments, and between autonomy and institutionalism in the direction committee. In addition, the management processes of a previously flat organisation have to be dissected and redesigned for a multi-layered one. The internal regulations were completely revised in function of the new ITM and became effective as of 1 June 2012. The departmentalisation is complicated by the concurrent consolidation of the comprehensive quality system that aims at institution-wide ISO certification in 2014. Scientists do not take a no, or even a yes, for an answer. Every step of the way in the transformation of ITM has to be explained, justified and discussed at all levels and with all stakeholders. Without going in any detail, it can be stated that the direction committee went through "interesting times". We are more than halfway in the work set out for 2012-2013, however, and confident that by the end of this year the scaffolding around an ITM under reconstruction can be removed.

The third component of the reforms was also firmly tackled, i.e. strengthening the senior academic corps and structuring postdoctoral career perspectives. New academic staff regulations were already introduced in May, and will be fully implemented by mid-2013. They are now completely in line with the private labour law, to which we are submitted as a foundation of public utility and which obliges us to provide a permanent contract to all personnel after two years of employment. Only university-

On November 28, we were honoured by the visit of HRH Princess Astrid, Ambassador for Roll Back Malaria, and Dr. Nafo Traoré, Executive Director of RBM and an old friend of ITM. They were presented with the interdisciplinary work of ITM's Malaria Research Centre and discussed with MPH students on the integration of malaria control in health care systems.

type "academic assistants" will remain employed with renewable temporary contracts during their "professorial traineeship". Experience will have to show how this system will work out in a scientific institute that relies heavily on external funding of temporary nature. It eliminates, however, a long-standing frustration among scientists, and pioneers a precedent for similar dilemmas in universities and research institutes.

Another novelty is the introduction of "tenure-track professors", intended for early-career postdoctoral scientists that can develop their curriculum over a period of five years before receiving full tenure. These TT-positions are open to internal as well as external postdocs, and are especially interesting for ITM in this period of strategic and generational transition. A first round of recruitment in 2012 has already resulted in exciting additions to our staff. Anna Rosanas (Spain) became TT-professor and head of the Unit of Malariology in the Department of Biomedical Sciences. Chris Kenyon (South-Africa) will establish a new Unit of Sexually Transmitted Infections in the Department of Clinical Sciences. In the Department of Public Health, Bruno Meessen (Belgium) will consolidate his pre- and postdoctoral work on innovative health financing as TT-professor and head of a new Unit of Health Economics. Other senior academic positions were awarded to Maria Zolfo, Marjan Pirard and Eric Thys (Departmental Education Coordinators) and Leen Rigouts (Research Laboratory Director).

Another highlight was the awarding of a highly competitive and prestigious European Research Council (ERC) starting grant to Bouke de Jong for her innovative molecular epidemiological work on tuberculosis. This it the second ERC starting grant in a year for ITM, after the one obtained in 2011 by Jakke Van Den Abbeele for his work on the molecular interaction of trypanosomes, symbionts and saliva in Glossina (tsetse) flies. These achievements confirm the thesis that poverty-related diseases are not only a source of relevant research, but also of highly innovative and competitive science. We can also rest assured that a new generation of scientists at ITM stands ready for the future.

In conclusion, 2012 will be recorded in the history of ITM as a transformative year. While the management of change puts a heavy burden on all levels of the institute, this report testifies that ITM's academic and scientific performance is stronger than ever. The next few pages illustrate that we also keep on having good times together. May this spirit endure.

Bruno Gryseels
Director

2012 smileys

January 13. New year's lights in the garden of Rochus Campus.

February 16. "Heavy Sweater Day": a competition to save energy by original warm clothing.

June 20. Garden party for the Patrons of the ITM.

May 10. "Save the Planet" day: a leg-powered fruit juice machine.

June 8. Outdoors' day for the support services.

June 23. Flemish Biotech day: young visitors learn how to extract DNA from kiwi fruit.

November 25. Public Science Day: a larger-than-life demonstration of CD4 cell counts in HIV/AIDS diagnosis for young and old.

July 5. Graduation of the 2011-2012 Master of Public Health classes.

October 26. Fiona Stanley and Geoffrey Stanley, Director and Research Leader at the famous Telethon Institute for Child Health Research in Subiaco, Western Australia, paid us a working visit in view of ongoing and planned collaboration before moving on to Leuven, where Fiona was awarded a Honorary Doctorate.

December 4. The dinner party of the 2012 Colloquium and Joint Partner Meeting took place in the stately surroundings of Napoleon's Palace in the Antwerp city centre.

December 18. . Evening for the Patrons of ITM: Peter Piot as guest of honour, here being interviewed about his autobiography "No time to lose".

December 21. Silly pictures at ITM's Christmas Lunch.

Performance Indicators 2012

EDUCATION

International Master Courses (2012-2012)	
Applicants	424
Admitted students	67 (16%)
International students	63 (97%)
Graduated students	66
Post Graduate Certificate and Short Courses	
Enrolled students	152
Graduated students	145 (95%)
Short Course participants	156
Doctoral training	
Doctoral trainees on 31.12.12	110
of which international	85 (77%)
Doctoral trainees started in 2012	23
Doctoral graduates in 2012	23

RESEARCH

Total number of scientists on 31.12.11 (PhD fellows included)	191
Postdoctoral scientists	96
Number of scientific articles in 2012	423
In ISI journals	316
with JIF >=2 and <5	190
with JIF >=5 and <10	34
with JIF >=10	19
Number of books and chapters in 2012	38
Number of PhD dissertations in 2012	23
Average PhD duration	5 years
Number of externally funded research projects	177
Amount of external research funding (without transfers for partners & overhead)	7,6 million euro
Number of new collaborative projects	33
International meetings organised	5

MEDICAL SERVICES

Patient contacts total	34,160
Outpatients tropical and travel-related diseases	6,299
Outpatients HIV/STD	8,299
Hospitalised patients (UZA)	170
Laboratory patients	32,210
Calls Travel Health Phone	7,000
Page views travel health website	200,000

INTERNATIONAL HEALTH DEVELOPMENT

Master students from developing countries	63
Doctoral trainees from developing countries	65
Doctoral graduates from developing countries in 2012	11
Institutional partnerships	
Africa	7
Asia	4
Latin America	6
Expenses for capacity strengthening in the South	12,8 million euro
National and International Reference Laboratories	14
Diagnostic kits for neglected diseases shipped	2,1 million

FINANCES (million euro)

Total income	51,5
Government subsidies	29,2
Academic core funding	10,6
Research programme funding	1,8
Medical programme funding (excluding patient fees)	3,3
International development programme funding	12,8
Investment funds	0,7
Own income	22,3
External project funding	8,8
Tuition fees, overhead, fiscal rebates, other	8,3
Medical fees	5,2
Expenditure	48,9
Institutional education & departmental research	11
Externally funded research and services	7,6
Development cooperation (DGD Programme)	9,2
Medical Services	9,0
Management	12,1
Carried forward to 2013 and reserves	2,6

HUMAN RESOURCES (in Full Time Equivalents)

Total Staff on 31.12.11	456
University and college graduates	369
Male : Female ratio	40:60
Total staff on institutional budget	208
Senior (tenure) academic staff	35
Academic assistants	34
Support staff	139
Staff medical services	66
Scientific staff on external funding	56
Support staff on external funding	29

QUALITY AND SAFETY MANAGEMENT

Accreditation Master Courses	Achieved in 2009
Laboratories under accreditation/certification	7
Number of ISO certificates	4
ISO certificates granted in 2012	ISO 9001:2008 ISO 15189:2007 ISO 17025:2005 ISO IEC 17043:2010
Staff working under formal quality assurance system	>150
Numbers of accredited tests	>100
Number of external quality audits	1
Number of internal audits	26
Wellbeing, safety and prevention at work	
Sick leave (% of work days)	2,63%
Sick leave due to work-related accidents (% of work days)	0.22%
Energy Performance Certificate	238kWh/m²

Education

Students: at the heart of ITM's mission

ITM's educational programmes combine a thematic niche and a strong research focus, and promote self-learning through the confrontation of ideas and experiences with those of other students and lecturers.

In 2012, ITM paved the way towards a more integrated, flexible and international course programme, in English and French.

These developments are in line with evolutions in International Health education, as well as the Institute's strategic 'ITM2020+' vision.

Master of Science programmes

ITM runs two broad Master of Science (MSc) programmes; one in Public Health (MPH) and another in Tropical Animal Health (MSTAH).

The MPH offers majors in Health Systems Management and Policy, Disease Control, and International Health. In the MSTAH, students can major in Epidemiologic Surveys or Control of Animal Diseases. To facilitate interactive teaching and exchange a master-class is limited to 25 participants.

The newly created major in International Health allows coherent study tracks which are flexible in place, time and content. Credit transfer is possible both from the postgraduate certificate "Introduction to International Health" module, from ITM specialised short courses and from advanced modules from the tropEd network (see page 16) or NVAO accredited masters at universities. Students of the academic year 2011-2012 responded positively to the updated course programme.

Over the last years, the MPH transformed a number of classical tests to assignments requiring the application of content to the participant's own professional context. Access to data from their home-country or prior professional environment is sometimes difficult, but not insurmountable as all participants have extensive professional experience. This approach allows students to start thesis research projects based on a truly comprehensive analysis of their own health system. These personal assignments are organised in small thematic (not geographical) groups in which peer-coaching is key. For example, the health systems module, which includes a visit to Belgian health services, ends with an assignment asking participants to identify critical differences with their own health system and discuss these on a blog with peers and the health professionals of the visited health services.

In the MSTAH the participants from the two majors in disease control and epidemiological data collection were offered a joint module on research methodology with exercises covering a range of experimental and epidemiological research designs. The module concludes with the presentation and peer-review of personal master thesis protocols.

(Post-)doctoral fellowships and grants

Doctoral and postdoctoral training make up an ever greater part of ITM's educational mission. At the end of 2012, 110 PhD students were registered at ITM and 23 had successfully defended their thesis during the year.

The PhD students doing research at ITM include academics and research assistants employed by ITM; Belgian and European scientists with a fellowship from research funding agencies; and PhD bursaries from developing countries supported by the Belgian Development Cooperation or other (development) agencies.

The latter category usually follows a "sandwich" track with alternating stays at ITM and in the home country. ITM awards such fellowships on a selective or competitive basis as part of an institutional collaboration programme, or to graduates from its Master and expert courses. In 2012, two such 'individual' PhD scholarships were awarded. While the number of PhDs graduates increases, postdoctoral positions remain scarce, especially in developing countries. This restricts the perspectives of young, talented scientists, resulting all too often in brain drain to industrialised countries. ITM therefore awards 'postdoctoral re-entry grants' to selected PhD graduates, allowing them to initiate and build up a scientific career in their country. The grant is channeled through the home institution, which commits itself to a career development plan and the gradual take-over of the funding.

Short courses and postgraduate certificates

ITM's international short courses and postgraduate certificates are mostly related to the MPH programme, but also have their own dynamics.

The short course on Qualitative and Mixed Methods in International Health Research (QMM) was fine-tuned. ITM developed a detailed manual to guide students doing fieldwork, such as surveys, in the city of Antwerp. This course is now also part of the ITM PhD training programme.

The content of the postgraduate certificate course in Tropical Medicine for nurses was reorganised in scenarios to mirror the main professional tasks at the start of a career in international health. Managing immunisation activities, a disease outbreak, a nutrition rehabilitation center, health in an emergency setting, a reproductive health programme or the coordination between health centers and a district hospital, are such professional tasks. Public health disciplines (epidemiology, statistics, social sciences, policy and management) are integrated in these competency-oriented scenarios. Tropical medicine and the challenges of clinical work in resource-limited settings constitute a track which runs in parallel to these scenarios. An impressive variety of teaching and training methods stimulates learning and provides methodological input for student's own teaching tasks in the future.

In 2012, new accents were also introduced in the second module on Tropical Medicine and Biomedical Sciences of the postgraduate certificate course in Tropical Medicine and International Health. Students interactively explored the advantages and limitations of rapid diagnostic tests in rural settings. They practiced venipuncture and injection on training arms. These training for trainer sessions will soon include lumbar puncture simulations. Learning by doing is also applied to a session on transport of clinical samples. The decision was taken to extend this module from eight to ten weeks to allow for more self-study and a series of case discussions on differential diagnostics and clinical decision making. For biomedical scientists one of the extra weeks will deepen the important topic of post-manufacturing drug management and quality control.

The e-learning Short Course on Antiretroviral Therapy (e-SCART) is ITM's e-learning laboratory. This three credit online course is facilitated by both ITM staff and experienced e-SCART alumni. The latter cater for 62% of online coaching hours and experience this as very rewarding and useful for continuous professional development. In 2012, eSCART focused on the development of a virtual community of practice with course participants and alumni, the measurement of student investment time in an e-learning environment, as well as on the development of rubrics for the assessment of group work. The yearly e-facilitators training (also held via e-learning) focused on specific coaching skills and coordination between content experts and methodological facilitators for online group work.

Joining hands in Belgium and abroad

National and international collaboration in education is a strategic priority for ITM.

The ITM contributions to the Master in Tropical Biomedical Sciences at the University of Antwerp and the online modular Master of Science in Animal/Human/Ecosystem Health at the University of Pretoria are being institutionalised. ITM scientists lecturing at these universities have significant responsibilities in teaching and curriculum development in both programmes.

In October 2012, ITM's Clinical Research Strategic Network organized the second edition of the Good Clinical Practice training module at the Clinical Research Unit of Nanoro (CRUN) in Burkina Faso. A third of the participants came from member institutions of the West-African Network of Excellence against TB, AIDS and Malaria (WANETAM-plus). The CRUN context allows for a unique combination of theoretical and practical training. ITM also ran two short training workshops on clinical research and clinical decision making respectively, at the medical faculty of Gadjah Mada University (UGM) in Yogyakarta, Indonesia.

The Pontificia Universidad Católica del Ecuador (PUCE), hosted the annual workshop of ITM's Linqed educational network, focused on joint learning about quality assurance in education. Specific Linqed network projects included piloting a self-assessment framework for student assessment programmes and the exchange on MSc research supervision practices among all network partners. Bilateral exchange projects within this network involved Bolivian and Ecuadorian network partners on student assessment and between ITM and UGM Yogyakarta on master thesis supervision skills.

ITM actively collaborates in the tropEd network for master level training in International Health and hosted a tropEd General Assembly meeting in January 2012. With partners of the network, ITM successfully participated in the last Erasmus Mundus call for joint doctoral programmes (see 'under the microscope' on page 20).

The Qualitative and Mixed Methods (QMM) course and the Management of Reproductive Health / Tropical Disease Control Programmes short courses were re-accredited for the tropEd Master in International Health.

Studying at ITM in practice

In order to capitalise also academically from the richness and diversity of its student community, ITM promotes an "open campus" policy.

One of the initiatives developed in this context was a One-Health workshop with participants of human and animal health masters, a joint academic introductory week in September for all master students and the organisation of social events.

Twice a year, student representatives and the direction of the Institute meet to discuss priorities for improving ITM's course programme. The 2012 meetings mainly led to quality assurance efforts in student assessment and master thesis supervision.

A standard format for yearly management reviews of courses was introduced. The new registration and management procedures, applicable to all categories of students were fine-tuned, including the study contracts for the more than 50 students who visited ITM in 2012 as "individual students" for tailor-made internships and study programmes. A study of investment time in education of academic staff documented the teaching load of scientific departments and individual staff members. Senior academic staff deliver around 80% of the teaching, which translates to an investment of about 20-25% of available working time.

ITM's tuition fees policy aims at covering 25% (postgraduate certificate level) to 50% (international master and expert level) of the full course cost. The rest is covered by ITM's own budget, half of which is core funding by the Flemish Ministry of Education.

Tuition fees were adjusted to the cost of living and now amount to 16.200 euro for a one year master course in a group of 25 students (60 ECTS credits). The fee for the postgraduate certificate course (5 months, 30 ECTS credits), taught in groups of 40-50 students, is 1 500 euro for EU students and 3 000 euro for non-EU students. For shorter expert courses the pro rata fee is approximately 325 euro per credit.

ITM master students have an initial university master degree, language proficiency (English or French) and relevant professional experience of at least 2 years. Selection criteria include academic record, relevance of professional experience, future plans and peer review. In case of equality, we take gender and geographical balance into account. For the academic year 2011-2012, 23 students out of 161 eligible applicants (14%) were selected for the MPH-DC, 24 out of 134 (18%) for the MPH-HSMP, and 20 out of 129 (16%) for the MSTAH.


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The Framework Agreement Programme between ITM and the Belgian Development Cooperation provided 51 ITM master students with a full scholarship in 2012. The Joint Japan/ World Bank Graduate Scholarship Programme funded one MSTAH student and five MPH students; the Belgian Technical Cooperation Agency BTC financed another two. Scholarships for ITM's short courses were awarded by the Belgian Directorate-General for Development (DGD), BTC, Médecins Sans Frontières and private organisations. ITM provided four partial scholarships to European students from own funding and private sponsors, especially the Ackermans-Van Haren fund.

In 2012, ITM's Student Service assisted over 700 students, trainees and guests with travel, visa, housing, social support, cultural activities and practical advice. Making students feel at home and offering administrative support remained the prime objectives, so as to enable them to concentrate fully on a fruitful and pleasant academic stay. With increasing difficulty to find affordable and good quality short-term housing, having sufficient own accommodation became a necessity. On top of the 29 existing ITM student lodgings, 18 rooms became available in a new building in Bogaerdenstraat 8. ITM aims at making an additional 69 quality lodgings available by January 2014.

Under the microscope

Tropen aan Tafel: meeting Antwerp for dinner

One of the main objectives of ITM's student service is to make sure foreign course participants can concentrate fully on their studies and enjoy a fruitful and pleasant stay in Antwerp.

In 2012, ITM introduced a new initiative following the results of a survey among students which indicated that they missed interaction with the local population. The student service mulled over various solutions and concluded that no place is more suitable than the dinner table to foster integration. They found enough enthusiastic Antwerp families willing to invite two students for dinner; 'Tropen aan Tafel' ("Tropics at the table") was born.

The culinary blind dates proved to be a great success for both guests and hosts. Many informed the student service of their intention to meet again. 'Tropen aan Tafel' allows students to meet inhabitants of Antwerp and experience Belgian culture. At the same time, host families get to see another side of the ITM and meet students from a different country and culture. Both guests and hosts are offered a great opportunity to develop new friendships.

The initiative will be repeated with the arrival of a fresh batch of students in Antwerp.

Alumni network

ITM remains a point of reference for students who have become part of the Institute.

In recent years, ITM's scientific departments developed several scientific networking initiatives, which offer a wide range of possibilities to stay up-to-date in the fields of health services organisation, disease control, and tropical animal health. New activities will increasingly make use of modern communication tools and will be directed at all alumni, whether from postgraduates certificates, master or short courses or PhDs, avoiding fragmentation between courses.

The Institute's alumni activities are organised in two networks, respectively on human and on animal health. Through newsletters and regional meetings, ITM aims at offering career support to master graduates. Since two years, calls for abstracts and presentations at international conferences are included. The alumni network also generates precious feedback from professional practice for ITM's courses.

The fifth RIPROSAT symposium for animal health alumni was held from October 1-3, in Addis Ababa, Ethiopia. The symposium addressed challenges and opportunities in a "One Health" approach in the context of developing countries. Veterinarians, physicians and biologists from Africa, Asia, Latin America, Europe and Canada discussed how they can increasingly collaborate for human and animal health. Participants pointed out that awareness must be raised through advocacy and media coverage in order to implement one-health concepts. To this end, national collaborating bodies should also be created to formulate and design appropriate strategies and projects that address the people's needs within a "One Health" concept.

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Educational collaboration throughout the world

ITM has strong ties with academic institutions across Africa, Asia and Latin America.

In Latin America, ITM provided institutional and academic support to master and postgraduate courses in public health, disease control and tropical medicine at the Institute of Public Health at the Pontificia Universidad Católica (IPH-PUCE) in Quito (Ecuador), the Post Graduate Unit for Tropical Medicine of the Universidad Mayor San Simon in Cochabamba (Bolivia) and the Instituto de Medicina Tropical Cayetano Heredia in Lima (Peru).

In Africa, ITM supported the web-based Master of Science in Animal/Human/Ecosystem Health at the University of Pretoria (South Africa), the latter to be developed as a joint degree by 2016. In Uganda, ITM contributed to the development of a two-year Health Systems Management fellowship programme. It concerns a unique collaboration between the Ministry of Health, Makerere University, the Uganda Public Health Specialists Association and ITM, aiming at continuous in-service professional development of health systems managers. In 2012, the first cohort of eight professionals were enrolled. At the Uganda Martyrs University ITM supported the development of an advanced diploma in Health Insurance Management. At the Institut National d'Administration Sanitaire (INAS) in Rabat (Morocco), the Institute supported curriculum development, e-learning capacity and PhD training. ITM also supported the postgraduate Master course in Parasitology and Parasitic Zoonoses (PARAZOON) at the Institut Agronomique et Vétérinaire (IAV) Hassan II, in Rabat. Several lecturers from the Department of Biomedical Sciences taught in the course's first cohort.

In Asia, ITM contributed to training programmes in clinical tropical medicine, internal medicine and HIV/AIDS at the Sihanouk Hospital Center of Hope in Phnom Penh (Cambodia); the tropical medicine diploma course at the B.P. Koirala Institute of Health Sciences in Dharan (Nepal); and public health training for health district teams and e-learning development at the Institute of Public Health in Bangalore (India).

Together with these and other institutional partners in the framework programme of ITM and the Belgian Development Cooperation, the Institute constitutes since 2008 the educational network Linqed, which focuses on educational quality assurance.

Under the microscope

Trans Global Health, an Erasmus Mundus Joint Doctorate Programme

The Trans Global Health proposal was selected with eight others from 133 proposals in an Erasmus Mundus call for Joint Doctorate Programmes. These are designed to enable PhD students to obtain a joint degree from partner institutes in two or more different European countries.

The Trans Global Health consortium consists of members of the TropEd network, an already existing network of higher education institutions that offer a European Master of International health (www.troped.org). The other partners in Trans Global Health are the Vrije Universiteit Amsterdam (coordinator), University and the Academic Medical Centre of Amsterdam, the Université Victor Segalen –in Bordeaux, and the University of Barcelona. Ten associated partners in the global South will be involved in the co-supervision of the PhD students.

The Trans Global Health programme will train a new generation of global health scientists, responding to emerging needs worldwide and confronting complex global health challenges through transdisciplinary approaches. After a seminar hosted by ITM in November 2012, the first call for candidates was launched, focusing on 3 themes: 'Confronting the global challenges of drug resistance'; 'Towards more sustainable and better quality health care in the global South in order to achieve HIV and maternal and reproductive health-related Millennium Development Goals'; and 'Generating understanding of health syndemics in the Global South'.

www.transglobalhealth.org

ITM course offer

Objectives	Target group	Language	Credits
International Masters			
Master of Public Health - Health Systems Management and Policy (MPH-HSMP)			
Focus: Management and policy of comprehensive and accessible quality health services at local, national and international level ***Components***: • Health systems management • Analysis, research, decision-making • Communication skills • Optional modules • Integration and synthesis (master thesis) ***Options***: • Health Policy • Strategic Management	Experienced health professionals (mainly medical doctors)	Yearly alternating English and French	60
Master of Public Health - Disease Control (MPH - DC)			
Focus: Epidemiological, technical and organisational aspects of disease control with emphasis on sustainable integration in regular health services ***Components***: • Quantitative and qualitative methods • Public health • Research & tools • Master thesis ***Options***: • Reproductive Health Programmes • Tropical Diseases Control	Experienced health professionals (mainly medical doctors)	Yearly alternating English and French	60
Master of Science in Tropical Animal Health (MSTAH)			
Focus: Epidemiological, technical and organisational aspects of animal disease control and surveillance ***Components***: • Research methodology • Project cycle management • Global livestock development • Epidemiological case studies • Master thesis ***Options***: • Animal disease control • Epidemiological data collection & processing	Experienced health professionals (mainly veterinary doctors)	Yearly alternating English and French	60

Objectives	Target group	Language	Credits
Postgraduate certificate courses			
Tropical Medicine and International Health (TM&IH / MT&SI)			
Focus: Clinical, biomedical and epidemological aspects of tropical and poverty related diseases and their control; health care organisation in low and middle income countries ***Components***: • Vector-borne diseases • Tuberculosis, HIV, malaria • Maternal and child health • Emergency medical care • Management of health care systems • Tropical and neglected diseases • Clinical decision-making • Tropical laboratory sciences • Clinical specialties in the tropics	Health professionals, mainly from the North, preparing to work in tropical and developing countries	Yearly, separately French and English	30
Tropical medicine for nurses and midwives (TG / MT)			
Focus: Clinical, biomedical aspects of tropical diseases and their control; health care organisation in low and middle income countries ***Components***: • Vector-borne diseases • Tuberculosis, HIV, malaria • Maternal and child health • Emergency medical care • Management of health care systems • Tropical and neglected diseases • Tropical laboratory sciences • Nursing in developing countries	Paramedical health professionals, mainly from the North, preparing to work in tropical and developing countries	Yearly, separately French and Dutch	20

Specialised short courses			
Introduction to International Health (TM&IH / MT&SI: Module 1)			
Focus: Diseases and health care in low and middle income countries ***Components***: • Vector borne and tropical diseases • TB, HIV and malaria • Maternal and child health • Emergency medical care • Management of health care systems	Health professionals, mainly from the North, preparing to work in tropical and developing countries	Yearly, separately French and English	20
Clinical and Biomedical Sciences of Tropical Diseases (TM&IH / MT&SI: Module 2)			
Focus: Clinical & biomedical aspects of tropical diseases ***Components***: • Descriptive tropical medicine • Clinical decision-making • Laboratory sciences • Clinical specialties in the tropics	Health professionals, mainly from the North, preparing to work in tropical and developing countries	Yearly, separately French and English	10

Objectives	Target group	Language	Credits
Short course on Clinical Research and Evidence-based Medicine (SCREM)			
Focus: Clinical research with focus on the design of guidelines and algorithms ***Components***: • Protocol / project development • Literature search and critical reading • Statistical data analysis and presentation • Algorithms and scoring systems • Research skills and communication	Experienced health professionals (mainly clinicians)	English	9
Planning and Management of Reproductive Health Programmes (MPH – DC: Module RH)			
Focus: Management and integration of reproductive health programmes in general health services ***Components***: • HIV/AIDS • Sexually transmitted infections • Family planning and maternal health • Project cycle management, logical framework	Experienced health professionals (mainly medical doctors)	Yearly alternating English and in French	15
Planning and Management of Tropical Diseases Programmes (MPH – DC: Module TD)			
Focus: Management and integration of tropical diseases control programmes in general health services ***Components***: • HIV/AIDS, tuberculosis, malaria • Neglected and tropical diseases • Project cycle management, logical framework	Experienced health professionals (mainly medical doctors)	Alternating English and in French	15
Health Policy (MPH-HSMP: Module HP)			
Focus: Formulation, implementation and evaluation of public health policies in developing countries ***Components***: • Framework for policy analysis • Actors and levers in policy making • Country case studies • Emerging challenges	Experienced health professionals	Alternating English and in French	9
Strategic Management of Health Systems (MPH-HSMP: Module SM)			
Focus: Performance assessment and management of organisations in health systems in developing countries ***Components***: • Models for performance assessment • Organisational theory and stakeholder analysis • Management of resources (human, financial, knowledge)	Experienced health professionals	Alternating English and in French	10

Objectives	Target group	Language	Credits
Qualitative and Mixed Methods (QMM) in International Health Research			
Focus: Development of basic skills in qualitative research to understand human behavior and the social context as part of international health research ***Components***: • Qualitative research methods • Theory and models from social sciences • Mixed methods approaches	Health professionals and researchers	English	6
HIV & AIDS: the multidisciplinary approach ("HIV evening course")			
Focus: HIV/AIDS patient care in Belgium ***Components***: • HIV: microbiology and epidemiology • Treatment of AIDS and opportunistic infections • HIV/AIDS in pregnancy and children • Multidisciplinary HIV/AIDS care	Medical and paramedical health professionals	Dutch (13 evening classes)	-
Electronic Short Course on Antiretroviral Therapy (e-SCART)			
Focus: Comprehensive HIV care and antiretroviral (ARV) treatment in resource-poor settings ***Components***: • Virology, immunology and clinical aspects of HIV/AIDS/TB • ARVs and patient management • Prevention of mother to child transmission • HIV pediatrics • Post-exposure prophylaxis • ARV scaling-up	Health professionals (mainly medical doctors)	English	3
Quantitative Risk Assessment (QRA) Internship			
Focus: Quantitative risk assessment (QRA) in endemic disease control and disease import risk management ***Components***: • Introduction to risk analysis • The R software environment • Probability theory • Uncertainty • Bayesian modelling • The WinBUGS software environment	Health professionals (mainly veterinary, medical and biomedical)	English	24 (equi-valent)

Educational output in 2012

Number and origin of participants in ITM-courses 2011-2012

	Belgium	EU	Europe other	Africa	Asia	Latin America	Other	Total
TM&IH EN	14	5	2				1	22
TM&IH EN module	5	2	1			1		9
TM&IH FR	6	2	1	4				13
TM&IH FR module	4	2		2	1		1	10
MT D	38	3						41
MT FR	16	27	6	4		1	3	57
MPH HSMP EN	1	1		11	8	3		24
MPH Mod HP EN		1		6	3	1		11
MPH Mod SM EN				1	2	1		4
MPH DC EN	1			12	8	1	1	23
MPH Mod RH EN	1			3	2			6
MPH Mod TD EN				4	1			5
MSTAH EN				12	6	2		20
MSTAH module		1		7	1	1		10
eSCART EN	1			17	11	1		30
eSCART FR	3	1		25		1		30
SCREM	1			9		1		11
QMM		3		5	4	2		14
QRA internship				9	1			10
Telemedicine workshop				3	2	1		6
PhD ongoing 31/12	25	13	0	48	11	13	0	110
PhD graduates	9	2	1	7	2	2	0	23
Total	**125**	**63**	**11**	**189**	**63**	**32**	**6**	**489**

EN = English FR = French

Age and gender of participants in ITM courses 2011-2012

	Gender		Age					Prior education	
	M	F	20-29	30-34	35-39	40-44	>45	Bachelor	Master
TM&IH EN	9	13	13	5	3	1			22
TM&IH EN module	5	4	7		1	1			9
TM&IH FR	7	6	1	9	3				13
TM&IH FR module	2	8	1	3	2	2	2		10
MT D	1	40	32	3	1		5	41	
MT FR	6	51	42	9	5		1	57	
MPH HSMP EN	17	7		5	9	7	3	2	22
MPH Mod HP EN	7	4		3	6	2			11
MPH Mod SM EN		4			1	3			4
MPH DC EN	12	11	2	8	7	6		1	22
MPH Mod RH EN	2	4		3	1	1	1	3	3
MPH Mod TD EN	3	2		4	1			2	3
MSTAH EN	14	6	8	9	2	1			20
MSTAH module	5	5	6	1	2	1			10
eSCART EN	13	17	10	12	4	3	1	21	9
eSCART FR	26	4	4	8	9	7	2		30
SCREM	9	2		4	5	2			11
QMM	6	8	1	4	7	2		2	12
QRA internship	5	5	1		3	2	4		10
Telemedicine workshop	5	1	2	1	2		1		6
PhD ongoing 31/12	58	52	9	27	30	27	17		110
PhD graduates	13	10	2	3	8	5	5	0	23
Total	**225**	**264**	**141**	**121**	**112**	**73**	**42**	**129**	**360**

PhD dissertations in 2012

Doctoral Theses (PhD)

Department of Biomedical sciences

Chitanga Simbarashe. *Domestication of the trypanosome transmission cycle and its effect on the level of drug resistance, transmissibility and virulence of Trypanosoma congolense.* Supervisors: Prof. dr. Pierre Dorny (Ghent University, ITM), Prof. dr. J. Van Den Abbeele (ITM), Dr. B. Namangala (University of Zambia).

De Haes Winni. *Particulate antigen delivery to dendritic cells in the context of HIV-1 immunotherapy.* Supervisor: Prof. dr. Guido Vanham (ITM, University of Antwerp)

De Vooght Linda. *Enhancing tsetse fly refractoriness to trypanosome infection using a symbiont-based delivery approach.* Supervisors: Prof. dr. Jan Van Den Abbeele (ITM), Prof. dr. Marc Coosemans (ITM), Dr. Guy Caljon (ITM).

Jugheli Levan. *Use of molecular tools in various aspects of tuberculosis diagnosis and epidemiology.* Supervisors: Prof. dr. Françoise Portaels (ITM), Prof. dr. Leen Rigouts (ITM, University of Antwerp), Prof. dr. Rusudan Aspindzelashvili (National Centre for TB and Lung Diseases).

Mous Kim. *Expression analysis of the cellular HIV-related host factors LEDGF/p75, APOBEC3G, TRIM5alpha and tetherin in frequently HIV-exposed seronegative individuals.* Supervisors: Prof. dr. Xaveer Van Ostade (University of Antwerp), Prof. dr. Luc Kestens (University of Antwerp, ITM), Dr. Wim Jennes (ITM)

Mwape Kabemba Evans. *An epidemiological study of human tapeworm infections in the Eastern Province of Zambia.* Supervisors: Dr. E. V. Schwan (University of Pretoria), Prof. P. Dorny (ITM), Prof. I.K. Phiri (University of Pretoria).

Nguyen Thi Giang Thanh. *The epidemiology of zoonotic fasciolosis in Central Vietnam.* Supervisors: Prof. dr. P. Dorny (ITM, Ghent University), Prof.dr. J. Vercruysse (Ghent University), Prof. dr. Le Thanh Hoa (Institute of Biotechnology, Hanoi, Vietnam)

Selhorst Philippe. *Prevention of HIV transmission through interference with HIV entry, reverse transcriptase, protease and integrase with regard to the development of new candidate microbicides.* Supervisor: Prof. dr. Guido Vanham (ITM, University of Antwerp)

Suykerbuyk Patrick. *Holistic study of the disease ecology of Mycobacterium ulcerans infections in Africa. A focus on trees will miss the forest.* Supervisors: Prof. dr. Françoise Portaels (ITM), Prof. dr. Luc Kestens (ITM, University of Antwerp), Prof. dr. Philippe De Maeyer (Ghent University).

Van Nieuwenhove Lies. *Ontwikkeling van innovatieve diagnostische tests voor humane Afrikaanse trypanosomiase, gebaseerd op synthetische peptiden.* Supervisors: Prof. dr. Philippe Büscher (ITM), Prof. dr. Marc Coosemans (ITM), Prof. dr. Yves Guisez (University of Antwerp)

Versteirt Veerle. *Taxonomic and functional biodiversity of indigenous and exotic mosquito species in Belgium.* Supervisor: Prof. dr. Marc Coosemans (University of Antwerp, ITM).

Department of Clinical Sciences

Conesa Botella Anali. *Pathogenesis of the tuberculosis-associated immune reconstitution inflammatory syndrome: role of mycobacterial load and vitamin D status?* Supervisors: Prof. dr. Bob Colebunders (University of Antwerp, ITM), Prof. dr. Luc Kestens (ITM), Prof. dr. Katalin Wilkinson (University of Cape Town).

Deribew Amare. *Tuberculosis and HIV/AIDS: burden, community perception and its effect on mental health and quality of life in Ethiopia.* Supervisor: Prof. dr. Bob Colebunders (University of Antwerp, ITM)

Roddy Paul. *Challenges in rolling out HIV care and antiretroviral treatment in resource limited settings.* Supervisor: Prof.dr. Bob Colebunders (University of Antwerp, ITM)

Worodria William. *The challenges of management of TB/HIV co-infection in resource limited countries.* Supervisor: Prof. dr. Bob Colebunders (University of Antwerp, ITM)

Department of Public Health

Alamo-Talisuna Stella Patricia. Scaling up antiretroviral therapy in resource-limited settings: optimizing retention, community engagement and clinic efficiency. Supervisors: Prof. dr. Marie Laga (ITM), Prof. dr. Bob Colebunders (ITM, University of Antwerp), Fred Wabwire-Mangen (University of Makerere, Uganda).

Kyabayinze Daniel. *Strategies to optimise and scale up parasitological diagnosis and treatment of Malaria at primary health care facilities in Uganda.* Supervisors: Prof. dr. Umberto D'Alessandro (ITM), Prof. dr. Jean-Pierre Van Geertruyden (University of Antwerp), Prof. dr. Ambrose Talisuna (Makerere University, Kampala)

Lema Terefa Belachew. *Food insecurity and its implications on nutrition, health and education of Ethiopian adolescents.* Supervisor: Prof. dr. Patrick Kolsteren (Ghent University, ITM)

Narayanan Devadasan. *Community health insurance contributes to universal health coverage in India.* Supervisors: Prof. dr. Wim Van Damme (ITM), Prof. dr. Bart Criel (ITM), Prof. dr. Patrick Van Der Stuyft (ITM, Ghent University), Dr Thankappan (Public Health Department, Sree Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum, Kerala, India).

Richard Fabienne. *La césarienne de qualité au Burkina Faso : comment penser et agir au-delà de l'acte technique.* Supervisors: Prof. dr. Vincent De Brouwere (ITM), Prof. dr. Guy Kegels (ITM), Prof. dr. Bruno Dujardin (ULB).

Roberfroid Dominique. *Intergenerational nutrition: the effects of maternal micronutrients on fetal growth and infant health.* Supervisors: Prof. dr. Patrick Kolsteren (ITM), Prof. dr. Bernard Brabin (University of Amsterdam).

Tejerina Silva Herland. *International cooperation in the Bolivian health sector: a win-win game?* Supervisors: Prof. dr. Jean-Pierre Unger (ITM), Prof. dr. Marie-Christine Closon (UCL), Dr. Oscar Lanza (Universidad Mayor de San Andrés, La Paz, Bolivia), Dr. Christian Darras (PAHO Bolivia).

Toledo Romani Maria Eugenia. *Community based dengue control: from formative research to evidence based policy recommendations.* Supervisor: Prof. Dr. Patrick Van der Stuyft (Ghent University, ITM).

ITM Master Theses

Master in Public Health – Orientation Diseases Control (MDC)

Atabe AN. Challenges and opportunities in onchocerciasis control: a case study of the South West and North West regions of Cameroon. 42 pp.

Birhade VY. HIV prevention programme among female sex workers in Karnataka, India, evaluation and lessons learned; 2003-2008. 55 pp.

Caluwaerts A. Preventing healthcare associated infections in low income countries; a proposed control panel to monitor the implementation of standard precautions in hospitals supported by Médecins Sans Frontières. 63 pp.

Doan TTD. Sex ratio at birth; son or daughter? What is the ideal family in the Chi Linh district in Viet Nam? 42 pp.

Fita AE. Retention of patients in antiretroviral therapy at a referral hospital in North-West Ethiopia. 41 pp.

Islam S. Determinants of outcome in treatment of multi-drug resistant tuberculosis (MDR TB); a comparison between Armenia and Bangladesh MDR TB cohorts. 60 pp.

Jacquemin G. Evaluating person centeredness in rehabilitation care: construction and application of a framework. 97 pp.

Jahan M. Community based prevention of postpartum hemorrhage in a rural subdistrict of Bangladesh. 50 pp.

Kabuya Bukasa JB. Maternal deaths review; four years of experience in Saint Paul's Mission Hospital in Nchelenge district, Zambia. 60 pp.

Kyobe-Bosa H. Dengue surveillance in Mogadishu, Somalia; assessment of clinical findings and their validity for clinical case definition and recommendations for systematic dengue surveillance. 58 pp.

Lu PT. A study of factors influencing sexual and reproductive health of young people in Myitkyina township, Myanmar. 66 pp.

Marwa MG. Virtual elimination of mother to child transmission of HIV; an analysis of prevention of mother to child transmission of HIV (PMTCT) programme in Tanzania. 47 pp.

Matandalasse MP. The potential role of Xpert MTB/RIF to effectively improve tuberculosis case detection in Mozambique; lessons learnt from Moatize case study. 54 pp.

Mu W. Incidence and associated factors of pulmonary tuberculosis in HIV-infected children after HAART in China. 49 pp.

Musuva AM. A process evaluation of the 2011 mass insecticide-treated net distribution campaign in 13 districts in Kenya. 61 pp.

Ndagire KG. Use of antiretroviral drugs in HIV positive pregnant women enrolled in a PMTCT programme in Uganda; challenges in the real world. 60 pp.

Palomares Paez AP. Lessons learnt from the situation analysis of tuberculosis and multidrug resistant tuberculosis in Buenaventura Colombia during 2010 and 2011. 44 pp.

Ruberanziza E. Assessment of *Schistosoma mansoni* infection on Nkombo Island, Rwanda. 47 pp.

Sim S. Scaling up the provision of comprehensive PMTCT services, using the linked response approach in Cambodia. 51 pp.

Svisva A. Malaria case management in Matabeleland South province: a case of too little and too late? 65 pp.

Tayong GEF. Antiretroviral therapy interruption in the North West region of Cameroon; causes and possible interventions. 61 pp.

Thida DA. The retention of female sex workers, men who have sex with men and drug users in an ART programme in Myanmar. 56 pp.

Turate I. Feasibility on implementation of Isoniazid preventive therapy for people living with HIV; a literature review on experience in resource-limited countries and situation analysis for Rwanda. 65 pp.

Master of Science in Tropical Animal Health (MSTAH)

Ahasan MS. Estimation of true prevalence of brucellosis and its associated risk factors in small household herds in Bangladesh. 69 pp.

Asrese NM. Genetic characterization of *Trypanosoma vivax* from East and West Africa. 48 pp.

Begum S. Evaluation of an ELISA based technique to determine the *Trypanosoma brucei* infection status in the midgut of Glossina morsitans. 45 pp.

Chilundo AG. Serological response of heifers following vaccination using *Brucella abortus* strain 19 - a cohort study in Hluvukani (South Africa). 55 pp.

Chou Chu L. Influence of biotic and abiotic factors on the distribution and abundance of Culicoides in Belgium. 53 pp.

Dao THT. Morphological and molecular identification of a small liver fluke (Opisthorchiidae) found in the liver of ducks in Central Vietnam. 44 pp.

Degefu ZN. Preliminary study on seroprevalence of bovine viral diarrhea in three zones in Ethiopia. 45 pp.

Deres BA. Seroprevalence of infectious bursal disease in back-yard chickens of Southwest Shewa, Ethiopia. 54 pp.

Ekah-Kunde WK. The impact of the environmental temperature on the susceptibility of *Glossina morsitans morsitans* to infection by *Trypanosoma vivax*. 45 pp.

Gashururu Simba R. Optimization of an in vitro tsetse fly transmission model for *Trypanosoma congolense*. 39 pp.

Islam MA. Estimation of sensitivity and specificity of three screening tests for caprine mastitis in Bangladesh. 57 pp.

Jabbar MA. Comparison of the DRG® human pepsinogen II ELISA and the SVANOVIR® *O. ostertagi* antibody ELISA with the pepsinogen micro method for

the diagnosis of ostertagiasis in first season grazing calves. 53 pp.

Mekonnen YT. Immune trypanolysis on non-human infective trypanosomes for diagnosis of gambiense sleeping sickness. 64 pp.

Mubanga MC. Enhancing PCR analytical sensitivity for the detection of hemoparasites by the use of detergent. 55 pp.

Mucavele LJG. Comparison of three techniques for the detection of *Sarcocystis* spp. in bovine cardiac muscle. 37 pp.

Patsanza G. Molecular epidemiology of bovine babesiosis in Benin. 40 pp.

Ramírez López AL. Spatial distribution of Influenza A virus in swine farms from Guatemala. 61 pp.

Regassa SL. Analysis of habitat suitability for *Rhipicephalus (Boophilus)* ticks in Benin. 63 pp.

Sungirai M. Identification of the four *Rhipicephalus (Boophilus*) tick species and their hybrids from Benin: morphology versus genetics. 55 pp.

Master in Public Health – Orientation Health Systems Management and Policy (HSMP)

Abirigo J. Improving access and coverage of health care services in Magwi County Eastern Equatoria State Republic of South Sudan: challenges and solutions. 57 pp.

Barasa WC. PEPFAR contracting for HIV/TB health systems strengthening: a case study of ICAP - MOH, Kenya. 48 pp.

Barro S. Patient-centered care approach: is it an alternative strategy for better utilization of first line health services? An action-research project in Fada N'Gourma health district (Burkina Faso). 58 pp.

Bui Hong S. Sustaining HIV care and treatment in the local health system of Phu Luong district - Thai Nguyen Province, Viet Nam. 45 pp.

Chatelain A. Building and exit strategy; how can be organised the transition from a private not-for-profit organisation to a public one, taking into account access & quality? 62 pp.

Chotchaisuwat P. Improving the district health system to provide optimum care; the case of Nakhon Thai district in Northern Thailand. 59 pp.

Devikoppa J. Analysis of the quality assurance programme in Tumkur district, Karnataka state, India. 55 pp.

Gashubije L. Performance based financing and selective free health care to improve access and quality of maternal health care in Burundi; results of an implementation experience in the health province of Cankuzo (2006-2010). 56 pp.

Gurram Krishnamurty SK. Performance analysis of primary care services in Gulur, Tumkur district, Karnataka, India. 59 pp.

Hajizada G. Cervical cancer control policy implementation in Azerbaijan; what are the bottlenecks and how to overcome them? 70 pp.

Hasuwannakit S. Including stateless people in universal health coverage: policy recommenadation for Thailand. 49 pp.

Hossain MA. People's participation in the development of population policy in Bangladesh. 63 pp.

Malanda EB. Person-centeredness to improve quality of care; an action research proposal to implement in Katana Health District (DR Congo). 46 pp.

Matsinhe GRC. The challenges of antiretroviral treatment delivery in rural settings; lessons learned from Mandlakaze Rural Hospital, Mozambique. 45 pp.

Mukungunugwa SH. Retaining doctors to work in the public sector in rural Zimbabwe; alternative policy options. 46 pp.

Nyakina JD. Strengthening quality and expanding offer of health services at Kagera regional hospital, Tanzania; is task shifting the way forward? 61 pp.

Ochola AJM. "Double tragedy": improving holistic care for victims of gender-based violence in Hoima district, Uganda. 58 pp.

Silumesii AN. Building leadership capacity to improve work climate in a Zambian hospital: an action research approach. 43 pp.

Thomas Morel MK. Assessing the potential impacts of an emergency humanitarian intervention on a local health system in a fragile state: the case of a MSF-Belgium project in Port-au-prince, Haiti. 51 pp.

Torres-Tovar MH. Experience of a policy of social participation in health in Bogotá (2008-2011): lessons to increase social participation in health in Colombia. 58 pp.

Van Belle E. Mapping for decision making. 52 pp.

Villa L. Implementation of the tuberculosis programme in Medellin in the context of the Colombian health system; critical analysis. 51 pp.

Zaqout G. Integrating individual prevention in curative care in Gaza health services; a strategy based on an NGO. 53 pp.

Zongo A. How to improve access to institutional deliveries in Po health district? Burkina Faso. 70 pp.

Research

Innovative and interdisciplinary research with worldwide partnerships

Advancing the knowledge of tropical, infectious and poverty-related diseases through research is at the core of ITM's academic mission. While good scientific research is driven by the curiosity of the investigator, societal relevance is deeply engrained in all our work, be it on pathogens, patients or populations.

Department of Public Health

Group Health Systems

- Unit of Health Services Organisation
- Unit of Public Sector Health Care
- Unit of Health Policy
- Unit of Health Financing
- Unit of Maternal and Reproductive Health
- Unit of Nutrition and Child Health
- Unit of Health Economics

Group Epidemiology and Disease Control

- Unit of General Epidemiology and Disease Control
- Unit of Epidemiology and Control of Tropical Diseases
- Unit of Epidemiology and Control of Zoonotic Diseases
- Unit of Epidemiology and Control of HIV/STD
- Unit of HIV/AIDS Policy
- Unit of Epidemiology and Control of Malaria

Department of Clinical Sciences

- Clinical Trials Unit

Group Tropical Medicine

- Unit of Tropical Diseases
- Unit of Tropical Laboratory Medicine
- Unit of Travel Medicine

Group HIV/STD & co-infections

- Unit of HIV/STD
- Unit of HIV/AIDS & Infectious Diseases
- Unit of Sexually Transmitted Infections

Medical Services

- Travel Clinic
- HIV/STD Clinic
- Central Laboratory for Clinical Biology
- HIV/STD Reference Laboratory
- Hospital Service UZA

Department of Biomedical sciences

Group Microbiology

- Unit of Mycobacteriology
- Unit of Virology
- Unit of Immunology

Group Parasitology

- Unit of Molecular Parasitology
- Unit of Parasite Diagnostics
- Unit of Malariology
- Unit of Medical Helminthology
- Unit of Veterinary Protozoology
- Unit of Veterinary Helminthology

Group Vector Biology

- Unit of Medical Entomology
- Unit of Veterinary Biostatistics and Epidemiology
- Unit of Veterinary Entomology

It is indeed at these levels that ITM has reorganised its research over the past year. The “three P’s” are studied respectively by the departments of Biomedical Sciences, Clinical Sciences, and Public Health. Institute-wide, the research portfolio covers a broad range of subjects, disciplines and geographic areas. Interdepartmental Research Centres, extending into worldwide networks and partnerships, integrate multidisciplinary work major topics such as HIV/AIDS, Neglected Tropical Diseases, Malaria, Tuberculosis, Woman and Child Health, and International Health Policies.

The Institute hosts 200 employed scientists and 120 PhD grantees from European, Africa, the Americas and Asia. The research is funded by subsidies from the Flemish ministries of education and sciences, important fiscal rebates through the federal Ministry of Sciences and competitive external grants from Belgian, European and international research organisations (please refer to the Management section for more details).

In 2012, ITM researchers produced 422 different scientific publications in peer-reviewed international science journals (see Key Performance Indicators page 12-13). The topics reflect the broadness and diversity of our activities, and include molecular sciences, the biology and ecology of pathogens and vectors, translational and transformative medicine, clinical and intervention trials, health services and systems research, and national and global health policies.

The SOFI Programme

Until 2008, ITM did not benefit from 'structural' research funding, which at Flemish universities generously supplements the 'primary' academic core funding. For the year 2008 onwards, the Flemish Ministry of Economy, Sciences and Innovation created a specific budget line for innovative research at ITM too.

SOFI-A PhD Fellows, calls 2008-2012

Name	Year of graduation	Subject (University)
Call 2008		
Thérèse DELVAUX	2009	Linking sexual and reproductive health and HIV services: from needs to feasibility and evidence of benefits. (Ghent University)
Kristien VERDONCK	2008	Clinical aspects and epidemiology of human T-lymphotropic virus 1 infection in Peru. (University of Antwerp)
Katty Irma TERRAZAS ARANDA	2009	Development of microbicides in a model system of dendritic cells and CD4+ T cells, with emphasis on avoidance of resistance. (University of Antwerp)
Sabine GIES	2009	Preventing malaria in pregnancy by health promotion and intermittent treatment: a community-based intervention in rural Burkina Faso. (University of Antwerp)
Natacha PROTOPOPOFF	2008	Vector control in a highland province of Burundi: towards a targeted strategy for the prevention of malaria in African highlands. (University of Antwerp)
Katrijn VERHAEGHEN	2009	Presence and role of knockdown resistance in Anopheles species of Africa and the Mekong region. (University of Antwerp)
Lutgarde LYNEN	2009	Challenges of HIV care in Low Resource settings. Experience from Cambodia: 2003-2007 (University of Antwerp)
Pol DE VOS	2010	Strengthening public health systems: Operational Research in Cuban first line health services. (Ghent University)
Dominique ROBERFROID	2012	Prevention of Intra Uterine Growth Retardation by Multiple Micronutrient Supplements during Pregnancy in Burkina Faso. (University of Amsterdam)
Call 2009		
Bart JACOBS	2011	Did the poor benefit from innovative reforms in public health service delivery in rural Cambodia during social and economic transition? (Vrije Universiteit Brussel)
Fabienne RICHARD	2012	Quality caesarean sections in Burkina Faso: beyond the technical act. [La césarienne de qualité au Burkina Faso : au-delà de l'acte technique]. (Université Libre de Belgique)
Philippe GILLET	2011	Malaria Rapid Diagnostic Tests: Laboratory aspects in the diagnostic setting. (Maastricht University)
Call 2010		
Kevin PETERSON	-	Optimizing HIV Care in sub-Saharan Africa. (University of Antwerp)
Call 2011		
Erika VLIEGHE	-	The microbiologic spectrum of invasive bacterial infections in Cambodian adults and its implications for standard treatment guidelines. (KU Leuven)
Alonso SOTO	-	Assessment of clinical and laboratory tools for the diagnosis of smear-negative pulmonary tuberculosis in resource-constrained settings. (Ghent University)
Katrijn GRUPPING	-	Inhibiting the CD4-gp120 interaction to prevent HIV infection: insights from mutational resistance analysis. (University of Antwerp)
Freya RASSCHAERT	-	ART care delivery models to improve access and retention in ART in poor resource settings. (Vrije Universiteit Brussel)
Rachel HAMMONDS	-	Advancing towards the Right to Health for All - the value of a Right to Health Approach. (Vrije Universiteit Brussel)
Call 2012		
Janneke COX	-	Autopsy methods to establish cause of death in HIV infected individuals in Sub Saharan Africa. (University of Antwerp)
Björn VICTOR	-	High throughput analysis of Taenia excretory/secretory products for improved understanding of host-parasite interactions and optimisation of immunodiagnostic tools in Taena so ilium cysticercosis. (Ghent University)
Filip MEHEUS	-	Economic analysis of control for visceral leishmaniasis. (Radboud University Nijmegen)

This subsidy, which includes a grant to consolidate ITM's Clinical Trials Unit (CTU), is assured by a renewable covenant that ran until the end of 2012 with an annual budget of 1.75 M€. In 2010 and 2011, however, the budget was cut by 150 000€ (9%) as part of a general austerity measure. In 2012, a slightly increased budget of 1.82 M€ was foreseen. The covenant imposes strategic and quality requirements, as well as a set of Key Performance Indicators (KPI's), on the whole of ITM's research. As part of the covenant an evaluation on ITM's research took place in the first half of 2012 (see below). The outcome of the evaluation will serve as the basis for drawing up a new research agreement between the Flemish Ministry of Economy, Sciences and Innovation and ITM.

Instead of using the SOFI subsidy to complement our deficient core funding, we created an internally competitive programme.

One part, SOFI-A, allows scientists working in service-oriented programmes such as the Framework Agreement between ITM and the Belgian Development Cooperation and ITM's Medical Services to finalise their PhD, by granting them a 'write up' fellowship for up to 18 months FTE. From 2009 onwards, the calls are also open to eligible external candidates. So far, 21 grants have been awarded (table) of which 12 have already resulted in a PhD defense; the other candidates are all well on track.

The other part, SOFI-B, funds innovative, promising and strategically important spearhead projects on a competitive basis. The evaluation, selection and follow-up is entirely in the hands of an external, international and multidisciplinary panel. Two calls in 2008 and 2009 resulted in 23 submissions and 6 funded projects. Unfortunately, the budget cuts in 2010 and 2011 did not allow to launch new calls. In May 2012, an expert panel performed a renewed progress review of the 2008 project *Plasmodium Vivax*, a mid-term review of the 2009 Novel immunization strategy project and an end review of the 2009 HAT-polyB project. The review of all three projects was positive. The expert panel advised for the *Plasmodium Vivax* project an increase in the originally awarded budget from 825.000 Euros to 1.000.000€ and recommended an extension of the 2009 HAT-polyB project until the end of 2012 to allow the postdoctoral researcher on the project to finish the publication of the project results. The expert panel also interviewed the Theileria parva researchers. It concluded that without a second successful transfection it was too early to re-evaluate the project terminated in 2011.

ITM's Director's Committee (DC) approved the advice of the expert panel and took its recommendations into account. In addition, the DC decided to increase the 2009 Novel immunization strategy project with 38.800€ based on the positive mid-term review. Based on the excellent mid-term review of the GeMini-project in 2011 the DC decided to increase the budget of this project as well. The financial contribution of ITM (75.000€) to the Hercules 2-project 'Next Generation Sequencing technology opening new frontiers in biological en medical research' (promoter G.Mortier, Universiteit Antwerpen) was also added to the budget of the GeMini-project.

Subject (promoters)	**Budget (period)**	**Status**
Human African Trypanosomiasis (*ad hoc* funding) (Coosemans, Van den Abbeele)		Finalised 2010
Genomics and metabolomics of drug-resistant *Leishmania* (Dujardin)	1 000 000€ + 123.000€+ 75.000€ (01/09/2008-31/12/2014)	Positive mid-term 2011
Plasmodium vivax culture (D'Alessandro)	825.000€+175.000€ (01/09/2008-31/08/2013)	Positive mid-term 2011 Positive mid-term 2012
Theileria parva transfection (Geerts, Dorny, Berkvens, Geysen)	Initially awarded 948 900 €, total expenses 376.208€ (01/09/2008-31/12/2011)	Negative mid-term 2011, terminated
Novel Immunization Strategy for HIV (Van Ham)	1 000 000 €+38.800€ (01/09/2009-31/08/2013)	Positive mid-term 2012
Human African Trypanosomiasis immune modulation (Busscher, Van Griensven)	347.557 €+111.549€ (01/09/2009-31/12/2012)	Positive end review 2012

Research Evaluation

As stipulated in the covenant 2008-2012 ITM's research was assessed during Spring 2012. The evaluation was assigned to 'Technopolis Group' in the Netherlands to inform the Flemish government about the research performance of ITM, its role and position in the research landscape and its management and organisation. A peer review by an international panel of experts in the research fields of ITM took place on 4 and 5 June 2012. The outcome of the evaluation was overall excellent and the following recommendations were made:

- ITM should not avoid internal and external competitiveness but further promote it.
- ITM should cherish its autonomous position but at the same time seek structural and strategic collaborations.
- ITM's visibility could be further en-hanced.
- ITM' new policy plan for research (2013-2018) could provide a better view on the research framework, including its leading research questions and the way the departments will address those questions.
- ITM should further focus on innovative science through the SOFI-B projects. The SOFI-A programme needs to be revisited, however.
- ITM's Scientific Advisory Council should play a more prominent advisory role.
- The research organisation could be further modernised. More attention needs to be given to career development.
- ITM should develop a clear monitoring and evaluation framework in line with its mission and objectives.
- There is a need for increased transparency in terms of the workings of the CTU and more specific KPIs that properly reflect the efforts of the CTU need to be developed.

Based on the excellent performance in the past five years, and the potential impact of its research in the future, both Technopolis Group and the expert panel recommended the Flemish Government to substantially increase the SOFI-funding in the next agreement. Further, the Government and EWI in particular was recommended to align the timing and KPIs for research in the research agreement with the Ministry of Education.

Department of Biomedical Sciences

Untangling the interactions between pathogens and hosts

The Department of Biomedical Sciences studies the complex interactions between pathogens and hosts in the laboratory and in the field, resulting in fascinating insights as well as new leads in the fight against tropical diseases.

One group discovered how the *Leishmania* parasite, that causes the deadly disease kala azar, outwits drugs and manipulates the human body on the molecular level. Some "superparasites" actually combine resistance to drugs with enhanced infectivity and virulence, and can be detected by new molecular techniques. Others managed for the first time to cultivate the malaria parasite *Plasmodium vivax* in vitro over multiple cycles, launched innovative research and community-based trials on the impact of repellents on mosquitoes and malaria transmission, or proved the existence and the immune dynamics of "HIV-discordant couples" in Africa. More about these and other achievements can be read on the following pages.

In 2012, the Department received funding worth 9 Million Euros for nineteen new research projects, guided ten PhD students to their final doctoral thesis, and published over 160 papers in international peer-reviewed journals on topics ranging from ecosystems to genomes.

In December, the Department also organised the 54th ITM colloquium on the evolutionary arms race between pathogens and their hosts (see next page).

The 3 P's: Pathogens

Department of Biomedical Sciences: Microbiology, Parasitology and Vector Biology

- ✓ focuses on tropical pathogens and vectors which cause disease in humans and animals: HIV, mycobacteria, plasmodium, trypanosomatids, helminths and arthropod vectors
- ✓ research on the biology of pathogens; their interactions with hosts and environment; transmission dynamics and eco- epidemiology
- ✓ performs basic and translational research from the laboratory to the field and back ("From home to genome")

Under the microscope

Man versus Microbe – the other arms race

Infectious agents (viruses, bacteria, protozoa, helminths) continue to threaten the lives of billions around the world. On the other hand, many have been close companions to humans through ages of co-evolution and found a fine-tuned balance between the peaceful co-existence of latency and the open war of disease. Several aspects of global infectious diseases were unravelled from that angle during the 54th ITM International Colloquium "Pathogens' Survival Strategies: from fundamentals to field" (3-5 December 2012, Antwerp), supported by the Belgian Development Cooperation and the Flemish Fund for Scientific Research (FWO)

Infectious diseases are the result of an evolutionary arms race between pathogens and their hosts. Most infectious microorganisms have developed intricate strategies to survive as colonists of their hosts; the latter have evolved by equally clever adaptations to destroy or fence off these intruders. Understanding these mutual survival strategies and the underlying interactions between species offers a unique insight in the biological and ecological fundaments of both pathogens and hosts. Such knowledge provides leads to new tools to cure or control infectious diseases. On the other hand, medical and other human interventions inevitably lead to new and much faster episodes in the evolutionary arms race. The rapid development of drug resistance or the emergence of new diseases, including HIV/AIDS, or the spread of pathogens and vectors through globalisation, are only a few of the consequences.

A score of scientists from all around the world presented and discussed their cutting-edge research on past and present evolution of host-pathogen relationships, and their consequences for science, medicine and public health.

They presented intriguing stories such as the discovery of Leishmania 'super-parasites', viral infections of parasites, cross-species transmission of simian retroviruses, and new human diseases in Africa.

For a full report of the event:
www.itg.be/colloq2012

The colloquium was brightened up by a surprise visit of the "Red Queen", a concept in evolutionary infectiology borrowed from Lewis Caroll's "Through the looking glass".

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Under the microscope

Genetic (mis-)match: why some partners cannot infect each other with HIV

Scientists from ITM and the Universities of Dakar and Brussels discovered that sexual partners with similar genes are less likely to rebut each other's cells, which facilitates HIV transmission. But the contrary holds true as well; genetic mismatches between partners can prevent infection, even after years of unprotected sex.

This ground-breaking study on HIV-discordant couples in Senegal is a strong boost to research on the role of genetic (mis-) matching and innate immune defences in HIV transmission. It compared Senegalese couples with only one HIV-positive partner in spite of year-long unprotected sex, with couples where both partners were infected. The discordant couples often showed important genetic differences, while HIV-positive partners were in general genetically more similar.

The researchers found that natural killer (NK) cells and human leucocyte antigen (HLA) probably play an important role in HIV-protective immunity. These cells are known to provide rapid responses to virally infected cells.

In time, this discovery can lead to the development of new HIV-prevention therapies, directed at the cells of the HIV-positive sexual partner instead of the virus.

Immunology

Work on immunology focuses on host responses to pathogens, HIV in particular. It aims at improving immunological laboratory tools for the diagnosis and treatment of patients, especially for HIV and Tuberculosis (TB).

Collaborative research in Senegal resulted in the detection and description of "discordant couples", in which a genetic mismatch between partners hampers the transmission of HIV, even after years of unprotected sex (see page 38 'under the microscope').

Another main research line studies the tuberculosis-associated immune reconstitution inflammatory syndrome (TB-IRIS) in HIV infected patients receiving antiretroviral therapy. In the field, we evaluate new CD4 technologies for use in resource-poor settings and TB antigens for the detection of latent TB infection.

Mycobacteriology

Our main focus is Tuberculosis (TB), one of the major poverty related diseases in the world and affecting millions of people in the South as well as in the North.

The specific research lines concern mechanisms underlying drug resistance, the transmission of mycobacteria, and the management of multi-drug resistant mycobacteria.

Bouke de Jong, the head of unit, obtained a highly competitive European Research Council (ERC) grant for a study on genetic clustering of TB isolates as an efficacy measure of TB control efforts (see page 41 'under the microscope').

We also tried to identify candidate genes for resistance to clofazimine, an old antimycobacterial drug that was mainly used for the treatment of leprosy. ITM-led research recently showed that it was efficacious for the treatment of multi-drug resistant tuberculosis (MDR-TB). Clofazimine resistance is relatively rare, but increased use could alter the situation rapidly. In-depth understanding of the mechanisms of resistance is therefore key to successful clinical roll-out. The identification of clofazimine resistance genes is a first step in this endeavour, and can help to develop rapid molecular tests for the diagnosis of clofazimine resistance.

Furthermore, the unit identified limitations of culture-based techniques to diagnose resistance to rifampicin, a main drug in TB treatment regimens. In fact, up to 15% of mutations in the gene associated with resistance to rifampicin lead to low-level resistance and/or fitness loss, meaning that the strains fail to grow fast enough to be recognised as rifampicin resistant. Molecular diagnostics should therefore be further improved.

We initiated biosafety experiments in order to optimise techniques for the detection of viable *Mycobacterium tuberculosis* on surfaces, with the aim to optimize the handling of multi-drug resistant strains under Biosafety Level 3 (BSL 3) conditions.

Virology

In 2012, the virology unit finalised its contribution to two large international research programmes on preventive vaccines.

In the CAVD programme "Protection by neutralizing antibodies", sponsored by the Bill and Melinda Gates Foundation, we isolated three new broad cross-neutralising monoclonal antibodies (HJ16, HGN194 and HK20) that block the three consecutive steps in HIV entry. In NGIN (Next Generation HIV-1 Immunogens inducing broadly reactive Neutralising antibodies), supported by the European Union, we successfully induced neutralising antibodies in rabbits by immunisation with HIV envelope proteins from one of ITM's patients with cross-neutralising antibodies.

We continued our studies on vaginal biomarkers in a cohort of healthy women from Antwerp. In the context of a project with co-support from the European & Developing Countries Clinical Trials Partnership (EDCTP), we collected vaginal samples from women with different epidemiological profiles in four African cities. This study will provide important baseline data for future microbicide studies.

With the EU-supported CHAARM consortium (Combined Highly Active Anti-Retroviral Microbicides) we searched for new preventive antiviral drugs. Together with the laboratory of Medicinal Chemistry of Antwerp University, we developed a new class of non-nucleoside reverse transcriptase inhibitors. The lead compound is currently evaluated in challenge studies in non-human primates In addition, we collaborated intensively with several groups on the mechanism of action and the resistance profile of an interesting class of entry inhibitors, i.e. CD4 mimetics.

Under the microscope

New impetus towards therapeutic vaccine for HIV

In collaboration with research and clinical teams of the Universities of Antwerp (UA) and Brussels (VUB), ITM's Unit of Virology performed a clinical trial of a candidate 'therapeutic vaccine' against HIV. Patients were vaccinated with their own cells in order to boost the immune system.

The researchers filtered a specific type of cells out of the volunteers' blood, manipulated these cells to become professional antigen presenting cells (i.e. dendritic cells) and subsequently 'loaded' them with mRNA encoding viral antigens and then re-injected these cells in the same patient ("autologous immunisation").

The hypothesis was that CD8 T lymphocytes (i.e. those cells that kill viral infected cells), receive insufficient support from the antigen presenting cells (i.e. dendritic cells), which help T lymphocytes on what to attack, by showing (i.e. presenting) them parts of the virus. However, human dendritic cells in HIV-infected patients partly fail to present the right information.

We managed to 'load' dendritic cells of seropositive volunteers in the laboratory with building instructions for HIV proteins. As a result, the dendritic cells more efficiently presented viral parts (i.e. antigens) and activated CD8 T cells better in test tubes.

The next step was a phase I clinical trial on six HIV patients under ART. From each volunteer, dendritic cells were filtered from a large volume of blood, cultivated in test tubes and "loaded" with the said genetic instructions. Each participant then received four times, at four-week intervals, a small quantity of their own "mRNA-loaded" dendritic cells. After each vaccination, the CD8 T cells recognised the virus better, while the vaccination had virtually no side effects. The results of this clinical trial provided a proof-of-concept and a new impetus for research on therapeutic vaccination for HIV.

Under the microscope

Genetic clusters: key to halt Tuberculosis?

The European Research Council (ERC) grant will allow Bouke de Jong and her team to find out whether genetic clustering of *M. tuberculosis* isolates can reveal the efficacy of public health efforts to halt TB transmission. The study is conducted in close collaboration with the Medical Research Council (MRC) in The Gambia, and is the first to apply molecular tools for monitoring public health interventions against TB.

The TB control strategies recommended by the World Health Organisation (WHO) rely mainly on passive case finding, in which TB cases are detected as they present and are diagnosed in health centres. While the strategy has many merits, an estimated 30% of all TB cases remain undetected and untreated, either because they do not reach the health centres, or the medical infrastructure is deficient.

In the Gambia, MRC and ITM researchers have set up a system of active case finding of TB patients. In the intervention villages, health workers provide health information and education on the recognition of the disease, and distribute cups for sputum collection of suspected patients. Some days later, the team returns and transports the samples to the laboratory; positive patients are referred for treatment. The results are compared with those in control villages where the usual way of TB detection is continued. The hypothesis is that transmission will be reduced in the intervention villages as compared to the control villages.

In order to test the hypothesis, the genetic code of TB isolates is compared. Bacteria with the same fingerprint indicate a local and recent chain of transmission. Old infections are likely to have more distinct fingerprints. By analysing the genotypic clustering rate in a mathematical model, the effective case contact rate of *M. tuberculosis* in the intervention and control arms of the study can be calculated and compared.

in a nutshell

Tuberculosis:

- ✓ caused by a bacteria (*Mycobacterium tuberculosis*) that mainly affects the lungs
- ✓ usually transmitted by coughing; each patient infects on the average 15 other people.is the leading cause of death for people with HIV
- ✓ 1/3 of people worldwide is infected with tuberculosis but mostly do not become ill ("latent" infection)
- ✓ 10-15% of infected people develop disease
- ✓ multi-resistant tuberculosis (MDR-TB), not responding to standard antibiotics, is on the rise world wide

Parasite Diagnostics

One of ITM's traditional research lines concerns the development of diagnostic tests for neglected tropical diseases, especially African trypanosomiasis (sleeping sickness) and leishmaniasis (kala azar).

As a non-profit spin-off, ITM hosts also a production line for diagnostic antigens and tests. The Card Agglutination Test for Trypanosomiasis (CATT) is the standard screening test for sleeping sickness in most control programmes, and the ITM produces and ships several millions of kits annually to endemic countries. The CATT is a public good which, for economic and technical reasons, is not transferable to industry.

Meanwhile, the Unit of Parasite Detection continues its research on new and ever better tests. In 2012, it developed a first generation of rapid diagnostic tests for surra, animal trypanosomiasis, and for sleeping sickness in humans. As quick diagnosis is crucial for successful treatment, such rapid tests are crucial for successful control. Similar tests are also being developed in collaboration with external partners, such as FIND and the NIDIAG consortium. Several formats are ready for large scale evaluation under field conditions. Meanwhile, efforts to develop recombinant antigens and synthetic peptides that can replace the native antigens, currently in use, remain ongoing.

In a study on tissue tropism, *Trypanosoma* parasites were transfected with fluorescent and luminescent reporter genes. As a result, their presence and survival in mice and rats can be monitored through bio-imaging. This technique provides a new model for *in vitro* and *in vivo* screening of candidate drugs. In a large case-control study, the unit examined the effect of sleeping sickness on blood memory T- and B-cells and on acquired immunity. Contrary to what was observed in experimental infections of *Trypanosoma brucei* in mice, the data did not indicate permanent elimination of vaccine protection in sleeping sickness caused by *Trypanosoma brucei gambiense*.

An Ethiopian PhD student showed that, in his country, the prevalence of animal trypanosomiasis was similar in tsetse and non-tsetse infested areas. Most likely, in the absence of tsetse flies, other bloodsucking insects are maintaining transmission. This notion is obviously crucial for the control, and most certainly for the elimination of African trypanosomiasis.

CATT: Screening test for sleeping sickness during visit of mobile team to a village in East Kasai, DR Congo

Molecular Parasitology

Scientists of the Unit of Molecular Parasitology currently research drug resistance in leishmaniasis, *Leishmania* systems biology and molecular epidemiology of leishmaniasis and chagas disease.

In the GeMiNi project, they managed to sequence the complete genome of *Leishmania dovani (L. donovani)*, the cause of visceral leishmaniasis or "kala azar". This is the most deadly parasitic disease world-wide after malaria, and occurs mainly on the Indian subcontinent and in Eastern Africa. The disease is transmitted through the bite of sand flies, and makes 1.6 million new victims each year, mostly in poor and vulnerable populations.

The unit also identified a series of mutations which lead to both drug resistance and lesser vulnerability to the human immune system. These double armed "superparasites" are present in nature, and were found in various foci on the Indian sub-continent. Mathematical models indicated that the rise in treatment failure on the Sub-Indian continent is related to the higher fitness of resistant strains. On a molecular level, the combination of drug resistance with enhanced infectivity or virulence is reflected in surprisingly dramatic changes across entire biochemical pathways. Molecular adaptations were revealed that had so far not been detected at the genomic level.

Obviously, these observations indicate a new and serious threats to ongoing control efforts. Therefore, a molecular test was developed at ITM that allows to detect the mutants, and new treatment options were explored. One promising candidate is imipramine, normally an anti-depressive drug, which efficiently killed intracellular parasites, *in vitro* and *in vivo*. Further studies will have to confirm whether this drug qualifies for the treatment of visceral leishmaniasis in humans.

Visceral Leishmaniasis:

in a nutshell

- ✓ also known as kala azar (or "black disease")
- ✓ most deadly parasitic disease after malaria
- ✓ transmitted by sand flies, it affects hundreds of thousands poor people in 88 countries
- ✓ its causative pathogen *Leishmania* evades and manipulates its host cell, the macrophage
- ✓ liver, spleen and bone marrow are vitally damaged

Under the microscope

Disseminating the findings of the Kaladrug-R project

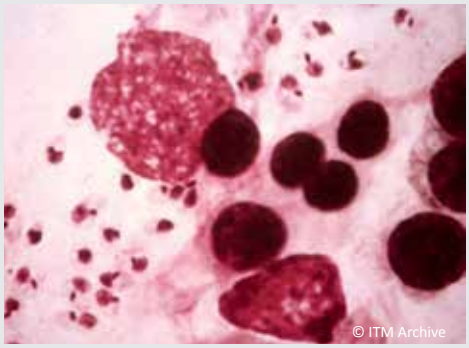
The findings of the EU-supported Kaladrug-R project on new tools for the evaluation of drug resistance in *L. donovani*, were disseminated at a workshop in Kathmandu (Nepal).

The Kaladrug-R project and consortium, sponsored by the European Union's 7th Framework Programme (FP7) and coordinated by ITM, developed, assessed and disseminated new tools for the evaluation of drug resistance in *L. donovani*. They worked with painstakingly collected samples and data from over 800 visceral leishmaniasis patients in India and Nepal.

At a dissemination workshop in Kathmandu (26 September 2012), the consortium shared its findings with experts, researchers, NGOs and other national and international stakeholders. The results include simple clinical and epidemiological tools for monitoring of drug effectiveness in kala azar.

Another significant observation is the substantial decline in the efficacy of oral Miltefosine, for which the possible causes are still being explored. A biological assay was developed to test *in vitro* susceptibility to Miltefosine; it is currently being used in four reference laboratories on the Indian subcontinent and could be further disseminated.

Read more:
www.leishrisk.net/kaladrug



Leishmania amastigotes in bone marrow, causing kala azar.

in a nutshell

Malaria:

- ✓ infectious disease caused by parasites that enter the bloodstream via a mosquito bite.
- ✓ causes fever, shivers, muscle and head aches and can result in death if untreated
- ✓ every year 650.000 people die from the disease, which can be prevented and treated
- ✓ various types of malaria parasites can infect people: *Plasmodium vivax*, *Plasmodium ovale*, *Plasmodium malariae*, *Plasmodium falciparum* and *Plasmodium knowlesi*
- ✓ *Plasmodium falciparum* causes malaria tropica, the most dangerous form of malaria

Malariology

The malariology unit contributes to the science and control of malaria with research on antimalarial drug resistance, the biology of the *Plasmodium vivax* parasite and the human reservoir of malaria.

In 2012, we continued our collaborative cohort studies on the transmission dynamics of *P. vivax* in Peru and Vietnam. In the laboratory, a breakthrough was achieved by setting up an invasion test of *P. vivax* as a first step towards a continuous culture system (see 'under the microscope).

Under the microscope

Plasmodium vivax cultivated in vitro

First in vitro cultivation *P. vivax* parasite opens new research perspectives

Plasmodium vivax is the second most important cause of human malaria in the world. While *P. falciparum* can be cultivated *in vitro* since several decades, this vital research tool remains elusive for *P. vivax*. In partnership with Asian research groups, an invasion system was created that allowed to cultivate the parasite in vitro for ten days. The method was replicated successfully after cryotransport in laboratories outside the endemic areas.

The ultimate goal is a continuous *in vitro* culture of *P vivax*, which is essential in the search for new vaccines, drugs and diagnostics.

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Veterinary Helminthology

We perform basic and applied research on helminth zoonoses, mainly cestodes (tapeworms), echinococcosis, food-borne trematodes, anisakiasis and trichinellosis.

The research ultimately aims at improving control over these diseases which, shared by animals and humans, are causing great economic and health-related losses. With multi-disciplinary teams of physicians, anthropologists and veterinarians at ITM and partner institutions, we investigate the transmission dynamics of these helminths and develop diagnostic tools for clinical or epidemiological use.

In 2012, we produced the first incidence data ever on human cysticercosis in endemic communities; demonstrated the effects of ethnic variations in communities on *Taenia solium (T.solium)* transmission; assessed the use of sentinel pigs in epidemiological studies on *T. solium;* and demonstrated the added value of circulating antigen detection for the diagnosis of neurocysticercosis. We investigated the epidemiology of trichinellosis in Vietnam and demonstrated the existence of at least three *Echinococcus granulosus* genotypes in Ethiopia.

Under the microscope

ELISA's 25th birthday: from laboratory test to commercial kit

After 25 years of research and validation, the B158/B60 monoclonal antibody-based ELISA was commercialised by an industrial partner as a diagnostic test kit.

Many scientific and laboratory staff members of ITM and collaborating partners worked on the development, fine-tuning and assessment of this assay. Through numerous scientific papers and collaborations with the medical and veterinary sectors, ITM was able to demonstrate the value of this assay in the diagnosis of cysticercosis in humans and pigs. The test can be used in both epidemiological studies and for individual diagnostic purposes. One of our main objectives was to make this assay available for the scientific communities and clinical laboratories of developing countries at low cost.

*C*ysticercosis is an infection of humans and pigs with the metacestode larvae (cysticercus) of *Taenia solium*. Circulating antigen detection in serum is an important diagnostic method that indicates the presence of viable parasites.

The assay demonstrates the presence of viable cysticerci only, but does not detect degenerated or calcified cysticerci. In this respect, unlike antibody detection, measurement of circulating antigen levels allows differentiation of cysticercosis cases with viable parasites, with antigen levels correlating to the numbers and size of lesions. It can as such also provide a tool for serological monitoring of antiparasitic therapy in human or pigs: antigen levels drop rapidly after successful anthelminthic treatment.

Medical Helminthology

The Unit of Medical Helminthology seeks to better understand host-parasite-environment interactions, the epidemiology and the transmission dynamics of helminth (co-)infections. This knowledge is translated in new tools and strategies for the prevention, control, and elimination of helminthic diseases.

An epidemiological study in northern Senegal showed that mixed *Schistosoma mansoni/S. haematobium* infections lead to higher infection intensities but not to increased morbidity due to *S. mansoni.* Urinary morbidity, related to *S. haematobium*, tended even to be suppressed. This suggests a protective effect of *S. mansoni* infection on urinary morbidity, an unexpected result which may have important consequences for schistosomiasis control in co-endemic areas.

In the same region, a significant correlation was shown between the occurrence of specific parasite genotypes and infection intensity. These preliminary results, based on a limited set of genetic markers, indicate that parasite genetics can also play a clinical and epidemiological role and may have to be taken into account in control efforts.

In the field of toxocariasis, we developed a model to estimate the level of human exposure that could be used as a conceptual approach to the transmission dynamics and control of helminthic diseases.

An ecological study in Cuba showed that exposure of infants and young children to economic factors in the nineties, was inversely associated with the prevalence of allergic asthma later in childhood.

Zoonotic helminth diseases such as Taeniasis are promoted by the close interaction between people and livestock.

Veterinary Protozoology

Our group focuses on unicellular parasites of veterinary or zoonotic importance.

We try to understand the biological host-parasite-vector interplay that underlies the pathogen transmission, as well as the molecular mechanisms by which the parasite develops resistance against currently used drugs. The unit also aims at translating this knowledge into applicable tools to interfere with disease transmission and with the development of parasite drug-resistance.

In 2012, the unit opened a new front in the battle against sleeping sickness in their study of *Sodalis glossinidius,* a maternally inherited bacterial symbiont of tsetse flies (see below 'under the microscope'). A major achievement was the ERC grant that the group leader, Jakke van den Abbeele, obtained on this subject.

The molecular research on tsetse fly saliva components and their biological role in tsetse fly feeding, parasite development and transmission made significant progress. We fully characterised the dominantly present TsalProtein family. These proteins display high affinity nucleic acid binding properties (DNA, RNA) but with only residual nuclease activity. Compromising the production of these saliva proteins in the fly resulted in a partially impaired blood digestion. The role of these saliva proteins in trypanosome survival and development at the host biting site are currently under study.

The unit also launched a study to unravel the molecular mechanisms underlying the resistance of the *Trypanosoma congolense* parasite to the drug isometamidium chloride (ISM). In collaboration with the Molecular Parasitology Unit, we try to pinpoint genetic differences between field *T. congolense* strains with different sensitivity to the ISM drug. This study is part of the European Union-funded project TRYRAC (Trypanosomiasis Rational Chemotherapy), which aims at improving the management of trypanosomiasis in smallholder livestock production systems in tsetse-infested sub-Saharan Africa. This project consists of both fundamental research, as well as field activities, including training of farmers, veterinarians and decision-makers to adopt the best local strategy to fight the disease.

Under the microscope

Fighting sleeping sickness from inside

ITM opens a new front in the battle against sleeping sickness, using friendly bacteria living in the tsetse fly to target the Trypanosome parasite that transmits the disease.

Without cure, sleeping sickness is fatal, but current therapies have serious side-effects. The related disease in livestock has a serious impact on agricultural development on the African continent, but also on public health as reduced productivity of the animals puts food security at risk. ITM is therefore looking for alternatives to beat the disease, targeting the Trypanosome parasite that causes it.

In 2012, ITM scientists found that bacteria called *Sodalis glossidinius*, which naturally live in the tsetse fly like friendly bacteria in our intestines, can be used to mount an attack from the inside. The scientists modified its genes, which led the bacteria to release fragments of antibodies, known as nanobodies, against the parasite. They also showed that these transformed bacteria have similar survival and growth characteristics compared to the wild-type bacteria, demonstrating that they are competitive.

With further research, they aim at generating targeted nanobodies which could kill or block the development of trypanosomes. Tsetse flies harbouring these genetically modified bacteria will be incapable to transmit the parasite. These are of significant importance for the currently used Sterile Insect Technique, where a massive amount of sterile tsetse male flies (all potential trypanosome vectors) are released in the field to eradicate the natural tsetse fly population. While this research is scientifically fascinating, releasing flies with genetically modified bacteria in nature is another matter, among others because of the ongoing debate on GMOs.

Veterinary Entomology and Epidemiology

The Unit of Veterinary Entomology and Epidemiology studies the ecology of vectors of animal or zoonotic pathogens, as well as the epidemiology of the diseases they cause.

In 2012, we used niche modelling to determine the distribution of *Rhipicephalus microplus* in Benin and the risk for further expansion. The tick, which parasitizes a variety of livestock species, has reached the northern departments of the country and displaced most of the local one-host ticks. The epidemiology of bovine babesiosis has been influenced significantly in the country as a result. In fact, different species of the Babesia parasite found in the country appear to be linked to the presence of the various ticks species.

We also found hybrid species between the four known one-host ticks. Most tick species feed on blood three times during their life cycle. One-host ticks remain attached to the host during all three blood-feeding times.

The unit successfully completed a transient transfection of *T. parva* sporozoites. This marks the start of the development of transgene parasites, which creates exciting possibilities to explore fundamental biological questions and develop novel strategies. If exogenous DNA can enter into the parasite nucleus, a range of possibilities will become available to influence the behaviour of the parasite or the ensuing infection. In the long run, the generation of attenuated parasites, still sufficiently immunogenic to provoke a protective immune response, can lead to a breakthrough in the vaccination research.

The unit is the *Theileria* reference centre of the World Organisation for Animal Health. During the year, we identified species and strain levels of isolates from across the globe. These included buffalo isolates from South Africa, *Theileria orientalis/buffeli* from an outbreak in cattle in New Caledonia, *T. parva* from Sudan, and *T. annulata* from Algeria.

We demonstrated inter-epidemic transmission of the vector-borne zoonotic viral disease Rift Valley fever in Tanzania. Research on the epidemiology of ruminant brucellosis continued, focusing on the differences between countries where the disease is important in both humans and animals, and countries where it has no economic impact (in terms of loss of cattle) but is a public health concern.

East Coast Fever is a devastating disease in African livestock, causing substantial economical damage.

Under the microscope

Vector of Schmallenberg virus found

In 2012, ITM scientists discovered how the Schmallenberg virus is transmitted from animal to animal.

The culprits are biting midges, the same that transmit bluetongue in Europe. This was proven in a joint research with the Belgian Veterinary and Agrochemical Research Centre (VAR).

This virus emerged for the first time in November 2011, in the German ski resort Schmallenberg. It causes grave congenital malformations and stillbirths in cattle, sheep and goats. Shortly thereafter, the new disease emerged in the Netherlands. In the meantime it has reached Belgium, Luxemburg, France, the UK, Italy and recently Spain. In Germany more than eight hundred livestock farms were hit. While nobody knew how the virus was transmitted, midges were the logical suspects since they also transmit similar diseases like the bluetongue virus.

Midges (or Culicoides) are minuscule insects, living in damp areas, where they can be a real nuisance to humans, attacking and biting in large swarms. There are many species of midges, and it takes a trained specialist to discriminate them under a microscope. ITM scientists, who monitor the distribution of midges as vectors of bluetongue for the Belgian authorities, have therefore developed a 'microarray', a molecular technology that can also be used by non-specialists to simply and accurately recognize midge species. To map the distribution of midges, we trap them in several locations as part of a bluetongue surveillance project. ITM and VAR scientists revisited their collection in order to find out if it also contained the Schmallenberg virus.

They looked only at the heads of midges because the virus must reach the salivary glands to be transmitted, and detected the virus in *Culicoides obsoletus*, *C. dewulfi* and *C. pulicaris*, three of the five species that have been shown to transmit bluetongue.

in a nutshell

Theileria parva:

- ✓ a parasitic protozoan, named in honour of Arnold Theiler
- ✓ causes East Coast fever (theileriosis) in cattle, a costly disease in Africa.
- ✓ Theiler found that East Coast fever was not the same as Red water disease, caused by another protozoan.
- ✓ The main vector is the tick *Rhipicephalus appendiculatus*.

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Under the microscope

Community protection: combating malaria from a new angle

While insecticide treated malaria nets have significantly reduced malaria transmission worldwide, the disease is increasingly transmitted outdoors and outside sleeping hours. ITM and CNM scientists therefore started an innovative research project in Cambodia (the MalaResT project), studying the impact of mass use of mosquito repellents in addition to malaria nets with the ultimate goal to eliminate malaria.

The individual effect of mosquito repellents applied on the skin is well-documented, but the effect on the scale of an entire village or wider was never researched. The answer to the question whether mass use of repellents will sufficiently tackle the residual transmission to eliminate malaria should provide information about the potential use of such tools to make Cambodia malaria free by 2025.

The project, run by ITM in collaboration with the National Centre for Malaria Control in Cambodia (CNM) and the Institut Pasteur du Cambodge, is funded by the Bill & Melinda Gates Foundation and received a substantial donation of repellents from S.C. Johnson & Son.

In substance, we set up a large randomized community based trial in the high endemic Province of Ratanakiri Cambodia to measure the additional impact of mass use of repellents to Long Lasting Insecticidal Nets (LLINs) on malaria infection. The project tests the epidemiological efficacy of repellents, which depends on how mosquitoes react to repellents, but also on how people use them. Only such field experiments can fill the gaps in our understanding of vector life cycles and the impact and uptake of control strategies at the community level. Innovative research, its translation in new tools, and their controlled testing in real life conditions, lead to the proof of principle for the roll-out of new control strategies. Such endeavours require a complex multidisciplinary approach involving entomological, epidemiological and anthropological scientists.

The trial involves around 40.000 people in two arms of 50 communities. A control arm with a large coverage of LLINs covers indoor biting during night time only. A second arm, with a similar coverage of LLINs combined with the massive use of an approved topical repellent, covers malaria transmission before, and after sleeping hours. Anthropologists follow up the use of the repellents and its determinants

Two surveys per year are planned: one at the start of the intervention and before the transmission season and another 6 months later at the end of the transmission season. A two year study is foreseen to tackle the annual variation in malaria transmission. The main indicator to estimate malaria incidence is the prevalence of parasite carriers measured by PCR techniques. PCR allows amplifying a single or a few copies of a piece of DNA across several orders of magnitude, generating thousands to millions of copies of a particular DNA sequence. A mobile molecular field laboratory, another novel feature of the research, is used to test a great number of samples in less than 12 hours, which allows the treatment of all PCR positive cases within 24 hours. Changes in sero-prevalence will be used as a secondary indicator.


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Medical Entomology

The Medical Entomology unit researches the biology, behaviour and ecology of insects which transmit diseases to humans.

In 2012, a main focus was on the control of "residual" malaria transmission, crucial to achieve malaria elimination. Residual transmission is defined as transmission that is not covered by the main vector control methods used today, such as Insecticide Treated Nets and Indoor Residual Spraying. We launched an innovative project in Cambodia to evaluate the impact of large-scale use of topical repellents on residual transmission of malaria (see left page 'under the microscope').

The unit also studies taxonomic and functional biodiversity of native and invasive mosquitoes in Europe and in tropical countries and the risk that new vector borne diseases are introduced.

In a domestic project, we explore the mosquito populations and their functional biodiversity in Belgium. This study focuses on two potentially invasive mosquitoes, originating from Asia. Although the current risk of transmission in Belgium by native or exotic mosquitoes is low, unexpected outbreaks cannot be ruled out. We evaluated the European Centre for Disease Prevention and Control (ECDC) guidelines for the surveillance of invasive mosquitoes in Europe, focusing on Belgium. In Cambodia and Vietnam, the unit was involved in the evaluation of new public health pesticides. We also played an important role in different expert groups of WHO on vector biology and control.

in a nutshell

Trypanosomiasis

- ✓ refers to several diseases in humans and animals by parasitic protozoan trypanosomes of the genus *Trypanosoma*
- ✓ associated sleep disturbances give the disease in humans the name sleeping sickness
- ✓ another form of human trypanosomiasis is called Chagas disease, found mainly in Latin America
- ✓ without treatment sleeping sickness is fatal, but the cure is painful and risky
- ✓ the equivalent disease in livestock is an economic and public health threat in Africa
- ✓ in Africa, trypanosomes are mostly transmitted by tsetse flies (*Glossina*), in South America by bed bugs (*Triatoma*)

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Department of Public Health

Working in, with and for communities worldwide

In 2012, the Department of Public Health successfully reformed the Master in Public Health and launched several new research projects. Eight PhD students defended their doctoral thesis. Scientists of the department produced more than 150 papers published in international peer-reviewed journals.

The 3 P's: Populations

Department of Public Health

Health, health systems, epidemiology and control of diseases at the level of entire populations.

- ✓ study of the epidemiology of tropical and infectious diseases, socio-economical and organisational aspects of health care, and general and international health care policy
- ✓ working towards accessible, adequate, integral and efficient health systems, with special attention to the poor and other risk groups, as well as an international health policy based on universal human rights.
- ✓ scientific research in and with communities, health services and relevant authorities in developing countries, as well

Health Policy

In 2012, the six-year EU-funded research project INCO-GHI was concluded. The seven consortium partners, coor-dinated by ITM, tried to understand how the rise of Global Health Initiatives (GHIs) has impacted the architecture of development partnerships and country-level health systems in Angola, Lesotho, Mozambique and South Africa.

The study focused on the effects of several large global health initiatives on aid recipient sub-Saharan African countries, such as the World Bank's Multi-country AIDS Program (MAP), the US President's Emergency Plan for AIDS Relief (PEPFAR), the Global Alliance on Vaccines and Immunisation (GAVI Alliance) and the Global Fund to Fight HIV/AIDS, TB and Malaria. The consortium organised a large dissemination event at the second Global Symposium for Health Systems Research in Beijing.

A three-year project on goals and governance for global health started under the European Commission's 7th Framework Programme. Go4Health is a 14-member-consortium of Southern and Northern institutions. ITM and its project partners will help to "ensure that the health-related development objectives for the period after 2015 are based on the best scientific evidence available and address the main shortcomings of the current Millennium Development Goals (MDG)." The project aims at advancing and improving on the concept of a global social contract as first articulated in the Millennium Declaration. Go4Health partners propose goals and a governance structure centred on a framework of shared but differentiated responsibilities.

The Switching International Health Policies & Health Systems (SWIHPS) network disseminates and exchanges information, expertise and practice. On the one hand, it aims at increasing the participation of experts from the South in Global Health. On the other hand, it wants to contribute to stronger health systems and improved policy making at local, national, regional and global levels. This has been carried out via online efforts (newsletters, blogs, websites, social media) and meetings (such as the Emerging Voices initiative) and creating regional hubs. The International Health Policies newsletter (and the accompanying blog www.e.itg.be/ihp), has reached 2500+ subscribers in 2012.

Read more:
www.globalhealthobserveg.org
www.go4health.eu

Studying social inclusion in Project de Santé Dar Naïm, focus group discussion with indigents, Nouakchott (Mauretania).

Under the microscope

Emerging Voices, Beijing 2012

Emerging Voices brings together young researchers as individuals and as a group in a concentrated effort of collective learning, sharing experiences and presenting research. After a successful start at the first Global Symposium on Health Systems Research in Montreux in 2010, a second edition of Emerging Voices took place in 2012 at the follow-up symposium in Beijing.

Emerging Voices was born in an attempt to actively engage young scientists from the global south in international academic conferences and to raise their voice in the scientific debate. For the 2012 edition, ITM and the Peking University School of Public Health joined forces to build presentation skills and strengthen the voices of young health systems researchers. The programme is supported by the Belgian Development Ministry (DGD) through its framework agreement with ITM.

It comprised of an intensive training programme for 50 health researchers from developing countries, which culminated with their participation in a pre-conference and the 2nd Global Symposium for Health Systems Research. Two sessions at the Global Symposium, organised by the Alliance for Health Policy and System Research in Beijing, featured "Emerging Voice" contributions. These young scientists also presented during the opening and the closing ceremonies of the symposium, as well as several poster and oral presentations in other sessions.

Young Sri Lankan researcher Lalith Senarathna described his experience in Beijing as follows.

"It was a great platform for us to share ideas and experiences on different topics and in different settings. It was very inspiring to see the work done by Emerging Voices on a vast range of topics from all continents. More interestingly, different research projects, despite being focused on sometimes very different health issues, often seemed to have many things in common. The conclusion is obvious: research work done in one area can often be useful for other areas too."

Read more:
www.ev4gh.net

Emerging Voices at the second Global Symposium on Health Systems Research in Beijing.

Health Services Organisation

Research lines in the Health Services Organisation unit are at the crossroads of strategic management of local health systems and research methodology for complex health interventions.

On invitation by the KEMRI-Wellcome Trust in Nairobi, we ran a week-long teaching workshop on designs to examine how, and in which conditions, clinical guidelines for pediatric care improve quality of care. Participants discussed determinants of hospital performance, management, leadership, research designs and realist inquiry. Brainstorming sessions focused on the protocols and helped research teams tackling methodological bottlenecks.

Within the FEMHealth project (see page 50), we examine how fee exemption policies play out at district level in Benin, Mali, Burkina Faso and Morocco, and analyse the policy-implementation gap from the point of view of district-level managers. In the process, we assess the actual implementation of these policies and the effects on target groups, as well as the impact on local health systems. This descriptive phase is followed by "realist case" studies that attempt to understand why these policies are (partially/not) implemented and/or adapted.

The unit also tackles methodological and substantive challenges in the field of life-long conditions and chronic illness. Also in this line we come to grips with the notion of complexity in health and the need to refine research methods. The coaching of PhD students and support of new teaching programmes at IPH Makerere in Uganda and IPH Bangalore in India also contributed to this end. This support, in turn, led to presentations and ITM-organised panel sessions during the Second Global Symposium on Health Systems Research in Beijing, and opened the gate to collaboration with the School of Public Health of the University of Western Cape in South Africa.

Health Financing

In 2012, the Health Inc. project coordinated by the Institute of Public Health (IPH) in Bangalore entered its second year.

It focuses on socially inclusive health care financing in West Africa and India. The six partners, including ITM, apply mixed methods in four countries and states (Ghana, Karnataka, Maharashtra and Senegal) to analyse whether different types of financing arrangements can overcome social exclusion to successfully cover poorer population groups and, crucially, increase social inclusion by empowering socially marginalised groups. Health Inc. will propose and test policy recommendations through a process of comparing and contrasting policies in various contexts. Following this field research, local policy makers and population groups will be consulted in a feasibility analysis.

ITM's Unit of Health Financing firmly supports South-South exchange of knowledge, to ensure that generated evidence is translated it into policy and practice.

One of the unit's most important activities is knowledge management on health care financing in Africa through Communities of Practice. These groups link practitioners with policy makers and researchers, bringing all the knowledge holders to one common platform to enhance dialogue and make sure the best policies are developed. The work on knowledge management ties in with the research activities, studies and other projects of the unit.

Unit members were involved in the organisation of a conference in Marrakech in September 2012 on "Equity in Universal Health Coverage: How to Reach the Poorest." The event was jointly organised with the Ministry of Health in Morocco, the Financial Access to Health Services Community of Practice and the Joint Learning Network for Universal Health Coverage. It gathered policy makers, scheme managers, agency representatives, scholars and members of parliament – including country delegations and individual participants from across the African continent.At the end of the workshop, individual participants signed a declaration marking their personal commitment to work for better access to health services for the poorest in Africa. You can read the declaration here at www.bit.ly/QHljmB.

Read more:
iphindia.org/health-inc-project-overview
www.iphindia.org/health-inc-project-over-view

Nutrition and Child Health

Since 2011 we coordinate the "Sustainable nutrition for Africa in the years to come" (SUNRAY) project, in collaboration with several African and European partners.

SUNRAY aims at developing a nutrition research agenda defined by a wide range of African stakeholders in nutrition. Three regional workshops were held in Tanzania (November 2011), Benin (January 2012) and South Africa (May 2012), building consensus on research priorities and actions for an enabling environment. In order to bring about effective nutrition research in Africa, SUNRAY documented knowledge gaps through evidence-based analysis of policy questions. The new approach aims at making nutrition research more responsive to policy needs and will promote governance of nutrition research. The approach aims at increasing commitment to nutrition research from an African perspective, as well as a rational dissemination of research findings. Results of the EU-funded SUNRAY project will be published in 2013.

In the field of acute malnutrition in children, another area of major activity, the unit conducted a cluster-randomized controlled trial in Burkina Faso's Hounde district. This LUCOMA (Treating Moderate Malnutrition in 6-24 Months Old Children) project assessed the effectiveness of three therapeutic approaches of moderate acute malnutrition that are adequate and affordable in the usual settings of health districts in poor countries, i. e. without the input of important external budgets or expertise. The three comparators were a locally-made ready-to-use supplementary food (RUSF), a processed corn-soya blend (CSB++), and a child-centred counselling. In total, 2090 children were enrolled in this study. The project is funded by the Global Alliance for Improved Nutrition (GAIN) and the World Food Programme (WFP). Data analysis is currently ongoing.

The unit also participated in the Nutrition Guidance Expert Advisory Group (NUGAG) of the World Health Organisation (WHO), which aims at establishing new evidence-based WHO guidelines following the GRADE methodology. ITM scientists produced three systematic reviews for the NUGAG group relating to the diagnosis and treatment of severe acute malnutrition.

Read more:
Sunray: www.sunrayafrica.co.za
Lucoma: 1.usa.gov/157Lvzl
Nugag: bit.ly/165obBW

Maternal and Reproductive Health

We launched a major research project on maternal and reproductive Health called "FEMhealth", supported by the European Union.

In this context, the unit conducts research on the implementation and effects of free Caesarean-section policies in Benin, Burkina Faso, Mali and Morocco. The European partners include the University of Aberdeen and the London School of Hygiene and Tropical Medicine.

The unit also leads the evaluation processes of the action research project Défi Jeunes, which takes place in Burkina Faso, Mali and Benin. The project aims at empowering young, unmarried girls to defend their rights, with special attention to reproductive health and access to family planning. The project is coordinated by the French NGO Equilibres & Population and consortium members include the Population Council, the Belgian NGO Le Monde Selon les Femmes and local African NGOs.

The struggle against female genital mutilation (FGM) is also of great concern in Europe. ITM's Fabienne Richard is one of the "founding mothers" of the NGO "Groupe pour l'abolition des mutilations sexuelles" (GAMS) Belgium. GAMS provides social, medical and legal assistance to women affected by FGM. It works with girls at risk, religious and community leaders, the wider African communities at stake, schools and parents' organisations, the federal agency for the reception of asylum seekers, asylum centres, professionals of the social, legal, law enforcement and health sectors, the Belgian authorities and the public. GAMS searches to raise awareness, takes on individual cases and lobbies at political and legal levels, and runs pilot projects in Senegal.

Read more
www.abdn.ac.uk/femhealth
www.defijeunes.wordpress.com
www.gams.be

Public Sector Health Care

In 2012, our 3-year" Health System Stewardship and Regulation in Vietnam, India and China" (HESVIC) project, supported by the European Union and coordinated by the University of Leeds, drew to a close.

HESVIC investigated the impact of regulation on governance and practice of health systems in the area of maternal health. ITM was responsible for the scientific coordination of this comparative study of nine cases in Vietnam, India and China. Apart from Leeds and Antwerp, the project partners were the Royal Tropical Institute of Amsterdam, the Hanoi School of Public Health, the Institute of Public Health in Bangalore, and the Fudan University in Shanghai. The project increased knowledge about common problems in developing and implementing regulation, as well as factors facilitating the achievement of equitable access to quality maternal healthcare in emerging economies.

In another EU-funded project, Equity-LA 1, we compare integrated health care networks (IHN) between Colombia and Brazil. This are project partners are the Consorci de Salut i Social de Catalunya (coordinator) in Barcelona, FIOCRUZ in Brazil and Universidad de Rosario in Colombia.

An IHN is a network of health providers that offers a coordinated continuum of health care services to a defined population, and makes itself responsible for the expenses and health results of the population attended. The results of the quantitative and qualitative research have been finalized in 2012, and 2013 (as the last year) will be dedicated to dissemination. A follow-up project of the consortium, "Equity-LA 2", will start in 2013 to conduct action-research to improve coordination and performance of Integrated Health Networks in Brazil, Chile, Mexico, Uruguay, Argentina and Colombia.

ITM has a long standing collaboration with the Public Health Institute at PUCE, Quito, Ecuador, which is one of its institutional partners in the Framework Agreement Programme with the Belgian Development Cooperation. In 2012, the unit continued to support the Master in Public Health training at IPH-PUCE, with a special focus on scientific writing skills.

The unit also supported the Research Education and Extension in Health in Latin America (IDESAL) network. IDESAL gathers academics, researchers and socio-political organisations active in the public health sector of about twenty countries in Latin America. On the research side, the network has shifted attention to the 'real meaning of universal health coverage', in light of observed paradoxes between high health insurance coverage in Latin America, but low access to quality health care. Coordinated by ITM, all network members carried out research on this issue in their own country, and exchanged course contents, teachers and participants.

The unit explores strategic collaboration with the newly formed South American Institute of Government in Health (ISAGS) in Rio De Janeiro. With the same aim, the unit also assisted in a meeting of the new EU programme EUROSOCIAL II in Quito, Ecuador, presenting its experience with integrated health systems in South America.

Read more:
www.redidesal.org
www.equity-la.eu
HESVIC (video): bit.ly/Zs8PA2


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General Epidemiology and Disease Control

In 2012, the unit of General Epidemiology and Disease Control continued its collaborative efforts to strengthen public health care in Cuba in the context of ITM's framework agreement with the Belgian Development Cooperation.

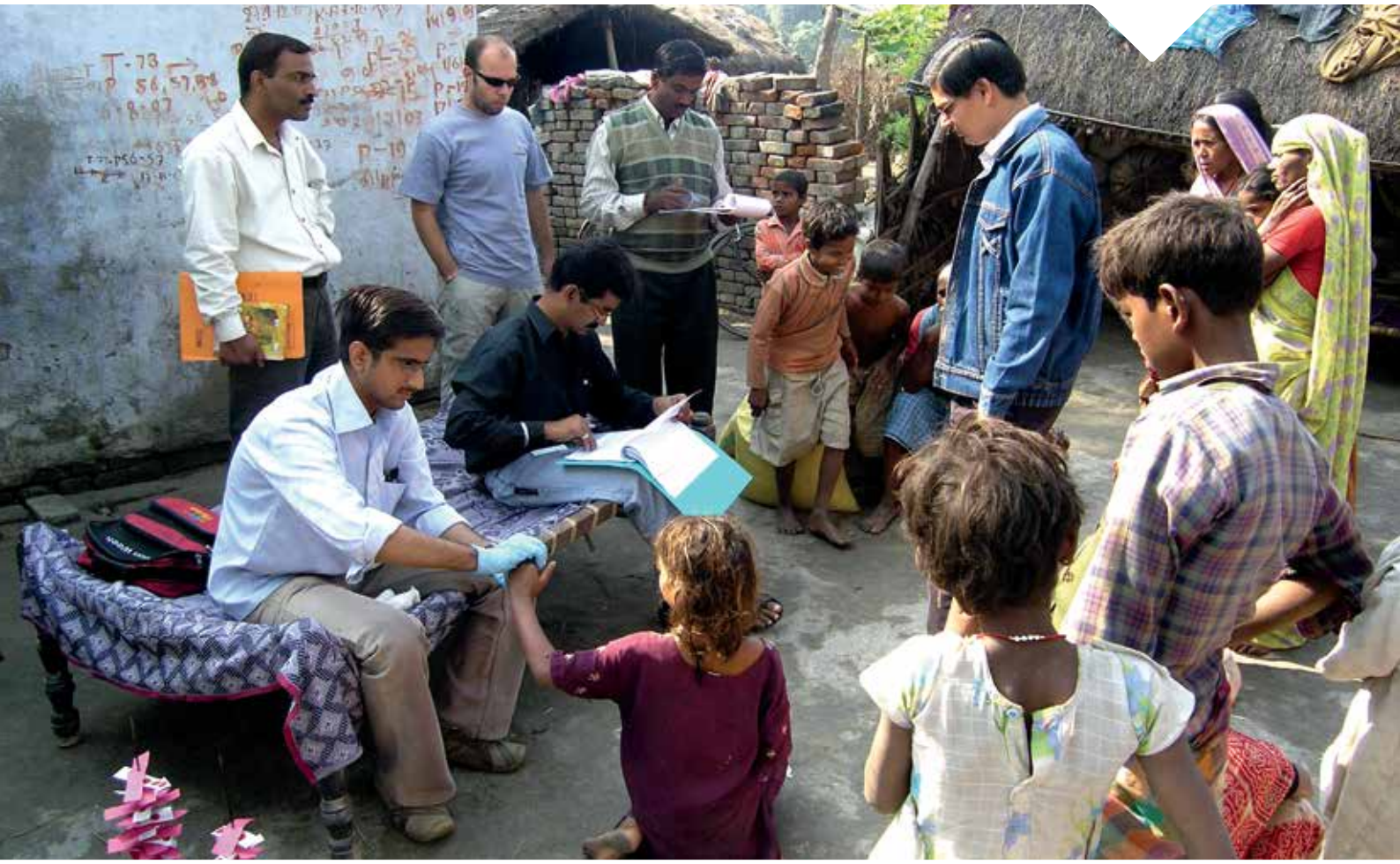
The project aimed at supporting the scientific mission of two Cuban partner institutes, the Instituto Nacional de Higiene, Epidemiologia y Microbiologia (INHEM) and the Instituto de Medicina Tropical "Pedro Kouri" (IPK), through capacity strengthening and scientific cooperation.

The project included a community intervention trial comparing different vector control methods to counter dengue, such as routine interventions, insecticide treated curtains and indoor residual spraying. The trial also included an acceptability study.

While final project results are not yet available, it is foreseen that the project will have among others boosted institutional research and management capacity, developed key human resources and skills and built up know-how on health care organisation and integrated disease control.

ITM collaborates with INHEM on three research projects. First, the two institutes continued their work on multi-sectorial community participation methodologies in identifying and tackling health determinants. The Ministry of Health took up the methodology of "comprehensive and participatory planning and evaluation" as a result. A second study focuses on optimisation for diagnosis and follow-up of hypertension, looking at the role and functions of the family doctor and nurse, as well as at enhancing self-responsibility and peer support in the community. The baseline study has been finalised and interventions are starting. A third research on social determinants of health analyses the consequences of ongoing social and economic changes in Cuba on health outcomes and health services, at national level and at local level.

In Jogjakarta (Indonesia), ITM researchers completed a study on Tuberculosis (TB) diagnosis with partners from the Department of Public Health of Gadjah Mada University and funded by the Belgian National Fund for Scientific Research (NFWO). Finally, the unit and researchers of the Institute of Public Health in Bangalore co-designed a qualitative study on the involvement of private practitioners in TB care and control in India that will be conducted in 2013.



Sampling blood in the village for visceral leishmaniasis testing, Bihar, India

Epidemiology and Control of Tropical Diseases

The Unit of Epidemiology and Control of Tropical Diseases mainly studies the control of visceral leishmaniasis and sleeping sickness, both poverty-related diseases with a protracted course.

The unit studies the effectiveness, the acceptability and efficiency of control interventions.

On the Indian subcontinent, the unit contributed to the Kaladrug-R project (see page 43 'under the microscope') and is associated with the Tropical Medicine Research Centers (TMRC) project, funded by US National Institutes of Health (NIH). In 2012, this project entered a new 5-year phase of research on neglected tropical diseases (NTDs). In the first phase of the project, researchers studied Visceral Leishmaniasis (VL), or kala azar, in an endemic area in the Muzaffarpur district of Bihar State, with a population of about 15 000 people. At individual and household level, they did not find any association between domestic animals and risk for kala azar: there is thus no ground for recommendations to change animal husbandry practices at the household level to reduce risk of kala azar. The follow up of the population will be continued in the second phase of the project, using demographic surveillance methods to study the contribution of asymptomatic infections to *Leishmania* transmission. As more evidence is needed on the behaviour of the transmitting sand flies, another focus will also be on entomology in this second phase.

In 2012, we continued our efforts to determine the diagnostic accuracy of rapid tests for the diagnosis of kala azar via a Cochrane review, a systematic analysis of primary research.

Our collaborative research on sleeping sickness in RD Congo takes place as part of the Framework Agreement with the Belgian Development Cooperation. The Congolese control programme focuses mainly on the detection of new cases, but produces limited data on the clinical outcome of subsequent treatment. We worked on a more efficient reporting system similar to the one used in tuberculosis programmes, including the registration of side effects. New registers have been piloted in two endemic districts on over 400 patients, with encouraging first results.

The Unit coordinates the EU-funded NIDIAG consortium, a research network aiming at developing simple, cost-effective diagnosis-treatment algorithms for three clinical syndromes: persistent fever, neurological disorders, digestive syndromes. The unit concentrates on the economic and the social aspects of the project. We finalised a qualitative study on the perspective of first-line health providers on diagnostic dilemmas. We also completed two studies on the costs and cost-effectiveness of treatment alternatives for visceral leishmaniasis in Sudan, in collaboration with the Drugs for Neglected Diseases Initiative (DNDi, Geneva), and developed economic research protocols with the NIDIAG partners.

The unit also contributed to the EU-funded UNITAS research partnership, which aims at supporting the implementation of reforms intended to achieve universal coverage in Tanzania and South Africa by monitoring and evaluating the policy process.

Read more:
www.nidiag.org
www.unitas-africa.org

Epidemiology and Control of Malaria

In 2012, Prof. Umberto D'Alessandro took up the position of team leader of the Disease Control & Elimination Unit at the Medical Research Council in The Gambia. In collaboration with the Department of Biomedical Sciences, the unit kicked-off a project studying the large scale use of repellents in Cambodia (see 'under the microscope' on page 38).

Medical anthropologists of the unit assess the acceptability, adherence and adequacy of topical repellents at community level, one of the determining factors for the success of this approach.

The unit continued the assessment of the impact of public health-oriented clinical trials on local communities and corresponding health systems in West and East Africa, a project funded by EDTCP (European and Developing Countries Clinical Trials Partnership).

We started a social science research on the heterogeneity of malaria transmission and hot spots, funded by the Wellcome Trust, and launched a study in The Gambia on adherence to treatment among carriers asymptomatic. Finally, the unit's social scientists provided expertise for a new EU-funded project on 'Community-based Scheduled Screening and Treatment of Malaria in Pregnancy for Improved Maternal and Infant Health' in Burkina Faso, Benin and The Gambia.

HIV/AIDS Policy

Eurosupport, an EU-funded research network consisting of ten European partners, aims at improving the capacity of service providers to support people living with HIV and improving their sexual and reproductive health.

'Positive prevention', for and by people living with HIV, is an important strategy to reach this goal. The Eurosupport team developed a theory-based counselling intervention that uses computerised tools to facilitate change in sexual behaviour in order to contribute to a reduction in new HIV-infections. Counsellors can use the tools, such as video-clips with recognisable situations of risk taking in sexual situations, as supporting material. In 2012, a randomised control trial was concluded that demonstrated the achievements of this strategy.

HIV-SAM, another prominent project of the unit, collaborates with African community-based organisations active in Flanders to develop and implement tailor-made HIV prevention actions through a participatory approach. The project aims at promoting sexual health and preventing HIV/AIDS and other sexually transmitted diseases (STD) among Sub-Saharan African Migrants (SAM) residing in Flanders. HIV-SAM offers culturally sensitive counselling to Africans living with HIV and shares its expertise with other service providers. Through scientific evaluations of the interventions, the project strengthens the link between science and practice, which is essential for the project's overall performance and the quality of its activities. In the context of HIV-SAM, the TOGETHER research tries to gain a better understand HIV transmission dynamics in the target group from an anthropological perspective.

The SIALON II project, funded by the European Public Health Programme, kicked-off in 2012. It carries out and promotes combined and targeted prevention complemented by a meaningful surveillance of HIV and sexually transmitted infections among men who have sex with men (MSM). This is done in 15 European countries with tests on oral fluid. In Belgium, the project is coordinated by ITM. Data will be collected among MSM visiting community venues in Brussels using time-location sampling. A behavioural survey will investigate sexual risk behavioural patterns and sexual health in the population. Data collection and prevention activities will be peer driven and organised in close collaboration with the community.

In the context of the Framework Agreement between the Belgian Development Cooperation and ITM, our strategic projects on HIV prevention in Cambodia, Côte d'Ivoire and Kenya continued. In Cambodia, we collaborate with the National HIV programme (NCHADS) and the Reproductive Health Programme (NMCHC), and provide scientific support for the development and testing of a model to integrate HIV, sexually transmitted infections and reproductive health services: the "Linked Response" (LR) approach. In 2012, NCHADS and NMCHC conducted a qualitative study to identify health related issues, challenges, solutions and needs of children on antiretroviral treatment (ART) to improve their transition from Paediatric AIDS Care to Adult Pre-ART and ART services.

In Côte d'Ivoire and Kenya, we collaborated with various organisations to identify best practices for the scaling-up and evaluation of interventions targeting sex workers. In Kenya, we provide technical support to the National AIDS Control Programme in the development of a National Peer Educators training manual. In Côte d'Ivoire, the unit finalised a study assessing the retention rate of sex workers on AIDS-treatment (ART), showing that compliance was only 61% after two years. We now try to better understand the reasons for this loss-to-follow-up and to identify strategies to increase long-term compliance. Providing ART to sex workers is not only an individual intervention, but has also an important impact on the whole population as it reduces the transmission and circulation of HIV.

Read more:
www.eurosupportstudy.net
www.hivsam.be

Under the microscope

Strengthening Health Systems to Achieve Universal Health Coverage in India

The second edition of the Bringing Evidence to Public Health Policy (EPHP) Conference focused on determining factors for the achievement of universal health coverage in India.

EPHP, an initiative led by the Institute of Public Health (IPH) in Bangalore, provides a platform for policy makers, practitioners and researchers to reflect jointly on issues related to Health Systems and Universal Health Coverage. The first edition took place in Bangalore in 2010.

The 2012 event was hosted by IPH in collaboration with ITM, the National Health Systems Resource Center (NHSRC), the Government of India, the Government of Karnataka and the State Health Systems Resource Center (SHSRC).

Delegates from 18 countries discussed how to disseminate the concepts of Universal Health Coverage (UHC) and Health Systems (HS) in the Indian context. They also looked at how to circulate and review the evidence of research and implementation experiences of strengthening health systems at National and State levels. A newly developed E-learning for Public Health Managers (EPHM) course was launched at the conference.

Read more:
www.ephp.in

The conference chairs light a ceremonial candle to kick off the meeting.

Under the microscope

Positive living: Our bodies, our choices

On the occasion of World AIDS day (1st December 2012), ITM organised a 3-day workshop using creative art to empower people living with HIV.

ITM researchers experienced how creative art therapy can provide useful learnings for HIV prevention. Facilitator and artist Xavier Verhoest (Arts2be, based in Kenya) carefully guided 10 HIV-positive participants with a sub-Saharan background to create life-size paintings of their own body. Through this technique of "body mapping", they reflected on what it means to live with HIV as a migrant in Belgium. Their paintings were exhibited at ITM and presented at the annual World AIDS Day seminar.

The workshop was held in an atmosphere of mutual respect and trust. HIV positive participants painted their perceptions of their body, their figure, their finger- and footprints on canvas. They used symbolic language representing on the one hand the participants' challenges of living with HIV, and the force they need to overcome those challenges on the other. These elements were integrated in the body map, presented and discussed among participants.

Also the scientists could draw valuable lessons for HIV prevention from the life stories of participants. The strong contextual influences on the quality of life of HIV positive migrants emerged, for instance through paintings that showed the clear connection between migrants' rights and individual coping styles. The workshop enabled several participants to testify and advocate for HIV prevention, on World AIDS day and beyond.

in a nutshell

HIV:

- ✓ human immunodeficiency virus (HIV) is a slowly replicating retrovirus that causes acquired immunodeficiency syndrome (AIDS)
- ✓ infection occurs by the transfer of blood, semen, vaginal fluid, pre-ejaculate, or breast milk.
- ✓ the combination of three or more antiretroviral drugs is referred to as ART or antiretroviral therapy
- ✓ this combination is used to repress the HIV virus and stop the progress of the disease, but does not cure the infection.
- ✓ together with many other scientists world-wide, ITM researchers continue the quest for curative strategies.

Epidemiology and Control of HIV/STD

The key research question of the Unit of Epidemiology and Control of HIV and Sexually Transmitted Diseases (STD) is why young women in sub-Saharan Africa are highly vulnerable to acquiring HIV infection.

The EDCTP funded study "Biomarkers for Africa" characterised the vaginal environment in 430 women seven times over an eight month period. It demonstrated that a joint score based on levels of various bacterial species can be used as an indicator of a healthy or unhealthy vaginal microbiome. Preliminary micro-array data indicate the presence of four to six vaginal microbiome clusters dominated by either individual *Lactobacillus* species or by different levels and combinations of anaerobic bacteria.

Furthermore, the scientists measured soluble biomarkers of inflammation and immune responses, such as cytokines, chemokines and antimicrobial peptides. They identified several biomarkers that correlated with a healthy or unhealthy vaginal microbiome. Additional analyses are planned to take participant characteristics, such as age, behaviour, and presence of HIV or sexually transmitted infections into account.

The study also characterised biomarkers of inflammation, epithelial integrity, immune activation, and antimicrobial activity in the cervicovaginal environment in different groups of women in Rwanda, Kenya, South Africa and Tanzania. Such biomarkers could be used in safety trials of intravaginal products for the prevention of HIV transmission.

In The RingPlus project, an EDCTP funded primer grant collaboration, the unit leads the research component on the acceptability of the vaginal contraceptive ring in Rwanda. Colleagues from the Unit of Virology in the Department of Biomedical Sciences study the effects of the ring on the vaginal microbiome. This project aims to prepare for future multipurpose vaginal ring interventions in development for high risk populations.

Expertise built up in the biomarker study led to a second EDCTP funded project entitled "Preparing for clinical trials of interventions to improve the reproductive health of adolescent girls in sub-Saharan Africa" (RHASA). The RHASA project is carried out in Tanzania, in collaboration with Mwanza Intervention Trials Unit & National Institute of Medical Research (MITU/NIMR) and the London School of Hygiene and Tropical Medicine. RHASA intends to assess the acceptability of procedures for research on reproductive health among adolescent girls, including the informed consent procedure, and at characterising the vaginal microbiome in adolescent girls. This multidisciplinary project furthermore involves epidemiologists and social scientists of the Department of Public Health, and microbiologists of the Department of Clinical Sciences.

In the context of CHAARM (Combined Highly Active Anti-Retroviral Microbicides, see above), we study vaginal biomarkers secondary school girls in Antwerp. These data will be compared with those of the vaginal microbiome of adolescent girls in Africa.

Under the microscope

Access to quality medicines is a human right

ITM coordinates Quamed, a network of non-profit drug suppliers which seek to ensure the quality of medicines in developing countries.

Counterfeit medicines are the subject of a growing number of global initiatives. However, substandard medicines, an issue of alarming proportions in low-income countries, are not sufficiently considered. Substandard medicines have an impact that is at least as negative for the health of vulnerable sections of the population as counterfeit medicines.

All partners of the Quamed network consider access to quality essential medicines to be a universal and inalienable human right. The fact that vulnerable sections of the population have limited access to quality medicines represents a major risk in public health terms. QUAMED and its partners are therefore committed to improve pharmaceutical supply practices and to taking part in raising awareness about the problem.

The Quamed partners pool resources, share validated information, and reinforce the technical capacity of the participants. They also perform applied research and advocate for drug quality assurance with decision-makers and donors.

In 2012, the number of institutional QUAMED partners increased to 23. The network carried out numerous assessments of the local market for medicines in low- and middle-income countries, as well as the audit of international procurement agencies and various capacity building activities for QUAMED partners.

QUAMED is funded by the Belgian Development cooperation through ITM's Framework Agreement Programme. In 2012, additional funding from the Humanitarian Aid and Civil Protection department of the European Commission (ECHO) allowed to extend the scope of the activities.

Read more:
www.quamed.org

Department of Clinical Sciences

Diagnosis, treatment and care

The expertise of the Department of Clinical Sciences is concentrated on tropical diseases, HIV/AIDS, sexually transmitted infections (STI) and tuberculosis.

The department covers a broad range of disciplines, including "bedside" sciences, laboratory medicine, clinical decision making, diagnostic studies and clinical trials. Through the Medical Services, it is at the service of patients in Belgium, Europe and across the world. The department also hosts the Clinical Trial Unit of the ITM and the Antwerp HIV/STI reference laboratory (see 'under the microscope' in this chapter).

New pandemics and other evolutions in the field of infectious diseases re-emphasise the importance of clinical tropical disease research, also in Europe. As national reference laboratory for tropical diseases, we are also at the vanguard of emerging and imported infectious threats. In this perspective, we further improved our molecular diagnosis tests for West Nile virus and other arboviral infections, as well as rickettsia. We detected and published the first case of West Nile Virus in Belgium, coming from Greece.

In 2012, the HIV-STI reference laboratory renewed its status as WHO reference laboratory. We started on-site saliva-based HIV-tests with a standard Enzyme-linked immunosorbent assay (ELISA). Clinical field research in the field of HIV, TB, malaria, antimicrobial resistance, visceral leishmaniasis took place in Africa, Latin America and Asia. In Cambodia, a large community based active case-finding study to increase the detection rate for tuberculosis in underserved communities is ongoing. In the Democratic Republic of Congo, we collaborate with the other ITM departments and Congolese partners institutes to study the diagnosis of neurological diseases. You can read more about our activities on the following pages.

The 3 P's: Patients

Department of Clinical Sciences

Scientists of the Department of Clinical Sciences take the patient as a starting point.

- ✓ clinical and laboratory research in the field of infectious diseases, in particular Tropical Diseases, HIV/AIDS, Sexually Transmitted Infections (STI), Tuberculosis (TB), Malaria Infectious diseases.
- ✓ strong clinical and laboratory expertise in evidence-based diagnosis and treatment of patients with tropical and infectious diseases national and international clinical and diagnostic reference centers for travel medicine, tropical diseases, HIV/AIDS, STI, TB,
- ✓ improved patient management in tropical countries by strengthening clinical, laboratory, teaching and research capacities

Clinical trials: in, with and for the South

ITM's Clinical Trials Unit (CTU) helps researchers at ITM and partner institutions to guarantee global ethical and regulatory requirements in contexts of limited resources, weak governance, and vulnerable communities. It has been established in 2004 with specific funding from the Flemish Ministry of Sciences, in order to respond to the growing needs in the field, the founding of the European & Developing Countries Clinical Trials Partnership (EDCTP) and, most of all, ITM's absolute commitment to the principle of "no double standards".

Good Clinical Practices (GCP) and ethical guidelines are meant to ensure that human subjects who participate in medical research are protected, and that data collected thanks to their participation are true, reliable and credible. ITM's Clinical Trials Unit (CTU) helps fulfilling these two fundamental requirements, and ensures that clinical trials sponsored (i.e. takes legal responsibility for) by ITM are conducted according to the same and highest standards, wherever they take place.

In 2012, the unit supported four non-commercial trials sponsored by ITM. Two of these trials aim at improving the management of malaria during pregnancy in sub-Saharan Africa (PREGACT and COTRIMAL studies), one at preventing kala-azar relapses in HIV patients in rural Ethiopia (Pentamidine study), and one at simplifying the rabies pre-exposure vaccination in Belgium (Rabies study). By the end of 2012, over 3000 pregnant women had been recruited in the PREGACT malaria trial in Burkina Faso, Ghana, Malawi and Zambia, and more than 800 in the COTRIMAL trial in Zambia. The unit also contributed to specific activities in other non-commercial clinical trials addressing public health questions in sub-Saharan Africa.

Carrying out high-quality clinical trials is a particularly challenging undertaking in rural, remote areas in the South. Therefore, in the context of the Pentamidine trial for leishmaniasis in Eastern Africa, a strong research consortium was built, which is able to work in remote areas in support of vulnerable and neglected population groups. The unit also supports the National Programme for Human African Trypanosomiasis in the Democratic Republic of Congo, collecting and analyzing treatment outcomes and safety information. We are also proud to support and coordinate the "Switching the Poles Clinical Research Network", co-funded by the Belgian Development Agency. Since its inception in 2008, the network has gradually moved from a theoretical approach to practical support of and collaboration with clinical researchers in developing countries.. A major network activity in 2012 was the development and organisation of field-based training in GCP and GCLP for young scientists, laboratory staff and data managers.

Clinical Trials Unit members on their way to monitor the Abdurafi site (Pentamidine study Ethiopia)

Clinical studies of Salmonella

In recent years, the Unit of Tropical Laboratory Medicine has become increasingly involved in blood culture-based surveillance of bacterial resistance in several partner-laboratories in Asia, Africa and Latin-America.

Salmonella enterica appears to be still one of the most important bacteria causing invasive infections in low-resource settings, and many have acquired important resistance to commonly used antibiotics.

In collaboration with partners in Cambodia and the Democratic Republic of the Congo (DRC), as well as the Reference Laboratory for Salmonella in Brussels (WIV/ISP), ITM scientists identified high rates of multidrug resistance and decreased susceptibility for ciprofloxacin in *Salmonella typhi*. Even more complex resistance patterns were seen in the non-typhoid *Salmonella spp*. Historically, more emphasis has been given to *Salmonella Typhi*, the cause of typhoid fever. However, during the past decades zoonotic non-typhoid *Salmonella* species (NTS) have emerged rapidly as important cause of illness and death, often in patients with compromised immune systems.

For instance, a recent increase in the mortality of children under five in Kisantu, DR Congo, could be traced back to an outbreak of multi-drug resistant *Salmonella enteritidis*, often in co-infection with malaria. Some 10.000 kilometers to the East in Phnom Penh, Cambodia, we identified 24 HIV-positive patients with *Salmonella choleraesuis* blood stream infection. This pathogen usually infects pigs and only occasionally infects humans with decreased immunity. These infections were associated with surprisingly high resistance rates for azithromycin (a second-line antibiotic) and numerous treatment failures and relapses. Some of these isolates carried even the much-feared and quickly emerging extended-spectrum beta-lactamase (ESBL), which enables them to resist most commonly used antibiotics, including third generation cephalosporins.

These examples illustrate that *Salmonella* still is a very important bacterial pathogen in tropical low-resources settings through a combination of a widespread presence, pathogenicity and problematic antibiotic resistance. However, the correct diagnosis of these infections is often a challenge, and presumed typhoid fever is an important cause of inappropriate antibiotic use.

These findings motivated us to dig deeper into the world of *Salmonella*: what is the genuine incidence of typhoid fever and NTS in partner countries? What is their environmental niche, how are patients infected, and what is the relationship with malaria-infections? And last but not least, which are the best diagnostic, therapeutic and preventive strategies in these low-resources settings? Ongoing and future projects with partners in DR Congo, Burkina Faso and Cambodia will attempt to unravel these questions.

Blood culture surveillance is the backbone of our Salmonella studies (INRB, DR Congo).

WHO Collaborating Centre on HIV/AIDS diagnosis

ITM's HIV/STI Reference laboratory is a WHO Collaborating Centre (WHO CC) for HIV/AIDS Diagnostics and Laboratory Support since 1986. This task has been renewed last year with the main goal of providing technical advice and support to WHO on HIV/AIDS Diagnostics

WHO Collaborating Centres are designated to perform activities in support of WHO programmes and norms, in our case the evaluation of tests for the diagnosis and monitoring of HIV infections worldwide. This service to the global community reflects the mission statement of the ITM and its commitment to share its expertise and technologies with the whole world.

The CC advises WHO and other partners on the surveillance of retroviral diseases, in particular HIV and Human T-lymphotropic virus types I and II. It also designs and contributes to WHO collaborating studies related to diagnostic technologies for markers of HIV infection. Furthermore, the CC provides laboratory reference services, gives advice on the quality & characteristics of diagnostic kits, acts as a repository for the WHO HIV evaluation panels and train laboratory and public health personnel from all over the world.

In 2012, nine different HIV rapid/simple tests, two solid-phase ELISA's and four regular ELISAs were tested on a panel of reference samples, and the results were communicated to the WHO.

The laboratory also assured the reference laboratory work and the GCLP training for an important international clinical trial, assessing the effect of the use of Truvada as pre-exposure prophylaxis by African women. The results of this trial lead to a landmark publication in the New England Journal of Medicine.

Under the microscope

Meeting the Experts on MDR-TB

Facilitators of the electronic Short Course on Antiretroviral Treatment (eSCART) and users of the ITM Telemedicine *second-opinion advice tool* were invited to "meet the experts" on Multidrug-Resistant Tuberculosis (MDR-TB) during a workshop in December 2012.

In preparation of this workshop, the eSCART facilitators and frequent users of Telemedicine participated in an electronic survey about the daily field problems in the management of MDR-TB. The results were used as a starting point for an in-depth discussion with MDR-TB experts from across the globe. Participants discussed challenges in diagnosis and treatment of MDR-TB cases (in particular among people living with HIV), available policies on MDR-TB screening and prevention, how to implement and scale up new diagnostic tools such as GeneXpert, and the development of optimal MDR-TB treatment regimens.

The workshop was organised jointly with the two other ITM departments, and supported by the Belgian Development Cooperation.

Under the microscope

Tracking tuberculosis among the urban poor in Phnom Penh

In February 2012, the Sihanouk Hospital Centre of HOPE, an institutional partner of ITM, launched the first community-based active tuberculosis case-finding project in Cambodia targeting deprived communities of Phnom Penh. It increased case detection, expedited diagnosis of infectious tuberculosis and brought patients quicker into care.

During 13 months, 37 tuberculosis workers conducted a house-to-house survey, assisted by community health volunteers. Collected sputum samples were analysed in district and referral laboratories. Through this project, LED-based fluorescence microscopy was introduced at three district referral hospitals in the capital. GeneXpert MTB/RIF® assay, a new and rapid diagnostic test for tuberculosis, was used for individuals at increased risk of smear-negative or drug-resistant tuberculosis. Positive results were communicated on the same day via Short Messaging System (SMS). Subsequently, tuberculosis workers contacted patients and referred them for TB care at their local health centre.

The researchers screened a population of 290,588, of which 148,937 (51.2%) through direct interviews. We identified 11,916 individuals with symptoms and signs suggestive of tuberculosis; 84.4% were able to provide sputum. The project identified 732 tuberculosis cases, including 688 microbiologically confirmed, as well as 10 multi-drug resistant tuberculosis cases. This resulted in a tuberculosis prevalence of 251 in 100.000 in the communities studied, which is higher than the national average. Case detection through the active case-finding project contributed to more than 35% of the total notifications and an increase of 21% from baseline in the capital during implementation. The project reaches a subgroup of frail and elderly patients that would otherwise not reach health services. More than 90% of the patients accepted tuberculosis treatment. It took four days to get a positive diagnosis, albeit through smear or Xpert, while usually health system factors cause an average delay of 7-15 days.

The project was funded by the TB REACH Initiative, the Belgian Development Cooperation and the Research Foundation Flanders (FWO).

Tuberculosis worker interviewing community members about tuberculosis symptoms during active case-finding round in urban slum. Phnom Penh, Cambodia.

Clinical research on HIV and associated diseases

In 2012, the department obtained two European research grants on HIV-treatment and prevention of HIV-associated diseases.

With the first grant, the University of Cape Town, the Imperial College London and ITM will examine the role of prednisone in the prevention of tuberculosis-associated immune reconstitution inflammatory syndrome, an inflammatory complication occurring in patients with tuberculosis who start antiviral therapy. The project is funded by the European & Developing Countries Clinical Trials Partnership (EDCTP), and is a direct spin off of the successful International Network for the Study of HIV Associated Immune Reconstitution Syndrome (INSHI), founded by ITM's Robert Colebunders.

Secondly, the AfriCoLeish project aims at developing and delivering a package of care that will address the needs of visceral leishmaniasis patients in East Africa. This research consortium is funded by the EU's 7th Framework Programme, coordinated by ITM, and further involving DNDi (Drugs for Neglected Diseases Initiative); the London School of Hygiene and Tropical Medicine; Médecins Sans Frontières; the Institute of Endemic Diseases, University of Khartoum; the College of Medicine and Health Sciences and the University of Gondar, Ethiopia. This project is a spin-off of the Fellowship Grant on HIV/NTD from the Inbev Baillet Latour Foundation, which continues to support ITM in this and other projects.

The third project is a EDCTP-funded clinical trial will study the use of vaginal rings to protect women from HIV and unintended pregnancy. The results will contribute to the possible introduction of a multipurpose vaginal ring as part of HIV-prevention strategies in Africa.

Under the microscope

Africa Build

In collaboration with the World Health Organisation (WHO), ITM and partners developed two pilot distance learning courses on Evidence-Based Medicine (EBM) in the field of HIV/AIDS and Reproductive Health in clinical care and research.

The EU 7th Framework Programme (FP7) project "Africa Build", coordinated by the Universidad Politécnica de Madrid, aims at enhancing research oriented education for African scientists. Through a novel approach of distance learning courses and the set-up of a Community of Practice we aim at identifying the research needs emanating from the field. This pilot, coordinated by ITM in Cameroon, Ghana and Mali will produce targeted courses for strengthening research methodology and policy. Study materials are made available to participants through an online portal and modules are delivered through webcasts.

Practice-based evidence as a basis for evidence-based practice becomes increasingly available, offering opportunities for linking effective interventions with pertinent research questions. EBM integrates individual clinical expertise with the best available clinical evidence from empirical research and systematic reviews. Its benefits are many-fold: up-to-date clinical evidence empowers health professionals to make informed decisions, and to plan or demand sufficient and adequate resources. In addition, EBM enables practitioners and scientists to identify knowledge gaps to develop targeted research agendas.

Good Clinical Laboratory Practices

In 2012, ITM set up a new training programme in Good Clinical Laboratory Practices (GCLP), with focus on resource-poor settings.

The training, held in Antwerp from February 27th to March 2nd of 2012, intended to complement the Good Clinical Practices (GCP) trainings that are required at the beginning of each clinical trial. Traditionally, GCP trainings are designed to cover the contents of the GCP Guidelines (WHO 1995, and ICH 1996), which describe in details the tasks of the clinical and pharmacy personnel. However, the current GCP Guidelines do not describe in details the tasks of the laboratory personnel. Consequently, personnel often do not get trained on the trial-specific procedures and requirements, although their contribution represents a major part in most of the studies, from the set-up of the laboratory to assuring the reliability and quality of laboratory end-points.

ITM therefore set up this new theoretical and practical training, based on the 2009 guidelines of the WHO's Special Programme for Research and Training in Tropical Diseases. It targets the different levels of laboratory personnel involved in the operational and quality assurance (QA) aspects of a clinical trial, from laboratory technicians to quality assurance and laboratory managers. In total, 14 participants of partners institutions and two ITM employees, coming from four continents and 11 countries, attended the training. There were four laboratory technicians, two quality assurance managers, seven laboratory managers, one biologist and two scientific researchers involved in laboratory aspects of clinical studies.

Theoretical background was complemented by case studies, practical sessions, laboratory visits and open discussions on the implementation of these guidelines in real-life conditions.

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Library and bibliometrics

The home made Reference Manager databases of ITM's library contain 98,465 records.

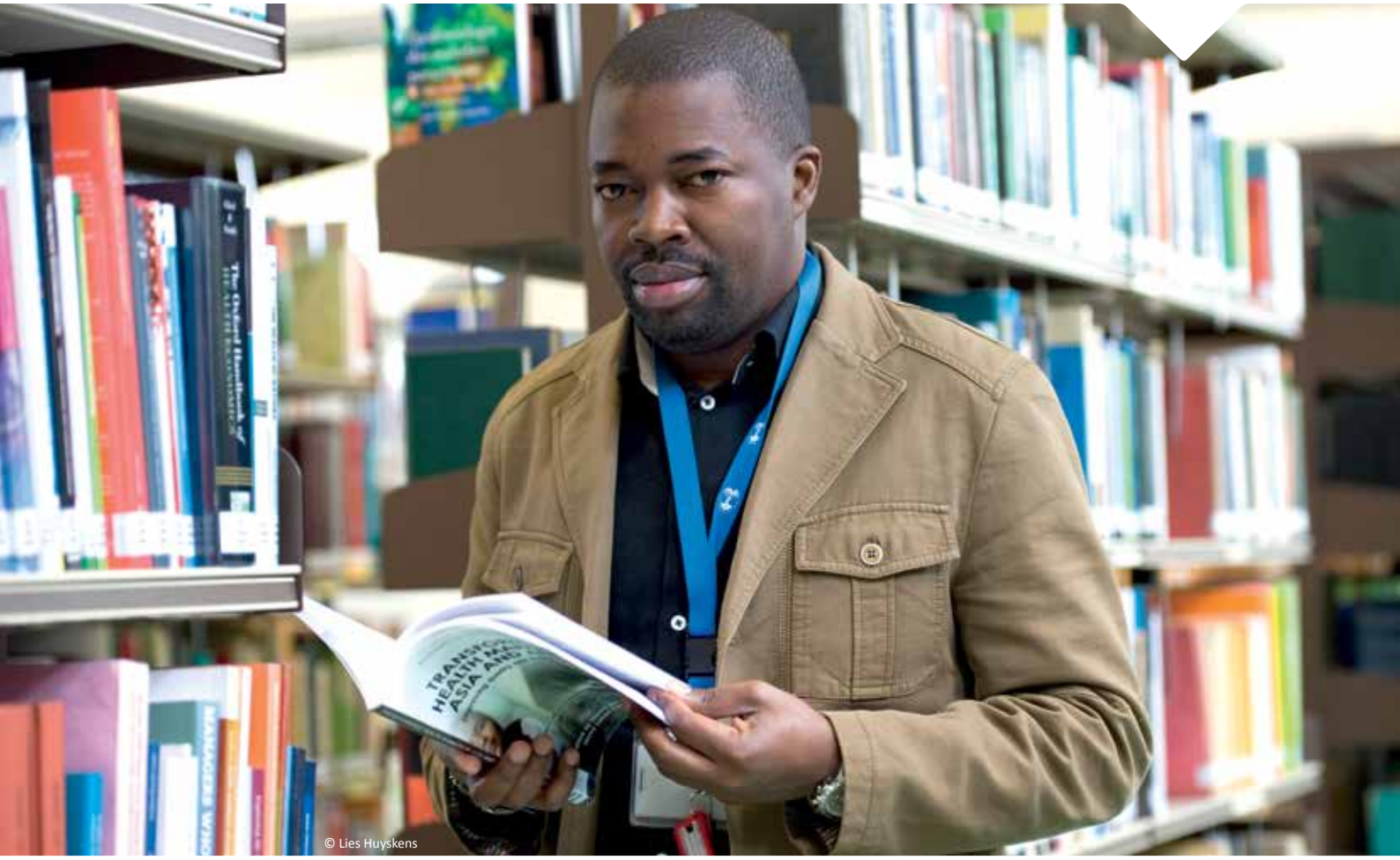
The library registers and analyses the Institute's ever increasing published scientific output, with permanent updates of the ITG Staff Publications database (14,550 records) and the TropMed Central Antwerp institutional open access repository (6,120 records), as well as various standard and ad hoc bibliometric analyses.

ITM issued more publications in 2012 than ever before (see table 1). Eighty-three percent of the 380 journal contributions were published in the Institute for Scientific Information's Journal Citation Reports (ISI-JCR). Both the numbers and the total values of the contributions with Journal Impact Factor (JIF) were substantially higher than in previous years.

In 2012, ITM researchers mainly published in PLoS ONE (33 items, JIF: 4.092) and PLoS Neglected Tropical Diseases (24 items, JIF: 4.716). Tropical Medicine & International Health (13) and The Malaria Journal (12) now follow at a large distance. BMC Public Health (9) is a newcomer in this list. The position of The International Journal of Tuberculosis and Lung Disease (8) remains stable. Other popular journals include Veterinary Parasitology (6), Clinical Infectious Diseases (6) and a national journal Acta Clinica Belgica (6).

The electronic-only publications now feature 132 items, which is, like last year, one third of ITM's total output. Most of these are either Public Library of Science (PLoS) or BioMed Central (BMC) journal contributions. Some 32% of all the journal contributions appeared in journals adhering to the 'golden road' open access policy, implying for example that they can be freely distributed in TropMed Central Antwerp.

Apart from JIF journal contributions the ITM output consists of articles in journals without impact factors, books, book chapters, and miscellaneous grey literature (PhD dissertations are excluded as 'ITM publications' since 2011). They represent about 27% of all publications and are necessarily not included in the JIF values.



ITM Publications

Department of Biomedical Sciences

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Medical services

At your service

The Medical Services are a separate operational and administrative entity within the Institute of Tropical Medicine (ITM), under the scientific and academic umbrella of the Department of Clinical Sciences.

Under the microscope

Swab2know

In 2012, ITM launched a novel HIV-prevention project using a free and anonymous HIV-test based on oral fluid samples.

This new test was validated and an algorithm elaborated at the HIV-reference laboratory, and detects antibodies against HIV in the oral fluid. Users need to rub the swab during one minute over the upper and lower gums, as well as over the inside of their cheek, hence the name of the project 'Swab2know'. The samples are analysed at ITM for the presence of antibodies against HIV. After a few days users can request their result anonymously on the protected website Swab2know.be with a unique code associated with their test.

The result of this saliva test is only indicative for HIV-infection, and does not replace a blood test. Participants with a positive saliva test are therefore encouraged to seek confirmation on a blood sample.

The pilot study aims at determining whether anonymous swab tests lower the testing threshold for risk groups. The results should enable to fine-tune or target existing prevention strategies.

Read more:
www.swabtoknow.be

ITM's medical services consist of the Travel Clinic, the Service for Tropical and Import Pathology (including Dermatology and Pediatrics), the Service for HIV/STD Care, the Medical Laboratory and the Hospital Ward. The latter is located in the Antwerp University Hospital. The Medical Services include the national reference centre for tropical and infectious diseases and the provincial reference centres for HIV/AIDS treatment and diagnosis.

ITM provides specialised outpatient, diagnostic, clinical and preventive care to returning travelers, expatriates and migrants. In 2012, staff of the medical services performed 34,160 consultations and administered 36,114 vaccines.

As part of ITM's role as national point of reference, the medical services are permanently on call to give other healthcare workers and medical institutions throughout Belgium diagnostic and therapeutic advice regarding tropical and import pathology. They also counsel the authorities on the surveillance and management of imported diseases.

In 2012, ITM's medical services participated in the main national and international scientific meetings on import pathology and travel medicine. They contributed in various ways to international travel health publications, including the WHO manual.

Pre-travel advice and care is provided by the **Travel Clinic**, staffed by a team of specialised doctors, nurses and clerks. They offer general, country-specific and disease-specific information, vaccinations, chemoprophylaxis, advice about treatment, and anything else to promote healthy travelling. A telephone hotline is accessible 24/7 for external physicians with questions on import pathology, allowing to solve diagnostic and therapeutic problems at a distance.

On www.travelhealth.be (or www.reisgeneeskunde.be, Dutch, and www.medecinedesvoyages.be, French) travellers find separate fact sheets for more than 200 countries, lists of obligatory and recommended vaccinations, an overview of malaria risks and prophylactic measures, and many other items and recommendations. The texts are based on the directives of the World Health Organisation (WHO) and the consensus policy of the Belgian Scientific Study Group on Travel Medicine, which is chaired by ITM.

Over 2300 HIV-positive patients are regularly followed up in the **HIV clinic.** The patients are mainly from Belgium (56%) and sub-Saharan Africa (27%). The clinic registered 270 new HIV-positive patients in 2012, 60 more than in 2011. Specialists of the clinic participate in several clinical trials assessing new HIV drugs and treatment strategies, and are studying the risk factors for hepatitis C among HIV-positive patients.

ITM's **Helpcenter** aims at improving secondary HIV prevention, in particular for groups with high risk behaviour. Due to funding uncertainties, 2012 was for a long time a difficult year. Eventually new covenant was signed, however, and in the meantime activities had been pursued relentlessly. They resulted in some 2000 patient contacts with 1434 different individuals. MSM (men having sex with men) constituted 29% of the group, migrants from Sub Saharan Africa 14%, and young people (under 25 years) 31%.

Out of 1318 HIV-tests performed, 16 were positive (1.2%), providing proof of concept of the high yield of targeted testing and counseling. Another novelty was the use of rapid tests for 90% of the clients.

Sexuological consultations, aiming at reducing high risk behavior, were continued for both HIV-negative and positive individuals, resulting in 97 interventions for 62 different individuals. Helpcenter also developed and tested new strategies of screening in high risk groups, especially outreach testing with saliva tests ("swab2know", see page 91) and by use of social media.

ITM's **Central Laboratory for Clinical Biology** performed 131.922 analyses for 32.210 patients. Within the remit of its function as National Reference Centre (NRC) for West Nile virus (including the other arboviruses) and Coxiella/Rickettsia, several serological and molecular diagnostic tools were implemented, evaluated and formally accredited. The new concept of NRCs caught on in 2012, leading to an increased number of submitted and resulting in the diagnosis of two cases of West Nile virus encephalitis, 73 of dengue fever, 13 of chikungunya fever, 18 of rickettsiosis of 15 with Q-fever. The diagnostic offer was further expanded by a real time polymerase chain reaction (PCR) for the detection of *Schistosoma mansoni* and *S. haematobium* in serum in the early phase of the disease.

The laboratory guide is available online in three languages and is continuously updated (http://labo.itg.be/lgm/en/home.aspx).

The mid-2012 hantavirus outbreak in Yosemite National Park, USA,lead to an important increase in requests for the serology of hantaviruses but no cases outside the USA were detected.

The **Tropical Disease Ward** at the University Hospital of Antwerp (UZA) took care of 170 inpatients in 2012. About half had HIV-related problems, the others were admitted for severe travel-related or infectious diseases, most frequently malaria. In addition, 181 patients received medical care at the 'day hospitalisation unit', mainly for diagnostic acts (e.g. lumbar punctures) or treatment with specific drugs (e.g. for Leishmaniasis, sleeping sickness, or syphilis).

The joint management of general and nosocomial infectious diseases has become a stronghold in the clinical collaboration between the UZA (Departments of Microbiology and General Internal Medicine) and the ITM. On a daily basis, hospital-wide laboratory results are reviewed and joint rounds are made to selected patients and wards. The team also provides in-house consultancies on demand, as well as postgraduate training in clinical infectious diseases.

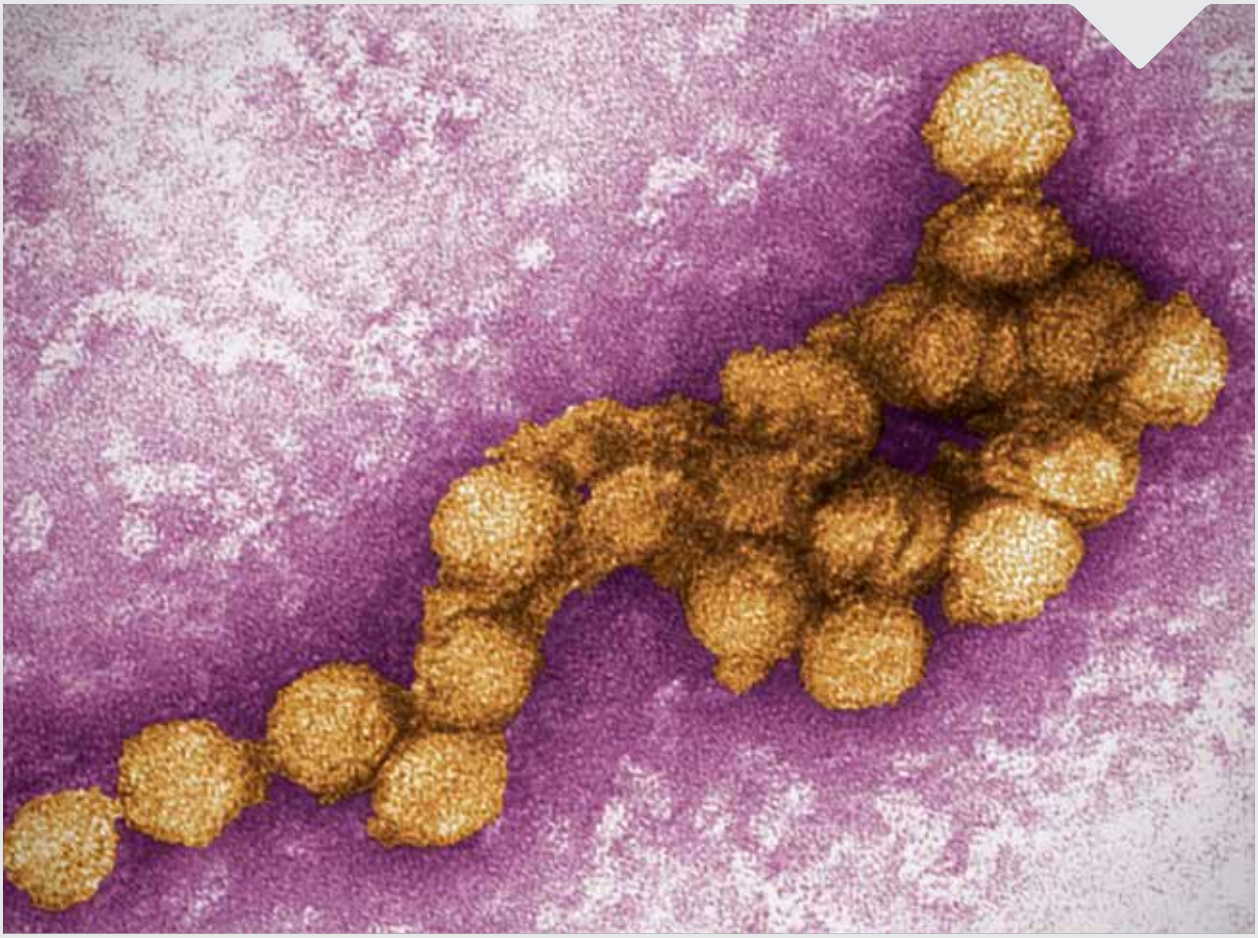
Under the microscope

First case of West Nile virus in Belgium

In September 2012, ITM diagnosed the first West Nile Virus encephalitis in a Belgian traveler returning from Greece.

One of the surprising observations was the detection of viral Ribonucleic acid (RNA) one month after the first symptoms. This is normally confined to the acute phase (first week) of infection, but could be explained by the immunocompromised status of the patient. This finding highlights the need to raise awareness among physicians and laboratory staff for imported WNV cases in tourists, even returning from 'non-tropical' destinations, and of special attention to elderly and immunosuppressed patients who are at higher risk to acquire neuroinvasive disease.

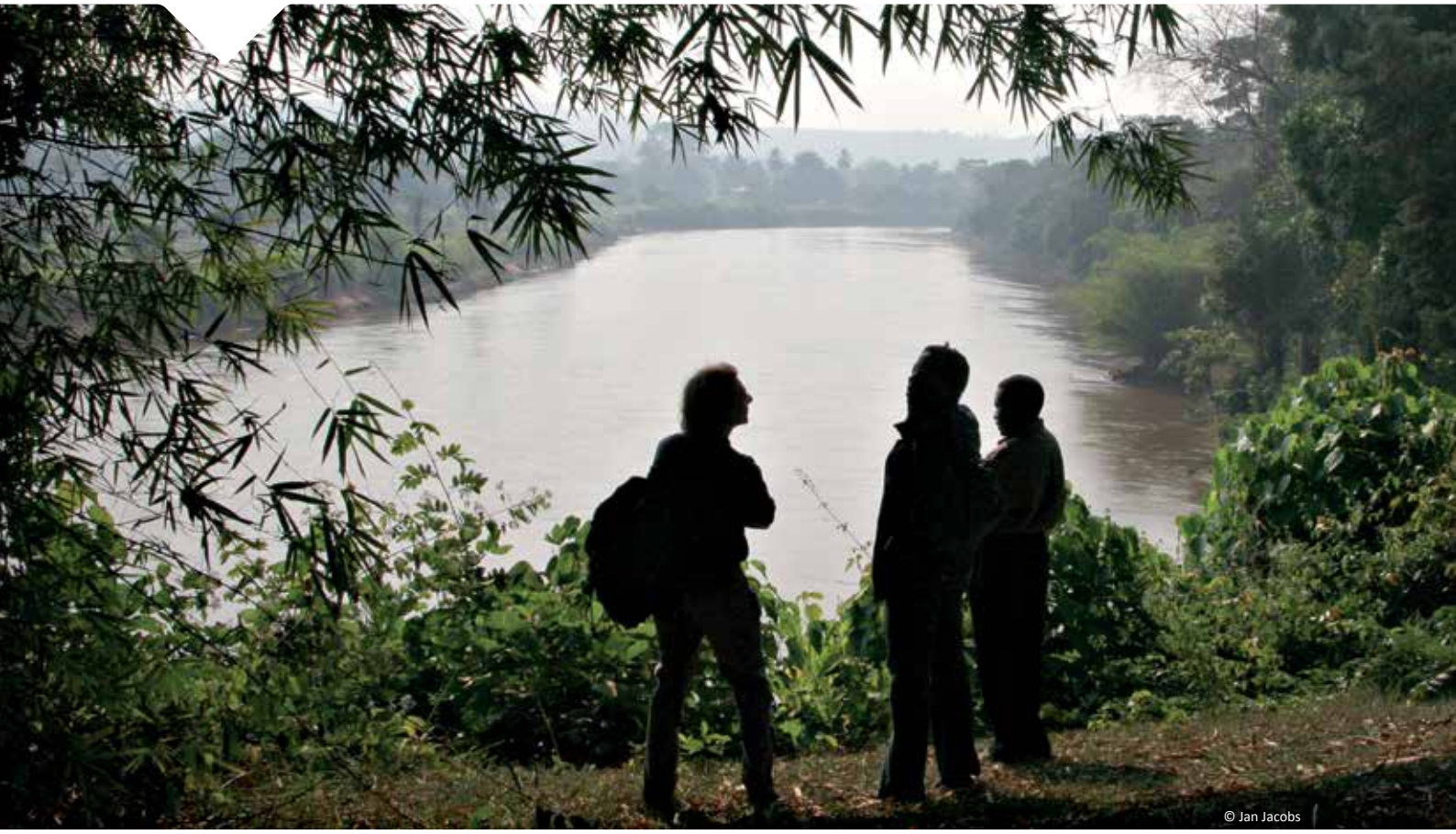
West Nile virus (WNV) is an arthropod-borne virus that is transmitted to humans by mosquitos, primary of the genus Culex. Most human infections are asymptomatic. Clinical symptoms occur in about 20% of case-patients and include fever, headache, and muscle pain. Less than one in 100 WNV infections develop into severe neuroinvasive disease. The virus was originally discovered in 1937 in the West Nile district of Uganda and is endemic in parts of Africa, Europe, Asia and the Middle East. Since an outbreak in New York in 1999, the virus has spread over the American continent where it continues to causes lical epidemics, like in Texas in the summer of 2012. WNV transmission is also ongoing in Europe with outbreaks in Italy, Romania, Hungary, Spain and Greece.



Development Cooperation

Strengthening capacity in the global South

ITM and the Belgian Directorate-General for Development (DGD) join forces towards sustainable scientific, medical and veterinary capacity building in the South. The third ITM-DGD Framework Agreement Programme (FA3) is in full swing.



The FA3 programme runs from 2008 through 2013, divided over two three-year periods. The second period started in 2011 with an annual budget of 12,8 million €. Its motto is 'Switching the Poles'. The programme does not only transfer expertise and resources, but also aims at making sure that Southern partner institutes own, lead and are held accountable for their role in the partnership. ITM is committed to make this philosophy work across its activities, in full awareness of the varying country contexts.

First, ITM aims to strengthen the capacity of individuals from developing countries through training. In the Education chapter you find more information about the Institute's academic offer to students, scientists and mid-career professionals.

Second, ITM has an institutional collaboration agreement with a series of institutes and organisations in the South, which aims at building their capacity. These partnerships are crucial for ITM too, because the Institute can only make a difference in science and society through strong partners in the South. An overview of institutional partners on page 98.

Third, strategic thematic programmes, among others on HIV/AIDS, tuberculosis and neglected tropical diseases, complement institutional collaboration. In 2012, ITM reinforced selected networks and south-south interactions on health systems and policies, neglected tropical diseases, tuberculosis, as well as on quality management in laboratory and clinical research.

ITM also supports policy development for the Belgian Development Cooperation and for European and international organisations. In 2012, ITM provided policy support on issues including sexual and reproductive health, access to quality medicines, sleeping sickness in the Democratic Republic of Congo, and the building of a post-2015 development agenda. The Institute also coordinates related platforms for medical and veterinary stakeholders in Belgium, such as Be-cause health (www.be-causehealth.be) and be.troplive (www.be-troplive.be).

The Institute also contributed to the dialogue between the Belgian Development Cooperation and actors of the non-governmental sector. This dialogue aimed at increasing coherence among Belgian organisations active in development cooperation, in line both with international trends and recommendations of the OECD's Development Assistance Committee (DAC). This resulted in a royal decree, with several ministerial ones to follow, on a new Belgian approach on development cooperation for 2017 onwards, which uses country processes as a starting point.

Under the microscope

Improving sexual and reproductive health and rights

In 2012, ITM analysed Belgian support for the improvement of sexual and reproductive health (SRHR), a priority of the country's development cooperation.

The first part of ITM's qualitative study aspired to determine the awareness and use of a 2007 policy note of the Belgian Development Cooperation on SRHR by key Belgian cooperation actors.

Results indicate that more active promotion of the policy note, proposing strategic fields and specific areas of cooperation, are needed to increase the partners' knowledge on the issue. The second part of the study, a review of sexual and reproductive health interventions in development aid programmes, is planned for 2013.

Progress reports on the Millennium Development Goals (MDGs) have shown that much remains to be done to improve maternal health and guarantee universal access to reproductive health by 2015.

Under the microscope

Institutional collaboration: looking back and forward

In December 2012, over 100 participants gathered in Antwerp for ITM's fifth joint partner meeting. They reflected upon the ongoing third Framework Agreement (FA3) programme between ITM and the Belgian Development Cooperation and discussed future collaboration.

ITM has an institutional collaboration agreement with 17 partner institutes in Africa, Asia and Latin America. Despite significant differences in size, scope and focus, all partners experienced FA3 as a an important catalyst. While scientific output was deemed important, partners agreed additional indicators and evaluation methods should be considered.

Participants viewed South-South collaboration, networking and partnership as strongholds of future FA programmes, in line with the "Switching the Poles" philosophy. These activities should be further defined in the years ahead.

FA3 draws to a close at the end of 2013, while the FA4 programme will start in 2017. In the three year transitional period, partners envisage to consolidate regional and sub-regional South-South collaboration, guarantee the sustainability of the global partnership, and continue developing capacity.

Pascal Lutumba (INRB, DR Congo) at the Joint Partner Meeting, bringing together all the institutional partners of the DGD/ITM Framework Agreement Programme.

Belgian organisations come together for better health worldwide

ITM coordinates *Be-cause Health*, a Belgian platform for international health of 50 public, non-governmental and academic organisations, as well as 200 individual members.

Be-cause Health strives to network Belgian stakeholders aiming at improving access to quality health care worldwide, through policy dialogue, coordination, sharing and learning.

Nine working groups focus on the following issues: access to quality medicines, people-centred care, social determinants of health, sexual and reproductive health and rights, human resources, social protection, HIV/AIDS, Central Africa and non-communicable diseases.

In 2012, Be-Cause Health drafted a charter on Human Resources for Health in Partner Countries. Human resources are vital for health systems to be able to satisfy essential needs, but they are under threat worldwide. Based on the World Health Organisation's (WHO) Global Code of Practice (2010), the working group on Human Resources drafted its own text targeting various Belgian development cooperation actors working on health. It encourages Belgian actors to improve their practices regarding recruitment and support for the development of health workers from partner countries. It aspires to limit the negative consequences international recruitment of health workers from partner countries might have on local capacity.

In a rapidly changing health sector, the scientific approach to health increasingly gained importance, often at the expense of a human or empathic approach of the patient. Hence, in November 2012 Be-cause Health dedicated its 8th Annual Seminar to People-Centred Care. Around 230 health workers from North and South came together in Antwerp to exchange ideas and best practices. They discussed better training of health personnel, proper working conditions, the need for patients to know their rights and raise their voices, evidence of people-centred care successes, and the importance of communicating and working with communities. Participants translated their discussions in a set of recommendations on how to achieve a more holistic and people-centred approach in health care.

Together with the local Directorate for Study and Planning of the DR Congo's Ministry of Public Health, Be-cause Health co-organised a seminar in Kinshasa for actors in the health sector (October 2012).

The event meant to allow participants to gain better understanding of the financing of health and improve interventions in line with the national Strategy to Enforce the Health System. It also aspired to facilitate the country's move towards universal health coverage. The over 120 participants from very different backgrounds found that there is no lack of innovation or good will in the efforts to improve the population's health status. However, the health sector could be strengthened if positive experiences and best practices would be translated into directives and instructions. Opportunities for concrete follow-up were identified in mobilising resources to improve the functioning of health structures, reducing financial barriers to access to care and increasing the motivation of health staff.

ITM's 17 institutional partners in the DGD/ ITM Framework Agreement Programme


National Institutes for Malaria, Parasitology and Entomology, Hanoi, Vietnam
National Center for Malaria Sihanouk Hospital Centre of HOPE, Phnom Penh, Cambodia;
Institute of Public Health, Bangalore, India
Makerere University School of Public Health, Kampala, Uganda
Institut National de Recherche Biomédicale, Kinshasa, Democratic Republic of Congo
Department of Veterinary Tropical Diseases, Faculty of Veterinary Science, University of Pretoria, South Africa

Management

Human Resources

On December 31 2012, ITM employed 456 people, equal to 414,3 Full Time Equivalents (FTE). This was an increase of 9,4 FTE (+ 4%) compared to 2011. Staff members come from Belgium and 21 other countries around the globe.

ITM staff categories and policies are similar to those of the Flemish universities and consist of academic, scientific, medical and support (administrative and technical) staff. Next to the employees on the payroll, also non-employees are active in research, education and service delivery, for instance PhD students, emeriti and academic guests. The numbers in this chapter incorporate doctoral students on a grant by the Flemish Scientific Organisation (FWO), the Agency for Innovation by Science and Technology (IWT), or the National Social Security Office (RSZ) as well as guests on a long stay and emeriti.

Figure 1 shows the number of FTEs on 31/12/2012 per category and per funding source.

Figure 2 shows the number of staff according to age and staff category. The average age is 45 years. Seventy-three of the 456 staff members are 55 and older. Hence, at least 16% of the staff will retire in the coming ten years. For executive academic, scientific and medical staff that retirement coefficient is even 56%.

Figure 3 shows the gender ratio per staff category. There are more women (60%) than men (40%) at ITM. This ratio varies per staff category. Women represent 68% of support staff and 52% of academic, scientific and medical staff. One in three senior academic, scientific and medical staff members are women (33%).

Figure 1:
Number of FTEs on 31/12/2012 per category and per funding source.

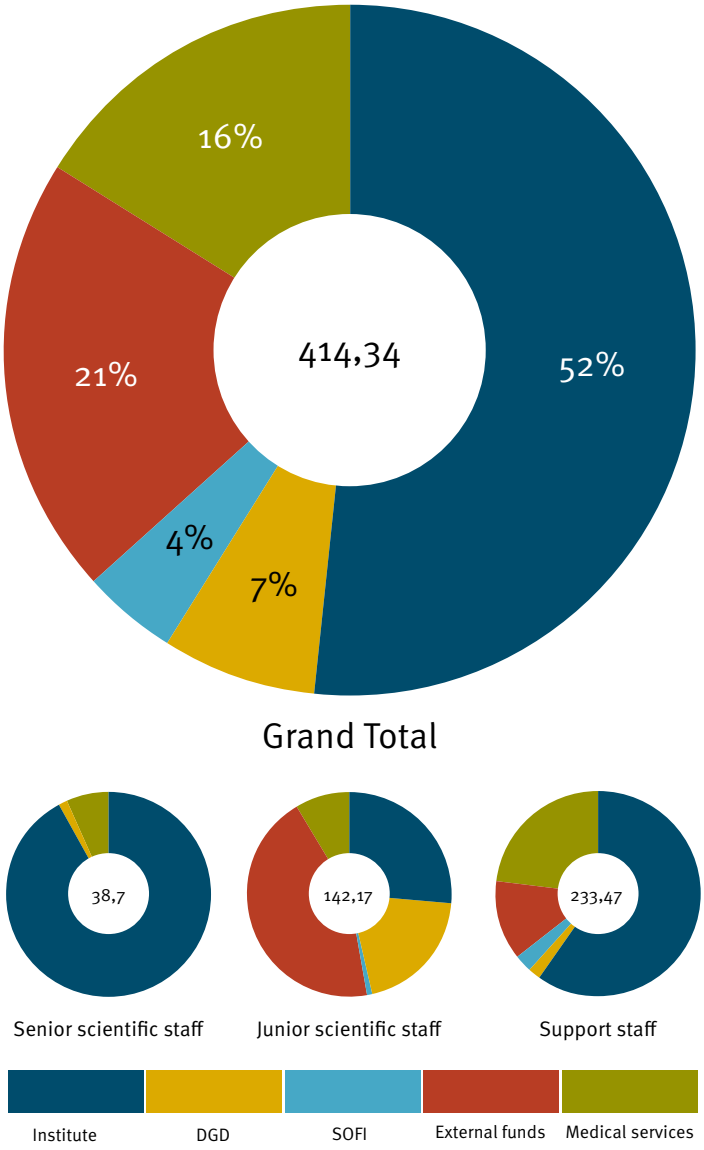


Figure 2: Number of staff according to age and staff category.

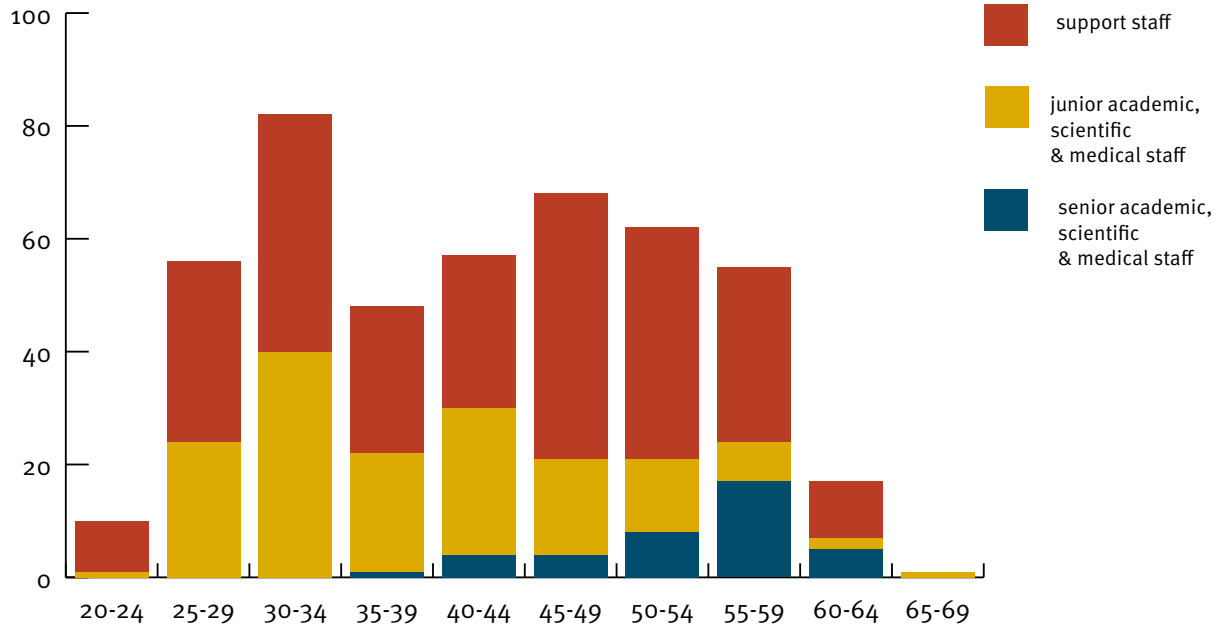
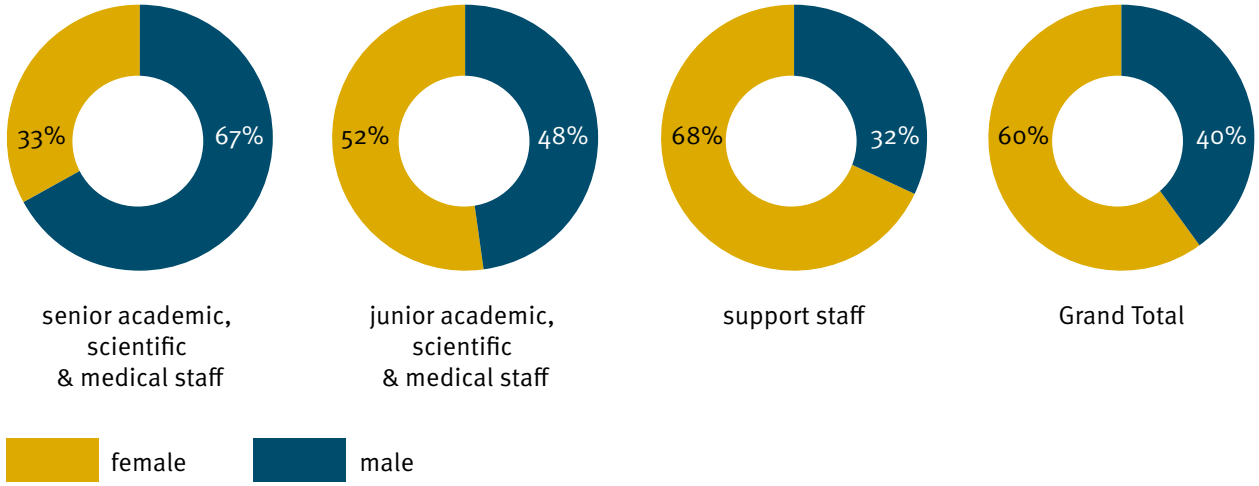


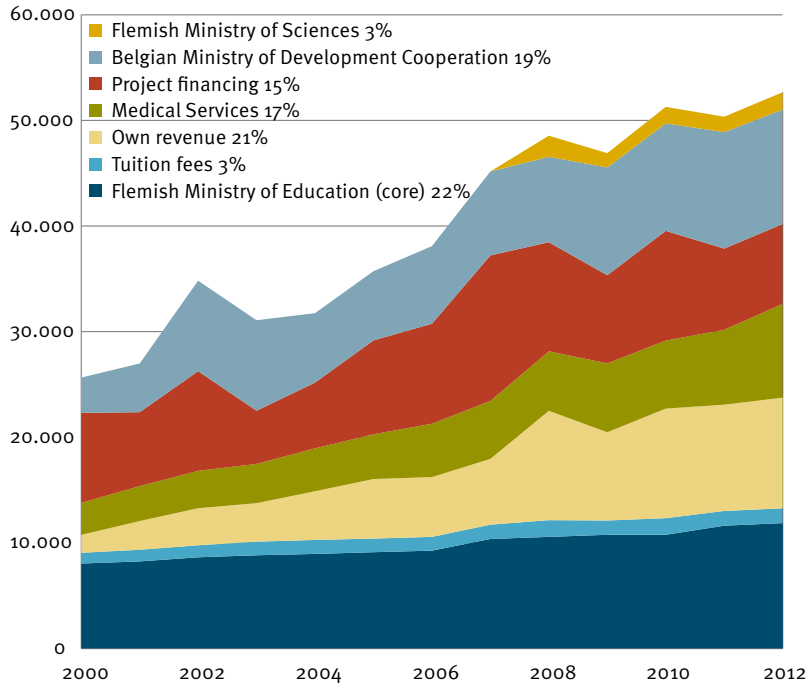
Figure 3: The male/female ratio per staff category.



Finances

ITM's income increased in 2012 by nearly 5% towards 51,5 million Euro, which is about double the amount of the year 2000.

Figure 4: Overview of income 2000-2012 (x 1000 euro)



The **Core Funding of the Flemish Government, Department of Education** makes up 22% of the total revenue and increased nominally by only 40% since 2000. In fact, the real value decreased over that period, due to the difference between the indexation of the subsidy and price inflation.

Own revenue (non-dedicated), including overhead, internal billing, fiscal and social rebates, and since 2002 also the revenue from the production of diagnostics, account for 21% of total revenues in 2012 as compared to 10% in 2000. Especially the fiscal and para-fiscal rebates from the federal government have become an essential budgetary pillar of the ITM.

The income of the **Medical Services** almost tripled since 2000, mainly due to the increase in patients and activities, and the subsidies for the AIDS Revalidation Centre and for the Reference Laboratories for Tropical diseases and for HIV/AIDS, received from the Belgian National Service for Medical and Disablement Insurance (RIZIV). The Medical Services now account for 17% of the total income.

Since 1998, the **DGD Framework Agreement** bundles the activities financed by the Belgian Directorate-General for Development Cooperation (DGD) in one coherent programme. In 2012 the budget allocated to ITM and its partners amounted to 12,8 million Euro or 19% of ITM's budget.

The income through **Project Funding** decreased slightly towards 7,6 million Euro, representing 15% of total income. The typical three-year funding cycle of the EU's framework programme explains the fluctuations.

The "Structural Research Funding ITM" (SOFI) funding from the **Flemish Ministry of Economy, Science and Innovation (EWI)** remains limited to 3% of total income.

Figure 5a: Project Funding overview excl. DGD and incl. SOFI

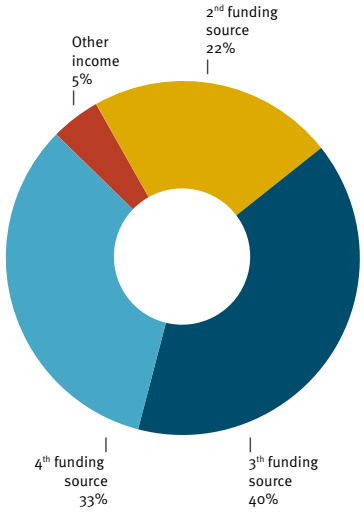


Figure 5 shows the composition and evolution of external project funding (excluding DGD, internal transfers, overhead and partners), sorted to the accounting system of the Flemish universities and the applicable VAT code.

The **3rd funding source (i.e. governmental funding for applied research, excluding DGD)** decreased from 57% in 2011 towards 40% of total funding. This decrease was mainly due to an internal re-allocation of 1,2 million Euro funding from RIZIV to the Medical Services for the AIDS Reference Laboratory. ITM scientists scored well in the European Framework programmes, which provided 31% of all project revenues.

The **4th funding source (i.e. contract research with private sector & scientific services)** increased from 13% in 2011 towards 33%, mainly due to a grant from the Gates Foundation. These projects are mostly funded through international Public Private Partnerships, Global Health Initiatives and NGOs like the Bill & Melinda Gates Foundation, Family Health International (FHI), the Damian Foundation, Doctors without Borders, and others.

Figure 5b: Research and project funding 2005-2012 excl DGD

Projects and SOFI according to official categories for Flemish Universities	2005	2006	2007	2008	2009	2010	2011	2012	%
Government funding for basic research (2nd funding source)	281.852	255.108	457.830	2.476.039	1.818.978	2.001.599	1.996.189	2.069.034	22%
BOF / SOFI (Secondary Research Funding ITM)				2.000.004	1.355.877	1.563.855	1.462.753	1.644.758	17,9%
IUAP (Inter University Attraction Poles, Federal)	0	0	47.893	182.122	140.017	133.826	135.219	149.689	1,6%
FWO (Fund for Scientific Research Flanders)	281.852	255.108	409.938	293.913	323.084	303.918	398.218	274.587	3,0%
Government funding for applied research (3rd funding source)	3.690.990	2.940.576	6.031.854	5.923.125	4.836.616	7.041.386	5.229.368	3.659.237	40%
Other Federal Government	767.903	983.418	1.810.181	1.206.896	992.532	2.160.844	1.557.575	305.980	3,3%
Flemish government	666.468	561.739	643.812	1.163.166	855.346	557.131	191.129	164.336	1,8%
IWT						20.399	116.871	45.890	0,5%
Cities & provinces	35.024	34.676	10.636	24.000	55.965	51.924	11.734	69.317	0,8%
European Union	1.837.020	613.958	2.888.862	2.537.203	1.645.429	2.709.232	2.521.341	2.883.660	31,3%
International organisations	124.183	204.287	224.590	134.167	406.121	804.745	364.511	151.964	0,0%
Other foreign governments	260.392	542.498	453.772	857.694	881.223	737.112	466.207	38.090	0,4%
Contract research with the private sector and scientif services (4th funding source)	929.388	1.200.715	1.940.643	3.187.815	1.478.317	1.813.497	1.199.609	3.060.809	33%
Contract research - non profit organisations	819.685	1.059.915	1.803.977	3.045.786	1.289.191	1.718.102	1.115.036	2.829.069	30,7%
Contract research companies	109.704	140.800	136.666	142.028	189.126	95.396	84.573	231.740	2,5%
Other project income from education, research and services	711.844	625.584	854.115	745.576	592.882	796.681	727.297	417.589	5%
Project funding: various income and transfers	711.844	598.748	854.115	697.821	592.882	796.681	727.297	417.589	4,5%
Other income									
Other income Institute (Bank intrests)	0	26.836	0	47.755		0			
Total	5.614.074	5.021.983	9.284.442	12.332.555	8.726.792	11.653.164	9.152.463	9.206.669	100%

Financial results 2012

Figure 6 summarises ITM's results account, according to the model of the Flemish Universities, for all sections.

In this presentation, the result, including transfers from previous years, amounts to +256,776 Euro of which 347,504 Euro in the section Institute and an expected negative result of -90,727 Euro through the Medical Services. This result is primarily due to increased SOFI income, fiscal and social security rebates and the consolidation of management costs of the FA3 programme.

The institutional net result is partly reserved for the "Pension Fund". The Institute carries in its balance sheet 3,3 million Euro "Profits brought Forward", as a buffer for lesser years.

In 2012, the personnel costs totalled 62% of total expenditure in all sections combined, 75% of expenditure in the section Institute and 54% in the section Medical Services. The section Institute paid 56% of total personnel costs. SOFI funded 5%, DGD 9%, Project Funding 13% and Medical Services 16%.

For the sake of completeness and legal compliance ITM also publishes its accounting results according to the model imposed for foundations and non-profit organisations (**Figure 7**). These accounting results were audited and certified by ITM's external auditors (cfr. Statutory Auditor's Report to the Board). Although income is presented differently in the university accounts model, the final result is the same.

The balance sheet (**Figure 8**) shows that total assets have further increased by 2,5 million euro or 5% as compared to 2011. Fixed assets have risen by 4,5 million Euro (mainly due to the building of student homes) while current assets decreased by 2,1 million Euro (mainly due to a decrease in cash and bank balances). "Inventory and orders in progress" are expenses through project financing that are not yet paid by the financer.

Under "Liabilities" the above changes are translated in a slight rise of "Capital and Reserves" (+0,1 million Euro), an increase in "Provisions" (+1,2 million Euro, mainly due to 0,8 million extra provisions for the defined benefit pension plan) and an increase of debt (+1,2 million Euro).

The current ratio indicates the ability of an organisation to pay its short term debts in the coming year, by comparing current assets to current liabilities (due in one year or less). For ITM the current ratio in 2012 is 1.72, which indicates a healthy financial status.

Figure 6: Profit & Loss Account (according to the template for Flemish Universities)

	2012	2011
Income (+)	49.783.356,45	50.114.684,64
Income from education, research and service provision	46.181.116,16	45.202.669,02
Government Grants - basic funding (primary funding source)	11.240.000,00	11.000.000,00
Government contribution to fundamental and basic research (second funding source)	2.069.033,61	1.996.189,46
Government contribution to applied research (third funding source)	16.484.347,06	17.590.428,18
Contract research with the private sector and scientific services (fourth funding source)	3.240.961,32	1.199.608,34
Other income from training, research and services	13.146.774,17	13.416.443,04
Funds & legacies	53.818,00	11.171,61
Other income	3.548.422,29	4.900.844,01
Expenditure (-)	46.880.826,83	48.538.853,27
Goods for resale	-	-
Goods and Services	11.990.528,44	15.576.873,32
Personnel Expenses	29.823.677,53	28.952.532,15
ZAP / VWK (Senior Academic Staff)	**3.906.125,78**	**3.669.275,23**
DGD	-	-
Projects	-	-
Institute	3.906.125,78	3.669.275,23
SOFI	-	-
AAP / BAP / TWP (Temporary Scientific Staff**)**	**9.892.944,38**	**9.943.563,51**
DGD	2.344.114,35	2.263.510,04
Projects	2.568.437,07	3.081.258,27
Institute	3.708.952,40	3.806.924,06
SOFI	1.271.440,56	791.871,14
ATP (Administrative and Technical Staff**)**	**10.989.692,94**	**10.668.645,44**
DGD	318.568,14	250.607,45
Projects	1.347.599,66	1.918.622,44
Institute & Production	9.133.004,11	8.308.160,43
SOFI	190.521,03	191.255,12
Staff Medical Services	**4.859.902,59**	**4.069.951,16**
Other staff costs (provision holiday pay and early retirement)	**175.011,84**	**601.096,81**
Depreciation of Formation Expenses, Tangible and Intangible Fixed Assets	1.104.882,89	1.019.913,81
Value depreciation on stocks and commercial dues (additions +, withdrawals -)	718,00	-
Risk Provisions (additions +, expenses and withdrawals -)	1.224.060,58	123.975,20
Other Operating Expenses: payments to DGD partners	2.736.959,39	2.865.558,79
Operating profit (loss)	2.902.529,62	1.575.831,37
Financal profits (+)	204.799,95	171.057,96
Financial Expenses (-)	429.759,21	267.559,38
Profit (loss) from regular activities	2.677.570,36	1.479.329,95
Exceptional profits (+)	94.550,64	49.659,35
Exceptional Expenses (-)	60.671,68	57.589,97
Devaluation on the realisation of the fixed assets	-	56.093,38
Other Exceptional Expenses	60.671,68	1.496,59
Profit (loss) of the financial year	2.711.449,32	1.471.399,33
Transfers (PROJECT FUNDING/DGDC/SOFI/INVESTMENTS)	2.454.673,06	1.111.180,71
RESULT	**256.776,26**	**360.218,62**

Figure 7: Profit & Loss Account (according to the template for Foundations)

	2012	2011
Operating Income (+)	**49.827.917,45**	**48.511.624,18**
Turnover	8.330.526,62	6.780.137,34
Work and Services in Progress (additions +, withdrawals -)	-19.851,56	2.080.450,08
Member fees, funds, legacies and subsidies	27.666.161,67	24.308.738,35
Other Operating Income	13.851.080,72	15.342.298,41
Operating Expenses (-)	**49.335.010,70**	**48.222.308,15**
(Cost of) Goods for Resale & Raw Materials	3.978.150,67	1.957.031,97
Purchases	3.950.525,90	1.998.887,88
Stock (withdrawal +, addition -)	27.624,77	-41.855,91
(Cost of) Goods and Services	13.537.898,77	15.816.815,09
Personnel Expenses	29.466.931,11	28.610.155,06
Depreciation of Formation Expenses, Tangible and Intangible Fixed Assets	1.104.882,89	1.019.913,81
Depreciation of Stock, Orders in Progress & Accounts Receivable	1.224.778,58	790.581,38
Other Operating Expenses	22.368,68	27.810,84
Operating Expenses activated as Restructuring Expenses	-	-
Operating Profit (Loss)	**492.906,75**	**289.316,03**
Financial income (+)	**204.799,95**	**308.470,08**
Revenue from Current Assets	71.520,17	74.302,94
Other financial income	133.279,78	234.167,14
Financial Expenses (-)	**429.759,21**	**256.977,95**
Costs of debts	350.273,67	230.927,59
Value depreciations on floating assets other than stocks, orders in execution and commercial receivables (additions +, withdrawals -)	-12.271,70	11.227,07
Other financial costs	91.757,24	14.823,29
Profit (loss) from regular company activities	**267.947,49**	**340.808,16**
Exceptional income (+)	**49.500,45**	**49.659,35**
Withdrawal of depreciations of Intangible an Tangible Fixed Assets	31.880,81	-
Other exceptional income	17.619,64	49.659,35
Exceptional Expenses (-)	**60.671,68**	**30.248,89**
Other Exceptional Expenses	60.671,68	30.248,89
Profit (loss) of the financial year	**256.776,26**	**360.218,62**

Figure 8: Balance sheet (according to the template for Foundations)

ASSETS	2012	2011
Fixed assets	32.188.310,68	27.656.207,79
Intangible fixed assets	-	119.778,03
Tangible Fixed Assets	32.188.310,68	27.523.338,76
Land and buildings	25.232.304,31	23.982.186,76
Plants, Machinery and Equipment	489.474,45	516.025,44
Furniture and Motor Vehicles	655.344,94	475.623,09
Leasing	-	-
Assets in course of construction and Payments on Account	5.811.186,98	2.549.503,47
Financial fixed assets	-	13.091,00
Current Assets	22.946.519,60	25.025.577,11
Stock and Orders in Progress	1.926.522,47	3.046.579,06
Stock	144.405,93	164.787,57
Orders in Progress (Projects in Progress)	1.782.116,54	2.881.791,49
Debtors due in one year or less	2.218.082,33	2.270.193,86
Receivables	2.214.628,56	2.249.948,03
Other Debtors	3.453,77	20.245,83
Investments	2.457.209,83	2.494.938,13
Cash and Bank Balances	14.369.532,31	16.220.022,47
Prepayments and accrued income	1.975.172,66	993.843,62
TOTAL ASSETS	55.134.830,28	52.681.784,90

LIABILITIES		
Capital and reserves	20.313.943,63	20.267.515,32
Funds of the Foundation	345.711,60	345.711,60
Revaluation surpluses	11.891.000,00	11.891.000,00
Reserves	3.213.904,45	2.300.323,61
Profit (Loss) brought forward	3.261.017,35	3.917.821,93
Capital Grant	1.602.310,23	1.812.658,18
Provisions	9.505.586,27	8.281.525,69
Provisions	9.505.586,27	8.281.525,69
Provision for pensions and similar obligations	1.768.367,64	1.009.233,60
Other provisions	7.737.218,63	7.272.292,09
Debts	25.315.300,38	24.132.743,89
Creditors due in over one year	9.659.644,16	10.100.309,25
Financial debts	9.659.644,16	10.100.309,25
Creditors due in one year or less	13.330.132,53	12.026.931,90
Creditors becoming due within one year	438.420,96	433.230,69
Payables	1.573.273,92	1.964.188,47
Received advanced payments on orders (Project funding)	7.376.334,49	5.909.120,32
Debts in reference to taxes, salaries and social contributions	3.681.817,32	3.496.141,86
Various debts	260.285,84	224.250,56
Accruals and deferred income	2.325.523,69	2.005.502,74
TOTAL LIABILITIES	55.134.830,28	52.681.784,90

Statutory auditor's report to the Board of Directors of the Prince Leopold Institute of Tropical Medicine on the financial statements for the year ended 31 December 2012

In accordance with the legal and statutory requirements, we report to you on the performance of the mandate of statutory auditor, which has been entrusted to us. This report contains our opinion on the true and fair view of the financial statements as well as the required additional statements.

Unqualified audit opinion on the financial statements

We have audited the financial statements for the year ended 31 December 2012, prepared in accordance with the financial reporting framework applicable in Belgium, which show a balance sheet total of EUR 55.134.830,28 and a profit for the year of EUR 256.776,26.

Management is responsible for the preparation and the fair presentation of these financial statements. This responsibility includes: designing, implementing and maintaining internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error; selecting and applying appropriate accounting policies; and making accounting estimates that are reasonable in the circumstances.

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the legal requirements and the Auditing Standards applicable in Belgium, as issued by the Institute of Registered Auditors (*Institut des Réviseurs d'Entreprises / Instituut van de Bedrijfsrevisoren)*. Those standards require that we plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement, whether due to fraud or error.

In accordance with the abovementioned auditing standards, we have implemented control procedures designed to obtain evidence supporting the amounts and disclosures included in the financial statements. The choice of these procedures is the result of our own judgement which includes the risk assessment whether the financial statements contain material misstatements, whether due to fraud or error.

In assessing the risk, we considered the foundation's internal control procedures regarding the preparation and the fair presentation of these financial statements in order to define the appropriate control procedures in the given circumstances, but not with the aim to express an opinion as to the effectiveness of the foundation's internal controls. We have assessed the appropriateness of accounting policies and the reasonableness of the accounting estimates made by the foundation as well as the overall financial statement presentation. We have obtained from management and the foundation's officials, the explanations and information necessary for executing our audit procedures. We believe that the audit evidence obtained is sufficient and appropriate to provide a reasonable basis for our opinion.

In our opinion, the financial statements for the year ended 31 December 2012 give a true and fair view of the foundation's assets and liabilities, its financial position and the results of its operations in accordance with the financial reporting framework applicable in Belgium.

Additional statements

The compliance by the foundation with the Law related to not-for-profit associations, international not-for-profit associations and foundations is the responsibility of management.

Our responsibility is to supplement our report with the following additional statements, which do not modify our audit opinion on the financial statements:

- Taking into account that the audit of the report of the board of directors is not part of our legal mission, we do not give an opinion upon its contents.
- Without prejudice to formal aspects of minor importance, the accounting records were maintained in accordance with the legal and regulatory requirements applicable in Belgium.
- There are no transactions undertaken or decisions taken in violation of the association's statutes or the Law related to not-for-profit associations, international not-for-profit associations and foundations that we have to report to you.

Antwerp, 27 May 2013

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Not on the picture: Philippe Büscher, Jef Van den Ende, Dirk Berkvens

40 years of service
Luc Hendrix

35 years of service
Luc Boel

30 years of service
Karin De Ridder

25 years of service
Philippe Büscher
Jef Van den Ende
Danielle De Paepe
Anne Van der Meer
Gerlinde Segers

20 years of service
Dirk Berkvens
Lisette Verwerft
Jakke Van den Abbeele
Leo Heyndrickx
Bea Vuylsteke

Retired
Redgi De Deken
Bernadette Lepage
Jef Van Lint
Marc Van Sprundel
Chris Wuytack

In memoriam

Paul Delanghe* - 06/02/2012
Gustave Helderweirt* - 14/03/2012
Crista Van Haeven* - 21/08/2012
Heidi Hatko* - 28/09/2012
(* retired)

We did not do it all alone

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Cover photo:	The Body Mapping project in Kenya tries to fight the prejudices about HIV/Aids by giving HIV positive people the opportunity to express their lives with HIV using the power of art.

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