

| | |
|--------------------------------|------------|
| Introduction | 3 |
| Foreword from the Chair | 5 |
| Director's note | 6 |
| Education | 13 |
| PhD and master dissertations | 28 |
| Research | 33 |
| Microbiology | 34 |
| Parasitology | 46 |
| Animal Health | 60 |
| Clinical Sciences | 70 |
| Public Health | 74 |
| Library and bibliometrics | 82 |
| Conferences | 101 |
| Medical Services | 107 |
| Reference Laboratories | 112 |
| Development Cooperation | 115 |
| Management | 127 |
| Support Services | 128 |
| Human Resources | 132 |
| Finances | 134 |

Foreword from the Chair

The Board of Governors of the ITM changed guards in 2008. In May, I had the honour to succeed Mr. Camille Paulus as governor of the Province of Antwerp and as the chair of the ITM Board. In October, Prof. Alain Verschoren took over from Prof. Francis Van Loon as rector of the Antwerp University and as vice-chair of the ITM Board. The Minister of Education appointed Mrs. Els Barbé as Liaison Official in replacement of Prof. Jan De Groof, as of July 1st. As new Board members we welcomed furthermore Mr. Peter Moors, Director General of the Belgian Development Cooperation, and Mrs. Linda De Cock, counsellor of the Flemish Department of Higher Education.

Since the former School for Tropical Diseases moved from Brussels to a site offered by the Province of Antwerp in 1934, it is an honoured tradition that its governor occupies the chair of the ITM. This part of my new duties is very special and precious, as it brings me far outside the borders of Antwerp to challenges that find no comparison in our own prosperous province. I became immediately immersed in the

richness of activities, the high academic quality and the humanitarian drive of the ITM. My first personal impression is confirmed by the recent external audits of ITM's education, research and development cooperation programmes. The over-all management audit by the Ministry of Education, planned for early 2009, will conclude an intensive cycle of evaluations and the Board is confident about its outcome as well.

Nevertheless, the ITM cannot rest on its laurels. The recommendations of the various audits have to be integrated in new policy and action plans by the end of 2009, with a time perspective of 10 years and more. Together with the management and the staff, the Board will have to reflect and decide on the role and position of the ITM in the 21st century. Over the past year, we have already made an unambiguous choice for a strategy of "Switching the Poles" in international development and for scientific and academic excellence in research and education. In fact, 2008 has thus set the scene for the ITM's future. My first year on the Board has been well spent, and there are many more to come.



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



Part of the current Board of Governors, from left to right: Filip Reyntjens, Els Barbé, Kathleen D'Hondt, Linda De Cock, Alain Verschoren, Cathy Berx, Bruno Gryseels, Diane Jacquet, Patrick Goubau, Patrick De Baetselier, Lieve Schueremans, Marc Coosemans.

Director's note

On behalf of all ITM staff, I express once more my gratefulness to Mr. Paulus for 15 years of wise stewardship, and to Profs. van Loon and De Groof for their support in the Board and in interuniversity forums throughout their 8-year term. We warmly welcome our new Chair, Vice-Chair, Liaison Official and Board Members and look forward to many good years of collaboration.

The past year was once more filled with a rich but coherent variety of activities in the fields of education, research, medical services and global health development. The main task of the management is to ensure the strategic coherence, scientific quality and financial health of the programmes, and 2008 brought several major challenges in this respect.

Early in the year, we were confronted with an unexpected cut in the planned tri-annual subsidy of the Belgian Direction-General for Development Cooperation (DGDC), from 36 to 32.5 million €. Political and fiscal reality forced us to adapt the third Framework Agreement or "FA3" Programme at the very moment it was being launched (see last years' report). In the end, we managed to preserve the carefully planned coherence, including all budgets and activities of our South-partners. Fortunately, the cuts were eased later in the year by the announcement of an additional subsidy of 2 million € for training fellowships in 2009-2010. At least as challenging was the ensuing dialogue between the DGDC, the universities and the ITM on the application of the Paris declaration on country ownership and donor alignment in our academic capacity strengthening programmes. As indicated by its FA3 motto "Switching the Poles", the ITM's FA3 programme is already explicitly in line with this agenda. The "new deal" resulting from these still ongoing negotiations should therefore be easily incorporated.

Scientific research was another main focus of the strategic management in 2008. The new "secondary" research funding from the Ministry of Economy, Sciences and Innovation of the Flemish Region (see previous report) was consolidated in a covenant for 2008-2012 and a structural annual subsidy of 1,75 million €. This programme grant represents only 4%

of our total turn-over, but is highly valuable as it can be attributed to self-initiated research. As a matter of fact, it allowed the ITM for the first time in its history to develop a comprehensive research strategy, in which needs-oriented and science-driven research are integrated in a coherent vision on our academic and societal roles. A new Strategic Research Plan was approved in October by the ITM Board of Governors and the Ministry of Sciences as a basis of the new covenant. In the process, we adapted the mission statement of the ITM to emphasize its science-driven character (see cover jacket).



Governor and Chair Camille Paulus at his farewell from the ITM

The new budget is attributed on one hand to the consolidation of the Clinical Trials Unit, and on the other to a new internal programme for innovative research. A first and highly competitive round resulted in the selection, by an international expert jury, of three exciting and ambitious new projects on the major tropical parasites *Plasmodium*, *Leishmania* and *Theileria*.

Our Scientific Advisory Council (SAC) visited the ITM in June and in November for its quinquennial in-depth evaluation of the departmental research programmes. As at previous occasions in 1996-1997 and 2002-2003, the units and departments prepared the audit by an in-depth self-assessment report, which was a highly useful exercise in its own right. The SAC praised the new Strategic Research Plan, found most units to be performing on a high international level and observed substantial progress since the previous audit. The final report and recommendations will be integrated with those of a general management audit in the first half of 2009; you will read more on the findings and ensuing actions in the next annual report.

In the field of education, a main highlight was the final accreditation of our Master courses by the Dutch-Flemish Accreditation Organisation (NVAO), after the highly praising audits and evaluations reported upon last year. In a related movement, the Master of Public Health courses were further integrated in one course, with majors rather than separate diploma's in Health Systems and Services Management (MPH-HSSM) or in Disease Control (MPH-DC). The ITM continued to extend its offer of short international expert courses, e-learning and telemedicine, as well as its PhD training programme.

As the number of foreign students and trainees continues to increase while affordable rooms become ever more difficult to find, we initiated a plan to build our own boarding houses in the vicinity of the ITM.

In the medical services, the restructuring of the HIV/AIDS clinic was consolidated by the appointment of a new and definitive head of service. We merged the reference laboratories for HIV/AIDS and Sexually Transmitted Infections and extended our collaboration with the Antwerp University Hospital in the development of their infectious diseases unit.



On July 9th the ITM and the University of Antwerp renewed their covenant for academic collaboration. On the picture: Governor Cathy Berx, our new Chair, signing for the ITM, with outgoing rector Prof. Van Loon on the left and incoming rector Prof. Verschoren on the right

2008 has also been a heavy year for the administrative and operational management of the ITM. We have become partly subjected to VAT as a consequence of European free market policies, while new regulations of the EC as well as national funders require a shift to full-cost accounting. These models can become useful internal management tools, but their introduction is a brain-teasing exercise with many consequences and uncertainties. Quality and safety management were shifted in higher gear following the recruitment of new, highly qualified coordinators. The turnover, activity volume and staff of the ITM meanwhile increased with another 10 to 20%. Obviously, this continued growth under ever increasing qualitative requirements puts a lot of strain on scientific as well as support staff. Commitment, professionalism and good humour remain constants on ITM's working floor, however, as witnessed by many cheerful staff outings, functions and parties as well as the new staff gazette.



We were very pleased to host, on Good Friday, Mr. Frank Vandenbroucke, Minister of Education and Labour and our main patron in the Flemish Government. He witnessed with his own eyes the drive, quality and international environment on our campus and concluded with satisfaction that the ITM is indeed a unique and precious part of the Flemish academic landscape. Being himself a scholar in social security systems, he engaged in an animated debate on health financing with our MPH students.

Running the ITM was more than a full-time job in 2008, leaving me all too little time for visits to our overseas partners, which I sincerely regret and apologise for. I shall hopefully be able to make up in the coming years. There was even less time for own scientific or other international activities. However, in March I was pleased and honoured to join His Majesty Prince Royal Filip and several ministers on an official visit to the Bill and Melinda Gates Foundation in Seattle, where we presented the Belgian work and position in the fields of international health and tropical disease research. I stepped down after two terms as Vice-Chair of the European & Developing Countries Clinical Trial Partnership (EDCTP) but continued to contribute actively, not least with lots of institutional memory on the wobbly early years of this most challenging project. I managed, at last, to pay a visit to the EDCTP African Office at the MRC in Cape Town where I also had meetings with partners at the Universities of Western Cape Province and Stellenbosch. The EDCTP experience was also put to good use in the preparation of an ERANet on HIV/AIDS, in which I participated on behalf of the Flemish Ministry for Economy, Sciences and Innovation. I look back with satisfaction at closing lectures summarizing the Second Geneva Forum on Global Access to Health in May and the EU conference on Poverty Related Diseases Research in November, thus maintaining a helicopter view of health systems and policies as well as of biomedical research.

Working in such a broad field of exciting sciences with paramount societal importance is a privilege; doing so with hundreds of highly dedicated and qualified collaborators, partners and friends from all over the world is a marvel. We are very much indebted to our funders in the Flemish and Belgian governments, the European Union, the United Nations, the non-governmental and the private sector. This annual report will hopefully prove to satisfaction that we merit their support and confidence.



Receiving a souvenir from the MPH promotion 2008: "You have the watch, we have the time."



The Scientific Advisory Council met for a preliminary hearing on 5-6 June and an in depth audit of the ITM research programmes on 17-19 November.

Top: plenary meeting in Broden Hall (name list: see chapter Management)

Left: Godfried Thiers, Chair of the SAC and Ann Verlinden, research coordinator of the ITM and SAC secretary



Halfdan Mahler, former director of WHO and the driving force behind the Alma Ata Declaration on Primary Health Care of 1978, surrounded by the entire ITM delegation at the Geneva Health Forum, May 2008

Performance Indicators 2008

EDUCATION

| | |
|---|-----------|
| International Master Courses (2007-2008) | |
| Applicants | 422 |
| Admitted students | 82 (19%) |
| International students | 80 (98%) |
| Graduated students | 77 (94%) |
| Post Graduate Certificate and Short Courses | |
| Enrolled students | 187 |
| Graduated students | 182 (97%) |
| Short Course participants | 239 |
| Doctoral training | |
| Doctoral trainees on 31.12.08 | 117 |
| Doctoral trainees started in 2008 | 20 |
| Doctoral graduates in 2008 | 13 |

RESEARCH

| | |
|---|-------------------|
| Total number of scientists on 31.12.08 | 230 |
| Postdoctoral scientists | 80 |
| Number of scientific articles in 2008 | 316 |
| In ISI journals | 217 |
| with JIF ≥ 2 | 146 |
| with JIF ≥ 5 | 36 |
| with JIF ≥ 10 | 11 |
| Number of books and chapters in 2008 | 35 |
| Number of PhD dissertations in 2008 | 13 |
| Average PhD duration | 4.3 years |
| % of international PhDs | 66% |
| Number of externally funded research projects | 136 |
| Amount of external research funding (expenses 2008) | 15.4 million euro |
| Number of new collaborative projects | 41 |
| International conferences (co-)organised | 7 |

MEDICAL SERVICES

| | |
|----------------------------------|---------|
| Patient contacts total | 38,553 |
| Outpatients curative | 30,824 |
| Outpatients preventive (HIV/STI) | 7,523 |
| Hospitalised patients (UZA) | 206 |
| Laboratory patients | 32,589 |
| Calls Travel Health Phone | 10,000 |
| Page views travel health website | 270,000 |

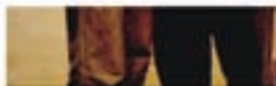
INTERNATIONAL HEALTH DEVELOPMENT

| | |
|---|-------------------|
| Master students from developing countries | 77 |
| PhD Fellows from developing countries | 71 |
| PhD Fellows from developing countries graduated in 2008 | 5 |
| Institutional partnerships | 16 |
| Africa | 8 |
| Asia | 3 |
| Latin America | 5 |
| Expenses direct development programmes (aid budgets) | 9,4 million euro |
| National and International Reference Laboratories | 9 |
| Diagnostics for neglected diseases delivered | 2,6 million tests |

| | |
|---|-----------|
| FINANCES (million euro) | |
| Total income | 59,2 |
| Government subsidies | 26,7 |
| Academic core funding | 10,5 |
| Research programme funding | 2,2 |
| Medical programme funding (excluding fees) | 2,4 |
| International development programme funding | 10,1 |
| Investment funds | 1,4 |
| Own income | 32,5 |
| External project funding | 17,1 |
| Tuition fees, overhead, fiscal rebates, other | 12,2 |
| Medical fees | 3,2 |
| Expenditure | 59,9 |
| Education & departmental research | 11,5 |
| Research projects and reference services | 16,6 |
| Development cooperation (DGDC Programme) | 9,4 |
| Capital investments | 0,5 |
| Medical Services | 5,6 |
| Management | 8,1 |
| HUMAN RESOURCES | |
| Total Staff on 31.12.08 (in Full Time Equivalent) | 370.1 |
| University and high school graduates | 324.4 |
| Male : Female ratio | 43:57 |
| Total staff on institutional core budget | 194.5 |
| Senior (tenure) academic staff | 29.1 |
| Academic assistants | 41.5 |
| Support staff | 123.9 |
| Staff medical services | 47.0 |
| Scientific staff on external funding | 78.9 |
| Support staff on external funding | 49.7 |
| QUALITY AND SAFETY MANAGEMENT | |
| Accreditation master Courses | Achieved |
| Audit by Scientific Advisory Council | Excellent |
| Quality accreditation | |
| Staff working under accredited conditions | 106 |
| Numbers of accredited tests | 97 |
| Wellbeing, safety and prevention at work | |
| Sick leave (% work days) | 2.82 |
| Sick leave due to work-related accidents (% of work days) | 0.35 |
| Energy Performance Certificate | 102% |



Education



future continuous **experience** Parasitology **MPH-HSMP** professional
ITM **courses** **master** **postgraduate** **students** **credits**
 PhD SCREM Belgian e-learning policy New academic modules learning diseases evidence based
 alumni systems antenatal awarded departments veterinary programmes University
 Animal student ICT **University**



Over the past year, major efforts were made in the fields of educational innovation, quality assurance, and continued reform. We launched a new short course on clinical research and evidence-based medicine (SCREM) and tested our new e-learning course on antiretroviral therapy. The Master in Public Health courses were further modularised, and the project for a new master degree in International Health was finalised. Together with our institutional south-partners, we initiated an Educational Network for quality assurance in higher education for health.

Evolutions and achievements in 2008

The ITM formally offers two master programmes: a Master in Public Health (MPH), with majors in Health Systems Management and Policies (MPH - HSMP) or Disease Control (MPH - DC), and a Master of Science in Tropical Animal Health (MSTAH), with majors in Epidemiologic Surveys or Control of Animal Diseases. Each course (MSTAH) or major (MPH) can admit up to 25 participants, of which most are mid-career professionals. Main modules can also be followed as stand-alone short courses. The total number of master students remained fairly stable over the past years, while the number of short course participants increased. The latter become evermore attractive for continuous professional development.

Since the integration of the Master of Disease Control in the MPH programme in 2007, interactions and collaboration between the two student groups were very much strengthened. Both majors aim at training experts that can strengthen health systems for the delivery of either comprehensive health care or integrated disease control. The two profiles will thus be synergetic in later professional duties as well. With the new Master in International Health (MIH) programme we aim at a professional profile which is complementary to the MPH. The MIH will deliver versatile health professionals, able to advise and work

on international health issues at various levels. The flexible curriculum will incorporate the postgraduate course in tropical medicine and international health, optional modules of the MPH-DC and MPH-HSMP, clinical expert courses (SCART, e-SCART, SCREM) and external modules as compulsory or optional building blocks. The project will be submitted for accreditation in 2009.

“Educational Networking” is a new component in the Third ITM-DGDC Framework Agreement Programme. A kick-off workshop in Antwerp in November 2008 brought together twelve institutional partners from Africa, Asia, Europe and Latin America in an intensive five-day workshop, aiming at ‘learning to network’ and ‘networking to learn’. Consensus was reached on an initial focus on quality assurance in higher education (see Highlight).

In the field of e-learning, and as follow-up of the SCART and e-SCART, a programme of short continuous education messages was developed and delivered via multiple media including the internet and mobile devices. This experiment allowed the ITM to keep abreast of the new technologies that are revolutionising the exchange of information particularly in developing countries.

“82 out of 89 respondents were involved in training more than 10,500 health professionals, showing the enormous multiplier impact of the SCART course”

Quality assurance

As a final step in the accreditation process we received the formal certificates of accreditation for our Master courses, confirming the excellent audit reports of last year. Several recommendations of the audit team were already implemented. The MSTAHA has been more explicitly focused on the research aspects of tropical animal health. The socio-economic and environmental impacts of disease control actions were integrated in the aims and objectives of the MSTAHA and in a new course component. More attention is paid to the presentation of the student's personal experience and to problem-based learning. The guidelines and procedures for the evaluation of the thesis and its defence have been defined more accurately, facilitating objective evaluation by the international jury. In the MPH, collaborative learning experiences between the two majors have been strengthened in the fields of public health and health policy concepts, methods for the analysis of health problems and the relation between HIV/AIDS programmes and health systems strengthening. Thesis instructions have been improved and supervision now includes an element of peer-coaching. The systematic screening of theses for plagiarism with the software Ephorus was taken as an opportunity to improve the writing skills of course participants.

Educational innovations

The ITM further increased its offer of specialised short courses, following the international demand for flexible, modular postgraduate training.

The new Short Course on Clinical Research and Evidence-based Medicine (SCREM) was accredited for the European tropEd Masters in International Health.

The Department of Public Health restructured the optional module “Strategic Management” of its MPH course and opened it up for external participants. As a stand-alone module, the aim of this seven-week course is to empower public-oriented local health systems in low and middle income countries.

The Department of Clinical Sciences organised its first Short Course on Clinical Research and Evidence-based Medicine (SCREM), which attracted 20 clinical experts from 11 countries. During six weeks, each participant developed a clinical research protocol or evidence-based clinical guideline on the basis of inductive adult learning methods. The course was evaluated as intense, eye-opening and highly rewarding. The department also launched a pilot version of the Electronic Short Course on Antiretroviral Therapy (e-SCART). It ran for three months (June – August 2008) with 43 participants



Nurses during laboratory skills' sessions in the course of Tropical Medicine

of 27 different nationalities, 36 participants of which successfully completed the course. Building on the mobile learning tests of 2007 moreover, twelve Continuing Medical Education modules for use with mobile devices were developed. These become ever more relevant in low income countries where cabled infrastructure remains scarce.

The Department of Animal Health organised, after the success of the first edition in 2007, a second short course on Quantitative Risk Assessment (QRA), for 14 participants from Eastern and Southern Africa and South America. This course remains in high demand and may be structurally embedded in the institutional offer. Together with the University of Pretoria, the department also graduated the first six students in the joint web-based Master in Tropical Veterinary Health. This online degree course focuses on infectious and parasitic diseases of cattle and fauna in sub-Saharan Africa. The ITM's Department of Animal Health leads three modules, equivalent to 15% of total credits. Since the start in 2005, 43 students have enrolled for the full MSc, of which 6 graduated and 8 discontinued. Yearly, more than 100 new students register for separate continuous professional development modules.

In the postgraduate course on Tropical Medicine and International Health, novelties include a workshop on control of non-communicable diseases in Module 1 and the consolidation of a special, problem-based track for biomedical scientists in Module 2.

The ITM organised a survey among alumni of the Postgraduate Course on Tropical Medicine for nurses and midwives on a possible further internationalisation, including a language shift from Dutch to English and joint learning in the similar course for medical doctors and/or biologists. The feedback indicated that the contents of the course still fitted the specific training needs very well, though there is a demand for more focus on health education and promotion skills. The alumni welcomed the proposed organisational reforms, for which concrete plans will now be drawn up.

ICT for education

Information and communication technology are at the core of many educational innovations. The learning management system Blackboard is now fully operational in all courses. Other new soft- and hardware include pictorial and video archiving, plagiarism screening and videoconferencing equipment. The latter was intensively used for contacts with institutional partners in South Africa, Peru and Ecuador that have similar facilities, and for teaching from Norway and South Africa during the Telemedicine course.



The course on HIV/AIDS management (SCART) is amplified through the e-SCART and Telemedicine



Students and staff relax in the ITM garden during a sunny lunch break.

Fellowship programmes

The ITM-DGDC Framework Agreement Programme supports each year 60 ITM master students. In 2008, the Joint Japan/World Bank Graduate Scholarship Programme (JJ/WBGSP) funded 4 MPH students, and another 3 master students obtained support from the Belgian Technical Cooperation (BTC) agency. Sources of scholarships for French-speaking students seem to be scarcer than for English-speaking ones. Scholarships for ITM's short courses were awarded by the DGDC, BTC, WHO, Médecins sans Frontières, Brown University, Suriname National AIDS Programme, City of Antwerp and the Flemish Interuniversity Council (VLIR).

Structural fellowship programmes for our master courses are largely restricted to participants from the South, and somewhat remarkably financial accessibility is mainly a problem for western students. As our master courses focus on mid-career professionals, usually with a family, interrupting income-generating activities for a year makes the choice even more difficult. The ITM has now attributed some of its core funding from the Ministry of Education to help, along with private sponsors, to lower the financial barriers for a year of study at the ITM also for Europeans. Such institutional scholarships, in 2008 granted to 5 master students and 6 short course participants, cover 80% of the registration fee. Additionally, cheap study loans can be made available.

Tuition fees

The ITM follows a tuition fees policy that aims at covering 25 % (postgraduate level) to 50% (international master and expert level) of the full course costs. The other part of the costs is covered by the institutional budget, particularly the core funding of the Flemish Ministry of Education. While costs vary somewhat between courses, the ITM aims at a uniform tariff per credit. Tuition and registration fees are pooled in the institutional budget and budgets allocated according to course needs rather than to course income. This policy also guarantees the academic independence of the lecturers and the quality of the teaching.

The total fee for an 11-month master course (60 ECTS credits), taught in groups of 20 students, amounts to 14,300 euro. For an additional 700 euro, the student is provided with a high-end portable PC including extensive licensed software, preconfigured for course work and wireless access throughout the ITM premises. For shorter expert courses with similarly sized groups, a pro rata fee of approximately 250 euro per credit is charged. For the full postgraduate certificate course (5 months, 30 ECTS credits), which is taught in larger groups of 40-50 students, the fee is 1,250 euro for EU students and 2,500 euro for non-EU students.

Admission criteria

The international master and short courses aim at mid-career experts. The eligibility criteria include a university master degree, course language proficiency (English or French) and relevant professional experience of minimally 2 to 4 years; most students actually have 5 to 10 years experience or more. Competitive selection criteria include academic record, professional experience, future plans and peer review. In case of equality, gender and geographical balance are taken into account.

For the courses of 2007-2008, 21 students out of 204 (10%) eligible applicants were selected for the MPH-MDC, 38 out of 115 (33%) for the MPH-HSMP, and 23 out of 103 (22%) for the MSTA. The average age was 38, 38 and 34 years, respectively.

Student support

In 2008, the Student Service assisted over 700 international master, short course, doctoral and individual trainees with travel, visa, housing, social support and practical advice. Making them feel comfortably at home is the prime objective, so as to enable them to concentrate fully on a fruitful and pleasant academic year. The Student Service organises a wide range of social and cultural activities to complete the 'Belgian experience', and guides students to medical and psychological support whenever necessary. The students also have access to low cost cultural and sport vouchers.

Alumni

Also our alumni provide important input for the quality assurance of our courses. In August, more than 50 MPH alumni joined the first meeting of the unified network in Kinshasa, DR Congo. The majority came from the host country, but in all 14 countries were represented. Seven ITM staff members attended the meeting and listened carefully to feedback for the MPH programme. Many suggestions confirmed the need for programmes that allow individual tailoring. The alumni expressed a growing interest in project formulation and evaluation methods, health reform policies, the capacity to influence these processes and health systems' research skills. These suggestions are clearly related to the fact that a significant proportion of alumni move to higher management and policy positions after their training at the ITM.

The ITM alumni receive a six-monthly newsletter from their network. The RIPROSAT newsletter, from the MSTA network, was sent to more than 400 members. A survey of graduates of courses 15 years or more ago showed that one third maintained interest, indicating a persistent bond with the ITM. The MPH newsletter was restyled, and was sent to more than 1,400 alumni all over the world. Former participants sharing their experiences made up over 50 % of the newsletter.

A survey among 208 alumni of the first 5 SCART (2003 – 2007) revealed that 82 out of 89 respondents were involved in training more than 10,500 health professionals, showing the enormous multiplier impact of this course. Moreover, the respondents' involvement in policy making and guideline development had increased with 50 and 85%, respectively.



Staff and students trying to coordinate outside the campus environment: Antwerp Rowing (backwards?) Regatta 2008

International collaboration

In South America, the ITM provides 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 Medical School of the Universidad Mayor San Simon in Cochabamba, Bolivia and the Instituto de Medicina Tropical Cayetano Heredia in Lima, Peru. At IPH-PUCE (Master of Public Health), all last four cohorts were maximally filled with 18 master students (admission rate 30%). In 2008 two new short courses were developed and capacity to deliver e-learning was built. In Cochabamba the specialisation course in tropical medicine and Master in Disease Control were institutionalised in the university and the first 13 master degrees were awarded. In Lima, we co-support the well-known international Gorgas course on tropical medicine.

In Africa, the ITM provides structural support to veterinary training programmes at the Centre for Ticks and Tick-Borne Diseases in Lilongwe, Malawi and to the web-based Veterinary Master of Science programmes at the University of Pretoria. At the Institut National d'Administration Sanitaire, Morocco, the ITM supports curriculum development, e-learning capacity, PhD training and thesis research programmes. At the Makerere University School of Public Health, Uganda, the ITM contributes to the development of a fellowship programme for district medical officers.

In Asia, the ITM contributes 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 Koirala Institute of Health Sciences in Dharan, Nepal; public health training for health district teams at the Institute of Public Health in Bangalore, India.

Together with these and other institutional partners in the ITM-DGDC framework programme, we launched an "Educational Network" with an initial focus on educational quality management (see Highlight).

Many ITM staff members contribute as guest lecturers to a wide range of courses in Belgium, Europe and worldwide.



Students applaud the ITM choir singing a farewell from the top of the stairways.

Doctoral training and research at the ITM

Doctoral and other research training makes up an ever greater part of ITM's educational mission. At the end of 2008, 117 PhD students were registered at the ITM. This group includes academic and research assistants employed by the ITM, Belgian and European scientists with a fellowship from research agencies or universities, and PhD bursaries from developing countries supported by the DGDC or other development agencies. The latter category usually follows a "sandwich" track with alternating stays at the ITM and in the home country. These sandwich fellowships include sustenance, travel costs and a bench fee for a four-year period. They can be awarded as part of an institutional collaboration programme, or to competitively selected graduates from ITM's master programmes. In 2008, "individual" PhD scholarships of the latter type were awarded to graduates from Ethiopia, Peru, The Philippines, Cameroon and Benin. The doctoral diplomas are awarded by Belgian universities, with whom the ITM has concluded agreements to this end. In 2008, 13 doctoral students under ITM supervision successfully defended their thesis, 5 of which from developing countries.



State of the (Sc)art.

The contribution of ITM departments

Department of Public Health

The Department of Public Health is responsible for the Master in Public Health – Health Systems Management and Policy (MPH-HSMP) and its optional modules, as well as public health courses in the MPH-Disease Control (MPH-DC), in the postgraduate certificate courses for doctors and nurses and in specialised short courses as the SCART and the SCREM.

Department of Animal Health

The Department of Animal Health organises the Master of Science in Tropical Animal Health (MSTAH) and its modules for Continuous Professional Development (CPD) as well as the second international course on Quantitative Risk Assessment. The veterinary staff also takes part in the biomedical sciences track of the postgraduate certificate courses, and coaches master or module students in the joint e-learning MSc in Veterinary Tropical Diseases with the University of Pretoria in South Africa.

Department of Clinical Sciences

The Department of Clinical Sciences takes care of the courses on tropical medicine, tropical biomedical sciences and HIV/AIDS care in the postgraduate certificate courses. It is also responsible for the face-to-face and online versions of the Short Course on Antiretroviral Therapy (SCART & eSCART) and the newly developed Short Course on Clinical Research and Evidence-based Medicine (SCREM). The teaching on clinical HIV/AIDS management is amplified through the Telemedicine initiative.

Department of Microbiology

The Department of Microbiology is responsible for courses on microbiology, immunology, infectious diseases and HIV/STD control integrating reproductive health in the MPH-DC, optional modules on HIV/AIDS and reproductive health, the postgraduate certificate courses, the SCART, eSCART and the SCREM. Together with the departments of Public Health and Parasitology, it assures the coordination and rotating directorship of the MPH-DC.

Department of Parasitology

The Department of Parasitology assures the teaching in parasitology, parasitic disease control and medical entomology, the postgraduate certificate courses in the MPH-DC, and the optional modules on tropical disease control.

All departments host PhD students, coach thesis work of master students from the ITM and Belgian universities and train other scientists and technicians from Belgium and abroad.

Overview of ITM courses

The table below summarises the educational programme of the ITM in 2008. More details and the 2009-2010 programme can be found on www.itg.be.

Further down we provide an overview of the student body and of dissertations and theses in 2008.

ITM Course offer

Objectives

Target group

Language

Credits

International Masters

Master of Public Health - Health Systems Management and Policy (MPH-HSMP)

| | | | |
|--|---|---------------------------------------|----|
| <p>Focus: Management and policy of comprehensive and accessible quality health services at local, national and international level</p> <p>Components:</p> <ul style="list-style-type: none"> • Health systems management • Analysis, research, decision-making • Communication skills • Optional modules • Integration and synthesis (master thesis) <p>Options:</p> <ul style="list-style-type: none"> • Health Policy • Strategic Management | Experienced health professionals (mainly medical doctors) | Yearly alternating English and French | 60 |
|--|---|---------------------------------------|----|

Master of Public Health - Disease Control (MPH - DC)

| | | | |
|---|---|---------------------------------------|----|
| <p>Focus: Epidemiological, technical and organisational aspects of specific disease control with emphasis on the integration of sustainable disease control in regular health services</p> <p>Components:</p> <ul style="list-style-type: none"> • Quantitative and qualitative methods • Public health • Research & tools • Master thesis <p>Options:</p> <ul style="list-style-type: none"> • 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)

| | | | |
|---|--|---------------------------------------|----|
| <p>Focus: Epidemiological, technical and organisational aspects of specific animal disease control</p> <p>Components:</p> <ul style="list-style-type: none"> • Research methodology • Project cycle management • Global livestock development • Epidemiological case studies • Master thesis <p>Options:</p> <ul style="list-style-type: none"> • Animal Disease Control • Epidemiological data collection & processing | Experienced health professionals (mainly veterinary doctors) | Yearly alternating English and French | 60 |
|---|--|---------------------------------------|----|

Postgraduate certificate courses

Tropical Medicine and International Health (TM&IH / MT&SI)

| | | | |
|---|--|-----------------------------------|----|
| <p>Focus: Clinical, biomedical and epidemiological aspects of tropical and poverty related diseases and their control; health care organisation in low and middle income countries</p> <p>Components:</p> <ul style="list-style-type: none"> • 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 an international context | Yearly in both French and English | 30 |
|---|--|-----------------------------------|----|

Tropical medicine for nurses and midwives (TG / MT)

| | | | |
|---|--|---------------------------------|----|
| <p>Focus: Clinical, biomedical aspects of tropical diseases and their control; health care organisation in low and middle income countries</p> <p>Components:</p> <ul style="list-style-type: none"> • 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 an international context | Yearly in both French and Dutch | 20 |
|---|--|---------------------------------|----|



Students and staff getting ready a sport outing

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: <ul style="list-style-type: none"> • 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 an international context | Yearly in both 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: <ul style="list-style-type: none"> • Descriptive tropical medicine • Clinical decision-making • Laboratory sciences • Clinical specialties in the tropics | Health professionals, mainly from the North, preparing to work in an international context | Yearly in both French and English | 10 |
|---|--|-----------------------------------|----|

Short Course on Antiretroviral Therapy (SCART)

| | | | |
|---|-----------------------------------|---------|-----|
| Focus: Comprehensive HIV care and antiretroviral (ARV) treatment in resource-poor settings Components: <ul style="list-style-type: none"> • Virology, immunology and clinical aspects of HIV/AIDS/TB • ARVs and patient management • Prevention of mother-to-child transmission • Public health aspects • ARV scaling-up | Health professionals (mainly MDs) | English | 4.5 |
|---|-----------------------------------|---------|-----|

Planning and Management of Reproductive Health Programmes (MPH – DC: Module RH)

| | | | |
|--|---|--|----|
| Focus: Management and integration of reproductive health programmes in general health services Components: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 |
|--|---|-----------------------------------|----|

Specialised short courses (continued)

Health Policy (MPH-HSMP: Module HP)

| | | | |
|--|----------------------------------|-----------------------------------|---|
| Focus: Formulation, implementation and evaluation of public health policies in developing countries Components: <ul style="list-style-type: none"> • Framework for policy analysis • Actors and levers in policy making • Country case studies • Emerging challenges | Experienced health professionals | Alternating English and in French | 9 |
|--|----------------------------------|-----------------------------------|---|

Medical Mycology (Mycology)

| | | | |
|--|--|----------------------------|---|
| Focus: Medically important fungal infections Components: <ul style="list-style-type: none"> • General mycology • Medical and veterinary mycology | Health professionals (mainly laboratory) | Yearly in Dutch and French | 3 |
|--|--|----------------------------|---|

HIV & AIDS: the multidisciplinary approach ("HIV evening course")

| | | | |
|---|--|----------------------------|---|
| Focus: HIV/AIDS patient care in Belgium Components: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 (equivalent) |
|--|--|---------|-----------------|

Educational output in 2008

Number and origin of participants in ITM-courses 2007-2008

| | Belgium | EU | Europe other | Africa | Asia | Latin America | Other | Total |
|------------------------|---------|----|-----------------|--------|------|------------------|-------|------------|
| TM&IH-E | 30 | 12 | 1 | 2 | 1 | 0 | 0 | 46 |
| TM&IH-E Module | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 4 |
| MT&SI-F | 13 | 7 | 2 | 2 | 1 | 0 | 1 | 26 |
| MT&SI-F Module | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| TG-D | 30 | 7 | 0 | 0 | 0 | 2 | 0 | 39 |
| MT-F | 26 | 30 | 12 | 4 | 0 | 0 | 4 | 76 |
| MPH-HSMP-E | 0 | 1 | 0 | 19 | 13 | 5 | 0 | 38 |
| MPH Mod HP-E | 0 | 0 | 0 | 12 | 4 | 1 | 0 | 17 |
| MPH-MDC-E | 1 | 2 | 0 | 9 | 6 | 3 | 0 | 21 |
| MPH Mod RH-E | 2 | 0 | 1 | 4 | 2 | 0 | 0 | 9 |
| MPH Mod TD-E | 0 | 0 | 0 | 5 | 1 | 1 | 0 | 7 |
| MSTAH-E | 1 | 0 | 0 | 15 | 5 | 2 | 0 | 23 |
| MSTAH-E Module | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Mycology-D | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| Mycology-F | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 7 |
| SCART-E | 2 | 4 | 0 | 30 | 4 | 3 | 0 | 43 |
| e-SCART-E | 0 | 4 | 0 | 20 | 11 | 1 | 0 | 36 |
| SCREM workshop E | 0 | 0 | 0 | 3 | 3 | 4 | 0 | 10 |
| QRA | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 10 |
| Telemedicine workshop | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 8 |
| HIV Evening course | 75 | 9 | 0 | 0 | 0 | 1 | 0 | 85 |
| PhD Ongoing (31/12/08) | 40 | 6 | 0 | 44 | 12 | 15 | 0 | 117 |
| PhD Graduates (2008) | 6 | 1 | 1 | 4 | 0 | 1 | 0 | 13 |
| Total | | | | | | | | 609 |

E = English

F = French

D = Dutch

Age and gender of participants in ITM courses 2007-2008

| | Gender | | Age | | | | | Prior education | |
|------------------------|------------|------------|------------|------------|------------|-----------|-----------|-----------------|------------|
| | M | F | 20-29 | 30-34 | 35-39 | 40-44 | >45 | Bachelor | Master |
| TM&IH-E | 12 | 34 | 25 | 14 | 4 | 0 | 3 | 0 | 46 |
| TM&IH-E Module | 2 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 4 |
| MT&SI-F | 7 | 19 | 7 | 11 | 3 | 2 | 3 | 0 | 26 |
| MT&SI-F Module | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| TG-D | 5 | 34 | 23 | 5 | 4 | 3 | 4 | 39 | 0 |
| MT-F | 9 | 67 | 52 | 13 | 6 | 3 | 2 | 76 | 0 |
| MPH-HSMP-E | 27 | 11 | 1 | 10 | 14 | 9 | 4 | 0 | 38 |
| MPH Mod HP-E | 12 | 5 | 0 | 3 | 3 | 3 | 8 | 0 | 17 |
| MPH-MDC-E | 11 | 10 | 1 | 2 | 11 | 5 | 2 | 0 | 21 |
| MPH Mod RH-E | 2 | 7 | 1 | 3 | 3 | 0 | 2 | 3 | 6 |
| MPH Mod TD-E | 5 | 2 | 0 | 4 | 2 | 1 | 0 | 1 | 6 |
| MSTAH-E | 18 | 5 | 1 | 17 | 3 | 1 | 1 | 0 | 23 |
| MSTAH-E Module | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Mycology-D | 4 | 3 | 3 | 2 | 1 | 0 | 1 | 6 | 1 |
| Mycology-F | 4 | 3 | 3 | 1 | 0 | 2 | 1 | 3 | 4 |
| SCART-E | 27 | 16 | 1 | 10 | 14 | 9 | 9 | 0 | 43 |
| e-SCART-E | 27 | 9 | 4 | 20 | 9 | 2 | 1 | 0 | 36 |
| SCREM workshop E | 8 | 2 | 0 | 1 | 2 | 5 | 2 | 0 | 10 |
| QRA Internship | 7 | 3 | 1 | 2 | 1 | 1 | 5 | 0 | 10 |
| Telemedicine workshop | 6 | 2 | 0 | 1 | 5 | 1 | 1 | 0 | 8 |
| HIV Evening course | 19 | 66 | 33 | 14 | 5 | 11 | 22 | 85 | 0 |
| PhD Ongoing (31/12/08) | 72 | 45 | 27 | 26 | 28 | 21 | 15 | 0 | 117 |
| PhD Graduates (2008) | 7 | 6 | 1 | 1 | 3 | 5 | 3 | 0 | 13 |
| Total | 265 | 344 | 181 | 140 | 117 | 83 | 88 | 213 | 396 |

Highlights

Wobbly first steps in educational networking

In the first week of November, 23 representatives of 12 partner institutes (including the ITM) gathered in Antwerp for the kick-off workshop of the Educational Network, an new initiative under the third ITM-DGDC Framework Agreement Programme. All partners had an expressed interest in networking in education for health, but to evolve towards a concrete common agenda and true joined ownership was not *a priori* evident. The workshop therefore initially focussed not only on education, but also on the dynamics of networking under the motto “networking to learn and learning to network”.

“Learning to network” was addressed through questions as “What brings us together, to do what and how?”; “How will the network define its structure, communication, power, decision-making, leadership and membership?”; “How will we balance institutional and network interests?” In order to avoid abstract discussions, the workshop switched between sessions focusing on contents and dynamics.

Three main themes were discussed: Education and the Field; Quality Assurance and Accreditation; and eLearning. Each partner presented a case study, followed by discussions and searches for common ground and interests.

The week-long exercise culminated in a final session of decision-making about future dynamics, meetings and actions. “Quality in Education” was found to be the main unifying theme for the first year. A steering committee with representatives from each continent was composed, that will prepare a plan of action and a next network meeting.



Different cooperative methods were employed during the meeting: an evening cooking workshop was not only fun but also a nice way to work together.

Highlights

MDC celebrates its 10th anniversary

The ITM Master in Disease Control (MDC) was launched in 1998 as an answer to the threat of (re)emerging diseases, the increased need for health professionals trained to manage disease control programmes within the context of comprehensive health systems and the gap in the international offer of courses in this field. ITM's expertise in HIV/AIDS, tropical diseases and reproductive health, together with a strong conceptual framework for integrated disease control and health systems strengthening, guaranteed the development of a challenging programme.



1998

2008

On the 17th of July 2008, on the occasion of the graduation of MDC 2007-2008, we proudly looked back at 10 years MDC (now MPH-DC). Dr. Fatoumata Nafo Traoré, member of the MDC examination board, stressed the relevance of the Master in Disease Control in the movement towards Health Care for All. Dr. Traoré, former Minister of Health of Mali and former director of Roll Back Malaria, is uniquely placed to balance disease control and comprehensive health care provision. She emphasised the continuing need for disease control programme managers within a broad health systems vision.

The celebration was concluded with a dinner in the presence of alumni of most MDC promotions, who shared many memories on “those days in Antwerp” and professional experiences since graduation. Close contacts and systematic feedback from alumni will keep the programme up to date and adapted to a rapidly changing environment.

PhD and master dissertations 2008

Doctoral theses (PhD)

Department of Microbiology

Crucitti T. Epidemiology of *Trichomonas vaginalis*: prevalence of *Trichomonas* sp., sexual and hygienic risk factors associated with genital trichomoniasis. Antwerp: University of Antwerp; 2008. 194 pp.
UA promoter S. Scharpé; ITM promoter A. Buvé (Unit of HIV/STD Epidemiology and Control)

Jallow S. Development and application of assays for monitoring drug resistance in HIV-2 infected patients on antiretroviral therapy. Antwerp: University of Antwerp; 2008. 175 pp.
UA promoter G. Vanham; ITM promoters G. Vanham, W. Janssens (Unit of Virology); MRC Laboratories co-promoter S. Rowland-Jones

Van Deun A. Optimization of smear microscopy for acid-fast bacilli in tuberculosis control programs. Leuven: Katholieke Universiteit Leuven; 2008. 201 pp.
K.U.Leuven promoter J. Verhaegen; ITM promoter F. Portaels (Unit of Mycobacteriology)

Van Gulck E. Dendritic cells loaded with gag mRNA from HIV quasispecies for the development of a cellular therapeutic vaccine. Antwerp: University of Antwerp; 2008. 205 pp.
UA/ITM promoter G. Vanham (Unit of Virology)

Verdonck K. Clinical aspects and epidemiology of human T-lymphotropic virus 1 infection in Peru. Antwerp: University of Antwerp; 2008. 182 pp.
UA/ITM promoter G. Vanham (Unit of Virology)

Department of Animal Health

Bazarusanga Th. The epidemiology of Theileriosis in Rwanda and implications for the control. Ghent: Ghent University; 2008. 140 pp.
Ugent promoter J. Vercruysse; ITM promoter D. Geysen

Mtambo J. *Rhipicephalus appendiculatus/zambeziensis* complex from eastern and southern Zambia: genetic and phenotypic diversity related to the associated variation of the epidemiology of bovine theileriosis. Ghent: Ghent University; 2008. 218 pp. Ugent/ITM promoter: P. Dorny; ITM co-promoter: M. Madder

Department of Parasitology

Gamboa D. Analysis of gene expression in the *Leishmania* life cycle: *Leishmania (Viannia) Braziliensis* and *Leishmania (Viannia) peruviana* model. Maastricht: Maastricht University; 2008. 121 pp.
UM promoter: C.A. Bruggeman; UM co-promoter G.J.J.M. Van Eys; ITM promoter J.C. Dujardin (Unit of Molecular Parasitology)

Protopopoff N. Vector control in a highland province of Burundi: towards a targeted strategy for the prevention of malaria in African highlands. Antwerp: University of Antwerp; 2008. 148 pp.

UA/ITM promoter: M. Coosemans (Unit of Entomology); ITM co-promoter: U. D'Alessandro (Unit of Parasite Epidemiology and Control)

Department of Public Health

Chappuis F. Evaluation of field diagnostic tests for visceral leishmaniasis. Antwerp: University of Antwerp; 2008. 218 pp.
UA/ITM promoter M. Boelaert (Unit of Epidemiology and Disease Control); UA co-promoter A. Meheus

Kimanya Martin E. Risk assessment and management options for fumonisins in maize based complementary foods in Tanzania. Ghent: Ghent University; 2008. 199 pp.
UGent /ITM promoter P. Kolsteren (Unit of Nutrition and Child Health)

Robays J. Efficient and sustainable control of West African sleeping sickness. Ghent: Ghent University; 2008. 132 pp.
UGent promoter P. Van der Stuyft; ITM promoter M. Boelaert (Unit of Epidemiology and Disease Control)

Department of Clinical Sciences

Apers L. Aspects of TB control in low income countries with high HIV prevalence. Antwerp: University of Antwerp; 2008. 188 pp.
UA/ITM promoter R. Colebunders (Unit of HIV/AIDS and STD); ITM co-promoter P. Van der Stuyft (Unit of Epidemiology and Disease Control)

ITM master theses

Master of Science in Tropical Animal Health (MSTAH)

Andrikaye JP. Development of a molecular tool for the detection of resistance against diminazene aceturate in *Trypanosoma vivax*, 36 pp.

Dinka H. Evolution of diminazene aceturate resistance over a seven years interval in Eastern Zambia, 31 pp.

Duguma R. Monitoring *Theileria annulata* attenuation using RT-PCR quantification for gene expression levels of some parasite and bovine leukocyte proteins in different cell cultures passages, 48 pp.

Ehsan A. Effect of ecological parameters on the distribution and phenology of *Culicoides* species in Belgium, 38 pp.

Ekong PS. Highly pathogenic avian influenza (H5N1) in Nigeria: spatio-temporal pattern and analysis of risk, 47 pp.

Gezahegn A. Comparison of the infection rate of the tsetse fly, *Glossina morsitans morsitans*, fed in vitro on citrated blood or in vivo, 31 pp.

Hoza FA. Validation of a microarray test for the identification of *Culicoides* spp, 45 pp.

Ibarra Rosero EM. Comparative evaluation of the most common milk brucellosis diagnostic tests in the northernmost part of Ecuador, 42 pp.

Islam MA. Zoonotic tuberculosis in Bangladesh: differentiation of *Mycobacterium tuberculosis* complex in humans and evaluation of risk factors, 53 pp.

Lempereur L. Identification by morphological and PCR-RFLP approaches of *Boophilus* ticks from west Africa with special interest in *Boophilus microplus*, 31 pp.

Mosha RM. Descriptive and spatial epidemiology of Rift Valley fever outbreak in Tanzania 2007, 48 pp.

Ogali IN. Malnutrition inequities in Kenya, 56 pp.

Olana Ginbar Tefera . Development of a dipstick ELISA for the detection of circulating antigens of *Taenia saginata*/*Taenia solium* cysticercosis, 51 pp.

Owolodun OA. Development and validation of a control plasmid for *Theileria parva* PCR assays, 42 pp.

Roy K. Reversal of resistance of *Trypanosoma congolense* to isometamidium chloride in a mouse model and screening of genes potentially involved in ISM transport by using SSCP, 45 pp.

Suman P. Methodological issues in classifying manure use in urban and peri-urban areas of Africa, 54 pp.

Vinueza C. Comparison of expression levels of genes correlated to attenuation in two cell cultures of *Theileria annulata* using real-time PCR, 46 pp.

Vu Thi Nga . Comparison of known infected fresh and frozen meat samples for the recovery of *Trichinella* larvae using the magnetic stirrer digestion method, 37 pp.

Woldesenbet Geleta Z. Monitoring the tsetse and trypanosomiasis challenge in the Southern Tsetse Eradication Project (STEP), Ethiopia, 39 pp.

Master of Public Health – Health Systems Management and Policy (MPH-HSMP)

Adigun R. From bottom up: strategies to improve referral coordination among multiple providers, a case study of the Epe Model Medical Clinic, Lagos, Nigeria, 45 pp.

Afandiyeva N. Relations between state and local non-governmental organizations in health sector of Azerbaijan, 30 pp.

Ahmad BM. Hospital outpatient overload: alternative strategies for Dutse General Hospital, Nigeria, 37 pp.

Ali L. A test protocol to change the DOTS strategy in Sudan; an action research in Kassala State, 41 pp.

Amin MR. The potential of informal private health care providers in neonatal survival: analysis and elucidations in Khansama, Dinajpur District, Bangladesh, 50 pp.

Aoki T. Strategies to strengthen aid policy in health sector in JICA to promote cooperation for health system strengthening, 38 pp.

Aroja Mamani O. The role of the community in the local health directory in Corocoro municipality, 32 pp.

Azeez BJ. Impact of health sector reform on health worker motivation in Nigeria, 28 pp.

Banyati P. The imbalances of health personnel in Tal province of Thailand (2005-2007): which way forward? 37 pp.

Belemvire S. Supply-side efforts are needed to improve access to care: the example of Bogand, health district, Burkina Faso, 35 pp.

Cheng F. Reflection on the present state of China's health system and possibilities for improvement, 27 pp.

Eweillar EC. Work load analysis of ART clinic in Kapiri district, Zambia, 35 pp.

Gallegos-Lemos D. How to improve quality of care through the introduction of patient-centred care in rural publicly-oriented first-line-health-services in Ecuador? An action-research protocol to be tested in La Concordia, 35 pp.

Gonzales G. Improving access to health care by the poor: the case of the sponsored program of the Philippine Health Insurance Corporation, 28 pp.

Gonzalez-Marulanda ER. A critical analysis for contracting-out preventive health programmes: a case study from Colombia, 26 pp.

Hailemariam JJL. Factors contributing for poor long term retention of patients on antiretroviral treatment in Lideta health center, Addis Ababa, Ethiopia, 32 pp.

Hurtado Ortiz Y. The referral system seen from the patient's side: by-passing at Colpa-Bélgica, Bolivia, 59 pp.

Kadam SM. Access to quality health care in the Indian public health care system; the case of Dhenkanal District, Orissa State, 42 pp.

Kiula RM. Motivation of health workers in Bukoba municipal district (Tanzania); proposals for a comprehensive package, 39 pp.

Ku-Blanco GM. Primary care strengthening and decentralization of the first line health services of the Veterans Memorial Medical Center, Philippines: improving quality of care at the first line, 37 pp.

Makaire F. Not repaid health micro-loans: an analysis of the health micro-credit schemes of Luwero, Nakasongola and Nakaseke Districts in Uganda, 34 pp.

Molano Builes PE. Health participatory budget in the city of Medellin, 39 pp.

Ngouadjio Kougom P. How to improve the functioning of Nguelemdouka Health District? 33 pp.

Ntambaazi Nabaggala M. Factors influencing low health facility delivery by women in Masaka district, Uganda, 54 pp.

Nuggehalli Srinivas P. Contracting as if public goals matter; an analysis of public-private partnership in primary health care in Karnataka, India, 50 pp.

Nyakiroti M. Towards a better functioning of health system in Ukerewe district, Tanzania, 43 pp.

Shamu A. Unsafe abortion: an entry point in improving health services, 40 pp.

Sina MA. Contemplating realistic strategies to tackle maternal mortality in war-affected Bamiyan Province, Afghanistan, 29 pp.

Slot R. Improving access to hospital care with a supply- and demand-side financing mechanism: a case of contracting plus health equity fund in Siem Reap provincial hospital, Cambodia, 47 pp.

Sobnangou JJ. Improving adherence to antiretroviral therapy in Tokombere district hospital in Cameroon, 41 pp.

Sok S. Contracting management to improve access to public health services; limitations of expansion & solutions, 39 pp.

Tabah EK. Optimising the functioning of Guidigu health district referral system, 37 pp.

Teferra Mergia L. Tackling HIV and TB in federal prison health centre of Addis Ababa, Ethiopia, 35 pp.

Tungkasamesamran K. Staffs' motivation: a key challenge for quality of care at remote health centers in Charttrakarn District, Phitsanuloke, Thailand, 32 pp.

Van Olmen J. Shopping at a health care bazaar; fragmentation in the health system of Muzaffarabad, Pakistan, 47 pp.

Zambite M. Towards a full integration of community based Integrated Management of Childhood Illness in the rural health district of Kenge, DR Congo, 28 pp.

Master of Public Health – Disease Control (MPH – DC)

Bhandari GP. Kala-azar control program: a review from 1994-2006, 38 pp.

Cremonini L. Access and quality of post abortion care in Médecins Sans Frontières Bunia hospital, Democratic Republic of Congo, 59 pp.

De Koning P. Are guidelines for field treatment of leprosy reactions evidence-based? A metanalysis, 33 pp.

Dwihardiani MB. Control of multidrug resistant tuberculosis in the slum with high HIV prevalence; a literature review, 51 pp.

Ferdous J. Severe obstetric complications at delivery and their physical consequences in rural Matlab, Bangladesh, 43 pp.

Fernando J. Implementation of prevention of mother-to-child HIV transmission services using a comprehensive approach in a low resource setting: experience of Tete City - Mozambique: challenges and lessons learned, 46 pp.

Gonani A. Assessment of the district monitoring and evaluation system focusing on disease control in Northern Malawi, 63 pp.

Kaswa-Kayomo M. Contribution of recent improved diagnostic tools to global tuberculosis control, 40 pp.

Khogali M. Female genital mutilation in Sudan; past, present and challenges for abandonment, 41 pp.

Lekharu D. Review of the PMTCT programme in India; lessons learnt from the PMTCT programme implementation in the state of Andhra Pradesh, 49 pp.

Nambozi M. Efficacy and safety associated with dihydroartemisinin +piperazine (DHA+PPQ) in the treatment of uncomplicated Plasmodium falciparum malaria in Zambian children and its impact on national drug policy, 45 pp.

Ngove TZ. Improvement of access and quality to HIV/AIDS care within an integrated system of health care in Tete city - Mozambique; the experience learned from the Provincial Hospital of Tete, a low resource setting, 48 pp.

Nguyen Thi Bich T. Malaria control in Vietnam; is elimination possible? 46 pp.

Otero Vegas L. Insights into contact investigation in an MDR TB setting and a systematic review of the yield of contact investigation in non household settings, 59 pp.

Sambola Estrada FB. HIV AIDS prevention among sex workers in Mozambique, why and how, 46 pp.

Schreier I. Childhood tuberculosis: a critical review of the study "Evaluation of clinical criteria and risk factors for childhood TB in a resource limited setting": results and challenges, 69 pp.

Shams Eldin Mohamed Eltayib M. Operational impact of adopting the World Health Organization 2006 Growth Standards in MSF-France nutritional program, Maradi - Niger 2007, 43 pp.

Shelemu TW. TB/HIV collaboration in Somali regional state of Ethiopia; how to improve? 45 pp.

Tebeu PM. Risk factors of obstetric fistula in the Far North Province of Cameroon, 51 pp.

Un P. How to monitor an antiretroviral therapy (ART) program with simple operational indicators, 49 pp.

Van Dijk M. Hepatitis B in Suriname, 39 pp.

University theses

Alpaerts K. Opsporen van sialoadhesine in weefsels geïnfecteerd met mycobacteriën. University of Antwerp, Master in Tropical Biomedical Sciences.
ITM promoter: L. Rigouts (Microbiology)

Teklé T. Impact of incomplete HAART-induced T cell restoration on CMV-specific response in HIV infected patients. Vrije Universiteit Brussel. Master, Interuniversity Programme Molecular Biology.
ITM promoter: P. Ondoa and L. Kestens (Microbiology)

Van de Velde E. Towards acceptable default-rates in Ambulatory Therapeutic Feeding Programmes (ATFP) in MSF-Holland's areas of operation. Royal Tropical Institute Amsterdam, Master in Tropical Medicine & International Health.
ITM promoter: P. Kolsteren (Public Health)

Vanhommering E. APOBEC3G genetic variants in a heterosexual cohort of HIV-1 discordant and concordant couples from Dakar, Senegal. University Medical Center Utrecht, Drug Innovation Master of Science.
ITM promoter: W. Jennes and L. Kestens (Microbiology)

University college theses

Den Baes N. Bioluminescent reportergenen in *Trypanosoma brucei brucei* AnTat 1.1E. Katholieke Hogeschool, Verpleegkunde & Biotechnologie, Campus Roeselaere, Bachelor Agro- & Biotechnologie.
ITM promoter: F. Claes (Parasitology)

Gelaude T. Feasibility study about the use of Nanobodies in ELISA to detect species-specific *Taenia solium* cysticercosis in pigs. Hogeschool West-Vlaanderen, Master of Biochemistry.
ITM promoter: P. Dorny and N. Deckers (Animal Health)

Lemmens K. Sero-epidemiology of forest malaria in Cambodia. Groep T - Leuven Engineering College, Master of Industrial Sciences.
ITM promoter: F. Claes and M. Coosemans (Parasitology)

Maes I. Risicofactoren voor herhal na behandeling van slaapziekte. KaHo Sint-Lieven, Campus Gent, Bachelor Biomedische Laboratoriumtechnologie.
ITM promoter: V. Lejon (Parasitology)

Olloo J. Challenges to the recommended feeding options for infants and young children born to HIV infected mothers in Kenya: A review of the literature. KaHo Sint-Lieven, Sefotech. Nut, Erasmus Mundus MSc in Food Science, Technology and Nutrition
ITM promoter: P. Kolsteren (Public Health)

Tegenbos B. Expression of RoTat 1.2 fragments in *Pichia pastoris* and introduction of a bioluminescent reporter gene in *T. evansi* and *T.b. brucei*. Groep T - Leuven Engineering College, Master of Industrial Sciences.
ITM promoter: N. Van Reet (Parasitology)

Van Erk S. Microarray ter identificatie van Culicoides. Fontys Hogeschool Eindhoven, Bachelor in Applied Sciences.
ITM promoter: D. Geysen (Animal Health)


Van Hoyweghen C. Stabiliteitsstudie van serumanalyse onder laboratoriumomstandigheden. Antwerp: Plantijn Hogeschool; 2008.
ITM promoter: M. Van Esbroeck (Unit of Tropical Laboratory Medicine)



Research



monitoring HTLV-1
detection
importance
important
capacity
Veterinary
molecular



Department of Microbiology

The current mission of the Department of Microbiology is to improve the knowledge and the control of the Human Immune Deficiency Virus (HIV), Tuberculosis (TB) and Sexually Transmitted Infections (STI), especially in developing countries, through research, training and services delivery. The department consists of five scientific units: Virology, Immunology, Mycobacteriology, HIV/STD Epidemiology and Control and the HIV/STD Reference Laboratory. The multidisciplinary character of the department, combining epidemiology, virology, immunology and diagnostics ensure coherence and critical mass.

Unit of Virology

The Unit of Virology further developed its translational research lines on HIV microbicides, immunotherapy and vaccine development, continued its separate projects on HIV-2 in Gambia and HTLV-1 in Peru and started a more fundamental project on gene expression in monocytes from HIV-1 infected subjects.

In the field of microbicides, we set up fruitful collaborations within the European Microbicides Program (EMPRO). With the Commissariat à l'Energie Atomique (CEA, Saclay, France), we developed CD4 miniproteins, peptidic mimics of the primary HIV receptor, and showed that they can block HIV entry in dendritic cells and are active against SHIV, a chimeric simian-human immunodeficiency virus. In collaboration with other groups (Merck, La Sapienza Rome) we produced *in vitro* evidence that integrase inhibitors can be used as candidate microbicides.

In collaboration with the Groupe sur l'Immunité des Muqueuses et Agents Pathogènes (GIMAP, Université Jean Monnet, Saint-Etienne), and with support from the ANRS (Agence Nationale de Recherches sur le Sida et les Hépatites Virales, France) we develop more sensitive *in vitro* assays for toxicity of candidate microbicides. Dr. Pharm. Thomas Bourlet from GIMAP joined our group for a sabbatical, to work on recombinant viruses expressing the envelope from seminal HIV. The microbicides research group was also joined by Philippe Selhorst, who will work on fusion inhibitors

and induction of drug resistance, and Céline Merlin, working on synergism experiments in collaboration with the International Partnership on Microbicides (IPM).

The unit is involved in an ambitious programme for HIV vaccine development, sponsored by the Bill & Melinda Gates Foundation and headed by Prof. Robin Weiss from the University College London. Based on our own 'long incubation neutralisation assay', we selected a number of patients with broad neutralising antibodies against subtype A, C and/or CRF02_AG, the most prevalent subtypes in Africa. We generated a series of monoclonal antibodies from patient B cells among which at least 10 new ones with some recognising totally new epitopes. With the complementary strategy of phage display (see Annual Report 2007) we also continue the efforts to identify potential epitopes.

The unit participates in two other European programmes, NeutNet (FP6), which aims to standardise neutralisation assays, and NGIN (FP7), a new vaccine development programme based on the structure of immunogenic HIV strains from individuals with cross neutralising responses.

We further elaborated our immunotherapy model, using patient-derived dendritic cells, loaded with messenger RNA (mRNA) encoding the structural Gag protein. We showed that we could use the patients' own provirus to produce the Gag mRNA. Moreover, with this strategy we expanded pre-existing Gag-specific T



Pascale Ondoa (l) and Marguerite Massinga Loembé (r) controlling the quality of cell sample cryopreservation in the Joint Clinical Research Center of Kampala, Uganda.

cells *in vitro*, and also broadened the immune response. These findings were accepted as a basis for a macaque immunogenicity study, in collaboration with the Primate Centre of CEA. In addition, a phase I clinical trial was set up in collaboration with immunology groups at the Free University of Brussels and the University of Antwerp. These findings were the basis for the PhD thesis of Ellen Van Gulck.

A new project was started to define correlates and factors of protection in a small patient group who seem to control their virus after stopping therapy. This observation is important because we want to reach this status after immunotherapy.

Assays to identify and monitor HIV-2 drug resistance were the topic of a second PhD thesis (Sabellé Jallow, Gambia). This work is continued in collaboration with the Medical Research Council in Gambia and Oxford University in the UK.

The work on clinical and epidemiological aspects of HTLV-1 in Peru resulted in a third PhD thesis (Tine Verdonck). This work was complemented by additional studies on dendritic cells and T regulatory cells in asymptomatic and symptomatic HTLV-1 infected subjects and on human genetic aspects.

In collaboration with the Free University of Brussels, we explored the differential expression of many genes in monocytes from HIV infected versus uninfected subjects, using a micro-array approach. Functional studies suggest that Visfatin plays a part in the switch from CCR5 to CXCR4 as a co-receptor for HIV.

Unit of Immunology

The Unit of Immunology continued its research on the cellular immunology of HIV with projects on HIV pathogenesis, immune reconstitution inflammatory syndrome (IRIS) and correlates of protection.

We developed and published an alternative method to detect HIV p24 antigen by flow cytometry, and continued investigations on the recovery of the regulatory T cells and effector Th17 cells in HIV patients in function of the degree of immune deficiency at the start of treatment (CD4 nadir).

We observed that HIV/tuberculosis (TB) co-infected patients present greater perturbations of their CD4⁺ T cell at baseline but recover as well as non-TB HIV patients after ART. Levels of regulatory T cells were higher in HIV/TB co-infections, but this was not associated with lack of recovery of PPD-specific IFN- γ T cell responses.

In our project on intrinsic factors of resistance to HIV infection in exposed individuals, we continued studies in a cohort of female sex workers in Abidjan, Côte d'Ivoire and a cohort of HIV-discordant couples in Dakar, Senegal. In the latter, a total of 39 HIV-discordant couples and 60 HIV-concordant couples are now enrolled. We made substantial progress in the analysis of the role of the intrinsic antiviral factors APOBEC3G and TRIM5 α , revealing a role for a H186R variant. In parallel, we have optimised a novel flow cytometry assay for the intracellular detection of APOBEC3G and TRIM5 α , which will facilitate quantitative expression analysis of these factors.

In the project on the immunopathogenesis of tuberculosis-associated Immune Reconstitution Inflammatory Syndrome (TB-IRIS), 300 patients (67% of target) have now been enrolled in Entebbe (Uganda), and immunological analysis has started. A second project group meeting was organised at the ITM on June 17, and a good number of other reciprocal visits were made.

In the institutional collaboration and strengthening project with the Department of Microbiology and Immunology at the Centre Hospitalier Universitaire (CHU) in Dakar, Senegal, we launched diagnostic studies on HIV/TB co-infections on the Quantiferon TB-Gold assay (a IFN- γ release assay) and a CD4 primary gating method with flow cytometry. Other efforts focused on the implementation of a quality control system in the immunology laboratory of the CHU, including internal audits, strengthening Good Laboratory Practices and training.

We chaired the Basic Science track of the International Conference on AIDS and STI's in Africa, organised in Dakar in December by Prof. Souleymane Mboup, director of our Senegalese partner institute.

Unit of HIV/STD Epidemiology and Control

The Unit of HIV/STI Epidemiology and Control aims mainly at the improvement of sexual and reproductive health in resource-poor settings, with emphasis on the control of HIV and other sexually transmitted infections (STI).

In our collaborative project in Côte D'Ivoire, we expanded HIV prevention and care services for sex workers to five new sites, bringing the total number to thirteen. At the national level, a workshop was organised for elaborating quality standards for sex worker interventions. We conducted capture-recapture studies to obtain estimates of female sex worker population sizes.

In Kenya, the intervention studies for female sex workers were expanded from Kisumu to Nakuru and Nairobi. In Kisumu, we reached more beach communities with mobile services. Through a mapping and capture-recapture exercise we estimated the size of the female sex worker population in Kisumu (1668) and the coverage of the project (34%). A population-based survey among female sex workers using respondent-driven sampling found an HIV-prevalence of 58% and a reported condom use with the last client of 75%.



Djibril Wade measures levels of regulatory T (Treg) cells in HIV-2 patients receiving antiretroviral therapy in the immunology laboratory of the CHU de Dakar.

In another collaboration in rural Western Kenya, with the Kenya Medical Research Institute (KEMRI) and the US Centers for Disease Control and Prevention, we develop a sexual and reproductive health programme for adolescents using a comprehensive package of interventions. This included an ethnographic study on young people's sexual behaviour and livelihood, youth-friendly health services with voluntary counselling and testing, interventions targeting parents of children aged 9-12 years, and "life skills" curricula for adolescents promoting healthy sexual relationships.

Another collaborative project involving KEMRI, the National Institute of Medical Research in Tanzania and the Medical Research Council in Glasgow produced literature reviews and reports on local parenting practices in Nyanza, Kenya and Mwanza, Tanzania. With KEMRI and the Makerere Institute of Public Health and Department of Paediatrics in Entebbe, Uganda, we identified gaps and interventions in specific sexual and reproductive health needs of adolescents. These will be adapted and tested in the local setting of Uganda and Kenya.

In our microbicide programme we conducted research on the development and evaluation of real time quantitative methods for the vaginal flora. A pilot study to describe several lactobacillus species is ongoing, and will be used to prepare a phase I clinical trial with TMC120 vaginal gels as part of the EMPRO consortium (see above). We ensured capacity building and training for Good Clinical and Laboratory Practices in preparation of phase III microbicide trials in Kigali and Mombasa. A new project on 'Characterisation of novel microbicide safety biomarkers in East and South Africa' was accepted for funding.

With the national AIDS control programme of Cambodia (NCHADS), we collaborate on strengthening the linkages between HIV services and reproductive health services. In one year (2007-2008), the proportion of pregnant women attending antenatal clinic who are tested for HIV increased from 4% to 67%.

The unit puts its expertise to use in several international forums, such as the UNAIDS Prevention Reference group, the Global Prevention Working Group (Gates and Kaiser foundations), the Scientific and Technical Advisory Board of the WHO AIDS Programme, the Avahan Programme in India, ACHAP (African Comprehensive HIV/AIDS Partnerships) in Botswana and the Namibia Prevention Task Force, and the 2008 International AIDS Conference in Mexico.

The unit was re-organised following a retreat. Marie Laga rotated as head of the unit with Anne Buvé, who takes over the coordination of research.

On December 1st 2008 the Unit of HIV/STD Epidemiology and Control held its World AIDS Day seminar. This year's theme was "HIV/AIDS programmes at scale". "Upscaling experts" from around the world gave keynote lectures, including Padma Chandrasekaran (Avahan, India); Joseph Niyibizi (AIDS Control Programme, Rwanda); David Harrison (LoveLife, South Africa); Eric Schouten (Ministry of Health, Malawi); Jonathan Wangisi (TASO, Uganda).

Unit of Mycobacteriology

The Unit of Mycobacteriology focuses its research mainly on tuberculosis (TB) and Buruli ulcer (BU).

Drug resistance and treatment are the two cornerstones of our TB research. We completed a drug-resistance survey in Tanzania and supported the continuous monitoring of drug resistance among retreatment patients in Bangladesh and DR Congo. In Bangladesh, we saw an increase from 5% to 15% in rifampicin (RMP) resistance, coinciding with a switch to the use of RMP throughout the standard treatment regimen instead of during the intensive phase only. In the course of 2008 we analysed multi-drug resistant TB isolates from Bangladesh, Rwanda, Burundi, Niger, Nigeria, Zambia and RD Congo. We found very few cases of extensively-drug resistant (XDR) TB in these regions. In the Caucasus, we observed high levels of resistance to second-line drugs but real XDRTB was again limited. In Georgia on the contrary (MSF project Zugddidi), 8 XDRTBs were found out of 68 MDRTB cases.

In our research on rapid detection methods and risk factors of drug-resistant TB we developed new specific primers for aminoglycoside resistance, evaluated and developed two non-commercial rapid colorimetric culture methods (nitrate reductase and resazurin microtiter). The latter, applicable under field conditions, correlated well with the standard proportion method on solid medium.

Treatment studies included the evaluation of a standardised gatifloxacin-based regimen for MDRTB patients in Bangladesh, the continuation of a clinical trial of gatifloxacin in a 4-month standard treatment regimen in 5 African countries, and the use of fixed-dose first-line drugs in 9 high-incidence countries worldwide. The latter two have almost come to an end, and final interpretation is awaiting closure of the studies. The gatifloxacin-based MDRTB treatment showed a cure rate of close to 90%, so far without any failures or relapses. It was proposed to the WHO's Green Light Committee to be recognised as a standard MDRTB treatment.

The clinical trial of diarylquinoline (TMC207, Tibotec, Belgium) for retreatment of MDRTB patients was expanded to new settings, including now Peru, Russia, Latvia and South Africa.

In our Buruli ulcer research, we confirmed that the disease is still endemic in several African countries where it was first reported decades ago (Gabon, Nigeria, Republic of Congo). In DR Congo, BU is still endemic in the Lower Congo and Bandundu Provinces. In Benin, we supported a study showing that two of 44 medicinal plants used for traditional treatment of BU

had anti-mycobacterial activity against *Mycobacterium ulcerans*.

We showed that protected and unprotected sources of water are contaminated by free-living amoebae, possible contributors to BU transmission; in BU endemic regions, contamination by amoebae is higher than in non-endemic regions. BU cases appear to occur under predictable environmental conditions, suggesting ecological determination of transmission. Possible factors include land-surface reflectance and plant phenology.

HIV/STI Reference Laboratory

Early 2008, the two Aids Reference Laboratory (ARL, formerly in the Unit of Virology) and the Reference Laboratory for Sexually Transmitted Infections (STI-RL, formerly in the Unit of HIV/STD Epidemiology and Control) were merged in one HIV/STI Reference Laboratory as a new research and services unit in the Department of Microbiology. These laboratories have different historical roots, but over the years ever closer collaboration had led to a factual integration. The unit is headed by Katrien Fransen, with Tania Crucitti as deputy and head of the STI-RL. She took over the latter duty from Eddy Van Dyck, who retired after a long and very distinguished career. The unit successfully transferred the alternative HIV antigen test HDSA P24 to the National Reference Laboratory for AIDS and STI (LNRS) in Kinshasa, DR Congo. In collaboration with the LNRS and the University of North Carolina, we continued to collect samples in a Prevention of Mother-to-Child Transmission (PMTCT) study. In addition, seven newly developed HIV rapid test kits were evaluated as WHO Collaborating Centre for HIV/AIDS Diagnostics and Laboratory Support.

The HIV/STI Reference Laboratory is a partner in the clinical trials of International Partnership for Microbicides (IPM) and is responsible for the laboratory aspects of the microbicide phase III trials of Family Health International.

The merger of the AIDS and STI reference laboratories was also approved and certified by Belac, the official Quality Assurance authority of Belgium.



Having a glass of palm wine, after a hard working day of teaching HIV viral load testing in Guinea



Using GPS for mapping of sex worker hotspots in San Pedro, Côte d'Ivoire.

Highlight

ITM at the International AIDS Conference

The 17th **International AIDS Conference in Mexico City** had as theme 'Universal Action Now' and as main foci the acceleration and scale-up of HIV prevention and treatment services; the integration of the AIDS response into existing systems and health programmes; and the long term sustainability of this response. The ITM was well represented. Marie Laga was Co-Chair on the Scientific Programme Committee. Wim Van Damme chaired the session on Task shifting in AIDS programmes.

Several ITM staff gave an **oral presentations**:

- Guido Vanham: Future promising microbicidal products: what to learn from the *in vitro* work
- Christiana Noestlinger: Eurosupport V: understanding sexual risk behaviour among people living with HIV
- Gorik Ooms: Fiscal space for health expenditure in Mozambique: blocking effectiveness of international funds through budget support
- Wim Van Damme: Community Health Workers in ART programmes in sub-Saharan Africa

Other ITM staff presented **posters**:

- Olivier Koole: Comparison of clinical and epidemiological characteristics and response to HAART in HIV positive patients; 2004/2005 versus 2006/2007
- Lut Lynen: Development of a tool for quality monitoring of an HIV database for an HIV program in Phnom Penh, Cambodia
- Robert Colebunders: Determinants of ART access in the Democratic Republic of Congo (DRC)
- Christiana Nöstlinger: Sexual risk reduction needs of adolescents living with HIV in a clinical care setting
- Tom Platteau: Eurosupport V: sexual health in a group of HIV-positive men who have sex with men (MSM)
- Tom Platteau: Eurosupport V: understanding sexual risk behaviour among people living with HIV
- Christiana Nöstlinger: What do sexual and reproductive health services offer in Europe?



Anali Conesa Botella, doctoral fellow, and Bob Colebunders with friends at the International AIDS Conference 2008 in Mexico

Highlight

‘BIG MYC’ Meeting

On August 8 and 9, the Unit of Mycobacteriology organised a two-day scientific, cultural, sportive and touristic meeting for its staff in the Ardennes. Twenty-six staff members participated in this ‘BIG MYC’ meeting, hosted by the Leonardo Hotel in Wépion. The objectives of the meeting were maintaining the team spirit in the unit and identifying priorities for perspectives of the unit after the retirement of Prof. Françoise Portaels in August 2009.

The first day was devoted to a historical overview of the unit and to scientific presentations by PhD students and laboratory technicians. The second day started with presentations by the post-doc members on their individual vision for the future after Françoise’s retirement. The surprise afternoon agenda was filled with a variety of sport, cultural and touristic activities, including “Draisine” (railbiking) in the picturesque Molinee Valley, a cave visit to the Man of Spy, one of the most important Paleolithic sites in Europe and finally blackberry picking, the results of which were processed by Françoise Portaels into jelly and jam for all staff members.

The festive dinner took place at the Citadel of Namur on Friday 08.08.08 at 8pm, with number eight as a symbol of infinity, or eternity.



Railbiking in the Molinee Valley: Dissou Affolabi, Juan-Carlos Palomino, Françoise Portaels, Andrea Von Groll, Aysel Gumusboga



Harvesting blackberries in Spy: Elie Nduwamahoro, Juan-Carlos Palomino

Obituary

Professor S.R. Pattyn M.D. 1927-2008

Prof. Stefaan Pattyn passed away on March 15, 2008, aged 80. From 1954 to 1960 he worked as a medical teacher and researcher in Lubumbashi, Congo, where he was head of the Pathology and Virology Sections. Initially, he studied enteroviruses and adenoviruses.

From 1960 to 1992 he was Professor of Bacteriology and Virology at the ITM, where he created and led for many years the units of Mycobacteriology and Virology. He was also Professor and Head of Department of Microbiology at the University of Antwerp.

Mycobacterial infections were the central part of Professor Pattyn's rich research career. His initial interest was raised in Congo by *Mycobacterium ulcerans*, the cause of Buruli ulcer (BU). He worked extensively on *M. leprae* and *M. tuberculosis* as well, however. As a member of the Subcommittee on Mycobacteria of the International Committee on Bacterial Taxonomy, he was one of the architects in 1980 of the revised taxonomy and nomenclature of infectious bacteria in general, and *Mycobacterium* in particular. He was one of the pioneers of the culture of *M. leprae*. His knowledge, interest and dedication went far beyond mycobacteriology, however. He fathered the discovery of and research on the Ebola virus in 1976, and encouraged his assistants, such as Peter Piot and Guido van der Groen, to engage in the very early HIV research in Africa.

Professor Pattyn authored over 300 publications. With his brilliant, analytical mind he was a meticulous scientist, an excellent teacher and an inspiring group leader.

Prof. Pattyn retired from the ITM in 1992, but maintained a keen and very active interest in the scientific activities of the ITM's Department of Microbiology. Until very recently, he still occupied a desk among junior scientists. Several generations of scientists have tremendously benefited from his vast scientific knowledge and experience. Throughout his long and distinguished career, Prof. Pattyn maintained the modesty of the truly great, however. We lose a most valued teacher, leader and friend.



Professor Pattyn with his successor, Prof. Françoise Portaels, at the ITM's New Year party in 2008

Department of Microbiology Projects

For more details visit www.itg.be and enter the project reference number in the search field.

Projects of the ITM-DGDC Framework Agreement Programme are listed in the chapter Development Cooperation.

Unit of Virology

Reference number 84210

European Microbicides Project

ITM promoter: Guido Vanham

Support: European Commission

Reference number 100094

Induction of immunity by dendritic cells in cancer and AIDS

ITM promoter: Guido Vanham

Support: Universitair Ziekenhuis Antwerpen, Belgium

Reference number 100183

Enhancement of antiviral immunity in seropositive individuals through vaccination with autologous dendritic cells, expressing viral RNA obtained from endogenous quasispecies: preclinical evaluation in macaques

ITM promoter: Guido Vanham

Support: Agence Nationale de Recherches sur le Sida et les Hépatites Virales, France

Reference number 100217

UCL-VDAC Consortium: vaccine-induced protective cross-neutralisation of HIV-1

ITM promoter: Sunita Balla-Jhagjhoorsingh

Support: Bill & Melinda Gates Foundation, USA

Reference number 314401

New HIV vaccines inducing broadly-reactive neutralising antibodies

ITM promoter: Guido Vanham

Support: European Commission

Reference number 414401

Inhibition of HIV replication

ITM promoter: Guido Vanham

Support: Federal Science Policy Office, Belgium

Reference number 424402

Sexual transmission of HIV: viral selection, fitness and adaption

ITM promoter: Guido Vanham

Support: Research Foundation Flanders, Belgium

Reference number 424403

A phase I/II study of therapeutic vaccination with autologous dendritic cells of HIV-infected individuals under stable highly active antiviral therapy

ITM promoter: Guido Vanham

Support: Institute for the Promotion of Innovation by Science and Technology in Flanders, Belgium

Reference number 424405

Protective immunity after stop of highly active antiviral therapy

ITM promoter: Guido Vanham

Support: Research Foundation Flanders, Belgium

Reference number 524401

In vitro evaluation strategy for the benefit/risk analysis of microbicidal anti-HIV effects in the vaginal epithelium

ITM promoter: Guido Vanham

Support: Agence Nationale de Recherches sur le Sida et les Hépatites Virales, France

Reference number 744001

NeutNet

ITM promoter: Leo Heyndrickx

Support: European Commission

Unit of Mycobacteriology

Reference number 85321, 624204

Programme for improved case detection and diagnosis of tuberculosis through strengthened laboratory services and operational research

ITM promoter: Françoise Portaels

Support : Union Internationale Contre la Tuberculose et les Maladies Respiratoires

Reference number 100111

Elaborating public culture collections of diatoms, polar cyanobacteria and mycobacteria in Belgium

ITM promoter: Françoise Portaels

Support: Federal Science Policy Office, Belgium

Reference number 100166

Buruli ulcer: multidisciplinary research for improvement of control in Africa

ITM promoter: Françoise Portaels

Support: European Commission

Reference number 100179

Diagnosis of tuberculosis and drug resistance surveillance in Médecins Sans Frontières tuberculosis projects

ITM promoter: Françoise Portaels

Support: Médecins Sans Frontières France

Reference number 100180

Implementation of tuberculosis laboratory services in the context of the Union Clinical Trials (Study C)

ITM promoter: Françoise Portaels

Support: Union Internationale Contre la Tuberculose et les Maladies Respiratoires

Reference number 100225

Buruli ulcer: multidisciplinary research for improvement of control in Africa

ITM promoter: Françoise Portaels

Support: European Commission

Reference number 314201

Development and clinical evaluation of fast tests for tuberculosis diagnosis

ITM promoter: Françoise Portaels

Support: European Commission

Reference number 314202

Development of a two-approach plate system for the fast and simultaneous detection of multidrug resistant and extensively drug resistant M. tuberculosis

ITM promoter: Françoise Portaels

Support: European Commission

Reference number 334203

Network for European / ICPC cooperation in the field of AIDS and TB

ITM promoter: Françoise Portaels

Support: European Commission

Reference number 424201

Detection of the system and the level of the mycolactone expression of *Mycobacterium ulcerans*

ITM promoter: Françoise Portaels

Support: Research Foundation Flanders, Belgium

Reference number 514201

Rapid genotypic rifampicin drug susceptibility tests

ITM promoter: Françoise Portaels

Support: World Health Organization

Reference number 514202

Development and maintenance of a bank of highly characterised M. tuberculosis isolates

ITM promoter: Françoise Portaels

Support: World Health Organization

Reference number 514203

Multicenter RCT of gatifloxacin-containing short-course regimen for the treatment of pulmonary tuberculosis

ITM promoter: Françoise Portaels

Support: World Health Organization

Reference number 624208

STOP Buruli

ITM promoter: Françoise Portaels

Support: UBS Optimus Foundation, Switzerland

Reference number 624212

Tuberculosis: drug resistance surveillance

ITM promoter: Françoise Portaels

Support: Damien Foundation, Belgium

Reference number 624213

Buruli ulcer: a multidisciplinary approach toward improvement of control in developing countries

ITM promoter: Françoise Portaels

Support: Damien Foundation, Belgium

Unit of HIV/STD Epidemiology and Control

Reference number 84211

European Microbicides Programme

ITM promoter: Anne Buvé

Support: European Commission

Reference number 84991

Rapid expansion of HIV/AIDS activities by national non-governmental organisations and associations serving highly vulnerable populations in Côte d'Ivoire

ITM promoter: Marie Laga

Support: Family Health International, USA

Reference number 314301

European Vaccine and Microbicides Enterprise

ITM promoter: Anne Buvé

Support: European Commission

Reference number 324301

Preparing for phase III vaginal microbicide trials in Rwanda and Kenya: preparedness studies, capacity building and strengthening of medical referral systems

ITM promoter: Anne Buvé

Support: European and Developing Countries Clinical Trials Partnership

Reference number 434301

Strengthening of HIV/AIDS control in Kinshasa, DRC, and Paramaribo

ITM promoter: Marie Laga

Support: Centrum voor Informatie en Samenlevingsopbouw VZW, Antwerp, Belgium

Reference number 524301

Assessment of youth interventions in Asembo and Gem, Nyanza Province, Kenya

ITM promoter: Anne Buvé

Support: Centers for Disease Control and Prevention, USA

Reference number 524303

Learning by doing: enhancing treatment literacy and addressing sexual and reproductive health of young people living with HIV/AIDS (PLHA) in Uganda and Kenya

ITM promoter: Anne Buvé

Support: Amsterdam School for Social Science Research, The Netherlands

Reference number 524304

Collaboration in the development process of the National Multisectoral Strategic Plan (Plan Stratégique Multisectoriel National) in DRC

ITM promoter: Marie Laga

Support: World Bank

Reference number 744003

An integrated approach for impact assessment of HIV preventive interventions : application to interventions targeting female sex workers and their clients in Benin, West Africa

ITM promoter: Anne Buvé

Support: various

Reference number 744004

Preliminary research on the development of parenting interventions in East Africa

ITM promoter: Anne Buvé

Support: World Health Organization

Reference number 744005

The epidemiology of *Trichomonas vaginalis*

ITM promoter: Anne Buvé

Support: various

Unit of Immunology

Reference number 314101

Pathogenesis and identification of predictive factors of TB-IRIS in HIV patients under HAART

ITM promoter: Luc Kestens

Support: European Commission

Reference number 424101

Correlates of protection against HIV infection among African HIV-exposed seronegative (ESN) subjects

ITM promoter: Luc Kestens

Support: Research Foundation Flanders, Belgium

Reference number 744002

Study of HAART-induced immune restoration in HIV patients

ITM promoter: Luc Kestens

Support: various

HIV/STI Reference Laboratory

Reference number 100109

HIV-1 diagnosis in infants younger than 18 months in Kinshasa, Democratic Republic of Congo

ITM promoter: Catharina Fransen

Support: University of North Carolina at Chapel Hill, USA

Reference number 334501

IPM-ITM partner agreement on Good Clinical Laboratory Practice

ITM promoter: Catharina Fransen

Support: International Partnership for Microbicides

Department of Microbiology

Ongoing PhD projects

AFFOLABI Dissou. *Development of microbiological tools for the control of two mycobacterial infections (Buruli ulcer and tuberculosis) in a low-resource country.*

Promoters: F. Portaels (ITM), L. Kestens (University of Antwerp), S. Anagonou (Laboratoire de Référence des Mycobactéries, Cotonou, Bénin)

ALAMO TALISUNA Stella Patricia. *Efficiency, quality of care, and cost effectiveness of ART Delivery at REACH Out Mbuya HIV/AIDS Initiative, Uganda.*

Promoters: M. Laga (ITM), F. Wabwire-Mangen (University of Makerere, Uganda)

BEELS Dominique. *Development of new tools to define immune markers of disease progression and immune reconstitution in HIV infected persons.*

Promoter: L. Kestens (ITM, University of Antwerp)

BLOMMAERT Ellen. *A qualitative, ethnographic study on livelihood and sexual behaviour among out-of-school youth in Asembo, Nyanza Province, Kenya.*

Promoters: A. Buvé (ITM), A. Hardon (University of Amsterdam, the Netherlands), M. De Bruijn (University of Leiden, the Netherlands)

CAMARA Makhtar. *Study of the correlates of protection from HIV transmission in HIV-discordant couples in Dakar, Senegal.*

Promoters: L. Kestens (ITM), Souleymane Mboup (CHU Dakar, Senegal)

DELVAUX Thérèse. *Sexual and reproductive health: lessons learnt from operations research on linkages with HIV.*

Promoters: A. Buvé (ITM), P. Van der Stuyft (Ghent University)

DIELTJENS Tessa. *Identification of Human Immunodeficiency Virus vaccine peptides and human broad cross-neutralizing monoclonal antibodies using M13 peptide phage display libraries.*

Promoter: G. Vanham (ITM, University of Antwerp)

DURNEZ Lies. *The role of rodents and insectivores in the epidemiology of mycobacterial infections in Africa.*

Promoters: F. Portaels (ITM), H. Leirs (University of Antwerp)

EDDYANI Miriam. *Development of better methods for the laboratory diagnosis of Mycobacterium ulcerans disease (Buruli ulcer) and search for environmental reservoirs of Mycobacterium ulcerans.*

Promoters: F. Portaels (ITM), H. Leirs (University of Antwerp)

GALI Youssef. *Development of an in vitro model to study heterosexual HIV transmission.*

Promoter: G. Vanham (ITM, University of Antwerp)

JUGHELI Levan. *Improving control of multidrug-resistant (MDR) and extensively drug resistant (XDR) tuberculosis (TB): rapid detection of resistance to aminoglycosides and fluoroquinolones, and MDRTB treatment in a setting with a high prevalence of MDRTB.*

Promoters: F. Portaels (ITM), L. Rigouts (ITM, University of Antwerp)

KIBADI KAPAY Anatole. *Contribution à l'amélioration des traitements de l'infection à Mycobacterium ulcerans (ulcère de Buruli) en République Démocratique du Congo.*

Promoters: F. Portaels (ITM), M. Boelaert (ITM, University of Antwerp), J.J. Muyembe-Tamfun (Institut National de Recherche Biomédicale and University of Kinshasa, DR Congo)

MULENGA Chanda. *Tuberculosis drug resistance and treatment outcome in the Copperbelt Province of Zambia.*

Promoters: F. Portaels (ITM); L. Rigouts (ITM, University of Antwerp), A. Mwinga (University of Zambia, Zambia)

PROANO Freddy. *Bovine tuberculosis in Ecuador: prevalence in cattle and impact on human health.*

Promoters: F. Portaels; L. Rigouts (ITM), A. Linden (University of Liege), W. Bénitez-Ortiz (CIZ Universidad Central del Ecuador, Quito, Ecuador)

SELHORST Philippe. *Analysis and induction of T cell mediated protective immunity in HIV patients under antiviral therapy.*

Promoter: G. Vanham (ITM, University of Antwerp)

SOPHO Ghislain. *Etude des facteurs de risque et de pronostic thérapeutique de l'Ulcer de Buruli.*

Promoters: F. Portaels (ITM), S. Anagonou (Laboratoire de Référence des Mycobactéries, Cotonou, Bénin)

STRAGIER Pieter. *Genotyping Mycobacterium ulcerans and related species.*

Promoters: F. Portaels (ITM), L. Kestens (University of Antwerp)

SUYKERBUYK Patrick. *Micro and macro study of the ecological niche of Mycobacterium ulcerans in Buruli ulcer endemic regions in Benin and the Democratic Republic of Congo.*

Promoters: F. Portaels (ITM), L. Kestens (University of Antwerp), P. De Maeyer (Ghent University)

TERRAZAS ARANDA Katty Irma. *Development of microbicides in a model system of dendritic cells and CD4+ T cells, with especial emphasis on synergistic combinations and avoidance of resistance.*

Promoter: G. Vanham (ITM, University of Antwerp)

VAN DEN BERGH Rafael. *Transcriptome analysis of HIV-macrophage interactions.*

Promoters: G. Vanham (ITM), P. De Baetselier (University of Brussels)

VON GROLL A. *Determination of the biological cost of Mycobacterium tuberculosis strains of the Beijing and non-Beijing genotypes: correlation with different levels of rifampicin and/or isoniazid resistance.*

Promoters: F. Portaels; Juan Carlos Palomino (ITM), P. Vandamme (Ghent University), P.E. Almeida da Silva (Fundação Universidade Federal do Rio Grande, Rio Grande, Brazil)

YEMOA Achilles. *Identification and chemical study of plants used in the traditional treatment of Buruli ulcer in Benin.*

Promoters: F. Portaels (ITM), J. Quetin-Leclercq (Université Catholique de Louvain), S. Anagonou (Laboratoire de Référence des Mycobactéries, Cotonou, Bénin)

Department of Parasitology

The Department of Parasitology aims to generate, disseminate and apply knowledge of human parasitic diseases and to strengthen the scientific capacities of developing countries in this field. Our main research subjects are malaria, leishmaniasis, sleeping sickness, Chagas' disease and schistosomiasis. While our work concentrates on the problems in (sub-)tropical regions, we also run programmes that are relevant for Europe. The department consists of five units: Entomology; Parasite Epidemiology and Control; Molecular Parasitology; Parasite Diagnostics; Medical Helminthology. Our research covers a coherent continuum ranging from basic biology of parasites and their vectors, over applied sciences and tool development to clinical trials, vector control and intervention research. In 2008 the department was very successful in obtaining new grants to support innovative research programmes on leishmania and vivax malaria.

Staff changes

A postdoctoral position on core funding in the Unit of Molecular Parasitology was filled by Meriem El Ouakad (previously at the Institut Pasteur in Tunis). She will be involved in drug resistance research. Ilse Maes joined the unit as laboratory technician. Celine Borlon joined the Unit of Parasite Epidemiology and Control to work in a postdoctoral project on *P. vivax*, and Evi Pockelé replaced Pascale Foret as laboratory technician. Koen Peteers joined this unit to work on the anthropological aspects of several projects.

Kirezi Kanobana joined the Unit of Medical Helminthology as postdoctoral researcher to support research capacity strengthening on helminthiasis and zoonoses in several institutional partners of the ITM-DGDC Framework Agreement Programme.

Unit of Entomology

The main research lines of the Unit of Entomology are on one hand the biology, control and insecticide resistance of malaria vectors, on the other hand tsetse-trypanosome interactions.

The MODIRISK project, studying taxonomic and functional biodiversity of mosquitoes (Culicidae) in Belgium, continued its large-scale national inventory.

Over a two-year period, 975 sites were sampled and all collected mosquitoes morphologically and/or molecularly identified. The more than 26,000 mosquitoes caught belonged to 23 species and 6 genera. This inventory will become the basis of a spatial distribution model. One exotic species, *Ochlerotatus japonicus*, was found in southern Belgium. A website was developed and a newsletter distributed to inform the general public about the outcomes of the project.



The MODIRISK project received a lot of attention by national and international press. Veerle Versteirt, PhD fellow in the Unit of Entomology, is interviewed by channel RTL



Searching for indoor resting mosquitoes near the Gilgel-Gibe hydroelectric dam in Jimma, Ethiopia.

In Vietnam, we set up experimental stations to evaluate public health pesticides (Phase II) and the operational consequences of insecticide resistance. The unit also contributed to the annual WHOPES (WHO Pesticides Evaluation Scheme) review of new products for vector control.

In an Interuniversity collaboration with the universities of Ghent (Belgium) and Jimma (Ethiopia) we study the impact of the Gilgel-Gibe hydroelectric dam in Jimma on malaria transmission, with responsibility for epidemiology and modelling. A first cross-sectional study indicated that children living close to the dam are at higher risk of malaria than those living farther away.

In our research on the trypanosome-tsetse fly molecular interplay, we use an innovative experimental approach to unravel this biological key to the transmission of African trypanosomiasis. The focus is on the tsetse fly salivary gland components, and on the impact of the tsetse's physiological status on

vectorial competence. We characterised a functional Antigen-5-related allergen in the saliva of the tsetse fly that possibly affects the local development of the trypanosomes and/or plays an infection-enhancing role at the inoculation site in the mammalian host. We showed that nutritional stress of adult female tsetse flies affects the susceptibility of its offspring to trypanosomal infections. In the EC-supported consortium TFCASS (Tsetse Flies and Control of Sleeping Sickness) we evaluated the vectorial capacity of a field-derived *G. fuscipes fuscipes* subpopulation for *T. brucei brucei* transmission. We achieved the genetic modification of *Sodalis glossinidius*, an endosymbiont of tsetse flies so as to express a trypanosome-targeting component.

Unit of Parasite Diagnostics

The Unit of Parasite Diagnostics investigates clinical tools for African trypanosomiasis, leishmaniasis and Chagas' disease. We focus on parasitological, serological, biochemical and genetic markers for diagnosis, stage determination and follow-up after treatment. The unit collaborates with partners in DR Congo, Uganda, Kenya, Sudan, Malawi, Ethiopia, South Africa, Mozambique, Zambia, Burkina Faso, Venezuela, Chile and Gran Canaria. It is partner of WHO and FIND-Diagnostics and an International Reference Laboratory of the World Organisation for Animal Health.

We completed a clinical study in Mbuji-Mayi, DR Congo on the follow-up of sleeping sickness patients after treatment. It appears possible to shorten the follow-up period from 24 to 12 months without loss of accuracy in treatment outcome assessment. *T. b. gambiense* strains from patients in Mbuji-Mayi are being isolated and adapted *in vitro* for drug sensitivity profiling.



Construction of the new sleeping sickness compound in Dipumba hospital, Mbuji-Mayi, DR Congo.

The unit is a partner in the NEUROTYP consortium which aims at unravelling the mechanisms by which African trypanosomes invade the brain. We have constructed recombinant *Trypanosoma brucei brucei*, *T. b. rhodesiense*, *T. b. gambiense* and *T. evansi* strains that express different luciferases of *Renilla*, firefly and click beetle enabling *in vivo* tracking of the parasites in mice. Within the same project, an improved culture medium has been introduced that supports the growth of pleomorphic trypanosomes difficult to adapt *in vitro*. To replace the native antigens in the antibody detection tests for trypanosomiasis, the unit conducts research into recombinant expression in *Escherichia coli* and *Pichia pastoris* of Invariable Surface Glycoproteins (ISG) and Variable Surface Glycoproteins (VSG) of *Trypanosoma brucei*. The extracellular domain of ISG75 has proven its diagnostic potential for diagnosis of surra in camels. Other recombinant proteins (e.g. from *T. congolense* and *T. evansi*) are provided by external partners for evaluation. Alternatively, mimitopes for diagnostic VSG epitopes are selected from random peptide phage display libraries using monoclonals. Several peptides are ready for assessing their reactivity with sera from sleeping sickness patients.

The unit coordinates the EC-funded TRYLEIDIAG consortium, which develops PCR- and NASBA-oligochromatography tests for simple and standardised molecular diagnosis of African trypanosomiasis and leishmaniasis. These novel molecular tests have gone through a ring trial evaluation with seven collaborating laboratories and a large-scale phase II evaluation in

Africa. In addition, a similar PCR-oligochromatography test was developed for Chagas' disease. This new test passed phase I evaluation and has been evaluated against other PCR tests for diagnosis of Chagas' disease through a WHO/TDR collaborative network. The unit co-organised a workshop on molecular diagnosis of African trypanosomiasis and leishmaniasis at Makerere University (Kampala, Uganda)

In collaboration with the Technical University of Darmstadt, a new research line was opened on RNA aptamers for detection of antigens in the urine of visceral leishmaniasis patients.

The unit supports the National Reference Laboratory for human African trypanosomiasis and the mini Anion Exchange Centrifugation Technique (mAECT) Production Unit at the Institut National de Recherche Biomédicale in Kinshasa, DR Congo. Over 5,000 mAECT and MSC tests were produced in 2008 and the production of an improved model has started.

The unit collaborates with the universities of Addis Abbeba (Ethiopia) and Leuven (Belgium) on the diagnosis and treatment of equine trypanosomiasis (*T. equiperdum* and *T. evansi*). We isolated for the first time the causative agent of dourine in the Bale highlands, in nine out of 100 horses examined. Sick horses were transferred for further experiments to fly-proof stables, newly constructed at the veterinary campus in Addis Abeba where also a molecular parasitology laboratory is now fully functional.



Sleeping sickness patients waiting for follow-up examination after treatment in Cibila, East Kasai, D.R. Congo

Unit of Molecular Parasitology

In 2008, we substantially expanded our research lines on leishmaniasis.

In a first line, we investigate mechanisms of drug resistance and its relationship with treatment outcome. We obtained contrasting results with different models. Antimony treatment failure in patients infected with *L. braziliensis* seems to be strongly determined by host factors. In *L. donovani* infections, parasite factors seem to dominate, e.g. epi-phenotypes that determine variable tolerance of the parasite to oxidative stress. We started up a new EC-supported FP7-project, Kaladrug-R, to further elaborate on these and other findings.

A second leishmania research line is genotyping for clinical and epidemiological purposes. In the past year, we focused on the validation and dissemination of our molecular tools as reference methods for species typing. Together with partners in endemic countries, we aim to establish a multicentre platform for standardisation, dissemination and quality control of typing tools.

A third and new, bridging line is the integration of genomics, metabolomics and clinical research. In this context, we launched the GeMInI project and alliance (see highlight), together with major international players in the fields of metabolomics, genomics and bio-informatics. The eventual aim is to analyse, interpret and integrate the data output of whole genome sequencing, metabolome analysis and clinical-epidemiological research.

Intensive networking remained a major activity of the unit, leading among others to a meeting and e-compendium (www.leishrisk.net) on the epidemiology of leishmaniasis. On top of our leishmaniasis portfolio, we provided molecular expertise to other units and projects of the department.

Unit of Parasite Epidemiology and Control

The Unit of Parasite Epidemiology and Control continued its work on malaria along three main research lines: antimalarial drug resistance and the efficacy of new drugs or drug combinations; malaria in pregnancy; malaria epidemiology including malaria-HIV interactions and control. In addition, a new research line was opened with an ambitious and high-risk SOFI project aiming at establishing the complete *Plasmodium vivax* cycle *in vitro*.

In the EDCTP-funded clinical trial 'Evaluation of 4 artemisinin-based combinations for treating uncomplicated malaria in African children' (4ABC), recruitment ended in December with 4,112 patients.

As part of the EC-supported MALACTRES project, a comparison of *in vivo* and *in vitro* efficacy of amodiaquine-artesunate and artemether-lumefantrine was started up in Burkina Faso to investigate point mutations linked to drug resistance.

The unit is a partner in the Malaria in Pregnancy consortium (MiP, funded by the Bill and Melinda Gates Foundation) investigating antimalarial treatment efficacy in African women. Additional funds have been obtained from the EDCTP for a large safety and efficacy trial in African pregnant women with malaria.

The work on HIV- malaria interactions in Zambia was continued. A case-control study identified HIV as an important risk factor for severe malaria in adults. A research project on the impact of mefloquine prophylaxis in HIV-infected individuals on the evolution towards full-blown AIDS was completed, as well as a study on cotrimoxazole malaria prophylaxis in HIV infected pregnant women..

The unit supported the set-up of a Clinical Research Unit on Malaria in Nanoro, Burkina Faso, linked to the Muraz Center. We will jointly run projects on the pharmacovigilance for antimalarial treatment and a phase III trial of the RTS,S malaria vaccine.

In Peru and in Vietnam, cohorts of *P. vivax* patients were treated with chloroquine and primaquine and are followed up for detecting new clinical episodes.



Anette Ehrhardt meeting the chief of a Candoshi village on the Pastaza river in Peru during malaria research

Koen Peeters, a seasoned anthropologist, has joined the unit for support of the partners and projects in Burkina Faso, Peru and Vietnam.

Unit of Medical Helminthology

The Unit of Human Helminthology conducts research to understand the host-parasite relationship and to identify integrated and sustainable control strategies for helminthic diseases. The three main lines are transmission dynamics of the parasite; immuno-epidemiology of resistance and pathology; integration and sustenance of control. Collaborative projects and field research take place in Senegal, Cuba, DR Congo and Peru.

In 2008, we continued our research activities on schistosomiasis in Senegal and DR Congo. In Senegal, we investigate which innate immune responses are associated with down-regulation of acquired immune responses, or conversely the development of pathology, by comparing immunological profiles in population groups with contrasting infection and morbidity patterns. Parasitological and clinical investigations were finalised and immunological studies will start soon. We also studied the genetic structure of local *Schistosoma* strains and its impact on morbidity and control.

In DR Congo, a WHO-supported research capacity strengthening project on the re-emergence and control of schistosomiasis with the INRB in Kinshasa has led to the preparation of extensive field studies in Kinshasa and Bas-Congo.

Helminthological research is now also included in several institutional collaboration and strengthening projects under the ITM-DGDC Framework Agreement Programme, i.e. in Peru (*Strongyloides*), Cuba (intestinal helminths, zoonoses) and DR Congo (schistosomiasis, cysticercosis).

In Cuba, collaborative research was extended to helminth-nutrition interactions in relation to atopy, in collaboration with the Free University of Amsterdam and the Institute for Nutrition and Hygiene in Havana.

Projects were initiated on the public health importance of cysticercosis in DR Congo and Cuba. In a first phase, the focus is on the current status and impact of cysticercosis, and on the relationship between (neuro) cysticercosis and epilepsy. Field studies in DR Congo were finalised mid-2008, and preliminary results confirm the presence of neurocysticercosis as a cause of acquired epilepsy.

In collaboration with the Department of Public Health, studies were initiated to study the interface between mass treatment campaigns and local health systems. There is currently a revival of mass treatment for the control of helminth infections in many African countries, promoted by the WHO and several global health initiatives. In Mali, we monitored the implementation of such a programme and assessed the effects on local health services.



Lunch during a field study in Pakh, Senegal with ultrasound experts Dr. Regina Schleucher and Dr. Ahmed Dieng collaborating in a EU/INCO project on innate immune responses and immunoregulation in schistosomiasis.

Highlights

Unit of Entomology

Collaboration with the World Health Organization Pesticide Evaluation Scheme (WHOPES)

The WHO's Roll Back Malaria (RBM) strategic plan for the prevention of malaria is largely based on country-level distribution of insecticide-impregnated bednets (ITNs) for personal and community protection. Conventional ITNs must be reimpregnated every year, which is problematic. Long lasting insecticidal nets (LN) are wash-resistant and stay effective during at least three years without retreatment. The RBM has made LN distribution a top priority for malaria control and called on the private sector to develop and produce more effective LNs, which moreover can be effective for the control of other vector-borne diseases as well.

The WHOPES reviews and makes recommendations on new pesticide technologies for public health programmes, including LNs. The testing process is divided into three phases: Phase I in laboratory conditions; Phase II on wild vector populations in experimental field huts (blood-feeding inhibition, induced exophily, mortality, deterrent effect); Phase III field performance including efficacy, efficiency, longevity, fabric integrity, community acceptance and safety. Due to the limited number of collaborating centres, Phase I and II reviews can take up to two or more years during which period the product is barred from most public tenders (e.g. Global Fund). Competition, industry interest and production capacity remain therefore limited and prices high. The ITM's Unit of Entomology has therefore stepped up its reference tasks for the WHOPES certification programme. In collaboration with the National Institute for Malaria and Entomology in Vietnam, it set up two experimental stations in South- and North- Vietnam to increase the testing capacity especially for Phase II. Over the past two years, insecticide resistance to recommended LNs as well as new LNs were evaluated. These tests will also be of immediate national interest in Vietnam, and will considerably increase its capacity to evaluate and monitor vector control programmes. The Unit also contributed to the annual meeting of the WHOPES working group that reviews the evaluations of new products for vector control, and hosted a jointly meeting with the WHO and the Bill & Melinda Gates Foundation on LN quality standards (see Conferences chapter, page 102)



The new experimental station in Hoa Binh, northern Vietnam.

Highlights

Unit of Parasite Diagnostics

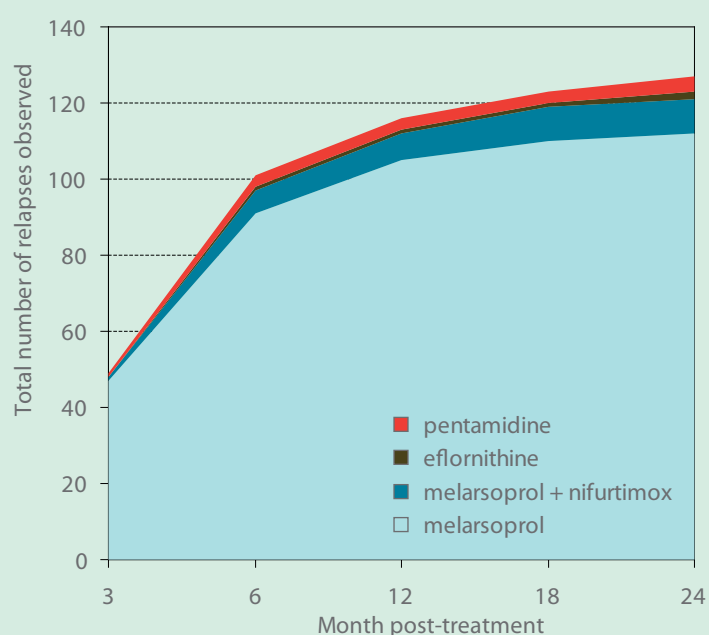
Shortening the follow-up after treatment in sleeping sickness

Human African trypanosomiasis patients must currently be followed up at 3, 6, 12, 18 and 24 months after treatment before being declared cured. In practice, this long monitoring period is rarely completed. If relapses are diagnosed late, the patient may suffer from lifelong sequels. Shortening the duration of post-treatment follow-up would therefore substantially improve clinical care and research, and reduce the cost and complexity of control programmes.

Together with the Institut National de Recherche Biomédical in Kinshasa, DR Congo, we initiated a study on the shortening of follow-up after treatment in Mbuyi Mayi, DR Congo. The study was lead by Dr. Dieudonné Mumba and lasted from 2005 until 2008. Out of 29,892 people screened, 360 patients were included in the study. First stage patients were treated with pentamidine, second stage patients with melarsoprol, eflornithine, melarsoprol-nifurtimox combination, melarsoprol-eflornithine or nifurtimox-eflornithine. At each follow-up visit, patients were classified as relapse, probable relapse, favourable disease evolution, uncertain disease evolution, unknown status, or deceased. Test of cure was carried out at 24 months or later.

Adherence to follow-up was excellent: respectively 94%, 92%, 84%, 72% and 84% at 3, 6, 12, 18 and 24 months. Overall, 35% relapses were observed; in the melarsoprol group, however, the relapse rate was 56%, confirming prior observations. Most relapses were detected within 6 months after treatment (figure below). Apart from treatment with melarsoprol, high pretreatment cerebrospinal fluid (CSF) white blood cell counts and IgM concentrations were identified as risk factors for relapse. We found no correlation with trypanosome-specific antibodies or with the presence of trypanosomes in the CSF. Stratification excluding the melarsoprol treatment showed that treatment interruption was also a risk for relapse.

Based on the collected data, we propose a new, combined criterion for cure and relapse that could half the follow-up time to 12 months without loss of accuracy.



Highlights

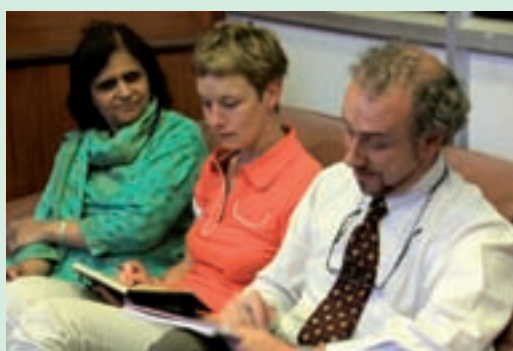
Unit of Molecular Parasitology

GeMInI. From genome to the field: a global study of pathogen genetic and metabolic diversity and its relationship to clinical phenotypes

Characterising the diversity of pathogen populations is a major key for understanding the clinical polymorphism of infectious diseases. The past two years have brought us new technologies with unprecedented potential for the integrated exploration of pathogens. On one hand, economic high-throughput sequencing technologies allow whole genome comparative analyses of multiple strains of a given species. On the other hand, advances in mass-spectrometry facilitate comprehensive metabolite profiling, hereby providing access to the ultimate expression of an organism's genotype, the closest correlate to the phenotype. The integration of the new genome metabolome technologies offer an unparalleled source of data, but its exploitation for an effective translation to health problems require alliances between the high-tech specialised centres currently developing the new technologies and institutions engaged in the field, at the front of infectious diseases. For this purpose, we are developing a multidisciplinary research platform at ITM with a holistic perception of diversity, equipped to analyse and interpret the massive data output of genome and metabolome studies. The initial prototype platform will be built in collaboration with the Koriola Institute of Health Sciences in Nepal, the Sanger Institute and the University of Strathclyde in the UK and the University of Groningen in the Netherlands. It will be validated using as pilot paradigm treatment failure in visceral leishmaniasis and drug resistance in *Leishmania donovani*. Isolates from clinical studies in Nepal will be submitted to genome- and metabolome-wide comparisons. Genetic and metabolic signatures associated with various drug resistance phenotypes will be identified, interpreted and validated. Our platform aims to interact with similar initiatives targeting other pathogens or the human host. GeMInI is expected to have a major impact by boosting post-genomic translational research in general, but also more specifically by bridging research and control of neglected diseases. GeMInI is coordinated by Saskia Decuyper and Jean-Claude Dujardin, and funded by the Inbev-Baillet Latour Foundation (see Inbev-Baillet Latour Foundation item), the ITM's Secondary Research Fund (SOFI-B), the ITM-DGDC Framework Agreement Programme, the European Commission and the participating institutes.



Logo of GeMInI, symbolising the integration of genomic and metabolomic research and the bridge between research and control



Saskia Decuyper and Jean-Claude Dujardin, the MPU tandem leading the GeMInI project; here with Dr. Poonam Solotra at the Banaras Hindu University in India.

Highlights

Unit of Parasite Epidemiology and Control

Nanoro Centre for Clinical Research on Malaria, Burkina Faso

Few research centres in Africa are able to carry out clinical trials according to the standards required by international regulatory authorities. The Nanoro Centre for Clinical Research on Malaria (NCCRM) in Burkina Faso is supported by the ITM under its ITM-DGDC Framework Agreement Programme. This collaborative project, which includes PhD and postdoctoral fellowships, operational costs and generic institutional strengthening, is part of a strategic plan to develop a network of GCP-competent clinical research centres in developing countries, especially in sub-Saharan Africa. It builds on the previous institutional collaboration between the ITM and the Muraz Center. Dr. Halidou Tinto, who obtained his PhD at the ITM and the University of Antwerp in 2006, is head of the NCCRM and benefits from a postdoctoral fellowship of ITM-DGDC. The NCCRM has already obtained several internationally competitive research grants, including phase III trials on dihydroartemisinin-piperaquine and the RTS,S vaccine. The centre is built at Nanoro Hospital, some 80 kilometres from Ouagadougou, with support from the Malaria Clinical Trial Alliance, the Malaria Vaccine Initiative and the Bill and Melinda Gates Foundation.



Dr. Tinto showing the foundations of the Nanoro Centre for Clinical Research on Malaria

Department of Parasitology Projects

For more details visit www.itg.be and enter the project reference number in the search field.

Projects of the ITM-DGDC Framework Agreement Programme are listed in the chapter Development Cooperation.

Parasite Epidemiology and Control

Ref. 85222

A phase III, randomised, non-inferiority trial, to assess the efficacy and safety of Dihydroartemisinin + Piperaquine (DHA+PPQ, Artekin) in comparison with Artemeter + Lumefantrine (A+L, Coartem) in patients of paediatric age affected by uncomplicated (*P. falciparum*) malaria

ITM promoter: Umberto D'Alessandro

Support: Medicines for Malaria Ventures, Switzerland

Ref. 100219

A phase I/II, open-label, pharmacokinetic, safety and efficacy study of 20mg dihydroartemisinin/160mg piperaquine (eurartekin) tablets, in paediatric patients with *P. falciparum* malaria

ITM promoter: Umberto D'Alessandro

Support: Medicines for Malaria Ventures, Switzerland

Ref. 100223

In vitro sensitivity of *Plasmodium falciparum* to different antimalarial drugs in Rukara, Rwanda

ITM promoter: Umberto D'Alessandro

Support: Liverpool School of Tropical Medicine, UK

Ref. 335201

Multi-drug resistance in malaria under combination therapy: assessment of specific markers and development of innovative, rapid and simple diagnostics

ITM promoter: Umberto D'Alessandro

Support: European Commission

Ref. 425201

Evaluation of *Plasmodium vivax* in Vietnam

ITM promoter: Umberto D'Alessandro

Support: Research Foundation Flanders, Belgium

Ref. 525201, 80304

Evaluation of 4 artemisinin-based combinations for treating uncomplicated malaria in African children

ITM promoter: Umberto D'Alessandro

Support 525201: Medicines for Malaria Ventures, Switzerland

Support 80304: European and Developing Countries Clinical Trials Partnership

Ref. 625201

Antimalarial combination treatments in African pregnant women with *P. falciparum* infection

ITM promoter: Umberto D'Alessandro

Support: Bill & Melinda Gates Foundation, USA

Ref. 625202

***P. vivax* control in Central Vietnam**

ITM promoter: Umberto D'Alessandro

Support: UBS Optimus Foundation, Switzerland

Ref. 755023

The complete in vitro *Plasmodium vivax* cycle as a first step for understanding its biology and identifying new therapeutic targets

ITM promoter: Umberto D'Alessandro

Support: SOFI-B Programme, ITM/Flemish Ministry of Economy, Science and technology

Parasite Diagnostics

Ref. 84581

Development of an anti-disease vaccine and diagnostic tests for African Trypanosomiasis

ITM promoter: Philippe Büscher

Support: European Commission

Ref. 100131

Improved and shortened follow-up of sleeping sickness patients by analysis of the cerebrospinal fluid

ITM promoter: Philippe Büscher

Support: Research Foundation Flanders, Belgium

Ref. 100232

Biology and clinical staging of trypanosome neuroinvasion in sleeping sickness

ITM promoter: Philippe Büscher

Support: European Commission

Ref. 100244

Development of new diagnostics for sleeping disease based on recombinant proteins

ITM promoter: Philippe Büscher

Support: Research Foundation Flanders, Belgium

Ref. 315501

Simplified and rapid molecular assays for diagnosis of leishmaniasis and human African trypanosomiasis and parasite (sub-)species identification

ITM promoter: Philippe Büscher

Support: European Commission

Ref. 715503

Development of a single format test for IgM quantification in cerebrospinal fluid of sleeping sickness patients

ITM promoter: Veerle Lejon

Support: Foundation for Innovative New Diagnostics, Switzerland

Ref. 715504

Separation of parasites from venous blood of patients with suspected infection with T.b. gambiense, T.b. rhodesiense and other trypanosome species

ITM promoter: Philippe Büscher

Support: Foundation for Innovative New Diagnostics, Switzerland

Ref. 715505

Evaluation of VSG specific aptamer for parasite detection in blood of sleeping sickness patients

ITM promoter: Philippe Büscher

Support: Foundation for Innovative New Diagnostics, Switzerland

Ref. 745002

Control of equine trypanosomiasis (T. equiperdum and T. evansi) in the Arsi and Bale highlands of Ethiopia

ITM promoter: Philippe Büscher

Support: various

Ref. 755081

Aptamer selection for antigen detection in visceral leishmaniasis

ITM promoter: Philippe Büscher

Support: various

Ref. 755082

Towards molecular point-of-care diagnosis of human African trypanosomiasis and visceral leishmaniasis (MOLDIA)

ITM promoter: Philippe Büscher

Support: various

Molecular Parasitology

Ref. 80303

Molecular markers for epidemiological monitoring of drug resistance in visceral leishmaniasis

ITM promoter: Jean-Claude Dujardin

Support: Research Foundation Flanders, Belgium

Ref. 100144

Control strategies for visceral leishmaniasis and mucocutaneous leishmaniasis in South America: applications of molecular epidemiology

ITM promoter: Jean-Claude Dujardin

Support: European Commission

Ref. 315401

Networking the networks for monitoring risk factors of (re-)emergence and spreading of leishmaniasis

ITM promoter: Jean-Claude Dujardin

Support: European Commission

Ref. 315402

KALADRUG: new tools for monitoring drug resistance and treatment response in visceral leishmaniasis in the Indian subcontinent

ITM promoter: Jean-Claude Dujardin

Support: European Commission

Ref. 425401

Molecular exploration of Leishmania donivani parasites during a bednet intervention for the control of visceral leishmaniasis in Nepal and India

ITM promoter: Jean-Claude Dujardin

Support: Research Foundation Flanders, Belgium

Ref. 755043

GeMInI. From genome to the field: a global study of pathogen genetic and metabolic diversity and its relationship to clinical phenotypes

ITM promoter: Jean-Claude Dujardin, Saskia Decuypere

Support: various (see highlight p. 53)

Entomology

Ref. 100243

Tsetse flies and the control of African sleeping sickness

ITM promoter: Jan Van Den Abbeele

Support: European Commission

Ref. 415101

Molecular dialogue between parasite and hosts: the trypanosome model

ITM promoter: Marc Coosemans

Support: Federal Science Policy Office, Belgium

Ref. 415102

Mosquito vectors of disease: spatial biodiversity, drivers of change, and risks.

ITM promoter: Wim Van Bortel

Support: Federal Science Policy Office, Belgium

Ref. 415103

Dynamic predictive mapping using multi-sensor data fusion: demonstration for malaria vector habitat

ITM promoter: Marc Coosemans

Support: Federal Science Policy Office, Belgium

Ref. 515101

Small scale (experimental huts) field evaluation of PermaNet 3.0 , a long lasting insecticidal net aiming to control insecticide resistant malaria vectors

ITM promoter: Marc Coosemans

Support: World Health Organization

Ref. 515102

Comparison of the efficacy of existing long lasting insecticidal nets in experimental huts

ITM promoter: Marc Coosemans

Support: World Health Organization

Medical helminthology

Ref. 315301

Innate immune responses and immunoregulation in schistosomiasis: novel mechanisms in the control of infection and disease

ITM promoter: Katja Polman

Support: European Commission

Ref. 745003

Microevolutionary and population dynamic processes in parasitic helminths

ITM promoter: Tine Huyse, Katja Polman

Support: Research Foundation Flanders, Belgium

Ref. 745004

Epidemiology and control of schistosomiasis in D.R. Congo today

ITM promoter: Katja Polman

Support: World Health Organization

Department of Parasitology

Ongoing PhD projects

ADAUI Vanessa. *Molecular epidemiological approach to the understanding of emergence and spreading of drug resistance in Neotropical Leishmania.*

Promoters: J-C Dujardin (ITM), L. Maes (University of Antwerp), J. Arevalo (Universidad Peruana Cayetano Heredia, Lima, Peru)

ADOKE Yeka. *Evaluation of the best approach to retreating recurrent malaria in Ugandan children.*

Promoters: U. D'Alessandro (ITM), A. Talisuna (Ministry of Health, Kampala, Uganda)

AKODA Komlan. *The effect of physiological stress on the tsetse's vectorial capacity and its implications on sleeping sickness transmission in the field.*

Promoters: M. Coosemans, J. Van den Abbeele, P. Van den Bossche (ITM), I. Sidibe (Centre International de Recherche-Développement sur l'Elevage en Zone subhumide, Bobo-Dioulasso, Burkina Faso)

ASHENAFI TAFESSE Hagos. *Control of equine trypanosomiasis in the highlands of Ethiopia.*

Promoters: P. Büscher (ITM), B. Goddeeris (Catholic University Leuven), G. Feseha (Addis Abeba University, Ethiopia)

BHATTARAI Narayan Raj. *Development and application of molecular tools for parasite tracking and its contribution to monitoring of a bednet intervention.*

Promoters: J.C. Dujardin (ITM), M. Coosemans (University of Antwerp), B. Khanai (B.P. Koirala Institute of Health Sciences, Dharan, Nepal)

DEBORGGRAEVE Stijn. *Towards simplified and standardised molecular diagnosis of human African trypanosomiasis, leishmaniasis and Chagas' disease.*

Promoters: P. Büscher (ITM), J.C. Dujardin (ITM), P. Herdewijn (Catholic University Leuven)

DE VOOGHT Linda. *The construction of tsetse flies refractory to Trypanosoma brucei by expression of trypanolytic agents through their symbionts.*

Promoters: M. Coosemans (ITM, University of Antwerp), J. Van den Abbeele (ITM)

GIES Sabine. *New approaches to improve coverage and compliance of antimalarial treatment for pregnant women in rural Africa.*

Promoters: U. D'Alessandro (ITM), M. Coosemans (University of Antwerp)

INOCÊNCIO DA LUZ Raquel Andreia. *Evaluation of the in vitro and in vivo pathogenicity, susceptibility to anti-leishmania drugs and genetic resistancy markers of laboratory- and field strains of the zoonotic Leishmania infantum parasites.*

Promoters: J.C. Dujardin (ITM), L. Maes (University of Antwerp)

MEURS Lynn. *Innate Immune Responses and Immunoregulation in Schistosomiasis in Northern Senegal.*

Promoter: K. Polman (ITM), M. Yazdanbakhsh (Leiden University Medical Center, Leiden, the Netherlands)

MUMBA Dieudonné. *Etude sur le raccourcissement du suivi des patients traités pour la Trypanosomiase Humaine Africaine.*

Promoters: P. Büscher, M. Boelaert (ITM), P. Cras (University of Antwerp), J.J. Muyembe-Tamfum (Institut National de Recherche Biomédicale, Kinshasa, DR Congo)

NAHUM Alain. *Plasmodium falciparum resistance to chloroquine: genetic determinants and implications for malaria morbidity among children living in the coastal lagoon area of Benin, Western Africa.*

Promoters: U. D'Alessandro (ITM), M. Coosemans (University of Antwerp), A. Massougboji (Université d'Abomey – Calavi, Cotonou, Benin)

NGO DUC Thang. *Long-lasting insecticidal hammock nets (LLIHN) for controlling forest malaria in Vietnam.*

Promoters: U. D'Alessandro (ITM), M. Coosemans (University of Antwerp)

OBSOMER Valerie. *Spatial temporal impact of environmental factors on malaria transmission dynamics.*

Promoters: M. Coosemans (ITM), P. Defourny (Université Catholique de Louvain)

ODIWUOR Samwel Ogado. *Identification and application of molecular markers in the development of simple and robust tests for distinguishing leishmania species.*

Promoters: J.C. Dujardin (ITM), M. Mbuchi, M.K. Wasunna (Kenya Medical Research Institute, Nairobi, Kenya)

PYANA Pati. *Investigation on drug sensitivity profiles of Trypanosoma brucei gambiense from treatment refractory patients.*

Promoters: P. Büscher, P. Van den Bossche (ITM), L. Maes (University of Antwerp), J.J. Muyembe-Tamfum (Institut National de Recherche Biomédicale, Kinshasa, DR Congo)

ROGE Stijn. *Diagnosis of human African trypanosomiasis based on invariable surface glycoproteins.*

Promoters: P. Büscher, M. Coosemans (ITM), Y. Guisez (University of Antwerp)

SOTO Veronica. *P. vivax morbidity after radical cure treatment in the Peruvian Amazon region.*

Promoters: U. D'Alessandro (ITM), A. Llanos-Cuentas (Universidad Peruana Cayetano Heredia, Lima, Peru)

SOW Seydou. *The behavioural determinants of intestinal schistosomiasis transmission in Northern Senegal: water contact, hygienic practices and risk prevention.*

Promoters: B. Gryseels, K. Polman (ITM), D. Habbema, S. De Vlas (Erasmus MC, Rotterdam, the Netherlands)

TRAN THI XUAN Thao. *Structural and functional analysis of Invariant Surface Glycoprotein Isg75 in trypanosomes.*

Promoters: P. Büscher (ITM), L. Wyns (Free University of Brussels)

VALEA Innocent. *The new antimalarial drug policy in Africa: How can we improve the existing strategies? The experience of Burkina Faso.*

Promoters: U. D'Alessandro (ITM), H. Tinto (Centre Muraz, Ouagadougou, Burkina Faso)

VANAERSCHOT Manu. *Antimonial resistant Leishmania Leishmania donovani: relation with fitness of the parasite and influence on other drugs.*

Promoters: J.C. Dujardin (ITM, UA)

VAN DEN EEDE Peter. *Developing an analytic method to distinguish reinfections from recrudescence and relapses.*

Promoters: U. D'Alessandro (ITM), J. Anné (Catholic University Leuven)

VAN DER WERFF Suzanne. *Helminths, nutrition and allergy: untangling the triangle. Epidemiological studies in Cuban children.*

Promoters: K. Polman (ITM), J. Seidell (University of Amsterdam, Amsterdam, the Netherlands)

VAN NIEUWENHOVE Lies. *Development of innovative diagnostics for sleeping sickness or human African trypanosomiasis, based on synthetic peptides as antigens.*

Promoters: P. Büscher, M. Coosemans (ITM), Y. Guisez (University of Antwerp)

VAN REET Nick. *Biology and clinical staging of trypanosome neuroinvasion in sleeping sickness.*

Promoters: P. Büscher (ITM), E. Van Marck (University of Antwerp)

VERHAEGHEN Katrijn. *Pyrethroidenresistentie in malariavectoren: KDR genvariatie en detectie.*

Promoters: M. Coosemans (ITM), T. Backeljau (University of Antwerp)

VERSTEIRT Veerle. *The taxonomic and functional biodiversity of endemic and invasive mosquito species (Culicidae) in Belgium.*

Promoters: M. Coosemans (ITM, University of Antwerp),

WÖRDEMANN Meike. *Helminth infections and atopic diseases: clinical epidemiological studies in Cuban children.*

Promoters: B. Gryseels, K. Polman (ITM)

The background features a light gray word cloud with terms such as 'epidemiology', 'diseases', 'study', 'focus', 'countries', 'epidemiology', 'molecular', 'Dissemination', and 'Control'. Two realistic illustrations of flies are positioned in the upper right area.

Department of Animal Health

The Department of Animal Health aims to improve human and animal health by developing, disseminating and applying scientific knowledge of livestock and zoonotic diseases. It consists of four units: Veterinary Protozoology, Veterinary Helminthology, Animal Disease Control, and Veterinary Epidemiology and Biostatistics. Their research concentrates on the biological, epidemiological and preventive aspects of vector-borne and zoonotic diseases. The department currently trains over 20 PhD students and organises a one-year, research-oriented master course on tropical animal health. Together with the University of Pretoria, it runs a web-based master course on tropical veterinary medicine.

Staff changes

The department welcomed three new staff members in 2008. Sarah Gabriel joined the Unit of Veterinary Helminthology as a postdoctoral researcher. Previously, she worked for eight years in Africa on the epidemiology and immunology of helminth livestock diseases. Emmanuel Nji Abatih was appointed in the Unit of Veterinary Epidemiology and Biostatistics to provide statistical and epidemiological support to the partners in the ITM-DGDC Framework Agreement Programme. Ellen Van Damme joined the Unit of Animal Disease Control where she works on socio-economic aspects of zoonotic diseases in developing countries.

The department further developed the integrated quality system and the test accreditation in its national and international reference laboratories.

Unit of Veterinary Protozoology

In the field of livestock trypanosomiasis, the Unit of Veterinary Protozoology continued its activities as FAO reference centre. We continued to develop molecular tools for the diagnosis of drug resistant *Trypanosoma vivax*, which is currently only possible through field assays or experimental infections. We expect to have them available in 2009. An interesting but disturbing observation was the fivefold increase since 2001 of the number of diminazen-resistant isolates of *Trypanosoma congolense* in Eastern Province of Zambia. Since drug pressure did not increase in this period, genetic

exchange of resistance genes might explain this observation.

In the field of theileriosis the unit contributed to the development of a 'Pan *Theileria*' diagnostic test, based on the FRET (fluorescence resonance energy transfer) probe technology for fast and sensitive diagnosis of field samples. Research on the virulence of *T. parva* isolates from epidemiologically different areas revealed variations of the onset of infection, but not of multiplication rates. We shifted our focus from DNA vaccines to per os vaccination against tick infestations. We started a project on *T. parva* transfection which should reveal fundamental biological aspects relevant to disease control. Several RT-PC-based assays were developed to monitor the attenuation process of four dominant *T. annulata* isolates from Morocco.

In the field of bluetongue, we continued the nationwide monitoring of vectoral *Culicoides* spp. in Belgium, in collaboration with the Walloon Centre of Agronomic Research, the Faculty of Veterinary Medicine of Liege and the Gembloux Agricultural University. Comparison of capture data collected in 2007 and in 2008 showed significant variations between years and sites of population densities and dynamics. It remains to be seen if they are due to spatial and temporal variations of ecological parameters. Larval breeding sites of major vectors were identified and the phenology of the 41 different *Culicoides* species, identified so far, has been determined. Some *Culicoides* species are hard to differentiate morphologically. Therefore, we developed a very accurate molecular tool based on micro-array technology.

“Cysticercosis, a zoonotic disease caused by the tapeworm *Taenia Solium*, is the most common cause of acquired epilepsy in many endemic countries.”

Unit of Veterinary Helminthology

The Unit of Veterinary Helminthology focuses its research on neglected zoonotic diseases, particularly cysticercosis, trichinellosis and fascioliasis.

Cysticercosis is caused by *T. solium*, and affects mainly the poor rural populations in developing countries. It is the most common cause of acquired epilepsy in many endemic countries. The focus of our research is on transmission dynamics, disease burden and control including pig vaccination. We strengthen the capacity in diagnosis and research of partner institutes in DR Congo, Burkina Faso, Cameroon, Ethiopia, Madagascar, Zambia, Ecuador, Cambodia, India, Nepal and Vietnam. Many of our research activities are integrated in regional and international working groups, involving medical and veterinary research teams.

A field study of a recombinant vaccine for pigs was initiated in North Cameroon. Community- and hospital-based studies with multiple diagnostic tests

yielded clinical and epidemiological data in DR Congo, India and Nepal. In the laboratory, we improved and validated the circulating antigen methods, including a new approach through recombinant nanobodies and coproantigen detection in humans.

Fascioliasis is emerging as another major zoonotic disease. We used serological and molecular tools to study its epidemiology in Vietnam, where thousands of human cases are reported every year. We assessed the diagnostic potential of a semi-purified antigen for medical and veterinary diagnosis. A molecular analysis of flukes collected from goats confirmed the presence of *Fasciola gigantica* and hybrids with *Fasciola hepatica*.

Furthermore, we worked on nematode control in ruminants in South Africa, on a trichinellosis outbreak in Vietnam and on improved diagnosis of the beef tapeworm.



One of the farms around Azaguié, Côte d'Ivoire, where a high density of *Rhipicephalus microplus*, the vector of tick fever, was found.



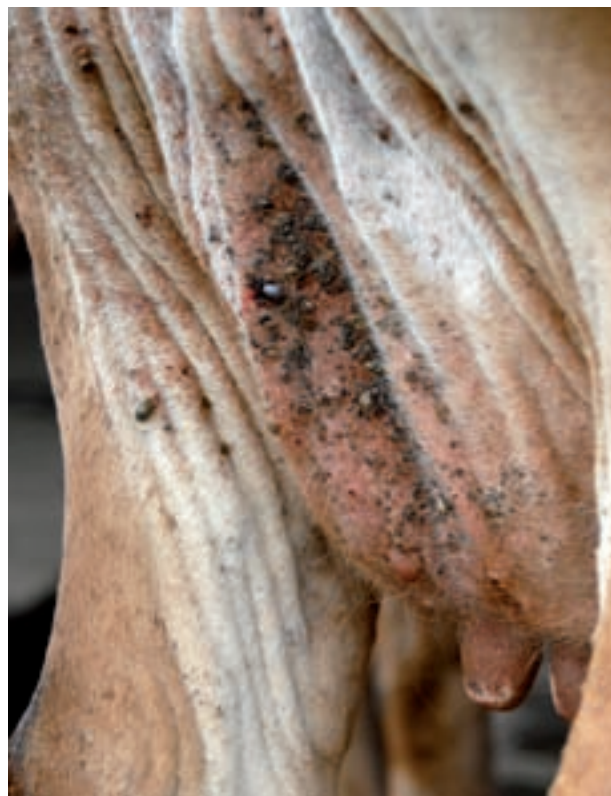
Satellite picture of the Lutendele District (Kinshasa, DR Congo) where tsetse flies and trypanosomiasis will be controlled by treating pigs with insecticides.

Unit of Animal Disease Control

The Unit of Animal Disease Control is a young group focusing on control strategies of major endemic livestock diseases in developing countries. We initiated research on the impact and farmers' perception of livestock diseases and zoonoses in subsistence farming systems in South Africa. The aim is to measure the demand for animal health care and to conceptualise the farmers' decision-making process regarding animal health and disease control.

Studies on livestock trypanosomiasis aimed at clarifying the repercussions of human encroachment and subsequent environmental changes on epidemiology and control. Field studies cover the entire epidemiological spectrum, in Mozambique, Zambia, Zimbabwe and South Africa, and are supported by laboratory studies at the ITM.

Together with the Unit of Veterinary Protozoology, we support studies on control strategies in Burkina Faso and Ghana in the framework of the Pan-African Tsetse and Trypanosomosis Eradication Campaign (PATTEC), in collaboration with the Centre International de Recherche-Développement sur l'Élevage en zone Subhumide (CIRDES) in Burkina Faso. In collaboration with the Laboratoire Vétérinaire de Kinshasa (DR Congo), we identified a site for a tsetse control trial based on insecticide treatment of pigs.



Intensive infestations of cattle by *Rhipicephalus* (*Boophilus*) *microplus* on a dairy farm adjacent to the quarantine facility in Bingerville, Côte d'Ivoire

We collaborated with the School of Veterinary Medicine of Jimma University and the Flemish University Council project on the impact of livestock trypanosomiasis in Ethiopia.

We investigated the factors contributing to outbreaks of foot-and-mouth disease at the wildlife/livestock/people interface, and designed studies on the epidemiology and human impact of bovine tuberculosis and brucellosis in southern Africa.

In collaboration with the Sokoine University of Agriculture (Tanzania), the Centre for Ticks and Tick-Borne Diseases (Malawi), the Eduardo Mondlane University (Mozambique) and the University of Pretoria (South Africa), the unit coordinates training courses in animal health and production for SADC (Southern African Development Community) countries. A total of 46 trainees from 14 countries attended the courses, which are supported by the EU in the PRINT (Promotion of Regional Integration) programme.

Unit of Veterinary Epidemiology and Biostatistics

The unit is specialised in advanced epidemiology, biostatistics and modeling of livestock diseases. One focus is brucellosis in livestock, with field research on sentinel herds in Africa, South-East Asia and South America. We study intra- and inter-species transmission in various environments including, where possible, human incidence. A persistent problem is the absence of a gold standard diagnostic test. We applied an adjusted Bayesian approach to test characteristics using observed data and expert opinion. True prevalence in cattle may be much higher than estimated, e.g. 30% instead of 5% in Ecuador. This estimate is more consistent with the high incidence in the human population, currently estimated at 2%.

We used the Bayesian approach also to evaluate other diagnostic tests for livestock diseases, in collaboration with the Belgian Veterinary and Agrochemical Research Institute and the Department of Animal Health of the University of Liege. We described a negative relationship between total uncertainty in the system and optimal sample size.

A special study on campylobacteriosis involved two tests with perfect specificity, allowing higher predictive values of positive results and thus more accurate surveillance. Other Bayesian studies related to giardiasis, cryptosporidiosis, foot-and-mouth disease and bovine spongiform encephalopathy (BSE). For the latter, the method was applied to study the possible re-emergence of BSE in Europe and to support a Belgian application to downsize the surveillance programme.

The unit is involved in the vector ecology component of the Flemish Interuniversity Council in Jimma University (Ethiopia), mentioned above. With the School of Public Health of the Université Catholique de Louvain we integrate our methodological approaches in a broader public health context. The unit supports study design and statistical analyses of other units at the ITM, and is present in several international scientific bodies dealing with zoonoses, animal health and food safety.



Experts from Southern African Development Community (SADC) countries attending the Animal Health Management course at the University of Pretoria, South Africa. Peter Van den Bossche, ITM coordinator of the course, sitting in the middle.

Highlights

Programme Against African Trypanosomiasis (PAAT)

Meeting of the Programme Committee
ITM, Antwerp 8-9 May 2008

The Programme Against African Trypanosomiasis (PAAT) was established in 1997 as an International Alliance combining the forces of The Food and Agriculture Organization of the United Nations (FAO), the World Health Organization (WHO), the International Atomic Energy Agency (IAEA) and the African Union/Interafrican Bureau of Animal Resources (AU-IBAR) to assist African Member States to control and eventually eradicate this devastating disease. Since its creation, PAAT has been acting as the principal alliance tackling trypanosomiasis by means of concerted international planning and action, prioritized and problem-driven research, focused investments and interventions, integrated vector and disease control and the participation of local communities. PAAT's ultimate goal remains the Sustainable Development of Agriculture and Livestock in areas affected by tsetse and trypanosomiasis intervention.

The twelfth meeting of the PAAT Programme Committee was organised by the Department of Animal Health of ITM and brought together 27 experts of FAO, WHO, IAEA and AU-IBAR. The meeting focused on the achievements of the PAAT mandated organizations during the past year and on the tsetse and trypanosomiasis interventions in six African countries (Burkina Faso, Ghana, Mali, Ethiopia, Kenya, Uganda) within the framework of the Pan-African Tsetse and Trypanosomiasis Eradication programme (PATTEC). The report and the recommendations of the meeting can be found at the PAAT website <http://www.fao.org/ag/againfo/programmes/en/paat/reports.html>



The PAAT newsletter is co-sponsored by the ITM.

Highlights

National Reference Laboratory for Trichinellosis

Trichinellosis is a worldwide zoonosis caused by nematodes belonging to the genus *Trichinella*. Humans acquire the infection by consuming raw or improperly cooked meat infected with larvae of *Trichinella* species. In Belgium, the domestic pig and horse populations are virtually free of trichinellosis, but the testing of every slaughtered pig, horse or wild boar is still mandatory.

The Department of Animal Health is the National Reference Laboratory for Trichinellosis (NRLT) in Belgium. Its task is to give scientific, technical and logistical support to the Federal Agency for the Safety of the Food Chain (FASFC). The NRLT analyses the epidemiological situation of trichinellosis, echinococcosis and other zoonoses in Belgium and monitors the performance of the laboratories that are accredited for the diagnosis of trichinellosis in meat. Core tasks include the annual organisation of interlaboratory tests, technical and scientific guidance and training, validation of techniques and dissemination of information.

In 2008 the NRLT developed an ISO-accredited quality system for the interlaboratory test. In collaboration with FASFC it prepared the national request to the European Commission to recognise Belgium as a country with negligible risk for trichinellosis.

FAO Reference Centre for Livestock Trypanosomosis

The control of livestock trypanosomosis depends heavily on the identification and treatment of infected animals, but is severely hampered by spread of resistance to the available trypanocides.

The Department of Animal Health was appointed as “FAO Reference Centre for livestock trypanosomosis” for parasite management and diagnosis in January 2007. A main reference task is molecular diagnosis of animal trypanosomosis and the detection of trypanocidal drug resistance. Another objective is to increase worldwide capacity in these fields, and to support control programmes for livestock trypanosomosis. The department is currently transferring techniques and quality control systems to three regional satellite laboratories in Africa: Centre International pour la Recherche/Développement de l’Élevage en zone subhumide (CIRDES), Bobo Dioulasso, Burkina Faso for West Africa; the Department of Veterinary Tropical Diseases, University of Pretoria (DVTD) for southern Africa; and the National Animal Health Diagnostic and Investigation Center in Ethiopia for eastern Africa.

Highlights

Micro-arrays as a molecular identification tool for possible bluetongue vectors

Following the 2006 outbreak of bluetongue virus serotype 8 (BTV-8) in Belgium, the Department of Animal Health was commissioned to coordinate a national vector monitoring programme. The results soon showed that no exotic, but local endemic species were involved in the transmission of BTV-8. Based on molecular tests, the most probable vectors belonged to the *Culicoides obsoletus*-complex (4 species) and the *C. pulicaris* complex (8 species). Since these complexes are hard to differentiate morphologically, we developed a molecular identification tool based on micro-arrays, small and solid supports on which sequences of different genes, i.e. probes, are spotted. Positive hybridisation events can be visualised through hybridisation with DNA, RNA or PCR-products and colorimetric detection. We designed 17 specific probes for 11 different species, including one common probe for all *Culicoides* spp, based on the interspecies differences within the rDNA sequences of the Internal Transcribed Spacer 1 (ITS1). In a first stage, we concentrated on the most prevalent complex, *C. obsoletus*. This test was validated and compared with other molecular tools during a ring test among thirteen European laboratories. Ours was the only molecular test that correctly identified all samples. In addition, this new tool allows to identify the species also after virus extraction. Further work will focus on specific probes for the *C. pulicaris* complex and other indigenous species.



A parous (above) and nulliparous *Culicoides* female. Only parous females have taken at least one bloodmeal and may thus harbour bluetongue virus.

Department of Animal Health Projects

For more details visit www.itg.be and enter the project reference number in the search field.

Projects of the ITM-DGDC Framework Agreement Programme are listed in the chapter Development Cooperation.

Unit of Veterinary Protozoology

Reference number 85581

Optimising and field testing of a practical vaccine against *Taenia solium* cysticercosis in pigs

ITM promoter: Stanny Geerts

Support: The Wellcome Trust, UK

Reference number 100222

Integrated Consortium on Ticks and Tick-borne Diseases

ITM promoter: Dirk Geysen

Support: European Commission

Reference number 100186

Control of most important bovine haemoparasites in Morocco through immunisation methods

ITM promoter: Dirk Geysen

Support: Institut Agronomique et Vétérinaire Hassan II, Morocco

Reference number 429001

DNA immunisations in a *Theileria parva* bovine model as an identification tool for candidate cytotoxic T-lymphocyte antigens

ITM promoter: Dirk Geysen

Support: Research Foundation Flanders, Belgium

Reference number 529001

Epidemiology and control of zoonotic infections in Gambia and Senegal

ITM promoter: Stanny Geerts

Support: University of Antwerp, Belgium

Reference number 748001

Improved diagnosis of drug resistance and pathogenicity of trypanosomes

ITM promoter: Stanny Geerts

Support: various

Reference number 748007

Improved diagnosis and control of animal trypanosomiasis in the Adamaoua region, Cameroon

ITM promoter: Stanny Geerts

Support: Flemish Interuniversity Council, Belgium

Reference number 758023

Transfection of *Theileria parva* and the role of genes encoding QP-rich proteins in host-parasite interactions

ITM promoter: Stanny Geerts

Support: SOFI-B Programme, ITM/Flemish Ministry of Economy, Science and technology

Unit of Animal Disease Control

Reference number 84861

Improved and harmonised quality control for expanded tsetse production, sterilisation and field application

ITM promoter: Peter Van den Bossche

Support: World Health Organization

Reference number 85582

Environmental changes in Africa and tsetse habitat fragmentation: epidemiological consequences and perspectives for control

ITM promoter: Peter Van den Bossche

Support: The Wellcome Trust, UK

Reference number 339001

Implementation and coordination of a training programme in Animal Health and Animal Production for the Southern African Development Community Region

ITM promoter: Peter Van den Bossche

Support: SADC PRINT Project, Botswana

Reference number 419003

Remote sensing tools to study the epidemiology and space/time dynamics of diseases

ITM promoter: Peter Van den Bossche

Support: Federal Science Policy Office, Belgium

Reference number 748005

Institutional collaboration with Jimma university, Ethiopia, sub-project Zoonotic and Helminth Diseases (animal trypanosomiasis)

ITM promoter: Peter Van den Bossche

Support: Flemish Interuniversity Council, Belgium

Unit of Epidemiology and Biostatistics

Reference number 100113

Scientific support to the Belgian Technical Cooperation South Dairy Project, Abidjan, Côte d'Ivoire

ITM promoter: Eric Thys

Support: Belgian Technical Cooperation, Belgium

Reference number 429002

Flexible mathematical and statistical models for microbiological risk evaluation with emphasis on Bovine Spongiform Encephalopathy and variant Creutzfeld-Jacob Disease

ITM promoter: Dirk Berkvens

Support: Research Foundation Flanders, Belgium

Unit of Veterinary Helminthology

Reference number 748002

The diagnosis, epidemiology and control of parasitic infections of livestock in Cambodia

ITM promoter: Pierre Dorny

Support: various

Reference number 748004

Development of a sensitive tool for post-mortem diagnosis of bovine cysticercosis

ITM promoter: Pierre Dorny

Support: various

Department of Animal Health Ongoing PhD projects

ADEL Amel. *Etude épidémiologique de la leishmaniose canine à 'Leishmania infantum' et son impact sur la leishmaniose viscérale humaine sur le littoral algérien.*

Promoters: D. Berkvens (ITM), M. Boelaert (ITM), C. Saegerman (University of Liege), A. Soukehal (CHU Béni-Messous, Alger, Algiers)

ASSANA Emmanuel. *Vaccination against porcine cysticercosis and analysis of immune correlates of protection in Cameroon.*

Promoters: S. Geerts (ITM), P. Dorny (Ghent University), A. Zoli (Université de Dschang, Cameroon)

BANKOLE Anani Adéniran. *Epidemiology and control of bovine brucellosis in the Gambia and Senegal.*

Promoters: D. Berkvens (ITM), C. Saegerman (University of Liege)

BOUKARY Abdou Razac. *Impact of livestock husbandry on the transmission of brucellosis and tuberculosis in urban and periurban Niamey.*

Promoters: P. Van der Stuyft, F. Portaels (ITM), C. Saegerman (University of Liege), A. Yenikoye (Université Abdou Moumouni, Niamey, Niger)

CHITANGA Simbarashe. *Domestication of the trypanosome transmission cycle and its effect on the level of drug resistance, the pathogenicity and transmissibility of T. congolense.*

Promoters: P. Van den Bossche, S. Geerts (ITM), S. Mukaratirwa (University of Zimbabwe, Zimbabwe)

CURAY-CARRERA Pablo. *The role of cysticercosis as a cause of neurological disorders in Ecuador.*

Promoters: P. Dorny (ITM, Ghent University), W. Bénitez-Ortiz (CIZ Universidad Central del Ecuador, Quito, Ecuador)

DECKERS Nynke. *Detection of biomarkers for an improved diagnosis of taenia colium cysticercosis.*

Promoters: P. Dorny (ITM), J. Vercruysse (Ghent University)

DE GOEYSE Ine. *Prime boost strategy for CTL response against Theileria parva.*

Promoters: S. Geerts (ITM), Y. Guisez (University of Antwerp)

DIONE Michel. *Epidemiology and control of Salmonella spp. in the Gambia (Upper River Division) and Senegal (Casamance).*

Promoters: S. Geerts (ITM), G. Ieven (University of Antwerp), A. Schönefeld (International Trypanotolerance Centre, Banjul, Gambia)

GONDWE Nkwachi. *Study of the epidemiology of human and animal trypanosomiasis at the game/cattle/domestic interface of the Nkhotakota Game Reserve, Malawi.*

Promoters: P. Van den Bossche (ITM)

HESHBORNE Tindih. *Analysis of virulence factors in Theileria parva.*

Promoters: S. Geerts (ITM), B. Goddeeris (Katholieke Universiteit Leuven), J. Naessens (International Livestock Research Institute, Nairobi, Kenya)

JANSSENS Michiel. *Molecular biological tools for the immunisation and diagnosis of Theileria parva.*

Promoters: S. Geerts (ITM), Y. Guisez (University of Antwerp)

LEVECKE Bruno. *Gastrointestinal parasitic infections in captive non-human primates.*

Promoters: P. Dorny (ITM), J. Vercruysse (Ghent University), F. Vercammen (Royal Zoological Society of Antwerp)

MWAPE Kabemba. *Epidemiological study of humane tapeworm infections in communal areas of Zambia.*

Promoters: P. Dorny (ITM), J. Boomker (University of Pretoria, South Africa)

MWEEMPWA Cornelius. *Environmental changes in Africa and tsetse habitat fragmentation: epidemiological consequences and perspectives for control.*

Promoters: P. Van den Bossche (ITM)

NGUYEN Thi Giang Thanh. *Zoonotic fasciolosis in Vietnam: molecular identification and geographical distribution.*

Promoters: P. Dorny (ITM), Le Thanh Hoa (Institute of Biotechnology, Hanoi, Vietnam)

OUAGAL Mahamat. *Evaluation de l'efficacité d'un réseau d'épidémio-surveillance.*

Promoters: D. Berkvens (ITM), C. Saegerman (University of Liege), Kiram Djibrine (Laboratoire de Recherches Vétérinaires et Zootechniques de Farcha, N'Djamena, Chad)

PRAET Nicolas. *Epidemiology of Taenia solium cysticercosis: transmission dynamics and burden of disease.*

Promoters: P. Dorny (ITM), C. Saegerman (University of Liege)

RAHMAN Anisur. *Brucellosis in Bangladesh.*

Promoters: D. Berkvens (ITM), C. Saegerman (University of Liege), M.U. Ahmed (Bangladesh Agricultural University, Mymensingh, Bangladesh)

RON ROMAN Washington. *Brucellosis epidemiology in Ecuador.*

Promoters: D. Berkvens (ITM), C. Saegerman (University of Liege), W. Bénitez-Ortiz (CIZ Universidad Central del Ecuador, Quito, Ecuador)

RON-GARRIDO Lenin Javier. *Modelling of transmission dynamics of major zoonoses in Ecuador.*

Promoters: D. Berkvens (ITM), W. Bénitez-Ortiz (CIZ Universidad Central del Ecuador, Quito, Ecuador)

SANOGO Moussa. *Contribution à l'étude de l'épidémiologie de la brucellose animale en Côte d'Ivoire: caractérisation bactériologique et moléculaire des souches de Brucella spp. présentes chez le bétail.*

Promoters: D. Berkvens (ITM), C. Saegerman (University of Liege), Y.L. Atse-Achi (Laboratoire National d'Appui au Développement Agricole, Abidjan, Côte d'Ivoire)

SECKA Arss. *The prevalence, risk factors, and options for the control and prevention of porcine cysticercosis in The Gambia and Senegal.*

Promoters: S. Geerts (ITM), E. Van Marck (University of Antwerp), A. Schönefeld (International Trypanotolerance Centre, Banjul, Gambia)

SIBEKO Kgomotso. *Characterisation of Theileria infections in African buffaloes and cattle and validation of diagnostic tests.*

Promoters: S. Geerts (ITM), N. Collins (University of Pretoria, South Africa)

SIMUKOKO Humphrey. *Livestock trypanosomosis in a trypanosomosis endemic area of Eastern Zambia.*

Promoters: P. Van den Bossche (ITM), J. Vercruysse (Ghent University)

YEWHALAW Delenasaw. *Dynamics and trends of malaria in relation to anopheline mosquitoes ecology, distribution and kdr resistance in a hydropower dam area of Southwestern Ethiopia.*

Promoters: N. Speybroeck, W. Van Bortel (ITM), L. Duchateau (Ghent University)

Department of Clinical Sciences

The Department of Clinical Sciences consists of the Unit of Tropical and Travel Medicine, the Unit of Tropical Laboratory Medicine and the Unit of HIV/AIDS & STD. Its aim is to provide training, to conduct research and to offer expertise in clinical tropical medicine and HIV/AIDS. Within Belgium, it assures clinical, diagnostic and preventive tasks in these fields through the ITM's Medical Services (see separate chapter on page 107). The department is a main contributor to the postgraduate courses of the ITM and organises the expert courses on Medical Mycology and Antiretroviral Treatment (SCART). Major achievements in the field of education in 2008 were the launches of the e-SCART and the Short Course in Clinical Research and Evidence-Based Medicine (SCREM).

Unit of Tropical Laboratory Medicine

The Unit of Tropical Laboratory Medicine welcomed three new collaborators in the project Laboratory Quality Management: Birgit De Smet, Marcella Mori and Veerle Hermans. We further developed the problem-based biomedical curriculum for non-medical students in the postgraduate course of Tropical Medicine and International Health. We installed a fully equipped "tropical laboratory" including solar systems for hands-on training.

Our overseas research focus is on the containment of antimicrobial resistance. It includes the set-up of microbiological capacity including drug resistance typing in partner institutes in DR Congo, Cambodia and Peru, as well as the introduction of standard antibiotic treatment guidelines. With the same partners, we started up a DGDC-supported network on Laboratory Quality Management with projects on biosafety and on the quality of diagnostic tests. In collaboration with the ITM's Department of Animal Health and the Department of Veterinary Tropical Diseases of the University of Pretoria, we initiated research on the antimicrobial resistance in the human-animal interface.

Unit of Tropical and Travel Medicine

The Unit of Tropical and Travel Medicine focused on imported fever, travel risks, altitude sickness and medical decision-making. We continued the analysis of subgroups of patients with imported fever, and collaborate within TropNetEurop on criteria for ambulatory treatment of malaria. We rewrote the interactive expert system KABISA for imported fever in Delphi computer language, further refined the logic and tested the programme in several clinics in Europe.



Dr. William Worodria and Dr. Doreen Mazakpwe preparing to aspirate the abscesses in a study about the pathogenesis of IRIS in Uganda



Practical teaching session on disinfection and sterilization. Philippe Gillet (right) of the Unit of Tropical Laboratory Medicine with biomedical students.

In Rwanda, we continued collaborative research with the University Hospital of Kigali on treatment thresholds in pulmonary tuberculosis, the diagnosis of TB in children, HIV diagnosis in infants, TB treatment delay and adverse reactions in adults, and hyperreactive malarial splenomegaly. In Burkina Faso we closed a clinical trial on rapid diagnostic tests for malaria at the health centre level. In Ecuador, we finalised a scoring system for tuberculous meningitis.

Unit of HIV/AIDS and STD

The HIV/AIDS & STD unit participated in the EuroSIDA network and in several multi-centre clinical trials on HIV/AIDS, including therapeutic vaccination and investigational drugs.

The health promotion sub-unit focuses its research on primary and secondary HIV prevention. Main projects in Belgium include HIV-prevention and voluntary HIV counselling and testing in African migrants in Flanders; EUROSUPPORT V, an international comparative research project with 17 HIV treatment in centres in Europe; the EnHERA network for the promotion of sexual and reproductive health among refugees and asylum seekers.

In the South, the main focus of the HIV/AIDS & STD unit is on AIDS, malaria, tuberculosis, sleeping sickness and other parasitic diseases. Most projects are embedded in institutional strengthening and collaboration programmes with partners in Lima, Peru (Institute of Tropical Medicine of the Universidad Peruana Cayetano Heredia); Phnom Penh, Cambodia (Sihanouk

Hospital Centre of HOPE); Kampala, Uganda (Makerere University); Kinshasa, DR Congo (Institut National de Recherche Biomédicale, Kinshasa and Kalembe Lembe Paediatric Hospital; and Mozambique (Tete Regional Hospital). Specific subjects include HIV-TB co-infection, Immune Reconstitution Inflammatory Syndrome (IRIS) and antimicrobial resistance surveillance. We also collaborate in the International epidemiological Database to Evaluate AIDS (IeDEA) network of the Central African region.



A patient with tuberculosis is treated with highly active antiretroviral Treatment (HAART) and shows large cervical abscesses caused by the immune reactivation inflammatory syndrome (IRIS).

Department of Clinical Sciences Projects

For more details visit www.itg.be and enter the project reference number in the search field.

Projects of the ITM-DGDC Framework Agreement Programme are listed in the chapter Development Cooperation.

Unit for HIV/AIDS and STD

Reference number 83541

Treatment of HIV tuberculosis co-infection

ITM promoter: Robert Colebunders

Support: Research Foundation Flanders, Belgium

Reference number 83873

Improving the sexual and reproductive health of persons living with HIV in Europe

ITM promoter: Christiane Nöstlinger

Support: European Commission, Health and Consumer Protection

Reference number 100251

Antiretroviral therapy adherence study

ITM promoter: Robert Colebunders

Support: Family Health International, USA

Reference number 427508

HIV-SAM project: promotion of sexual health and prevention of HIV and other sexually transmitted infections in sub-Saharan African migrants in Flanders

ITM promoter: Christiane Nöstlinger

Support: Ministerie van de Vlaamse Gemeenschap, Vlaams Agentschap Zorg en Gezondheid, Belgium

Reference number 437308

Consolidation of HIV/AIDS treatment on public health level in Paramaribo, Suriname 2008-2009

ITM promoter: Robert Colebunders

Support: Centrum voor Informatie en Samenlevingsopbouw VZW, Antwerp, Belgium

Reference number 517308

Operational study on the implementation of an algorithm as proposed in the 2006 WHO guidelines to improve the diagnosis of tuberculosis among adults in HIV prevalent and resource constrained settings (for ambulatory patients without danger signs)

ITM promoter: Lutgarde Lynen

Support: World Health Organization, Switzerland

Reference number 747001

Outreach HIV testing for men having sex with other men

ITM promoter: Christiane Nöstlinger

Support: various

Reference number 747003

Epidemiologic database to evaluate AIDS, Regional Center in Region 9 - Central Africa

ITM promoter: Robert Colebunders

Support: various

Reference number 747004

Improve the access to and monitoring of antiretroviral treatment and improve the monitoring of this treatment in the Democratic Republic of the Congo

ITM promoter: Robert Colebunders

Support: various

Unit of Tropical and Travel Medicine

Reference number 427307

Rede Integrada II: AIDS care project in Tete, Mozambique

ITM promoter: Emmanuel Bottieau

Support: Vlaams Agentschap voor Internationale Samenwerking, Belgium

Reference number 627108

Side effects and paradoxal reactions on the TB treatment with HIV-negative and positive patients in Rwanda

ITM promoter: Jan Clerinx

Support: Tibotec BVBA, Belgium

Reference number 747002

Usefulness of Paracheck® for limiting antimalarials prescription while introducing more expensive drugs to overcome growing chloroquin resistance in Burkina Faso

ITM promoter: Jef Van den Ende

Support: various

Department of Clinical Sciences

Ongoing PhD projects

BISOFFI Zeno. *Accuracy of rapid diagnostic malaria tests, and clinical and cost-effectiveness of the introduction of these tests in a rural setting in sub-Saharan Africa.*
Promoters: J. Van den Ende (ITM), M. Coosemans (University of Antwerp)

CALLENS Steven. *Paediatric antiretroviral treatment in resource poor settings.*
Promoter: R. Colebunders (ITM, University of Antwerp)

CONESA BOTELLA Anali. *IRIS: pathogenesis, clinical and public health aspects.*
Promoter: R. Colebunders (ITM, University of Antwerp)

HUNG Chien-Ching. *Treatment of persons with HIV-1-infection in Taiwan.*
Promoter: R. Colebunders (ITM, University of Antwerp)

LUNGUYA Octavie. *Aspects microbiologiques et diagnostiques de la fièvre typhoïde en République Démocratique du Congo (RDC).*
Promoter: J. Jacobs (ITM), J.J. Muyembe-Tamfum (Institut National de Recherche Biomédicale, Kinshasa, DR Congo)

LYNEN Lut. *AIDS care in low-income countries: the challenge of providing quality care with limited resources.*
Promoters: R. Colebunders, L. Kestens (ITM, University of Antwerp)

MOREIRA Juan. *Clinical reasoning strategies in primary care and second level contexts in Ecuador.*
Promoters: J. Van den Ende (ITM), A. Narvaez (Universidad Central del Ecuador, Quito, Ecuador)

NEYRA Edgar. *Contribución a la Epidemiología Molecular de Micosis importantes en el Perú.*
Promoter: D. Swinne (ITM), E. Gotuzzo (Universidad Peruana Cayetano Heredia, Lima, Peru)

OCAMA Ponciano. *Hepatitis B HIV and liver diseases in Uganda*
Promoter: R. Colebunders (ITM, University of Antwerp)

OTITI Juliet. *Ocular complications in HIV positive individuals in sub-Saharan Africa*
Promoter: R. Colebunders (ITM, University of Antwerp)

TORPEY Kwasi. *Delivering HIV prevention, care and treatment program in resource-limited settings: lessons from Ghana and Zambia*
Promoter: R. Colebunders (ITM, University of Antwerp)

VLIEGHE Erica. *Containment of antimicrobial resistance of invasive Gram-negative bacteria in low resource settings in the tropics.*
Promoter: J. Jacobs (ITM), W. Peetermans (Catholic University Leuven)

WANYENZE Rhoda. *Implementation of provider initiated HIV testing and counselling (PITC) in Uganda: assessment of feasibility, approaches and outcomes of implementation*
Promoter: R. Colebunders (ITM, University of Antwerp)

WORODRIA William. *Immune Reconstitution Inflammatory Syndrome (IRIS) in TB HIV co-infected patients first commencing HAART*
Promoter: R. Colebunders (ITM, University of Antwerp)

Department of Public Health

The mission of the Department of Public Health is to contribute through research, education, capacity strengthening and technical support to the development of equitable and sustainable health systems, particularly in developing countries. The department consists of five units: Epidemiology and Disease Control; Health Policy and Financing; Quality and Human Resources; Public Policy and Management; Nutrition and Child Health. Our research focuses on access to care, quality of care, development of human resources, integrated disease control and international health policies. Many research projects involve several units and/or other departments. Teaching is a major activity of the department, in close interaction with research and policy development. It is responsible for the Master in Public Health in Health Systems Management and Policy, and co-organises the Master in Public Health in Disease Control.

Unit of Epidemiology and Disease Control

Our research portfolio in disease control focuses on integration, acceptability, cost-effectiveness and sustainability. The subjects include assessment of diagnostic, therapeutic and preventive tools, and health systems research on participatory approaches to disease control and health care organisation. We also invest in teaching, health policy development, advocacy and capacity strengthening of partner institutions.

In collaborative community trials in India and Nepal we evaluate the efficacy, acceptability and cost-effectiveness of long-lasting insecticide-treated bed nets (LN) for the prevention of visceral leishmaniasis (VL) or kala azar in high-endemic regions. LN may be an alternative to indoor residual spraying in the control of *P. argentipes*, the sandfly transmitting VL in this part of the world. In Cuba we test a comprehensive intervention strategy for the control of dengue fever in which community-based *Aedes* control is combined with routine vector control and intersectorial action. In both South-East Asia and Latin America we develop randomised community trials on the acceptability and cost-effectiveness of different implementation strategies for delivering new, insecticide-based *Aedes* control tools.

Our research on human African trypanosomiasis (HAT) we focus on methods to optimise control strategies. Research topics include the validation of novel diagnostic tests, decision analysis, comparison of control strategies and clinical algorithms, perception of disease and integration of control in primary health care. We demonstrated that user fees as well as drug toxicity are barriers to participation in HAT population screening programmes in DR Congo, and that population screening becomes less efficient as the prevalence decreases. We therefore started research on alternative approaches, such as risk-based surveillance with periodical random sero-surveys.

In the field of tuberculosis (TB), we finalised a collaborative validation study on diagnostic algorithms for smear-negative TB in Peru. In Cuba we assessed the impact and cost-effectiveness of different active case finding strategies, and developed new research protocols to characterise transmission patterns. In Indonesia, we conduct joint research on the role of the private sector in TB control, which revealed the limited scope for linking private general practitioners to the TB control programme.

In the field of health care organisation, we started collaborative research to guide the ongoing decentralisation of the Cuban health services. Projects include the evaluation of managerial shifts at provincial and local level, and participatory planning in local health systems.

“Costa Rica spends nine times less per capita on health than the USA and yet does better in terms of epidemiological and demographical outcomes.”

Unit of Health Policy and Financing

As part of the new ITM-DGDC Framework Agreement Programme, we launched an intense institutional collaboration with the Makerere University School of Public Health in Kampala (Uganda) and with the Institute of Public Health in Bangalore (India). Both projects include collaborative research and postgraduate training in public health.

Thematically, the unit focuses on four areas. A first one is “health care delivery in a changing world”, with special attention for health system challenges regarding antiretroviral treatment delivery and the interface between health systems and disease-specific programmes in general. In May 2008 we co-organised the ‘Antwerp in Geneva meeting’ at the WHO headquarters, which looked at synergies between Global Health Initiatives and health systems strengthening. This work is pursued in the network Positive Synergies.

Social health protection is the second focus of the unit. We coach and follow community health insurance schemes and social assistance for health care in DR Congo, Mauritania, Uganda, Tanzania, Cambodia and India, with special attention for social and political dimensions.

One publication in 2008 deserves special mention, i.e. the book *Health and social protection: experiences from Cambodia, China and Lao PDR*. This collaborative work compiles the research results of the POVILL project (“Protecting the rural poor against the economic consequences of major illness: a challenge for Asian transitional economies”), supported by the European Commission.

The third area of work is the transformation of institutional relationships in increasingly pluralistic health systems, with changing roles for government, private actors and civil society. In December 2008, we co-organised an international meeting at the ITM in collaboration with the development agency AEDES, the



Werner Soors visiting an integrated service delivery facility in India

Norwegian development cooperation and the WHO on performance-based contracting in health care delivery. The unit pursued its work on contractual relationships between church-based facilities and public health authorities in Africa.

Our fourth theme is international health policy, which we follow up as part of the support to the Belgian Directorate-General for Development Cooperation (DGDC) under the new ITM-DGDC Framework Agreement Programme, and within an EC-funded research consortium on the impact of Global Health Initiatives on African health systems.

Unit of Quality and Human Resources

The unit continued its research on the management of health systems, especially human resources (HR), quality management and reproductive health. Specific projects include priority setting in general and HR management in Tanzania, Kenya and Zambia, in an EC-funded consortium; leadership and HR management in hospitals in Ghana; the interaction between disease control programmes and general health care services in Western Africa; randomised controlled trials of obstetrical audits in Burkina Faso, Benin and Niger; costs of obstetric care. We invested in developing and teaching short courses on maternal and neonatal health programmes, and continued action-research on reproductive and sexual health of adolescents in urban settings in Cameroon, Mali and Burkina Faso. Methodological research focused on decontextualisation and external validation of specific field experiences and case studies through theory-based evaluation and synthesis.

The unit ensures the scientific coaching of health care programmes of the Belgian Technical Cooperation in Senegal and Niger, and of a EU-funded health reform project in Thailand. As part of the ITM-DGDC Framework Agreement Programme we embarked on a new institutional collaboration with the Institut National d'Administration Sanitaire (INAS) in Rabat, Morocco.

Unit of Public Health Policy and Management

Our unit completed part of the research on the Chilean and Costa Rican health systems. Costa Rica spends nine times less per capita on health than the USA and yet does better in terms of epidemiological and demographical outcomes. Our research has demonstrated the pivotal role of the Costa Rican public health policy and health system in this achievement.

Our unit remained also involved in the EC-supported HEPVIC project on health policies in Vietnam, India and China. We won two new research grants from the EC to study equity of access and efficiency of integrated health care networks in Colombia and Brazil, and health system stewardship and regulation in Vietnam, India and China. We supported the set-up of a Latin American academic network on health policy with a first meeting in Havana in June 2008. We continued the institutional collaboration with the Institute of Public Health at the Pontificia Universidad Catolica de Ecuador (PUCE) in Quito.

We remained also involved in the Local Health System ("Sylos") project in Belgium, developing bottom-up integrated health care systems in three Belgian districts (Antwerp, Brussels and Malmédy).

Unit of Nutrition and Child Health

The research of the Unit of Nutrition and Child Health concentrates on the double nutritional burden in many developing countries: persisting under-nutrition on one hand, and an explosive increase of diet-related chronic diseases and overweight on the other.

The research axis on under-nutrition focuses on the highest risk group, children under the age of two. A first set of studies based on the hypothesis of a foetal origin of disease assesses interventions to enhance child growth and health through improved maternal nutrition. Two randomised clinical trials were finalised in Burkina Faso, one comparing a micronutrient mix with an iron and folic acid supplements, the second assessing fortified food supplements during pregnancy. The studies are embedded in an international network under the auspices of WHO/UNU/UNICEF. A second set of projects targets the improvement of nutritional quality and energy density of complementary foods, with particular emphasis on micronutrients. We study processing techniques and contaminants such as mycotoxins in a variety of contexts. A third set concerns promotional and preventive strategies that health systems can adopt to improve child growth and development. In Burkina Faso, we studied community-based detection and rehabilitation of malnourished children and growth monitoring through the existing health system.

Diet-related chronic diseases are quickly increasing in low and middle income countries, where adolescents make up the majority of the population. We completed a number of descriptive studies on food habits, physical activity patterns and their determinants in different countries.

Highlights

Uganda Week

As part of the short course and MPH module “Health Policy” in April, the department of Public Health organised a special “Uganda week”. Senior Ugandese policy-makers, academia, press members, civil society representatives, as well as officials of the WHO and the Belgian Technical Cooperation in Uganda, spent a full week with our students and staff. The Ugandese guests presented a number of thought-provoking lectures on various aspects of the Ugandan health systems. They also acted as resource persons for the Master’s participants, who had received analytic assignments on “Ugandese” subjects such as the role of the state, the non-profit and the private sector in health care delivery, the abolition of user fees, the impact of consumer organisations, media and civil society in the health system, the responsibility of donors in strengthening the health system, the tasks of Ugandan academia in health systems research, and others. The week-long seminar provided also the Ugandan guest lecturers a unique opportunity for internal review and interaction, and for confronting their experiences and problems to experts and students from other countries. The Ambassador of Uganda to Belgium honoured the closing session with her presence. She expressed her great satisfaction for this initiative and thanked the Belgian Technical Cooperation Agency for its financial and substantive support.



Bart Criel welcoming the participants of the Uganda Week



Part of the Ugandan experts. From left to right: Prof. George-William Pariyo, Makerere University School of Public Health; Dr. Francis Runumi, Commissioner Health Planning, Ministry of Health, Uganda; Dr. Juliet Nabyonga, WHO, Kampala, Uganda; Mike Wafula, Cabinet Prime Minister, Kampala, Uganda; Dr. Sam Orach, Uganda Catholic Medical Bureau, Kampala, Uganda; Dr. Freddie Ssengooba, Makerere University School of Public Health

Department of Public Health Projects

For more details visit www.itg.be and enter the project reference number in the search field.

Projects of the ITM-DGDC Framework Agreement Programme are listed in the chapter Development Cooperation.

Epidemiology and Disease Control

Reference number 84590

KALANET: a community trial to assess the efficacy, acceptability and cost-effectiveness of long lasting insecticidal nets in the prevention of Kala-azar

ITM promoter: Marleen Boelaert

Support: European Commission

Reference number 85561

Validation of a clinical algorithm for the diagnosis of smear-negative tuberculosis in low-income countries

ITM promoter: Patrick Van der Stuyft

Support: Damien Foundation, Belgium

Reference number 100160

Determinants of initiation of effective treatment of human West African trypanosomiasis after diagnosis by the control programme

ITM promoter: Marleen Boelaert

Support: Research Foundation Flanders, Belgium

Reference number 100164

Towards successful dengue control

ITM promoter: Patrick Van der Stuyft

Support: European Commission

Reference number 526602

Visceral leishmaniasis in Bihar State, India

ITM promoter: Marleen Boelaert

Support: Banaras Hindu University, India

Health Policy and Financing

Reference number 100221

Human resources for health in Tete, Mozambique

ITM promoter: Wim Van Damme

Support: Vlaams Agentschap voor Internationale Samenwerking, Belgium

Reference number 100143

Protecting the rural poor against the economic consequences of major illness: a challenge for Asian transitional economies

ITM promoter: Wim Van Damme

Support: European Commission

Reference number 100253

Global Health initiatives in Africa

ITM promoter: Wim Van Damme

Support: European Commission

Reference number 100262

Effects of antiretrovirals for HIV on African health systems, maternal and child health

ITM promoter: Wim Van Damme

Support: European Commission

Reference number 416601

Follow-up of Belgian Technical Cooperation primary health care projects in DRC

ITM promoter: Bart Criel

Support: Belgian Technical Cooperation, Belgium

Reference number 416602

Technical continuous follow-up of health care programmes in Benin

ITM promoter: Bart Criel

Support: Belgian Technical Cooperation, Belgium

Reference number 526701

Policy analysis of user fee abolition in sub-Saharan Africa

ITM promoter: Wim Van Damme

Support: UNICEF, USA

Reference number 626601

Contracting study Ministries of Health and private non-for-profit sector

ITM promoter: Bart Criel

Support: Medicus Mundi Belgium, Belgium

Reference number 716115

Community health insurance in sub-Saharan Africa

ITM promoter: Bart Criel

Support: various

Quality and Human Resources

Reference number 85541

EU Health Care Reform Project - Kingdom of Thailand

ITM promoter: Guy Kegels

Support: European Commission, GTZ International Services, Germany

Reference number 100157

Strengthening fairness and accountability in priority setting for improving equity and access to quality health care at district level in Tanzania, Kenya and Zambia

ITM promoter: Guy Kegels

Support: European Commission

Reference number 100182

Projet d'Approche Solidaire en Santé GENésique (PASSAGE): a project for the solidarity approach in reproductive health

ITM promoters: Guy Kegels, Vincent De Brouwere

Support: European Commission

Reference number 100230

Scientific follow-up Belgian Technical Cooperation projects in Senegal and Niger

ITM promoter: Guy Kegels

Support: Belgian Technical Cooperation, Belgium

Reference number 100261

Effectiveness of facility-based audits to improve the responsiveness of West African district hospitals to obstetric emergencies : a three-country cluster randomised controlled trial

ITM promoters: Guy Kegels, Vincent De Brouwere

Support: European Commission

Public Policy and Management

Ref. 100123

Health policy-making in Vietnam, India and China: key determinants and their inter-relationships

ITM promoter: Jean-Pierre Unger

Support: European Commission

Nutrition and Child Health

Reference number 85341

Prevention of intrauterine growth retardation in Burkina Faso

ITM promoter: Patrick Kolsteren

Support: Nutrition Third World, Belgium

Reference number 100125

Qualitative and quantitative assessment of nutritional status and lifestyles of Vietnamese adolescents

ITM promoter: Patrick Kolsteren

Support: various

Reference number 746004

Influence of aflatoxin and fumonisin exposure on growth and iron status of Tanzanian infants aged 6 to 12 months consuming maize based complementary foods

ITM promoter: Patrick Kolsteren

Support: various

Reference number 746005

The nutritional quality of street foods and their role in the diet of school-going adolescents in Cotonou urban Benin

ITM promoter: Patrick Kolsteren

Support: various

Reference number 746006

The metabolic syndrome in Bolivian adolescents study (MESA)

ITM promoter: Patrick Kolsteren

Support: various

Reference number 746007

Inter University collaboration Jimma, Ethiopia: nutrition and child health project

ITM promoter: Patrick Kolsteren

Support: various

Department of Public Health

Ongoing PhD projects

BALY Aberto. *Cost and cost-effectiveness of vertical and participatory Aedes aegypti control and dengue prevention.*

Promoters: P. Van der Stuyft (ITM, Ghent University), S. Flessa (Ernst Moritz Arndt University of Greifswald, Greifswald, Germany)

BASAZA Robert. *Community-based health insurance in Uganda: prospects and policy issues.*

Promoters: B. Criel (ITM), P. Van der Stuyft (Ghent University), G.W. Pariyo (Makerere University, Kampala, Uganda)

BAYA BOTTI Ana Maria. *The metabolic syndrome in Bolivian adolescents study (MESA).*

Promoter: P. Kolsteren (ITM, Ghent University)

BORCHERT Matthias. *Epidemiology and Control of Marburg Haemorrhagic Fever Epidemics in Central Africa.*

Promoter: P. Van der Stuyft (ITM, Ghent University)

DEVADASAN Narayanan. *Enhancing the insurance functions of the Indian health system: the role of local health insurance.*

Promoters: B. Criel, W. Van Damme (ITM), P. Van der Stuyft (Ghent University), K.R. Thankappan (Sree Chitra Tirunal Institute of Medical Sciences and Technology, Kerala, India)

DE VOS Pol. *Strengthening public health systems: operational research in Cuban first line health services.*

Promoter: P. Van der Stuyft (ITM, Ghent University)

HENG Thay Ly. *Relationship between leadership and human resource management and performance in public health care systems: a case study of rural public hospitals in Cambodia.*

Promoters: M. Van Dormael, W. Van Damme (ITM), S. Oum (University of Health Sciences, Phnom Penh, Cambodia)

IR Por. *Health Equity Funds to improve access to quality health care for the poor and protect poor households in Cambodia from catastrophic health expenditure.*

Promoters: W. Van Damme (ITM), E. Huot (University of Health Sciences, Phnom Penh, Cambodia)

KABALI, Eugénie. *Factors associated to maternal deaths in Kinshasa, DR Congo.*

Promoters: V. De Brouwere (ITM), C. Gourbin (Université Catholique de Louvain)

KULWA Kissa. *Dietary strategies to increase content and bioavailability of iron and zinc in complementary foods of breastfeeding infants in rural Tanzania.*

Promoters: P. Kolsteren (ITM), J. Van Camp (Ghent University)

LACHAT Carl. *Out of home eating as determinant of unbalanced nutrition?*

Promoter: P. Kolsteren (ITM, Ghent University)

MAHENDRADHATA Yodi. *Integration of intervention strategies to control the dual tuberculosis and HIV/AIDS epidemics in Indonesia.*

Promoters: P. Van der Stuyft (ITM, Ghent University), M. Boelaert (ITM), L. Trisnantoro (Centre for Health Service Management, Gadjah Mada University, Indonesia)

MARCHAL Bruno. *Well-performing healthcare organisations: What's the role of (HR) management?*

Promoters: G. Kegels (ITM), T. Mets (Free University of Brussels)

MEESEN, Bruno. *Economics of public health care organizations in low-income countries.*

Promoters: W. Van Damme (ITM), M. Nyssens (Université catholique de Louvain)

MENTEN Joris. *Latent variable models in diagnostic medicine.*

Promoters: M. Boelaert (ITM), E. Lesaffre (Catholic University of Leuven)

MISRA Samarendra Nath. *AIDS care in the private sector, India.*

Promoters: W. Van Damme; Marleen Boelaert (ITM), Preeti Mehta (Seth GS Medical College and KEM Hospital, Mumbai, India)

NAGO Eunice. *The nutritional quality of street foods and their role in the diet of school-going adolescents in urban Benin.*

Promoters: P. Kolsteren (ITM), J. Van Camp (Ghent University)

OUEDRAOGO NIKIEMA Laeticia. *Evaluation d'une approche communautaire pour la prise en charge de la malnutrition du jeune enfant dans un district rural au Burkina Faso.*

Promoters: P. Kolsteren (ITM, Ghent University), B. Sondo (Institut de Recherche en Sciences de la Santé, Ouagadougou, Burkina Faso)

PEREZ CHACON Dennis. *Follow-up and evaluation of institutionalization processes of participatory strategies in Aedes aegypti control.*

Promoters: P. Van der Stuyft (ITM, Ghent University), P. Lefèvre (ITM)

RICHARD Fabienne. *La césarienne de qualité.*

Promoters: V. De Brouwere (ITM), B. Dujardin (Université Libre de Bruxelles)

ROBERFROID Dominique. *Intergenerational nutrition: the effects of maternal micronutrients on foetal growth and infant health.*

Promoters: P. Kolsteren (ITM), B. Brabin (University of Amsterdam, the Netherlands)

TEJERINA SILVA Herland. *International aid to Bolivia health sector: a win-win game? Analysis and orientations for a new cooperation.*

Promoters: J.P. Unger (ITM); M.C. Closon (Université Catholique de Louvain); O. Lanza (Universidad Mayor de San Andrés, La Paz, Bolivia); C. Darras (PAHO, Bolivia)

TOLEDO ROMANI Maria. *From passive to active community participation in dengue control.*

Promoter: P. Van der Stuyft (ITM, Ghent University)

VANLERBERGHE Veerle. *Effectiveness and acceptance of integrated dengue vector control strategies.*

Promoter: P. Van der Stuyft (ITM, Ghent University)

VERMEIREN Peter. *The impact of Global Health Initiatives and Donor Harmonisation on health systems on national and district level.*

Promoters: W. Van Damme (ITM), Herman Meulemans (University of Antwerp)

VERSTRAETEN Roosmarijn. *A school-based health promotion intervention in adolescents in Ecuador: a cluster-randomized controlled trial.*

Promoters: P. Kolsteren (ITM), L. Maes (Ghent University)

Library and bibliometrics

Library and bibliometrics

While printed sources remain in high demand, the shift of the scientific literature to cyberspace is irrevocable. We monitor an ever increasing number of open access journals, replaced several print subscriptions with online-only editions and acquired new online titles as well as additional electronic archives for long-standing core journals such as *Acta Tropica*, *American Journal of Tropical Medicine & Hygiene* (starting from 1921), *Transactions of the Royal Society of Tropical Medicine & Hygiene* and *Trends in Parasitology*. Worthwhile e-books in our field remain scarce, while we had to install 30 additional meters of shelves to accommodate new printed books. Our own *ITGPress* published 3 new books in 2008.

Early spring, the ITM launched an open access repository of its scientific publications since 2000 called *TropMed Central Antwerp*. By the end of the year it contained over 2200 bibliographic descriptions, of which 25% with digital full-text in PDF format.

We will increase this ratio further with authors' pre- and post-prints, and integrate our repository with international harvesters such as *OAIster* and *Driver*.

Much effort went into literature training of students, upgrading the *Organization of Health Care Organization in Developing Countries* bibliography, reorganising the historical and image archives and a new 5-year bibliometric report on ITM's scientific publications.

The library participated in the Flemish Research Libraries Council and its project to maintain at least one physical copy of each biomedical journal collection in one Flemish academic library, and hosted one of its meetings.

Library staff coordinated also the development of a new archiving policy for the whole of the ITM, consistent with the institutional quality system.

Table: Summary of research output of the ITM, 2001-2008

| Indicator | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|----------------------|------|------|------|------|--------------|--------------|--------------|
| Total number of publications | 245 | 223 | 206 | 252 | 235 | 227 | 272 | 308 |
| All journal contributions | 164 | 180 | 166 | 205 | 191 | 203 | 240 | 262 |
| Research papers only * | 147 | 158 | 142 | 175 | 165 | 183 | 220 | 240 |
| Papers in JIF - journals ** | 121 | 135 | 138 | 161 | 151 | 166 | 201 | 217 |
| Research papers in JIF - journals * | 107 | 114 | 117 | 135 | 130 | 149 | 183 | 198 |
| Sum JIF values all contributions | 425 | 490 | 510 | 596 | 561 | 790 | 897 | 833 |
| Average JIF all contributions | 3.5 | 3.6 | 3.7 | 3.7 | 3.7 | 4.8 | 4.5 | 3.8 |
| Sum JIF research papers * | 327 | 317 | 348 | 364 | 338 | 626 | 642 | 730 |
| Average JIF research papers * | 3.1 | 2.8 | 3.0 | 2.7 | 2.6 | 4.2 | 3.5 | 3.6 |
| Journal Impact factor (JIF) values based on | avg 01-05 JIFs | | | | | 2006 JIFs | 2007 JIFs | 2007 JIFs |

* excluding editorials, letters and published abstracts.

** JIF = Journal Impact Factor according to ISI Journal Citation Report



The library staff outdoors on a sunny Belgian weekend. Left to right: Dirk Schoonbaert, Veerle Demedts, Kris Didden, Noor Goemaere and Els Mannaerts.

Bibliometrics 2008

The library is also responsible for monitoring the ITM's bibliographic output. The upward trend of recent years was consolidated in all publication categories (table 1). In 2008, ITM produced more papers in JIF-journals than ever before.

The most popular journal remained Tropical Medicine and International Health, followed by The Malaria Journal, Transactions of the Royal Society of Tropical Medicine and Hygiene, International Journal of Tuberculosis and Lung Disease, AIDS, The Lancet and Emerging Infectious Diseases. Articles in journals without impact factors, books and book chapters, dissertations and miscellaneous publications represent about 30% of the ITM's output. Twenty electronic-only publications were published, mainly in The Malaria Journal and other BioMedCentral (BMS) and Public Library of Science (PLoS) titles.

Own Publications

Demedts V. Organization of health care in developing countries; selected publications (2000-2008).

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Goemaere E. Horatius' oden op het WWW; de rol van het web in de klassieke filologie [dissertation].

Antwerpen: Stedelijk Centrum Volwassenonderwijs "Pestalozzi", 2008: 47 pp.

Mannaerts E. Uitwerken van een zoekstrategie naar Nederlandstalige populairwetenschappelijke bronnen over 20 tropische ziekten [dissertation]. Antwerpen: Stedelijk Centrum Volwassenonderwijs "Pestalozzi", 2008: 44 pp.

Schoonbaert D & Demedts V. Analysis of the leprosy literature indexed in Medline (1950-2007). *Leprosy Rev* 2008; 79: 387-400.

Library statistics 2007

Books

| | |
|---------------------------------------|--------|
| Acquisitions | 368 |
| Purchased | 306 |
| Donated | 62 |
| Total number of books | 20,873 |
| Total number of CD-ROMs | 259 |
| Total number of videos | 382 |
| Total number of ITM dissertations | 2,689 |
| Total number of digital master theses | 1,868 |

Journals

| | |
|------------------------------|------------|
| Print subscriptions | 208 |
| Volumes bound in 2008 | 393 |
| Total number of volumes | ca. 35,000 |
| Online subscriptions | ca. 1,350 |
| Online package subscriptions | 3 |
| Open access journals | ca. 3,000 |

Databases

| | |
|--|--------|
| Electronic Reference Library (ERL) | |
| Number of databases | 14 |
| ITG Staff Publications: no. of records | 12,018 |
| TropMed Antwerp: no. of records | 2,222 |
| ERL logins | 5,320 |
| Database logins | 23,140 |
| Other database subscriptions* | 2 |
| Major free online databases | 5 |

Document Delivery

| | |
|-------------------------|--------|
| Incoming requests | 1,404 |
| Outgoing requests | 2,044 |
| Success rate | 98.1% |
| DGDC Framework requests | 1,195 |
| Success rate | 97.1% |
| Photocopies & prints** | 82,927 |
| Scans** | 64,511 |

User training

| | |
|----------------|----|
| Teaching hours | 37 |
|----------------|----|

* ISI Web of Knowledge (Thomson), Cochrane Library (Wiley)

** 1 photocopy = 1 scan + 1 print; multiple photocopies = 1 scan + multiple prints

ITM publications in 2008

Department of Microbiology

Publications in international peer-reviewed journals

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Department of Parasitology

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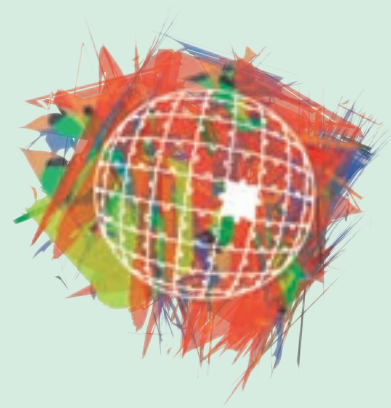
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Conferences

50th ITM colloquium: Primary Health Care in Times of Globalisation: Alma Ata, back to the future



In 2008, the world celebrated the 30th anniversary of the Declaration of Alma Ata . The commemoration provided an ideal opportunity to share experiences and evidence on PHC and to redefine its position in the global health arena of today. The colloquium was organised jointly by the ITM, the Directorate-General for Development Cooperation (DGDC), the Belgian Development Cooperation Agency (BTC) and the Belgian Platform for International Health (Be-cause Health).

About 250 participants participated actively in the colloquium, representing public, private, academic and non-governmental stakeholders from across the globe, students in Public Health and Disease control at Belgian universities and at the ITM, European and international organisations and European and Belgian policy makers.

During the colloquium, three main global reports on health were presented: the World Health report 2008, the Report of the Commission on Social Determinants of Health "Closing the gap in one generation", and the "World Health Watch" report. Subthemes that received special attention included community participation, human resources and new aid paradigms.

Key note lectures were held by Monique Van Dormael (ITM, Belgium), Gerald Bloom (Institute of Development Studies, UK), Frederico Songane (Partnership for Maternal, Newborn and Child Health, Geneva), Thelma Narayan (Centre for Public Health and Equity, Bangalore, India).

The presentations and conclusions of the meeting can be consulted at:
<http://www.itg.be/colloq2008/>

The colloquium was preceded by an international workshop for PHC-specialists, organised by the Department of Public Health (see next page).



The closing panel discussion. From left to right: Christopher Knauth, Luc De Backer, Hypolite Kalambay, Thelma Narayan, Francisco Songane

International workshop Primary Health Care in the 21st Century

In November, the strategic network on health systems of the Department of Public Health organised a two-day workshop convening 80 health care experts from North and South. The objective was to assess the relevance of primary health care (PHC) concepts, especially first-line health care services, in view of the challenges in today's society. Some key discussions are summarised below.

In many settings the interface between users and providers of health services is being modified. Examples are the organisation of self-help groups for patients with chronic diseases and the development of community-based health insurance projects which lead to alternative voice mechanisms for the population. Potential tensions between empowering movements and other actors inside health systems require coordination.

The impact of unfair distribution of resources and power in health gained renewed attention, with increasingly comprehensive descriptive models. Health services are social determinants in themselves because of their influence on access to care and promotion of empowerment. Health professionals should be aware of this relationship; from there action could follow, as was illustrated by local initiatives in Belgium and India.

The demographic transition and subsequent changing dependency ratios are a universal phenomenon. The stereotype that in traditional societies elderly people are being taken care of by families is often beside reality. This is due to urbanisation and changed social patterns. The elderly are a heterogeneous group with multiple needs, including a great unmet need for social care. This urges to build stronger bridges between social and medical care.

Institutional arrangements are part of the present explanation of weak performance of health systems in many low-income countries. Initiatives to reform institutional mechanisms, such as the introduction of performance-based financing in Rwanda, have shown an improvement of output indicators, but these should be seen against a background of other health sector reforms.

The workshop concluded that PHC remains a highly valuable concept but that health systems need to adjust their organisation, with special attention for patient empowerment, bridges with other sectors and the institutional arrangements. There is need for improved evaluation, including the clarification of concepts, better measurement tools, assessment of (long-term) unexpected consequences and of processes and context factors.

WHO meeting at ITM on quality standards for long-lasting insecticidal mosquito nets

On 10 and 11 July the World Health Organization (WHO), the ITM and the Bill & Melinda Gates Foundation jointly organised an expert meeting on quality standards for long-lasting insecticidal mosquito nets (LN).

The distribution of LNs is a key intervention in the prevention and control of malaria. LNs are expected to retain their insecticidal activity for up to three years under field conditions. Different impregnation can be used; the insecticide can be incorporated in the fibre during production, or it can be coated on the fibre later on.

High product quality is essential for the effectiveness and safety of pesticides use. WHOPES, the WHO Pesticide Evaluation Scheme, coordinates the testing and evaluation of pesticides for public health, including LNs. Its recommendations facilitate the registration of pesticides by member states.

The objective of the meeting was to gather stakeholders from industry, academia, control

programmes and international organisations; to share data and experiences in the testing and evaluation of LNs and to agree on joint quality standards. It was attended by over 60 experts from all over the world.

Key speakers introduced technical topics, such as the mechanisms, patterns and measurement of active ingredient release and retention in LNs; the physical properties and requirements of LNs; implications for resistance and development of new generation LNs; and capacity strengthening for assessment of LNs. The animated discussions, chaired by Marc Coosemans (ITM), resulted in clear recommendations for WHOPES and other stakeholders.

For more information visit www.who.int/whopes/en/



Dr. Morteza Zaim, head of the WHO Pesticide Evaluation Scheme, welcomes the audience and explains the objectives of the meeting.

Alumni meeting of sub-Saharan French speaking MPH.

Kinshasa DRC, 18-21 August 2008

Over 50 alumni from the MPH (formerly MCM and CIPS/PMSS) gathered in Kinshasa for the first joint meeting of their unified network. The majority came from DR Congo, the host country which also counts the most alumni, but there were also representatives from 14 other countries and seven ITM staff. The meeting was co-organised by the Institut National de Recherches Biomédicales (INRB), the ITM's partner institute in DR Congo.

The opening session was chaired by the Minister of Health of DR Congo, Dr. Victor Makwenge. He emphasised the importance for his country of the topic of the meeting, "The interface between health programmes and services", in the light of the ongoing health sector reform in DR Congo.

The objectives of the meeting were threefold:

- To discuss and analyse different experiences of former participants with the interface between health services and diseases control programmes;
- To review the MPH and MDC courses of the ITM, in order to feed their continuous adjustment to field needs;
- To share the experiences and challenges by Congolese colleagues in the revitalisation of their health care system.

The first two days of the meeting focused on the interface "services – programmes". The scientific analysis

and discussions were based on 15 field experiences, selected from 43 abstracts submitted by the alumni.

On day three all participants went on a field visit to observe the operational relations between control programmes and the health system at the local, intermediate and central level in DR Congo. The afternoon was dedicated to a presentation of the Congolese health system, and the new national strategy to strengthen the health system. Different points of view were confronted, and successes as well as drawbacks were openly discussed. Finally, the participants worked in two groups to prepare their feedback on the relevance of the courses for their current tasks, resulting in highly relevant suggestions for scientific and didactic adjustments. Alumni from different MOH/MDC cohorts and staff had a great time together, reminiscing good and bad times in Antwerp, exchanging current experiences and making joint plans for the future.



The first joint alumni meeting of sub-Saharan French speaking MCM and CIPS/PMSS in Kinshasa, DR Congo in August 2008.

Diagnostics Quality Assurance Network for Visceral Leishmaniasis

WHO/TDR meeting in Antwerp 24-26 September, 2008

Simple rapid diagnostic tests (RDT) are critical for the control of visceral leishmaniasis (VL) by early case detection. After thorough evaluation, the immunochromatographic strip test rK39 has been found suitable for field use. However, products of doubtful origin and quality are circulating in the Indian subcontinent and quality control of products and reading is imperative. With financial support of the DGDC Framework Agreement, the ITM actively contributes to an initiative of WHO/TDR to develop a quality assurance network for VL-RDTs. A network of 9 laboratories from India, Bangladesh, Nepal, Kenya, Sudan and Brazil will (1) evaluate commercially available diagnostic tests to guide procurement; (2) develop national diagnostics quality assurance mechanisms for RDT reading; (3) facilitate diagnostic research and development. To this end, each laboratory will set up a GLCP compliant specimen bank, coordinated by WHO/TDR and with scientific and technical support of an ITM team headed by Marleen Boelaert and Diane Jacquet. The first round of batch testing of products is planned for July 2009.

Between 24 and 26 september 2008 the network members met at the ITM to discuss governance, procedures and action plans. This meeting was co-funded by the Belgian Direction-General of Development Cooperation (Framework Agreement, Strategic Network on Neglected Diseases) and the European Commission through the LeishRisk platform.



The participants of the VL Diagnostics meeting: experts from all continents



patients
testing
clinical
travel
international
laboratory
diagnosis
unit
performed
health
tropical
surveillance
Helpcenter
information
different countries
malaria

reference

Belgium
extended biomedical
ring confirmed
hosted
various
isolates
provides
Clinic
Organisation
data
sexually
remains
external
received
Trichinellosis
problems
therapeutic
staff
programmes
control
service
Microbiology
Research
Hospital
detection
biopsies
identification
transmitted
Pre-travel
evaluation

terms
Mycobacterium
sent
high-risk
routine
Bacoparvulosis
Antwerp
VCT
migrants
in-house
expanded
Federal
Clinic
sexually
remains
external
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Trichinellosis
problems
therapeutic
staff
programmes
control
service
Microbiology
Research
Hospital
detection
biopsies
identification
transmitted
Pre-travel
evaluation

sample
medicine
Collection
HIV/STD
laboratories
quality
HIV
scientific collaboration
website
diagnostic resistance
new

Public
Trypanosoma
infection
Supranational
Mycobacteriology
Phone
Culture
World
Africa
specific
promotion
Internal
confirmation
ARL
Immunized
Dermatology
tuberculosis
Schistosomiasis
include
Table
trials
groups
Trichinella
vaccinations

Medical
diagnostic resistance
new
treatment
consultations
aims within

institute
Animal
specialised
assistance
certified
Sciences
performs

centre
training
diseases
UZA
African
general
evolution
national
epidemiological
number
India
local

Services

Research
base



Medical Services

Medical services

The Medical Services are a distinct administrative and operational entity within the Institute. Patient-related research, education and scientific services are carried out under the umbrella of the Department of Clinical Sciences, be it largely by the same staff.

The Medical Services consist of the Service for Tropical and Import Pathology (including Dermatology and Paediatrics), the Travel Clinic, the Service for HIV/STD Care, the Medical Laboratory and the Hospital Ward. The latter is physically integrated in the Antwerp University Hospital (UZA), with the ITM medical staff as supervising consultants. The Medical Services embrace the single national reference centre for tropical and infectious diseases and one of the ten national reference centres for HIV/AIDS care (Aids Revalidation Centrum or ARC). In the extra muros "Helpcenter" we run an experimental facility to provide low-barrier HIV and STI screening and counseling, as well as preventive services to high-risk groups.

The Medical Services had 30,824 patient contacts in 2008, of which:

- Pre-travel advice 15,324 (50%)
(with 33,844 vaccinations)
- Tropical/import pathology 5,889 (19%)
- Dermatology 620 (2%)
- HIV dermatology 73 (0.2%)
- Paediatrics 117 (0.4%)
- STD 1311 (4%)
- HIV 6,214 (20%)
- Helpcenter 1,438 (5%)

The outpatient **Service for Tropical and Import Pathology** provides specialised diagnostic and curative care to travellers, expatriates and migrants. As national reference centre for tropical and infectious diseases, we are permanently on call to advise other health workers and authorities on the diagnosis, management and surveillance of imported and tropical diseases. We participated in main national and international scientific meetings and contributed to international travel health publications, including the WHO manual.



The Helpcenter moved to a new location in St.-Andries, a popular quarter near the ITM.

The **Travel Clinic** provides mainly pre-travel advice and care to tourists, professional travellers and migrants. A multidisciplinary team offers general, country-specific and disease-specific information, vaccinations, chemoprophylaxis, presumptive treatment instructions and other advices on healthy travelling. A telephone hotline is accessible 24/7 for external physicians seeking advise on import pathology; many diagnostic and therapeutic problems are thus solved by distant interventions.

The **Travel Phone** for tourists and travellers received over 10,000 calls in 2008, 20% of which were transferred to specialist staff for a “live” dialogue. In 2008, updated information was incorporated on outbreaks such as meningitis in Uganda, yellow fever in Paraguay, Brazil and Argentina and cholera in Zimbabwe. Extensive information on travel health can also be found on the ITM’s dedicated website on this subject, www.reisgeneeskunde.be (Dutch), www.medecinedesvoyages.be (French) or www.travelhealth.be (English). This website was consulted over 270,000 times (page views) in 2008. Its content is continuously updated, expanded and fine-tuned. The website includes separate fact sheets for more than 200 countries, overviews of obligatory and recommended vaccinations, malaria risks and prophylaxis, and many other recommendations. They are based on the consensus directives of the World Health Organization and the Belgian Scientific Study Group on Travel Medicine, which is coordinated by the ITM.

The outpatient **Service for HIV/STD Care** performed 7,523 consultations in 2008, 6,214 of which for HIV and 1,311 for other sexually transmitted infections. The AIDS Revalidation Centre (ARC) followed up 1,667 HIV-infected patients, 1,170 (70%) of which were on antiviral treatment. Of these patients, 56% are from Belgium (mainly men having sex with men, MSM) and 28% from sub-Saharan Africa. Most patients are followed-up three to four times a year in order to monitor their clinical, immunological and viral status and if necessary to adapt the therapy. In 2008 we registered 218 new HIV-positive patients, an increase of 15% compared to last year.

Evolution of laboratory requests since 2000 for in-patients and out-patients

Table 1. Evolution of laboratory requests since 2000 for in-patients and out-patients.

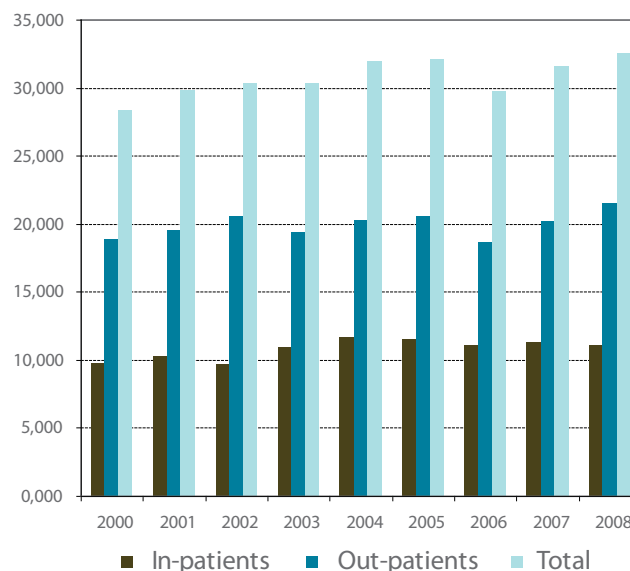
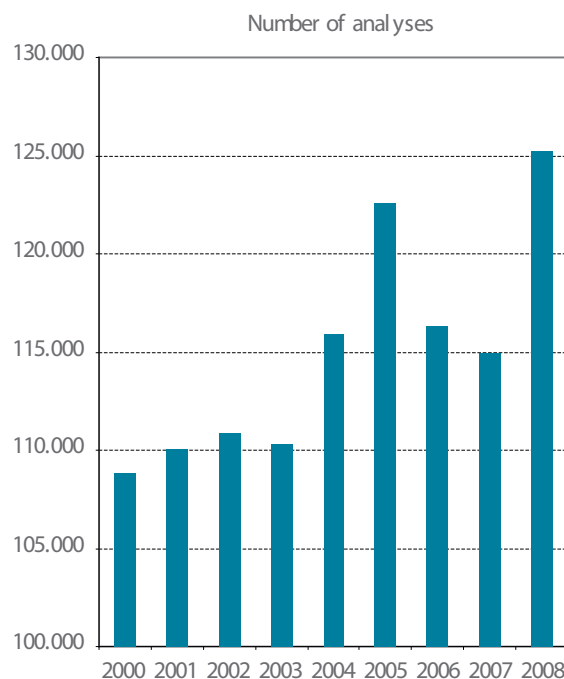


Table 2. Evolution of serological en parasitological analyses for imported diseases since 2000.



The ITM's **Helpcenter** is a special, experimental extra-muros facility which tests strategies to improve HIV prevention in high-risk groups.

A main activity is the offering of free, anonymous voluntary counselling and testing (VCT). In 2008, there were 1,438 patient contacts with 894 different persons. Men having sex with men (MSM) accounted for 29% of the total group and 50% of the men. In 2008 we tested with outreach VCT on locations where high-risk MSM gather, such as saunas and bars.

The second main target is sub-Saharan African migrants (SAM), a group which remains difficult to reach. Only 9% of all patients were Africans, while this group makes up a much larger part of HIV-positives in Belgium. The programme for primary prevention in SAM, run by the ITM on request of the Flemish Ministry of Welfare, has therefore actively promoted VCT at the Helpcenter in African bars and during "integration courses" for new immigrants.

Of the nearly 900 HIV tests performed by the Helpcenter In 2008, 18 tests (2%) were positive; these people were referred to the ARC. The Helpcenter also provided 72 sexuological consultations to 30 persons, focusing on the reduction of high risk behaviour.

The **Medical Laboratory** of the ITM ensures routine and expert diagnosis for the own outpatients, and referral services for laboratories, clinics and hospitals throughout Belgium. In 2008, the Medical Laboratory processed samples of 11,097 internal and 21,492 external patients (total 32,589). Besides routine biochemistry, haematology and microbiology, the laboratory performed 125,234 specific serological or parasitological tests for tropical and imported diseases. Some typical diagnoses are listed below.

In 2008 the specialised Laboratory of Mycology processed 6,836 samples including 392 cultures for identification and 11 yeast cultures for sensitivity testing.



Comprehensive check-up after a stay in the tropics

Typical "exotic" laboratory diagnoses

in 2008

| Species | nr. |
|------------------------------|-----|
| Ancylostomidae | 19 |
| Ascaris lumbricoides | 16 |
| Blastocystis | 682 |
| Chilomastix mesnili | 28 |
| Cryptosporidium | 21 |
| Cyclospora | 12 |
| Dengue virus | 63 |
| Dientamoeba fragilis | 49 |
| Endolimax nana | 233 |
| Entamoeba coli | 334 |
| Entamoeba hartmanni | 100 |
| Entamoeba histolytica/dispar | 195 |
| Entamoeba histolytica | 5 |
| Enterobius vermicularis | 2 |
| Giardia lamblia | 235 |
| Heterophyes heterophyes | 2 |
| Hymenolepis nana | 26 |
| Iodamoeba butschlii | 52 |
| Isospora belli | 4 |
| Leishmania | 12 |
| Loa loa | 1 |
| Mansonella perstans | 7 |
| Plasmodium falciparum | 124 |
| Plasmodium malariae | 7 |
| Plasmodium ovale | 10 |
| Plasmodium species | 3 |
| Plasmodium vivax | 22 |
| Plasmodium mixed | 7 |
| Sarcocystis | 2 |
| Schistosoma haematobium | 9 |
| Schistosoma mansoni | 28 |
| Strongyloides stercoralis | 9 |
| Taenia saginata | 1 |
| Taenia spp. | 2 |
| Trichomonas vaginalis | 1 |
| Trichostrongylus spp. | 5 |
| Trichuris trichiura | 31 |

Hospitalisation Unit

The ITM/UZA Hospitalisation Unit for Tropical Diseases and HIV/AIDS hosted 206 patients in 2008, 110 of which for HIV-related problems and 96 for severe tropical or travel-related diseases, usually malaria. 77 patients were treated in the day care unit of the UZA. The joint infectiological consultations, in collaboration with the UZA Departments of Microbiology and General Internal Medicine, were further extended. These consist of a daily hospital-wide survey of relevant laboratory results, and joint bedside visits to selected patients. The team also provides consultancies on demand and staff training in infectiology.

Highlight

Change of guard at the HIV/AIDS clinics

In June, the Medical Services with great regret took leave of Dr. Filip Moerman, the inspired and inspiring acting head of the HIV/AIDS clinic and Aids Revalidation Centre (ARC). He took on a 5-year training residence in internal medicine at the University of Ghent, but will surely come back with these new capacities to the field of tropical medicine and HIV/AIDS.

The Board of Governors appointed Dr. Eric Florence as new head of the Service for HIV/AIDS Care and of the ARC, as of July 1st. Dr. Florence is an internist and infectiologist with great experience in HIV care and research in Belgium and Africa, and obtained his PhD on this subject at the ITM and Antwerp University in 2004. He is also an expert in medical informatics and database management, an ever greater necessity in HIV care.



Eric Florence (left) presenting a farewell gift to Filip Moerman (middle).

Reference Laboratories

Department of Microbiology

National Aids Reference Laboratory (ARL) Reference Laboratory for Sexually Transmitted Infections (STI)

The AIDS Reference Laboratory (ARL) of the ITM is one of the seven centres certified and funded by the Belgian Ministry of Public Health and Social Affairs. Their tasks include reference and confirmation diagnosis of HIV (serology, viral load, resistance); assessment, development and quality control of existing and new tests; data collection and surveillance. They collaborate in a national ARL network with the national Scientific Institute of Public Health.

The table shows the number of reference tests performed by the ARL at the ITM over the last five years. In 2008, 352 new HIV infections have been confirmed. The number of screening and confirmation tests remains relatively stable. The increasing number of viral loads and resistance tests indicates the qualitative evolution of the clinical needs. Ever more patients are under anti-retroviral treatment, and resistance patterns become more complex.

In 2008, the ITM's Reference Laboratory for Sexually Transmitted Diseases (STD), formerly part of the Unit of HIV/STD Control and Epidemiology, merged with the ARL (see Department of Microbiology).

National Reference Centre for Mycobacteria

As National Reference Centre for Mycobacteria, the Unit of Mycobacteriology performs diagnostic microscopy, PCR and culture as well as drug-susceptibility testing (DST) and identification of mycobacteria from peripheral Belgian laboratories. The unit assists in organising quality control programmes for DST and performs DNA-fingerprinting analyses to document possible laboratory cross-contaminations or mini-epidemics. In 2008, the reference centre received 75 isolates for identification and DST, and 283 human specimens for detection of mycobacteria.

| Test | 2004 | 2005 | 2006 | 2007 | 2008 |
|------------------------|------|------|------|------|------|
| HIV screening | 2717 | 2688 | 2466 | 2974 | 3128 |
| HIV confirmation | 1085 | 1146 | 976 | 906 | 1039 |
| HIV viral load | 4564 | 4835 | 4980 | 5338 | 5680 |
| Blood Donors (BTC) | 5 | 11 | 10 | 4 | 1 |
| Others | 64 | 113 | 115 | 132 | 205 |
| Total | 69 | 124 | 134 | 136 | 206 |
| HIV resistance testing | 113 | 110 | 136 | 210 | 165 |
| Chlamydia trachomatis | | | | | 1546 |
| Neisseria gonorrhoeae | | | | | 321 |
| Chlamydia trachomatis | | | | | 1546 |

WHO Collaborating Centre for HIV/AIDS Diagnostic and Laboratory Support

This reference centre is hosted jointly by the ARL and the Unit of Immunology. The activities include expert advice, reference services, quality control, research and training on the diagnosis and surveillance of retroviral diseases and blood-transmissible diseases, particularly HIV and HTLV-I/II.

In 2008, a meeting was convened to discuss current and future joint activities between the WHO and the ITM, such as HIV specimen reference panels, specimen acquisition, prequalification of diagnostics laboratory evaluation protocol and quality management.

WHO Collaborating Centre for the Diagnosis and Surveillance of *Mycobacterium ulcerans* Infection

The Unit of Mycobacteriology is a WHO reference centre for the diagnosis and surveillance of *Mycobacterium ulcerans* infection. The terms of reference include: support to endemic countries in clinical diagnosis and epidemiological surveillance; collection, storage and distribution of reference samples; training in microbiology and epidemiology for health professionals and researchers; development of training materials.

In 2008, we confirmed the diagnosis by culture and/or PCR for patients from Benin (123 biopsies), DR Congo (263 biopsies, 71 swabs), Gabon (53 biopsies) and South Africa (6 biopsies). We continued our support to the National Reference Laboratory of Mycobacteria in Cotonou (Benin), including training, external quality assurance and the transfer of diagnostic PCR technology.

Supranational Reference Laboratory of the World Health Organization (WHO) and the International Union against Tuberculosis and Lung Disease for the worldwide monitoring of drug-resistant tuberculosis

The Unit of Mycobacteriology performed drug-susceptibility testing (DST) for various National Tuberculosis Programmes, trained local staff in DST and external quality assurance (EQA) among others for a drug-resistance survey in Tanzania. We continued the supervision and EQA of drug-resistance surveillance in retreated cases in Bangladesh. We supported multi-drug resistant TB (MDR-TB) treatment programmes in Rwanda, DR Congo, Burundi, Niger, Nigeria and Georgia

by resistance testing to second-line drugs. In 2008, we also analysed 4,181 sputum specimens (culture and DST) from various field projects of Médecins sans Frontières France. As global coordinator of the Supranational Reference Laboratories (SRL) of the WHO / IUTLD, the Unit of Mycobacteriology organised the 15th round of quality assessment of DST for SRLs.

Department of Parasitology

OIE Reference Centre for *Trypanosoma evansi* (surra)

The Unit of Parasite Diagnostics is a World Organization for Animal Health (OIE) reference centre for *Trypanosoma evansi* (surra). We carry out these duties in close collaboration with the Applied Technology and Production Unit. In 2008, we tested 102 animals with the CATT / *T. evansi*, 23 of which needed confirmation by trypanolysis, 21 underwent parasitological examination and 5 were submitted to ELISA and PCR. Furthermore, we gave advice on surra management to scientists and veterinarians from various countries. These include France and Spain, where surra outbreaks are caused by camels imported from Gran Canaria.

Department of Animal Health

FAO Reference Centre for Livestock Trypanosomosis: parasite management and diagnosis

See highlight in the Department of Animal Health chapter

National Reference Laboratory for Trichinellosis

See highlight in the Department of Animal Health chapter

capacity scientific
comprehensive strategies
international developing
networking

FA3



partnerships

collaboration

activities

individuals annual
training health policy
South Meeting
second management
process period
support
FA2
care
projects
million
strategic
policies
Programme
sustainable
institutions
services administrative
alumni
Framework
Belgian
DGDC
partners
strengthening
countries
objective
research
Agreement
institutional planning

Development Cooperation

Development Cooperation

The Belgian Directorate-General for Development Cooperation (DGDC) and the ITM have been partners for decades in numerous projects, scholarship programmes and other activities. Since 1998, we integrated our collaboration in a comprehensive Framework Agreement Programme, a coherent set of activities geared at sustainable scientific, medical and veterinary capacity building in the South. The year 2008 marked the start of the third FA programme (FA3, 2008-2013).

The ITM-DGDC Framework Agreement Programme

The first (FA1, 1998-2002) and second (FA2, 2003-2007) 5-year ITM-DGDC Framework Agreement Programmes have been described in previous annual reports; the achievements are summarised in the table below.

| | FA1 1998-2002 | FA2 2003-2007 |
|--------------------------------|------------------|------------------|
| Training in Belgium (Masters) | 450 | 387 |
| Individual PhD scholarships | 0 | 15 |
| Regional Courses | 3 | 0 |
| Congresses | 6 | 5 |
| Institutional Strengthening | 7 | 10 |
| Joint Research Projects | 16 | 12 |
| Policy Support projects | 15 | 5 |
| National Stakeholder Platforms | 0 | 2 |

As already described in the 2007 report, the ITM submitted the Third Framework Agreement programme (FA3, 2008-2013) for approval to DGDC in November 2007, after intense preparation with all partners. The estimated budget for the first period 2008-2010 was of 36 million euro. As motto we withheld "Switching the Poles", the theme of our 2006 Centennial Colloquium on capacity strengthening in the South. The focus of transferring not only expertise, but also institutional resources, ownership and leadership to the South

partners, is very much in line with the Declaration of Paris (2005) and the Accra Agenda (2008). Due to the delayed government formation, the federal budget for development aid budgets was only decided upon in March 2008. For the indirect actors (NGOs, universities, scientific institutes), the 2007 budgets were linearly increased with 3% which for ITM amounted to a 2008 budget of 10.1 million euro instead of the proposed 12 million euro. The total budget for the first three-year period (2008- 2010) was set at 32.5 million euro. The original programme was consequently amended. In view of the coherence of the programme, the interests of partner institutes and students, and the great efforts that had gone in joint planning processes, the educational and institutional capacity strengthening components were maximally preserved. The amended programme was finally approved in March 2008; meanwhile, most activities had been started or continued with pre-funding of the ITM. It is possible that in the course of the programme, budgets will be increased for specific components.

The Minister of Development Cooperation and the DGDC initiated in the course of 2008 an intensive discussion with the universities and the ITM on the application of the Paris principles in academic and scientific cooperation. As the FA3 was conceived under that very spirit, with the telling motto "Switching the Poles", the ITM welcomed this new policy. Its practical application of challenges and even shakes up many

“The FA3 substantially increases the emphasis on synergetic networking and interactions between the South partners.”

ingrained relations and attitudes, however the dialogue is expected to result by early 2009 in a revised “pact” between the ministry and the “University and Scientific Development Cooperation”, as this subset of actors has been newly coined. We look forward to report on the outcome in our next annual report.

The Third Framework Agreement

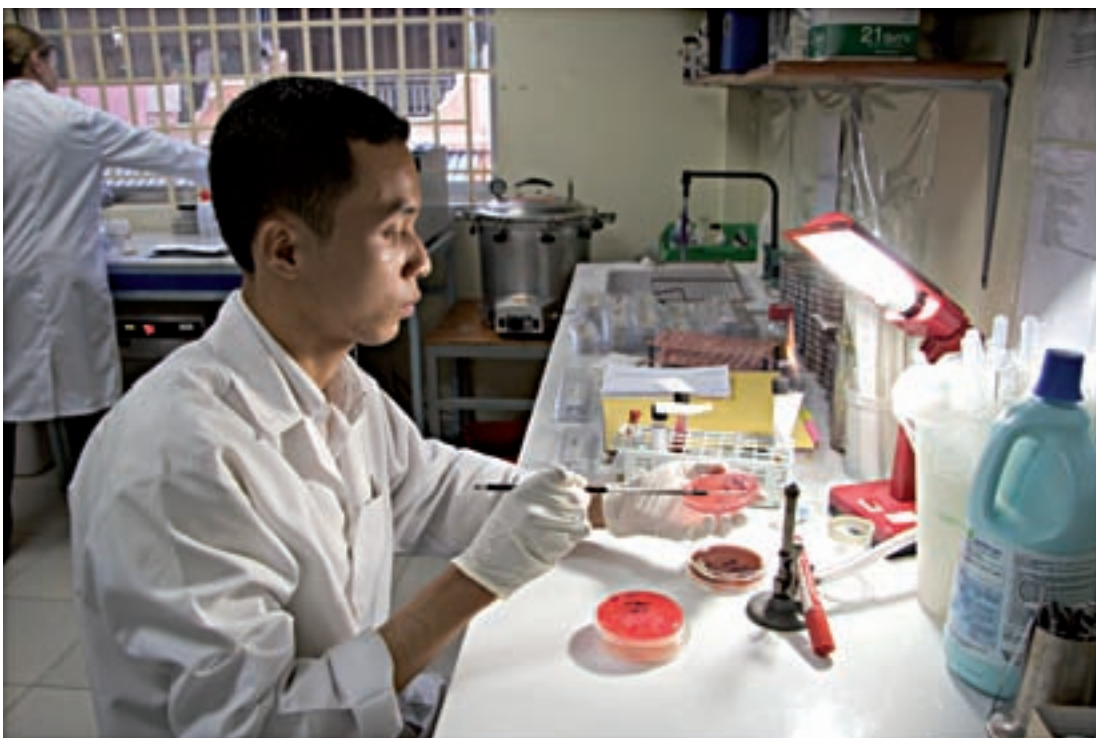
The third Framework Agreement Programme (FA3) started on January 1, 2008 and runs until the end of 2013 over a period of 2 times 3 years, with a mid-term assessment planned for 2010.

The *overall objective of the FA3 programme* is to strengthen the rational basis and the country ownership of health care systems and policies in developing countries, in order to improve the health

status of the populations and thereby to contribute to the reduction of poverty and inequity.

The *specific programme purpose* is to build, reinforce and support appropriate and sustainable capacity in developing countries to conduct research, training and delivery of reference services in order to meet the overall objective.

The *target groups* of the programme are, in order of impact and level: (1) The leaders, scientists and experts in the partner institutions in developing countries; (2) The health professionals and policy makers that can implement the improved practices and policies resulting from the programme; (3) The communities and individuals that should benefit from the improved practices and policies.



Sihanouk Hospital Centre of Hope, Phnom Penh, Cambodia: Laboratory of Diagnostic Microbiology



Institut National de Recherche Biomédicale, Kinshasa, DR Congo

Capacity development is pursued at the individual, institutional and international level. In addition, support is given to the Belgian sector of international health development and cooperation. The administrative management is a fifth, separate component. Accordingly, the FA3 is divided into five subprogrammes, each corresponding with a “programme result” in the overall logical framework:

- *Training*: strengthening the capacity of individuals from developing countries
- *Institutional collaboration*: strengthening the institutional capacity of institutes, organisations and networks in developing countries
- *Strategic programme*: addressing and completing strategic priorities by targeted additional projects and partnerships, and through networking within and outside the FA3
- *Policy support and advocacy*: providing support to the Belgian development cooperation in the formulation, implementation and dissemination of its policies
- *Management*: ensuring adequate administrative and financial management of the programme

The **Training Subprogramme** for individual capacity strengthening has seven components:

- Participation of mid-career professionals from developing countries in the master and short expert courses at the ITM
- Mixed (“sandwich”) doctoral training for health scientists from developing countries, either as selected individual master alumni or as part of institutional strengthening projects
- Development of and provision to students and institutes in developing countries of novel educational tools and updated scientific information
- Offering of distance and e-learning programmes and expert telemedicine support
- Support, follow-up and networking of alumni from and in developing countries
- A strategic network for the joint development of curriculae, standards and policies
- Student services providing administrative, financial, social and cultural support to ITM students and trainees with a DGDC scholarship

The **Institutional Collaboration (IC) Subprogramme** focuses on sixteen partner institutions selected on the basis of scientific and institutional quality (see table and map). The participants represent a geographical mix, although sub-Saharan Africa would ideally have been more strongly represented. The IC projects include support to training, research and/or services delivery, but also to institutional development and to the translation of research into policy and practices. Most of the shared thematic priorities of the DGDC and the ITM are broadly covered, except HIV/AIDS that was - coincidentally or not - mainly addressed by applicants that did not fulfil institutional criteria. These deficits will be remedied through additional partnerships and projects in the Strategic Subprogramme. The different IC projects have varying degrees of potential for national, (sub)regional and global impact, which will be further strengthened through strategic networking.

The **Strategic Subprogramme** addresses strategically, in complement to the IC Subprogramme, main global health topics, geographic priorities and cross-cutting issues through “Strategic projects” and “Strategic networks”

The strategic projects focus on topics such as HIV prevention, leishmaniasis and Buruli ulcer that were not adequately covered by the institutional programmes. These projects are conducted with partners that were not selected for the IC programme for institutional reasons, enabling continued collaboration and networking. In order to strengthen the desired geographic focus, further priority was given to partner institutes in sub-Saharan Africa.

The Strategic Networks aim at optimising synergies and cooperation between the South partners, capitalising on each other's expertise and experiences, and joining forces in the promotion of common viewpoints in international health policies. "Thematic Networks" address joint strategic priorities of the DGDC, the ITM and the partners. The "Quality Networks" address cross-cutting issues mainly aiming at introducing and strengthening international quality standards. They will initially focus on three main issues: (1) Good Laboratory Practices in medical reference and research laboratories; (2) Good Clinical Practices in clinical trial centres; and (3) the promotion of equity, gender balance and ethics.

The **Policy Support and Advocacy Subprogramme** is geared at a close collaboration with the DGDC in the development, implementation and follow-up of its policies in international health, including the coordination of Belgian actors, expert assistance in international fora and advocacy at the national and international level. This subprogramme embraces the formal policy support function for basic health care entrusted to the ITM under the FA2, and consists of following elements:

- Policy support to DGDC: advice and assistance in the formulation of international health policies, co-representation of DGDC and other government agencies in international fora and policy supportive research on demand
- Coordination with Belgian actors by means of platforms: Be-Cause Health, Be-TropLive and a (planned) Pharmaceutical platform
- Public information and sensitisation
- The organisation of the annual colloquia, other seminars and events

The **Management Subprogramme** ensures adequate administrative and financial management of the whole programme, including planning, monitoring and evaluation.

In the first trimester of 2008 most projects were kept on hold awaiting the final approval of the programme by the minister. In April 2008 the projects could take off for good and most gained momentum quickly. Inevitable red tape delayed the start-up of some new collaborations, but by the second half of 2008 all projects were up and running. The progress of the individual projects can be found on www.itg.be by filling in the project reference number in the search box.



Health care users in a tribal area in Karnataka, India

Table 2. Institutional Collaboration projects in the third ITM-DGDC Framework Agreement Programme.



| | | | |
|----|--|-----|--|
| 1. | Institut National de Recherche Biomédicale (INRB), Ministère de la Santé Publique, Kinshasa, Congo | 9. | Instituto Nacional de Higiene, Epidemiología y Microbiología (INHEM), Havana, Cuba and Instituto Pedro Kourí (IPK), Havana, Cuba |
| 2. | Institute of Public Health (IPH - MU), Makerere University, Kampala, Uganda | 10. | Instituto de Medicina Tropical "Alexander von Humboldt" (IMTA vH), Universidad Cayetano Heredia, Lima, Peru |
| 3. | Tropical Diseases Research Centre (TDRC), Ndola, Zambia | 11. | Centro Internacional de Zoonosis (CIZ), Universidad Central, Quito, Ecuador |
| 4. | Centre Hospitalière Universitaire (CHU), Université Cheik Hassan Diop, Dakar, Senegal | 12. | Post-Graduate Medical School, Universidad Mayor de San Simon (UMSS), Cochabamba, Bolivia |
| 5. | Department of Veterinary Tropical Diseases (DVRD), University of Pretoria (DVTB), South Africa | 13. | Institute of Public Health (IPH), Bangalore, India |
| 6. | Centre International de Recherche-Développement sur l'Élevage en Zone Subhumide (CIRDES), Bobo-Dioulasso, Burkina Faso | 14. | Sihanouk Hospital Center of HOPE, Phnom Penh (SHCH), Cambodia |
| 7. | Institut National d'Administration Sanitaire (INAS), Ministère de la Santé, Rabat, Morocco | 15. | National Institute of Malariology, Entomology and Parasitology (NIMPE), Ministry of Health, Hanoi, Vietnam |
| 8. | Institute of Public Health, Pontificia Universidad Católica del Ecuador (IPH-PUCE), Quito, Ecuador | | |

Third Joint Partner Meeting

Since 2004, all FA partners meet every other year in “Joint Partner Meetings” to promote collaboration and networking, to mould the different projects into a true programme and to forge an alliance of institutes and individuals sharing a common view on science, health and global development. On November 28, 2008 we gathered once more with promoters and scientists from all FA3 partners in the ancient Campus Rochus, after a busy week of interactive meetings and the ITM annual colloquium.

The meeting started with a joint briefing on Framework Agreement 3 (FA3), its structure and components, managerial issues and the ongoing discussions with the DGDC on the application of the Paris Declaration in the scientific cooperation programmes. While in 2006 we had already agreed on the basic objective of “Switching the Poles”, the frank discussion on the conceptual, operational and managerial challenges of a genuine implementation was a sometimes shocking eye-opener to participants from North and South. Indeed, even the FA3 remains a programme that is funded, steered and managed by a northern institution. Even with the best of wills, shifting ownership and power to the southern partners of the FA3 network shakes up the very concept and many ingrained habits and attitudes. The FA3 alliance will have to make a serious and joint effort to explore this uncharted territory, but the maturity of the partnerships is ready to be tested.

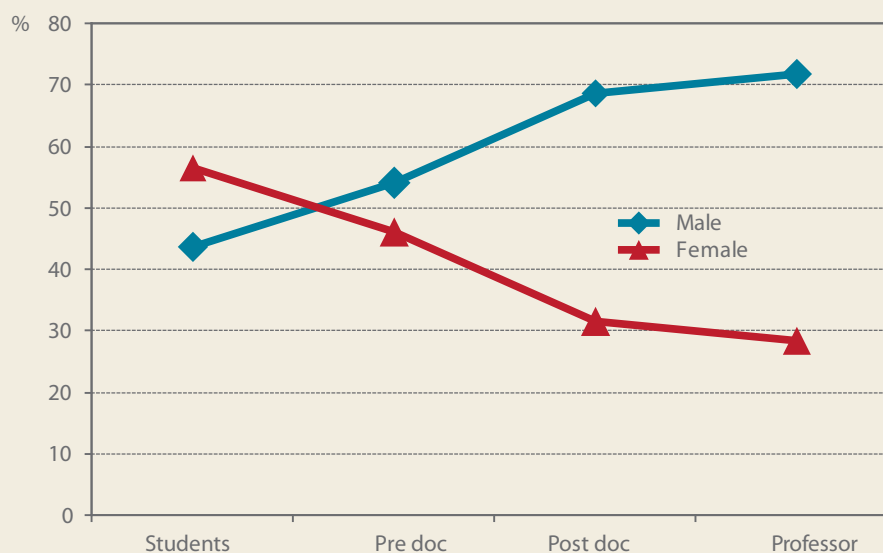
A second and related session was dedicated to the networking. The various strategic networks that are, or could be envisaged in the FA3 were presented in plenary, in order to inform all partners and sound out possible interests. A lively discussion ensued, building on the previous session. Apart from its intrinsic value, networking was recognised as a potential instrument for gradual “pole shifting” e.g. by shifting the coordination and management from the ITM to South partners. On the other hand, participants agreed that networking should not be an aim in itself, and that there were already many international thematic networks and websites. The FA3 networking subprogramme could actually focus part of its strategies and resources on promoting the coordinated participation to relevant existing networks. Several speakers felt that it might be more efficient and natural



Directors and promoters of the 16 FA3 partner institutes at the Third Joint Partner Meeting.

to maintain one over-arching FA3 network, under which partners could forge ad hoc or structural sub-networks on the basis of common interests or needs. It was agreed that, for the sake of initial manageability and start-up, the ITM would continue to coordinate the networks in the first three-year period of the FA3 (2008-2010), and to redesign the web structure while preparing for the second FA3-period (2011-2013).

We concluded the JPM3 with a workshop on “Research Ethics” and “Gender & Equity”. The results of an initial survey on policies, practices and facts regarding these issues among all partner institutions were presented. A mixed panel then opened a lively, frank and at times confronting group discussion on this gripping subject. While the basic value of equity, the actual fundament of the FA3 partnership was shared by all, views and attitudes still vary considerably between people, institutes, countries and continents. There was a great and common felt need for training of junior and senior scientists in research ethics, and it was agreed that activities to that effect should be strengthened at project as well as programme level. As to gender policies, striking differences between countries and institutes were observed and analyzed. In some countries such as Cambodia and Cuba, gender equity in academia is a reality and even considered evident. In most situations, however, the proportion of women among scientists typically decreases exponentially from the junior to the senior level. Most partners were very interested in an explicit exchange of policies and practices, and this is one of the networks which certainly has an animated future.



Gender distribution (in %) at subsequent academic levels in the total staff of seven FA3 partner institutions, including ITM, for the year 2006-2007: the typical “scissor” pattern with decreasing female representation in rising ranks. There are substantial and sometimes surprising local variations, however.

FA3 Projects and Partners

The projects listed below are funded by the Belgian Directorate-General for Development Cooperation (FA3). For more details on the projects of Institutional Collaboration or the Strategic Programmes visit www.itg.be and enter the project reference number in the search field.

Training

Reference number 910100

Master and short courses

ITM promoter: Govert van Heusden (Direction - Education coordination)

Reference number 910200

PhD programme

ITM promoter: Ann Verlinden (Direction - Research Coordination)

Reference number 910300

Educational tools

ITM promoter: Govert van Heusden (Direction - Education coordination)

Reference number 910400

Distance education & eLearning

ITM promoter: Govert van Heusden (Direction - Education coordination)

Reference number 910500

Alumni support

ITM promoter: Jean Van der Venet

Reference number 910600

Educational networking

ITM promoter: Hilde Buttiëns (Direction - Education coordination)

Reference number 910700

Student support

ITM promoter: Helga Bödges (Student Services)

Institutional collaboration

Africa

Reference number 920100

Institutional strengthening of the Institut National de Recherche Biomédicale (INRB), Kinshasa, Democratic Republic Congo

ITM promoter: Marleen Boelaert (Department Public Health – Unit Epidemiology and Disease Control)
INRB promoter: Jean-Jacques Muyembe

Reference number 920200

Support to the development of training and research capacity of the Institut National d'Administration Sanitaire (INAS), Rabat, Morocco

ITM promoter: Vincent De Brouwere / Guy Kegels (Department Public Health – Unit Quality and Human Resources)
INAS promoter: Prof. Aabderrahmane Maaroufi

Reference number 920300

Capacity strengthening for health systems research and health policy development at the Institute of Public Health (IPH), Makerere University, Kampala, Uganda

ITM promoter: Bart Criel (Department Public Health – Unit Health Policy and Financing)
IPH promoter: Prof. George William Pariyo

Reference number 920900

Institutional capacity strengthening of the Tropical Diseases Research Centre (TDRC) for the conduct of quality clinical research, Ndola, Zambia

ITM promoter: Umberto D'Alessandro (Department Parasitology – Unit Parasite Epidemiology and Control)
TDRC promoter: Dr. Modest Mulenga

Reference number 921200

Strengthening of Centre Hospitalier Universitaire de Dakar as centre of excellence for research and control of HIV, tuberculosis and other infectious diseases in Senegal and Africa

ITM promoter: Luc Kestens (Department Microbiology – Unit Immunology)
CHU promoter: Prof. Souleymane Mboup

Reference number 921300

Institutional collaboration to develop and transfer methods for the control of parasitic livestock diseases and zoonoses in the Southern African Development Community Region with the Department of Tropical Veterinary Diseases (DVT), University of Pretoria, South Africa

ITM promoter: Peter Van den Bossche (Department Animal Health – Unit Veterinary Disease Control)
DVT promoter: Prof. J. A. W. Koos Coetzer

Reference number 921400

Strengthening as a reference centre for the diagnosis and control of trypanosomiasis and trypanocide resistance in West Africa of the Centre International de Recherche Développement de l'Élevage en zone Subhumide (CIRDES), Bobo Dioulassou, Burkina Faso

ITM promoter: Stanny Geerts (Department Animal Health – Unit Veterinary Protozoology)

CIRDES promoter: Dr. Sidibe Issa

South America

Reference number 920400

Strengthening the capacity for public health training and research of the Institute of Public Health Institute at Pontificia Universidad Católica del Ecuador (IPH-PUCE), Quito, Ecuador

ITM promoter: Jean-Pierre Unger (Department Public Health – Unit Public Policy and Management)

IPH-PUCE promoter: Dr. Edison Aguilar Santacruz

Reference number 920500

Strengthening public health and tropical disease research in Cuba at the Instituto Nacional de Higiene, Epidemiología y Microbiología (INHEM), Havana, Cuba and Instituto Pedro Kourí (IPK), Havana, Cuba

ITM promoter: Patrick Van der Stuyft (Department Public Health – Epidemiology and Disease Control)

INHEM/IPK promoters: Dr. Mariano Bonet and Dr. Gustavo Kouri

Reference number 920600

Strengthening postgraduate training at the Faculty of Medicine, Universidad Mayor de San Simon (UMSS) of Cochabamba, Bolivia

ITM promoter: Patrick Van der Stuyft (Department Public Health – Unit Epidemiology and Disease Control)

UMSS promoter: Dr. Faustino Torrico

Reference number 921000

Institutional collaboration with the Instituto de Medicina Tropical “Alexander von Humboldt” in Lima, Peru

ITM promoter: Jean-Claude Dujardin (Department Parasitology – Unit Molecular Parasitology)

IMTA vH promoter: Dr. Eduardo Gotuzzo

Reference number 921500

Capacity strengthening of Centro Internacional de Zoonosis (CIZ), Universidad Central, Quito, Ecuador

ITM promoter: Dirk Berkvens (Department Animal Health – Unit Veterinary Epidemiology and Biostatistics)

CIZ promoter: Prof. Dr. Washington Benitez

Asia

Reference number 920700

Strengthening the capacity to provide training and conduct public health research of the Institute of Public Health, Bangalore, India

ITM promoter: Bart Criel (Department Public Health – Unit Health Policy and Financing)

IPH promoter: Dr. N. Devadasan

Reference number 920800

Building capacity to conduct high-quality clinical research and training in infectious diseases at the Sihanouk Hospital Centre of Hope (SHCH), Phnom Penh, Cambodia

ITM promoter: Lut Lynen (Department Clinical Sciences – Unit HIV/AIDS and STD)

SHCH promoter: Dr. Thai Sopheap

Reference number 921100

Institutional collaboration to strengthen rational prevention and control of malaria and other parasitic diseases in Southeast Asia with the National Institute of Malariology, Entomology and Parasitology (NIMPE), Ministry of Health, Hanoi, Vietnam

ITM promoter: Marc Coosemans (Department Parasitology – Unit Entomology)

NIMPE promoters: Prof. Le Khanh Thuan and Dr. Nguyen Manh Hung

Strategic Projects

Africa

Reference number 930100

Preventive interventions targeting HIV uninfected and HIV infected young people in Kenya and Uganda

ITM promoter: Marie Laga (Department Microbiology – Unit HIV/STD Epidemiology and Control)

Reference number 930200

HIV prevention among female sex workers in Côte d'Ivoire

ITM promoter: Marie Laga (Department Microbiology – Unit HIV/STD Epidemiology and Control)

Reference number 930500

Diagnosis and control of Buruli ulcer in Benin and West Africa

ITM promoter: Leen Rigouts (Department Microbiology – Mycobacteriology)

Reference number 930600

Clinical trial capacity strengthening for malaria in Burkina Faso

ITM promoter: Umberto D'Alessandro (Department Parasitology – Unit Parasite Epidemiology and Control)

Reference number 930700

Support to clinical research on human African trypanosomiasis in the Democratic Republic of Congo

ITM promoter: Raffaella Ravinetto (Interdepartmental Clinical Trials Unit)

Asia

Reference number 930300

Improving access to comprehensive reproductive health in Cambodia through increased linkages between HIV/STI and reproductive health services

ITM promoter: Marie Laga (Department Microbiology – Unit HIV/STD Epidemiology and Control)

Reference number 930400

Visceral leishmaniasis control

ITM promoter: Marleen Boelaert (Department Public Health – Unit Epidemiology and Disease Control)

Strategic Networks

Reference number 931100

Network on Health Systems: ‘Health for All beyond 2000’

ITM promoter: Guy Kegels (Department Public Health – Unit Quality and Human Resources)

Reference number 931200

Network HIV/AIDS Programmes and Policies

ITM promoter: Marie Laga (Department Microbiology – Unit HIV/STD Epidemiology and Control)

Reference number 931500

Network Neglected Diseases

ITM promoter: Marleen Boelaert (Department Public Health – Unit Epidemiology and Disease Control)

Reference number 931600

Network Zoonotic Diseases

ITM promoter: Stanny Geerts (Department Animal Health – Unit Veterinary Protozoology)

Reference number 931700

Network International Health Policies

ITM promoter: Wim Van Damme (Department Public Health – Unit Health Policy and Financing)

Reference number 932100

Network Integrated Laboratory Quality Management

ITM promoter: Jan Jabobs (Department Clinical Sciences – Tropical Unit Laboratory Medicine)

Reference number 932200

Network Clinical Research

ITM promoter: Raffaella Ravinetto (Interdepartmental Clinical Trials Unit)

Reference number 932300

Network Equity, Ethics and Gender

ITM promoter: Ann Verlinden (Direction - Research Coordination)

Impulse Programme

Reference number 933100

Human African trypanosomiasis impulse programme

ITM promoter: Marc Coosemans (Department Parasitology – Department Entomology)

Policy Support and Advocacy

Reference number 940100

International Health Fora

ITM promoter: Dirk Van Der Roost (Direction, Networking)

Reference number 940200

Policy Supportive Research

ITM promoter: Dirk Van Der Roost (Direction - Networking)

Reference number 941100

Be-cause health: Belgian platform for international health

ITM promoter: Dirk Van Der Roost (Direction - Networking)

Reference number 941200

Be-troplive: Belgian platform for animal health and animal production in the tropics

ITM promoter: Eric Thys (Department Animal Health)

Reference number 941300

Pharmaceutical Platform

ITM promoter: Dirk Van Der Roost (Direction - Networking)

Reference number 942100

Public information and sensitisation

ITM promoter: Jan Coenen (Direction -South Programme)

Reference number 943100

ITM Annual Colloquium

ITM promoter: Dirk Van Der Roost (Direction - Networking)

Reference number 943200

Seminars and events

ITM promoter: Ann Verlinden (Direction - Research Coordination)



Research
personnel
section
allocated
balance
network
ITM

staff external
Euro Laboratory
accounts
scientific
organisation
services
quality
activities
internal
funds
core
invoices
include
Medical Ministry
financing
DGDC temporary
Institute
million
among
service
support
education
number



Management

Support Services

Administrative and financial services

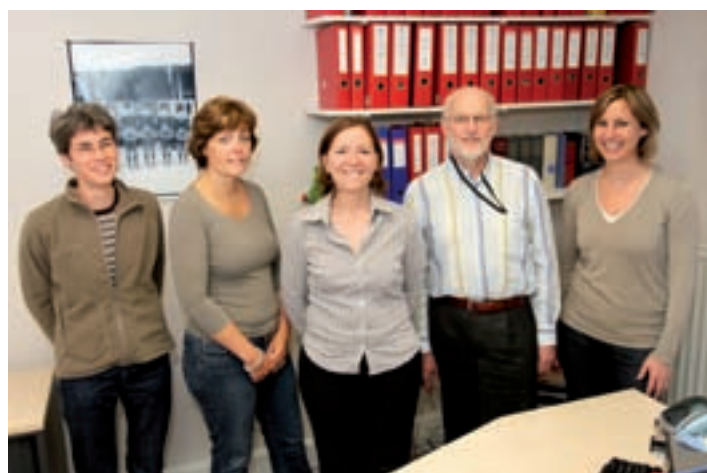
The administrative and financial support services first of all dealt with an ever-increasing number of routine tasks, linked to the growing volume and complexity of the ITM's activities. Moreover, due to new European and national legislation, part of these activities became liability to Value-Added Tax (VAT). The preparation and introduction of the accounting and fiscal procedures took a lot of thinking, negotiations and work. Also our IVAN business software package, only recently introduced (see annual report last year) had to be adapted and further fine-tuned. At the same time, we had to start up the new ITM-DGDC Framework Agreement Programme and to find our way in the complex financial regulations of the 7th European Framework Programme.

The **Purchase Service** handled 4,492 order forms, 1,083 express deliveries, 16 large export dispatches, 91 deliveries of dangerous goods, 91 imports and 75 air freights. The number of operations more than doubled over the last ten years, with a striking increase of dangerous good shipments. These can be handled only by people with the IATA certificate, which was obtained by one more staff member in 2008. The Travel Service booked 650 travels and arranged related visa. We fully switched to electronic processing of all orders and internal bills, and extended the offer of the in-house stocks.

The **Accounts Service** prepared the introduction of the VAT liability and of the new accounting regulations for the Flemish universities. It processed 11,198 invoices, 326 compounded payment lists, 798 reports and claims to financiers, 74 credit notes and 566 internal bills.

The **Human Resources Service** administered the salaries of 406 staff members, the recruitment of 127 new employees and the retirement or departure of 92 others. We introduced fiscal-free meal vouchers as an additional employer's bonus and an external ironing service as a means to facilitate the combination of work and family care. We took over the coordination of the staff magazine (ITGa-zet). In collaboration with the IT Service we extended the staff databases and management systems, and with the Quality Assurance Unit we revised several staff-related procedures.

The **Medical Accounts Service** contributed to the digitalisation of the radiology unit, prepared the switch to new software for patient administration, and processed 3,477 invoices to suppliers, 60,596 to patients, 43,567 to other clients and 44,590 to social insurance companies.



The team of the Project Management Service: Saskia Kraus, Michele Bruyneel, Annick De Somer, Jef Van Lint, Nadine Van Peer

The **Project Management Service** followed up 136 externally funded projects, of which 26 started up in 2008. It took care of the administrative start of the third ITM-DGDC Framework Agreement Programme and prepared the introduction of the full cost model and other new financial regulations of the 7th European Framework Programme for Research. It coordinated the introduction of a new ITM Intellectual Property Policy and of related standard contracts, published a guideline for the project module in IVAN and organised training for IVAN users and departmental project managers.

The activities of the **Student Service** can be found in the chapter on Education.

Technical support services

The **Graphics Service** was responsible for the layout of the annual and other reports, brochures, scientific publications, posters etc. We implemented a new digital imaging management system, providing easy access to 34,000 original pictures. We produced ITM "house style" templates, organised training sessions for graphic software and videoconferencing, supported e-learning and the design of websites.

The workload of the **Information Technology (IT) Service** increases by the year. In 2008, activities included the upgrade to a gigabit network, the



Behind the IT scenes: switches and fibre connections

extension of wireless facilities, the switch of all servers to a virtual platform, a new maintenance system for the telephone switchboard, the quality and integrity assurance of network software including IVAN, the establishment of electronic order systems (see Purchase Service) and support to the digitalisation of the radiology unit, e-learning, videoconferencing, Blackboard and other educational software.

The **Applied Technology and Production Service** provides laboratory support to the research departments and the Medical Laboratory, and assures the production and the worldwide distribution of non-commercial diagnostic kits for neglected diseases, especially trypanosomiasis and visceral leishmaniasis. The subunit **CLKS** (Cryobiology, Laboratory Kitchen, Sterilisation) manages the institutional cryobank with



A day out for the Support Services and Coordination Cells: taking a lucky shot

54,038 vials and prepares culture media (115,572 in 2008). The CLKS further takes care of decontamination (42,555 items), sterilisation (31,393 items), washing (59,136 items), drying (20,180 items) and filling (1,965). The subunit for **Laboratory Animal Maintenance** took care of (monthly averages) 411 mice, 217 rats and 45 rabbits, under veterinary supervision of the Department of Animal Health. The subunit **Production** supplies diagnostic kits for sleeping sickness and leishmaniasis to control programmes, ministries and NGOs in endemic countries.

The main item is the Cart Agglutination Test (CATT) for *Trypanosoma gambiense*, of which 2,252,000 were produced and 2,057,637 supplied in 2008. In 2008 we developed a CATT/ *T. b. gambiense* test kit with 10 antigen doses per vial instead of 250, aiming at the peripheral laboratories and point-of-care use. Interestingly, this development stems from a demand, among others, from the National Control Programme in RD Congo and the Belgian Cooperation Agency, and shows the increased need to integrate control activities in regular health care structures. A field evaluation of this kit was started up in DR Congo by the end of 2008. Smaller production lines include CATT/ *T. evansi* (14,750 supplied), LATEX / *T. b. gambiense* (4,250), LATEX / IgM (9,500), DAT / Visceral Leishmanias (231,360). We perform the quality control on the mAECT columns produced at the Institut National de Recherche Biomédicale (INRB) in Kinshasa, DR Congo.



The "Energy Performance Certificate" of the ITM, newly obtained in 2008

The **Technical Services** finished the renovation and extension of the annex in the Campus Rochus, build on the fundamentals of a historical monks' house. We expanded the IT offices, optimised maintenance systems, extended electronic access control and obtained our first Energy Performance Certificate. We surveyed the surroundings of the ITM for real estate opportunities in view of future student housing, and planned the construction of new extensions in the central premises of the ITM.



The safety and prevention officers of the ITM: Kathleen Anthonis (who joined ITM in 2008) and Luc Hendrix

The **Unit for Safety, Prevention and Wellbeing** was restructured and strengthened with a new unit head, Kathleen Anthonis. We started the establishment of new and comprehensive security and emergency plans, strengthened access control systems, inventoried all chemical products, introduced new safety information sheets, audited the fire safety signals and technical equipment, and performed the annual test of evacuation procedures. We initiated a “stress survey”, which will gauge the general wellbeing and job satisfaction of all staff members.

Coordination Cells

The **Quality Assurance Unit** was considerably strengthened with a new head and three quality project managers (two of which will join the ITM early 2009). A revised strategic plan was prepared that should lead to the completion of a fully accredited quality assurance system for all parts of the ITM by the end of 2012. Software validation was introduced and successfully concluded in the reference laboratories, the Clinical Trials Unit and the Information Technology (IT) Service. We initiated a major review of general procedures of accredited laboratories and upgraded the institutional calibration system.

The support services were further integrated in the quality management system, including major efforts in IT, Human Resources and Purchase. Much efforts also went into the preparation of the bi-annual audit by BELAC, the Belgian Accreditation Organisation, planned for early 2009.

The **Communication Unit** is responsible for internal and external communication by the Institute, the production of brochures, reports and newsletters, organisation of events and relations with the press. We coordinated several PR and charity events as well as the ITM’s participation in the Flemish “Science week” and the “I have a question” initiatives. Our main project in 2008 was, however, a complete overhaul of the ITM website which should be opened by mid-2009. The Communication Service also assisted in the development of several smaller online projects at ITM.



The “Karthuis” annex and adjacent garden at Campus Rochus were the final straws of the renovation of this 17th century convent.

Human Resources

On December 31 2008, the ITM employed 406 people, equivalent to 370 full-time (FTE). Nine expatriates work in field projects, and 10% of the staff are non-Belgians from 18 different countries in Europe, Africa and South America. These numbers do not include 72 PhD fellows with a non-employee statute. In this group, 29% are Belgians and 71% foreigners. Compared to last year, the work force increased with 40 FTE (+ 12%), of which 14 FTE on the institutional core budget and 24.6 FTE on project and programme funding.

The staff categories and policies are similar to those at Flemish universities. The categories include senior scientific staff (academic, scientific and medical personnel with an employment contract of undetermined duration); temporary or assisting scientific staff (academic, scientific and medical personnel with an employment contract of fixed duration); and administrative and technical staff.



The HR team Service: Daphné Vleeschouwer, Lore Verstraete, Martien Cryns, Anneke De Meester, Alexia De Smet. A small team to manage an ever-growing work force!

Figure 1: Overview of personnel (FTE)

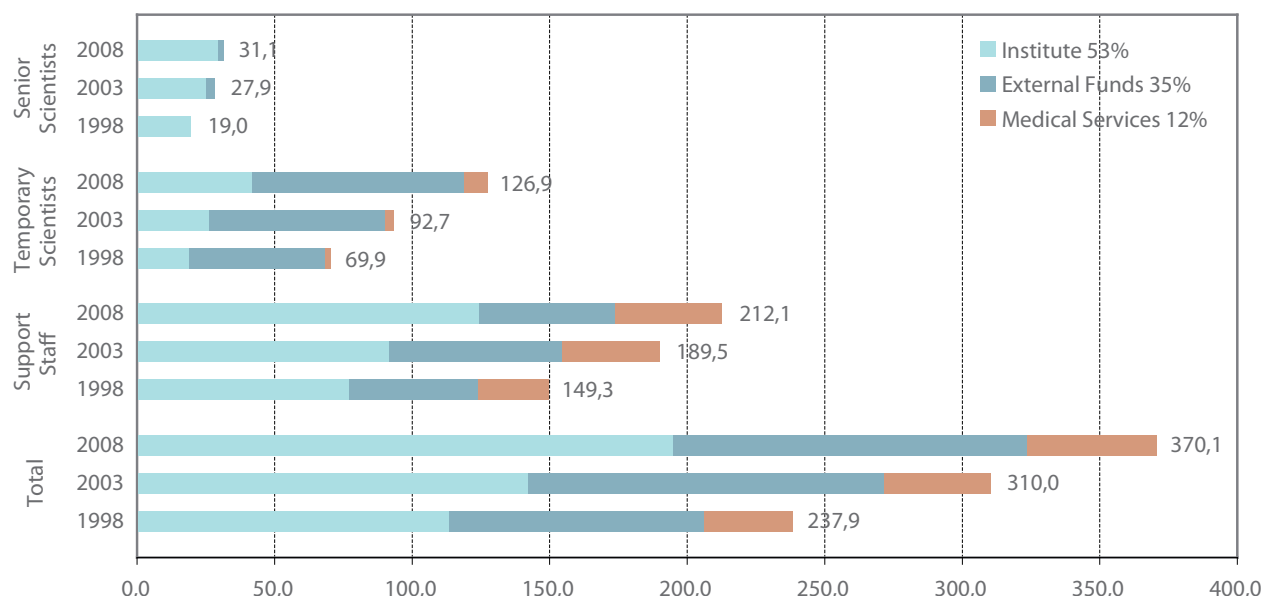


Figure 1 gives an overview of the staff numbers since 1998, per category and per funding source, showing a steady and very substantial growth.

Figure 2 shows that women represent 57% of all ITM staff, but only 23% of senior scientific staff. The trend is being reversed, however; at the end of 2008, 52% of postdoctoral staff was female compared to 40% last year.

Figure 3 shows the age structure of the personnel; 28% is older than 50, 33% are in their forties and 24% in their thirties. Among the senior scientific staff 81% are over 50, among administrative and technical staff 30%. Almost 90% of the staff has a diploma of higher

education, with 52% from a university and 36% from a university college ("hogeschool"). The ITM staff undergoes permanent training and education through seminars, training sessions and external and internal courses.

While most of the personnel works at the ITM since many years, only 50% has a contract of undetermined duration. Apart from the temporary mandates for assisting academic staff, many other contracts are linked to temporary project funding. However, employment conditions are similar for all personnel, regardless of the contract duration.

Figure 2: Male/female ratio per category

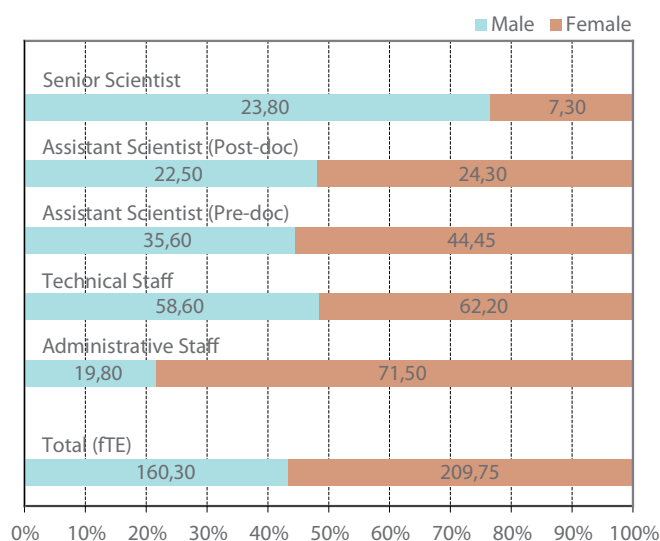
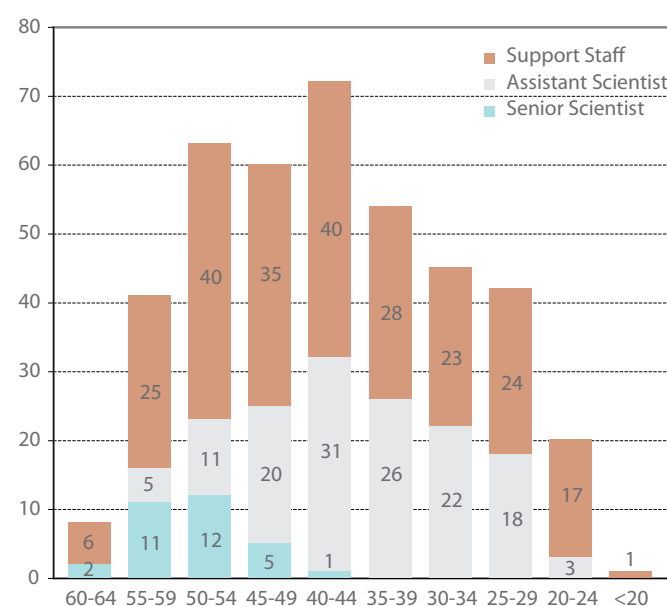


Figure 3: Age structure per category



Finances

Income

The **net income** of the ITM in 2008 totalled **51.7 million euro**, an increase of 15% as compared to 2007 and of 219% as compared to 1995.

Figure 4 shows the recent evolution of the ITM's net income and the relative contributions of major funding sources. In 2008, 20% of the funding came from the Flemish Ministry of Education (core funding), 14% from the Federal Ministry of Development Cooperation, 4% from the Flemish Ministry of Economy, Science Policy 4%, 20% from own revenue (overhead, social and fiscal rebates, other), 3% came from tuition fees, 11% from medical service provision and 28% from external project funding.

The core funding of the Flemish Ministry of Education increased nominally with 40% over the past 12 years, but decreased in real value with almost 20% due to inflation.

Own revenue from overhead, fiscal and parafiscal rebates, internal billing and the production of

diagnostic tests amounted to 20%, compared to 14% in 2007. This is a one-shot peak, due to substantial arrear payments of parafiscal rebates. The income of the Medical Services nearly tripled since 1995, due to the rising number of patients and the increased federal subsidies for the AIDS and Tropical Medicine Reference Centres.

External project funding grew with 184% since 1995, showing the international competitiveness of the ITM's researchers. The ITM-DGDC Framework Agreement Programme, which integrates since 1998 most ITM activities funded by the Belgian Ministry for Development Cooperation, has become a very substantial part of the ITM's portfolio. The budget from the Flemish Ministry for Economy, Sciences and Innovation (the "SOFI"-Fund) is entirely new and made up 4% of the total income in 2008.

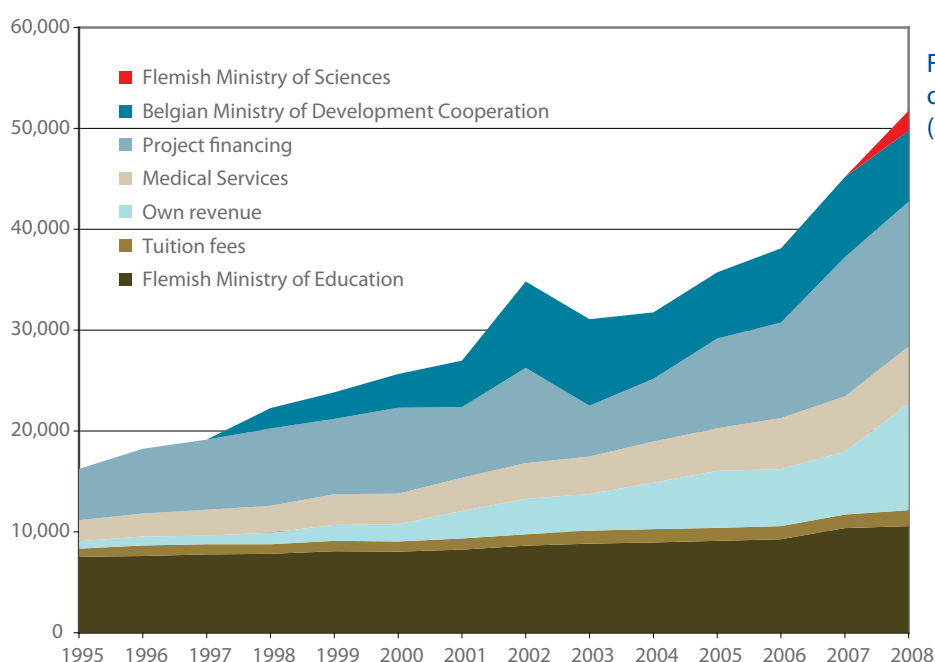


Figure 4: Overview of income since 1995 (x1,000 euro)

Figure 5: Research and project funding according to official categories (x1,000 euro)

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|
| Government funding for basic research (2nd funding source) | | | | | | | | | |
| SOFI (Secondary Research Finding ITM) | | | | | | | | | 2,200.0 |
| IUAP (Inter University Attraction Poles, Federal) | | | | | | | | | 188.8 |
| FWO (Fund for Scientific Research Flanders) | 476.0 | 308.9 | 424.0 | 470.3 | 394.9 | 281.9 | 255.1 | 460.1 | 293.9 |
| Subtotal | 476.0 | 308.9 | 424.0 | 470.3 | 394.9 | 281.9 | 255.1 | 460.1 | 2682.7 |
| Government funding for applied research (3rd funding source) | | | | | | | | | |
| Federal government | 2,089.7 | 1,457.6 | 2,642.7 | 1,722.4 | -248.0 | 849.2 | 1,104.1 | 2,114.6 | 1,382.1 |
| Flemish | | | | | | | | | |
| Ministry of Sciences | 167.5 | 177.9 | 298.3 | 253.7 | 893.9 | 757.5 | 618.0 | 615.0 | 1,263.2 |
| IWT (Institute of Science and Technology) | 314.0 | 176.3 | 225.9 | 275.4 | -58.2 | 0.0 | 0.0 | 0.0 | 75.2 |
| Cities and provinces | | | | | | | | | 60.0 |
| International bodies | | | | | | | | | |
| European Union | 2,726.8 | 2,355.0 | 2,936.6 | 1,134.6 | 2,389.4 | 4,441.9 | 4,518.2 | 7,295.5 | 6,524.7 |
| International Organisations | 515.6 | 205.7 | 119.8 | 80.8 | 252.3 | 134.7 | 226.5 | 253.2 | 176.5 |
| Foreign governments | | | | | | | | | 858.5 |
| Subtotal | 5,813.6 | 4,372.5 | 6,223.3 | 3,466.9 | 3,229.4 | 6,183.3 | 6,466.8 | 10,278.3 | 10,340.3 |
| Cooperation with the private sector and services (4th funding source) | | | | | | | | | |
| National | | | | | | | | | |
| Contract research - non-profit organisations | 84.3 | 49.6 | 40.0 | 129.7 | 0.0 | 0.0 | 0.0 | 75.2 | 420.0 |
| Contract research - companies | | | | | | | | | 58.7 |
| International | | | | | | | | | |
| Contract research - non-profit organisations | | | | | | | | | 2,976.3 |
| Contract research - companies | | | | | | | | | 138.8 |
| Subtotal | 84.3 | 49.6 | 40.0 | 129.7 | 0.0 | 0.0 | 0.0 | 75.2 | 3,590.8 |
| Other project income from education, research and services | | | | | | | | | |
| Other | 2,332.6 | 2,439.3 | 2,755.0 | 2,093.9 | 2,772.8 | 2,584.5 | 2,842.8 | 3,326.9 | 509.3 |
| Subtotal | 2,332.6 | 2,439.3 | 2,755.0 | 2,093.9 | 2,772.8 | 2,584.5 | 2,842.8 | 3,326.9 | 509.3 |
| Gifts, donations and legacies | 364.4 | 317.3 | 317.3 | 286.2 | 457.3 | 426.3 | 474.1 | 601.3 | 222.5 |
| Other income | | | | | | | | | 47.8 |
| Total | 9,070.9 | 7,487.6 | 9,759.6 | 6,447.0 | 6,854.4 | 9,476.0 | 10,038.8 | 14,741.8 | 17,393.3 |

Figure 5 shows the evolution of **project funding** and its main sources since 2000. The categories are those used in the accounting systems of the Flemish Universities.

Governmental project and programme subsidies for research ("secondary funding") make up 15% of all research funds, compared to 3% in 2007, thanks to the new budget line just mentioned. The European Framework Programme accounts for no less than 38% of all project funding. Other international funds make up 21%, and include public-private partnerships, Global Health Initiatives, charities and NGOs such as the Bill & Melinda Gates Foundation, the Foundation for Innovative New Diagnostics (FIND), Family Health International, US President's Emergency Plan for AIDS Relief (Pepfar), Medicines for Malaria Venture, Damien Foundation, Doctors without Borders, Medicus Mundi and others.

Expenditure

Figure 6 shows the effective **expenditures**, which amounted to 44.1 million euro. Financial transfers to partner institutes, making up 6.9 million euro, are not included in this graph. The distribution over the various expenditures remains stable with 66% for education and research, 13% for the medical services and 19% for management and support services.

Figure 7 shows in more detail the expenditures of the programme funded by the Directorate-General for Development Cooperation (DGDC) in 2008, the first year of a new multi-annual grant period (2008-2013). For the first three years, a total budget of 32 million euro was allocated of which 73% goes straight to institutes and students in the South (Africa 49%, Asia 16%, South America 35%; for more details, see chapter on Development Cooperation).

Figure 6:
Overview of expenditures since 1995 (x1,000 euro)

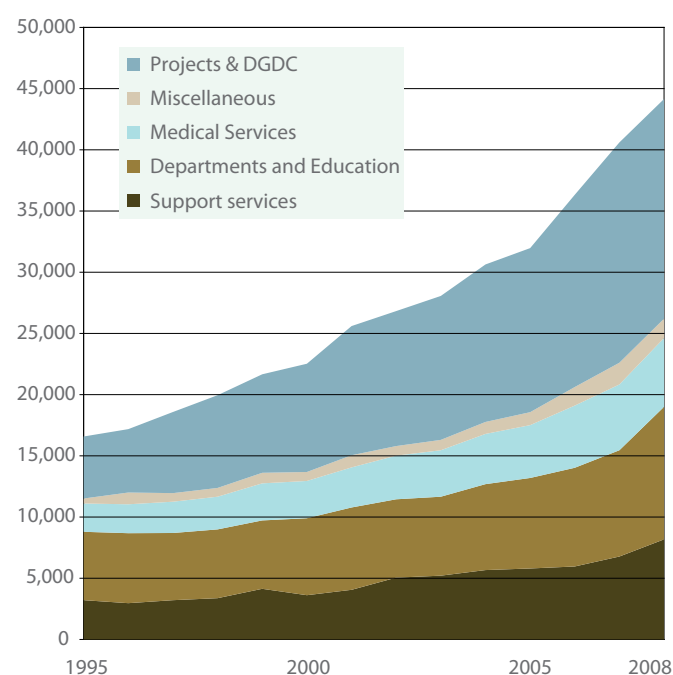


Figure 7 : DGDC Framework Agreement (FA) expenditures (x 1,000 euro)

| FA2 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | FA3 2008-2013 |
|---------------------------------------|--------------|--------------|--------------|--------------|---------------|--------------|---------------------------------|
| Training in Belgium | 1,022 | 1,145 | 1,172 | 1,212 | 1,455 | 2,543 | Training and fellowships |
| Fellowships | 936 | 900 | 980 | 983 | 1,094 | | |
| Local courses | | | | | | | |
| Conferences | 25 | 108 | 134 | 91 | 102 | | |
| Institutional Collaboration | 1,519 | 1,805 | 1,854 | 1,697 | 2,031 | 3,346 | Institutional Collaboration |
| Other projects | 866 | 1,034 | 1,115 | 1,220 | 1,752 | 679 | Strategic Programmes |
| Policy support | 98 | 180 | 212 | 177 | 263 | 97 | Policy Support & Advocacy |
| General expenses & Scientific support | 2,437 | 2,913 | 2,975 | 3,593 | 3,446 | 2,825 | Management & Scientific support |
| Total | 6,902 | 8,084 | 8,442 | 8,972 | 10,143 | 9,490 | Total |
| AIDS Impulse Programme | 1,470 | | | | | | |

Financial results

Figure 8 on the next page summarises the ITM's **results account of 2008**, with all registered income and expenditures per section. This legal format includes duplicate entries (tuition fees, overhead and internal adjustments).

The total **gross income** for 2008, thus including duplicate entries, totalled 59.2 million euro, an increase of 5.806.880 euro or 11% as compared to 2007. This increase is mainly due to the new SOFI research funds (+2.200.000 euro in 2008; structurally +1,500,000 euro per year) and important back payments of parafiscal rebates (2.7 million euro, included in the section "Own revenue"). Obviously, this one-time income cannot be allocated to recurrent costs. Recurrent fiscal and parafiscal rebates, granted by the federal government to stimulate scientific research, now total 3.4 euro annually and constitute a very important source of unearmarked income. As intended, the ITM spends this income entirely on the recruitment of scientists.

The core subsidy of the Flemish Ministry of Education makes up 18% of the total gross income, the DGDC programme funding 17%, the new SOFI 4% and external project funding 29%

In the section "Funds and Legacies", income as well as expenditure decreased temporarily after the completion of Campus Rochus and in anticipation of newly planned construction works in the main building.

The net result of 2008 for the section "**Institute**" totalled an exceptionally high positive result of 2,366,875 euro, due to the back payments of parafiscal rebates. The result of the section "Medical Services" was slightly positive, for the second year in a row after many years of losses, with + 16,180 euro.

Of the positive results, 16,875 euro were allocated to the fellowship fund, 598,000 euro to a "contingency fund" for social dues (intended to switch temporary contracts to permanent ones), and 1,752,000 euro to a "consolidation fund" for sustaining and strengthening the structural staff in case of financial need. The positive result of "Medical Services" is added to the cumulative negative balance, which is thus reduced to -35.145 euro.

The sections "**Project Financing**", "**DGDC Agreement**" and "**SOFI**" include duplicate entries overlapping with the section "Institute", i.e. for overhead, tuition fees and internal billing. The net results are transferred to the 2009 budget of the same sections. The result of the section "Funds and Legacies" is transferred to the specific destinations of these funds (investments, awards, retirement premiums, etc).

Of the total expenditures, 46% went to staff costs; for the section "Institute" this percentage was 71%. Total staff costs increased with 8% as compared to 2007; on the section Institute, this increase was 8%, on Medical Services 2%, on Project Financing 17% while on DGDC staff costs (at ITM) decreased with 30% due to delayed recruitment and a budgetary shift from direct (support) staff costs to indirect overhead.

Operational costs increase mainly in the section Institute (+31%), due to the outsourcing of maintenance, investments in IT infrastructure and external consultants for software validation

On request of the financial auditors, we reserved 250,000 euro as a provision for as yet non-audited cost items.

Investment expenditures were limited (538,258 euro) as compared to the past few years of intensive constructions and renovations.

Figure 8: Income and expenses account (in Euro)

| INCOME | 2008 | 2007 |
|---|-------------------|-------------------|
| Section Institute | 22,741,204 | 18,317,379 |
| Core Subsidy Flemish Ministry of Education | 9,962,000 | 9,776,000 |
| Social security rebates | 604,096 | 592,816 |
| Tuition fees | 1,583,110 | 1,354,051 |
| Financial income | 135,284 | 52,749 |
| Letting | 19,435 | 16,112 |
| Overhead | 1,678,044 | 1,830,044 |
| Other income | 8,759,235 | 4,695,606 |
| Section Secondary Research Fund | 2,200,000 | 0 |
| Flemish Ministry of Sciences | 2,200,000 | 0 |
| Section DGDC agreement | 10,100,000 | 9,800,000 |
| DGDC Framework Agreement | 10,100,000 | 9,800,000 |
| Section Project financing | 17,140,238 | 17,268,121 |
| Flanders | 1,696,129 | 1,164,102 |
| Belgium | 1,716,158 | 1,926,682 |
| Europe | 6,593,533 | 7,316,638 |
| World Health Organisation | 86,298 | 271,324 |
| Private | 5,410,470 | 3,761,579 |
| Sponsoring | 1,637,600 | 2,136,969 |
| DGDC/BTC (outside Framework Agreement) | 50 | 690,827 |
| Section Medical Services | 5,634,880 | 5,489,514 |
| Patient fees and reimbursements | 4,256,081 | 4,165,813 |
| Agreement UZA | 92,606 | 90,791 |
| Flemish Ministry of Welfare | 30,309 | 29,712 |
| RIZIV/DOSZ (Social Security) forfaitary payments | 1,020,913 | 999,898 |
| Miscellaneous | 234,971 | 203,300 |
| Section Funds and Legacies | 1,400,287 | 2,534,715 |
| Funds and legacies | 15,225 | 14,809 |
| Fund for early retirement premium | 0 | 190,000 |
| Investment fund | 1,385,062 | 2,329,906 |
| Total income | 59,216,609 | 53,409,729 |
| EXPENSES | 2008 | 2007 |
| Personnel costs | | |
| Section Institute | 13,970,428 | 12,920,008 |
| Senior academic staff | 3,114,928 | 3,066,419 |
| Assisting academic staff | 3,642,899 | 2,544,178 |
| Administrative and technical staff | 6,750,560 | 6,321,524 |
| Other personnel costs | 461,337 | 902,091 |
| External lecturers | 704 | 85,795 |
| Section secondary Research Fund | 843,689 | 0 |
| Temporary scientific staff | 843,689 | 0 |
| Section DGDC | 1,706,463 | 2,444,366 |
| Temporary scientific staff (DGDC) | 1,491,557 | 2,164,418 |
| Administrative and technical staff (DGDC) | 214,906 | 279,948 |
| Section Project financing | 4,384,728 | 3,747,208 |
| Senior scientific staff (External funds) | 39,924 | 38,853 |
| Temporary scientific staff (External funds) | 2,564,018 | 2,082,385 |
| Administrative and technical staff (External funds) | 1,780,786 | 1,625,969 |
| Section Medical Services | 3,249,505 | 3,171,303 |
| Salaries and social costs | 2,762,790 | 2,683,692 |
| Fees | 486,714 | 487,611 |
| Total personnel costs | 24,154,814 | 22,282,884 |

| OPERATING AND EQUIPMENT COSTS | 2008 | 2007 |
|--|-------------------|-------------------|
| Section Institute | 5,647,490 | 4,315,540 |
| Operating costs | 3,997,831 | 3,283,726 |
| Equipment costs | 931,832 | 760,959 |
| Financial costs | 467,828 | 270,855 |
| Depreciation reserve | 250,000 | |
| Section Secondary Research Fund | 384,112 | 0 |
| Operating costs | 97,530 | 0 |
| Overhead | 199,996 | 0 |
| Equipment costs | 86,586 | 0 |
| Section DGDC | 7,784,457 | 7,988,498 |
| Operating costs | 3,979,012 | 4,980,058 |
| Overhead | 846,671 | 883,662 |
| Subcontracts | 2,958,774 | 2,124,778 |
| Section Project financing | 11,050,899 | 11,527,230 |
| Operating costs | 6,189,136 | 6,069,810 |
| Overhead | 830,450 | 961,001 |
| Subcontracts | 4,031,313 | 4,496,420 |
| Section Medical Services | 2,369,196 | 2,204,469 |
| Operating costs | 2,061,985 | 1,897,002 |
| Depreciation | 264,306 | 261,603 |
| Depreciation of current assets | 33,183 | 32,615 |
| Provisions | 8,848 | 9,383 |
| Investment provision | -7,134 | -5,712 |
| Financial costs | 6,693 | 8,195 |
| Exceptional costs | 1,314 | 1,384 |
| Section Funds and Legacies | 560,475 | 3,440,963 |
| Results from previous financial year | 0 | 6,006 |
| Awards | 0 | 1,000 |
| Financial costs | 17,725 | 347 |
| Investment costs | 538,285 | 3,428,534 |
| Support medical costs patients | 4,465 | 3,718 |
| Other costs | 0 | 1,358 |
| Total operating and equipment costs | 27,796,629 | 29,476,701 |
| Total expenses | 51,951,443 | 51,759,585 |

| Balances brought forward | 2008 | 2007 |
|---------------------------------|-------------|-------------|
| Section Institute | 756,410 | 737,953 |
| Section Secondary Research Fund | 972,198 | 0 |
| Section Project Financing | 1,704,611 | 1,993,683 |
| DGDC agreement | 609,080 | -632,864 |
| Early retirement premium fund | 0 | 190,000 |
| Investment fund | 846,776 | -1,098,628 |
| Legacies | -6,965 | 2,380 |
| Results | 2008 | 2007 |
| Section Institute | 2,366,875 | 343,878 |
| Section Medical Services | 16,180 | 113,742 |

Balance

Assets increased, due to a rise of "Dues" and the "Grants to be received". "Financial accounts" show a positive balance due to upfront payments for projects.

On the liabilities side the "Own funds" increased, due to the positive result of 2008 and new provisions. The "Debts to trade creditors" increase as well as the "Transferrable Income" of projects.

The financial indicator for "Floating Assets", calculated as the ratio between the "Floating Assets" (24 million euro) and "Short-term Debts" (7.2 million euro) is 3.3, implying that sufficient funds are available to cover short-term debts.

Balance on December 31, 2008

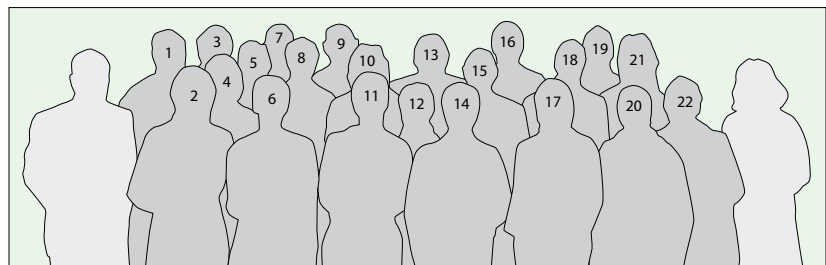
| Assets | 2008 | 2007 |
|---------------------------------|-------------------|-------------------|
| Fixed assets | 26,033,926 | 26,238,932 |
| Stock of consumables | 130,632 | 119,181 |
| Receivables on maximum one year | 4,627,508 | 3,110,599 |
| Financial accounts | 15,388,645 | 9,944,053 |
| Transferable accounts | 3,869,535 | 3,657,715 |
| Floating assets | 24,016,320 | 16,831,548 |
| Total assets | 50,050,246 | 43,070,480 |

| Liabilities | 2008 | 2007 |
|---------------------------------------|-------------------|-------------------|
| Own funds | 22,591,744 | 19,369,373 |
| Provisions for risks and payments due | 4,883,085 | 4,030,566 |
| Long-term debts | 3,261,632 | 3,552,586 |
| Short-term debts | 7,243,564 | 4,413,178 |
| Transferable accounts | 12,070,221 | 11,704,777 |
| Total liabilities | 50,050,246 | 43,070,480 |

Retirees and Jubilees



1. Marc Coosemans
2. Karina De Ridder
3. Marc Vandenbruane
4. Marianne Hilgert
5. Simonne De Doncker
6. Agnes D'Hondt
7. Patrick Daems
8. Anne Schellinckx
9. Jean-Pierre Unger
10. Rita Vermeulen
11. Patricia Roelants
12. Marianne Mangelschots
13. Hugo De Groof *
14. Chris Wuytack
15. Luc Kestens
16. Peter Konings
17. Hilde Smet
18. Krista Fisette
19. Luc Verhelst
20. Françoise Portaels
21. Viviane Hanquart
22. Yvette Jacob *



* Retired in 2008

Jubilees = 20, 25, 30 of 35 years of service

Not on the picture: Arlette Deprest, Harry Depuydt and Eddy Van Dyck

Fanny Maes

° 1 December 1954

† 22 February 2008



Stefaan Pattyn

° 9 September 1927

† 22 March 2008



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(*) Member of the Bureau

(**) Observer in the Bureau and the Board of Governors

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The Scientific Advisory Committee of the ITM in full.

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 Wouters Ingrid
 Zavala Peña Andrea

Events



The InBev - Baillet Latour Foundation, which awards some of the most prestigious medical research prizes in Belgium, honoured the ITM with a renewable 3-year grant of 450,000 euro. The award intends to promote research on tropical and neglected diseases, by funding two young postdoctoral scientists. The laureates are Saskia Decuypere, who will lead work on the integrated genomics and metabolomics of leishmaniasis in the Unit of Molecular Parasitology, and Johan Van Griensven, who will work in the Department of Clinical Sciences on the clinical aspects of the leishmania research as well as on the relation between HIV and neglected tropical diseases.

On October 20, 2008, the awards were officially presented by Province Governor and ITM Chair Cathy Berx, in the presence of Mr. De Waele, Secretary-General of the InBev - Baillet Latour Foundation and a good number of academic and civil authorities. At this occasion, the ITM highlighted the GeMIni project, an innovative international collaboration with the Koirala Institute of Health Sciences (Dhara, Nepal), Sanger Institute (Cambridge, UK), the universities of Strathclyde and Glasgow (UK) and the University of Groningen (The Netherlands). The consortium combines top expertise in clinical epidemiology, genomics, metabolomics and bio-informatics to unravel the biological fundamentals of drug resistance and other phenotypes in visceral leishmaniasis. This infectious disease affects half a million people and kills tens of thousands each year in Asia, eastern Africa and Brazil.



Saskia Decuypere (Unit of Molecular Parasitology) and Johan Van Griensven (Department of Clinical Sciences), the two laureates of the Inbev-Baillet Latour Fund for Neglected Diseases, with Cathy Berx (l.), Governor of the Province of Antwerp and chair of the ITM's Board, and Alain De Waele (r.), secretary of the InBev-Baillet Latour Fund), during the official award ceremony on October 20.

10th successful edition of Science Day

“Research careers and postdoctoral research at the ITM” was the heading of the 10th edition of the ITM’s Science Day. Postdoctoral researchers Wim Jennes, Gert Van Der Auwera, Lieselotte Cnops, Pierre Lefèvre and Niko Speybroeck presented their work and talked about the challenges and opportunities of building a research career. In between the presentations the “improvisation duo Inspinazie” put a humorous light on the theme of the day. In the evening the ‘Flemish Carnival’ with typical Belgian fries, sausages and apple sauce and traditional games turned out to be a huge success.

Prior to Science Day an info session ‘Building a research career’ was organized. The invited speakers Karen Haegemans, PhD (Flemish Government, Department Economics, Science and Innovation) and Anne De Brabandere, PhD (Scientific Advisor European Programmes IWT-Vlaanderen) presented the FP7 People programme and the ERC-grant schemes.

Continuing scientific debate in the
garden of the Rochus Campus



Queuing for French (actually
Belgian) fries

FWO Researcher's Day, 23 October 2008

On 23 October the Research Foundation – Flanders (FWO) celebrated its 80th birthday with a big event under the heading “Knowledge makers: Day of the Researcher”. The ITM participated with an information stand in the academic lounge. More than 1500 researchers were present to discuss with national and international experts on the future of basic scientific research in Flanders.

ITM participating in the Flemish Science Week (17-26 October 2008)

The Flemish Science Week (‘Wetenschapsfeest’) started with the Science Days in the Nekkerhal in Mechelen (17-19 October). The ITM was present with a stand under the heading ‘All about Mosquitos’. From 22-24 October the ITM invited students of the third and fourth grade and used interactive methods to learn them more about sleeping sickness and HIV/AIDS.



Young and old visiting the ITM stand at the Flemish Science Week

Word of thanks

We are grateful to many organisations and individuals that support our activities and objectives. The Flemish Ministries of Education and of Economy, Sciences and Innovation provide our primary and secondary funding for teaching and scientific research. The Belgian Ministry of Development Cooperation supports our international capacity strengthening programme. The Federal Ministry of Public Health and Social Affairs funds our medical reference tasks.

• Abbott NV • Ackermans & van Haaren NV • Agence Nationale des Recherches sur le Sida (ANRS) • American Foundation for AIDS Research (AMFAR) • Antwerp Aids Foundation • Antwerp Dinner Foundation • Armand Féron Foundation • Artsen zonder Grenzen / Médecins sans Frontières • Belgische Nationale Bond tegen TB • Belgische Technische Coöperatie (BTC/CTB) • Becton Dickinson Benelux • Bill & Melinda Gates Foundation • Bio Merieux Benelux NV • Boehringer Ingelheim • Bristol-Myers Squibb • Centers for Disease Control & Prevention (CDC), USA • Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD) • Central Science Laboratory, UK (The Food & Environment Research Agency, UK) • Centrum voor Informatie en Samenlevingsopbouw vzw (CISO) Stad Antwerpen • Conrad, USA • Cordaid • Damiaanactie • Danish National Research Foundation • Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) • Dries Van Noten • Eurogenetics • European Commission • European & Developing Countries Clinical Trials Partnership (EDCTP) • Family Health International (FHI) • Federaal Agentschap voor de Veiligheid van de Voedselketen (FAVV) • Federaal Wetenschapsbeleid • Foundation for Innovative New Diagnostics (FIND) • Fonds Bastanie-Cant • Fonds voor Wetenschappelijk Onderzoek – Vlaanderen (FWO) • Fortis Bank • Glaxo SmithKline NV • INBEV-Baillet Latour Fund • Institut Pour la Recherche au Développement, (IRD), France • International Atomic Energy Agency (IAEA) • International Fund for Agricultural Development (IFAD) • Intervet International BV • The International Union against Tuberculosis and Lung Diseases (UNION) • Innogenetics NV • InWEnt, Capacity Building International, Germany • Janssen-Cilag NV • Janssen Pharmaceutica NV • KBC Bank • Koninklijke Maatschappij voor Dierkunde Antwerpen (KMDA) • Lalemant NV • M.A.C. Cosmetics • Medicus Mundi Belgium • Merck Sharp & Dohme Interpharma • Nutricia Research Foundation • Pfizer Ltd • Provincie Oost-Vlaanderen • Provincie Antwerpen • Rijksinstituut voor Ziekten en Invaliditeitsverzekering (RIZIV) • Roche NV • Roche Diagnostics Belgium • Stad Antwerpen • Tibotec/Virco BVBA • The Medicines for Malaria Venture (MMV) • The World Bank • UBS Foundation • UCB Pharma NV • UNAIDS • Unicef • United Nations Population Fund (UNFPA) • United States Agency for International Development (USAID) • University of North Carolina at Chapel Hill, USA • Van Breda International • Instituut voor de Aanmoediging van Innovatie door Wetenschappen Technologie in Vlaanderen (IWT) • Vlaamse Interuniversitaire Raad (VLIR) • Vlaams Agentschap voor Internationale Samenwerking (VAIS) • Vlaams Ministerie voor Welzijn • Voeding Derde Wereld/Nutrition Tiers Monde • World Health Organization (WHO) • WHO Special Programme for Research and Training in Tropical Diseases (WHO/TDR) • The Wellcome Trust • World AIDS Foundation and many other organisations, companies and individuals.