Institute of Tropical Medicine

Annual Report 2007

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Introduction

Foreword from the Chairman

By the time this report is published I will have retired as Governor of the Province of Antwerp and as Chairman of the ITM. In both functions I have had the privilege to witness tremendous changes in the province, as well as at the ITM. The turn of the millennium, precisely halfway my term of office was not just a symbolic date. We are indeed living in a new era of rapid globalisation, increased mobility and stunning technological advances.

As Governor of the Province of Antwerp I have had to deal with several issues, many of which were directly related to these enormous changes in our society. And as Chairman of the ITM as well, I have seen a lot of evolutions over the past fifteen years. Many developing countries have attempted to bridge the gap towards the wealth we are so used to in the western world and some have succeeded even at a breathtaking pace. But not all have been successful and in far too many countries the slow progress towards the millennium development goals and particularly the universal right to health and health care, remains a disgrace to the global community.

One of the best, lasting contributions we can make to end this, is to invest in education, research and capacity strengthening. And I am proud to say that such is precisely what the ITM has done. With its well-designed, high-quality programmes in each of these fields, this institute has grown into one of the world's major players in this respect. It has been a privilege to help making this happen, together with the board members, the management and all of the ITM staff. I would like to thank them all most heartily for their dedication, professionalism and friendship and I wish them all the best for the future.

Camille Paulus
Honorary Governor of the Province of Antwerp

Director's note

After the intense centennial year, 2007 left us no time to lay back and relax.

The internal and external assessments of our Master courses, in compliance with the new Flemish-Dutch academic accreditation system, turned into a major conceptual and organisational review of the ITM's educational programme. From 2007 onwards, the ITM's Master of Public Health integrates the 40-year old "traditional" Master and the 10-year young Master of Disease Control. MPH students can continue to choose for options in Disease Control or Health Systems. This alignment reflects the ITM's strong and sustained commitment to comprehensive primary health care, a goal that the international health community is currently rediscovering - at last. The assessment itself was very gratifying, as all our Master courses received exceptionally high quotes.

A second major planning exercise plunged us as deeply in the fundamental objectives and strategies of the ITM's international development efforts. In an intensive dialogue with all stakeholders, we prepared the third Framework Agreement Programme with the Directorate-General of Development Cooperation. We built on the achievements of the second programme, of which an international audit team concluded "... the DGDC gets value for money in every component". The third Framework Agreement Programme will run over a period of six years with an estimated budget of about 70 million Euro, and include individual training, institutional partnerships and international networking. Under our centennial motto "Switching the Poles", it aims at enabling institutes and experts in the South to support strong, rational health systems through research, training and services delivery.

With prof. Jean Jaques Muyembe, director of the Institut National de Recherche Biomédicale (INRB) in Kinshasa, DR Congo, testing the power unit installed as part of the institutional capacity strenghtening programme supported by the Belgian Directorate-General of Development Cooperation (DGDC).

Several other activities of the ITM underwent major audits in 2007. Just as for those described above, each was seized as an occasion for internal assessment, reflection and planning. An international expert team reviewed the Clinical Trials Unit, on request of the funding Flemish Ministry of Sciences. The panel praised the ITM's courage to assume legal sponsorship of non-commercial clinical trials, as well as the drive, professionalism and resourcefulness with which it brought its expertise to partner institutes and communities in need. The quality of the ITM's staff and activities was further demonstrated through independent audits and accreditations of our systems for biosafety ("... in many aspects, the ITM surpasses the regulatory and legal requirements") and quality assurance ("... the continuous progress and the sustained commitment of all staff members are highly appreciated").

The Ministries of Education, Sciences and Development Cooperation have committed additional resources to the ITM's activities. We were also very pleased that several new Maecenas have joined our small but generous circle of patrons. More than ever, our sponsors can rest assured that they are investing in quality. We are currently launching exciting new programmes in teaching, research and capacity building, so come and read next year.

On all this and much more, you can read further in the next chapters. On behalf of all staff and partners of the ITM, I thank all our funders and friends wholeheartedly for their relentless support. A particular word goes to our Chairman, Governor Camille Paulus. He will not leave us until well into 2008, so we will highlight his legacy in the next annual report. However, Mr. Paulus, let me express our deep gratitude for 15 years of wise leadership and wish you many happy years to come.

Bruno Gryseels
Director

Activity and Performance Indicators 2007

EDUCATION	
International Master Courses (2006-2007)	
Applicants	295
Admitted students	70 (24%)
International students	64 (91%)
Graduated students	67 (96%)
Post Graduate Certificate and Short Courses	
Enrolled students	162
Graduated students	157 (97%)
Short Course participants	247
Doctoral training	
Doctoral trainees on 31.12.07	87
Doctoral trainees started in 2007	16
Doctoral graduates in 2007	14
RESEARCH	
Total number of scientists on 31.12.07	201
Postdoctoral scientists	65
Number of scientific publications in 2007	279
In ISI-Journals	201
High-impact in field (JIF >=2)	136
High impact general (JIF >=8)	21
First-author publications	90
PhD dissertations	14
Number of externally funded research projects	240
Amount of external research funding (expenses 2007)	10.8 million Euro
Number of newly acquired projects	34
International conferences (co-)organised (>100 participants)	4
MEDICAL SERVICES	
Patient contacts total	32,057
Outpatients curative	30,851
Outpatients preventive (HIV/STI)	1,206
Hospitalised patients (UZA)	200
Laboratory patients	31,549
Calls Travel Health Phone	7,832
Page views travel health website	270,000

INTERNATIONAL HEALTH DEVELOPMENT

Master students from developing countries	56
PhD Fellows from developing countries	48
PhD Fellows from developing countries graduated in 2007	8
Institutional partnerships	16
Africa	9
Asia	3
Latin America	4
Other main capacity strengthening and development projects	8
Expenses direct development programmes (aid budgets)	10.9 million Euro
World Reference Laboratories tropical and infectious diseases	6
Diagnostics for neglected diseases delivered	2.4 million kits

FINANCES

Total income (million Euro)	53.4
Government subsidies (allocated)	24.6
Academic core funding	10.3
Research programme funding (allocated)	(0.6)
Medical programme funding (exc. fees)	2.2
International development programme funding	9.8
Investment funds	2.3
Own income	28.8
External project funding	17.2
Tuition fees, overhead, fiscal rebates, other	8.4
Medical fees	3.2
Expenditure	51.7
Education & Departments	9.6
Research and reference services	15.3
Development cooperation	10.3
Capital investments	3.4
Medical Services	5.3
Management and support costs	7.8

HUMAN RESOURCES

Total Staff on 31.12.07 (in Full Time Equivalent)	330.1
University and high school graduates	277.3
Male : Female ratio	44:56
Total staff on institutional budget	179.9
Senior (tenure) academic staff	30.0
Academic assistants	34.3
Support staff	115.6
Staff medical services	46.2
Scientific staff on external funding	54.9
Support staff external funding	49.1

QUALITY AND SAFETY MANAGEMENT

External audits	
Master Public Health – Disease Control	Excellent
Master Public Health – Health Systems	Excellent
Master Tropical Animal Health	Excellent
Development Programme (DGDC Framework Agreement)	Excellent
Biosafety systems	Excellent
Quality assurance system (BELAC)	Excellent
Clinical Trials Unit (CTU)	Excellent
Quality accreditation	
Staff working under accredited conditions	101
Numbers of accredited tests	97
Welbeing, safety and prevention at work	
Sick leave (% working days)	2.6%
Sick leave due to work-related accidents	0.05%

Education

Education

Over the past year, the main efforts of the educational teams went to the reorganisation, assessment and accreditation of our master courses. New evolutions and initiatives included the partial modularisation of the Master in Public Health; the development of new short courses, individual tracks and part-time learning; the integration of ICT in education; and the establishment of a world-wide educational network. They are fed by a long-term commitment to capacity building in the South and to maintaining international added value of the ITM's own educational programme.

Evolutions and achievements in 2007

After a thorough analysis and much debate, we restructured and integrated the Master in Disease Control (MDC) and the Master in Public Health (MPH) into one Master with two majors. Respectively in disease control (MPH-DC) and in health systems management and policy (MPH-HSMP). Both aim at training experts in strengthening health systems through the delivery of integrated health care and disease control. The similar timing and group size allows a common yet separate learning experience of future programme managers (DC) and service/system managers (HSMP).

In the MPH-HSMP, we offer two optional modules, on health policy and on strategic management, respectively.

In the MPH-MDC, the optional modules remain Tropical Diseases Control and Reproductive Health, both incorporating HIV/AIDS

Master in Disease Control graduates receive their diploma.

In the Master of Science in Tropical Animal Health (MSTAH), we broadened the predominantly African focus to global veterinary disease control and epidemiology.

The postgraduate courses in tropical medicine and international health, the optional modules of the MPH-DC and MPH-HSMP, the short courses on antiretroviral therapy (SCART) and a new short course on clinical research and evidence-based medicine (SCREM), are also to become building blocks of a novel and flexible Master in International Health (MIH). This new master programme will aim at the training of professionals of technical advisors in international health, with a solid field experience and sound, needs-based training.

Educational networking is a new and important component of the third DGDC-ITM Framework Agreement (FA3, 2008-2013, see elsewhere), involving 11 institutional partners in Africa, Asia and South America.

"Important input came also from the regional alumni workshops and surveys"

Quality assurance

The Education Committee and course steering committees focused on the implementation of the above-mentioned innovations, and not in the least on the self-assessment studies for the external assessment of the ITM's master courses. This was a very demanding but fruitful exercise obliging all stakeholders to take stock and to critically reflect on past, present and future. The process and its results are described in the accompanying highlight, but in general this "visitation" truly proved to be the ultimate cornerstone of our academic quality assurance.

Important input came also from the regional alumni workshops and surveys. Of the MPH-DC alumni, 86% appear to hold a position as disease programme manager, technical advisor or researcher; of the MPH-HSMP alumni, almost 90% work in senior health management positions.

A third regional workshop for MSTAH alumni took place in Dakar (Senegal), from 25 to 27 September. A survey among the participants showed that for 85% of them, the ITM training had contributed significantly to their career development.

Ten ITM lecturers attended a second workshop on teaching and training skills (May 2007); an internal peer-review system for lecturers is being established.

The postgraduate certificate course in Tropical Medicine and International Health is becoming increasingly successful. The English section admitted 48 students, the highest number since the reform in 2004-2005. After two trial years, we submitted the course also for accreditation by the American Society of Tropical Medicine and Hygiene (ASTMH). A preliminary appraisal was highly positive, stating that "*...your two modules will make your program one of the strongest if the not the strongest of the accredited courses. Your curriculum's focus on care in resource-poor areas is the most thorough*". The formal U.S. accreditation will be valid from the academic cycle 2008-2009 onwards. The course is since long accredited as core module for the European TropEd Master in International Health.

Filip Moerman teaches pathology to nurses.

Educational innovation

The ITM further increased its offer of specialised short courses, following the international demands and academic trends in flexible, modular post-graduate teaching.

The Health Policy (HP) module of the MPH-HSMP was made available for continuous professional development (CPD). The aim of this 7-week course is to empower participants for active involvement in national and international health policy making.

A Short Course on Clinical Research and Evidence-based Medicine (SCREM) was developed with clinical experts from 8 institutional partners during a curriculum workshop from 19 to 30 November. The first full six-week SCREM will be organised in November 2008.

The Department of Animal Health organised a new 16-week course on Quantitative Risk Assessment (QRA), attended by 10 participants. The focus is on Bayesian frameworks and mathematical modelling for risk assessment and management of imported and endemic veterinary health problems.

The same department also developed a short e-learning course on Geographic Information Systems, in collaboration with the company Avia GIS. Available from 2008 onwards, it will be used as part of the online Master of Science in Veterinary Tropical Diseases, run in collaboration with the University of Pretoria. This on-line degree programme focuses on the infectious and ecto- and endoparasitic diseases of domestic and wild animals in Sub-Saharan Africa. Since the start in July 2005, over 600 students subscribed to one or more of the 38 modules, either for the full MSc or for continuous professional development (CPD). In the postgraduate course in Tropical Medicine and International Health, a new module for biomedical scientists tested the ground for a shift from interactive teaching to problem-based learning. The experience showed the great potential of this approach but also the high demands it entails on students and teachers.

The postgraduate curriculum in tropical medicine, once known as the "national Course", now draws a predominantly international student body.

The Short Course on Antiretroviral Therapy (SCART) remains in very high demand; a distance-learning version is therefore being developed and tested. Besides e-learning modules or blended courses, we explore to that end the use of mobile phones or PDA's ("m-learning") and social Web2.0 media. These innovative channels may further increase the availability and impact of internet-based education, such as the ITM Telemedicine website, particularly in the South.

ICT for education

Educational innovation is intensively linked with the development and support of Information and Communication Technology (ICT).

In 2007, we extended the use of Blackboard software for the communication with students and the management of course material. Several other new software packages were introduced to strengthen the development of e-learning and the management of pictorial archives.

Plagiarism detection software was made available for course coordinators and scientific staff, greatly facilitating the screening of assignments, theses and papers. A random sample test confirmed the virtual absence of plagiarism in the ITM master courses.

We purchased new videoconferencing equipment to support e-learning and facilitate regular contacts with partners around the world.

Postgraduate students perform laboratory work as part of their training.

Fellowship programmes

The ITM/DGDC Framework Agreement Programme is currently the main source of Master scholarships, supporting up to 60 participants annually. In 2007, we concluded a new agreement with the Joint Japan/World Bank Graduate Scholarship Programme (JJ/WBGSP), providing an additional opportunity for five MPH-HSMP students in this first year. Another 10 students obtained support from the World Health Organisation (WHO), the International Atomic Energy Agency (IAEA), the Japan International Cooperation Agency (JICA), Médecins sans Frontiéres or the Belgian Technical Cooperation agency (BTC).

The subsidy increase of the Ministry of Education, along with private support, has allowed improving also the financial accessibility for European students, which usually have much less access to fellowships. The institutional scholarship fund is now offering up to 9 scholarships per year to European Union students, covering 80% of the registration fee. In 2007, 6 students took advantage of these awards.

Tuition fees

The ITM policy regarding tuition fees aims at covering 50% of the full costs of the advanced international courses and 25% of the postgraduate "European" courses. The other 50% to 75% are covered by the subsidy of the Flemish Ministry of Education and other own income. The fee calculation is based on an extensive and annually updated cost analysis. Full unit costs vary from one course to another, according to specific curriculum characteristics such as field visits, number of invited lecturers or laboratory requirements. These differences are limited and variable, however, and the ITM policy aims at relatively uniform fees per credit. To that end, it pools tuition and registration fees in the institutional budget and allocates budgets according to specific course needs rather than to specific course income.

The registration and tuition fees were not raised in 2007. The total fee for an 11-month Masters course (60 ECTS credits), taught in groups of 20 students, amount to 14,300 Euro. This sum, covering thus 50% of the full cost, remains somewhat below a benchmarked international average. 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 specialised international short courses with equally small groups, a pro rata fee of approximately 250 Euro per credit is charged, increased with course-specific costs.

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, covering 25 % and 50% of the full costs, respectively.

Admission criteria

For international master and short courses, primary admission criteria are a first degree at Master level and relevant professional experience of minimally 2 to 4 years. Further selection criteria include academic record, relevance of professional experience and future, peer review; in case of equality, the selection committee seeks to establish gender and geographical balance. For 2006-2007, 19 students out of 101 (19%) eligible applicants were selected for the MPH-MDC, 34/119 (29%) for the MPH-HSMP, and 17/75 (23%) for the MSTAH. The average age in these respective groups was 39, 41 and 36 years respectively, illustrating the advanced mid-career level of the courses.

Student support

In 2007, the Student Service assisted over 700 international master, short-course, doctoral and individual trainees with travel, 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 Antwerp City council provides students ITM with low cost "cultural vouchers", and the University shares its sport facilities.

International students embarking on a weekend trip in Antwerp Central Station.

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 (PUCE) in Quito, Ecuador, the Post Graduate Medical School of the Universidad Mayor San Simon (UMSS) in Cochabamba, Bolivia and the Instituto de Medicina Tropical Cayetano Heredia in Lima, Peru. At IPH-PUCE, the number of MPH students increased significantly in 2007 following a modular reorganisation, while in Cochabamba the postgraduate diploma course in tropical medicine and disease control was upgraded to the master level.

In Africa, structural support is given to veterinary training programmes at the Centre for Ticks and Tick-Borne Diseases in Lilongwe, Malawi, and Veterinary Master of Science programmes at the University of Pretoria.

In Asia, the ITM contributes to training programmes in clinical tropical medicine, internal medicine and HIV/AIDS at the Hope Hospital in Phnom Penh, Cambodia. From 2008 onwards, a range of new collaborative academic programmes and networks will be established through the new ITM/DGDC "Switching the Poles" programme (see below).

Many ITM staff members contribute as guest lecturers to a wide range of courses in Belgium, Europe and worldwide. We started a new and exciting collaboration with the Norwegian NCT Centre for Telemedicine in Tromsø, Norway, initiated joint training of Master in International Health (MIH) students with the Swiss Tropical Institute Basel and provided tutoring to students in a HIV blended learning course from InWent (Internationale Weiterbildung und Entwicklung, Germany).

Doctoral training and research at the ITM

Doctoral fellows make up a rapidly growing and ever more important group of the ITM's students' body. On 31 December 2007, 87 PhD students were enlisted which included academic and research assistants employed by the ITM, Belgian and European fellows funded or employed by research funding 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. The sandwich fellowships including sustenance, travel and a bench fee for a period of four years, and can be awarded as part of an institutional collaboration programme or to selected graduates from the ITM's master programmes.

In 2007 the latter type of "individual" PhD scholarships, based on merit and competitive project proposals, were awarded to scientists from Ivory Coast, Uganda and Zimbabwe.

The doctorates are usually awarded by a Belgian university, with whom the ITM has concluded agreements to this end. In 2007, 14 doctoral students supervised by the ITM successfully defended their thesis, among which 8 from developing countries. Nine of these PhD's were defended at a Belgian and 5 at a foreign university.

When the sun shines, the ITM's historical art deco garden becomes a favourite place for group work.

One of the nice things about studying in Antwerp is the chocolate.

Christmas far away from home.

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 and its optional modules, as well as public health courses in the MPH-Disease Control, the postgraduate certificate courses for doctors and nurses, and 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 and its modules for CPD (Continuous Professional Development). Many modular students integrate their credits earned at ITM in a joint master track at the University of Limoges. The veterinary staff also takes part in the biomedical sciences track of the postgraduate certificate courses, and coaches Master or CPD students in the joint e-learning MSc in Veterinary Tropical Diseases with the University of Pretoria.

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 Short Course on Antiretroviral Therapy (SCART) 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 and the upcoming E-SCART.

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 and the SCREM. Together with the Departments of Public Health and Parasitology, it assures the coordination and rotating directorship of the MPH-MDC.

Department of Parasitology

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

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 2007; more details and the 2008-2009 programme can be found on www.itg.be.

Further down we provide an overview of the student body, the dissertations and the theses produced during the past year.

International Masters

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

Objectives	Target group	Language	Credits
Focus: Management and policy of comprehensive and accessible quality health services at local, national and international level ***Components***: • Health systems management • Analysis, research, decision making • Communication skills • Optional modules • Integration and synthesis (Master thesis) ***Options***: • Health Policy • Strategic Management	Experienced health professionals (mainly MDs)	Yearly alternating English and French	60

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

Focus: Epidemiological, technical and organisational aspects of specific disease control with emphasis on the integration of sustainable disease control in regular health services ***Components***: • Quantitative and qualitative methods • Public health • Research & tools • Master thesis ***Options*:** • Reproductive Health Programmes • Tropical Diseases Control	Experienced health professionals (mainly MDs)	Yearly alternating English and French	60

Master of Science in Tropical Animal Health (MSTAH)

Focus: Epidemiological, technical and organisational aspects of specific animal disease control ***Components***: • Research methodology • Project cycle management • Global livestock development • Epidemiological case studies • Master thesis ***Options*:** • Animal Disease Control • Epidemiological data collection & processing	Experienced health professionals (mainly veterinary doctors)	Yearly alternating English and French	60

Objectives	Target group	Language	Credits

Postgraduate certificate courses

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

Focus: Clinical, biomedical and epidemological aspects of tropical and poverty related diseases and their control; health care organisation in low and middle income countries ***Components***: • Vector-borne diseases • Tuberculosis, HIV, malaria • Maternal and child health • Emergency medical care • Management of health care systems • Tropical and neglected diseases • Clinical decision making • Tropical laboratory sciences • Clinical specialties in the tropics	Health professionals, mainly from the North, preparing to work in an international context	Yearly in both French and English	30

Tropical medicine for nurses and midwives (TG / MT)

Focus: Clinical, biomedical aspects of tropical diseases and their control; health care organisation in low and middle income countries ***Components***: • Vector-borne diseases • Tuberculosis, HIV, malaria • Maternal and child health • Emergency medical care • Management of health care systems • Tropical and neglected diseases • Tropical laboratory sciences • Nursing in developing countries	Paramedical health professionals, mainly from the North, preparing to work in an international context	Yearly in both French and Dutch	20

Objectives	Target group	Language	Credits

Specialised short courses

Introduction to International Health (TM&IH / MT&SI: Module 1)

Objectives	Target group	Language	Credits
Focus: Diseases and health care in low and middle income countries ***Components***: • Vector borne and tropical diseases • TB, HIV and malaria • Maternal and child health • Emergency medical care • Management of health care systems	Health professionals, mainly from the North, preparing to work in an international context	Yearly in both French and English	20

Clinical and Biomedical Sciences of Tropical Diseases (TM&IH / MT&SI: Module 2)

Objectives	Target group	Language	Credits
Focus: Clinical & biomedical aspects of tropical diseases ***Components***: • Descriptive tropical medicine • Clinical decision making • Laboratory sciences • Clinical specialties in the tropics	Health professionals, mainly from the North, preparing to work in an international context	Yearly in both French and English	10

Short Course on Antiretroviral Therapy (SCART)

Objectives	Target group	Language	Credits
***Focus*:** Comprehensive HIV care and antiretroviral (ARV) treatment in resource-poor settings ***Components*:** • Virology, immunology and clinical aspects of HIV/AIDS/TB • ARVs and patient management • Prevention of mother to child transmission • Public health aspects • ARV scaling-up	Health professionals (mainly MDs)	English	4.5

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

Objectives	Target group	Language	Credits
***Focus*:** Management and integration of reproductive health programmes in general health services ***Components*:** • HIV/AIDS • Sexually transmitted infections • Family planning and maternal health • Project cycle management, logical framework	Experienced health professionals (mainly MDs)	Yearly alternating English and in French	15

Objectives	Target group	Language	Credits

Specialised short courses (continued)

Planning and Management of Tropical Diseases Programmes (MPH – DC: Module TD)

Objectives	Target group	Language	Credits
***Focus*:** Management and integration of tropical diseases control programmes in general health services ***Components*:** • HIV/AIDS, tuberculosis, malaria • Neglected and tropical diseases • Project cycle management, logical framework	Experienced health professionals (mainly MDs)	Alternating English and in French	15

Health Policy (MPH-HSMP: Module HP)

Objectives	Target group	Language	Credits
***Focus*:** Formulation, implementation and evaluation of public health policies in developing countries ***Components*:** • Framework for policy analysis • Actors and levers in policy making • Country case studies • Emerging challenges	Experienced health professionals (mainly MDs)	Alternating English and in French	9

Medical Mycology (Mycology)

Objectives	Target group	Language	Credits
***Focus*:** Medically important fungal infections ***Components*:** • General mycology • Medical and veterinary mycology	Health professionals (mainly laboratory)	Yearly in Dutch and French	3

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

Objectives	Target group	Language	Credits
***Focus*:** HIV/AIDS patient care in Belgium ***Components*:** • HIV: microbiology and epidemiology • Treatment of AIDS and opportunistic infections • HIV/AIDS in pregnancy and children • Multidisciplinary HIV/AIDS care	Medical and paramedical health professionals	Dutch (13 evening classes)	-

Educational output in 2007

Number and origin of participants in ITM-courses 2006-2007

	Belgium	EU	Europe other	Africa	Asia	Latin America	Other	Total
TM&IH (E)	14	9	1	2	1	0	1	28
TM&IH Module (E)	5	2	0	0	2	0	0	9
MT&SI (F)	7	6	3	2	0	1	2	21
MT&SI Module (F)	3	0	0	0	0	0	0	3
TG (D)	29	2	0	0	0	0	0	31
MT (F)	22	21	21	4	0	0	2	70
MPH-HSMP (F)	1	0	0	32	1	0	0	34
MPH- Module HP	2	0	0	5	0	2	1	10
MPH-DC (F)	0	2	0	15	1	1	0	19
MPH- Module TD	0	0	0	3	0	0	0	3
MPH- Module RH	0	0	0	7	0	0	1	8
MSTAH (F)	0	0	0	16	0	1	0	17
MSTAH Module	1	3	0	3	1	0	0	8
Mycology (D)	11	1	0	0	0	0	0	12
Mycology (F)	5	0	0	1	0	0	0	6
SCART	2	4	0	28	5	3	0	42
HIV evening course	73	3	0	0	1	0	0	77
PhD ongoing	34	3	1	31	10	8	0	87
PhD graduates	5	0	1	6	0	2	0	14
Total	**212**	**56**	**27**	**155**	**22**	**19**	**7**	**498**

E = English F = French D = Dutch

Age and gender of participants in ITM courses 2006-2007

	Gender		Age					Prior education	
	M	F	20-29	30-34	35-39	40-44	>45	Bachelor	Master
TM&IH (Eng)	10	18	14	11	3	0	0	n.a.	28
TM&IH Module (Eng)	2	7	4	2	1	0	2	n.a.	9
MT&SI (F)	10	11	8	11	1	1	0	n.a.	21
MT&SI Module (F)	1	2	1	2	0	0	0	n.a.	3
TG (D)	6	25	23	2	0	3	3	31	0
MT (F)	7	63	42	21	5	1	1	70	0
MPH-HSMP (F)	26	8	0	3	10	16	5	0	34
MPH-HSMP Module HP	9	1	0	0	0	5	5	0	10
MPH-DC (F)	12	7	1	2	6	9	1	1	18
MPH-DC Module TD	3	0	0	0	1	1	1	0	3
MPH-DC Module RH	4	4	1	0	3	1	3	2	6
MSTAH (F)	15	2	0	5	7	5	0	n.a.	17
MSTAH Module	6	2	1	2	3	2	0	n.a.	8
Mycology (D)	3	9	2	6	1	0	3	6	6
Mycology (F)	2	4	0	1	1	1	3	3	3
SCART	25	17	1	14	12	6	9	0	42
HIV evening course	16	61	32	15	6	7	17	47	30
PhD ongoing	54	33	17	19	20	19	12	0	87
PhD graduates	10	4	1	2	4	6	1	0	14
Total	**221**	**277**	**148**	**118**	**84**	**83**	**65**	**160**	**338**

Accreditation process of the master programmes: excellent scores

Following the Bologna reforms, the Ministries of Education of Flanders and the Netherlands introduced a joint accreditation system for all master degrees. The procedure consists of three consecutive steps, spread over a period of approximately one year: (1) a thorough and written self-assessment according to an elaborate template; (2) a site visit and evaluation by a panel of experts and stakeholders, organised by the Flemish Interuniversity Council (VLIR); (3) a final evaluation and accreditation by the Dutch-Flemish Accreditation Organisation (Nederlands-Vlaamse Accreditatie Organisatie, http://nvao.net). The three master programmes of the ITM are due for accreditation in 2008.

The self-assessment, coordinated by task forces at course and institutional level, was a very intensive but equally fruitful exercise, resulting in a thorough review, further alignments and new reforms in all three courses. The reports were submitted on January 31st of 2007, and the site visit took place on 29-31 May. English was used for all reports and proceedings, allowing to invite a truly international committee. The committee chairperson, professor Christina Vandenbroucke – Grauls, presented the final assessment report to the VLIR representative on 30 November.

All three master programmes passed the assessment with flying colours. The evaluation template, consisting of 6 subjects divided in 20 "facets", was positive across the board. MPH-HSMP, MPD-DC and MSTAH respectively scored "excellent" or "good" for 18, 19 and 18 facets, a truly exceptional result (See table on next page). The committee highly valued the coherence between targeted professional profile, learning objectives and programme as well as the didactic approach and coaching of participants. It made suggestions for further improvement of the organisation and output of the programmes. The VLIR approved the report and the ITM officially applied for re-accreditation to the NVAO on November 30th.

Feedback to the ITM at the end of the evaluation visit by professor Vandenbroucke. From left to right: professor Elke Struyf (University of Antwerp), professor André Buldgen (Faculty of Agricultural Science, Gembloux), professor Malcolm Segall (Institute of Development Studies, Sussex, UK), professor Vandenbroucke (University of Amsterdam), professor Felix M. L. Salaniponi (Ministry of Health, Malawi), Mark Ssennono (Transnational University Limburg) and Pieter-Jan Van de Velde (VLIR).

Summary scores of the ITM master courses in the external assessment

Grading facets (*)	Excellent	Good	Satisfactory	Unsatisfactory
Master courses ITM				
Public Health	10	8	2	0
Disease Control	14	5	1	0
Tropical Animal Health	9	9	2	0
Total (out of 60)	33	22	5	0
Percentage	**55%**	**37%**	**8%**	**0 %**

(*) Legend

Excellent: 'best practice', (international) example for other trainers
Good: well above the minimum requirements
Satisfactory: meets the minimum requirements
Unsatisfactory: does not meet the minimum requirements

The full report can be read or downloaded from
http://www.vlir.be/media/docs/Visitatierapporten/2007/kv07v1-ITG.pdf

The chairperson of the visitation commission, professor Christina Vandenbroucke, handing over the assessment report to professor Eddy Van Avermaet (VLIR) at the ITM on 30 November.

The internal assessment reports, available on request.

PhD and master dissertations 2007

Doctoral theses (PhD)

Department of Microbiology

Ablordey A. Development of molecular methods for the study of genetic diversity in *Mycobacterium ulcerans*. 130 pp. Host University: University of Ghent, Belgium. UGhent promoter J. Swings; ITM promoter F. Portaels.

Nyaruhirira Umubyeyi Mbaraga A. Apport de la microbiologie dans la prise en charge thérapeutique de la tuberculose au Rwanda. 185 pp. Host University: Université Libre de Bruxelles, Belgium. ULB promoter M. Struelens; ITM promoter F. Portaels.

Best I. Marcadores inmunologicos relacionados a la paraparesia espastica tropical (PET) asociada a HTLV-1. Host University: Universidad Peruana Cayetano Heredia, Lima, Peru. UPCH promoters E. Gotuzzo and D. Clark; ITM promoter G. Vanham

Department of Animal Health

Rodriguez Hidalgo R.I. The epidemiology of *Taenia* spp. and cysticercosis in Ecuador. 126 pp. Host University: University of Ghent, Belgium. UGhent promoter J. Vercruysse; ITM promoter P. Dorny; ITM co-promoter J. Brandt.

Faburay B. Molecular epidemiology of heartwater (*Ehrlichia ruminantium* infection) in The Gambia. 155 pp. Host University: Utrecht University, The Netherlands. UU promoter F. Jongejan; ITM promoter D. Geysen.

Mamoudou. Trypanosomosis and trypanocidal drug resistance on the Adamaoua plateau in Cameroon. 100 pp. Host University: Freie Universität Berlin, Germany. FUB promoter K. Zessin; ITM promoter S. Geerts

Ververken C. The polymorphic immunodominant molecule of *Theileria parva*: recombinant expression and localization in mammalian cells, DNA immunization of cattle and use in diagnosis. 135 pp. Host University: Catholic University of Leuven, Belgium. KUL promoter B. Goddeeris; ITM promoter D. Geysen.

Esterhuizen J. Bionomics and control of *Glossina austeni* and *G. brevipalpis* (Diptera: Glossinidae) in South Africa. 100 pp. Host University: University of Pretoria, South Africa. UP and ITM promoter P. Van den Bossche.

Department of Parasitology

Decuypere S. Antimonial treatment failure in anthroponotic visceral leishmaniasis: towards improved tools and strategies for epidemiological surveillance and disease control. 250 pp. Host University: University of Antwerp, Belgium. UA promoter R. Colebunders; ITM promoter J.C. Dujardin.

Van geertruyden J.P. HIV-1 and malaria treatment interactions. 178 pp. Host University: University of Antwerp, Belgium. UA promoter R. Colebunders; ITM promoter U. D'Alessandro.

Gillingwater, K. Discovery of novel active diamidines as clinical candidates against *Trypanosoma evansi* infection. 212 pp. Host University: Universität Basel, Switzerland. UB promoter R. Brun; ITM promoter P. Büscher.

Department of Clinical Sciences

Bottieau E. Fever after a stay in the tropics. 114 pp. Host University: University of Antwerp, Belgium. UA promoter R. Colebunders; ITM promoter J. Van den Ende.

Kamya M.R. HIV and malaria in Uganda: the challenges for treatment. 173 pp. Host University: University of Antwerp, Belgium. UA promoter R. Colebunders; ITM promoter U. D'Alessandro.

Clevenbergh P. Key determinants for effective, safe and efficacious antiretroviral therapy in HIV-infected persons. 240 pp. Host University: University of Antwerp, Belgium. UA and ITM promoter R. Colebunders.

Master theses

Master of Science in Tropical Animal Health (MSTAH) 2006-2007

Attindehou S. Variation saisonnière de la densité apparente de mouches tsétsés aux environs de la réserve faunistique de Nkhotakota au Malawi, 26 pp.

Bagayogo A. Différenciation des Culicoides appartenant au complexe obsoletus, 38 pp.

Barry Y. Etude de la mérogonie de *Theileria annulata* et *Theileria parva*, 46 pp.

Bihizi JM. Importance de *Mycobacterium bovis* en Afrique, 40 pp.

Chepnda VRM. Etude de la corrélation entre le polymorphisme du gène TbAT1 de *Trypanosoma brucei* et la sensibilité à l'acéturate de diminazene, 28 pp.

Garba Yaye I. Evolution des cas de rage animale dans la région de Niamey (Niger) de 1995 à 2005, 30 pp.

Houndje EMB. Approche Bayésienne spatio-temporelle des cas cliniques de fièvre aphteuse au Bénin de 2003-2006, 37 pp.

Kouzoukende TN. Etude de l'expression de biotransporteurs membranaires en fonction de la sensibilité à l'isométamidium chez différentes souches de *Trypanosoma congolense*, 33 pp.

Manzanedo García R. Estimation du coût socio-économique de la cysticercose par *Taenia solium* à l'ouest du Caméroun, 42 pp.

Midinhouevi B. Screening d'anticorps VHH de chameau pour leur utilisation dans l'ELISA sandwich pour la détection d'antigènes de *Cysticercus cellulosae*, 40 pp.

Minani B. Effet du chlorure de l'isometamidium sur la capacité vectorielle des femelles tsé-tsé à la transmission de *Trypanosoma congolense* IL 1180, 42 pp.

Ould El Mamy AB. Epidémiologie de la fièvre de la Vallée du Rift en Mauritanie; pertinence des troupeaux sentinelles, 43 pp.

Rakotoharinome VM. Surveillance des maladies de bovins dans un système de zonage à Madagascar, 46 pp.

Sanogo M. Estimation de la prévalence de la brucellose bovine dans le centre de la Côte d'Ivoire par une approche bayésienne, 51 pp.

Tchamdja E. Mise au point et étude des performances d'un test ELISA pour la détection d'anticorps dirigés contre *Cysticercus cellulosae* chez l'homme, 42 pp.

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

Agbanouvi-Agassi EE. Problématique de gestion d'un district sanitaire fragmenté; cas du district urbain de Foumban, ouest Cameroun; analyse et approche de solutions, 36 pp.

Andriamihantanirina RM. Réflexion sur l'articulation des campagnes de vaccination de masse et le fonctionnement du service de santé à Madagascar, 33 pp.

Awaga EDA. Prise en charge ambulatoire de la malnutrition aiguë sévère; expérience de l'ONG Save The Children - UK au Niger, 42 pp.

Bouslimane A. Carence en personnel qualifié en santé mentale en Algérie, 41 pp.

Chan P. La mobilisation des ressources communautaires pour l'élargissement de disponibilité des services pour les personnes vivant avec le VIH/SIDA au Cambodge, 67 pp.

Condé B. Déséquilibres des ressources humaines pour la santé en Guinée, 40 pp.

Condé S. Mutuelle de santé au centre d'une approche communautaire en santé; expérience de trois centres de santé du district sanitaire de Kankan, Guinée, 55 pp.

Dangar Guira D. Etat des lieux de la lutte contre la mortalité maternelle au Tchad et identification de quelques pistes stratégiques, 36 pp.

Dormbaye M. Faible utilisation des services de santé dans le district sanitaire de Mao au Tchad, 30 pp.

Dosso Y. L'approche district dans la prise en charge des personnes vivant avec le VIH: cas du district d'Agnibilekro, 32 pp.

Douamba Ouedraogo FHK. La mise à l'échelle du traitement par les antirétroviraux au Burkina Faso; analyse critique et suggestions, 54 pp.

Ebeng Depe SR. Amélioration du service de dépistage volontaire du HIV à l'hôpital d'Ekondo Titi Caméroun, 40 pp.

Haba S. Place d'un réseau de services de santé sans but lucratif dans le système de santé de la ville de Conakry (République de Guinée), 33 pp.

Kamalo CG. La motivation des personnels de santé dans la préfecture de la Mambere-Kadei en République Centrafricaine, 47 pp.

Keugoung B. Mutuelles de santé du district de Méri au Cameroun; leçons d'un échec, 37 pp.

Kiamvu WR. Participation communautaire dans la zone de santé de Befale (Equateur, RDC), 39 pp.

Kiluba wa Kyungu JC. Intégration des activités du programme VIH/SIDA à l'hôpital général de référence Kenya (RDC); effets synergiques et perturbateurs, 34 pp.

Konate M. Evaluation de la gestion d'une épidémie de méningite à méningocoque A survenue en 2006 dans le district sanitaire de Kolondiéba, Mali, 43 pp.

Lonema LVR. Quelle approche d'appui au sylos dans un contexte de sous financement? Expérience de deux OINGs au nord est de la RDC, 50 pp.

Mbeko Simalenko M. Financement extérieur et système de santé: cas du fonds mondial en République Centrafricaine, 45 pp.

Nguefack F. Prévention de la transmission mère enfant du VIH à l'hôpital provincial d'Ebolowa au Caméroun: comment faire mieux?, 39 pp.

Ouedraogo B. Améliorer l'accès à des soins de qualité dans le service public au Burkina Faso: c'est possible, 56 pp.

Ould Khalef IOM. Campagnes de vaccination de masse: impact sur le fonctionnement des services de santé; cas du district d'El mina, 46 pp.

Ould Mohamed A. Analyse de la motivation des ressources humaines de santé en Mauritanie, 27 pp.

Rwiteyimanza FX. La mutuelle communautaire pour financer les urgences obstétricales à Muyinga (Burundi): problèmes et solutions, 37 pp.

Sidibe M. L'impact de la gratuité de la césarienne sur les soins obstétricaux dans le district sanitaire de Fana (Mali), 32 pp.

Simbiyara C. Proposition d'intégration de la prise en charge des malnutris dans les centres de santé de Caritas Burundi, 38 pp.

Soglo DR. Comment améliorer l'accès aux soins à l'hôpital de zone de Kandi? (Bénin), 43 pp.

Stasse S. Protocole d'évaluation des agents de santé communautaire dans le département du Pool en République Populaire du Congo, 57 pp.

Swana Kawawa E. Réconstruire un système local de santé performant à finalité publique: que faire à Kilela Balanda en République Démocratique du Congo?, 41 pp.

Thiero M. Surproduction des médecins au Mali: une opportunité pour renforcer la première ligne, 31 pp.

Traore BT. Les facteurs de risque de la mortalité périnatale à Segou-Mali, 32 pp.

Traore B. Optimaliser la formation des médecins chefs de district au Mali, 33 pp.

Zambou B. Problématique de la durabilité du traitement à l'ivermectine: cas du district de santé de Ndikiniméki-Caméroun, 59 pp.

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

Yong W. Control and prevention of infectious diseases and migrants: an overview of the different approaches and their respective policy frameworks, 51 pp.

Angoran Yapi Bénié HMA. Alimentation des enfants de 0-6 mois nés de femmes infectées par le VIH: connaissances, attitudes, pratiques, croyances et perceptions des mères en Afrique; une revue systématique de la littérature, 83 pp.

Bassirou B. Suivi et évaluation du programme d'accès aux antirétroviraux du Cameroun, 48 pp.

Bigabiro CL. Les conditions de suivi des patients sous traitement antirétroviral; contexte des pays à ressources rares, 58 pp.

Gonçalves Martín J. Les agents de santé communautaires Yanomami; contribution potentielle et déterminants de succès dans le Haut Orénoque, Vénézuéla, 42 pp.

Guendehou BIC. Evaluation du programme national contre la tuberculose en République du Bénin de 1996 à 2005, 43 pp.

Guettaï M. Evaluer la pertinence des données sanitaires produites par le système d'information du Programme National de Lutte contre le Paludisme en Algérie, 42 pp.

Kazadi JC. La prise en charge à domicile du paludisme simple avec les combinaisons thérapeutiques à base d'artemisinine: analyse de faisabilité en République Démocratique du Congo, 42 pp.

Konan Dibu JP. Qualité des soins prénatals avant et après l'intégration des programmes de la prévention de la transmission mère-enfant du VIH en Côte d'Ivoire, 47 pp.

Lodesani C. L'utilité hypothétique de l'introduction du test rapide Paracheck® dans le diagnostic du paludisme dans un pays de l'Afrique sub-saharienne à transmission saisonnière, 47 pp.

Longo JdD. Faisabilité d'un programme de contrôle de l'herpès simplex virus de type-2 en République Centrafricaine (RCA): revue de la littérature, 44 pp.

Matendo Mwaku R. Réduire la mortalité périnatale dans une communauté rurale en République Démocratique du Congo, 55 pp.

Mbo Kuikumbi F. Vers un renforcement du dépistage passif et sa contribution à la lutte contre la trypanosomiase humaine africaine; cas de la province de Bandundu en République Démocratique du Congo, 48 pp.

Min DC. Accessibilité aux services de santé pour avortement dans la province de Sihanouk Ville, Cambodge, 37 pp.

Mwembo-Tambwe-A-Nkoy A. Acceptabilité du dépistage volontaire du VIH chez les femmes enceintes de l'hôpital général de référence de Kenya à Lubumbashi en République Démocratique du Congo, 47 pp.

Ouedraogo E. Conseil et dépistage volontaire du VIH: analyse de la situation actuelle du Burkina Faso, 64 pp.

Ralisimalala A. Programme de prévention ciblé des IST et du VIH dans le commerce du sexe à Diégo-Suarez, 61 pp.

Richard F. La césarienne de qualité; expérience du district sanitaire du secteur 30 Ouagadougou, Burkina Faso, 66 pp.

Sieleunou I. Facteurs influençant la survie des patients sous thérapie antirétrovirale à l'Extrême-Nord du Cameroun, 53 pp.

Traoré D. Evaluation de la formation des agents de santé à la prise en charge intégrée des maladies de l'enfant au Mali, 54 pp.

University master theses

Department of Parasitology

Kempen I. RNAi-silencing van 'Tsetse Antigen-5, een speekseleiwit van de tseetseevlieg *Glossina morsitans*, Universiteit Antwerpen. ITG promoter: M.Coosemans, ITG Co-promoter: J.Van Den Abbeele.

Stessens T., Validatie van een PCR-oligochromatografie test, Universiteit Antwerpen. ITG promoter: P. Büscher

Department of Animal Health

Zimmer, J.Y. Contribution à l'étude de l'écologie des larves de Culicoides, vecteurs de la fièvre cattharale ovine en Belgique. Travail de fin d'études (option Nature et Forêt), Faculté Uuniversitaire des Sciences Agronomiques de Gembloux. ITM promoter: R. De Deken.

Goethals A. Onderzoek naar de genetische basis van diminazene resistentie en verbeterde diagnose bij trypanosomen van het vee. Universiteit Antwerpen. ITM promoter: V. Delespaux

Hermans V. Distributie, demografie en mobiliteit van tseetseevliegen *Glossina brevipalpis* en *G. austeni* (*Diptera, Glossinidae*) in en rond het Hluhluwe-iMfolozi Park, KwaZulu-Natal, Zuid Afrika. Universiteit Gent. ITM promoter: P. Van den Bossche.

De Haes W. Het gebruik van DNA vaccinatie voor het opwekken van cytologische T lymfocyten tegen de polymorfe immunodominante oppervlaktemolecule van *Theileria parva*, VUB. ITM promoter: D. Geysen.

Oughanou A. Analyse du polymorphism de *T. Ruleria annulata* dans les infections bovines au Maroc. Institut Agronomique Hassan II, Rabat. ITM promoter: D. Geysen.

Department of Clinical Sciences

Oluwaseyi SA. Defaulters in a cohort of HIV infected patients, Universiteit Hasselt. ITM promoter: E. Florence, 45pp.

Lamidi MA. Outcome of Chronic Hiv-1 Patients who interrupt their Highly Active Antiretroviral Treatments, Universiteit Hasselt. ITM Promoters: E. Florence and J. Menten, 63pp.

Hogeschool bachelor theses

Department of Parasitology

Cuesters A. Selectie van peptiden voor diagnose van slaapziekte uit faag expressiebanken, Katholieke Hogeschool Sint Lieven Gent. ITG promoter: P. Büscher.

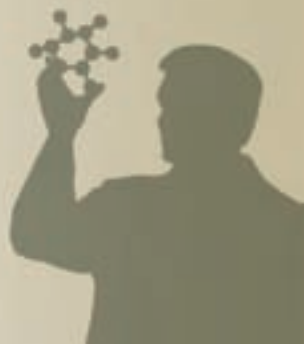
Department of Animal Health

De Keyser D. Moleculaire diagnostiek op parasitaire *Trypanosoma* soorten, *Theileria parva* stammen en *Ehrlichia ruminantium* stammen. Plantijn Hogeschool Antwerpen. ITM Promoter: D. Geysen.

Nispen D. Vergelijking tussen morfologische en moleculaire onderzoeksmethodiek voor de bepaling van *Theileria parva* infecties in teken. Fontys Hogeschool, Nederland.
ITM Promoter: D. Geysen.

Research

Department of Microbiology



The main goal 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.
The Department has four scientific units: Virology, Immunology, Mycobacteriology and STD/HIV Research & Intervention. It also houses the service-oriented AIDS Reference Laboratory.

Unit of Virology

In 2007, our principal research subject remained HIV, with as main axes the development of microbicides, the analysis of broad neutralising antibodies, the study of HIV replicative fitness, the analysis of mutations in drug-treated HIV-2 infection, dendritic cell-based immunotherapy and correlates of T cell-mediated protection. A second research line is HTLV-1, with field and pathogenicity studies in Peru (collaboration with the Institute of Tropical Medicine Cayetano Herredia, Lima).

We finalised and published our study on the *in vitro* model of the female cervical mucosa, which will be a useful tool to evaluate microbicides. Together with the Rega Institute (Katholieke Universiteit Leuven) we also reported on the anti-HIV activity of plant lectins in transmission from dendritic cells to T cells. We compared the activity of candidate microbicides in various settings, showing that reverse transcriptase inhibitors are more promising than entry inhibitors.

With regard to vaccine development, we showed the specificity of some exceptionally broad neutralising antisera. Based on one of these subjects, an antibody phage bank was prepared and will be further analysed to isolate the neutralising antibodies. We continue our efforts to characterise mimotopes of neutralising antibodies, and work on a mouse model to evaluate broad neutralising antibodies in vivo.

In a ground-breaking paper, we demonstrated the possible evolution of HIV towards lower virulence. On the other hand, we observed an increase of replication capacity in HIV isolates from the more recent years in the Amsterdam cohort of seroconvertering homosexuals.

With regard to resistance in HIV-2, we developed a user-friendly assay, aiming to screen plasma virus from treated patients for the most common drug-related mutations. This assay will be useful for resource-limited settings.

The progress of the HTLV-1 research in Lima is highlighted below.

Unit of Immunology

The Unit of Immunology continued its projects on HIV pathogenesis, immune reconstitution and correlates of protection from HIV infection. The work on the use of pseudo viral particles in the monitoring of cellular immune responses was finalised, but we started an important new EC-funded project on the immunopathogenesis of tuberculosis-associated Immune Reconstitution Inflammatory Syndrome (TB-IRIS), an important complication of antiretroviral treatment in developing countries. Immune reconstitution in HIV patients receiving antiretroviral treatment (ART) was studied in a cohort of outpatients

"In a ground-breaking paper, we demonstrated the possible evolution of HIV towards lower virulence"

of the ITM's medical services. We analysed the recovery of the regulatory (Treg) and effector T cells in HIV patients, in function of the degree of immune deficiency at the start of the treatment. We found that a balanced reconstitution of these important T cells was affected by the degree of immune deficiency (low CD4 counts). Monitoring these cells during ART helps to assess the recovery of the immune system after the initiation of ART in HIV patients.

The project on correlates of immune protection from infection resulted in very interesting findings. We found that natural killer (NK) receptor gene combinations, which were linked to protection in HIV exposed subjects, were associated with lower CD4+ T cell count in HIV-1 infected female sex workers. This finding suggests that activated NK cells protect against HIV acquisition but may promote HIV disease progression in HIV infected subjects. In collaboration with "Hôpital Le Dantec" and "Hôpital de Fann", we have continued to collect valuable biological samples from HIV-serodiscordant couples in Dakar, Senegal. 35 couples have been enrolled for follow-up. In 2007, twenty concordant couples were identified with genetically linked HIV-1 gp41 sequences, indicating intra-couple virus transmission. The collaboration with, and capacity strengthening of the Laboratoire de Virologie & Bactériologie in Dakar is further described in the chapter on Development Cooperation. In November, they hosted a workshop on HIV diagnostics, sponsored by the African AIDS vaccine programme (AAVP) and the World Health Organisation, to which we also contributed.

Wim Jennes and Luc Kestens assisted in the organisation of the ELISPOT workshop in Dakar.

The TB-IRIS project started officially on July 1st 2007. The launch of the field and laboratory work in Uganda was extensively prepared, and resulted in the extension of the consortium with the Joint Clinical Research Centre (JCRC) in Kampala. The work started in September 2007 with patient enrolment in study cohorts at Mulago hospital other at the Infectious Disease Institute. We organised a workshop on ELISPOT, a method to assess the immunological efficiency of new potential HIV vaccines.

Unit of STD/HIV Epidemiology and Control

The Unit of STI/HIV Epidemiology and Control aims at contributing to the worldwide prevention of HIV infection.

In 2007, HIV prevention and care services for sex workers in our collaborative project in Ivory Coast were expanded to three new sites, bringing the total number to eight. At the national level, a workshop was organised for the training of peer health educators and community workers. Guidelines on the minimum package of services for sex workers were elaborated and validated. A survey on HIV and STIs and associated risk behaviour among women attending the clinics, revealed a HIV prevalence of 33.4%.

International Women's Day in Kenya.

The intervention studies for female sex workers in Kisumu, Western Kenya, in collaboration with Family Health Options Kenya, had a higher uptake of services than expected, indicating a large unmet need. Highlight of the year was the celebration of the International Women's Day.

In the same area, the unit also collaborates with the Kenya Medical Research Institute and the US Centers for Disease Control in a prevention programme for youth. The most promising and innovative component is an intervention targeting parents of children aged 9-12 years, called "Families Matter!". The aim is to provide parents with skills and self-confidence to talk about sex with their children. WHO has provided funding to conduct a literature review and more qualitative work on parent-adolescent relationships in Kenya and Tanzania. This work is done in collaboration with the Medical Research Council in Glasgow, KEMRI and the National Institute of Medical Research in Tanzania. Another gap in youth interventions is the problem of HIV infected adolescents. A grant from the Dutch AIDS-FUND will allow the STI/HIV Epidemiology and Control Unit, in collaboration with the Department of Clinical Sciences, to develop an intervention addressing the sexual and reproductive health needs of HIV infected adolescents in Uganda and Kenya.

The unit is involved in several projects and networks on vaginal microbicides, including two phase III trials on the effects of cellulose sulphate on HIV transmission; EMPRO (European Microbicides Programme); EUROPRISE (European Vaccines and Microbicides Enterprise); and an EDCTP-funded project on capacity building for microbicide trials. In January 2007, the phase III trials of cellulose sulphate were stopped by their Independent Data Monitoring Committees, a new and major setback for the entire field. The STI laboratory and the AIDS Reference Laboratory played an important part in these trials and participated in the close-out visits of the sites. On a more positive note, funding was secured from the Dormeur Foundation for the purchase of real time PCR equipment. This equipment will be used in a phase I study assessing the effects of a vaginal ring containing dapivirine on the vaginal flora.

The EuropeAid project on HIV/AIDS prevention in Cambodia focused on youth as main target group.

The EuropeAid funded project "Increasing the relevance and effectiveness of HIV/AIDS prevention and care among youths through a Cambodia-Thailand partnership" ended on 31st December 2007. This large project had several components, including care of HIV infected persons, HIV prevention in youth, and operational research. A project review was conducted in Cambodia and Thailand. The final workshop on 19 - 20 December in Siem Reap, Cambodia, was attended by over 100 participants from the Ministry of Health, partners and stakeholders. The collaboration with the National Centre for HIV/AIDS (NCHADS) will continue, among others through the ITM/DGCD framework programme.

The experience of the unit is also put to use for international policy support and development. Marie Laga is an active member of the UNAIDS Prevention Reference group; the Global Prevention Working group (funded by the Gates and Kaiser foundations); and the Scientific and Technical Advisory Board of WHO's AIDS programme. In 2007 she also provided technical assistance to the Avahan Programme in India, the world's largest HIV prevention program for sex workers, and the AIDS Strategy & Action plan (ASAP) working group of the World Bank to strengthen the strategic planning processes in different African countries. She travelled several times to Mexico in her capacity as co-chair for science of the 2008 World AIDS conference.

Unit of Mycobacteriology

In 2007, the Unit of Mycobacteriology retained its focus on Tuberculosis (TB) and Buruli ulcer (BU).

In TB research our main topics are drug resistance, in particular multidrug resistant TB (MDRTB) and improved treatment. A drug-resistance survey (DRS) in Rwanda was completed and published, showing moderate levels of resistance to first-line drugs and very low levels of resistance to second-line drugs. Another DRS in Georgia, for which we performed quality control, revealed a prevalence of 6.8% MDRTB among new cases and of 27.4% among retreatment cases in the general population. Other DRS were started or supported in Tanzania and Bangladesh. In Bangladesh, rifampicin resistance increased after a switch to long-term use of this drug, but further follow-up is needed to confirm this trend.

We found only a few cases of the much dreaded and publicised extensively-drug resistant tuberculosis (XDRTB) in samples from Bangladesh, Rwanda, Myanmar, Burundi and DR Congo. In surveys in Georgia, we found 6 XDRTB among 66 MDRTB cases, and in Abkazia one in 29.

One way of tackling MDRTB is the development of easy and early detection methods of drug-resistant TB. To that end, we evaluated new TB-specific primers for the detection of rifampicin resistance, and two non-commercialised rapid colorimetric culture methods (nitrate reductase assay and resazurin microtiter assay) for first and second line drugs under field conditions. The new methods compared well with the standard proportion method on solid medium. We also study the risk of developing resistance under various treatment regimens with molecular methods. The preliminary results in Bangladesh, cited above, showed 25 of 106 (24%) versus 2 of 79 (2.5%) of rifampicin-resistance conferring mutations in, respectively, long- and short term users.

Treatment studies included the evaluation of a standardised gatifloxacin-based regimen for MDRTB patients in Bangladesh, the continuation of a clinical trial on the use of gatifloxacin in a 4-month standard treatment regimen in 5 African countries, and the use of fixed-dose first-line drugs for standard treatment of new TB cases in 9 high incidence countries worldwide. The gatifloxacin-based MDRTB treatment showed a cure rate of close to 90%, so far without any failures or relapses.

A new collaborative clinical trial of diarylquinoline (TMC207, Tibotec, Belgium) for retreatment of MDRTB patients in South Africa was started up.

Our work on Buruli Ulcer (BU) is taking place mainly in West Africa. In 2007, we achieved a major breakthrough by cultivating, for the first time ever, *M. ulcerans* from the environment. We confirmed that the disease is still endemic in several countries where it was first reported decades ago (Gabon, Nigeria and DR Congo). In Southern Benin, we discovered a new and unique BU genotype, with possible implications for the severity of the disease in this region.

A large case control study allowed us to highlight the protective effect of the regular use of clean flowing water and of soap for the treatment of ulcers. We demonstrated that water sources in BU endemic regions are more contaminated by amoebae than those in non-endemic regions, suggesting a possible role of these organisms in the transmission of BU.

Leen Rigouts and long time associate Humberto Guerra in the TB laboratory of the Institute of Tropical Medicine Caeyetano Heredia in Lima, Peru.

Human T Lymphotropic Virus type 1 (HTLV-1) in Peru

HTLV-1 is a viral infection that is transmitted by prolonged breast feeding, transfusion of infected blood or sexual contact. Although most infections are asymptomatic, a minority of the infected subjects develop serious complications, including a debilitating neurological syndrome (tropical spastic paraparesis) or aggressive leukemias or lymphomas. Some patients are also sensitive to infectious complications, such as scabies, strongyloidiasis and onychomycosis. HTLV-1 infection is prevalent in West Africa, Japan, the Caribbean and the northern Andes region.

Over the last two decades, Eduardo Gotuzzo, director of the Institute of Tropical Medicine of Lima, has established a clinical and epidemiological cohort of 1,500 HTLV-1 subjects, and their family members. This is one of the largest cohorts in the world.

Tine Verdonck works on HTLV and other infectious diseases with Prof. Eduardo Gotuzzo at the Institute of Tropical Medicine Caeyetano Heredia in Lima, Peru. She is also a key player in the collaborative capacity strenghtening programme.

The ITM's Unit of Virology collaborates in studies aiming to understand why only some of the infected subjects develop the disease and why the disease expression is clustered in three different syndromes, i.e. an inflammatory neurological one, an infectious one or a neoplastic one. The project is part of the ITM DGDC collaborative programme between the Antwerp and Lima institutes and is co-funded by the Flemish Interuniversity Council (VLIR). Other partners are the Medical Genetic Department of the University of Antwerp (Prof. Van Camp and Dr. Van Laer) and the Catholic University of Leuven (Prof. Van Damme). In Peru, Dr. Tine Verdonck, Dr. Daniel Clarck, Dr. Ivan Best and Dr. Michael Talledo are the main investigators working with Prof. Gotuzzo. Several clinical trainees and master students in molecular biology are also involved trained in the project. Over a period of 4 years, we will collect clinical, epidemiological and biological data on 800 HTLV-1 infected subjects. By the end of 2007, we had reached our mid-term target of 400 subjects. Tine Verdonck analysed the clinical and epidemiological features and convincingly demonstrated an increased risk for severe tuberculosis in HTLV-1 infected subjects. Together with the other researchers she published a prestigious review in the "Lancet Infectious Diseases" and papers in several other international journals. She will defend her PhD thesis in 2008 at the Antwerp University. Ivan Best analysed the T cell function in the patients and observed signs of spontaneous activation and increased activity of regulatory T cells in patients with neurological complications. He successfully defended his PhD thesis at the Caeyetano Heredia University in Lima. Ms. Vanessa Adaoui, together with Dr. Clarck, succesfuly developed an in-house assay test to measure the proviral load. Michael Talledo observed a genetic association between "Andean origin" and risk for neurological complications.

World AIDS Day

The theme of this year's World AIDS Day seminar at ITM was "HIV and youth". In the morning, scientists reviewed the state of the art in the prevention, treatment and care of HIV in young people. Two young adults living positively with HIV, Tristan from Belgium and Vivian from Kenya, gave their personal testimony.

In the afternoon, Princess Mathilde, who is also ambassador for UNICEF and UNAIDS, visited the ITM and met with a group of HIV-affected young people. Adolescents from the African community in Belgium and from a multicultural school in Antwerp held a participatory workshop on HIV-prevention.

Princess Mathilde at the ITM greeting staff and students on World AIDS Day 2007.

Projects

For more details, see www.itg.be/projects and fill in the project reference number

Unit of Virology

Reference number 84210/84211
EMPRO European Microbicide Project
ITM Promoter: G. Vanham
ITM Collaborator: A. Buvé
EMPRO-coordinater: C. Kelly (King's College London)
Support: European Commission

Reference number 85101
MMP Development of an association of one or more vaginal microbicidal formulations at the pre-clinical stage.
ITM Promoter: G. Vanham
MMP-coordinater: L. Belec (INSERM, France)
External promoters: G. Van den Mooter, J. Balzarini & D. Schol (KUL, Belgium), S. di Fabio (ISS, Italy)
Support: ANRS French National Agency for Research on Aids/Agence nationale de recherches sur le sida

Reference number 100107
Research collaboration on microbicides
ITM promoter: G. Vanham
External promoters: J. Van Roey (Tibotec, Belgium), IPM (International Partnership of Microbiocides Inc.)
Support: Tibotec Pharmaceuticals Ltd, Ireland.

Reference number 424402
Sexual Transmission of HIV: viral selection, fitness and adaptation
ITM promoter: G. Vanham
ITM collaborator: J. Michiels
External promoters: M. Temmerman & M. Praet (University of Ghent)
Support: Research Foundation Flanders (FWO)

Reference number 414401
Inhibition of human immunodeficiency virus (HIV) replication
ITM promoter: G. Vanham
ITM collaborators: E. Van Gulck, D. Atkinson
External promoters: Z. Bernemann (Antwerp University, Belgium, coordinator), B. Verhasselt (Ghent University, Belgium), M. Moutschen (University of Liège, Belgium), A-M Vandamme (Catholic University Leuven, Belgium), B. Berkhout (University of Amsterdam, The Netherlands).
Support: Belgian Federal Science Policy Office (BELSPO)

Reference number 100094
Induction of immunity by dendritic cells in cancer and aids
ITM-promoter: G. Vanham
ITM-collaborators: K. Vereecken, S. Coppens, Y. Gali
External promoters: Z. Berneman, E. Van Gulck and G. Van den Bosch (University of Antwerp, Belgium)
Support: University of Antwerp (GOA)

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: G. Vanham
Support: French National Agency for Research on Aids (AWRS)

Reference number 424403
A phase I/II study of therapeutic vaccination with autologous dendritic cells of HIV infected individuals under stable HAART
ITM-promoter: G. Vanham
External promoters: K. Thielemans (Free University of Brussels, Belgium), Z. Berneman (Antwerp University Hospital, Belgium)
Support: Institute for the Promotion of Innovation by Science and Technology in Flanders (IWT)

Reference number 100217
Vaccine induced protective cross-neutralisation of HIV-1
ITM promoters: G. Vanham, W. Janssens
ITM collaborators: S. Balla-Jhagjhoorsingh, B. Willems, L. Heyndrickx, K. Vereecken, N. Loots
External promoters: R.A. Weiss (University College London, United Kingdom), A. McKnight(Queen Mary University of London, United Kingdom), J. Heeney and D. Davis (Biomedical Primate Research Centre, The Netherlands), A. Lanzavecchia (Institute for Research in Biomedicine, Switzerland), Q. Sattentau (University

of Oxford, United Kingdom), T. Verrips (University of Utrecht), R. Wagner(University of Regensburg, Institute of Medical Microbiology and Hygiene, Germany), W. Weissenhorn (Université Joseph Fourier Grenoble, France), M. Neuberger (Cambridge University, Medical Research Council, United Kingdom), H. Langedijk (Pepscan Systems BV, The Netherlands).
Support: Bill & Melinda Gates Foundation

Unit of Immunology

Reference number 424101
Correlates of protection against HIV infection among African HIV-exposed seronegative (ESN) subjects
ITM promoters: L. Kestens, W. Jennes
ITM collaborators: L. Heyndrickx, M. Camara, Jordan Kyongo, Evelyn Vanhommerig
External promoters: S. Mboup, T. Dieye (CHU, Dakar, Senegal); C. Demanet (Free University of Brussels, Belgium); K. Mous, X. Van Ostade (University of Antwerp, Belgium)
Support: Research Foundation Flanders (FWO); Belgian Directorate-General for Development Cooperation (DGDC)

Reference nummber 314101
Pathogenesis and identification of predictive factors of TB-IRIS in HIV patients under HAART
ITM promoter: L. Kestens
ITM collaborators: B. Colebunders, P. Ondoa
External promoters: H. Mayanja-Kizza (Infectious disease Institute Kampala); F. Mascart (Université Libre de Bruxelles); P. Reiss (Academic Medical Center Amsterdam); P. de Baetselier (University of Brussels); C. Locht (Institut Pasteur de Lille)
Support: European Commission

Unit of STD/HIV Epidemiology and Control

Reference number 524301
Assessment of youth interventions in Asembo and Gem, Nyanza Province, Kenya
ITM promoter: A. Buvé
ITM collaborators: H. Vandenhoudt, E. Blommaert, L. Langat
External promoters: J. Vulule, C. Obong'o (Kenya Medical Research Institute); R. Bunnell, K.Laserson (Centers for Disease Control and Prevention, Atlanta, USA); L. Oteba (Family Health Options Kenya)
Support: PEPFAR (President's Emergency Plan for AIDS Relief) through Centers for Disease Control and Prevention (Atlanta, USA)

Reference number 524303
Sexual and reproductive health interventions for young people living with HIV in Uganda and Kenya
ITM promoter: A. Buvé, C. Nöstlinger (Department of Clinical Sciences)
ITM collaborators: H.Vandenhoudt, L.Langat
External promoters: A. Hardon (University of Amsterdam); J. Vulule, C.O'bongo (Kenya Medical Research Institute); S. Bakeera-Kitaka (Baylor College of Medicine Children's Foundation, Mulago Hospital, Kampala, Uganda)
Support: AIDS Fund, Belgian Directorate-General for Development Cooperation (DGDC)

Reference number 84991
Rapid expansion of HIV/AIDS activities by national Ivorian nongovernmental organizations and associations serving highly vulnerable populations in Ivory Coast
ITM promoter: M. Laga
ITM collaborators: B. Vuylsteke, A. Buvé, T. Delvaux
External promoters: P. Agbré (ASAPSU promoter), G. Mah-Bi, S. Yayo, A Langui, E. Koffi (ASAPSU collaborators); Family Health International (Abidjan, Côte d'Ivoire)
Support: Belgian Directorate General for Development Cooperation (DGDC); Family Health International (FHI)

Reference number 84211
European Microbicides Programme (EMPRO Trial)
ITM promoters: V. Jespers, A. Buvé
External promoters: C. Kelly (King's College London, UK); International Partnership for Microbicides (IPM), Washington, USA
Support: European Commission

Reference number 314301
European Vaccine and Microbicides Enterprise (EUROPRISE)
ITM promoter: V. Jespers, A. Buvé
External promoters: R. Shattock, SGUL, London (coordinator) and 31 European partners
Support: European Commission

Reference number 84943

Randomised Controlled Trial of 6% Cellulose Sulfate Gel and the Effect on HIV transmission

ITM promoter: A. Buvé

ITM collaborators: T. Crucitti, S. Abdellati, V. Cuylaerts, B. Dedeken, W. Thys

External promoters: V. Halpern, D. Grimes (Family Health International, North Carolina, USA - coordinator)

Support: Family Health International (FHI)

Reference number 85353

Collaboration for laboratory strenghtening and training in STD/HIV methodology

ITM promoter: A. Buvé

ITM collaborators: T. Crucitti, S. Abdellati, V. Cuylaerts, B. Dedeken, W. Thys

External promoters: L. Van Damme, M. Callahan (CONRAD, Washington, USA)

Support: CONRAD

Reference number 324301

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

ITM promoter: V. Jespers, A. Buvé

ITM collaborators: T. Crucitti, S. Abdellati, V. Cuylaerts, B. Dedeken, W. Thys

External promoters: J. van de Wijgert (AMC-CPCD, Amsterdam, The Netherlands - coordinator); M. Temmerman (University of Ghent); J. Vyankandondera (Projet Ubuzima, Rwanda); K. Mandaliya (ICRH, Kenya), Z. Roosenberg (IPM, Silver Springs, USA)

Support: European and Developing Countries Clincial Trials Partnership (EDCTP), EuropeAid

Reference number 624301

Evaluation of PMTCT Program in Rwanda

ITM promoter: A. Buvé

ITM collaborators: T. Delvaux; D. Roberfroid (Public Health Department); J. Menten (Clinical Trials Unit)

External promoters: A. Asiimwe, E. Munyana (TRAC Rwanda); B. Elul, F. Ndagije (Columbia University, ICAP, USA)

Support: President's Emergency Plan for AIDS Relief (PEPFAR)

Reference number 84552

Increasing the relevance and effectiveness of HIV/AIDS prevention and care among youths through a Cambodia-Thailand partnership

ITM promoter: A. Buvé

ITM collaborators: F. Crabbé

External promoters: C.V. Mean (NCHAD, Phnom Penh, Cambodia); Sav Chanty (HNI, Cambodia); G. Suwanarrat (AIDSNet, Thailand)

Support: EuropeAid

AIDS Reference Laboratory

Reference number 100109

HIV-1 diagnosis of infants in DR Congo

ITM promoters: K. Fransen, F. Behets

ITM collaborators: A. Litzroth, T. Vermoesen

External promoters: F. Behets (University of North Carolina, USA), J. Muwonga, O. Okenge (PNLS, Ministry of Health, DR Congo)

Support: USA Centers for Disease Control and Prevention (CDC), University of North Carolina (UNC-CH, USA)

Unit of Mycobacteriology

Reference number 84133

Development of a molecular platform for the simultaneous detection of *M. tuberculosis* resistance to rifampicin and fluoroquinolones (TB-DRUG OLIGOCOLOR)

ITM promoter: F. Portaels

ITM collaborators: J.C. Palomino, A. Martin

External promoters: National Institute for Public Health & the Environment (Bilthoven, the Netherlands); Swedish Institute for Infectious Disease Control (Solna, Sweden); Corporación CorpoGen (Bogotá, Colombia); INEI-ANLIS Institute Malbrán (Buenos Aires, Argentina); Hospital Dr. Cetrángolo (Buenos Aires, Argentina)

Support: European Commission

Reference number 314201

Development and Clinical Evaluation of High Speed Tests for Tuberculosis Diagnosis (FASTEST-TB)

ITM promoter: F. Portaels

ITM collaborators: J.C. Palomino, A. Martin

External promoters: LIONEX Diagnostics & Therapeutics GmbH (coordinator); German Research Centre for

Biotechnology, Germany; Asklepios Fachkliniken München-Gauting, Germany; Akdeniz University Medical School, Turkey; Tuberculosis Research Centre, India, Sacred Heart Hospital, Nigeria; Instituto Politecnico Nacional, Mexico
Support: European Commission

Reference number 514201
Rapid genotypic rifampicin drug susceptibility tests
Promoter: F. Portaels
ITM collaborators: A. Van Deun, L. Rigouts, P. de Rijk, A. Hoza
External promoters: M. Zignol (WHO Geneva, Switzerland), M. Chonde (NRL, Tanzania)
Support: WHO

Reference number 614201
A Phase II, placebo-controlled, double-blind, randomized trial to evaluate the anti-bacterial activity, safety, and tolerability of TMC207 in subjects with sputum smear-positive pulmonary infection with multi-drug resistant *Mycobacterium tuberculosis* (MDR-TB)
ITM promoter: F. Portaels
ITM collaborators: J.C. Palomino, A. Martin, S. Docx
Support: Tibotec

Reference number 514202
Lyophilisation, management and distribution of the *Mycobacterium tuberculosis* strains
Promoter: F. Portaels
ITM collaborators: L. Rigouts, M. Gumusboga
External promoters: A. Ramsay (WHO/TDR), J. Cunningham (WHO/TDR), C. Nathasson (WHO/TDR)
Support: WHO/TDR

Reference number 100179
Diagnosis of tuberculosis and drug resistance surveillance in MSF-projects.
ITM promoter: F. Portaels
External promoters: A. Martin, D. Bombeeck, W. Mulders
Support: Médecins Sans Frontières France (MSF-F)

Reference number 514203
A multicentre randomised control trial of a gatifloxacin-containing short-course regimen for the treatment of pulmonary TB
ITM promoter: F. Portaels
ITM promoters : A. Martin, E. Nduwamahoro, K. Fissette, G. Anyo
External collaborators: C. Lienhardt (Institut de Recherche pour le Développement, Paris, France - coordinator), C. Perronne (Hopital Raymond Poincare, Garches, France), D.A. Mitchisson (St George's Hospital Medical School, London, UK), K. Fielding, C. Merle (London School of Hygiene and Tropical Medicine, London, UK), M. Ndir, A.H. Diop, F. Ba (Programme National Tuberculose, Dakar, Senegal), M. Gninafon (Programme National Tuberculose, Cotonou, Benin), B. Fourie (Medical Research Council, South Africa), J. Odhiambo (Kenya Medical Research Institute, Nairobi, Kenya), O. Sow (Programme National Tuberculose, Conakry Guinea)
Support: European Commission

Reference number 85321
Support for improved case detection and diagnosis of tuberculosis through strengthened laboratory services and operational research
ITM promoter: F. Portaels
ITM collaborators: A. Van Deun, G. Torrea, M. Gumusboga
Support: International Union Against Tuberculosis

Reference number 624202
Tuberculosis drug resistance surveillance
ITM promoter: F. Portaels
ITM collaborators: A. Van Deun, L. Rigouts, P. de Rijk, K. Fissette, D. Bombeeck
Support: Damian Foundation

Reference number 624203
Buruli ulcer: a multidisciplinary approach toward improvement of control in developing countries
ITM promoter: F. Portaels
ITM collaborators: A. Van Aerde, C. Uwizeye
Support: Damian Foundation

Reference number 424202
The possible role of protozoa in the environmental reservoir of *Mycobacterium ulcerans* and in the transmission of Buruli ulcer and other mycobacterial diseases
ITM promoter: F. Portaels
ITM collaborator: M. Eddyani, A. Van Aerde
External collaborators: J.F. De Jonckheere (University

of Brussels), M.T. Silva (Institute for Molecular and Cell Biology, Portugal) and J. Pedrosa (University of Minho, Portugal)
Support: Research Foundation Flanders (FWO)

Reference number 424201
Mycolactone expression in *Mycobacterium ulcerans*
ITM promoter: F. Portaels
ITM collaborators: P. Stragier
Support: Research Foundation Flanders (FWO)

Reference numbers 100166
Buruli ulcer: multidisciplinary research for improvement of control in Africa
ITM promoter: F. Portaels
ITM collaborators: A. Ablordey, L. Durnez, M. Eddyani, P. Stragier, P. Suykerbuyk
External promoters: B. Fleischer (Bernhard Nocht Institute for Tropical Medicine, Germany - coordinator), C. Johnson (Programme National de Lutte contre l'Ulcère de Buruli, Benin), D. Phanzu (Institut Médical Evangélique Kimpese, D.R. Congo), TS van der Werf (University Medical Centre Groningen, The Netherlands), O. Adjei (Kwame Nkruma University of Science and Technology, Ghana), G. Bretzel (Munich University, Germany)
Support: European Commission

Reference number 100111
Public culture collection of Diatoms, Polar *Cyanobacteria* and *Mycobacteria* in Belgium
ITM promoter: F. Portaels
ITM collaborators: L. Rigouts, M. Eddyani, C. Van Schaeverbeek
External promoters: P. De Vos, W. Vijverman (University of Ghent), A. Wilmotte (University of Liège)
Support: Belgian Federal Science Policy (BELSPO)

Reference number 514204
Proficiency Testing network of Supranational Reference Laboratories of the WHO/IUATLD Global Project on TB Drug Resistance Surveillance
ITM promoter: F. Portaels
ITM collaborators: A. Van Deun, E. Nduwamahoro
External promoters: A. Wright (WHO, Geneva, Switzerland), H. Rieder (International Union Against Tuberculosis and Lung Disease IUATLD)
Support: WHO, IUATLD

Ongoing PhD-projects

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)

DELVAUX Thérèse. *Sexual and reproductive health: lessons learnt from operations research on linkages with HIV*. Promoters: A. Buvé (ITM), P. Van der Stuyft (University of Ghent)

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)

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)

VON GROLL Andrea. *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: J.C. Palomino (ITM), F. Portaels (ITM), P. Vandamme (University of Ghent), P.E. Almeida da Silva (Fundação Universidade Federal do Rio Grande, Brazil)

STRAGIER Pieter. *Genotyping Mycobacterium ulcerans and related species*. Promoter: F. Portaels (ITM)

KIBADI KAPAY Anatole. *Contribution à l'amélioration des traitements de l'infection à Mycobacterium ulcerans (ulcère de Burulu) en République Démocratique du Congo*. Promoters: F. Portaels (ITM), M. Boelaert (University of Antwerp), J.J. Muyembe-Tamfum (National Institute of Biomedical Research, Kinshasa, DR Congo)

AFFOLABI Dissou. *Developement 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)

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. *Improved control of Mycobacterium ulcerans disease (Buruli ulcer)*. Promoters: F. Portaels (ITM), H. Leirs (University of Antwerp)

MULENGA Chanda. *Tuberculosis drug resistance and treatment outcome in the Copperbelt Province of Zambia*. Promoters: F. Portaels (ITM), A. Mwinga (University of Zambia, Zambia)

SOPOH Ghislain. *Etude des facteurs de risque et de pronostic thérapeutique de l'ulcère de Buruli*. Promoters: F. Portaels (ITM), S. Anagonou (Laboratoire de Référence des Mycobactéries, Cotonou, Bénin)

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)

CRUCITTI Tania. *The epidemiology of Trichomonas vaginalis: Prevalence of Trichomonas sp., and sexual and hygienic risk factors associated with genital trichomoniasis*. Promoters: A. Buvé (ITM), S. Scharpé (University of Antwerp)

JALLOW Sabelle. *Development and application of assays for monitoring drug resistance in HIV-2 infected patients on antiretroviral therapy*. Promoters: G. Vanham (ITM), W. Janssens (ITM), S. Rowland-Jones, S. Kaye (Medical Research Council, Gambia)

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)

VAN DEN BERGH Rafael. *Transcriptome analysis of HIV-macrophage interactions*. Promoter: G. Vanham (ITM, University of Antwerp)

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 GULCK Ellen. *Human dendritic cells loaded with mRNA of HIV quasispecies for the development of cellular anti-HIV vaccine*. Promoter: G. Vanham (ITM, University of Antwerp)

VERDONCK Tine. *Clinical aspects and epidemiology of human T-lymphotropic virus 1 in Peru*. Promoter: G. Vanham (ITM, University of Antwerp)

SELHORST Philippe. *Analysis and induction of T cell mediated protective immunity in HIV patients under antiviral therapy*. Promoter: G. Vanham (ITM, University of Antwerp)

GALI Youssef. *Development of an in vitro model to study heterosexual HIV transmission.* Promoter: G. Vanham (ITM, University of Antwerp)

A TV documentary on HIV/AIDS in Africa and Belgium

On November 25th and December 2th, the public television network Canvas broadcasted a twin documentary on "HIV/AIDS: 25 years", contrasting the situations of HIV/AIDS in Belgium and Uganda. The series was co-produced by the ITM, and featured a selection of its work and partnerships in the field. Prof. Marie Laga was the resource person for the crew and provided the expert comments. The first episode dealt with HIV/AIDS in Belgium. Three HIV-patients talked openly about their life with the disease and anti-retroviral treatment.

In the second episode the crew travelled to Uganda where they documented the life of AIDS patients under ART in Africa. The documentary highlighted the work of the Aids Support Organisation (TASO), a successful Ugandese NGO working for and with people affected by HIV/AIDS. The red thread through this episode was a day's work of Dr. Jonathan Wangisi, an ITM alumnus heading the Mbale branch of TASO. Currently, Johnathan is deputy director for strategic information.

Professor Marie Laga is being interviewed by the television crew from Over leven in Kampala, Uganda.

Dr. Jonathan Wangisi, an ITM alumnus, is deputy director for strategic information at TASO.

Department of

Parasitology

The Department of Parasitology aims to generating, disseminating and applying 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 counts five units: Entomology, Epidemiology and Control of Parasitic Diseases, Molecular Parasitology, Parasite Diagnostics and Human Helminthology.

Our research covers a coherent continuum from basic biology of parasites and their vectors, over applied sciences and tool development to clinical trials, vector control and intervention research. 2007 was a special year in terms of dissemination and networking, with the organisation of three major conferences, on malaria (ITM Annual Colloquium in Vietnam), leishmaniasis and Chagas disease, (see highlights).

The malaria vector, *Anopheles* mosquitoes.

Unit of Entomology

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

A study of insecticide resistance in the Mekong region in Vietnam showed that pyrethroid resistance is present in two main malaria vectors, *Anopheles epiroticus* and *An. minimus s.l,* and is not caused by classical "knockdown" mechanisms. The impact of pyrethroid impregnated bed nets (ITN) on resistant *An. epiroticus* was assessed in experimental huts, showing that ITNs provide protection at the individual, but not at the community level. We also reviewed several reports on this subject in the framework of the WHO Pesticide Evaluation Schemes (WHOPES).

In Cambodia, we performed collaborative studies on malaria transmission in forest areas along the borders with Vietnam and Thailand. The results will be of critical importance for the plans to eliminate malaria from this area. In the same perspective, we participated in the entomological evaluation of insecticide-treated hammocks in forest-dwelling communities, tested for the prevention of early biting by vectors such as *An. minimus, An. dirus* and *An. maculatus.*

With the research on the interactions between tsetse flies and trypanosomes, we gain insight in the molecular determinants of this complex relationship and the biological keys of transmission of African trypanosomiasis. In 2007, we showed among others that a deprived nutritional status of the tsetse fly affects the responsiveness against the trypanosome parasite, making the fly more susceptible to host and

"While our work concentrates on the problems in (sub-)tropical regions, we also run programmes that are relevant for Europe"

transmit the parasite. Furthermore, we characterised a dominant tsetse saliva protein that possibly affects the development of the trypanosome in the tsetse salivary glands or at the inoculation site in the mammalian host.

To obtain tsetse flies that are unable to transmit the trypanosome parasite we showed that both the tsetse fly and the *in vitro* cultured *Sodalis* endosymbiont support the presence of a human trypanolytic protein. A plasmid vector to express and secrete this human protein by *Sodalis* bacteria is now under construction.

The unit also participates in the WHO/TDR International Glossina Genomics Initiative (IGGI) and in the EC-INCO project "Tsetse flies and Control of Sleeping Sickness" (TFCASS).

Unit of Epidemiology and Control of Parasitic Diseases

The Unit of Epidemiology and Control of Parasitic Diseases extended its research on malaria epidemiology, antimalarial drug resistance, the efficacy of new drugs or drug combinations, malaria in pregnancy, malaria-HIV interactions, and the evaluation of new interventions. A major milestone in 2007 was the start-up of the multicentre clinical trial "Evaluation of 4 artemisinin-based combinations for treating uncomplicated malaria in African children", supported by the European Developing Countries Clinical Trial Partnership (EDCTP). The first patient was recruited in Manhiça, Mozambique, in July 2007. Since then all 10 sites in 7 African countries have become active. At the end of the year, over 1,000 patients had been recruited. The last patient should be recruited in December 2008 and preliminary results should be available by December 2009.

This is the first-ever project of the ITM in the role of legal sponsor of non-commercial clinical trials.

We finalised the analysis of the phase III clinical trial on the safety and efficacy of dihydroartemisinin-piperaquine (Artekin®) and registration is currently under way.

Two other clinical trials, one in Rwanda (artemether-lumefantrine) and the other in Peru (dihydroartemisinin-piperaquine) were also finalised and published.

The unit is a partner in three other large consortia: the Malaria in Pregnancy consortium (MiP), the World Antimalarial Resistance Network (WARN) and the artemisinin-based combination treatment consortium (ACT). The MiP consortium produced a dedicated issue on malaria in pregnancy in the Lancet Infectious Diseases. Within the MiP the unit will be the coordinator of a large clinical trial on antimalarial treatment in African pregnant women.

Malaria patients waiting at the Mulago Hospital in Kampala, Uganda.

The field activities of another project related to malaria in pregnancy (DELIMAL), funded by the European Commission, ended in 2006, but the analysis of the database has been going on throughout 2007. This study, in Burkina Faso, investigated the effectiveness of intermittent preventive treatment of sulfadoxine-pyrimethamine when implemented with the support of a promotional campaign encouraging pregnant women to attend antenatal clinics. More than 6,000 pregnant women were identified and 2,766 first and second pregnancies were followed up until delivery. The first results will be published in 2008.

The study of the interaction between HIV and malaria in Zambia was continued according to plan. A case-control study investigating HIV infection as a risk factor for severe malaria in adults was completed and analysis is under way. A study on the contribution of malaria on the evolution towards full-blown AIDS is still ongoing.

In Vietnam, we contribute to the epidemiological, clinical and parasitological evaluation of insecticide-treated hammocks for the prevention of forest malaria, cited above. The field studies were completed and results are currently being analysed. A new ELISA test for the detection of antibodies against *P. falciparum* and *P. vivax* was set up, and a study on the genotyping of *P. vivax* in Vietnam was continued. The unit participated in a meeting for the standardisation of *P. falciparum* genotyping.

In Peru, 2007 was a year of preparation for new field studies. We aim to link research on *P. vivax* in Vietnam and Peru. Cohorts of *P. vivax* infected people would be identified in both countries, treated with chloroquine and primaquine and followed up for at least one year.

The multicentre trial of 4 artemisinin-based combinations for treating malaria in African children took off in July 2007. The ITM coordinates the trial and assumes the role of legal sponsor.

Unit of Molecular Parasitology

In the course of 2007, the Unit of Molecular Parasitology Unit has made considerable progress in its two main, closely related research lines on leishmaniasis, i.e. treatment failure and drug resistance, and parasite genotyping.

Our studies on drug resistance were highlighted in the PhD thesis of Saskia Decuypere "Antimony treatment failure in anthroponotic visceral leishmaniasis: towards improved tools and strategies for epidemiological surveillance and disease control", which provides a synthesis of five years work on drug resistance leishmaniasis. Saskia joined the University of Strathclyde (Prof. G. Coombs) with a Marie-Curie scholarship, where she will pursue the biochemical characterisation of drug-resistant strains for two years before continuing her postdoctoral work at the ITM. By the end of 2007, Meriem Ouakad joined the unit for postdoctoral studies on drug resistance.

Our research on parasite genotyping consists of three main activities and PhD projects:

- dissemination, standardisation and quality control of existing typing methods
- new and simple methods for species identification
- the application of molecular methods to specific epidemiological questions

The composition of our team, with PhD and postdoctoral fellows from Cuba, Peru, Algeria, Kenya and Nepal illustrate the success of our intercontinental networking.

Among the major findings of 2007, we quote the first extensive description of the *L. donovani* population structure among healthy carriers in Nepal.

The Euro-Mediterranean consortium "Leishmed", which we coordinated, concluded its activities with two workshops on immunological and environmental control of leishmaniasis, both in Tunisia. A main deliverable of this project was the digital compendium on geo-referenced publications on the epidemiology of leishmaniasis in the Mediterranean, developed in close collaboration with the Leishmed partners and WHO. Another networking milestone was the "Leishrisk" conference in November 2007 in Antwerp (see highlights) which brought together 150 world class leishmaniacs.

The unit pursued its contribution simplified molecular diagnosis of Leishmania and genotyping of *Plasmodium* by the other units in the Department.

Unit of Parasite Diagnostics

The Unit of Parasite Diagnostics conducts research on parasitological, serological, bioclinical and genetic markers for the diagnosis, stage determination and follow-up of trypanosomiasis (African and South-American) and leishmaniaisis. We collaborate with partners in DR Congo, Uganda, Kenya, Sudan, Malawi, Ethiopia, South Africa, Mozambique, Zambia, Burkina Faso, Venezuela, Chile and Spain, and are a partner in WHO and FIND-Diagnostics consortia aiming to develop new diagnostics for sleeping sickness.

The results of the first randomised clinical trial on combination therapy for sleeping sickness were published. This pioneer study was conducted in Bwamanda (DR Congo), in collaboration with national partners and the Drugs for Neglected Diseases Initiative (DNDi). It allowed the identification of biological markers in cerebrospinal fluid (CSF) as risk factors for relapse and provided a rationale for shortening post-treatment follow-up. These results should be confirmed in a new study conducted in Mbuji-Mayi (DR Congo), where rates of treatment failure are uncommonly high. The first *in vitro* drug sensitivity tests on parasite strains isolated from such patients seem to reject the hypothesis that the high relapse rates are caused by parasite drug resistance.

The unit is partner in the NEUROTRYP consortium, which intends to unravel the mechanisms by which African trypanosomes invade the brain. We have constructed recombinant *Trypanosoma brucei* strains that express *Renilla* luciferase enabling *in vivo* tracking of the parasites in mice (see highlight). Within the same project, an

Active sleeping sickness case detection near Mbuji-Mayi, DR Congo.

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*. Other recombinant proteins (e.g. from *Trypanosoma congolense* and *Trypanosoma 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 peptide families were identified and matched with gene motives.

The unit co-ordinates the TRYLEIDIAG consortium in which PCR- and NASBA-Oligochromatography tests for simple molecular diagnosis of African trypanosomiasis and leishmaniasis are developed. These novel molecular tests have gone through a ring trial evaluation with seven collaborating laboratories and will soon undergo a large-scale phase II evaluation in Africa and Europe. A similar PCR-Oligochromatography test for Chagas disease has passed phase I evaluation and is selected for evaluation through WHO/TDR. An earlier PCR-Oligo for *Trypanozoon* successfully passed a ring-trial evaluation.

The unit organised a workshop on Chagas disease diagnosis with experts from Latin America and Europe and assisted in the organisation of a workshop on molecular diagnosis at Makerere University (Kampala, Uganda).

At the Institut National de Recherche Biomédicale in Kinshasa, we support the production for national and regional use of mini Anion Exchange Centrifugation Technique (mAECT). Over 11,000 mAECT tests were produced in 2007 and a production line of the Modified Simple Centrifugation test was installed. In Malawi, where non-conventional *T.b. rhodesiense* strains are circulating, the unit installed facilities for active and passive sleeping sickness diagnosis.

In Ethiopia, the unit participates in a VLIR-funded project on the diagnosis and treatment of equine trypanosomiasis (*T. equiperdum* and *T. evansi*).

Unit of Human Helminthology

The Unit of Human Helminthology conducts research on helminthic diseases along 3 main lines:

- transmission dynamics of the parasite
- immuno-epidemiology of resistance and pathology
- integration of control

The overall objective is to unravel the host-parasite relationship and to develop strategies for integrated and sustainable control. Collaborative projects and field research take place in Senegal, Cuba, DR Congo and Peru.

In 2007, we continued our research activities on the epidemiology and control of schistosomiasis in Senegal. New initiatives in the field of integrated helminth disease control are on their way, and a proposal was written to closely analyse and evaluate this process in collaboration with the Department of Public Health. We started two new projects, supported by the EU and FWO, respectively, on innate immune responses and immunoregulation, and on population genetics and transmission dynamics. To this end, our unit was reinforced with a postdoctoral scientist and a PhD fellow. The first project is still in a preparatory phase, but the second one is already yielding interesting results. After an epidemic of *S. mansoni* in northern Senegal due to the construction of a dam some 20 years ago, a new shift seems to take towards *S. haematobium* predominance. Molecular methods point to competitive interactions between both species, and to genetic differentiation between different foci. Further analysis of the schistosome population structure and transmission dynamics in northern Senegal is under way.

Mankeur Diop, head of the field team in Senegal, in search of villages at risk for *Schistosoma*.

In DR Congo, a new research capacity strengthening project at the Institut de Recherche Biomédicale focusses on the re-emergence and control of schistosomiasis in unstable and post-war areas. Support is provided by the DGDC and WHO/TDR. We continued our collaborative project on the diagnosis and epidemiology of strongyloides in Peru with the Institute of Tropical Medicine Alexander von Humboldt in Lima and the University of Leiden. An ELISA to detect antibodies against *S. stercoralis* is now ready to be implemented at the ITMAvH, while a PCR-based assay is under development. Both methods will be applied in clinical and epidemiological studies on *S. stercoralis* infections in Peru, including the association with HTLV-1.

In collaboration with the Instituto Nacional de Higiene, Epidemiología y Microbiología (INHEM) and Instituto de Medicina Tropical "Pedro Kouri" (IPK) in Havana, Cuba, we pursued longitudinal studies on the relation between helminth infections and atopic diseases. The results are currently being compiled in a PhD thesis. A new PhD student has been recruited in collaboration with the Vrije Universiteit Amsterdam, in order to extend the research to helminth-nutrition interactions.

We collaborate with the Unit of Veterinary Helminthology in several projects on cysticercosis, and initiated two projects on the public health importance of cysticercosis in DR Congo and Cuba. A first phase will consist of the exploration and documentation of the current status of cysticercosis and its relationship with epilepsy.

Targeted vector control to fight malaria in the highlands of Burundi

Epidemic malaria is an emerging problem in African highlands, often with devastating consequences in the non-immune populations. The development of targeted preventive and control strategies adapted to the unusual ecological conditions is of upmost importance. In collaboration with the Ministry of Health of Burundi and MSF-Belgium, we evaluated a vector control strategy based on indoor residual spraying (IRS) and the distribution of Insecticide Treated Nets (ITNs) in selected high-transmission highland areas in Burundi. This project lasted 5 years and was supported by the Directorate-General for Development Cooperation and Médecins Sans Frontières. The results showed that targeted IRS can decrease malaria transmission significantly, resulting in a reduction of the number of infected persons and preventing the spread to non-affected areas. When IRS coverage is high, malaria transmission is indeed reduced to an undetectable level. ITN's do not result in an added impact in these conditions.

Spraying of a traditional Burundese house.

Despite poor living conditions this widow in Karuzi, Burundi, uses the Insecticide Treated Net (ITN) received from the national malaria control programme.

MODIRISK: research on endemic and invasive mosquito species in Belgium

Climatic changes may create suitable conditions for the (re)emergence of vector-borne diseases in Europe, with mosquitoes as prime suspects. In collaboration with the Royal Belgian Institute of Natural Sciences, the Université Catholique de Louvain, the company Avia-GIS and the University of Wageningen, the Unit of Entomology started the MODIRISK project. Supported by the Federal Agency for Scientific Research (BELSPO), it aims at studying the taxonomy, biodiversity and influencing factors of endemic and invading mosquito species. In Belgium, such an inventory had not been made for 30 years. A network of CO_2-baited traps was installed throughout Belgium in a grid-based (10 x 10km) sampling approach; in each grid, different habitats are sampled. In 2007, we collected mosquitoes in 480 different sites and caught 21 different species, belonging to 6 different genera. All except one were endemic and also present in neighbouring countries. One exotic species, *Ochlerotatus japonicus*, was found. The importance of this finding is currently under investigation.

The study should result in a better assessment of the risk for mosquito-borne diseases being (re-)introduced in Belgium and Europe. A follow-up committee of end-users was set up with representatives and experts in the fields of public health, veterinary medicine, biodiversity and environment.

The press showed a great interest in the project and the CO_2 baited traps, demonstrated here by project coordinator Wim Van Bortel.

Light in the dark: Bioluminescent trypanosomes

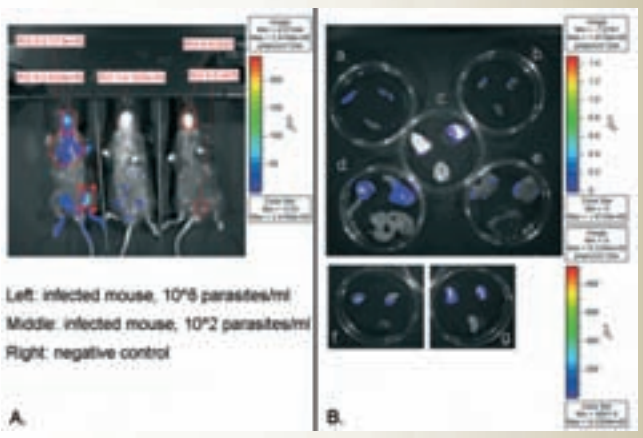
See also www.modirisk.be

Trypanosomoses are important protozoa infecting humans and animals in Africa, Latin America and Asia. They comprise several species including T*rypanosoma brucei, T. evansi, T. congolense* and *T. vivax*. At present, little is known on how and when parasites leave the blood circulation and penetrate into deeper tissues and organs, particularly the brain. Such knowledge would be very helpful to develop and validate new drugs that can clear the parasite both from the blood and the tissues.

Monitoring parasites in experimentally infected animals with real-time imaging techniques provides a fast method to evaluate parasite distribution, especially in immunoprivileged locations, and allows a significant reduction in the number of animals required. To date, most bioluminescence models were generated to monitor pathogenic bacterial infections, such as *Salmonella* and bacterial meningitis. Among pathogenic protozoa only *Plasmodium, Leishmania amazonensis* and *Toxoplasma* have been engineered for bioluminescence imaging. In 2007, we generated *Trypanosoma brucei* recombinant populations, expressing *Renilla* luciferase, enabling us to conduct real-time bioluminescent in vivo trypanosome studies. Infection experiments showed that the most intense bioluminescent signals arose from the stomach and digestive tract, which might indicate a high concentration of parasites in or around these organs.

Also around the heart, lungs, spleen, and brain significant luminescence was measured (Figure). This model opens new avenues to examine the tissue invasion dynamics of different trypanosome species and strains in relation to host genetic background.

These bioluminescent trypanosome models can also be useful for *in vitro* and *in vivo* drug studies. *In vitro*, luminescence allows direct measurement of IC50 values compared to indirect enzymatic activity measurements. The same bioluminescent strains can be investigated *in vivo* to assess drug efficacy in function of tissue localisation of the parasites.



In vivo and *ex vivo* bioluminescence imaging of *T. brucei* 427-Rluc infected RAG$^{-/-}$ mice. Panel A, *In vivo* imaging screening of infected mice. Panel B, *Ex vivo* imaging screening of infected organs. Upper left and right organs are from infected mice, the lower organ is from a non-infected negative control. Shown organs are (a) spleen, (b) heart, (c) brain, (d) stomach, (e) liver, (f) kidney, (g) lung.

Projects

For more details, see www.itg.be/projects and fill in the project reference number

Unit of Molecular Parasitology

Reference number 84383

Monitoring risk factors of spreading of leishmaniasis around the Mediterranean basin (Leish-Med)

ITM promoter: J.C. Dujardin (co-ordinator)

External collaboration: Charité Universitäts-medizin, Berlin, Germany; London School of Hygiene and Tropical Medicine, UK; Charles University, Fac. Of Sciences, Prague, Czech Republic; World Health Organization, Geneva, Switserland; Université Montpellier I, France; Institut Pasteur de Paris, France; Instituto de Higiene e Medicina Tropical, Lisboa, Portugal; Instituto de Salud Carlos III, Madrid, Spain; Consejo Superior de Investigaciones Cientificas, Granada; Istituto Superiore di Sanita, Roma, Italy; Istituto Zooprofilatico Sperimentale della Puglia, Italy; Hellenic Pasteur Institute, Athens, Greece; Institut Agronomique et Veterinaire Hassan II, Rabat, Morocco; Institut Pasteur d'Algérie; Institut Pasteur de Tunis, Tunesia; The Hebrew University of Jerusalem, Israel; Technion-Israel Institute of Technology; Al-Quds University, East-Jerusalem, Israel; Jordan University of Sc; Ege University Izmir, Turkey; National Reference Laboratories of Animal Health, Cyprus

Support: European Commission

Reference number 100144

Control strategies for visceral leishmaniasis (VL) and mucocutaneous leishmaniasis (MCL) in South America: applications of molecular epidemiology (LeishepinetSA)

ITM promoter: J.C. Dujardin

External promoters: M. Miles (LSHTM, London, UK - coordinator), L. Maes (University of Antwerp), G. Schoenian (Universitaet Charité Berlin, Germany), C. Canavate (Instituto de Salud Carlos III, Spain), L. Campino (Instituto de Higiene e Medicina Tropical, Portugal), S. do Monte (Universidade Federal do Piaui, Brazil), A. Rojas de Arias (Instituto de Investigaciones en Ciencias de la Salud, Paraguay), J. Arevalo (Instituto de Medicina Tropical Alexander von Humboldt, Perú), N. Mello (Universidade Federal de Minas Gerais, Brazil), D. Feliciangeli (Univ. de Carabobo, BIOMED-Centro Nacional de Referencia de Flebotomos de Venezuela), E. Cupolillo (Instituto Oswaldo Cruz, Rio de Janeiro, Brazil), J. Clos (Bernhard Nocht Institute, Hamburg, Germany).

Support: European Commission

Reference number 80303

Molecular markers for epidemiological monitoring of drug resistance in visceral leishmaniasis

ITM promoter: J.C. Dujardin

External promoters: L. Maes (University of Antwerp – coordinator)

Support: Research Foundation Flanders (FWO)

Reference number 315401

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

ITM promoter: J.C. Dujardin (coordinator)

External promoters: Faculty of Veterinary Medicine, University of Science and Technology, Jordan; Department of Parasitology, Ege University, Turkey; World Health Organisation, Switzerland; Faculty of Medicine, University of Crete, Greece; Institut Pasteur Tunis, Tunisia; Centro de Estudios en Salud, Universidad Del Valle, Guatemala; Universidad Peruana Cayetano Heredia, Peru; London School of Hygiene and Tropical Medicine, UK; Institut Pasteur, France; Instituto de Higiene e Medicina Tropical de Lisboa, Portugal; Department of Community Medicine, Hôpitaux universitaires de Genève, Switzerland; Bernhard Nocht Institute for Tropical Medicine, Germany; Strathclyde Institute of Pharmacy and Biomedical Sciences, Scotland; Drugs for Neglected Diseases Initiative, Switzerland; Instituto Oswaldo Cruz, Brazil; Institut Agronomique et Vétérinaire Hassan II, Morocco; Rajendra Memorial Research Institute of Medical Sciences, India; Dept Infection & Tropical Medicine, Northwick Park Hospital, UK; Division of Infection and Immunity, University of Glasgow, Glasgow, UK; European Centre of Disease Prevention and Control, Sweden; Institute for OneWorld Health, France; Faculty of Medical Laboratory Sciences,

Khartoum University, Sudan; Department of Parasitology and Zoology, Szent István University, Hungary; Istituto Zooprofilattico Sperimentale of Puglia and Basilicata, Italy; Centro Nacional de Referencia de Flebótomos y Otros Vectores, Univeristy of Carabobo, Venezuela; Laboratori de Parasitologia, Universitat de Barcelona, Spain; Universidad Mayor de San Simon Facultad de Medicina, Bolivia; International Pharmaceutical Research Center, Amman, Jordan; Banaras Hindu University, India; Istituto Superiore di Sanità, Italy; Department of Microbiology, Immunology & Parasitology, Addis Ababa University, Ethiopia; The Hebrew University of Jerusalem, Israel; B.P. Koirala Institute of Health Sciences, Nepal; Division of Biology, Imperial College London, UK; Coris BioConcept, Belgium; Faculty of Pharmacy, University of Paris XI, France; Institut Pasteur Tunis, Tunisia; Veterinary Parasitology and Microbiology Department, Makerere University, Uganda; Biomedical science department, University of Antwerp, Belgium; Veterinary Service of the Ministry of Agriculture, Cyprus; Kenya Medical Research Institute, Kenya; Departamento de Parasitologia, Universidade Federal de Minas Gerais, Brazil; Institut Pasteur, France; Tehran University of Medical Sciences, Iran; Servicio de Parasitología, Centro Nacional de Microbiología, Instituto de Salud Carlos III, Italy; International Centre for Diarrhoeal Disease Research, Bangladesh; Universidade Federal do Piauí, Brazil; Al-Quds Nutrition and Health Research Institute, Palestine; Instituto de Investigaciones en Ciencias de la Salud, Paraguay; Institut Pasteur Tunis, Tunisia; Medical School Department of Parasitology, Ege University, Turkey; Special Programme for Research & Training in Tropical Diseases, Switzerland; Public Health Mapping and GIS, WHO; Zentaris AG, Germany; Laboratoire de Parasitologie - Mycologie du CHU et de la Faculté de Médecine de Montpellier, France; Department of Biomedical Sciences, Natural History Museum, UK; Infectious Disease Research Institute, Seattle, USA; Departement de Parasitologie, Institut National d'Hygiène, Morocco; Public Health Department, MSF-Holland, Holland; Centro de Investigaciones Biológicas, Spain; Núcleo de Medicina Tropical, Universidade de Brasilia, Brasil; Indian Institute of Chemical Biology, India; Royal Tropical Institute, The Netherlands; Charite Universitätsmedizin Berlin, Germany; Institut Pasteur d'Algérie, Algeria; National Vector Borne Disease Control Programme, India; Laboratory of Molecular Parasitology, Hellenic Pasteur Institute, Greece; Kala-Azar Medical Research Center, Department of Medicine, Banadaras university, India; Epidemiology and Disease control division, Ministry of Health, Nepal; Department of Parasitology, Charles University, Czech Republic; Muséum National d'Histoire Naturelle, France; Technion-Israel Institute of Technology, Israel

Support: European Commission

Reference number 425401

Molecular exploration of Leishmania donovani parasites during a bednet intervention for the control of visceral Leishmaniasis

ITM promoter: J.C. Dujardin

ITM collaborators: M. Coosemans, M. Boelaert

External promoters: S. Rijal, B.P. Koriala Institute of Health Sciences, Dharan, Nepal

Support: Research Foundation Flanders (FWO)

Unit of Medical Helminthology

Reference number 315301

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

Promoter: K. Polman

Collaborators : L. Meurs, K. Vereecken

External pormoters: A. Mountford (University of York, UK - coordinator); M. Yazdanbakhsh (Leiden University Medical Centre, The Netherlands); S. Mboup (Université Cheikh Anta Diop CHU Le Dantec, Dakar, Senegal); D. Boakye (Nogouchi Memorial Institute for Medical Research, Ghana); M. Missinou (Hospital Albert Schweitzer, Lambarene, Gabon)

Support: European Commission

Unit of Entomology

Reference number 415101

Molecular dialogue between parasite and hosts: the trypanosome model

ITM promoter: M. Coosemans

External promoters: E. Pays (Université Libre de Bruxelles – coordinator), P. De Baetselier (Vrije Universiteit Brussel); P. Michels (Université Catholique de Louvain); D.Nolan (Trinity College Dublin, Ireland); M. Boshart (Ludwig-Maximilians University of Munich, Germany)

Support: Belgian Ministry of Sciences (Interuniversity Attraction Poles, IUAP)

Reference number 415102

MODIRISK

ITM promoter: W. Van Bortel, M. Coosemans (coordinator)

External promoters: P. Grootaert (Royal Belgian Institute of Natural Sciences); T. Hance (Université Catholique de Louvain); G. Hendrickx (Avia-GIS); W. Takken, (Wageningen University, The Netherlands); F. Schaffner (University of Zürich, Switzerland)

Support: Belgian Federal Science Policy Office (BELSPO)

Reference number 100243

Tsetse flies and the control of sleeping sickness

ITM promoter: J. Van den Abbeele, M. Coosemans

External promoters: Liverpool School of Tropical Medicine, UK - coordinator; Rothamsted Research Ltd., UK; International Centre of Insect Physiology and Ecology, Kenya; Livestock Health Research Institute, Uganda; Institut Pierre Richet, Côte d'Ivoire; Institut de Recherche pour le Développement, France; International Atomic Energy Agency, Austria; Ministère de la Santé Publique, Division Prévention, Guinea; Centre International de Recherche-Développement sur l'Elevage en zone Subhumide, Burkina Faso

Support: European Commission

Unit of Parasite Diagnosis

Reference numbers 100131/100177

Improved stage determination and follow-up of sleeping sickness patients through IgM quantification in cerebrospinal fluid

ITM promoter: V. Lejon, P. Büscher

ITM collaborators: M. Boelaert, J. Robays

External promoters: T. Josenando, F. Makiadi (Instituto de Combate e Controlo das Tripanossomiases (ICCT), Angola), C. Santercole (Belgian Technical Cooperation-Luanda, Angola), P. Abel (Angotrip, Angola).

Support: WHO/TDR Special Programme for Research and Training in Tropical Diseases, Research Foundation Flanders (FWO)

Reference number 84581

Development of an anti-disease vaccine and diagnostic tests for African trypanosomiasis (TRYPADVAC 2)

ITM promoter: P. Büscher

ITM-collaborators: P. Van den Bossche

External promoters: Centre International de Recherche-Développement sur l'Elevage en zone Sub-humide, Burkina Faso; Université de Bordeaux 2, France; University of Glasgow, United Kingdom; Free University of Brussels; University of Lisbon, Portugal; University of Kwa-Zulu Natal, South Africa; Makerere University, Uganda; Eduardo Mondlane University, Mozambique; University Simon Bolivar, Venezuela; DiaMed Ag, Switzerland

Support: European Commission

Reference number 100232

Biology and clinical staging of trypanosome neuroinvasion in sleeping sickness (NEUROTRYP)

ITM promoter: P. Büscher

ITM-collaborators: F. Claes, N. Van Reet, V. Lejon

External promoters: K. Kristensson (Karolinska Institute, Sweden - coordinator), M. Bentivoglio (University of Verona, Italy), G. Lubega (Makerere University, Uganda), M. Mulumba (Centre for Ticks and Tick Borne Diseases, Malawi), J.J. Muyembe (Institut National de Recherche Biomédicale, DR Congo), C. Mulenga (Tropical Diseases

Research Centre, Zambia), A. Njamshi (University of Yaounde, Cameroon)
Support: European Commission

Reference number 315501
Simplified and rapid molecular assays for disease diagnosis and parasite (sub-) species identification (TRYLEIDIAG)
ITM promoter: P. Büscher (coordinator)
ITM collaborators: S. Deborggraeve, J.C. Dujardin, G. Van der Auwera, F. Balharbi
External promoters: Coris BioConcept ,Belgium; Koninklijk Instituut voor de Tropen, The Netherlands; University of Copenhagen, Denmark; Inserm Transfert, France; Makerere University, Uganda; Kenya Medical Research Institute, Kenya; University of Khartoum, Sudan; Institut National de Recherche Biomédicale, DR Congo
Support: European Commission

Reference number 745001
Validation of the PCR-Oligochromatography technique as a rapid and simple tool for molecular diagnosis and epidemiological monitoring of Chagas' disease
ITM promoter: P. Büscher
ITM collaborators: S. Deborggraeve, J.C. Dujardin
External promoters: A. Solari (Universidad de Chile, Santiago, Chile), Coris BioConcept (Belgium)
Support: Bilateral Scientific Cooperation, Flemish Ministry of Sciences

Reference number 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: P. Büscher
ITM collaborators: D. Jacquet, M. Van Esbroeck
External promoter: Institut National de Recherche Biomédicale, DR Congo
Support: Foundation for Innovative new Diagnostics (FIND)

Reference number 715503
Development of a single format test for IgM quantification in CSF of sleeping sickness patients
ITM promoter: V. Lejon
ITM collaborators: D. Jacquet
External promoters: H. Smits (Koninklijk Instituut voor de Tropen, The Netherlands)
Support: Foundation for Innovative new Diagnostics (FIND)

Reference number 100244
Development of new diagnostics for sleeping sickness
ITM promoter: P. Büscher
ITM collaborators: T. Tran, S. Rogé
External promoters: H. De Greve, L. Wyns (Free University of Brussels); Y. Guisez (University Antwerp)
Support: Research Foundation Flanders (FWO), Belgian Directorate-General for Development Cooperation

Reference number 745002
Control of equine trypanosomiasis (*Trypanosoma equiperdum* and *T. evansi*) in the Arsi and Bale highlands of Ethiopia
ITM promoter: F. Claes, P. Büscher
External promoters: B. Goddeeris (Katholieke Universiteit Leuven - coordinator), H.T. Ashenafi (University of Addis Abeba, Ethiopia)
Support: Flemish Interuniversity Council (VLIR-UOS); Research Foundation Flanders (FWO)

Unit of Epidemiology and Control of Parasitic Diseases

Reference number 80304
Evaluation of four artemisinin-based combinations for treating uncomplicated malaria in African children (4 ABC)
ITM promoter: U. D'Alessandro (coordinator)
ITM collaborators: J.P. Van geertruyden, P. Forret, C. Van Overmeir, J.C. Dujardin, G. Van der Auwera, R. Ravinetto, J. Menten, H. Van Loen
External promoters: Liverpool School of Tropical Medicine and Centre for Medical Statistics and Health

Evaluation, University of Liverpool, UK; Centre Muraz, Bobo Dioulasso, Burkina Faso; Department of Paediatrics, University of Calabar, Nigeria; Tropical Diseases Research Centre, Ndola, Zambia; Institute of Tropical Medicine, University of Tuebingen, Germany; Albert Schweitzer Hospital, Lambaréné, Gabon; Uganda Malaria Surveillance Project, Kampala, Uganda; Epicentre, Paris, France; Faculty of Medicine Mbarara University, Uganda, Programme National de Lutte contre le Paludisme, Kigali, Rwanda; Fundacio Clinic per a la Recerca Biomèdica/ Centre for International Health, University of Barcelona, Spain; Manhiça Health Research Center, Mozambique
Support: European and Developing Countries Trials Parnership (EDCTP); Belgian Directorate-General Cooperation for Development (DGDC)

Reference number 84151
New approaches to improve coverage and compliance of antimalarial treatment for pregnant women in rural Africa (DELIMAL)
ITM promoter: U. D'Alessandro
ITM collaborators: P. Kolsteren, S. Gies, C. Van Overmeir, A. Erhart
External promoters: S. Coulibaly (Laboratoire National de Santé Publique, Ouagadougou, Burkina Faso); B. Brabin (Liverpool School of Tropical Medicine, UK); P. Kazembe (Lilongwe Central Hospital, Malawi)
Support: European Commission; Belgian Directorate-General Cooperation for Development (DGDC)

Reference number 85221
Effectiveness of impregnated hammocks for controlling forest malaria in Vietnam project
ITM promoter: U. D'Alessandro
ITM collaborators: M. Coosemans, W. Van Bortel, A. Erhart, C. Van Overmeir, K. Peeters
External promoters: National Institute of Malariology, Parasitology and Entomology, Hanoi, Vietnam; Provincial Malaria station, Ninh Thuan Province, Vietnam
Support: Union des Banques; Optimus Foundation; Belgian Directorate-General Cooperation for Development (DGDC)

Reference number 85222
A phase III, randomised, non-inferiority trial of Artekin in comparison with Coartem in children with uncomplicated malaria
ITM promoter: U. D'Alessandro
ITM collaborators: C. Van Overmeir, P. Forret
External promoters: Centre Muraz, Burkina Faso; Epicentre, France; Mbarara University, Uganda; Tropical Disease Research Centre, Zambia; Wellcome Trust/KEMRI, Kenya; Fundacio Clinic per a la Recerca Biomèdica/Centre for International Health, Spain; Manhiça Health Research Center, Mozambique
Support: Medicines for Malaria Venture (MMV); Belgian Directorate-General Cooperation for Development (DGDC); Sigma Tau Industrie Farmaceutiche Riunite (sponsor)

Reference number 425201
Evaluation of *Plasmodium vivax* in Vietnam
ITM promoter: U. D'Alessandro
ITM collaborators: P. Van den Eede, A. Erhart, C. Van Overmeir
External promoters: Le Xuan Hung (National Institute of Malariology, Parasitology and Entomology, Vietnam)
Support: Institute for the Promotion of Innovation by Science and Technology in Flanders (IWT), Research Foundation Flanders (FWO)

Reference number 100223
In vitro sensitivity of *Plasmodium falciparum* to different antimalarial drugs in Rukara, Rwanda
ITM promoter: U. D'Alessandro
ITM collaborators: C. Van Overmeir
External promoters: Liverpool School of Tropical Medicine, UK; National Malaria Control Program, Rwanda
Support: Medicines for Malaria Venture (MMV)

Ongoing PhD-projects

TRAN THI XUAN Thao. *Structural and functional analysis of Invariant Surface Glycoprotein Isg75 in trypanosomes*. Promoters: P. Büscher (ITM), L. Wyns (University of Brussels)

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 of Louvain)

MUMBA Dieudonné. *Etude sur le raccourcissement du suivi des patients traités pour la Trypanosomiase Humaine Africaine*. Promoters: P. Büscher (ITM), M. Boelaert (ITM), P. Cras (University of Antwerp), J.J. Muyembe-Tamfum (National Institute of Biomedical Research, Kinshasa, DR Congo)

ROGE Stijn. *Diagnosis of human African trypanosomiasis based on invariable surface glycoproteins*. Promoters: P. Büscher (ITM), M. Coosemans (ITM), Y. Guisez (University of Antwerp)

PYANA PATI Patient. *Investigation on drug sensitivity profiles of Trypanosoma brucei gambiense from treatment refractory patients*. Promoters: P. Büscher (ITM), P. Van den Bossche (ITM), L. Maes (University of Antwerp), J.J. Muyembe-Tamfum (National Institute of Biomedical Research, Kinshasa, DR Congo)

ASHENAFI TAFESSE Hagos. *Control of equine trypanosomosis in the highlands of Ethiopia*. Promoters: P. Büscher (ITM), F. Claes (ITM), B. Goddeeris (Catholic University of Louvain), G. Feseha (Addis Ababa University, Ethiopia)

VAN REET Nick. *Biology and clinical staging of trypanosome neuroinvasion in sleeping sickness*. Promoters: P. Büscher (ITM), E. Van Marck (University of Antwerp)

VAN NIEUWENHOVE Lies. *Development of innovative diagnostics for sleeping sickness or human African trypanosomiasis, based on synthetic peptides as antigens*. Promoters: P. Büscher (ITM), M. Coosemans (ITM), Y. Guisez (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), W. Van Bortel (ITM)

PROTOPOPOFF Natacha. *Evaluation of a strategy to prevent malaria epidemics in Burundi Highlands*. Promoter: M. Coosemans (ITM, University of Antwerp)

OBSOMER Valerie. *Spatial temporal impact of environmental factors on malaria transmission dynamics*. Promoters: M. Coosemans (ITM), P. Defourny (Catholic University of Louvain)

VERHAEGHEN Katrijn. *Pyrethroidenresistentie in malaria vectors: KDR gen variation and detection*. Promoters: M. Coosemans (ITM), W. Van Bortel (ITM), T. Backeljau (University of Antwerp)

IYIKIRENGA Laurent Nkera. *La prévention des épidémies du paludisme en zones d'altitude : cas du Rwanda*. Promoter: M. Coosemans (ITM, University of Antwerp)

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)

VAN DEN EEDE Peter. *Developing an analytic method to distinguish reinfections from recrudescence and relapses*. Promoter: U. D'Alessandro (ITM)

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)

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)

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)

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. Massougbodji (Université d'Abomey - Calavi, Cotonou, Bénin)

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 (ITMAvH, Lima, Peru)

GAMBOA Dionicia. *Analysis of gene expression in the Leishmania life cycle: Leishmania (Viannia) braziliensis and L. (V.) peruviana model*. Promoters: J.C. Dujardin (ITM), C. Bruggeman (University of Maastricht)

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. Koriala Institute of Health Sciences, Dharan, Nepal)

VANAERSCHOT Manu. *Antimonial resistant Leishmania Leishmania donovani: relation with fitness of the parasite and influence on other drugs.* Promoter: J.C. Dujardin (ITM)

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), G. Van der Auwera (ITM), M. Mbuchi and M.K. Wasunna (Kenya Medical Research Institute, Nairobi, Kenya)

WÖRDEMANN Meike. *Helminth infections and atopic diseases: clinical epidemiological studies in Cuban children*. Promoters: B. Gryseels (ITM), K. Polman (ITM)

MEURS Lynn. *Innate immune responses and immunoregulation in schistosomiasis in Northern Senegal*. Promoter: K. Polman (ITM)

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 (ITM), J. Van den Abbeele (ITM), P. Van den Bossche (ITM), I. Sidibe (CIRDES, Bobo-Dioulasso, Burkina Faso)

Department of

Animal Health

The Department of Animal Health aims at developing, disseminating and applying scientific knowledge of livestock diseases. As such it also contributes to the health and well-being of the human populations in the tropics. Its research concentrates on vector-borne diseases and zoonoses, particularly trypanosomosis, theileriosis, bluetongue, taeniasis-cysticercosis and brucellosis. The department counts four units: Veterinary Protozoology, Veterinary Helminthology, Animal Disease Control, and Epidemiology and Biostatistics

The Unit of Veterinary Protozoology focuses on trypanosomiasis and theileriosis, both vector-borne diseases that constrain cattle breeding in Africa. It collaborates closely with institutes in Cameroon, DR Congo, Gambia, Burkina Faso, Rwanda, Malawi, Morocco and South Africa. The unit is a key partner in the Programme Against African Trypanosomiasis (PAAT), a forum to assist affected countries in the development of integrated control strategies. As FAO reference centre for livestock trypanosomiasis, it examines large numbers of trypanosome isolates from different origins for the presence of drug resistance. In 2007, we found alarming rates in some areas such as the Adamaoua region in Cameroon. Main other achievements in this past year include the further validation of various molecular tools for the detection of resistance to the trypanocidal drugs isometamidium and diminazene, and the elucidation of the mechanisms underlying resistance to isometamidium.

A meat market in Nepal: reservoir of *Taenia* infections and cysticercosis.

In the field of theileriosis, the importance of recombination of parasites derived from buffaloes and cattle was investigated with a newly developed glas-based micro-array test. In Rwanda, immunisation trials showed a partial but not complete cross-protection between the Muguga cocktail and the local *Theileria parva* strains. DNA-based immunisation with a lower dose did not produce the expected results, in spite of the encouraging results of a preliminary trial with the pcDNA4 construct. Analysis of new field samples from Morocco revealed high parasite diversity. Attenuation studies of dominant *T. annulata* strains are being completed.

Unit of Veterinary Helminthology

The Unit of Veterinary Helminthology conducted research on cysticercosis, trichinellosis and fascioliasis. Cysticercosis is a neglected zoonosis affecting mainly poor rural populations, and the most common cause of late-onset epilepsy in endemic countries. We assisted

"The Department of Animal Health also contributes to the health and well-being of the human populations in the tropics"

in capacity building, training and quality control for diagnosis and research of cysticercosis in Congo, Burkina Faso, Cameroon, Ethiopia, Zambia, Ecuador, Cambodia, India, Nepal and Vietnam. These activities involved regional and international cysticercosis working groups with medical as well as veterinary researchers. Thematically, we focused on transmission dynamics, disease burden, and intervention studies including pig vaccination.

Data generated by multiple diagnostic tests from community- and hospital-based studies were analysed using Bayesian techniques. These allowed to explore the relation between exposure, infection and disease in different age groups and epidemiological settings.

Laboratory research concentrated on the improvement of the specificity of circulating antigen detection with nanobodies, of molecular methods for the diagnosis of taeniasis, and on the validation of existing techniques for antibody and antigen detection. Nanobody-based tests showed high specificity to *T. solium* in competitive and sandwich ELISA formats. At least three promising antibodies will be further evaluated in different combinations and test formats. The use of molecular tools for the identification of *Taenia* spp. shed new light on their epidemiology in Vietnam; the Asian tapeworm was more commonly found than *T. solium* and *T. saginata*.

Neurocysticercosis can be diagnosed by a CT-scans of the brain.

T. saginata, the beef tapeworm, remains an economic problem in Western Europe. We participated in outbreak studies of cysticercosis in large cattle farms in France.

Our National Reference Laboratory for Trichinellosis performed routine monitoring and studied the infection status of wildlife, mainly foxes, in Belgium. All samples were negative, confirming the low risk for trichinellosis in Belgium.

Fasciolosis, a helminth of ruminants causing important economic losses, is also a potential zoonosis causing serious liver disease in humans. We used serological and molecular tools to study the epidemiology of this helminth in Central Vietnam, where thousands of human cases occur every year. We demonstrated the presence of both *Fasciola gigantica* and hybrids of *F. hepatica* and *F. gigantica*, and described the occurrence of ectopic lesions in humans.

We also worked on protozoan infections in non-human primates and on nematode control in ruminants in South Africa.

Unit of Animal Disease Control

Rational control of vector-borne livestock diseases, such as trypanosomiasis, requires a thorough understanding of local epidemiological settings. In the Eastern Province of Zambia, field studies on the relationship between man-made habitat changes and the distribution of tsetse's were completed. We observed a clear relationship, with habitat fragmentation resulting in a reduction of tsetse density. Interestingly, such density changes do not seem to reduce infection challenge as the environmental stress in highly fragmented areas appears to increase the vectorial capacity of the tsetse's. These observations are consistent with laboratory experiments on the effects of nutritional stress on the tsetse's susceptibility to trypanosomes. The assessment of the role of various livestock species in the epidemiology of trypanosomiasis showed heterogeneous challenge with oxen being the most threatened. These results will help to guide targeted tsetse control interventions.

Studies on the epidemiology and control of livestock trypanosomiasis at the edge of tsetse-infested game areas in Malawi (Nkhotakota Game Reserve) and South Africa (Hluhluwe Imfolozi Park) showed two distinct types of interface. Along the Malawian interface, the challenge is limited due to intense poaching and subsequent low game density at the park's edges. Tsetse control will thus have little impact on overall challenge. Infection of people and livestock are best avoided by restricting movements into the park. In South Africa, where game animals are spread more evenly, tsetse densities at the park's edge are high and tsetse control at the interface is an effective intervention.

Cattle in South Africa, Zimbabwe and Mozambique carry highly contagious diseases such as foot and mouth disease.

Wandering pigs in Vietnam are often infected with *Taenia solium*.

In game/livestock interfaces in South Africa, Zimbabwe and Mozambique, a study was initiated to develop a Space/Time Information System (STIS) for highly contagious diseases such as foot and mouth disease (FMD). The aim is to assess the use of remotely sensed data in low, medium, high and very high resolution as information system for the prevention of the spread of FMD from game to livestock.

Other studies focused on the assessment of the public health burden of zoonotic tuberculosis and brucellosis and on the development of appropriate control strategies in different African contexts. We co-organised a workshop on these topics in Pretoria, which was attended by 25 medical, veterinary and wildlife experts from Africa and Europe. Livestock surveys were carried out in Kenya, Zambia, Namibia and South Africa.

Based on epidemiological research and surveillance, we developed a regional expert training programme for the Southern African Development Community (SADC) in animal health and production in collaboration with the Soikoine University of Agriculture (Tanzania), the Centre for Ticks and Tick-Borne Diseases (Malawi) and the University of Pretoria (South Africa). The four training courses (Animal Health Management, High Impact Diseases, Pigs & Poultry and Cattle & Small Stock) were attended by 53 participants from 11 SADC countries.

Unit of Epidemiology and Biostatistics

The research focus of the Unit of Epidemiology and Biostatistics is currently on the incidence and risk factors of brucellosis in domestic species (cattle, water buffalo, goats, sheep and pigs) in Africa, South-East Asia and South America. With longitudinal and cross-sectional surveys in sentinel herds, we investigate the intra- and inter-species transmission dynamics in various environments. Where possible, we link the data with available information on human incidence. A continuing problem remains the absence of a gold standard diagnostic test. In collaboration with the Belgian Central Veterinary and Agrochemical Research Institute and the Department of Animal Health at the University of Liège, we evaluated commonly used diagnostic tests and developed a Bayesian approach to determine prevalence and test characteristics. This method was successfully applied to brucellosis as well as to giardiasis, cryptosporidiasis, bovine spongiform encephalopathy and foot-and-mouth disease.

Using the BSE/new variant Creutzfeldt-Jacob Disease complex as a model, we also worked on classification and regression trees and Bayesian back-calculation models. In collaboration with the University of Hasselt (Unit of Biostatistics) and the University of Antwerp (Department of Neurology), we attempt to develop tools to assess the risk of (re)-emergence and world-wide monitoring of BSE.

We established a collaboration with the School of Public Health of the Université Catholique de Louvain (UCL) which allows the integration of our methodological work in a broader public health context.

The unit also collaborates in the partnership of the Flemish Interuniversity Council (VLIR) with the University of Jimma in Ethiopia, especially the entomology component.

Bluetongue: a devastating animal disease spreading over Europe

Bluetongue (BT) is a vector-borne viral disease which affects all ruminants, particularly sheep. Worldwide 24 different serotypes of the virus are known, among which almost no cross-immunity exists. Clinical symptoms are lesions of the mucous linings of the mouth, nose and the coronary band of the foot, as well as reproduction problems. Transmission of the virus occurs by biting midges belonging to the genus *Culicoides*.

Although initially a (sub-)tropical disease, serotype 8 of bluetongue was introduced in northern Europe in August 2006. At first, the disease was restricted to Belgium and surrounding countries, but in 2007 the disease spread further to Switzerland, Denmark, Czech Republic, Austria and the United Kingdom. No geographic boundaries seem to halt bluetongue, and most likely it will continue to spread all over Europe. Last year economic losses due to the disease were estimated at 45 million euro in Belgium only. Vaccination of all domestic ruminants will start in 2008.

Because of its expertise in vector biology, the ITM's Department of Animal Health was asked to supervise a national entomological surveillance programme, in collaboration with the Belgian Veterinary and Agrochemical Research Centre, the Walloon Centre of Agronomic Research, the Faculty of Veterinary Medicine of Liege and the Gembloux Agricultural University.

Characteristic clinical symptoms of bluetongue: nasal discharge and ulcers of the mucosa

Isra Deblauwe and Gill De Deken preparing a *Culicoides* trap.

The vector monitoring programme so far learned that:

- The disease is not transmitted by imported tropical vectors but by several local species such as *Culicoides obsoletus, C. dewulfi, C. scoticus* and *C. pulicaris*
- During winter the vectors escapine adverse conditions by surviving in stables
- Major breeding sites of local species were identified, providing clues for targeted vector control strategies
- Over 40 different *Culicoides* species were identified so far, some of which were not known to inhabit Belgium

Important gaps still exist in our knowledge of the biology of local *Culicoides spp* and on the epidemiology of tropical vector-borne diseases introduced in temperate climate zones. The bluetongue outbreak comprises an in-depth study of the issues and will strenghthen the expertise in global surveillance of tropical arboviruses.

Professor André Zoli: laureate of the Prize Armand Féron

Professor André Zoli, veterinarian and former student of the ITM, received the biennial prize Armand Féron during a ceremony at the ITM on 12 July.

The prize comes from a family trust, created in memory of Dr. Armand Féron, a Belgian veterinarian who devoted his short professional career to animal production and health in developing countries. It is awarded every two years to a person, originating from a developing country or Europe, who contributed significantly to the rural development in Third World countries.

André Zoli is professor at the University of Dschang (Cameroon) and since 2003 dean of the Faculty of Agronomy and Agricultural Sciences. He recieve the award for his research on cysticercosis and trypanosomosis. As coordinator of research projects on these two diseases, carried out in close collaboration with the ITM's Department of Animal Health, he contributed significantly to the control of these important livestock diseases in his country.

Projects

For more details, see www.itg.be/projects and fill in the project reference number

Unit of Veterinary Protozoology

Reference number 85581
Vaccination against porcine cysticercosis
ITM promoters: S. Geerts, P. Dorny
External promoters: M. Lightowlers (University of Melbourne, Australia), A. Zoli (University of Dschang, Cameroon)
Support: The Wellcome Trust (UK)

Reference number 85260
Strengthening of the diagnostic capacity of the National Veterinary Laboratory in Kigali, Rwanda
ITM promoter : D. Geysen
External promoters : J. Vercruysse (University of Ghent - coordinator)
Support: Flemish Interuniversity Council (VLIR)

Reference number 100186
Control of bovine haemoparasites in Morocco through immunisation methods (FRAB2)
ITM promoter: D. Geysen, S. Geerts
External promoter: A. Rhalem (Institut Agronomique et Vétérinaire Hassan II, Rabat, Morroco, IAV)
Support: ITM, Institut Agronomique et Vétérinaire Hassan II (IAV)

Reference number 100222
Coordinated action on Ticks and Tick-borne Diseases (ICTTD-3)
ITM promoter : D. Geysen, S. Geerts
External promoters : F. Jongejan (Utrecht University, The Netherlands - coordinator).
Support: European Commission

Reference number 429001/619001
DNA immunisations in a Theileria parva bovine model as an identification tool for candidate CTL antigens
ITM promoter: D. Geysen, S. Geerts
External promoter: D. Goossens (Intervet, The Netherlands)
Support: Global Alliance for Livestock Veterinary Medicines (GalvMed)

Reference number 529001
Epidemiology and control of zoonotic infections in The Gambia and Senegal
ITM promoter: S. Geerts
External promoters: A. Schönefeld (ITC, The Gambia), E. Van Marck (University of Antwerp - coordinator)
Support: Flemish Interuniversity Council (VLIR)

Reference number 748001
Improved diagnosis of drug resistant trypanosomes
ITM promoters: V. Delespaux, S. Geerts
External promoter: Centre International de Recherche-Développement sur l'élevage, Burkina Faso
Support: ITM (Department of Animal Health)

Unit of Veterinary Helminthology

Reference number 100083
Drug screening for neglected diseases
ITM promoters: P. Dorny, J.C. Dujardin
External promoter: L. Maes (University of Antwerp - coordinator)
Support: WHO/TDR

Reference number 100246
Identification of biomarkers for *Taenia solium* cysticercosis
ITM promoter: P. Dorny
External promoters: J. Vercruysse (University of Ghent - coordinator), S. Muyldermans (University of Brussels)
Support: IWT-Flanders, Research Foundation Flanders (FWO)

Reference numbers 419001/100248
Monitoring the bluetongue vector
ITM promoter: R. De Deken, P. Dorny
External promoters: Veterinary and Agrochemical Research Centre; Wallon Centre of Agronomic Research; Faculty of Veterinary Medicine of Liège; Gembloux Agricultural University
Support: Belgian Ministry of Health, Food Agency (FAVV)

Reference number 419002
National Reference Laboratory for Trichinella
ITM promoter: P. Dorny, L. Claes
Support: Belgian Ministry of Health, Food Agency (FAVV)

Reference number 629002
Protozoan infections in non-human primates in zoological gardens
ITM promoter: P. Dorny
External promoters: F. Vercammen (Royal Zoological Society of Antwerp), J. Vercruysse (University of Ghent)
Support: Flemish Ministry of Sciences, Royal Zoological Society of Antwerp

Reference number 748002
Diagnosis, epidemiology and control of parasitic infections of livestock in Cambodia
ITM promoter: P. Dorny
External promoters: M. Sothy (Royal university of Agriculture, Phnom Penh, Cambodia); S. San (National Animal Health and Production Investigation Center, Phnom Penh, Cambodia); J. Vercruysse (University of Ghent)
Support: Flemish Interuniversity Council (VLIR)

Reference number 748003
Impact assessment and control of cysticercosis in the Indian subcontinent
ITM promoter: P. Dorny
External promoters: V. Rajshekhar (Christian Medical College, Vellore, India); D.D. Joshi (National Zoonosis and Food Hygiene Research Center, Kathmandu, Nepal); J. Vercruysse (University of Gent)
Support: Flemish Interuniversity Council (VLIR)

Reference number 748004
Improved diagnosis of Taenia saginata cysticercosis
ITM promoter: P. Dorny
External promoter: G. Caethoven (Plantijn Hogeschool, Antwerp)
Support: Flemish Ministry of Sciences

Unit of Animal Disease Control

Reference number 85582
Environmental changes in Africa and tsetse habitat fragmentation: epidemiological consequences and perspectives for control
ITM promoter: P. Van den Bossche
External promoters: Avia-GIS, CIRAD (France), Oxford University (UK)
Support: The Wellcome Trust (UK)

Reference number 339001
Implementation and coordination of a training programme in animal health and animal production for the SADC-region
ITM promoter: P. Van den Bossche
External promoters: University of Pretoria (South Africa), Sokoine University of Agriculture (Tanzania), Centre for Ticks and Tick-Borne Diseases (Malawi)
Support: European Commission

Reference number 419003
Remote sensing tools to study the epidemiology and Space/time dynamics of diseases
ITM promoter: P. Van den Bossche
External promoters: University of Pretoria (South-Africa), Université Catholique de Louvain, Université Libre de Bruxelles, Avia-GIS
Support: Belgian Federal Science Policy Office (BELSPO)

Reference number 84861
Improved and harmonised quality control for expanded tsetse production, sterilisation and field application
ITM promoter: P. Van den Bossche, J. Van den Abbeele
Support: International Atomic Energy Agency (IAEC)

Unit of Epidemiology and Biostatistics

Reference number 429002
Flexible mathematical and statistical models for microbiological risk evaluation with emphasis on Bovine Spongiform Encephalopathy (BSE) and variant Creutzfeld-Jacob Disease (vCJD).
ITM promoter: D. Berkvens, N. Speybroeck
External promoters: University of Hasselt; University of Antwerp; Veterinary and Agrochemical Research Centre; University of Liège
Support: Research Foundation Flanders (FWO)

Reference number 100113
Scientific support to BTC South Dairy Project, Abidjan, Ivory Coast
ITM promoter: E.Thys, S. Geerts
Support: Belgian Technical Cooperation (BTC)

Reference number 748005
Institutional collaboration with Jimma university, Ethiopia, sub-project Zoonotic and Helminth Diseases
ITM promoters: P. Dorny, P. Van den Bossche
External promoters: F. Regassa, T. Tolosa (Jimma University, Ethiopia); L. Duchateau, J. Vercruysse (University of Ghent - coordinator)
Support: Flemish Interuniversity Council (VLIR)

Ongoing PhD-projects

SIMUKOKO Humphrey. *Epidemiology of livestock trypanosomiasis in an endemic area of Eastern Zambia*. Promoters: P. Van den Bossche (ITM), J. Vercruysse (University of Ghent)

ADEL Amel. *Epidemiology of Leishmania in Algeria*. Promoters: D. Berkvens (ITM), M. Boelaert (ITM), C. Saegerman (University of Liège), A. Soukehal (CHU Béni Messous, Alger)

OUAGAL Mahamat. *Evaluation de l'efficacité d'une réseau d'épidemio-surveillance*. Promoters: D. Berkvens (ITM), C. Saegerman (University of Liège), Kiram Djibrine (Laboratoire de Recherches Vétérinaires et Zootechniques de Farcha, N'Djamena, Chad)

RAHMAN Anisur. *Brucellosis in Bangladesh*. Promoters: D. Berkvens (ITM), C. Saegerman (University of Liège), M.U. Ahmed (Bangladesh Agricultural University, Bangladesh)

RON ROMAN Jorge Washington. *Epidemiologie de la brucellose en Equateur*. Promoters: D. Berkvens (ITM), C. Saegerman (University of Liège), W. Bénitez-Ortiz (CIZ Universidad Central del Ecuador, Ecuador)

DECKERS Nynke. *Detection of biomarkers for an improved diagnosis of taenia colium cystercosis*. Promoters: P. Dorny (ITM), J. Vercruysse (University of Ghent)

LEVECKE Bruno. *Gastrointestinal parasitic infections in captive non-human primates*. Promoters: P. Dorny (ITM), J. Vercruysse (University of Ghent), F. Vercammen (KMDA, Belgium)

NGUYEN Thi Giang Thanh. *Zoonotic fasciolasis in Vietnam: molecular identification and geographical distribution*. Promoters: P. Dorny (ITM), Le Thanh Hoa (Institute of Biotechnology, Vietnam)

ASSANA Emmanuel. *Vaccination against porcine cysticercosis and analysis of immune correlates of protection in Cameroon*. Promoters: S. Geerts (ITM), P. Dorny (University of Ghent), A. Zoli (Université de Dschang, Cameroon)

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, Gambia)

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, Gambia)

BAZARUSANGA Thomas. *Characterisation of and immunisation against Theileria parva*. Promoters: D. Geysen (ITM), M. Madder (ITM), J. Vercruysse (University of Ghent)

DE GOEYSE Ine. *Prime boost strategy for CTL response against T. parva*. Promoters: D. Geysen (ITM), Y. Guisez (University of Antwerp)

HESHBORNE Tindih. *Analysis of virulence factors in Theileria parva*. Promoters: D. Geysen (ITM), B. Goddeeris (Catholic University of Louvain), E. Taracha and J. Naessens (International Livestock Research Institute, Kenya)

JANSSENS Michiel. *Molecular biological tools for the immunisation and diagnosis of T. Parva*. Promoters: D. Geysen (ITM), Y. Guisez (University of Antwerp)

SIBEKO Kgomotso. *Characterisation of Theileria infections in African buffaloes and cattle and validation of diagnostic tests*. Promoter: D. Geysen (ITM)

MTAMBO Jupiter. *Ecology of Rhipicephalus appendiculatus and Rhipicephalus zambesiensis in Southern Zambia*. Promoters: M. Madder (ITM), P. Dorny (University of Ghent)

BOUKARY Abdou Razac. *Impact of livestock husbandry on the transmission of brucellosis and tuberculosis in urban and periurban Niamey*. Promoters: E. Thys (ITM), P. Van der Stuyft / F. Portaels (ITM), C. Saegerman (University of Liège), A. Yenikoye (Université Abdou Moumouni, Niamey, Niger)

GONDWE Nkwachi. *Study of the epidemiology of human and animal trypanosomiasis at the game/cattle/people interface of the Nkhotakota Game Reserve, Malawi*. Promoter: P. Van den Bossche (ITM)

MWEEMPWA Cornelius. *Environmental changes in Africa and tsetse habitat fragmentation: epidemiological consequences and perspectives for control*. Promoter: P. Van den Bossche (ITM)

Department of
Clinical Sciences

The aim of the Department of Clinical Sciences is to provide training, conduct research and offer services in tropical medicine and HIV/AIDS. It consists of the Unit of Tropical and Travel Medicine, the Unit of Tropical Laboratory Medicine (including the subunit Medical Mycology), and the Unit of HIV/STD.

Research in the South

Most of our collaborative research in the South involves all units of the department and it is therefore presented together. The main focus is on AIDS, malaria, tuberculosis, sleeping sickness and other parasitic diseases. We run collaborative capacity strengthening, training and research programmes with clinical or diagnostic centres in Peru (Institute of Tropical Medicine of the Universidad Peruana Cayetano Heredia); Phnom Penh, Cambodia (Sihanouk Hospital Centre of HOPE); Kigali, Rwanda (Centre Hospitalier Universitaire); Kampala, Uganda (Makerere University); DR Congo (Kalembe Lembe Paediatric Hospital and Institut National de Recherche Biomédicale), and Tete, Mozambique (Regional Hospital).

At the Sihanouk Hospital Center of HOPE (SHCH) in Cambodia, we train health professionals, assist in research on HIV and TB and generally reinforce the infectious diseases department and the laboratory. By the end of 2007, 2,024 patients were enrolled for HIV care, of which 1,503 on Higly Active Anti Retroviral Treatment (HAART). A new project on antibiotic resistance surveillance and infection control in the hospital was initiated.

The TB research focuses, among others, on the exclusion of active TB in HIV patients and on the role of abdominal ultrasound in the diagnosis of extra-pulmonary TB. The SHCH obtained a WHO grant to test the new smear-negative TB guidelines; this project will start in 2008. We are also involved in the EU-AID project (see Microbiology), in which we supervise the clinical management of HIV patients (side effects, clinical and immunological monitoring and measurement of the adherence).

Philippe Gillet with dr. Nadine Mintsey at the INRB in Kinshasa, DR Congo.

"This qualitative study in young people living with HIV revealed major misconceptions on sexual and reproductive health and the resources needed for prevention"

The Infectious Diseases Institute (IDI) in Kampala is a centre of excellence for HIV/AIDS at the Makerere University that provides quality care to 18,000 adults and 3,000 children with HIV. More than 5,000 patients are treated with HAART, of which 1,000 are included in a research cohort that is regularly followed up for time intervals with routine CD4 conts and viral load. The ITM is involved, among others, in an EDCTP-supported capacity building project to conduct phase III trials of novel TB vaccines. A study site will be established at the Demographic Surveillance Site in Iganga/Mayuge.

The ITM also assists IDI in the preparation and coordination of a study on adherence and retention rates in antiretroviral roll out programmes in 5 Ugandan HIV treatment centres. Other joint research projects include the effect of antiretroviral treatment on HIV related symptoms and signs, methods to predict antiretroviral treatment failure, side effects of antiretroviral treatment including the immune reconstitution inflammatory syndrome, the efficacy of second line antiretroviral treatment and HIV/TB co-infection. A formative qualitative study was conducted on the sexual and reproductive health needs of young people living with HIV in a clinical setting. This study revealed major misconceptions about SRH and the resources needed for prevention. The ITM supports the pediatric infectious disease clinic in programmes for secondary prevention of HIV/STDs.

The collaborative project in Tete, Mozambique aims at strengthening diagnostic, therapeutic and research capacity of the Provincial Hospital and related health centres. Surveys over a period of 3 years showed a significant improvement of the quality of HIV/AIDS care in the medical departments. The ITM will prolong its involvement for at least another 3 years.

Microbiology at the Institut National de Recherche Biomédicale in Kinshasa, DR Congo.

Frank Anthonissen of the ITM at work with his Cambodian collegue Kham Chun in the Sihanouk Hospital Center of HOPE in in Phnom Penh.

At the Institute of Tropical Medicine of the Universidad Peruana Cayetano Heredia in Peru, our input is part of a broad institutional collaboration. We focus on HIV care, microbial resistance to antibiotics and mycology. We support the management of the cohort database and assist with publications and laboratory quality management. The Mycology subunit collaborates on sporotrichosis, PCP and cryptococcosis.

At the Centre Hospitalier Universitaire de Kigali, Rwanda, we provide support to the Clinical Research Unit. Master and PhD students address a wide array of research topics, including treatment thresholds in pulmonary tuberculosis, diagnosis of TB in children, HIV diagnosis in infants, delay in TB treatment in adults, *Schistosoma mansoni* infection in children, hyperreactive malarial splenomegaly, prevention of post-partum haemorrhage and postoperative pain management in children.

Other collaborative projects include the evaluation of rapid diagnostic tests for diagnosis of malaria at the health centre level in Burkina Faso, and of lowering the treatment threshold for tuberculous meningitis in Ecuador.

Research in Europe

The Unit of Tropical and Travel Medicine focused on imported fever, travel risks and medical decision making. We continued the analysis of subgroups of patients with imported fever. Within TropNetEurop, a network of travel clinics, we focused on criteria for ambulatory treatment of malaria. In travel medicine we finalised and published research on conditions that interfere with vaccination and prevention, and on sexual risk behaviour during travel; we initiated a study on altitude sickness.

Based on the logic of the Kabisa training programme, we developed the first evidence-based expert system ever in travel medicine. The programme gives a ranking of probable diseases for a given patient, and guides the clinician through an interactive and reasoned workup of the patient. A first evaluation in a travel clinic in Brussels gave excellent results, and a prospective European multicenter evaluation is currently ongoing.

We collaborated with medical faculties in a review of Computerised Clinical Decision Support Systems, and published a study on our didactic model for training in clinical reasoning. We compared the use of sensitivities and specificities vs. an ordinal likelihood ratio scale, between an algorithmic vs. a panoramic clinical approach, and the weight of harm in treatment decisions for pulmonary tuberculosis.

The Unit of Tropical Laboratory Medicine focused on a prospective study on pathogenicity of intestinal parasites; the development of PCR diagnosis for malaria, leishmaniasis and Chikungunya virus; and on infection transmission by fingerprint identification for visa applications and border control. In addition, we performed a retrospective analysis of antimicrobial resistance of *Campylobacter jejuni/coli*.

The STD/HIV Unit participated in several European multi-centre clinical trials on HIV/AIDS, including studies on new treatment strategies (SMART, Merit & Bnchmrk I studies), investigational drugs (TMC-114, TMC-125 and MK-518) and expanded access programmes (TMC-114, TMC-125, MK-518 and maraviroc). The unit closely monitors a cohort of around 1,500 HIV-infected patients and participates in the EuroSIDA network. We follow patients participating in research projects of the immunology and virology units of ITM. Finally, we prepared a clinical trial of HIV immunotherapy.

The Health Promotion sub-unit aims at collecting evidence and developing expertise in the area of sexual health, especially primary and secondary HIV prevention. EUROSUPPORT V is an international expert network funded by the European Commission, which collects evidence on how to improve the sexual and reproductive health of persons living with HIV. In 2007, a large scale survey was conducted in17 European HIV treatment centres to assess factors that determine sexual risk behaviour among people living with HIV/AIDS. In the project "Promotion of sexual health and prevention for Sub-Saharan African migrants", we explored barriers to HIV-testing in this vulnerable group, such as HIV-related stigma, the lack of a preventive culture and provider-related problems.

A good hair cut in Phnom Penh, Cambodia.

Telemedicine for HIV/AIDS care

In 2003 we set up a hybrid web/e-mail discussion forum, http://telemedicine.itg.be, to support physicians working in resource-limited settings in the management of HIV/AIDS cases.

In a four-year period, this programme offered 650 teleconsultations to clinicians in 35 different countries. Patients' records are sent to the ITM Telemedicine system through a web- or e-mail-based format for a second opinion, provided by an international network of HIV/AIDS specialists or other experts (dermatology, ophthalmology, radiology, cardiology, ….). The consulting panel is available for discussion of the cases and to formulate a final advice.

75% of the teleconsultations concerned the management of complex medical problems in a new patient, while 25% dealt with questions about the organisation of health services for HIV prevention, treatment and care.

In 47% of the cases the second opinion request was related to the general use of antiretrovirals (ARV), ARV side effects, second line prevention of mother-to-child transmission, immune reconstitution syndrome, HIV associated TB and management of co-infections. In 40% of the cases the request was related to the diagnosis and treatment of specific opportunistic infections and in 13% to the organisation of HIV services.

Over these 4 years, we witnessed a significant increase of teleconsultations related to organisational issues of HIV programmes and HIV drug resistance, while questions on general use of antiretrovirals have become less frequent. This evolution illustrates the maturation of the Roll Out ARV programmes and the changing problems confronting clinicians working in HIV/AIDS care.

Projects

For more details, see www.itg.be/projects and fill in the project reference number

Unit for HIV/AIDS and STD

Reference numbers 81240/427307
AIDS care project in Tete, Mozambique
ITM promoters: V. Huyst, E. Bottieau
ITM collaborators: M. Ponnet, E. Casas, B. Angerita
External promoters: L. Cumba, C. das Dores Mosse (Direcção Provincial de Saùde, Tete, Mozambique), M. Biot (Médecins sans Frontières, Luxembourg), D. Seelhoed, M. Temmerman (University of Ghent, ICRH)
Support: Flemish International Cooperation Agency (FICA)

Reference number 83541
Treatment of HIV tuberculosis co-infection
Promoter: R. Colebunders
External promoter: Infectious Diseases Institute, Makerere University Medical School, Kampala (Uganda)
Sponsor: Research Foundation Flanders (FWO)

Reference number 83873
Eurosupport V: Improving Sexual and Reproductive Health of People Living with HIV/Aids (PLWHA) in Europe
ITM promoter: R. Colebunders, C. Nöstlinger
ITM collaborators: T. Platteau, V. Van Wijk
External promoters: HIV-treatment centres in Austria, Belgium, Czech Republic, Germany, Greece, Hungary, Italy, Latvia, Poland, Portugal, Slovak Republic, Spain, Switzerland, United Kingdom
Support: European Commission; ITM; private sponsors

Reference number 84553
HIV/AIDS prevention and care
ITM promoter: L. Lynen
ITM collaborators: O. Koole, D. Sculier
External promoter: National Center for HIV/AIDS, Dermatology and STD's, Ministry of Health, Cambodia
Support: European Commission

Reference number 100035
Assessing Sexual Risk Reduction Needs of Young People Living with HIV
ITM promoter: C. Nöstlinger
External promoter: S. Bakeera-Kitaka (Infectious Disease Clinic, Mulago Hospital, Uganda)
Support: ITM; private sponsors

Reference number 100251
Antiretroviral therapy adherence study
Promoter: R. Colebunders
External promoters: Family Health International, USA; Muhimbili University, Tanzania; Infectious Diseases Institute, Uganda; Tropical Diseases Research Centre, Zambia
Support: Centers for Disease Control (CDC), USA

Reference numbers 420001/430001/430002
Promotion of sexual health and prevention of HIV among African migrants living in Flanders
Promoter: C. Nöstlinger
ITM collaborators: T. Alou, J. Loos, L. Manirankunda
Support: Flemish Government; Provinces of East Flanders and Antwerp; ITM

Unit of Tropical Medicine

Reference number 627108
Side effects and paradoxical reactions on TB treatment in Rwanda
ITM promoter: J. Clerinx, J. Van den Ende
External promoters: N. Lorent, O. Sebatunzi, J. Rudasingwa Gategе, L. Gahimbare (Centre Hospitalier Universitaire de Kigali, Rwanda)
Support: Tibotec

Ongoing PhD-projects

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)

APERS Ludwig. *Aspects of TB control in low income countries with high HIV prevalence*. Promoters: R. Colebunders (ITM, University of Antwerp), P. Van der Stuyft (ITM)

NEYRA Edgar. *Molecular biology of fungal diseases*. Promoter: D. Swinne (ITM), E. Gotuzzo (University Cayetano Heredia, Lima, Peru)

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

Department of

Public Health

The Department of Public Health aims at the development of sustainable, effective and efficient health care systems that assure universal access, equity, quality and participation. It deploys a strategy that integrates teaching, research, capacity strengthening and policy support. The department consists of five units: Epidemiology and Disease Control; Health Policy and Financing; Quality & Human Resources; Public Health Policy and Management; Child Health and Nutrition. Most research is conducted in a matrix involving several units.

Unit of Epidemiology and Disease Control

Our research projects on disease control focus on integration, participation and multi-sectoriality besides technical and epidemiological issues. The latter include assessment of clinical tools to diagnose, treat and prevent neglected diseases in resource-poor settings. Another part of the research portfolio looks at epidemiological aspects of decentralisation, efficiency and equity in health care organisation. We also invest heavily in teaching, health policy fora and capacity strengthening of partner institutions.

In a collaborative community trial of long lasting insecticide-treated bed nets for the prevention of visceral leishmaniasis or kala azar (KALANET) in the Indian subcontinent, we finalised a first year of follow-up. In the same field, we continued our evaluation of rapid diagnostic tests and drug policies.

In Cuba we completed a series of collaborative dengue projects that demonstrated the cost-effectiveness of integrating community based environmental management with routine vertical *Aedes* control (see highlight). In South-East Asia and Latin America we started up randomised community trials on the acceptability and cost-effectiveness of different implementation strategies for delivering new, insecticide-based *Aedes* control tools. In the field of Human African trypanosomiasis we demonstrated, that user fees as well as drug toxicity are barriers to participation in population screening programmes in the DR Congo. Furthermore, exhaustive population screening for HAT becomes less efficient as the prevalence decreases. We therefore started research on alternative approaches, such as risk based surveillance with periodical random sero-surveys.

Demographic survey for the KALANET bednet trial against Visceral Leishmaniasis in Nepal.

"User fees as well as drug toxicity are barriers to participation in population screening programmes for sleeping sickness"

We have published the final results of our multicenter study on service factors constraining the diagnosis of smear-negative TB in Latin America. In a validation study of diagnostic algorithms in Peru, patient recruitment proceeded as planned. In Cuba we finished the assessment of the added value of a Provincial Commission for the diagnosis of smear-negative TB in low prevalence settings. The role of the private sector in TB control has in the past 2 years been the subject of joint research in Indonesia. We revealed the limited scope for linking private general practitioners to the TB control programme.

In the field of health care organisation, we finalised two pilot studies in Cuba, one on "Hospitalisation at Home" and another on "Group Practices". The local health authorities decided to experiment with this latter model on a larger scale. We also developed new protocols for service research, to be started in 2008. These will address participatory planning, effective decentralisation and provincial level planning. Finally, we contributed to research of other units of the Department, in particular the work on health insurance, quality of care and Latin American health policies.

Unit for Health Policy and Financing

The Unit for Health Policy and Financing is involved in research and training activities at different levels of the health system, ranging from grass-roots (e.g. community-based health insurance and local social assistance schemes) to the international policy arena (Global Health Initiatives).

In 2007, we continued our research projects on community-based health insurance in Mauritania, Togo, Uganda, Tanzania and Mali; on Health Equity Funds and similar schemes targeting the poor in Cambodia, Laos and China; on the impact of Global Health Initiatives in Southern Africa and the DR Congo ; on human resources in AIDS care in Malawi, Uganda, Ethiopia and Mozambique; and on contractual arrangements between private not-for-profit health facilities and public authorities in Uganda. We conducted a multi-country

Measuring a pregnant woman in Burkina Faso.

Community health insurance representative in Nongon, Mali.

mail survey in 15 Sub-Saharan countries on quality of care as part of contractual arrangements between CHI schemes and the health care providers.

All these research projects take place in partnership with research and development organisations in the country and international networks. In 2007, we also strengthened our collaboration with the Institute of Development Policy and Management and the Department of Sociology at the University of Antwerp. The unit further ensured the coordination of the Belgian *MasMut* policy platform (*Micro-assurance santé/Mutuelles de Santé*).

Unit of Quality & Human Resources

The Unit of Quality & Human Resources carries out collaborative research on health service organisation at the operational and policy level, using equitable access, utilisation and quality of healthcare as outcomes.

In Mali, we investigated the retention of rural community doctors, following previous research on rural family practice, and conduct a socio-anthropological study on health seeking behaviour and service utilisation.

In Thailand, the unit provided support to the EU-supported Health Care Reform Project by examining strategies to develop family practice teams through training and organisational development.

We provide scientific support to the BTC (Belgian Technical Cooperation) project "Support to health systems development" in Niger and Senegal. During a first visit to Senegal in March, unit staff provided training on health systems research for district, regional and BTC technical assistants. In November, they coached a national workshop revising operational guides for district health management teams and first referral level facilities. In Niger, the unit supported the drafting of health district development plans and the assessment of training programmes for district and regional health management teams. In both countries, we assisted the BTC in dealing with cross-cutting aspects of system strengthening, such as surgery at district level, financial accessibility and quality of care.

Within a EU/INCO project "Response to Accountable priority setting for Trust in health systems (REACT)", we participated in meetings on qualitative methods and research planning in Kenya.

In Mali, we assessed the impact of vertical programmes and mass campaign activities on routine health services, with the National Campaign against Neglected Tropical Diseases (NTD) as a tracer. The study demonstrated the high opportunity costs for local health systems of such interventions.

In Ghana, we participated in a comparative study of the link between management and performance in two regional hospitals, one in the Volta Region and one in the Cape Coast.

In Morocco, we extended the criterion-based clinical audits study to the problem of professional professionals, on demand of the Ministry of Health,

As coordinator of the "Projet d'approche solidaire en santé génésique" (Passage), we participated in international meetings in Mali and Cameroon. Ongoing interventions consist of improving the provision and quality of care, coordinating networks of health facilities providing reproductive health care, setting up services for the youth and informating target groups about their reproductive health rights.

As a follow-up of the "Amélioration de la Qualité et de l'Accès aux Soins Obstétricaux d'Urgence" (AQUASOU) project, the unit started a desk study on "Financing Maternal Health Care", in order to analyse how schemes in Africa, Asia and Latin America reduce the household costs hindering access to maternal health care.

AudObEm is a cluster-randomised controlled trial in Benin, Burkina Faso and Niger assessing the effectiveness of clinical audits to improve the responsiveness to obstetric complications. The unit produced the protocol of intervention, the management guides for major obstetric complications and for conducting clinical audits, and the training curricula for intervention.

The unit provided teaching and coaching in public health, health service organisation, safe motherhood, social sciences, demography and decision-making at the National Institute of Health Administration (INAS) in Rabat, Morocco. This support included a short course in monitoring and evaluation of maternal and neonatal health for the Initiative for Programme Assessment and Capacity Training (IPact).

The AudObEm research team in Ouagadougou, Burkina Faso, with members from the London School of Hygiene and Tropical Medicine (UK), Centre Muraz (Burkina Faso), Centre de Recherche et Reproduction Humaine et Démographie (Niger), the East European Institute of Public Health and the ITM.

Unit for Public Health Policy and Management

The Unit of Public Health Policy and Management aims at formulating, assessing and disseminating concepts of public sector health management. In 2007, our research lines included collaborative studies of health policy processes in China, Vietnam and India; of national health policies in Costa Rica, Chile, Bolivia and Ecuador; of management contracts in Costa Rica; and of contracting out tuberculosis control programmes.

Since 1998 we coach the Institute of Public Health (IPH) at the PUCE university in Quito, with five more missions in 2007. The PUCE increased the number of full time staff on the university core budget to four, ensuring long-term sustainability of the IPH. Two large cohorts of students attended the MPH course in 2007. The IPH staff started a weekly radio programme on public health.

We co-organised a Symposium "La política de salud en los países latinoamericanos" in Quito, which also commemorated the 50th anniversary of the FLACSO (Facultad Latino Americana de Ciencias Sociales).

We provided technical support to the Ecuador Ministry of Health for the development of pilot districts and the training of medical staff in the improvement of quality of care.

We assisted the health services in Huetar Atlántica region, Costa Rica, for the promotion of new competence transfer techniques as an alternative to the prevailing managed care techniques ("compromisos de gestión"). Results were fed back to the the National Health System.

Finally, we participated in the EU-project "Equal opportunities for health: action for development" which aims at involving health professionals across Europe in health development in low and middle income countries.

Unit of Child Health and Nutrition

The Init of Health and Nutrition concentrates its research on the double nutritional burden of many developing countries: persisting undernutrition on one hand, and an explosive increase of diet-related chronic diseases and overweight on the other.

A study in Burkina Faso aims to improve the detection of malnourished children at an early stage.

In the first axis, we focus on the first year of life, the highest risk period. A first set of studies tests hypotheses on the fetal origin of diseases, by improving maternal nutrition in order to improve maternal health, child growth and child nutritional status. A randomised clinical trial in Burkina Faso is part of the programme of a WHO/SCN/UNICEF working group on maternal micronutrient supplementation. A study of the impact of micronutrients on birth outcome and infant growth, as compared to iron and folic acid supplements, has been completed. A second set of studies tests how nutritional quality and energy density of complementary foods can be improved. Processing techniques and contaminants are studied in a variety of contexts, including Tanzania, Ethiopia and Ecuador. A third set of studies relates to strategies to improve growth and development of children. One study in Burkina Faso attempts to improve early detection of malnourished children and the rehabilitation of their nutritional status through the regular health system. The research on diet-related chronic diseases includes descriptive studies in adolescents on food habits, physical activity patterns and their determinants. In Vietnam, Benin and Bolivia, food intake and physical activity were studied in adolescents from urban as well as rural areas. The results highlighted the role of "out of home food" as a determinant of nutritional status and dietary composition.

Bart Criel of the Unit of Health Policy and Financing observing the proceedings of the Community Health Insurance scheme at Mutec Health Center in Bamako, Mali.

Cluster randomised trial of community participation in *Aedes* control and dengue prevention

Forty percent of the world population lives at risk of contracting dengue, a crippling vector-borne viral disease. Annually, the disease causes a loss of 528,000 Disability-Adjusted Life Years (DALY). Suppressing the vector, the *Aedes* mosquito, is currently the only way to prevent transmission. Without much evidence on effectiveness, community involvement in environmental management has so far been advocated as a corner stone of *Aedes* control.

In Guantanamo city, Cuba, we randomly allocated 32 neighbourhoods of around 2,000 inhabitants to 16 control and 16 intervention clusters. In the former, the routine vertical *Aedes* control programme was run without change. In the intervention clusters we combined, from January 2005 onwards, a community-based environmental management approach. Possible vector control activities were identified, designed, planned and executed by the community itself, with the support of local "Community Working Groups". We intended to formally evaluate the intervention after a two year period, but performed a mid-term analysis in January 2006. Before the trial, *Aedes* infestation levels had been comparable in all areas. The house index, a measure of vector abundance, was around 0.25% and the pupal index, a more direct measure of the risk of transmission, was in the order of 0.4 per 1,000 persons. By January 2006, in the intervention neighbourhoods the house index was 50% lower and the pupal index almost 75% lower as compared to the control clusters. Furthermore, early immature vector stages had become predominant, which indicated that breeding sites were eliminated more timely.

Children impersonating the mosquito *Aedes aegypti*, the vector transmitting dengue fever in Cuba.

Based on the results at that moment, the Provincial Health Authorities decided to halt the experiment and to extend the intervention to the whole city.

In summary, we provided the first hard evidence of the effectiveness of community-based environmental management integrated with routine vertical *Aedes* control, and this in a setting with already relatively low infestation levels. The health authorities appraised the new strategy as innovative, successful and feasible and decided to scale it up.

5th HEPVIC partner meeting in Antwerp

On 19-23 May, ITM hosted the 5th HEPVIC partner meeting. HEPVIC stands for "Health Policy-Making in Vietnam, India and China", a 2005-2008 research project supported by the European Community. Using maternal health as a tracer, HEPVIC aims at a better understanding and the improvement of health policy-making processes in low- and middle-income countries.

The ITM's research partners in HEPVIC are the Nuffield Centre for International Health and Development (UK), the University of Bologna (Italy), the Royal Tropical Institute (Netherlands), the Liverpool School of Tropical Medicine (UK), the Indian Institute of Management-Ahmedabad (India), Fudan University (China) and the Hanoi School of Public Health (Vietnam).

Besides being paired with the Indian partner for research and capacity development, the ITM Public Health's Public Policy and Management Unit is the HEPVIC theme leader for health services.

The Antwerp meeting was at the crossroads of the HEPVIC research process, concluding the first phase of preliminary data collection and analysis, and paving the way for the second phase of main data collection. Building on the results of phase one, the Antwerp consensus fine-tuned the HEPVIC research methodology. As a result, data collection (and analysis) is ongoing in Vietnam, India and China. HEPVIC will disseminate its first country and cross-country results by the end of 2008.

Participants at the 2007 Antwerp HEPVIC meeting.

Projects

For more details, see www.itg.be/projects and fill in the project reference number

Unit of Epidemiology and Disease Control

Reference number 84590

Efficacy, acceptability and cost-effectiveness of long lasting insecticidal nets for the prevention of Kala-azar (KALANET)

ITM promoter: M. Boelaert (coordinator)

ITM collaborators: V. Vanlerberghe, P. Lefèvre, B. Ostyn, M. Coosemans, J.C. Dujardin

External promoters: Banaras Hindu University, Varanasi, India; BP Koirala Institute of Health Sciences, Dharan, Nepal; International Centre for Control of Diarrhoeal Diseases, Dhaka, Bangladesh; London School of Hygiene and Tropical Medicine, UK; Hôpitaux Universitaires de Genève, Switzerland; Rajendra Memorial Research Institute of Medical Sciences, Patna, India

Support: European Commission

Reference number 100164

Towards successful dengue prevention and control (DENCO)

ITM promoter: P. Van der Stuyft (coordinator)

ITM collaborators: V. Vanlerberghe, P. Lefèvre

External promoters: Department of Tropical Hygiene and Public Health, University of Heidelberg, Germany; Department of Molecular Virology, University of Heidelberg, Germany; Liverpool School of Tropical Medicine, UK; WHO/TDR, Switzerland; Queen Sirikit National Institute of Child Health, Bangkok, Thailand; Department of Vector-Borne/Blood-Borne Infections, San Lazaro Hospital, Manila, Philippines; Clinical Research Unit, Hospital for Tropical Diseases and Paediatrics, Ho Chi Minh City, Vietnam; Universidad de los Andes, Research Centre Trujillo, Venezuela; Institute of Tropical Medicine Pedro Kouri (IPK), Havana, Cuba; Department of Health Economics, Greifswald University, Germany

Support: European Commission

Reference number 556602

Epidemiological study of risk factors for Visceral Leishmaniasis, immuno-genetic factors for progression of infection to clinical disease and validation of markers for leishmanial infection in Bihar, India

ITM promoter: M. Boelaert

ITM collaborators: J. Menten, J. Robays

External promoters: SP Singh, S. Shyam Sundar (Banaras Hindu University (India); C. Davies, A. Picado (London School of Hygiene and Tropical Medicine, UK);

Support: Institute of Medical Sciences of the Banaras Hindu University, India

Reference number 84072

A systems approach to optimising quality of diagnosis of smear-negative tuberculosis in high and low prevalence countries of South-America

ITM promoter: P. Van der Stuyft

ITM collaborators: G. Dieltiens, F. Matthys, A. Van Deun, M. Boelaert

External promoters: Nuffield Institute of Health - Leeds, UK; Instituto Pedro Kourí, Cuba; Instituto de Medicina Tropical Cayetano Heredia, Peru; Universidad Mayor de San Simon de Cochabamba, Bolivia

Support: European Commission

Reference number 746001

The burden of tuberculosis in Eastern Sudan: epidemiology and drug-resistance patterns of *Mycobacterium tuberculosis* isolates

ITM-promoter: P. Van der Stuyft

ITM collaborators: G. Dieltiens , M. Boelaert

External promoter: M. Mukhtar (University of Khartoum, Sudan)

Support: European and Developing Countries Clinical Trial Partnership (EDCTP)

Reference number 85561

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

ITM promoter: P. Van der Stuyft

ITM collaborators: F. Matthys

External promoters: E. Gotuzzo (Instituto de Medicina Tropical Cayetano Heredia, Peru); A. Soto (Hospital Cayetano Heredia); Hospital Nacional Hipolito Unanue, Peru)
Support: Damian Foundation

Unit for Health Policy and Financing

Reference number 416601
Follow-up of BTC-funded Primary Health Care projects in DR Congo
ITM promoter: B. Criel
ITM collaborator: G. Laleman
Support: Belgian Technical Cooperation (BTC)

Reference number 626601
Community based health care insurance and quality of care
ITM promoter: B. Criel
ITM-collaborators: D. Boulenger, B. Keugoung
Support: Medicus Mundi International (MMI)

Reference number 100221
Human resources for health in Mozambique
ITM promoter: W. Van Damme
ITM collaborators: L. Buhendwa, D. Van der Roost, L. Apers
External promoters: B. Chilundo (University Eduardo Mondlane, Mozambique), L. Cumba, C. das Dores Mosse, M.-R. dos Santos (Direcção Provincial de Saùde, Tete, Mozambique).
Support: Flemish International Cooperation Agency (FICA)

Reference number 100253
Global Health Initiatives in Africa
ITM promoter: W. Van Damme
ITM collaborators: P. Vermeiren, G. Laleman, N. Timmermans, K. Verbeke
External promoters: J. Cliff (Universidad Eduardo Mondlane, Maputo, Mozambique), E. Buch (University of Pretoria, South Africa), D. Sanders (University of the Western Cape, South Africa), P. Ferrinho (Instituto de Higiene e Medicina Tropical, Portugal), R. Brugha (Royal College of Surgeons, Ireland), E. Fresta (Centro de Estudos Avançados em Educaçao e Formaçao Médica, Portugal)
Support: European Commission

Reference number 100262
Effects of Antiretrovirals for HIV on African health systems, Maternal and Child health (ARVMAC)
ITM promoter: W. Van Damme
ITM collaborators: K. Hermann, W. Massavon, A. Cirera
External promoters: A-M Ekström (Karolinska Institutet, Sweden - coordinator), G. Pariyo (Makerere University, Uganda), D. de Savigny, K. Wyss (Swiss Tropical Institute, Switzerland), H. Masanja (Ifakara Health Research and Development Centre, Tanzania), M. Sarker (Universität Klinikum Heidelberg, Germany), J. Ganamé (Centre de Recherche en Santé de Nouna, Burkina Faso)
Support: European Commission

Unit of Quality and Human Resources

Reference number 100230
Scientific follow-up of BTC projects in Senegal and Niger
ITM promoters: G. Kegels, M. Van Dormael
Support: Belgian Technical Cooperation (BTC)

Reference number 85541
Health Care Reform in Thailand
ITM promoters: G. Kegels, M. Van Dormael
Support: Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)

Reference number 100157
REsponse to ACcountable priority setting for Trust in health systems (REACT)
ITM promoter: V. De Brouwere
ITM collaborators: B. Marchal, G. Kegels
External promoters: J. Byskov (Centre for Health Research and Development, University of Copenhagen, Denmark – coordinator); Centre for International Health, Norway; Umea International School of Public Health, Sweden; Institute of Development Studies, Tanzania; National Institute of Medical Research, Tanzania; Primary Health Care Institute, Tanzania; Centre for Public Health Research, Kenya; Institute of African Studies, Kenya;

Department of Community Medicine, University of Zambia; Institute of Economic and Social Research, Zambia
Support: European Commission

Reference number 85812
The Initiative for Maternal Mortality Programme Assessment (IMMPACT)
ITM promoter: V. De Brouwere
ITM collaborators: B. Marchal, H. Buttiëns, D. Dubourg, J. Menten
External promoters: W. Graham (University of Aberdeen, UK - coordinator); C. Ronsmans (London School of Hygiene and Tropical Medicine, UK); T. Ensor (University of York, UK); C. Stanton (Johns Hopkins University, USA); E.L. Achadi (Centre of Family Welfare, University of Indonesia); M. Armar-Klemesu (Noguchi Memorial Institute of Medical Research, Ghana); N. Meda (Centre Muraz, Burkina Faso)
Support: Bill and Melinda Gates Foundation; USAID; Department for International Development (DFID), UK; European Commission

Reference number 100182
PASSAGE: Projet d'Approche Solidaire en SAnté Génesique
ITM promoter: V. De Brouwere
ITM collaborators: D. Dubourg
External promoters : B. Dujardin (Université Libre de Bruxelles); C. Wissocq (Equilibres & Populations, France); J. Compaoré (ASMADE, Burkina Faso); Direction Régionale du Centre (Ministère de la Santé, Burkina Faso); P. Thonneau (Université Paul Sabatier, Toulouse, France); M.E. Gruénais (Institut d'Etudes Africaines, Marseille, France); F.T. Touré (Association de Soutien au Developpement des Activites de Population, Mali); S. Samaké (Ministère de la Santé, des Personnes Agées et de la Solidarité, Mali)
Support : European Commission, EuropAid

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 (AUDOBEM-AFRO)
ITM promoter: V. De Brouwere
ITM collaborators: V. Zinnen, D. Dubourg, T. Delvaux
External promoters: London School of Hygiene & Tropical Medicine, UK; East European Institute of Reproductive Health Mures, Romania; Centre de Recherche en Reproduction Humaine et en Démographie, Bénin; Centre Muraz, Burkina

Unit of Public Policy and Management

Reference number 100123
Health policy-making in Vietnam, India and China (HEPVIC)
ITM promoter: J.P. Unger
ITM collaborators: W. Soors, W. Zocchi
External promoters: Nuffield Centre for International Health and Development, University of Leeds, UK - coordinator; Dipartimento di Medicina e Sanità Pubblica, University of Bologna, Italy; Royal Tropical Institute, The Netherlands; Centre for Management of Health Services, Ahmedabad Indian Institute of Management, India; the School of Public Health, Shanghai Fudan University, China; the Hanoi School of Public Health, Vietnam
Support: European Commission

Unit of Nutrition and Child Health

Reference number 100125
Nutritional status and lifestyles of Vietnamese adolescents
ITM promoter: P. Kolsteren
ITM collaborators: R. Verstraeten, C. Lachat
External promoters: National Institute of Nutrition, Hanoi, Vietnam; Karolinska Institutet, Sweden
Support: Nutricia Foundation (The Netherlands)

Ongoing PhD-projects

CHAPPUIS François. *Evaluation of field diagnostic tests for visceral leishmaniasis*. Promoters: M. Boelaert (ITM), A. Meheus (University of Antwerp)

DEVADASAN Narayanan. *Enhancing the insurance functions of the Indian health system: the role of local health insurance*. Promoters: B. Criel (ITM), W. Van Damme (ITM), P. Van der Stuyft (University of Ghent), K.R. Thankappan (Sree Chitra Tirunal Institute of Medical Sciences and Technology, Kerala, India)

BASAZA Robert. *Community-based health insurance*. Promoters: B. Criel (ITM), P. Van der Stuyft (University of Ghent), G.W. Pariyo (Makerere University, Uganda)

MARCHAL Bruno. *Well-performing healthcare organisations: What's the role of (HR) management?* Promoter: G. Kegels (ITM), P Van der Stuyft (University of Ghent)

OUEDRAOGO NIKIEMA Laeticia. *Evaluation d'une approche à base communautaire pour la prise en charge de la malnutrition du jeune enfant dans un district rural au Burkina Faso*. Promoters: P. Kolsteren (ITM, University of Ghent), B. Sondo (Institut de Recherche en Sciences de la Santé, Ouagadougou, Burkina Faso)

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), O. Lanza (Universidad Mayor de San Andrés, La Paz, Bolivia), C. Darras (PAHO, Bolivia)

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 Science, Phnom Penh, Cambodia)

MEESSEN Bruno. *Economics of public health care organisations in low-income countries*. Promoters: W. Van Damme (ITM), M. Nyssens (Catholic University of Louvain)

MISRA Samarendra Nath. *AIDS care in the private sector; India*. Promoters: W. Van Damme (ITM), Preeti Mehta (Seth GS Medical College and KEM Hospital Mumbai, India)

VERMEIREN Peter. *The impact of Global Health Initiatives and Donor Harmonisation on health systems on national and district level*. Promoter: W. Van Damme (ITM)

MAHENDRADHATA Yodi. *Integration of intervention strategies to control the dual tuberculosis and HIV/AIDS epidemics in Indonesia*. Promoters: M. Boelaert (ITM), P. Van der Stuyft (ITM, University of Ghent), L. Trisnantoro (Center for Health Service Management, Gadjah Mada University, Indonesia)

ROBAYS Jo. *Towards a more efficient and effective control of West African Trypanosomiasis*. Promoters: P. Van der Stuyft (ITM), M. Boelaert (ITM), P. Van der Stuyft (University of Ghent)

VANLERBERGHE Veerle. *Dengue control*. Promoter: P. Van der Stuyft (ITM and University of Ghent)

HENG Thay Ly. *Relationship between leadership and human resource management and performance in public health care system: a case study of rural public hospitals in Cambodia*. Promoters: M. Van Dormael (ITM), W. Van Damme (ITM), S. Oum (University of Health Sciences, Phnom Penh, Cambodia)

Library and bibliography

The ITM library maintainted its focus on easy access to printed and digital content, complemented by rapid electronic document delivery and other user services.

Some of the traditional print collections were definitively replaced by "online only" access. On the other hand, we joined an interuniversity project to ensure the availability of least one hard copy of each relevant scientific journal.

Considerable time and effort were invested in the preparation of an open access repository of ITM's scientific publications, to be launched publicly in 2008.

Another challenge was the further reorganisation of the ITM's historical archives and image collections.

The demand and the offer of the library are summarised in a few statistics in the table.

2007 was the last year in which the library was also responsible for the ITM's website. During 2007, the ITM website was visited 317,085 times, with a total of 964,897 page views, an increase of more than 35% compared to 2006. The travel health pages were the most popular with over 270,000 page views. 44% of the pages consulted were in English, 31% in Dutch, 17% in French and 8% in Spanish.

The ITM started up a major renovation of its website in 2007. At this occasion, chief librarian Dirk Schoonbaert, who had managed the website since 2000, passed on these duties to the new full-time webmaster Nico Van Aerde.

Library statistics 2007

Books

Acquisitions	413
Total number of books	20505
Total number of CD-ROMs	254
Total number of videos	382
Total number of ITM dissertations	2613
Total number of digital master theses	1792

Journals

Print subscriptions	222
Volumes bound in 2007	363
Total number of volumes	ca. 35000
Online subscriptions	ca. 1300
Open access journals	ca. 3000

Databases

Electronic Reference Library (ERL)	
Number of databases	14
ERL logins	6295
Database logins	28306
Database subscriptions*	2
Major free online databases	5

Document Delivery

Incoming requests	1642
Outgoing requests	1641
Success rate	98.1%

User training

Teaching hours	41

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

Bibliometrics 2006 & 2007

In 2007, the ITM produced more scientific papers than any other year in its history. Particularly the publications in journals with impact factors, i.e. journals indexed in Thomson Scientific's ISI Web of Knowledge, significantly outnumber those of previous years. The upward trend of the 2001-2004 period experienced a slight dip in 2005, but recovered strongly in2006 and 2007 make up for this significantly (see table).

The most popular journal over these last two years was Tropical Medicine and International Health, with 31 contributions, followed by International Journal of Tuberculosis and Lung Disease, Lancet, Transactions of the Royal Society of Tropical Medicine and Hygiene, Veterinary Parasitology, Emerging Infectious Diseases and The American Journal of Tropical Medicine and Hygiene, each with at least a dozen items.

Apart from "JIF journal" contributions, ITM staff also published in journals without impact factors, books, book chapters, dissertations and miscellaneous grey literature. These represent a relatively small group (28%) of publications.

Els Mannaerts and Noor Goemaere from the library with head librarian Dirk Schoonbaert in the background.

Online publications increased from 5 papers in 2005 to 11 in 2006 and 27 in 2007, with The Malaria Journal (8 articles) as the most popular destination. A more detailed analisys of the ITM's output is currently in progress. The next pages give the complete list of all ITM publications in 2007.

Table: Summary of research output of the ITM, 2001-2007

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

* excluding editorials, letters and published abstracts.

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

ITM Publications in 2007

Department of Microbiology

Publications in international peer-reviewed journals

Ablordey A, Fonteyne PA, Stragier P, Vandamme P, Portaels F. Identification of a new variable number tandem repeat locus in *Mycobacterium ulcerans* for potential strains discrimination among African isolates. Clin Microbiol Infect 2007; 13(7): 734-736

Adu-Sarkodie Y, Opoku BK, Crucitti T, Weiss HA, Mabey D. Lack of evidence for the involvement of rectal and oral trichomonads in the aetiology of vaginal trichomoniasis in Ghana. Sex Transm Infect 2007; 83(2): 130-132.

Affolabi D, Adjagba OABG, Tanimomo-Kledjo B, Gninafon M, Anagonou SY, Portaels F. Anti-tuberculosis drug resistance among new and previously treated pulmonary tuberculosis patients in Cotonou, Benin. Int J Tuberc Lung Dis 2007; 11(11): 1221-1224.

Affolabi D, Odoun M, Martin A, Palomino JC, Anagonou S, Portaels F. Evaluation of direct detection of *Mycobacterium tuberculosis* rifampin resistance by a nitrate reductase assay applied to sputum samples in Cotonou, Benin. J Clin Microbiol 2007; 45(7): 2123-2125.

Ariën KK, Vanham G, Arts EJ. Is HIV-1 evolving to a less virulent form in humans? [opinion]. Nature Rev Microbiol 2007; 5(2): 141-151.

Balzarini J, Van Herrewege Y, Vermeire K, Vanham G, Schols D. Carbohydrate-binding agents efficiently prevent dendritic cell-specific intercellular adhesion molecule-3-grabbing nonintegrin (DC-SIGN)-directed HIV-1 transmission to T lymphocytes. Mol Pharmacol 2007; 71(1): 3-11.

Bloom DE, Buvé A. Business and AIDS in South Africa [editorial]. AIDS 2007; 21(Suppl.1): S1.

Bloom DE, Buvé A. Business and AIDS in South Africa. AIDS 2007; 21(Suppl.1): 99 pp.

Buvé A. Should all pregnant women be screened for syphilis? Women's Health 2007; 3(4): 547-555.

Buvé A, Delvaux T, Criel B. Delivery of male circumcision services: "Festina lente". Reprod Health Matt 2007; 15(29): 57-61.

Cabada MM, Maldonado F, Bauer I, Verdonck K, Seas C, Gotuzzo E. Sexual behavior, knowledge of STI prevention, and prevalence of serum markers for STI among tour guides in Cuzco, Peru. J Travel Med 2007; 14(3): 151-157.

Chauca JA, Palomino JC, Guerra H. Evaluation of the accuracy of the microplate Alamar Blue assay for rapid detection of MDR-TB in Peru. Int J Tuberc Lung Dis 2007; 11(7): 820-822.

Chauca JA, Palomino JC, Guerra H. Evaluation of rifampicin and isoniazid susceptibility testing of *Mycobacterium tuberculosis* by a mycobacteriophage D29-based assay. J Med Microbiol 2007; 56(3): 360-364.

Chukwuekezie O, Ampadu E, Sopoh G, Dossou A, Tiendregeogo A, Sadiq L, Portaels F, Asiedu K. Buruli ulcer, Nigeria [letter]. Emerg Infect Dis 2007; 13(5): 783-784.

Crucitti T, Jespers V, Van Damme L, Van Dyck E, Buvé A. Vaginal microbicides can interfere with nucleic acid amplification tests used for the diagnosis of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infection. Diagn Microbiol Infect Dis 2007; 57(1): 97-99.

Delvaux T, Aké-Tano O, Gohou-Kouassi V, Bosso P, Simon C, Ronsmans C. Quality of normal delivery care in Côte d'ivoire. Afr J Reprod Health 2007; 11(1): 22-32.

Delvaux T, Nöstlinger C. Reproductive choice for women and men living with HIV: contraception, abortion and fertility. Reprod Health Matt 2007; 15(29(Suppl.)): 46-66.

Dhillon AK, Donners H, Pantophlet R, Johnson WE, Decker JM, Shaw GM, Lee FH, Richman DD, Doms RW, Vanham G, Burton DR. Dissecting the neutralizing antibody specificities of broadly neutralizing sera from human immunodeficiency virus type 1-infected donors. J Virol 2007; 81(12): 6548-6562.

Eddyani M, Portaels F. Survival of *Mycobacterium ulcerans* at 37oC. Clin Microbiol Infect 2007; 13(10): 1033-1035.

Freeman EE, Orroth KK, White RG, Glynn JR, Bakker R, Boily MC, Habbema D, Buvé A, Hayes RJ. Proportion of new HIV infections attributable to herpes simplex 2 increases over time: simulations of the changing role of sexually transmitted infections in sub-Saharan African HIV epidemics. Sex Transm Infect 2007; 83(Suppl.1): i17-i24.

Gali Y, Berkhout B, Vanham G, Bakker M, Back NKT, Ariën KK. Survey of the temporal changes in HIV-1 replicative fitness in the Amsterdam cohort. Virology 2007; 364(1): 140-146.

Gilpin C, Kim SJ, Lumb R, Rieder HL, Van Deun A. Critical appraisal of current recommendations and practices for tuberculosis sputum smear microscopy [workshop report]. Int J Tuberc Lung Dis 2007; 11(9): 946-952.

Gotuzzo E, Moody J, Verdonck K, Cabada MM, González E, Van Dooren S, Vandamme AM, Terashima A, Vermund SH. Frequent HTLV-1 infection in the offspring of Peruvian women with HTLV-1-associated myelopathy/tropical spastic paraparesis or strongyloidiasis. Rev Panam Salud Pública 2007; 22(4): 223-230.

Huyst V, Lynen L, Bottieau E, Zolfo M, Kestens L, Colebunders R. Immune reconstitution inflammatory syndrome in an HIV/TB co-infected patient four years after starting antiretroviral therapy. Acta Clin Belg 2007; 62(2): 126-129.

Jallow S, Kaye S, Schutten M, Brandin E, Albert J, McConkey SJ, Corrah T, Whittle H, Vanham G, Rowland-Jones S, Janssens W. Development and evaluation of an oligonucleotide ligation assay for detection of drug resistance-associated mutations in the human immunodeficiency virus type 2 *pol* gene. J Clin Microbiol 2007; 45(5): 1565-1571.

Jespers V, Buvé A, Van Damme L. Safety trial of the vaginal microbicide cellulose sulfate gel in HIV-positive men. Sex Transm Dis 2007; 34(7): 519-522.

Jespers V, Laga M, Van Herrewege Y, Vanham G. Microbicides: a long and bumpy road to success? AIDS Rev 2007; 9(1): 61-62.

Jespers VA, Van Roey JM, Beets GI, Buvé AM. Dose-ranging phase 1 study of TMC120, a promising vaginal microbicide, in HIV-negative and HIV-positive female volunteers. J Acquir Immun Defic Syndr 2007; 44(2): 154-158.

Kabedi MJ, Kashongwe M, Kayembe JM, Mumba Ngoyi D, Mampasi P, Mbaya P, Fissette K, Verhaegen J, Portaels F, Muyembe-Tamfum JJ. Résistance primaire de *Mycobacterium tuberculosis* aux anti-tuberculeux à Kinshasa, République Démocratique du Congo. Bull Soc Pathol Exot 2007; 100(4): 275-276.

Käser M, Rondini S, Naegeli M, Stinear T, Portaels F, Certa U, Pluschke G. Evolution of two distinct phylogenetic lineages of the emerging human pathogen *Mycobacterium ulcerans* [electronic only]. BMC Evol Biol 2007; 7(177): 14 pp.

Kibadi K, Aujoulat I, Meyers WM, Mokassa L, Muyembe T, Portaels F. Etude des appellations et des représentations attachées à l'infection à *Mycobacterium ulcerans* dans différents pays endémiques d'Afrique. Méd Trop 2007; 67(3): 241-248.

Martin A, Portaels F, Palomino JC. Colorimetric redox-indicator methods for the rapid detection of multidrug resistance in *Mycobacterium tuberculosis*: a systematic review and meta-analysis. J Antimicrob Chemother 2007; 59(2): 175-183.

Nackers F, Johnson RC, Glynn JR, Zinsou C, Tonglet R, Portaels F. Environmental and health-related risk factors for *Mycobacterium ulcerans* disease (Buruli ulcer) in Benin. Am J Trop Med Hyg 2007; 77(5): 834-836.

Nackers F, Tonglet R, Slachmuylder V, Johnson RC, Robert A, Zinsou C, Glynn JR, Portaels F, Gala JL. Association between haemoglobin variants S and C and *Mycobacterium ulcerans* disease (Buruli ulcer): a case-control study in Benin. Trop Med Int Health 2007; 12(4): 511-518.

Orroth KK, Freeman EE, Bakker R, Buvé A, Glynn JR, Boily MC, White RG, Habbema JDF, Hayes RJ. Understanding the differences between contrasting HIV epidemics in east and west Africa: results from a simulation model of the Four Cities Study. Sex Transm Infect 2007; 83(Suppl.1): i5-i16.

Palomino JC, Martin A, Portaels F. MODS assay for the diagnosis of TB [letter]. N Engl J Med 2007; 356(2): 188.

Palomino JC, Martin A, Portaels F. Rapid drug resistance detection in *Mycobacterium tuberculosis*: a review of colourimetric methods. Clin Microbiol Infect 2007; 13(8): 754-762.

Phanzu DM, Ablordey A, Imposo DS, Lefevre L, Mahema RL, Suykerbuyk P, Meyers WM, Portaels F. Edematous *Mycobacterium ulcerans* infection (Buruli ulcer). Am J Trop Med Hyg 2007; 77(6): 1099-1102.

Quezada CM, Kamanzi E, Mukamutara J, de Rijk P, Rigouts L, Portaels F, Ben Amor Y. Implementation validation performed in Rwanda to determine whether the INNO-LiPA rif.TB line probe assay can be used for detection of multidrug-resistant *Mycobacterium tuberculosis* in low-resource countries. J Clin Microbiol 2007; 45(9): 3111-3114.

Rahim Z, Zaman K, van der Zanden AGM, Möllers MJ, van Soolingen D, Raqib R, Zaman K, Begum V, Rigouts L, Portaels F, Rastogi N, Sola C. Assessment of population structure and major circulating phylogeographical clades of *Mycobacterium tuberculosis* complex in Bangladesh suggests a high prevalence of a specific subclade of ancient *M. tuberculosis* genotypes. J Clin Microbiol 2007; 45(11): 3791-3794.

Rigouts L, Nolasco O, de Rijk P, Nduwamahoro E, Van Deun A, Ramsay A, Arevalo J, Portaels F. Newly developed primers for comprehensive amplification of the *rpoB* gene and detection of rifampin resistance in *Mycobacterium tuberculosis*. J Clin Microbiol 2007; 45(1): 252-254.

Rivoire N, Ravololonandriana P, Rasolonavalona T, Martin A, Portaels F, Ramarokoto H, Razanamparany VR. Evaluation of the resazurin assay for the detection of multidrug-resistant *Mycobacterium tuberculosis* in Madagascar. Int J Tuberc Lung Dis 2007; 11(6): 683-688.

Rondini S, Käser M, Stinear T, Tessier M, Mangold C, Dernick G, Naegeli M, Portaels F, Certa U, Pluschke G. Ongoing genome reduction in *Mycobacterium ulcerans*. Emerg Infect Dis 2007; 13(7): 1008-1015.

Shah NS, Wright A, Bai GH, Barrera L, Boulahbal F, Martín-Casabona N, Drobniewski F, Gilpin C, Havelková M, Lepe R, Lumb R, Metchock B, Portaels F, Rodrigues MF, Rüsch-Gerdes S, Van Deun A, Vincent V, Laserson K, Wells C, Cegielski JP. Worldwide emergence of extensively drug-resistant tuberculosis. Emerg Infect Dis 2007; 13(3): 380-387.

Shamputa IC, Van Deun A, Salim MAH, Hossain MA, Fissette K, de Rijk P, Rigouts L, Portaels F. Endogenous reactivation and true treatment failure as causes of recurrent tuberculosis in a high incidence setting with a low HIV infection. Trop Med Int Health 2007; 12(6): 700-708.

Siddiqi K, Newell JN, Van der Stuyft P, Gotuzzo E, Torrico F, Van Deun A, Walley J. Improving sputum microscopy services for the diagnosis of tuberculosis in Peru and Bolivia. Int J Tuberc Lung Dis 2007; 11(6): 665-670.

Silva MT, Portaels F, Pedrosa J. Aquatic insects and *Mycobacterium ulcerans*: an association relevant to Buruli ulcer control? [electronic only]. PLoS Med 2007; 4(2): 229-231 [e63].

Sopoh GE, Johnson RC, Chauty A, Dossou AD, Aguiar J, Salmon O, Portaels F, Asiedu K. Buruli ulcer surveillance, Benin, 2003-2005. Emerg Infect Dis 2007; 13(9): 1374-1376.

Steyaert S, Heyndrickx L, Verhoye L, Vermoesen T, Donners H, Fransen K, Van Wanzeele F, Vandergucht B, Vanham G, Leroux-Roels G, Vanlandschoot P. Inhibition of replication of primary HIV-1 isolates in huPBL-NOD/Scid mice by antibodies from HIV-1 infected patients. Antiviral Research 2007; 75(2): 129-138.

Steyaert S, Verhoye L, Beirnaert E, Donners H, Fransen K, Heyndrickx L, Vanham G, Leroux-Roels G, Vanlandschoot P. The intraspleen huPBL NOD/SCID model to study the human HIV-specific antibody response selected in the course of natural infection. J Immunol Methods 2007; 320(1-2): 49-57.

Suykerbuyk P, Vleminckx K, Pasmans F, Stragier P, Ablordey A, Tran HT, Hermans K, Fleetwood M, Meyers WM, Portaels F. *Mycobacterium liflandii* infection in European colony of *Silurana tropicalis*. Emerg Infect Dis 2007; 13(5): 743-746.

Terrazas-Aranda K, Van Herrewege Y, Lewi PJ, Van Roey J, Vanham G. *In vitro* pre- and post-exposure prophylaxis using HIV inhibitors as microbicides against cell-free or cell-associated HIV-1 infection. Antivir Chem Chemother 2007; 18(3): 141-151.

Torrado E, Fraga AG, Castro AG, Stragier P, Meyers WM, Portaels F, Silva MT, Pedrosa J. Evidence for intramacrophage growth phase of *Mycobacterium ulcerans*. Infect Immun 2007; 75(2): 977-987.

Umubyeyi AN, Rigouts L, Shamputa IC, Fissette K, Elkrim Y, de Rijk PWB, Struelens MJ, Portaels F. Limited fluoroquinolone resistance among *Mycobacterium tuberculosis* isolates from Rwanda: results of a national survey. J Antimicrob Chemother 2007; 59(5): 1031-1033.

Umubyeyi AN, Rigouts L, Zissis G, Kamanzi E, Pauwels P, Gasana M, Vandebriel G, Struelens M, Portaels F. Résistance primaire et acquise aux antituberculeux des souches de *Mycobacterium tuberculosis* isolées au Rwanda. Méd Trop 2007; 67(2): 149-153.

Umubyeyi AN, Shamputa IC, Rigouts L, Dediste A, Karita E, Struelens MJ, Portaels F. Molecular investigation of recurrent tuberculosis in patients from Rwanda. Int J Tuberc Lung Dis 2007; 11(8): 860-867.

Umubyeyi A, Shamputa IC, Rigouts L, Dediste A, Struelens M, Portaels F. Evidence of 'amplifier effect' in pulmonary multidrug-resistant tuberculosis: report of three cases. Int J Infect Dis 2007; 11(6): 508-512.

Umubyeyi AN, Vandebriel G, Gasana M, Basinga P, Zawadi JP, Gatabazi J, Pauwels P, Nzabintwali F, Nyiramasarabwe L, Fissette K, Rigouts L, Struelens MJ, Portaels F. Results of a national survey on drug resistance among pulmonary tuberculosis patients in Rwanda. Int J Tuberc Lung Dis 2007; 11(2): 189-194.

Van Deun A, Zwahlen M, Bola V, Lebeke R, Bahati E, Lubamba P, Rieder HL. Validation of candidate smear microscope quality indicators, extracted from tuberculosis laboratory registers. Int J Tuberc Lung Dis 2007; 11(3): 300-305.

Van Herrewege Y, Michiels J, Waeytens A, De Boeck G, Salden E, Heyndrickx L, van den Mooter G, de Béthune MP, Andries K, Lewi P, Praet M, Vanham G. A dual chamber model of female cervical mucosa for the study of HIV transmission and for the evaluation of candidate HIV microbicides. Antiviral Research 2007; 74(2): 111-124.

Vandepitte JM, Malele F, Kivuvu DM, Edidi S, Muwonga J, Lepira F, Abdellati S, Kabamba J, Van Overloop C, Buvé A. HIV and other sexually transmitted infections among female sex workers in Kinshasa, Democratic Republic of Congo, in 2002. Sex Transm Dis 2007; 34(4): 203-208.

Vansnick E, de Rijk P, Vercammen F, Rigouts L, Portaels F, Geysen D. A DNA sequence capture extraction method for detection of *Mycobacterium avium* subspecies *paratuberculosis* in feces and tissue samples. Vet Microbiol 2007; 122(1-2): 166-171.

Verdonck K, González E, Henostroza G, Nabeta P, Llanos F, Cornejo H, Vanham G, Seas C, Gotuzzo E. HTLV-1 infection is frequent among out-patients with pulmonary tuberculosis in northern Lima, Peru. Int J Tuberc Lung Dis 2007; 11(10): 1066-1072.

Verdonck K, González E, Van Dooren S, Vandamme AM, Vanham G, Gotuzzo E. Human T-lymphotropic virus 1: recent knowledge about an ancient infection. Lancet Infect Dis 2007; 7(4): 266-281.

Vereecken K, Naus CWA, Polman K, Scott JT, Diop M, Gryseels B, Kestens L. Associations between specific antibody responses and resistance to reinfection in a Senegalese population recently exposed to *Schistosoma mansoni*. Trop Med Int Health 2007; 12(3): 431-444.

Walsh DS, de la Cruz EC, Abalos RM, Tan EV, Walsh GP, Portaels F, Meyers WM. Clinical and histologic features of skin lesions in a cynomolgus monkey experimentally infected with *Mycobacterium ulcerans* (Buruli ulcer) by intradermal inoculation. Am J Trop Med Hyg 2007; 76(1): 132-134.

Yip MJ, Porter JL, Fyfe JAM, Lavender CJ, Portaels F, Rhodes M, Kator H, Colorni A, Jenkin GA, Stinear T. Evolution of *Mycobacterium ulcerans* and other mycolactone-producing mycobacteria from a common *Mycobacterium marinum* progenitor. J Bacteriol 2007; 189(5): 2021-2029.

Other publications

Ablordey A. Development of molecular methods for the study of genetic diversity in *Mycobacterium ulcerans* [PhD dissertation]. Ghent: University of Ghent, Laboratory of Microbiology; Antwerp: Institute of Tropical Medicine, Department of Microbiology, Mycobacteriology Unit, 2007: 130 pp.

Crucitti T, Vandenbruaene M. STIs: diagnostic and clinical implications of recent epidemiology. In: Diagnose en surveillance van infectieuse aandoeningen; 23ste seminarie van het Wetenschappelijk Instituut Volksgezondheid, 22/11/2007. [s.l.]: [s.n.], 2007: 15-21.

Kibadi K, Nkuku L, Singa J, Mputu-Yamba JB, Mokassa L, Muyembe TJJ, Portaels F. Phénomène 'mbasu' ou ulcère de Buruli à Kinshasa: mythe ou réalité? Résultats préliminaires. Congo Méd 2007; 4(11): 1000-1005.

Palomino JC, Leao SC, Ritacco V, editors. Tuberculosis 2007; from basic science to patient care [electronic only]. [s.l.]: [s.n.], 2007: 687 pp.

Savage EJ, Ison CA, van de Laar MJW, ESSTI Network. Results of a Europe-wide investigation to assess the presence of a new variant of *Chlamydia trachomatis* [electronic only]. Eurosurveillance Monthly 2007; 12(10).

Umubyeyi AN. Apport de la microbiologie dans la prise en charge thérapeutique de la tuberculose au Rwanda [dissertation]. Bruxelles: Université Libre de Bruxelles (ULB), Faculté de Médecine, 2007: 185 pp.

Umubyeyi A, Struelens M, Portaels F. Implementation in low-income countries of colorimetric methods as novel rapid antimicrobial susceptibility tests for *Mycobacterium tuberculosis*. Rwanda Med J 2007; 66(2): 12-21.

Department of Parasitology

Publications in international peer-reviewed journals

Arevalo J, Ramirez L, Adaui V, Zimic M, Tulliano G, Miranda-Verástegui C, Lazo M, Loayza-Muro R, De Doncker S, Maurer A, Chappuis F, Dujardin JC, Llanos-Cuentas A. Influence of *Leishmania (Viannia)* species on the response to antimonial treatment in patients with American tegumentary leishmaniasis. J Infect Dis 2007; 195(12): 1846-1851.

Bisser S, N'Siesi FX, Lejon V, Preux PM, Van Nieuwenhove S, Miaka Mia Bilenge C, Büscher P. Equivalence trial of melarsoprol and nifurtimox monotherapy and combination therapy for the treatment of second-stage *Trypanosoma brucei gambiense* sleeping sickness. J Infect Dis 2007; 195(3): 322-329.

Claes F, Deborggraeve S, Verloo D, Mertens P, Crowther JR, Leclipteux T, Büscher P. Validation of a PCR-oligochromatography test for detection of *Trypanozoon* parasites in a multicenter collaborative trial. J Clin Microbiol 2007; 45(11): 3785-3787.

Coulibaly SO, Gies S, D'Alessandro U. Malaria burden among pregnant women living in the rural district of Boromo, Burkina Faso. Am J Trop Med Hyg 2007; 77(Suppl.6): 56-60.

Diggle PJ, Thomson MC, Christensen OF, Rowlingson B, Obsomer V, Gardon J, Wanji S, Takougang I, Enyong P, Kamgno J, Remme JH, Boussinesq M, Molyneux DH. Spatial modelling and the prevention of *Loa loa* risk: decision making under uncertainty. Ann Trop Med Parasitol 2007; 101(6): 499-509.

Dujardin JC, De Doncker S, Jacquet D, Bañuls AL, Balavoine M, Van Bockstaele D, Tibayrenc M, Arevalo J, Le Ray D. Clonal propagation and the fast generation of karyotype diversity; an *in vitro Leishmania* model. Parasitology 2007; 134(1): 33-39.

Elrayah IE, Rhaman MA, Karamalla LT, Khalil KM, Büscher P. Evaluation of serodiagnostic tests for *T. b. gambiense* human African trypanosomiasis in southern Sudan. E Mediterr Health J 2007; 13(5): 1098-1107.

Erhart A, Thang ND, Xa NX, Thieu NQ, Hung LX, Hung NQ, Nam NV, Toi LV, Tung NM, Bien TH, Tuy TQ, Cong LD, Thuan LK, Coosemans M, D'Alessandro U. Accuracy of the health information system on malaria surveillance in Vietnam. Trans R Soc Trop Med Hyg 2007; 101(3): 216-225.

Fanello CI, Karema C, van Doren W, Van Overmeir C, Ngamije D, D'Alessandro U. A randomised trial to assess the safety and efficacy of artemether-lumefantrine (Coartem) for the treatment of uncomplicated *Plasmodium falciparum* malaria in Rwanda. Trans R Soc Trop Med Hyg 2007; 101(4): 344-350.

Gamboa D, Van Eys G, Victoir K, Torres K, Adaui V, Arevalo J, Dujardin JC. Putative markers of infective life stages in *Leishmania (Viannia) braziliensis*. Parasitology 2007; 134(12): 1689-1698.

Garcia AL, Parrado R, De Doncker S, Bermudez H, Dujardin JC. American tegumentary leishmaniasis: direct species identification of *Leishmania* in non-invasive clinical samples. Trans R Soc Trop Med Hyg 2007; 101(4): 368-371.

Garcia AL, Tellez T, Parrado R, Rojas E, Bermudez H, Dujardin JC. Epidemiological monitoring of American tegumentary leishmaniasis: molecular characterization of a peridomestic transmission cycle in the Amazonian lowlands of Bolivia. Trans R Soc Trop Med Hyg 2007; 101(12): 1208-1213.

Gillingwater K, Büscher P, Brun R. Establishment of a panel of reference *Trypanosoma evansi* and *Trypanosoma equiperdum* strains for drug screening. Vet Parasitol 2007; 148(2): 114-121.

Grande T, Bernasconi A, Erhart A, Gamboa D, Casapia M, Delgado C, Torres K, Fanello C, Llanos-Cuentas A, D'Alessandro U. A randomised controlled trial to assess the efficacy of dihydroartemisinin-piperaquine for the treatment of uncomplicated falciparum malaria in Peru [electronic only]. PLoS One 2007; 2(10): e1101.

Hougard JM, Martin T, Guillet PF, Coosemans M, Itoh T, Akogbéto M, Chandre F. Preliminary field testing of a long-lasting insecticide-treated hammock against *Anopheles gambiae* and *Mansonia* spp. (Diptera: Culicidae) in West Africa. J Med Entomol 2007; 44(4): 651-655.

Laurent T, Rijal S, Yardley V, Croft S, De Doncker S, Decuypere S, Khanal B, Singh R, Schönian G, Kuhls K, Chappuis F, Dujardin JC. Epidemiological dynamics of antimonial resistance in *Leishmania donovani*; genotyping reveals a polyclonal population structure among naturally-resistant clinical isolates from Nepal. Infect Genet Evol 2007; 7(2): 206-212.

Lejon V, Robays J, N'Siesi FX, Mumba D, Hoogstoel A, Bisser S, Reiber H, Boelaert M, Büscher P. Treatment failure related to intrathecal immunoglobulin M (IgM) synthesis, cerebrospinal fluid IgM, and interleukin-10 in patients with hemolymphatic-stage sleeping sickness. Clin Vaccine Immunol 2007; 14(6): 732-737.

Li FJ, Gasser RB, Lai DH, Claes F, Zhu XQ, Lun ZR. PCR approach for the detection of *Trypanosoma brucei* and *T. equiperdum* and their differentiation from *T. evansi* based on maxicircle kinetoplast DNA. Mol Cell Probes 2007; 21(1): 1-7.

Lukes J, Mauricio IL, Schoenian G, Dujardin JC, Soteriadou K, Dedet JP, Kuhls K, Quispe Tintaya KW, Jirku M, Chocholova E, Haralambous C, Pratlong F, Obornik M, Horak A, Ayala FJ, Miles MA. Evolutionary and geographical history of the *Leishmania donovani* complex with a revision of current taxonomy. Proc Natl Acad Sci USA 2007; 104(22): 9375-9380.

Lutumba P, Meheus F, Robays J, Miaka C, Kande V, Büscher P, Dujardin B, Boelaert M. Cost-effectiveness of algorithms for confirmation test of human African trypanosomiasis. Emerg Infect Dis 2007; 13(10): 1484-1490.

Menéndez C, D'Alessandro U, ter Kuile FO. Reducing the burden of malaria in pregnancy by preventive strategies. Lancet Infect Dis 2007; 7(2): 126-135.

Mtambo J, Madder M, Van Bortel W, Berkvens D, Backeljau T. *Rhipicephalus appendiculatus* and *R. zambeziensis* (Acari: Ixodidae) from Zambia: a molecular reassessment of their species status and identification. Exp Appl Acarol 2007; 41(1-2): 115-128.

Mtambo J, Madder M, Van Bortel W, Chaka G, Berkvens D, Backeljau T. Further evidence for geographic differentiation in *Rhipicephalus appendiculatus* (Acari: Ixodidae) from eastern and southern provinces of Zambia. Exp Appl Acarol 2007; 41(1-2): 129-138.

Mtambo J, Madder M, Van Bortel W, Geysen D, Berkvens D, Backeljau T. Genetic variation in *Rhipicephalus appendiculatus* (Acari: Ixodidae) from Zambia: correlating genetic and ecological variation with *Rhipicephalus appendiculatus* from eastern and southern Africa. J Vector Ecol 2007; 32(2): 168-175.

Nahum A, Erhart A, Gazard D, Agbowai C, Van Overmeir C, van Loen H, Menten J, Okogbeto M, Coosemans M, Massougbodji A, D'Alessandro U. Adding artesunate to sulphadoxine-pyrimethamine greatly improves the treatment efficacy in children with uncomplicated falciparum malaria on the coast of Benin, West Africa [electronic only]. Malaria J 2007; 6(170): 8 pp.

Obsomer V, Defourny P, Coosemans M. The *Anopheles dirus* complex: spatial distribution and environmental drivers [electronic only]. Malaria J 2007; 6(26): 16 pp.

Price RN, Dorsey G, Ashley EA, Barnes KI, Baird K, D'Alessandro U, Guerin PJ, Laufer MK, Naidoo I, Nosten F, Olliaro P, Plowe CV, Ringwald P, Sibley CH, Stepniewska K, White NJ. World Antimalarial Resistance Network I: clinical efficacy of antimalarial drugs [electronic only]. Malaria J 2007; 6(119): 9 pp.

Protopopoff N, Van Bortel W, Marcotty T, Van Herp M, Maes P, Baza D, D'Alessandro U, Coosemans M. Spatial targeted vector control in the highlands of Burundi and its impact on malaria transmission [electronic only]. Malaria J 2007; 6(158): 10 pp.

Protopopoff N, Van Herp M, Maes P, Reid T, Baza D, D'Alessandro U, Van Bortel W, Coosemans M. Vector control in a malaria epidemic occurring within a complex emergency situation in Burundi: a case study [electronic only]. Malaria J 2007; 6(93): 9 pp.

Raguenaud ME, Jansson A, Vanlerberghe V, Van der Auwera G, Deborggraeve S, Dujardin JC, Orfanos G, Reid T, Boelaert M. Epidemiology and clinical features of patients with visceral leishmaniasis treated by an MSF clinic in Bakool region, Somalia, 2004-2006 [electronic only]. PLoS Negl Trop Dis 2007; 1(1): e85.

Reithinger R, Dujardin JC. Molecular diagnosis of leishmaniasis: current status and future applications. J Clin Microbiol 2007; 45(1): 21-25.

Reithinger R, Dujardin JC, Louzir H, Pirmez C, Alexander B, Brooker S. Cutaneous leishmaniasis. Lancet Infect Dis 2007; 7(9): 581-596.

Ribera JM, Hausmann-Muela S, D'Alessandro U, Peeters Grietens K. Malaria in pregnancy: what can the social sciences contribute? [electronic only]. PLoS Med 2007; 4(4): 631-635 [e92].

Rijal S, Yardley V, Chappuis F, Decuypere S, Khanal B, Singh R, Boelaert M, De Doncker S, Croft S, Dujardin JC. Antimonial treatment of visceral leishmaniasis: are current in vitro susceptibility assays adequate for prognosis of in vivo therapy outcome? Microbes Infect 2007; 9(4): 529-535.

Rozas M, De Doncker S, Adaui V, Coronado X, Barnabé C, Tibayrenc M, Solari A, Dujardin JC. Multilocus polymerase chain reaction restriction fragment-length polymorphism genotyping of *Trypanosoma cruzi* (Chagas disease): taxonomic and clinical applications. J Infect Dis 2007; 195(9): 1381-1388.

Savage EJ, Msyamboza K, Gies S, D'Alessandro U, Brabin BJ. Maternal anaemia as an indicator for monitoring malaria control in pregnancy in sub-Saharan Africa. BJOG 2007; 114(10): 1222-1231.

Semballa S, Okomo-Assoumou MC, Holzmuller P, Büscher P, Magez S, Lemesre JL, Daulouede S, Courtois P, Geffard M, Vincendeau P. Identification of a tryptophan-like epitope borne by the variable surface glycoprotein (VSG) of African trypanosomes. Exp Parasitol 2007; 115(2): 173-180.

Stijlemans B, Baral TN, Guilliams M, Brys L, Korf J, Drennan M, Van Den Abbeele J, De Baetselier P, Magez S. A glycosylphosphatidylinositol-based treatment alleviates trypanosomiasis-associated immunopathology. J Immunol 2007; 179(6): 4003-4014.

Talisuna AO, Okello PE, Erhart A, Coosemans M, D'Alessandro U. Intensity of malaria transmission and the spread of *Plasmodium falciparum*-resistant malaria: a review of epidemiologic field evidence. Am J Trop Med Hyg 2007; 77(Suppl.6): 170-180.

Tinto H, Ouédraogo JB, Zongo I, Van Overmeir C, Van Marck E, Guiguemdé TR, D'Alessandro U. Sulfadoxine-pyrimethamine efficacy and selection of *Plasmodium falciparum DHFR* mutations in Burkina Faso before its introduction as intermittent preventive treatment for pregnant women. Am J Trop Med Hyg 2007; 76(4): 608-613.

Van Den Abbeele J, Caljon G, Dierick JF, Moens L, De Ridder K, Coosemans M. The *Glossina morsitans* tsetse fly saliva: general characteristics and identification of novel salivary proteins. Insect Biochem Mol Biol 2007; 37(10): 1075-1085.

Van geertruyden JP, D'Alessandro U. Malaria and HIV: a silent alliance. Trends Parasitol 2007; 23(10): 465-467.

Vereecken K, Naus CWA, Polman K, Scott JT, Diop M, Gryseels B, Kestens L. Associations between specific antibody responses and resistance to reinfection in a Senegalese population recently exposed to *Schistosoma mansoni*. Trop Med Int Health 2007; 12(3): 431-444.

Yu JM, de Vlas SJ, Jiang QW, Gryseels B. Comparison of the Kato-Katz technique, hatching test and indirect hemagglutination assay (IHA) for the diagnosis of *Schistosoma japonicum* infection in China. Parasitol Int 2007; 56(1): 45-49.

Other publications

Büscher P, Lejon V, Van den Ende J. Diagnosis. In: Human African trypanosomiasis [CDROM]. London: Wellcome Trust, 2007 (Topics in International Health).

Coosemans M, Van Bortel W. Malaria vectors in the Mekong countries: a complex interaction between vectors, environment and human behaviour. In: Hubs, harbours and deltas in southeast Asia: multidisciplinarity and intercultural perspectives; international conference, Phnom Penh, 6-8 February, 2006. Brussel: Koninklijke Academie voor Overzeese Wetenschappen/ Académie Royale des Sciences d'Outre-Mer, 2007: 551-569.

Decuypere S. Antimonial treatment failure in anthroponotic visceral leishmaniasis: towards improved tools and strategies for epidemiological surveillance and disease control [PhD dissertation]. Antwerpen: Universiteit Antwerpen, Faculteit Farmaceutische, Biomedische en Diergeneeskundige Wetenschappen, Departement Biomedische Wetenschappen; Antwerpen: Instituut voor Tropische Geneeskunde, Departement Parasitologie, Moleculaire Parasitologie, 2007: 280 pp.

Elrayah IE, Mikhail NA, Rhaman MA, Khalil KM, Karamalla LT, Büscher P, Babiker A. Evaluation of serodiagnostic tests for *T. b. gambiense* human African trypanosomiasis in Baher el Jabel State, Southern Sudan. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 238-245. (AU/DREA Publications; 123).

Jamonneau V, Koffi M, Courtin D, Garcia A, Lejon V, Büscher P, Cuny G, Solano P. PCR techniques in diagnosis of human African trypanosomiasis: limits and epidemiological considerations. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty-eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 164-168. (AU/DREA Publications; 123).

Lutumba P, Robays J, Miaka mia Bilenge C, Kande V, Mumba D, Büscher P, Dujardin B, Boelaert M. Détection active de la trypanosomiase humaine africaine. In: Njogu AR, editor. Conseil Scientifique International pour la Recherche et la Lutte contre les Trypanosomiases (CSIRLT), 28ème réunion, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DERA, 2006: 227-237. (Publications AU/DERA; 123).

Malaria control in the Mekong region: challenges and opportunities; international colloquium, Hanoi, 3-5 December 2007; abstract book. Hanoi: Medical Publishing House, 2007: 127 pp.

OMS. Recommandations de la consultation informelle sur les questions relatives au développement de produits cliniques pour la trypanosomiase humaine africaine; Genève, Suisse, 9-10 septembre 2004. Genève: Organisation Mondiale de la Santé (OMS), 2007: 76 pp. (WHO/CDS/NTD/IDM/2007.1).

Van den Bossche P, Kubi C, De Deken R, Dorny P, Van Den Abbeele J. The vectorial capacity of tsetse flies revisited. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 426-429. (AU/DREA Publications; 123).

Van geertruyden JP. HIV-1 and malaria treatment interactions [PhD dissertation]. Antwerpen: Universiteit Antwerpen, Faculteit Geneeskunde; Antwerpen: Instituut voor Tropische Geneeskunde, Departement Parasitologie, 2007: 178 pp.

WHO. Recommendations of the informal consultation on issues for clinical product development for human African trypanosomiasis; Geneva, Switzerland, 9-10 September 2004. Geneva: World Health Organization (WHO), 2007: 70 pp. (WHO/CDS/NTD/IDM/2007.1).

Wördemann M, Menten J, Junco Diaz R, Menocal Heredia LT, Ruiz Espinoza A, Gryseels B, Bonet Gorbea M, Polman K. Effect of deworming on atopy, asthma, allergic rhinoconjunctivitis and atopic dermatitis in Cuban children. Tijdschr Belg Kinderarts 2007; 9(3): 22-29.

Department of Animal Health

Publications in international peer-reviewed journals

Abrahantes JC, Aerts M, van Everbroeck B, Saegerman C, Berkvens D, Geys H, Mintiens K, Roels S, Cras P. Classification of sporadic Creutzfeldt-jacob disease based on clinical and neuropathological characteristics. Eur J Epidemiol 2007; 22(7): 457-465.

Assana E, Kanobana K, Tume CB, Zoli PA, Nguekam , Geerts S, Berkvens D, Dorny P. Isolation of a 14 kDa antigen from *Taenia solium* cyst fluid by HPLC and its evaluation in enzyme linked immunosorbent assay for diagnosis of porcine cysticercosis. Res Vet Sci 2007; 82(3): 370-376.

Bamhare C, Thomson G, Latif A, Mulumba M, Chisembele C, Derah N, Mataa L, Mokopasetso M, Dlamini P, Jamal S, de Klerk G, Letuka O, Chikungwa P, Mumba T, Dombolo EF, Wanda G, Münstermann S, van Schalwyk L, Gummow B, Hendrickx G, Berkvens D, Marcotty T, Thys E, Van den Bossche P. Building capacity for improved veterinary epidemiosurveillance in southern Africa. J S Afr Vet Assoc 2007; 78(2): 92-98.

Bazarusanga T, Geysen D, Vercruysse J, Madder M. An update on the ecological distribution of Ixodid ticks infesting cattle in Rwanda: countrywide cross-sectional survey in the wet and the dry season. Exp Appl Acarol 2007; 43(4): 279-291.

Bazarusanga T, Vercruysse J, Marcotty T, Geysen D. Epidemiological studies on theileriosis and the dynamics of *Theileria parva* infections in Rwanda. Vet Parasitol 2007; 143(3-4): 214-221.

Boone I, Thys E, Marcotty T, de Borchgrave J, Ducheyne E, Dorny P. Distribution and risk factors of bovine cysticercosis in Belgian dairy and mixed herds. Prev Vet Med 2007; 82(1-2): 1-11.

Brochier B, De Blander H, Hanosset R, Berkvens D, Losson B, Saegerman C. *Echinococcus multilocularis* and *Toxocara canis* in urban red foxes (*Vulpes vulpes*) in Brussels, Belgium. Prev Vet Med 2007; 80(1): 65-73.

De Deken R, Martin V, Saido A, Madder M, Brandt J, Geysen D. An outbreak of East Coast Fever on the Comoros; a consequence of the import of immunised cattle from Tanzania? Vet Parasitol 2007; 143(3-4): 245-253.

Delespaux V, de Koning HP. Drugs and drug resistance in African trypanosomiasis. Drug Resist Upd 2007; 10(1): 30-50.

Delespaux V, Geysen D, Geerts S. Point mutations in mitochondrial topoisomerase enzymes of *Trypanosoma congolense* are not involved in isometamidium resistance. Mol Biochem Parasitol 2007; 151(1): 137-140.

Dorny P, Praet N. *Taenia saginata* in Europe. Vet Parasitol 2007; 149(1-2): 22-24.

Dorny P, Somers R, Vercruysse J. Human tapeworms in north Vietnam [response]. Trans R Soc Trop Med Hyg 2007; 101(6): 629-630.

Ducheyne E, De Deken R, Bécu S, Codina B, Nomikou K, Mangana-Vougiaki O, Georgiev G, Purse BV, Hendrickx G. Quantifying the wind dispersal of *Culicoides* species in Greece and Bulgaria. Geospatial health 2007; 1(2): 177-189.

Faburay B, Geysen D, Ceesay A, Marcelino I, Alves PM, Taoufik A, Postigo M, Bell-Sakyi L, Jongejan F. Immunisation of sheep against heartwater in The Gambia using inactivated and attenuated *Ehrlichia ruminantium* vaccines. Vaccine 2007; 25(46): 7939-7947.

Faburay B, Geysen D, Munstermann S, Bell-Sakyi L, Jongejan F. Longitudinal monitoring of *Ehrlichia ruminantium* infection in Gambian lambs and kids by pCS20 PCR and MAP I-B ELISA [electronic only]. BMC Infect Dis 2007; 7(85): 11 pp.

Faburay B, Geysen D, Munstermann S, Taoufik A, Postigo M, Jongejan F. Molecular detection of *Ehrlichia ruminantium* infection in *Amblyomma variegatum* ticks in The Gambia. Exp Appl Acarol 2007; 42(1): 61-74.

Fandamu P, Marcotty T, Brandt JRA, Duchateau L, Speybroeck N, Dolan TT, Berkvens D. Red blood cell volume as a predictor of fatal reactions in cattle infected with *Theileria parva* Katete. Onderstepoort J Vet Res 2007; 74(1): 37-43.

Geurden T, Berkvens D, Martens C, Casaert S, Vercruysse J, Claerebout E. Molecular epidemiology with subtype analysis of *Cryptosporidium* in calves in Belgium. Parasitology 2007; 134(14): 1981-1987.

Geysen D, Kanobana K, Victor B, Rodriguez-Hidalgo R, de Borchgrave J, Brandt J, Dorny P. Validation of meat inspection results for *Taenia saginata* cysticercosis by PCR-restriction fragment length polymorphism. J Food Prot 2007; 70(1): 236-240.

Goossens E, Dorny P, Vervaecke H, Roden C, Vercammen F, Vercruysse J. *Toxocara vitulorum* in American bison (*Bison bison*) calves. Vet Rec 2007; 160(6): 556-557.

Goris N, Praet N, Sammin D, Yadin H, Paton D, Brocchi E, Berkvens D, De Clercq K. Foot-and-mouth disease non-structural protein serology in cattle: use of a Bayesian framework to estimate diagnostic sensitivity and specificity of six ELISA tests and true prevalence in the field. Vaccine 2007; 25(41): 7177-7196.

Hosseinpoor AR, Naghavi M, Alavian SM, Speybroeck N, Jamshidi H, Vega J. Determinants of seeking needed outpatient care in Iran: results from a national services utilization survey. Arch Iranian Med 2007; 10(4): 439-445.

Kubi C, Billiouw M, Van den Bossche P. Age prevalence of trypanosomal infections in female *Glossina morsitans morsitans* (Diptera: Glossinidae) on the plateau area of eastern Zambia. Onderstepoort J Vet Res 2007; 74(3): 223-229.

Lesaffre E, Speybroeck N, Berkvens D. Bayes and diagnostic testing. Vet Parasitol 2007; 148(1): 58-61.

Levecke B, Dorny P, Geurden T, Vercammen F, Vercruysse J. Gastrointestinal protozoa in non-human primates of four zoological gardens in Belgium. Vet Parasitol 2007; 148(3-4): 236-246.

Losson B, Mignon B, Paternostre J, Madder M, De Deken R, De Deken G, Deblauwe I, Fasotte C, Cors R, Defrance T, Delécolle JC, Baldet T, Haubruge E, Frederic F, Bortels J, Simonon G. Biting midges overwintering in Belgium [letter]. Vet Rec 2007; 160(13): 451-452.

Madder M, Thys E, Geysen D, Baudoux C, Horak I. *Boophilus microplus* ticks found in West Africa. Exp Appl Acarol 2007; 43(3): 233-234.

Mbao V, Berkvens D, Dorny P, Van den Bossche P, Marcotty T. Comparison of the survival on ice of thawed *Theileria parva* sporozoites of different stocks cryoprotected by glycerol or sucrose. Onderstepoort J Vet Res 2007; 74(1): 9-15.

Mtambo J, Madder M, Van Bortel W, Berkvens D, Backeljau T. *Rhipicephalus appendiculatus* and *R. zambeziensis* (Acari: Ixodidae) from Zambia: a molecular reassessment of their species status and identification. Exp Appl Acarol 2007; 41(1-2): 115-128.

Mtambo J, Madder M, Van Bortel W, Chaka G, Berkvens D, Backeljau T. Further evidence for geographic differentiation in *R-appendiculatus* (Acari: Ixodidae) from eastern and southern provinces of Zambia. Exp Appl Acarol 2007; 41(1-2): 129-138.

Mtambo J, Madder M, Van Bortel W, Geysen D, Berkvens D, Backeljau T. Genetic variation in *Rhipicephalus appendiculatus* (Acari: Ixodidae) from Zambia: correlating genetic and ecological variation with *Rhipicephalus appendiculatus* from eastern and southern Africa. J Vector Ecol 2007; 32(2): 168-175.

Prado-Jean A, Kanobana K, Druet-Cabanac M, Nsengiyumva G, Dorny P, Preux PM, Geerts S. Combined use of an antigen and antibody detection enzyme-linked immunosorbent assay for cysticercosis as tools in an epidemiological study of epilepsy in Burundi. Trop Med Int Health 2007; 12(7): 895-901.

Protopopoff N, Van Bortel W, Marcotty T, Van Herp M, Maes P, Baza D, D'Alessandro U, Coosemans M. Spatial targeted vector control in the highlands of Burundi and its impact on malaria transmission [electronic only]. Malaria J 2007; 6(158): 10 pp.

Saegerman C, Hubaux M, Urbain B, Lengelé L, Berkvens D. Regulatory issues surrounding the temporary authorisation of animal vaccination in emergency situations: the example of bluetongue in Europe. Rev Sci Tech Off Int Epizoot 2007; 26(2): 395-413.

Saegerman C, Vanopdenbosch E, Berkvens D. Current status of scrapie [electronic only]. CAB Rev Perspec Agric Vet Sci Nutr Nat Res 2007; 2(27): 20 pp.

Sikasunge CS, Phiri IK, Phiri AM, Dorny P, Siziya S, Willingham AL. Risk factors associated with porcine cysticercosis in selected districts of eastern and southern provinces of Zambia. Vet Parasitol 2007; 143(1): 59-66.

Simukoko H, Marcotty T, Phiri I, Geysen D, Vercruysse J, Van den Bossche P. The comparative role of cattle, goats and pigs in the epidemiology of livestock trypanosomiasis on the plateau of eastern Zambia. Vet Parasitol 2007; 147(3-4): 231-238.

Simukoko H, Marcotty T, Phiri I, Vercruysse J, Van den Bossche P. Heterogeneity in the trypanosomosis incidence in Zebu cattle of different ages and sex on the platteau of eastern Zambia. Acta Trop 2007; 103(2): 98-101.

Somers R, Dorny P, Geysen D, Nguyen LA, Thach DC, Vercruysse J, Nguyen VK. Human tapeworms in north Vietnam. Trans R Soc Trop Med Hyg 2007; 101(3): 275-277.

Soumare B, Tempia S, Cagnolati V, Mohamoud A, Van Huylenbroeck G, Berkvens D. Screening for Rift Valley fever infection in northern Somalia; a GIS based survey method to overcome the lack of sampling frame. Vet Microbiol 2007; 121(3-4): 249-256.

Van de Poel E, Hosseinpoor AR, Jehu-Appiah C, Vega J, Speybroeck N. Malnutrition and the disproportional burden on the poor: the case of Ghana [electronic only]. Int J Equity Health 2007; 6(21): 12 pp.

van Hellemond JJ, Hoek A, Wichgers Schreur P, Chupin V, Özdirekcan S, Geysen D, van Grinsven KWA, Koets AP, Van den Bossche P, Geerts S, Tielens AGM. Energy metabolism of bloodstream form *Trypanosoma theileri*. Eukaryot Cell 2007; 6(9): 1693-1696.

Vansnick E, de Rijk P, Vercammen F, Rigouts L, Portaels F, Geysen D. A DNA sequence capture extraction method for detection of *Mycobacterium avium* subspecies *paratuberculosis* in feces and tissue samples. Vet Microbiol 2007; 122(1-2): 166-171.

Other publications

Berkvens D, Praet N, Thys E, Speybroeck N. A Bayesian approach in veterinary epidemiology. In: Camus E, Cardinale E, Dalibard C, Martinez D, Renard JF, Roger F, editors. Does control of animal infectious risks offer a new international perspective? Proceedings of the 12th International Conference of the Association of Institutions of Tropical Veterinary Medicine. Montpellier: CIRAD; Utrecht: AITVM, 2007: 345-348.

Cherenet T, Sani RA, Speybroeck N, Panandam JM, Nadzr S, Van den Bossche P. Bovine trypanosomiasis in tsetse-infested and tsetse-free areas of the Amhara region, north-west Ethiopia. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty-eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 312-317. (AU/DREA Publications; 123).

Coetzer JAW, Venter L, Madder M, Van Zyl M. A perspective of online learning in tropical animal health with the focus on sub-Saharan Africa. In: Camus E, Cardinale E, Dalibard C, Martinez D, Renard JF, Roger F, editors. Does control of animal infectious risks offer a new international perspective? Proceedings of the 12th International Conference of the Association of Institutions of Tropical Veterinary Medicine. Montpellier: CIRAD; Utrecht: AITVM, 2007: 317-320.

Delespaux V, Geysen D, Geerts S. Molecular diagnosis of resistance to isometamidium in Trypanosoma congolense. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty-eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 361-366. (AU/DREA Publications; 123).

Esterhuizen J, Kappmeier K, Nevill E, Van den Bossche P. Habitat preferences and suppression of *Glossina austeni* and *G. brevipalpis* in South Africa. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 436-444. (AU/DREA Publications; 123).

Everaert D, Geysen D, Brandt J, Witters J, Deprez P, Claerebout E. Babesiose bij runderen: eerste klinische uitbraak in Vlaanderen. Vl Diergeneeskd Tijdschr 2007; 76(3): 208-215.

Hoeven E, Fidalis MN, Leak SGA, Geerts S, Hanotte O, Jianlin H. Introgression of the sahelian breed into West African dwarf goats. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 622-626. (AU/DREA Publications; 123).

Mamoudou A, Zoli A, Tanenbe C, Andrikaye JP, Bourdanne, Marcotty T, Delespaux V, Clausen PH, Geerts S. Evaluation sur le terrain et sur souris de la résistance des trypanosomes des bovins du plateau de l'Adamaoua au Cameroun à l'acéturate de diminazène et au chlorure d'isométamidium. Rev Elev Méd Vét Pays Trop 2006; 59(1-4): 11-16.

Meiswinkel R, Baldet T, De Deken R, Takken W, Delécolle JC, Mellor P. Epidemiological analysis of the 2006 bluetongue virus serotype 8 epidemic in north-western Europe; distribution and dynamics of vector species. [s.l.]: European Food Safety Authority (EFSA), 2007: 88 pp.

Muenstermann S, Madzima WN, Van den Bossche P, Coetzer JAW, Taljaard P. Continuous professional development (CPD) in support of regional integration and improved knwoledge base in the SADC region. In: Camus E, Cardinale E, Dalibard C, Martinez D, Renard JF, Roger F, editors. Does control of animal infectious risks offer a new international perspective? Proceedings of the 12th International Conference of the Association of Institutions of Tropical Veterinary Medicine. Montpellier: CIRAD; Utrecht: AITVM, 2007: 331-334.

Rodriguez Hidalgo R. The epidemiology of *Taenia* spp. and cysticercosis in Ecuador [dissertation]. Gent: Universiteit Gent, Faculteit Diergeneeskunde, Vakgroep Virologie, Parasitologie en Immunologie, Laboratorium voor Parasitologie, 2007: 126 pp.

Thys E, Buldgen A, Dorny P. Be-troplive: a Belgian platform enabling knowledge management and capacity development. In: Camus E, Cardinale E, Dalibard C, Martinez D, Renard JF, Roger F, editors. Does control of animal infectious risks offer a new international perspective? Proceedings of the 12th International Conference of the Association of Institutions of Tropical Veterinary Medicine. Montpellier: CIRAD; Utrecht: AITVM, 2007: 341-344.

Van den Bossche P, Kubi C, De Deken R, Dorny P, Van Den Abbeele J. The vectorial capacity of tsetse flies revisited. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 426-429. (AU/DREA Publications; 123).

Vercammen F, Bauwens L, De Deken R, Brandt J. Aspergillosis in King penguins (*Aptenodytes patagonica*) in Antwerp zoo. In: Wibbelt G, editor. Erkrankungen der Zootiere; Verhandlungsbericht des 43. Internationalen Symposiums über die Erkrankungen der Zoo- und Wildtiere, May 19-20, 2007 in Edinburgh, United Kingdom. Berlin: IZW, 2007: 334-336. (Schriftenreihe aus dem Institut für Zoo- und Wildtierforschung; 7).

Vercammen F, Bauwens L, De Deken R, Brandt J. Entomophthoromycosis in an Eastern lowland gorilla (*Gorilla gorilla graueri*). In: Proceedings of the American Association of Zoo Veterinarians, 20-25 October 2007, Knoxville, USA. [s.l.]: [s.n.], 2007: 244-247.

Department of Clinical Sciences

Publications in international peer-reviewed journals

Asboe D, Catalan J, Mandalia S, Dedes N, Florence E, Schrooten W, Noestlinger C, Colebunders R. Sexual dysfunction in HIV-positive men is multi-factorial: a study of prevalence and associated factors. AIDS Care 2007; 19(8): 955-965

Basinga P, Moreira J, Bisoffi Z, Bisig B, Van den Ende J. Why are clinicians reluctant to treat smear-negative tuberculosis? An inquiry about treatment thresholds in Rwanda. Med Decision Making 2007; 27(1): 53-60.

Bottieau E, Clerinx J, Colebunders R, Van den Enden E, Wouters R, Demey H, Van Esbroeck M, Vervoort T, Van Gompel A, Van den Ende J. Selective ambulatory management of imported falciparum malaria: a 5-year prospective study. Eur J Clin Microbiol Infect Dis 2007; 26(3): 181-188.

Bottieau E, Clerinx J, Van den Enden E, Van Esbroeck M, Colebunders R, Van Gompel A, Van den Ende J. Fever after a stay in the tropics: diagnostic predictors of the leading tropical conditions. Medicine 2007; 86(1): 18-25.

Callens SFJ, Kitetele F, Lelo P, Shabani N, Lusiama J, Wemakoy O, Colebunders R, Behets F, Van Rie A. Pulmonary cystic disease in HIV positive individuals in the Democratic Republic of Congo: three case reports [electronic only]. J Med Case Rep 2007; 1(101): 5 pp.

Calmy A, Ford N, Hirschel B, Reynolds SJ, Lynen L, Goemaere E, Garcia de la Vega F, Perrin L, Rodriguez W. HIV viral load monitoring in resource-limited regions: optional or necessary? Clin Infect Dis 2007; 44(1): 128-134.

Carroll ID, Toovey S, Van Gompel A. Dengue fever and pregnancy; a review and comment. Travel Med Infect Dis 2007; 5(3): 183-188.

Colebunders R, Apers L, Dieltiens G, Worodria W. Tuberculosis in resource poor countries; better access to antiretroviral therapy and isoniazid prophylaxis offer new opportunities for control [editorial]. BMJ 2007; 334(7585): 105-106.

Colebunders R, Bukenya T, Pakker N, Smith O, Boeynaems V, Waldron J, Muganzi Muganga A, Twijukye C, McAdam K, Katabira E. Assessment of the patient flow at the Infectious Diseases Institute out-patient clinic, Kampala, Uganda. AIDS Care 2007; 19(2): 149-151.

Colebunders R, Colebunders B. Vena cava inferior thrombosis detected by venous hum: a case report [electronic only]. J Med Case Rep 2007; 1(67): 2 pp.

Colebunders R, Tshomba A, Van Kerkhove MD, Bausch DG, Campbell P, Libande M, Pirard P, Tshioko F, Mardel S, Mulangu S, Sleurs H, Rollin PE, Muyembe-Tamfum JJ, Jeffs B, Borchert M. Marburg hemorrhagic fever in Durba and Watsa, Democratic Republic of the Congo: clinical documentation, features of illness, and treatment. J Infect Dis 2007; 196(Suppl.2): S148-S153.

Colebunders R, Vlieghe E, Maniewski U, Schepens T, Hollanders E, Gheuens E, De Roo A. Lessons learned from 2 patients with multidrug-resistant HIV-1 infection successfully treated with a darunavir-containing antiretroviral treatment regimen. J Int Assoc Physicians AIDS Care 2007; 6(3): 203-205.

Delvaux T, Nöstlinger C. Reproductive choice for women and men living with HIV: contraception, abortion and fertility. Reprod Health Matt 2007; 15(29(Suppl.)): 46-66.

Heyman P, Duh D, Van der Kuylen B, Cochez C, Van Esbroeck M, Vandevelde C, Avsic-Zupanc T. Molecular and serological evidence for *Anaplasma platys* and *Babesia* sp. infection in a dog, imported in Belgium, from southern Spain. J Vet Med A 2007; 54(5): 276-279.

Huyst V, Lynen L, Bottieau E, Zolfo M, Kestens L, Colebunders R. Immune reconstitution inflammatory syndrome in an HIV/TB co-infected patient four years after starting antiretroviral therapy. Acta Clin Belg 2007; 62(2): 126-129.

Kamya MR, Mayanja-Kizza H, Kambugu A, Bakeera-Kitaka S, Semitala F, Mwebaze-Songa P, Castelnuovo B, Schaefer P, Spacek LA, Gasasira AF, Katabira E, Colebunders R, Quinn TC, Ronald A, Thomas DL, Kekitiinwa A. Predictors of long-term viral failure among Ugandan children and adults treated with antiretroviral therapy. J Acquir Immun Defic Syndr 2007; 46(2): 187-193.

Kishore PV, Palaian S, Paudel R, Prabhu M, Van den Ende J. Diagnostic delay in a multi-organ tuberculosis immunocompetent patient: a case report. Southeast Asian J Trop Med Public Health 2007; 38(3): 507-511.

Kong BN, Harwell JI, Suos P, Lynen L, Mohiuddin S, Reinert S, Pugatch D. Opportunistic infections and HIV clinical disease stage among patients presenting for care in Phnom Penh, Cambodia. Southeast Asian J Trop Med Public Health 2007; 38(1): 1-7.

Koole O, Noestlinger C, Colebunders R. Quality of life in HIV clinical trials: why sexual health must not be ignored [electronic only]. PLOS Clin Trials 2007; 2(3): e8.

Kowalska JD, Mocroft A, Blaxhult A, Colebunders R, van Lunzen J, Podlekareva D, Hansen ABE, Machala L, Yust I, Benfield T. Current hemoglobin levels are more predictive of disease progression than hemoglobin measured at baseline in patients receiving antiretroviral treatment for HIV type 1 infection. AIDS Res Hum Retroviruses 2007; 23(10): 1183-1188.

Libois A, De Wit S, Poll B, Garcia F, Florence E, Del Rio A, Sanchez P, Negredo E, Vandenbruaene M, Gatell JM, Clumeck N. HIV and syphilis: when to perform a lumbar puncture. Sex Transm Dis 2007; 34(3): 141-144.

Lynen L, Jacobs J, Colebunders R. Co-trimoxazole prophylaxis in tropical countries in the era of highly active antiretroviral therapy: do we know enough? Trans R Soc Trop Med Hyg 2007; 101(11): 1059-1060.

Meya DB, Katabira E, Otim M, Ronald A, Colebunders R, Njama D, Mayanja-Kizza H, Whalen CC, Sande M. Functional adrenal insufficiency among critically ill patients with human immunodeficiency virus in a resource-limited setting. Afr Health Sci 2007; 7(2): 101-107.

Moerman F, Van Gompel A, Colebunders R, Avonts D. Reizen met hiv: voorbereidingen, gevaren en implicaties. Tijdschr Geneeskd 2007; 63(21): 1030-1037.

Nachega JB, Bottieau E, Zech F, Van Gompel A. Travel-acquired scrub typhus: emphasis on the differential diagnosis, treatment, and prevention strategies. J Travel Med 2007; 14(5): 352-355.

Toovey S, Moerman F, Van Gompel A. Special infectious disease risks of expatriates and long-term travelers in tropical countries. Part I: malaria. J Travel Med 2007; 14(1): 42-49.

Toovey S, Moerman F, Van Gompel A. Special infectious disease risks of expatriates and long-term travelers in tropical countries. Part II: Infections other than malaria. J Travel Med 2007; 14(1): 50-60.

Van De Winkel K, Van den Daele A, Van Gompel A, Van den Ende J. Factors influencing standard pretravel health advice: a study in Belgium. J Travel Med 2007; 14(5): 288-296.

Van den Ende J, Bisoffi Z, Van Puymbroeck H, Van der Stuyft P, Van Gompel A, Derese A, Lynen L, Moreira J, Janssen PAJ. Bridging the gap between clinical practice and diagnostic clinical epidemiology: pilot experiences with a didactic model based on a logarithmic scale. J Eval Clin Pract 2007; 13(3): 374-380.

van Nispen tot Pannerden C, Van Gompel A, Rijnders BJ, Caumes E, den Hollander JG. An itchy holiday. Neth J Med 2007; 65(5): 188-190.

Vekemans M, John L, Colebunders R. When to switch for antiretroviral treatment failure in resource-limited settings? [editorial]. AIDS 2007; 21(9): 1205-1206.

Vekemans M, Robinson J, Georgala A, Heymans C, Muanza F, Paesmans M, Klastersky J, Barette M, Meuleman N, Huet F, Calandra T, Costantini S, Ferrant A, Mathissen F, Axelsen M, Marchetti O, Aoun M. Low mannose-binding lectin concentration is associated with severe infection in patients with hematological cancer who are undergoing chemotherapy. Clin Infect Dis 2007; 44(12): 1593-1601.

Wichmann O, Gascon J, Schunk M, Puente S, Siikamaki H, Gjorup I, Lopez-Velez R, Clerinx J, Peyerl-Hoffmann G, Sundoy A, Genton B, Kern P, Calleri G, de Górgolas M, Mühlberger N, Jelinek T. Severe dengue virus infection in travelers; risk factors and laboratory indicators. J Infect Dis 2007; 195(8): 1089-1096.

Other publications

Bottieau E. Fever after a stay in the tropics [PhD dissertation]. Antwerpen Antwerpen: Universiteit Antwerpen, Faculteit Medische Wetenschappen Instituut voor Tropische Geneeskunde, Departement Klinische Wetenschappen, 2007: 114 pp.

Burgmeijer R, Van Gompel A. Buiktyfus (febris typhoidea / febris abdominalis / tyfoïd). In: Burgmeijer R, Hoppenbrouwers K, Bolscher N, editors. Handboek vaccinaties. Deel B. Infectieziekten en vaccinaties. Assen: Van Gorcum, 2007: 12-23.

Burgmeijer R, Van Gompel A. Cholera. In: Burgmeijer R, Hoppenbrouwers K, Bolscher N, editors. Handboek vaccinaties. Deel B. Infectieziekten en vaccinaties. Assen: Van Gorcum, 2007: 24-34.

Burgmeijer R, Van Gompel A. Gele koorts. In: Burgmeijer R, Hoppenbrouwers K, Bolscher N, editors. Handboek vaccinaties. Deel B. Infectieziekten en vaccinaties. Assen: Van Gorcum, 2007: 49-58.

Burgmeijer R, Van Gompel A. Hondsdolheid (rabiës). In: Burgmeijer R, Hoppenbrouwers K, Bolscher N, editors. Handboek vaccinaties. Deel B. Infectieziekten en vaccinaties. Assen: Van Gorcum, 2007: 115-128.

Burgmeijer R, Van Gompel A. Japanse encefalitis. In: Burgmeijer R, Hoppenbrouwers K, Bolscher N, editors. Handboek vaccinaties. Deel B. Infectieziekten en vaccinaties. Assen: Van Gorcum, 2007: 176-186.

Burgmeijer R, Van Gompel A. Teken-encefalitis (frühsommer-meningo-enzephalitis (fsme); tick-borne encephalitis (tbe); russian spring-summer encephalitis (rsse); central european encephalitis (cee)). In: Burgmeijer R, Hoppenbrouwers K, Bolscher N, editors. Handboek vaccinaties. Deel B. Infectieziekten en vaccinaties. Assen: Van Gorcum, 2007: 369-383.

Burgmeijer R, Van Gompel A. Vaccinaties voor reizigers. In: Burgmeijer R, Hoppenbrouwers K, Bolscher N, editors. Handboek vaccinaties. Deel A. Theorie en uitvoeringspraktijk. Assen: Van Gorcum, 2007: 307-313.

Büscher P, Lejon V, Van den Ende J. Diagnosis. In: Human African trypanosomiasis [CDROM]. London: Wellcome Trust, 2007 (Topics in International Health).

Clerinx J. Active intestinal schistosomiasis in travellers returning from the Democratic Republic of the Congo [electronic only]. Eurosurveil Wkly 2007; 12(10): 2 pp.

Crucitti T, Vandenbruaene M. STIs: diagnostic and clinical implications of recent epidemiology. In: Diagnose en surveillance van infectieuse aandoeningen; 23ste seminarie van het Wetenschappelijk Instituut Volksgezondheid, 22/11/2007. [s.l.]: [s.n.], 2007: 15-21.

De Backer G, Van Ranst M, Goubau P, Hoppenbrouwers K, Lernout T, Levy J, Peetermans W, Peleman R, Schetgen M, Senterre J, Snack , Swennen B, Top G, Van Damme P, Van de Vijver N, Van Gompel A, Van Laethem Y, Waeterloos G. Conseil Supérieur de la Santé, guide de vaccination. Bruxelles: Service Public Fédéral de la Santé Publique, de la Sécurité de la Chaîne Alimentaire et de l'Environnement, Conseil Supérieur de la Santé, 2007: 52 pp.

De Backer G, Van Ranst M, Goubau P, Hoppenbrouwers K, Lernout T, Levy J, Peetermans W, Peleman R, Sc , Senterre J, Snacken R, Swennen B, Top G, Van Damme P, Van de Vijver N, Van Gompel A, Van Laethem Y, Waeterloos G. Hoge Gezondheidsraad, vaccinatiegids. Brussel: Federale Overheidsdienst Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu, Hoge Gezondheidsraad, 2007: 52 pp.

Moreira J, Van den Ende J. Toma de decisiones en medicina: una disciplina huérfana [editorial]. Rev Fac Cien Méd (Quito) 2007; 32(1): 3-5.

Van Gompel A. Reizen en gezondheid. In: Meijman FJ, editor. Winkler Prins medisch handboek; Vlaamse editie. Utrecht: Het Spectrum, 2007: 120-131.

Department of Public Health

Publications in international peer-reviewed journals

Baiden F, Bawah A, Biai S, Binka F, Boerma T, Byass P, Chandramohan D, Chatterji S, Engmann C, Dieltiens G, Jakob R, Kahn K, Kunii O, Lopez AD, Murray CJL, Nahlen B, Rao C, Sankoh O, Setel PW, Shibuya K, Soleman N, Wright L, Yang G. Setting international standards for verbal autopsy [editorial]. Bull World Health Organ 2007; 85(8): 570-571.

Baly A, Toledo ME, Boelaert M, Reyes A, Vanlerberghe V, Ceballos E, Carvajal M, Maso R, La Rosa M, Denis O, Van der Stuyft P. Cost effectiveness of *Aedes aegypti* control programmes: participatory versus vertical. Trans R Soc Trop Med Hyg 2007; 101(6): 578-586.

Barroso Utra IM, García Fariñas A, Rodríguez Salvá A, De Vos P, Bonet Gorbea M, Van der Stuyft P. El ingreso en el hogar y su costo directo en Cuba. Rev Panam Salud Pública 2007; 21(2-3): 85-95.

Basaza R, Criel B, Van der Stuyft P. Low enrolment in Ugandan community health insurance schemes: underlying causes and policy implications [electronic only]. BMC Health Serv Res 2007; 7(105): 12 pp.

Boelaert M, Bhattacharya S, Chappuis F, El Safi SH, Hailu A, Mondal D, Rijal S, Sundar S, Wasunna M, Peeling RW. Evaluation of rapid diagnostic tests: visceral leishmaniasis. Nature Rev Microbiol 2007; 5(11 (Suppl.)): S30-S39.

Borchert M, Mulangu S, Lefèvre P, Tshomba A, Libande ML, Kulidri A, Muyembe-Tamfum JJ, Van der Stuyft P. Use of protective gear and the occurrence of occupational Marburg hemorrhagic fever in health workers from Watsa health zone, Democratic Republic of Congo. J Infect Dis 2007; 196(Suppl.2): S168-S175 [+ appendix].

Buvé A, Delvaux T, Criel B. Delivery of male circumcision services: "Festina lente". Reprod Health Matt 2007; 15(29): 57-61.

Chappuis F, Sundar S, Hailu A, Ghalib H, Rijal S, Peeling RW, Alvar J, Boelaert M. Visceral leishmaniasis: what are the needs for diagnosis, treatment and control? Nature Rev Microbiol 2007; 5(11): 873-882.

Chihota V, Apers L, Mungofa S, Kasongo W, Nyoni IM, Tembwe R, Mbulo G, Tembo M, Streicher EM, van der Spuy GD, Victor TC, van Helden P, Warren RM. Predominance of a single genotype of *Mycobacterium tuberculosis* in regions of southern Africa. Int J Tuberc Lung Dis 2007; 11(3): 311-318.

Chowdhury ME, Botlero R, Koblinsky M, Saha SK, Dieltiens G, Ronsmans C. Determinants of reduction in maternal mortality in Matlab, Bangladesh: a 30-year cohort study. Lancet 2007; 370(9595): 1320-1328.

Colebunders R, Apers L, Dieltiens G, Worodria W. Tuberculosis in resource poor countries; better access to antiretroviral therapy and isoniazid prophylaxis offer new opportunities for control [editorial]. BMJ 2007; 334(7585): 105-106.

Colebunders R, Tshomba A, Van Kerkhove MD, Bausch DG, Campbell P, Libande M, Pirard P, Tshioko F, Mardel S, Mulangu S, Sleurs H, Rollin PE, Muyembe-Tamfum JJ, Jeffs B, Borchert M. Marburg hemorrhagic fever in Durba and Watsa, Democratic Republic of the Congo: clinical documentation, features of illness, and treatment. J Infect Dis 2007; 196(Suppl.2): S148-S153.

Coulibaly S, Deplats D, Kone Y, Nimaga K, Dugas S, Farnarier G, Sy M, Balique H, Doumbo OK, Van Dormael M. Une médecine rurale de proximité: l'expérience des médecins de campagne au Mali [electronic only]. Educ Health 2007; 20(2): 47.

Das ML, Singh SP, Vanlerberghe V, Rijal S, Rai M, Karki P, Sundar S, Boelaert M. Population preference of net texture prior to bed net trial in kala-azar-endemic areas [electronic only]. PLoS Negl Trop Dis 2007; 1(3(e100)): 4 pp.

De Baets AJ, Bulterys M, Abrams EJ, Kankassa C, Pazvakavambwa IE. Care and treatment of HIV-infected children in Africa; issues and challenges at the district hospital level. Pediatr Infect Dis J 2007; 26(2): 163-173.

De Brouwere V. The comparative study of maternal mortality over time: the role of the professionalisation of childbirth. Soc Hist Med 2007; 20(3): 541-562.

De Paepe P, Soors W, Unger JP. International aid policy: public disease control and private curative care? Cad Saúde Pública 2007; 23(Supl.2): S273-S281.

De Vos P, Barroso I, Rodríguez A, Bonet M, Van der Stuyft P. The functioning of the Cuban home hospitalization programme: a descriptive analysis [electronic only]. BMC Health Serv Res 2007; 7(76): 8 pp.

De Vos P, De Ceukelaire W, Bonet M, Van der Stuyft P. Cuba's international cooperation in health: an overview. Int J Health Serv 2007; 37(4): 761-776.

Devadasan N, Boelaert M, Criel B, Van Damme W, Gryseels B. The need for strong general health services in India and elsewhere [letter]. Lancet 2007; 369(9562): 638-639.

Devadasan N, Criel B, Van Damme W, Ranson K, Van der Stuyft P. Indian community health insurance schemes provide partial protection against catastrophic health expenditure [electronic only]. BMC Health Serv Res 2007; 7(43): 22 pp.

Diro E, Techane Y, Tefera T, Assefa Y, Kebede T, Genetu A, Kebede Y, Tesfaye A, Ergicho B, Gebre-Yohannes A, Mengistu G, Engers H, Aseffa A, Desjeux P, Boelaert M, Hailu A. Field evaluation of FD-DAT, rK39 dipstick and KATEX (urine latex agglutination) for diagnosis of visceral leishmaniasis in northwest Ethiopia. Trans R Soc Trop Med Hyg 2007; 101(9): 908-914.

Janssens B, Van Damme W, Raleigh B, Gupta J, Khem S, Soy Ty K, Vun MC, Ford N, Zachariah R. Offering integrated care for HIV/AIDS, diabetes and hypertension within chronic disease clinics in Cambodia. Bull World Health Organ 2007; 85(11): 880-885.

Janssens B, Van Herp M, Goubert L, Chan S, Uong S, Socheat D, Brockman A, Ashley EA, Van Damme W. A randomized open study to assess the efficacy and tolerability of dihydroartemisinin-piperaquine for the treatment of uncomplicated falciparum malaria in Cambodia. Trop Med Int Health 2007; 12(2): 251-259.

Kolsteren P, Roberfroid D, Huybregts L, Lachat C. Management of severe acute malnutrition in children [letter]. Lancet 2007; 369(9563): 740.

Laleman G, Kegels G, Marchal B, Van der Roost D, Bogaert I, Van Damme W. The contribution of international health volunteers to the health workforce in sub-Saharan Africa [electronic only]. Hum Resources Health 2007; 5(19): 9 pp.

Lambert ML, Roberfroid D, Vlayen J. Rimonabant in obese patients with type 2 diabetes [letter]. Lancet 2007; 369(9561): 553.

Lejon V, Robays J, N'Siesi FX, Mumba D, Hoogstoel A, Bisser S, Reiber H, Boelaert M, Büscher P. Treatment failure related to intrathecal immunoglobulin M (IgM) synthesis, cerebrospinal fluid IgM, and interleukin-10 in patients with hemolymphatic-stage sleeping sickness. Clin Vaccine Immunol 2007; 14(6): 732-737.

Lutumba P, Makieya E, Shaw A, Meheus F, Boelaert M. Human African trypanosomiasis in a rural community, Democratic Republic of Congo. Emerg Infect Dis 2007; 13(2): 248-254.

Lutumba P, Meheus F, Robays J, Miaka C, Kande V, Büscher P, Dujardin B, Boelaert M. Cost-effectiveness of algorithms for confirmation test of human African trypanosomiasis. Emerg Infect Dis 2007; 13(10): 1484-1490.

Mahendradhata Y, Lambert ML, Boelaert M, Van der Stuyft P. Engaging the private sector for tuberculosis control; much advocacy on a meagre evidence base [editorial]. Trop Med Int Health 2007; 12(3): 315-316.

Mahendradhata Y, Utarini A, Lazuardi U, Boelaert M, Van der Stuyft P. Private practitioners and tuberculosis case detection in Jogjakarta, Indonesia: actual role and potential. Trop Med Int Health 2007; 12(10): 1218-1224.

Meessen B, Bloom G. Economic transition, institutional changes and the health system: some lessons from rural China. J Econ Pol Reform 2007; 10(3): 209-231.

Meessen B, Kashala JPI, Musango L. Output-based payment to boost staff productivity in public health centres: contracting in Kabutare district, Rwanda. Bull World Health Organ 2007; 85(2): 108-115.

Mestdagh F, Lachat C, Baert K, Moons E, Kolsteren P, Van Peteghem C, De Meulenaer B. Importance of a canteen

lunch on the dietary intake of acrylamide. Mol Nutr Food Res 2007; 51(5): 509-516.

Muffler N, El Hassane Trabelssi M, De Brouwere V. Scaling up clinical audits of obstetric cases in Morocco. Trop Med Int Health 2007; 12(10): 1248-1257.

Ndiaye P, Soors W, Criel B. A view from beneath: community health insurance in Africa [editorial]. Trop Med Int Health 2007; 12(2): 157-161.

Noirhomme M, Meessen B, Griffiths F, Ir Por , Jacobs B, Thor R, Criel B, Van Damme W. Improving access to hospital care for the poor: comparative analysis of four health equity funds in Cambodia. Health Pol Plann 2007; 22(4): 246-262.

Ooms G, Van Damme W, Temmerman M. Medicines without doctors; why the Global Fund must fund salaries of health workers to expand AIDS treatment [electronic only]. PLoS Med 2007; 4(4): 605-609 [e128].

Orach CG, Dubourg D, De Brouwere V. Costs and coverage of reproductive health interventions in three rural refugee-affected districts, Uganda. Trop Med Int Health 2007; 12(3): 459-469.

Pérez D, Lefèvre P, Sánchez L, Sánchez LM, Boelaert M, Kouri G, Van der Stuyft P. Community participation in *Aedes aegypti* control; a sociological perspective on five years of research in the health area "26 de Julio", Havana, Cuba. Trop Med Int Health 2007; 12(5): 664-672.

Pérez D, Lefèvre P, Sánchez L, Van der Stuyft P. Comment on: What do community-based dengue control programmes achieve? A systematic review of published evaluations [letter]. Trans R Soc Trop Med Hyg 2007; 101(6): 630-631.

Raguenaud ME, Jansson A, Vanlerberghe V, Van der Auwera G, Deborggraeve S, Dujardin JC, Orfanos G, Reid T, Boelaert M. Epidemiology and clinical features of patients with visceral leishmaniasis treated by an MSF clinic in Bakool region, Somalia, 2004-2006 [electronic only]. PLoS Negl Trop Dis 2007; 1(1): e85.

Richard F, Ouédraogo C, Compaoré J, Dubourg D, De Brouwere V. Reducing financial barriers to emergency obstetric care: experience of cost-sharing mechanism in a district hospital in Burkina faso. Trop Med Int Health 2007; 12(8): 972-981.

Rijal S, Yardley V, Chappuis F, Decuypere S, Khanal B, Singh R, Boelaert M, De Doncker S, Croft S, Dujardin JC. Antimonial treatment of visceral leishmaniasis: are current in vitro susceptibility assays adequate for prognosis of in vivo therapy outcome? Microbes Infect 2007; 9(4): 529-535.

Robays J, Lefèvre P, Lutumba P, Lubanza S, Kande Betu-Ku-Mesu V, Van der Stuyft P, Boelaert M. Drug toxicity and cost as barriers to community participation in HAT control in the Democratic Republic of Congo. Trop Med Int Health 2007; 12(2): 290-298.

Roberfroid D. Rimonabant in obese patients with type 2 diabetes [letter]. Lancet 2007; 369(9561): 553.

Roberfroid D, Pelto GH, Kolsteren P. Plot and see! Maternal comprehension of growth charts worldwide. Trop Med Int Health 2007; 12(9): 1074-1086.

Samb B, Celletti F, Holloway J, Van Damme W, De Cock KM, Dybul M. Rapid expansion of the health workforce in response to the HIV epidemic. N Engl J Med 2007; 357(24): 2510-2514.

Siddiqi K, Newell JN, Van der Stuyft P, Gotuzzo E, Torrico F, Van Deun A, Walley J. Improving sputum microscopy services for the diagnosis of tuberculosis in Peru and Bolivia. Int J Tuberc Lung Dis 2007; 11(6): 665-670.

Sundar S, Singh RK, Bimal SK, Gidwani K, Mishra A, Maurya R, Singh SK, Manandhar KD, Boelaert M, Rai M. Comparative evaluation of parasitology and serological tests in the diagnosis of visceral leishmaniasis in India; a phase III diagnostic accuracy study. Trop Med Int Health 2007; 12(2): 284-289.

Toledo ME, Vanlerberghe V, Baly A, Ceballos E, Valdes L, Searret M, Boelaert M, Van der Stuyft P. Towards active community participation in dengue vector control: results from action research in Santiago de Cuba, Cuba. Trans R Soc Trop Med Hyg 2007; 101(1): 56-63.

Toledo-Romani ME, Vanlerberghe V, Perez D, Lefèvre P, Ceballos E, Bandera D, Baly-Gil A, Van der Stuyft P. Achieving sustainability of community-based dengue control in Santiago de Cuba. Soc Sci Med 2007; 64(4): 976-988.

Unger JP, De Paepe P. Controlling diseases, securing access to health care, strengthening health systems... squaring the circle? [electronic only] [commentary]. Educ Health 2007; 20(2): 63.

Van Damme W. World social health insurance: strengthening health systems in low-income countries [letter, electronic only]. PLoS Med 2007; 4(3): 596-597 [e137].

Van Damme W, Kheang ST, Janssens B, Kober K. How labour intensive is a doctor-based delivery model for antiretroviral treatment (ART)? Evidence from an observational study in Siem Reap, Cambodia [electronic only]. Hum Resources Health 2007; 5(12): 9 pp.

Van den Ende J, Bisoffi Z, Van Puymbroeck H, Van der Stuyft P, Van Gompel A, Derese A, Lynen L, Moreira J, Janssen PAJ. Bridging the gap between clinical practice and diagnostic clinical epidemiology: pilot experiences with a didactic model based on a logarithmic scale. J Eval Clin Pract 2007; 13(3): 374-380.

Van der Stuyft P, De Vos P. The USA and 'Cuban doctors working abroad' [letter]. Lancet 2007; 369(9580): 2160.

Van Dormael M, Dugas S, Diarra S. North-South exchange and professional development: experience from Mali and France. Fam Pract 2007; 24(2): 102-107.

Van Eygen L, Van Lerberghe V, Blaise P, Woelk G, Criel B. The challenge of measuring quality of care at health centre level in Africa; the example of Tsholotsho health district in Matabeleland north, Zimbabwe. Int J Health Plann Manag 2007; 22(1): 63-89.

Vanlerberghe V, Diap G, Guerin PJ, Meheus F, Gerstl S, Van der Stuyft P, Boelaert M. Drug policy for visceral leishmaniasis: a cost-effectiveness analysis. Trop Med Int Health 2007; 12(2): 274-283.

Other publications

Aspin J, Pinchuk M, editors. Verbal autopsy standards: ascertaining and attributing cause of death. Geneva: World Health Organization (WHO), 2007: 112 pp.

Basaza R, Kaija D, Ochola-Odongo D. The impact of HIV and AIDS on children: lights and shadows in the 'successful case' of Uganda. In: Cornia GA, editor. AIDS, public policy and child well-being; 2nd ed. Florence: UNICEF Innocenti Research Centre, 2007: 31-66.

Lutumba P, Robays J, Miaka mia Bilenge C, Kande Betu Ku Mesu V, Molisho D, Declercq J, Van der Veken W, Meheus F, Jannin J, Boelaert M. Human African trypanosomiasis in the Democratic Republic of Congo, 1993-2003. In: Njogu AR, editor. International Scientific Council for Trypanosomiasis Research & Control (ISCTRC), twenty-eighth meeting, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DREA, 2006: 97-105. (AU/DREA Publications; 123).

Lutumba P, Robays J, Miaka mia Bilenge C, Kande V, Mumba D, Büscher P, Dujardin B, Boelaert M. Détection active de la trypanosomiase humaine africaine. In: Njogu AR, editor. Conseil Scientifique International pour la Recherche et la Lutte contre les Trypanosomiases (CSIRLT), 28ème réunion, Addis Ababa, Ethiopia, 2005. Nairobi: AU/DERA, 2006: 227-237. (Publications AU/DERA; 123).

Vieira AC, Diniz AS, Cabral PC, Oliveira RS, Lóla MMF, Silva SMM, Kolsteren P. Nutritional assessment of iron status and anaemia in children under 5 years old at public daycare centers. J Pediatr 2007; 83(4): 370-376.

Waelkens MP, Criel B, editors. La mise en réseau de mutuelles de santé en Afrique de l'Ouest, l'union fait-elle la force? Les enseignements d'un colloque international organisé à Nouakchott, Mauritanie, 19 et 20 décembre 2004. Antwerpen: ITGPress, 2007: 128 pp.

Conferences

ITM Annual Colloquium

Malaria Control in the Mekong Region: challenges and opportunities

With the conference on Buruli Ulcus and TB in Benin in 2005, we started a tradition to organise the annual ITM colloquium every second year in collaboration with one of our institutional partners in the South. In 2007, the co-host was the Vietnamese National Institute of Malariology, Parasitology and Entomology (NIMPE), with as theme "Malaria Control in the Mekong Region: challenges and opportunities". The venue was Hanoi, 3-5 December 2007, coinciding with the 50th anniversary of NIMPE.

The colloquium brought together a large audience of scientists, experts and professionals from the Mekong Region with the international community, in order to review, update and enhance malaria control in the region.

The Mekong countries have been very successful in reducing the burden of malaria over the past decade. Strong political commitment, technical expertise and the integration of malaria control in community-based health systems were key elements to success. The main strategies included prompt diagnosis and treatment, wide coverage, insecticide-treated nets (ITNs) and indoor residual spraying (IRS). In addition, socio-economic development has substantially contributed to the decline of malaria in the region.

The colloquium was opened by professor Le Khanh Thuan, director of NIMPE, professor Bruno Gryseels, director of ITM, and Dr. Nguyen Thi Xuyen, vice Minister of Health of Vietnam, in the presence of Dr. Arata Kochi, director of the WHO Global Malaria Programme, Dr. Awa Coll Seck, executive director of the Roll Back Malaria Parthership, Mr. Hubert Cooreman, Belgian Ambassador to Vietnam, professor Jan De Groof, Commissioner of the Flemish Ministry of Education, other dignitaries and some 150 international malaria-experts.

Keynote speeches were given by Dr. Arata Kochi, on the control, elimination and eradication of malaria and Dr. Awa Coll Seck, on scaling up malaria interventions through partnership. Prof. Marc Coosemans, chairman of the ITM's Department of Parasitology and promoter of the colloquium lectured on the differences between malaria in Africa and Asia and their consequences for control strategies.

The back office of the colloquium: last preparations for the colloquium by the Belgo-Vietnamese organisation team.

ITM and NIMPE scientists on stage at the joint colloquium.

The next three days, national experts reviewed the achievements and experiences in Vietnam, Cambodia, Laos and Thailand, and scientists from all over the world presented research results on the pathology, treatment, epidemiology and control of malaria in South East Asia.

The ITM promoter of the colloquium, professor Marc Coosemans, enjoying Vietnamese haute cuisine.

Challenges and bottlenecks in the consolidation and further progress of control were analysed and debated. Malaria transmission is still intense in border areas, usually remote and forested settings in which access and compliance to prevention and treatment are complicated by social, cultural and political factors.

Malaria control is confronted with multi-drug resistance, counterfeit and substandard drugs, and the high population mobility between endemic and malaria-free areas. Furthermore, vector control is less effective in these endemic foci due to the behaviour of the mosquitoes and the inadequacy of impregnated bed nets for forest workers, which usually sleep in open-air hammocks. Many problems can only be solved by intensive cross-border collaboration, and the colloquium was an opportunity to bring together actors from the different Mekong countries. The presence of international experts and authorities gave additional strength to the exchanges.

The colloquium was followed by a workshop (6 - 8 December 2007) on social sciences applied to malaria research and control. Participants were familiarised with basic concepts and tools of medical anthropology, adapted to public health and malaria control.

4th International Congress on Infectious and Parasitic Diseases in Kinshasa

Our Congolese partner, the Institut National de Recherche Biomédicale (INRB), organised its 4th Congress on Infectious and Parasitic Diseases on 4-7 July 2007 in Kinshasa. Prof. Jean Jacques Muyembe, Director of the INRB, Dr. Pascal Lutumba, research coordinator, and the entire team of the INRB put together an exciting programme and a smooth organisation. The ITM provided substantial scientific, financial and logistical support, and delegated a large team headed by prof. Marleen Boelaert, coordinator of the ITM's Congo programme and prof. Bruno Gryseels, director. The congress attracted 352 participants, including a considerable number of scientists of the Universities of Kinshasa, Lubumbashi, Mbuji-Mayi, but also researchers from other countries in Africa, Europe and the United States. Perhaps even more encouraging was the attendance by many young Congolese students and researchers.

The central theme of the event was the control of infectious and parasitic diseases, with emphasis on the interaction between research and practice in health care and disease control. The inaugural key address was delivered by prof. Joel Breman (NIH, USA), on the burden of malaria. The thematic sessions concentrated on malaria, African trypanosomiasis, HIV/AIDS, typhoid fever, monkeypox, Tuberculosis, Buruli Ulcus, helminthiasis, leprosy, haemorrhagic fevers and other infectious diseases.

The reinforcement of health systems and their interaction with disease control programmes was a main cross-cutting issue. An interesting round-table discussion involved the directors of disease control programmes and health service managers. A very well attended session on monkeypox control was co-organised with scientists from USAMRIID and the University of North Carolina.

Marleen Boelaert and Pascal Lutumba working late with the local organising committee.

At the closing session, the ITM's director, professor Bruno Gryseels, reviewed hundred years of collaboration between the ITM and the DR Congo, and warmly remembered his time as a junior scientist in Kinshasa at the start of his career.

National and international participants were impressed by the quality of the presentations and of the event's organisation. It was suggested to organise future conferences as regional events, and to encourage even more local and African researchers to present their research.

The congress was also seized as an opportunity to organise a national meeting of ITM alumni. During the conference, they organised a round table on the relation between disease control programmes and the health system in the DR Congo. The participants included representatives of the Ministry of Health, the World Health Organisation, donors, disease programme managers, public health doctors, epidemiologists and health system researchers.

The panels reviewed the new governmental Health Systems Strengthening Policy, which aims at revitalising primary health care and in particular the health zones, the corner stones of the Congolese health system.

Prof. Dr. Muyembe, chair of the organising committee and director of the INRW.

Bruno Gryseels in the Laboratory of Parasitology at Kinshasa University, where he learned the trade 28 years ago. He found back old comrades Prof. Odio (front) and chief technician Mr. Lokombe (next to BG).

The ITM delegation, the organising committee and embassy staff at a breakfast meeting with Mr. and Mrs. Johan Swinnen, Belgian ambassador in the DR Congo.

EDCTP stakeholder meeting on HIV vaccines

The European & Developing Countries Clinical Trials Partnership (EDCTP) was created in 2003 as a European response to the global health crisis caused by the three main poverty-related diseases of HIV/AIDS, malaria and tuberculosis, particularly in Sub-Saharan Africa. Its mission is to accelerate the development of new or improved drugs, vaccines and microbicides against HIV/AIDS, malaria and tuberculosis, with a focus on phase II and III clinical trials in Sub-Saharan Africa. Apart from its scientific and humanitarian mission, the EDCTP is also an advanced European experiment to join and integrate national research programmes, and to bridge research with capacity strengthening and health development in the South.

The ITM represents the Belgian (federal and regional) governments in the Assembly of the EDCTP, and has been an active (though sometimes critical) member and vice-chair since its inception. After a difficult start-up period, the EDCTP is now well on track to reach its objectives, following a "roadmap" which provides, among others, for stakeholder meetings in the various fields of activity. The ITM took it upon her to organise the stakeholder meeting on HIV vaccines, the last of a series. On 7 September 2007, 50 African and European scientists and networking officers gathered to identify and prioritise products in the pipeline, suitable trial sites in Africa and appropriate funding procedures and timelines. In addition, EDCTP sounded out the financial commitment and participation of the Member States for clinical trials on HIV vaccines.

From left to right, Dr. Diana Dunstan (MRC, UK), Chair of the EDCTP; Dr. José Esparza, senior advisor on HIV vaccines at the Bill & Melinda Gates Foundation, meeting chair; Prof. Charles Mgone, Executive Director of the EDCTP; Prof. Bruno Gryseels (ITM), vice-chair of the EDCTP (until end 2007).

The disappointing results of the first AIDS vaccine trials, that became available shortly before the meeting, left the field in considerable confusion. Should scientists continue with trials of products in the pipeline, or go back to the drawing board? This Hamlet-like question has many scientific, methodological and not least ethical implications. The meeting came thus at an appropriate time, the more as it was a non-academic event involving a selected number of top experts and main stakeholders. The meeting was chaired by Dr. José Esparza, Senior Advisor on HIV Vaccines at the Bill & Melinda Gates Foundation (BMGF). Other participants represented the French National Agency for AIDS Research (ANRS); the Bill and Melinda Gates Foundation (BMGF); the Centres for Disease Control & Prevention (CDC), USA; the European Commission (EC); the European Developing Countries Clinical Trial Partnership (EDCTP); the International AIDS Vaccine Initiative (IAVI); the Institute of Tropical Medicine (ITM, Belgium); Karolinska Institute, Sweden; the National Institute of Allergy and Infectious Diseases (NIAID), USA; the World Health Organization (WHO); and representatives of the EDCTP Members States Germany, Norway, United Kingdom, France, the Netherlands, Denmark, Norway, Spain, Switzerland and Belgium. In addition, representatives and invited scientists from Nigeria, Senegal, Kenya, South Africa, Uganda and the U.S.A. were present.

No clear-cut concensus was achieved, but bearing in mind the scope and merit of EDCTP as well as the current landscape, the majority of the participants seemed to favour conducting a phase II preventive vaccine trial. Following the recommendations of the meeting, the EDCTP has recently launched a major call to that effect.

More information on the EDCTP is found on www.edctp.org. The full report and presentations of the HIV Vaccine stakeholder meetings (and others) can be found at http://www.edctp.org/HIV_vaccines.301.0.html.

Lively debates on the existential questions facing the HIV vaccine field at a post-meeting drink in the hall of the ITM.

3rd annual seminar of Be-cause health: 'Drugs, cure or curse?'

Michele Childs (Knowledge Ecology International), Nicoletta Dentico (Drugs Neglected Diseases initiative), Rafaella Ravinetto (ITM), André Meheus (University of Antwerp) and Leen Meulenbergs (Ministry of Public Health), panel members of the Be-cause health seminar.

"Be-cause health" is a platform uniting all Belgian academic, non-governmental and governmental actors in the field of international health. It succeeded in 2004 the Belgian Society of Tropical Medicine and holds the "Health Care for All" Declaration (Antwerp 2001) as its charter. One of its regular activities is the organisation of an annual seminar for Belgian stakeholders and students on hot topics in international health. The third edition took place on 3th December in the prestigious Egmont Palace in Brussels with as subject "Drugs, cure or curse?"

Access to and quality of drugs is a major problem in developing countries, influenced by many issues including international trade rules, price setting, insufficient research and development, counterfeit and substandard drugs, international financing, regulatory mechanisms and obviously national distribution and health care systems. Global initiatives concentrate on the procurement of medicines for the "big three" HIV/Aids, malaria and tuberculosis.

The main objective of the seminar was presenting persistent bottlenecks, recent evolutions and new ways forward. Apart from the platform members, the audience of 180 consisted of politicians, international stakeholders and public health students.

Professor André Meheus (University of Antwerp) and Dr. Martine Vandermeulen (HERA and president of Be-cause health) chaired the meetings. The seminar offered an excellent update of the issues at stake and generated interesting discussions as well as concrete recommendations, which can be consulted on the platform website: www.be-causehealth.be.

Be-troplive workshop

Be-troplive, created in 2006, is a platform that brings together all Belgian academic and development-oriented bodies in the field of tropical veterinary medicine.
Its annual workshop in November 2007 treated with "Sustainable livestock production in the tropics". Seventy-nine experts and scientists from 23 countries in Africa and Europe attended the event, which took place in the Egmont Palace in Brussels. Four keynote presentations introduced the topic and were followed by group work about arid zones, humid agricultural zones and urban areas in order to identify the current challenges faced by the livestock sector.

Website: www.be-troplive.be

Leishrisk: bridging research and control in leishmaniasis

The 'LeishRisk' consortium (www.leishrisk.net) is a worldwide network of leishmaniasis researchers, funded by the European Union and coordinated by the ITM's Unit of Molecular Parasitology. On 12-14 November, some 90 "Leishmaniacs" from a broad range of disciplines and countries came together in Antwerp to discuss key issues confronting scientists and health professionals.

The goal of the workshop was threefold: strengthening the European and international network of leishmaniasis scientists; building a platform for new, control oriented initiatives in leishmaniasis research; bridging the gap between fundamental research and the field.

The significant advances in fundamental research on leishmaniasis have not yet been sufficiently translated in new tools for treatment, prevention and control. There are no vaccines and only a limited number of toxic drugs, requiring long courses of treatment are available. Increased drug resistance creates worrying situations in several regions.

Bridging leishmaniasis research and control in one of the breakout sessions.

Jean-Claude Dujardin, coordinator of Leishrisk, and Dominique Le Ray, forefather of many leishmaniacs.

Plenary and parallel sessions covered various subjects: methods (of diagnosis, treatment, molecular epidemiology and vector control); environmental changes; treatment failure and drug resistance; immunity and vaccination; control interventions. The meeting resulted in concrete recommendations to the scientific community, funding agencies and health authorities for a better alignment of research with control needs. The meeting was closed with an honouring of emeritus professor Dominique Le Ray, a pioneer in leishmaniasis research and networking.

Revitalisation of the health system in DR Congo

The Ministry of Health (MOH) in the DR Congo has recently launched a National Strategic Health Plan aiming at rebuilding the national health system. It provides a blueprint for a stronger central planning process that would counteract, among others, the current fragmentation into a multitude of internationally supported but isolated disease control efforts. The donor community endorses the implementation of this "Stratégie de Renforcement du Système de Santé (SRSS)" as part of the common "Paris Agenda", and attempts to harmonize their interventions in a "Groupe Inter Bailleurs Santé" (GIBS), coordinated by the Belgian embassy. The MOH Département d' Etude et de Planification (DEP), which is supervising the implementation of the SRSS, has requested the ITM to offer a forum for discussion, reflection, information and international exchanges.

Peter Verlinden, journalist from the Flemish television network, briefed the audience on the political situation in the DR Congo.

For whom it is all about: patients and family at the General Hospital of Kinshasa.

From 26 to 30 March, the Department of Public Health organised a first workshop to that effect. National top scientists, experts and authorities, including the senior staff and advisors of the DEP, presented and analysed the new policy plans for the revitalisation of the Congolese health system to over 50 international stakeholders. These included major donors and technical agencies such as the World Bank, the European Union, the World Health Organisation, the Directorate General for Development Cooperation, the Belgian Technical Cooperation, the Walloon Cooperation Agency; NGO's active in the RD Congo such as Médecins sans Frontières, Memisa, Aedes, Cemubac, Fometro and the umbrella organisation Centre National De Coopération au Développement; and journalists and individuals with a special interest for Congo.

An attentive audience of students and stakeholders in the health sector of DR Congo.

The workshop opened with a general presentation of the new constitutional and legal framework of the RD Congo, and a showing of the documentary film "Congo na biso".

The plenary debates and breakout sessions focused, among others, on

- The integration of vertical disease programmes into the health systems at national, regional and peripheral level
- How to document and analyse the process of implementation of SRSS
- Linking the SRSS to the international follow-up of the Paris Declaration on donor harmonisation
- Exchanging experiences with other Sub-Saharan countries, in order to extract best practises and "lessons learned" at the national and international level

The exchanges showed the enormous challenges but also the promising perspectives for a truly integrated and comprehensive health care system in the DR Congo – provided that socio-economic and political stability go hand in hand with adequate and well-coordinated international support. The ITM and the DEP intend to continue this collaborative monitoring process of the SRSS as part of the third DGDC/ITM Framework Programme for 2008-2013 (see below).

This event was also used as a forum for the participants in the International Health Policy teaching module. They were asked to propose policy and action plans on the basis of the presentations, discussions and own experiences. The students interviewed the participants to collect information for their assignment, and presented their proposals at the end of the week to the ITM staff and the Congolese guests.

International workshop on trypanosomiasis in Cameroon

In collaboration with the Faculty of Medicine of Antwerp University, the Department of Animal Health works with the University of Dshang (Prof. A. Zoli) on a VLIR-funded research project on trypanosomasis in the Adamaoua region, Cameroon. At the end of this project, the partners organised an international workshop in Dshang to summarise the results and impact of the project. The main conclusions were:

- Ten years after the tsetse eradication campaign on the Adamaoua plateau, tsetse flies remain absent. The trypanosomiasis risk for local cattle has become alsmost negligible.
- The insecticide-treated herds in the buffer zone between the plateau and the tsetse infested valleys have served as an effective barrier against re-invasion of the plateau by tsetse flies.
- In the endemic valleys, trypanocide resistance has become a serious problem. Molecular and *in vivo* tests show that 65 % of the local trypanosome isolates are resistant to isometamidium chloride, 75 % to diminazene aceturate and 53 % to both drugs. These are the only drugs currently available and there are no new ones in the pipeline. The situation is thus very alarming.
- A sensitisation campaign to inform cattle owners of the problem, and practical recommendations to delay its further spread have been iniciated.

In the course of this project, three Cameroonian scientists obtained their MSc degree, one a PhD and several scientific articles were published. The collaboration between the ITM and the University of Dshang is sustained in several projects and networks.

Participants attending the trypanosomiasis workshop at the University of Dschang, Cameroon. In the middle the project promoters Prof. A. Zoli, S. Geerts and E. Van Mark

Medical Services

Medical Services

Medical services

The Medical Services of the ITM form a separate administrative and operational entity within the institute. Their mission is to provide top quality health care in the field of tropical and travel medicine and of HIV/AIDS and sexually transmitted diseases (STD). Research, education and scientific service functions are carried out under the umbrella of the Department of Clinical Sciences.

The Medical Services consist of the Service for Tropical and Import Diseases (including Dermatology and Paediatrics), the Travel Clinic, the Service for HIV/STD Care, the Medical Laboratory and the Hospital Ward (in the Antwerp University Hospital). They also comprise the national reference centre for tropical and infectious diseases and the provincial reference centres for HIV/AIDS treatment and diagnosis. The "Helpcenter" is an extra-muros low-treshold facility for sexual health promotion and HIV-screening in specific risk groups.

The Medical Services performed 32,056 consultations in 2007, of which:

- Pre-travel advice: 16,507 (51.5%)
- Tropical/import diseases: 5,935 (18.5%)
- Dermatology: 685 (2.1%)
- Paediatrics: 205 (0.6%)
- STD: 1,535 (4.8%)
- HIV/STD: 5,926 (18.5%)
- Helpcenter: 1,206 (3.9%)

The Service for Tropical and Import Pathology

This specialised outpatient unit provides diagnostic, clinical and preventive care to travellers, expatriates and migrants. As national reference centre we are permanently on call to other healthcare workers throughout Belgium for diagnostic and therapeutic advice, and to the authorities for the surveillance and management of imported diseases.

As in previous years, we participated in the main national and international scientific and consensus meetings on import pathology and travel medicine, contributed to publications, including the WHO manual (see department of Clinical Sciences).

Travel Clinic

The Travel Clinic provides pre-travel advice and care. A team of specialised doctors offers general, country-specific and disease-specific information, vaccinations, chemoprophylaxis, and anything else to promote healthy travelling.

During its 16,507 consultations the Travel Clinic administered 36,420 vaccinations.

A telephone hotline is accessible 24/7 for external physicians with questions on import pathology, allowing to solve diagnostic and therapeutic problems at a distance.

Travel Phone system

An automated "Travel Phone" system is accessible to travellers seeking guidelines on vaccination or chemoprophylaxis. It received over 7832 calls in 2007, of which 20% were eventually transferred to "live" specialist staff. The information is permanently updated, in 2007 with data on outbreaks such as Ebola in Uganda, Chikungunya in the Indian Ocean (Reunion, Comoros, Mauritius, Seychelles), India, Malaysia and Italy, avian flu, malaria in the Caribbean (Jamaica and Dominican Republic) and Goa (India), poliomyelitis in Namibia and measles in Germany.

ITM website

Extensive information on travel health can also be found on the ITM website, www.itg.be, or at www.reisgeneeskunde.be (Dutch), www.medecinedesvoyages.be (French) or www.travelhealth.be (English). This website recorded over 270,000 page views in 2007. Also this information is continuously updated, expanded and fine-tuned. It includes fact sheets for more than 200 countries, including mandatory and recommended vaccinations, malaria risks and prophylactic measures, and other items and recommendations. The texts are based on the directives of the World Health Organisation (WHO) and the consensus policy of the Belgian Scientific Study Group on Travel Medicine, which is chaired by the ITM.

The HIV/STD service

The HIV/STD service performed 7,461 consultations in 2007, of which 5,926 from HIV patients and 1,535 for other sexually transmitted diseases.

The AIDS-care Reference Centre (ARC) followed up 1,531 HIV-infected patients, of which 1,089 are on anti-viral treatment. These patients are seen at least three to four times a year to monitor their immunological and viral status. In 2007 we registered 191 new HIV patients. Fifty-five percent of the patients are from Belgium, 28% from Sub-Saharan Africa and 17% from elsewhere.

Helpcenter

The Helpcenter aims at improving secondary HIV prevention, particularly in groups with high-risk behaviour. In 2007, we focused on voluntary counselling and HIV testing (VCT) of men having sex with men (MSM), in collaboration with the umbrella organisation Sensoa. This group now accounts for 18% of our patients and for 40% of the male patients. The Helpcenter had about 1,250 patient contacts with 630 different persons, and performed nearly 500 HIV tests. A pilot project to offer rapid HIV testing on-site (e.g. in bars and saunas) aims at reducing the thresholds for testing; clients have to attend only once and receive the result (and counseling) within half an hour.

The second main target group of the Helpcenter are Sub-Saharan African migrants. This group remains difficult to reach, and still makes up only 12% of our patients. In close cooperation with the health promotion unit (see Department of Clinical Sciences), we attempt to increase the Helpcenter's visibility and acceptance through outreach VCT promotion in popular African bars and at courses for newcomers. We also started up sexuological consultations in 2007, with the aim to reduce high-risk behaviour.

Hospitalisation Unit

The Tropical and HIV/AIDS Disease Ward at the University Hospital of Antwerp (UZA) hosted about 200 patients in 2007. Half of them had HIV-related problems. The others tropical or travel-related diseases, mostly malaria.

The ITM and UZA further extended their clinical collaboration to general infectiology, in association with the UZA departments of Microbiology and General Internal Medicine. On a daily basis, hospital-wide laboratory results are reviewed and joint rounds are made to selected patients. The team also provides in-house consultancies on demand, and provides training in infectiology.

Medical Laboratory

The Medical Laboratory assures general and specialised laboratory diagnosis for ITM patients as well as other laboratories and medical institutions in Belgium. In 2007, it processed samples from 31,549 patients (11,337 internal and 20,212 external). Besides routine biochemistry, haematology and microbiology, the Laboratory performed 114,998 specific serological or parasitological tests for tropical and imported diseases. Some typical diagnoses are listed below. In 2007, 6,432 samples were sent to the Mycology Laboratory, including 362 cultures for identification and 16 yeast cultures for sensitivity testing. Interesting strains are sent to the BCCM/IHEM (Biomedical Fungi/Yeast Collection of the Scientific Institute of Public Health (IPH), Brussels).

Table 1. The evolution of laboratory requests since 2000 shows a slow but steady increase, particularly of in-house patients

Year	Nr. Laboratory requests	ITM patients	External demands
2000	28,401	9,807	18,954
2001	29,916	10,313	19,603
2002	30,333	9,738	20,595
2003	30,357	10,955	19,402
2004	31,989	11,654	20,335
2005	32,144	11,514	20,630
2006	29,764	11,121	18,643
2007	31,549	11,337	20,212

Table 3. Typical laboratory diagnoses in 2007

Diagnosis	Number
Ancylostomidae	18
Ascaris lumbricoïdes	16
Blastocystis	637
Chilomastix mesnili	40
Cryptosporidium	16
Cyclospora	3
Dengue Virus	45
Dientamoeba fragilis	59
Endolimax nana	232
Entamoeba coli	332
Entamoeba hartmanni	120
Entamoeba hystolytica/dispar	222
Entamoeba hystolytica	10
Enterobius vermicularis	15
Giardia lamblia	197
Heterophyes heterophyes	2
Hymenolepis nana	9
Iodamoeba butschlii	56
Isospora belli	2
Leishmania	12
Loa loa	4
Mansonella perstans	4
Microsporidium	1
Plasmodium falciparum	110
Plasmodium malariae	10
Plasmodium ovale	17
Plasmodium species	2
Plasmodium vivax	19
Sarcocystis	4
Schistosoma haematobium	12
Schistosoma mansoni	36
Strongyloides stercoralis	12
Taenia saginata	1
Taenia spp.	4
Trichostrongylus spp.	4
Trichuris trichiura	24

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

Year	2000	2001	2002	2003	2004	2005	2006	2007
Number	108,833	110,088	110,832	110,265	115,914	122,601	116,327	114,998

Departmental Reference Laboratories

Department of Microbiology

National Aids Reference Laboratory

The AIDS Reference Laboratory (ARL) of the ITM is one of the seven centers certified and funded by the Federal Ministries 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 federal Scientific Institute of Public Health.

The table shows the number of reference tests performed by the ARL at the ITM since 2000. In 2007, 299 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.

Together with the HIV/STD laboratory, the ARL also participates in international studies among others in clinical trials of microbicides.

WHO collaborating centre for HIV/AIDS Diagnostic and Laboratory support

This reference centre is hosted by the ARL and the Unit of Immunology. The terms of reference 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 2007, the WHO testing panels were expanded with diluted cell culture supernatants of different subtypes of HIV 1 and HIV 2, and this for the evaluation of combined Ab/Ag tests, single Ag tests and viral load tests.

National Reference Centre for Mycobacteria

As National Reference Centre for Mycobacteria, the Unit of Mycobacteriology performs drug-susceptibility testing (DST) and identification of mycobacteria from peripheral Belgian laboratories, assists in quality control programmes for DST and performs DNA-fingerprinting analyses to document possible laboratory cross-contaminations or mini-epidemics. In 2007, we received 159 isolates for identification and DST, and 381 human specimens for the detection of mycobacteria.

Test	2000	2001	2002	2003	2004	2005	2006	2007
HIV screening	2,461	2,673	2,475	2,670	2,717	2,688	2,466	2,974
HIV confirmation	539	711	1,019	1,244	1,085	1,146	976	906
HTLV 1, 2 tests	73	152	51	32	-	-	-	-
HIV cultures	38	84	51	-	-	-	-	-
HIV viral load	3,114	3,421	3,744	4,376	4,564	4,835	4,980	5,338
HIV DNA PCR								
Blood Donors (BTC)	15	73	32	4	5	11	10	4
Others	72	68	73	91	64	113	115	132
Total	87	141	105	95	69	124	134	136
HIV resistance testing	91	98	100	121	113	110	136	210

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 assistance to endemic countries; international reference diagnosis; epidemiological surveillance; biomedical research; collection, storage and distributing reference samples; international training and developing material for local training. In 2007, we confirmed the diagnosis by culture and/or PCR for patients from Benin (549 biopsies, 188 swabs), DR Congo (563 biopsies, 314 swabs), Gabon (23 biopsies, 1 swab), South Africa (2 biopsies) and Togo (1 biopsy).

Supranational Reference Laboratory for drug-resistant tuberculosis

The Unit of Mycobacteriology performs DST for various National Tuberculosis Programmes, trains local staff and ensures quality control for an international network of TB laboratories. In 2007, external quality assessment was assured for drug resistance surveys in Tanzania and Bangladesh. We supported the MDRTB treatment programmes in Rwanda, DR Congo, Georgia and Myanmar by resistance testing to second-line drugs.

We also analysed 2,920 sputum specimens (culture and DST) sampled in various field projects from Médecins sans Frontières France.

As International Reference Laboratory, the unit coordinated in 2007 the 13th round of quality assessment of DST for the Supranational Reference Laboratories.

National reference laboratory for *Neisseria gonorrhoeae*

The ITM Reference Laboratory for Sexually Transmitted Diseases acts as Belgian reference centre for *Neisseria gonorrhoeae*. In 2007, it received 530 gonococcal isolates from 71 different peripheral Belgian laboratories, an increase of 60% as compared to 2006. Confirmed isolates were stored frozen for later supplemental batch testing. Antimicrobial susceptibility testing, identification of plasmids and detection of fluoroquinolone resistance DNA mutations were performed on 332 gonococcal isolates. Resistance to quinolone, penicilline, and tetracycline was detected in 62%, 33%, and 51% of the isolates, respectively.

Department of Parasitology

OIE Reference Laboratory for *Trypanosoma evansi* (surra)

The Unit of Parasite Diagnostics is an official reference laboratory for *Trypanosoma evansi* (surra) of the World Organisation for Animal Health (OIE). In 2007, our laboratory delivered 30,000 diagnostic kits, carried out 200 reference tests on animal samples for export purposes (horses, dogs, camels, small ruminants), and performed a ring trial to assess reproducibility and performance of a PCR-Oligochromatography diagnostic test. We gave advice on surra diagnosis and treatment to scientists and veterinarians from various countries.

Department of Animal Health

National Reference Laboratory for Trichinellosis, Echinococcosis, Sarcosporidiosis and Anisakiasis

Since a number of years the ITM houses the National Reference Laboratory for Trichinellosis. In 2007, the Federal Food Agency extended this commission to echinococcosis, sarcosporidiosis and anisakiasis. Our tasks include epidemiological surveillance of these parasitic zoonoses in Belgium, the periodical evaluation of certified routine laboratories, the organisation of ring trials, and scientific and technical assistance to other laboratories. In 2007 we performed 10 audits of *Trichinella* laboratories, a first ring trial for the detection of *Trichinella* larvae in meat, and several training sessions. We confirmed a suspected case of Trichinellosis in a wild boar. The European Commision was formally requested to certify Belgium as a "Region with negligible risk" for *Trichinella* in pigs kept under controlled housing conditions.

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 this 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 2007 was marked by the assessment and conclusion of the second FA programme (FA2, 2003-2007), and the planning of the upcoming third FA programme (FA3, 2008-2013).

Conclusion of the Second DGDC-ITM Framework Agreement

The first Five-Year Programme under the Framework Agreement started in 1998 and was successfully concluded in 2002, with total expenses exceeding 21 million Euro.

The second Five-Year Programme started in 2003 and was completed at the end of 2007, with expenses of nearly 45 million Euro. Over these 5 years, the Framework Agreement was further modernised into a succinct, results-oriented management contract. The DGDC links its financial support to expected output and quality; the ITM and its partners define the strategies and activities to achieve these objectives and set targets. In practice, the DGCD remained closely involved in the planning and monitoring of the programme through a joint steering committee.

Joint project planning at the Institute of Tropical Medicine Cayetano Herredia, Lima, Peru.

The main objective of the 5YP-II was defined as "capacity building of institutions in the South, which through research, education and the provision of services can provide sustainable improvements to health care, and thus poverty reduction, in their countries and regions". This objective was pursued through three interacting strategies: individual training and support; institutional strengthening; international networking and policy development. We networked and collaborated with 27 institutions or organisations in 17 developing countries, trained over 500 individuals to the Master of PhD level and supported the DGDC with policy research and attendance in international health fora.

"The over-all assessment of the ITM programme was highly positive across the board; DGDC gets good value for monely in each component"

On an **individual level**, we focused primarily on the training of mid-career experts, both at the ITM and in the partner institutions (see chapter Education). The stimuli given to doctoral training, distance learning and alumni support paid off. Over a period of five years, some 350 Master and PhD students benefited from a fellowship. Several e-learning courses and interactive expert programmes were developed and put to use, both in the veterinary and in the medical sector. We strengthened, expanded and harmonised the support to our alumni networks.

Our second strategy aimed at comprehensive, sustainable **strengthening of partner institutions** in the South. The support was not limited to joint research and training projects, but included also strategic and operational management, logistics, administration and personal exchanges. The scope of most of these institutional partnerships developed gradually, with intermittent evaluations and re-orientations. We established a fully-fledged cooperation with several partners across the entire institutional spectrum. Other collaborations had a thematic focus or concentrated on

Health policy research: a patient interview in Mali to gauge the acceptability of Community Health Insurance.

research, training or reference diagnostics and patient care. Most partners were scientific institutes or references laboratories, but some projects involved public health services or NGOs in order to support and document operational experiences with a generic interest.

On an **international level,** the 5YP-II aimed to generate, distribute and apply cross-border knowledge, and to influence regional and global health policies. To this end, we used a variety of mechanisms: direct flow of results and recommendations for operational services from our partners to national ministries of health in their countries; dissemination of results through the usual scientific national and international channels (publications, reports, congresses); creation and support of regional or international networks. Other outlets and instruments were the alumni networks, the annual ITM-colloquia and the ITM's own teaching programmes. Generic policy questions were addressed in a number of policy-support research projects. These included the follow-up and evaluation of international health policies focused on the "global initiatives"; the follow-up of the "Health Care for All" agenda; the roll-out of anti-retroviral treatment for HIV/AIDS; and rational strategies for surveillance and control of zoonoses in Africa.

Maternal and child health survey in collaboration with the Centre Muraz, Burkina Faso

The detailed list of institutional programmes, joint research projects and other activities under the FA2 is given below. Details can be found on the ITM's website.

Preparation of the Third Framework Agreement (FA3)

In 2007 very substantial efforts went to the preparation of a third Framework Agreement Programme ("FA3"), in close collaboration with the prospective partners and the DGDC. The FA3 starts on 1 January 2008 and runs until end 2013 over a period of 2 x 3 years, with a mid-term assessment being planned in 2010. As a continuation of the FA2, the renewal provided an opportunity to review and strengthen concepts, strategies and procedures. While this has been a continuous process since 2003, the year 2007 has been marked by several decisive meetings and planning exercises.

In November 2004, all FA2 partners had met in a first "Joint Partner Meeting" aiming at mutual exchanges, networking and policy development. This meeting was also the onset for a comprehensive programme evaluation. This Mid-Term Assessment (MTA) was confined to a consortium consisting of the consultancy firm HERA and the Swiss Tropical Institute, and rounded off by mid-2006. The review covered not only FA2, but retrospectively also FA1 and prospectively FA3, and thus a 15-year period. The overall assessment was highly positive across the board, concluding that "DGDC gets good value for money for each component". No major adjustments were recommended for the ongoing FA2, and relevant recommendations were made for the continuation under FA3.

Our collaboration with the Institut Nationale de Recherche Biomédicale, has resulted, among others, in a local production line of the mAECT (mini Anion Exchange Chromatography Test) for the detection of trypanosomes in sleeping sickness patients.

An internal working group then set off to develop the institutional vision on the FA3 and, more in general, ITM's mission in respect to capacity strengthening in the south. In November 2006, a second Joint Partner Meeting was convened in which the objectives, components and instruments of the FA3 were discussed and agreed upon. The renewed concept was reflected in the ITM's 2006 Centennial Colloquium "Tropical medicine in the 21st Century: switching the poles" (see previous annual report). In summary, the partnership agreed on the following progammatic logical framework.

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

The purpose of capacity development will be pursued at the individual, institutional and international level. In addition, support will be given to the Belgian sector of international health development and cooperation. The administrative management is considered a fifth, separate component. Accordingly, the FA3 is divided into 5 subprogrammes, each corresponding with a "programme result" in the over-all logical framework.

1. Training: strengthening the capacity of individuals from developing countries
2. Institutional collaboration: strengthening the institutional capacity of institutes, organisations and networks in developing countries
3. Strategic programme: addressing and completing strategic priorities by targeted additional projects and partnerships, and through networking within and outside the FA3
4. Policy support and advocacy: providing support to the Belgian development cooperation in the formulations, implementations and dissemination of its policies
5. Management: ensuring adequate administrative and financial management of the programme

Throughout 2007, the conceptual and practical planning process was continued at various levels, while partnerships and projects were selected through a peer-reviewed process concentrating on institutional development strategies. With the DGDC, important changes were agreed regarding contractual modalities, including an extension of the programme period to (renewable) six year periods with tri-annual funding commitments, greater autonomy to define the programme components, and more flexible rules and regulations.

The ITM formally submitted the FA3 programme to DGDC on 28 November, with an estimated budget of 36 million Euro for the first period 2008-2010. Due to the government crisis in Belgium, however, the final approval is not expected until early 2008. Nevertheless, the programme activities do start (or continue) on the January the 1st, 2008, with a preliminary budget allocation and pre-funding by the ITM. In the next annual report, we will describe the new Framework Agreement Programme or FA3 in greater detail and provide feedback on the first experiences.

Improved case management of tropical and infectious diseases, including the prevention of drug resistance, is a major cross-cutting issue of the ITM-DGDC Programme.

New Director-General of DGDC visits the ITM

Director Bruno Gryseels officially handed over the ITM's proposal for the Third Framework Agreement Programme to Mr. Peter Moors, the new Director-General of the DGDC.

On 28 November Mr. Peter Moors, the DGDC's new Director-General, paid his first visit to the ITM. The ITM's director, Bruno Gryseels, introduced the institute's history, mandates, structure and activities. Obviously, the DGDC-ITM Framework Agreement Programmes were presented and discussed in great depth.

A tour of the ITM's premises, including the new Rochus Campus, allowed Mr. Moors to meet staff and students and to get a hands-on feeling of the vibrant campus surroundings.

Projects

Institutional collaboration

Africa

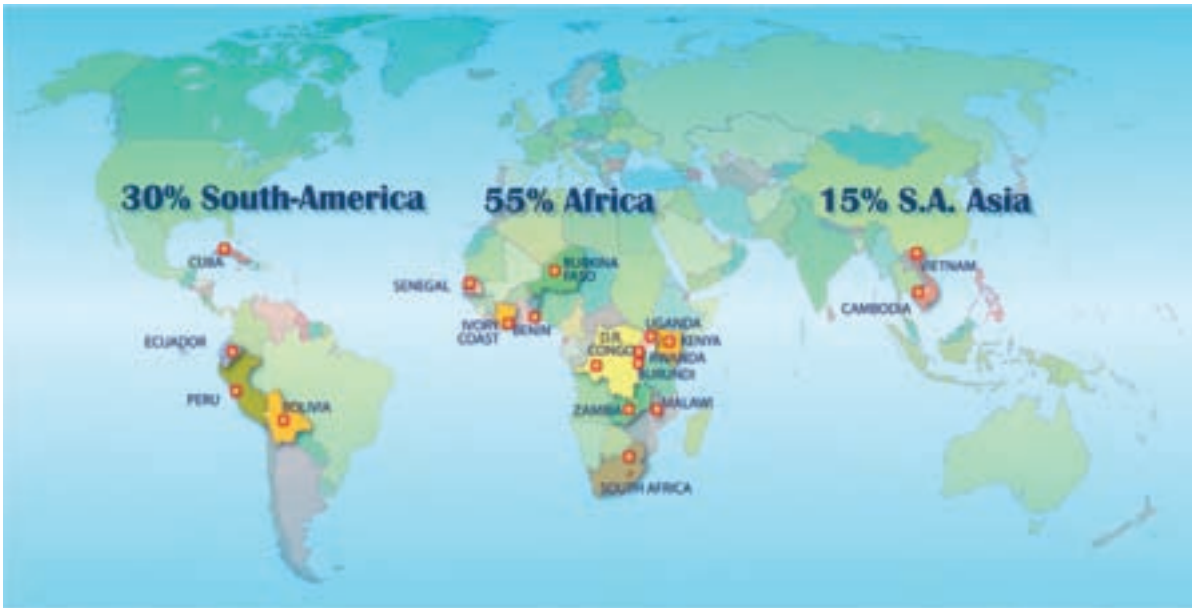
Reference number 95103
DR Congo, Kinshasa: Institut Nationale de Recherche Biomédicale (INRB)
INRB promoter: J.-J. Muyembe Tamfum
INRB collaborators: A.Kibadi, A. Lukuka, P. Lutumba, D.Mumba,
Other institutions: J. Sumbu (LABOVET); V.Kande (PNLTHA)
ITM promoter: M. Boelaert
ITM collaborators: P. Büscher, U. d'Alessandro, R. De Deken, K. Polman, F. Portaels, J. Robays

Reference number 95104
DR Congo: Laboratoire Nationale de Référence pour le SIDA (LNRS)
LNRS promoters: J. Muwonga (LNRS), A. Okenge (PNLS)
LNRS collaborators: H. Engele (LNRS)
ITM promoter: K. Fransen
IMT collaborators: L. Kestens, L. Boel

Reference number 95305
Rwanda: Clinical Research Centre, Centre Hospitalier Universitaire de Kigali
Local promoter: P. Munyarugamba
Local collaborators: J. Mugabekazi, J. Vyankandondera.
ITM promoter: J. Van den Ende
ITM collaborators: J. Clerinx, L Lynen, L. Kestens, L. Boel, M. Van Esbroeck, T. Vervoort.

Reference number 96202
Burundi: Programme de Lutte contre les Maladies Transmissibles et Carentielles (LMTC)
LMTC promoter: D. Baza, J. Karenzo (LMTC), N. Protopopoff
LMTC collaborators: P. Maes, M. Van Herp (MSF- Brussels)
ITM promoter: M. Coosemans
ITM collaborators: W. Van Bortel, N. Protopopoff, U. d'Alessandro

Reference number 96603
Zambia: Tropical Disease Research Centre of Ndola
TDRC promoter: M. Mulenga
TDRC collaborators: V. Chalwe, M. Nambozi, C. Mulenga
ITM promoter: U. D'Alessandro
ITM collaborators: J.P. Van Geertruyden, L. Kestens, A. Buvé, L. Rigouts, F. Portaels



Institutional partnerships in the South under the ITM-DGDC Framework Agreement.

Reference number 96702

Uganda, Rwanda: East African Network for Monitoring Anti-malarial Treatment (EANMAT)

EANMAT promoter: T.K. Mutabwinga

EANMAT collaborators: C. E. Rwagacondo, A.O. Talisuna, **N. Bakyaita**

ITM promoter: U. D'Alessandro

ITM collaborators: M. Coosemans, J.C. Dujardin, C. Van Overmeir

Reference number 96402

Kenya: collaboration with Nyanza health services, KEMRI and NGO's to improve reproductive health of adolescents in Western Kenya

Nyanza promoter: Nyanza Provincial Medical Officer (Nyanza Province, Kenya)

Nyanza collaborators: staff of Kenya Medical Research Institute and Nyanza Provincial Medical Services, Kisumu

ITM Promoter: A. Buvé

ITM collaborators: H. Vandenhoudt, E. Blommaert

Reference numbers 96902

Senegal: collaboration with the Immunology Laboratory of the Centre Hospitalier

CHU Promoter: S. Mboup

CHU Collaborators: T. Dieye, M. Camara, A. Diallo, P. A. Diaw, M. Diop, S. Sow, D. Faye.

ITM Promoter: L. Kestens

ITM Collaborators: P. Ondoa, W. Jennes, K. Polman, K. Vereecken, C. Vereecken

Reference number 95203

Ivory Coast: Institut National de Santé Publique / ASAPSU

ASAPSU promoter: P. Agbré

ASAPSU collaborators: G. Mah-Bi, S. Yayo, A. Langui, S. Elloh, C. Zouzoua, M. Dodo

ITM promoter IMT: M. Laga

ITM collaborators: A. Buvé, T. Delvau

Reference number 96502

Burkina Faso: Centre Muraz, Bobo-Dioulasso

CM promoter: N. Meda

CM collaborators: S. Drissa, H. Tinto, R. Guigemdé

ITM promoter: P. Kolsteren, V. De Brouwere, U. D'Alessandro

ITM collaborators: D. Roberfroid, S. Gies

Reference number 96803

Benin: Reference Laboratory for Mycobacterial Diseases

RLMD promoter: S. Anagonou

RLMD collaborators: M. Gninafon, B. Tanimomo, F. Kassa, J. Aguiar

External collaborators: J. Glynn (London School, UK), W.M. Meyers (AFIP, Washington DC, USA), F. Nackers (UCL, Brussels, Belgium), J. Pedrosa (University of Minho, Portugal), M.T. Silva (University of Porto, Portugal)

ITM promoter: F. Portaels

ITM collaborators: A. Ablordey, D. Affolabi, M. Debacker, L. Durnez, M. Eddyani, G. Sopoh, P. Stragier, P. Suykerbuyk

Support: DGDC, Damien Foundation, TDR

Reference number 96130

Innovation in the control of African trypanosomiasis: development of novel tools, based upon pioneering scientific findings

Local collaborators: INRB, DR Congo; DVTD, South Africa

ITM promoter: M.Coosemans

ITM collborators: P. Büscher , M. Boelaert, P. Van den Bossche, E. Pays (ULB), P. De Baetselier (VUB)

Support: DGDC

Reference number 95402

South-Africa: Institutional collaboration with the Department of Veterinary Tropical Diseases (DVTD) of the University of Pretoria

External promoter: J.A.W. Coetzer

ITM promoter: P. Dorny and P. Van den Bossche

Support: DGDC, University of Pretoria

Reference number 96104

Malawi: Support to the training programme of the OAU/IBAR Centre for Ticks and Tick-borne diseases (CTTBD), Lilongwe

Partner promoter: M. Mulumba
Partner collaborators: University of Zambia, Sekoine University, University of Pretoria
External collaborators: G. Chaka, S. Tempia, M. Ouagal
ITM promoter: Dirk Berkvens
ITM collaborators: T. Marcotty, V. Delespaux, P. Van den Bossche
Support: DGCD, DANIDA, Dutch Development Cooperation, PACE, South America

Reference number 95502

Peru: Instituto de Medicina Tropical "Alexander von Humboldt", Universidad Peruana Cayetano Heredia, Lima

IMT AvH promoter: E. Gotuzzo
IMT AvH collaborators: J. Arevalo, D. Gamboa, B. Bustamante, H. Guerra, P. Ventosilla, I. Best, and colleagues
ITM coordinator: J.C. Dujardin
ITM collaborators: T. Verdonck, D. Swinne, L. Lynen, U. D'Alessandro, K. Polman, F. Portaels, L. Rigouts, G. Vanham

Reference number 95702

Cuba: Institutional Collaboration between ITM Antwerp and IPK-INHEM

Partner promoter: M. Bonet (INHEM) and G. Kourí (IPK)
IPK-collaborators: M.E. Toledo, D. Perez Chacon, A. Baly, A. Reyes Jimenez, M. Peralta Perez, J. Fraga, L. Rojas Rivero, F. Nunez Fernandez, A. Ruiz Espinosa, L. Pelayo Duran, R. Cordovi Prado, I. Atencio Millan
INHEM-collaborators: A. Rodriguez Salva, A.G. Alvarez Perez, A. Garcia Farinas, R. Junco Diaz, AM Collado Madurga, L. Menocal Heredia, K. Alfonso Sague, A. Escobedo
ITM promoter: P. Van der Stuyft
ITM collaborators: M. Boelaert, P. De Vos, V. Vanlerberghe, F. Matthys, P. Lefèvre, J.-C. Dujardin, K. Polman, M. Wördemann

Reference number 96113

Bolivia: Support to the "Specialisation Course in Tropical Medicine and Disease Control"

UMSS Promoters: Dr. F. Torrico
UMSS Collaborators: 26 UMSS academic staff
ITM Promoter: P. Van der Stuyft
ITM Collaborators: M. Pirard, J. Van der Vennet, G. Van Heusden

Reference number 95604

Ecuador: Institutional collaboration between PUCE and ITM

Partner promoter: E. Aguilar
Partner collaborators: J. Palacios, K. Pesse, E. Rojas, R. Goyes, I. Debrouwere, José Sola and A. Rojas
External collaborators: BTC/CTB, APS project; Instituto Ecuatoriano de Seguridad Social; Ministerio de Salud Pública del Ecuador; Municipio de Quito; PAHO; SOLCA; Universidad Central de Quito; FLACSO sede Ecuador; Universidad Autónoma de Barcelona; Universidad del Noreste (Argentina); Escuela Politécnica del Litoral; Universidad de Antioquia, Colombia, NGOs and hospitals.
ITM promoter: J.-P. Unger
ITM collaborators: G. Van Heusden, J. Van der Vennet, P. Daveloose, M. Van Dormael, P. De Paepe, W. Soors

Reference number 96123

Ecuador: International Centre for Zoonosis, Quito

ICZ promoter: W. Benitéz-Ortíz
ICZ collaborators: M. Chavéz-Larea, M. Barionuevo-Samaniego, M. Celi-Erazo, J. Ron-Roman, F. Proano,R. Rodríguez-Hidalgo, Rommel Lenin.
ITM promoter: D. Berkvens
ITM collaborators: P. Dorny, N. Praet, D. Geysen, F. Portaels, L. Rigouts

Asia

Reference number 95801
Vietnam (Cambodia, Laos): National Institutes of Malariology, Parasitology and Entomology (NIMPE)
NIMPE promoter: L. K. Thuan
NIMPE collaborators: H. D. Trung, L.X. Hung, N.D. Thang, N.X. Xa, T. T. Tinh, D. Thach, T. Sochanta, K. Keokenchan.
Regional collaborators: (Cambodja, Laos): D. Socheat, S. Phompida, V. Baimai.
ITM promoter: M. Coosemans
ITM collaborators: W. Van Bortel, K. Verhaeghen, U. D'Alessandro, A. Erhart, P. Büscher, F. Claes, P. Dorny

Reference number 95901
Cambodia: Sihanouk Hospital Centre of HOPE (SHCH)
SCHC promoter: T. Sopheak
SCHC collaborators: G. Jacques, C. Haener, G. Lucas, S. An, S. Teav, C. Chandarith
ITM promoter: L. Lynen
ITM collaborators: D. Sculier, O. Koole, J. Jacobs, L. Rigouts, A. Feyens, B. Colebunders
Support: DGDC, EC, EuropeAid

Reference number 96102
Cambodia: National Centre for HIV/AIDS Dermatology and STDs (NCHADS)
NCHADS promoter: M. Chhi Vun
NCHADS collaborators: E. Huot, central and provincial staff of NCHADS
ITM promoter: A. Buvé
ITM collaborators: F. Crabbé, T. Delvaux

POLICY SUPPORT

Reference number 97206
Health Care for All (HCA)
ITM promoter: M. Van Dormael
ITM collaborators: B. Criel, G. Kegels, V. De Brouwere, J.-P. Unger, M. Van Dormael, M.P. Waelkens, B. Meessen, M. Noirhomme, B. Marchal, P. Blaise, S. Dugas, A. Cavalli, W. Soors, P. De Paepe

Reference number 97306
Policy Research on prevention of HIV transmission from mother-to-child (PMTCT) and on care of HIV-infected persons in developing countries
ITM promoter: A. Buvé, M. Laga
ITM collaborators: T. Delvaux, J. Vandepitte, W. Van Damme, R. Colebunders, L. Lynen, B. Meessen, L. Kestens, G. Vanham, K. Fransen

Reference number 97102
International Health Policy
ITM promoters: W. Van Damme, M. Boelaert.
ITM collaborators: G. Laleman, P. Van der Stuyft, D. Van der Roost

Reference number 94301
Be-cause Health: Belgian platform for International Health Development
ITM promoter: D. Van der Roost
ITM collaborators: M. Van Dormael, B. Criel, M. Laga, T. Delvaux, M-P. Waelkens and others

Reference number 94301
Be-troplive: Belgian platform on tropical animal health and production
ITM promoter: Eric Thys
ITM collaborators: P. Dorny, S. Geerts and others

Reference number 97402
A framework from the improved control of zoonoses
ITM promoters: P. Van den Bossche, P. Van der Stuyft

Management

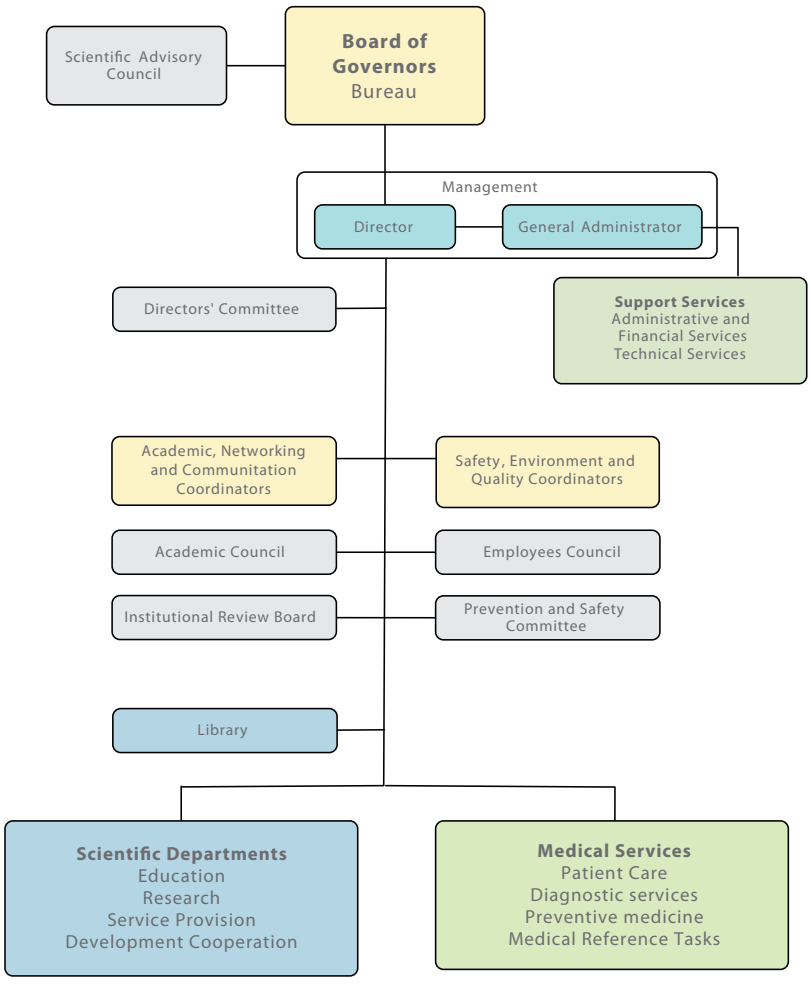
General

Early 2007, the ITM adopted completely renewed internal regulations, consolidating and refining the responsibilities of the various management levels and advisory bodies at the ITM, and integrating the revised staff, student and academic regulations that had been adopted over the previous few years. These new and comprehensive regulations provide a solid reference base for our management system, and a cornerstone for the integrated quality system, which we still aim to complete by 2010.

The organisation chart of the support services was simplified and, following natural retirements and departures, new heads of service were appointed for Human Resources, Health and Safety and the Applied Technology and Production Unit.

The shrinking availability of experienced administrative and technical staff on the Belgian labour market has become an important challenge for retaining and motivating support staff in academic institutes.

General organisation chart ITM



Support services

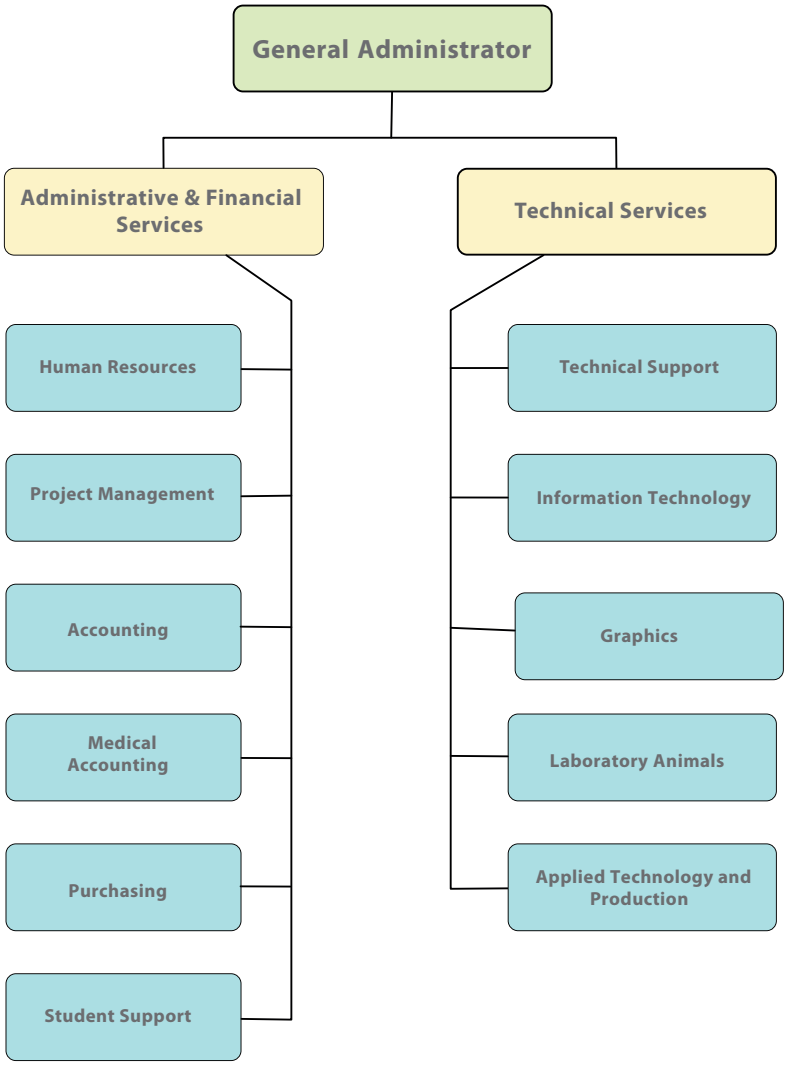
Administrative & Financial Services

The ever-increasing number and complexity of routine duties, the newly introduced VAT-liability of academic institutes, the fine-tuning of the "innovative administrative network" software (IVAN) and the drastic reform of the contractual obligations European Framework Programmes were the most distinctive challenges in 2007.

The **Accounting Service** processed 11,088 invoices and kept the ITM's books and balances up to date. It contributed substantially to the design and implementation of the processes needed to implement the VAT-liability. Invoices related to all investments over the last 15 years were traced and listed, which should allow to recover retrospectively a relatively large sum of earlier VAT-payments.

The **Medical Accounting Service** handled the public tender for digitalising of the radiology unit and dealt with 3,324 supply invoices, 61,303 patient invoices, 43,003 client invoices and 43,533 invoices for mutual insurance companies.

Organisation chart of support services



The **Human Resources Service** managed the salary administration of 370 staff members and coordinated the recruitment of 48 new employees. Lore Verstraete, the newly appointed head of service, brought with her an extensive knowledge of and experience in academic human resources management. New software for the follow-up of staff training was introduced, linked to the salary software and the integrated quality system. The cleaning services were outsourced and a new collective labour agreement for early retirement was concluded.

The **Purchasing Service** handled 4,356 order forms, 124 large air shipments, 873 urgent deliveries, 45 complex deliveries of dangerous goods, 650 travel and visa bookings. An integrated data processing system for external order forms and stock needs was introduced, and the through IVAN network all purchasing data are now available on-line to ITM staff.

The **Project Management Service** contributed considerably to the preparation of the third ITM/DGDC Framework Agreement. The new funding rules of the EU Framework Agreement were implemented, the VAT-liability applied to the project management, and the IVAN network tailored to specific needs. The service follows up 240 projects, of which 46 under the European Research Framework Programme, and 34 were started up in 2007.

The new head of HR Unit Lore Verstraete with staff members Anneke De Meester and Alexia De Smet.

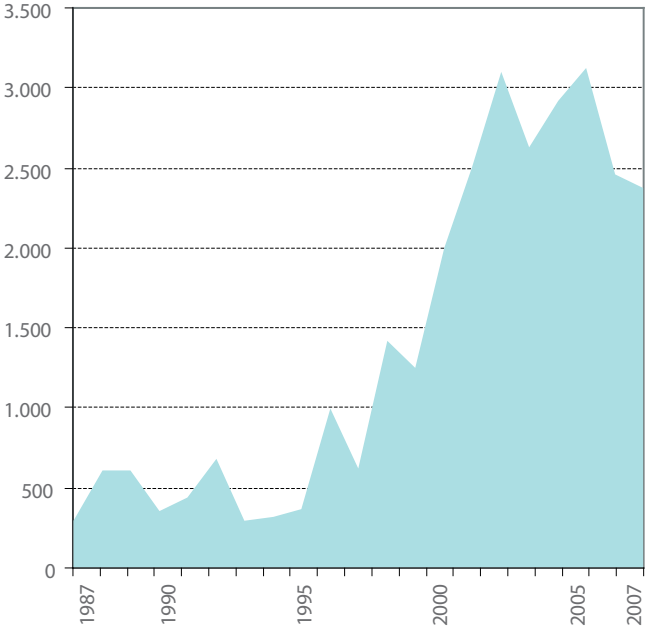
The team of the Purchasing Service : Tim Stoffelen, Lieve Casier, Kirsten Gabriëls, Mark Blijweert and Peter Croes.

Technical Support Services

As in previous years, the **Graphics Service** was responsible for the layout and printing of most ITM documents. In 2007, a new image management system (FOTOWARE) was installed, new templates for presentations and publications were designed, and in-house software training provided. An increasingly important part of the units' assignment consists of support to e-learning and website design.

The duties of the ITM's **Information Technology (IT) Service** increase by the year. The 2007 activities include an upgrade of the network servers, the renewal of central IT infrastructure and the installation of 40 new wireless network access points. Furthermore, the IT unit provided extensive support to the IVAN network and its users, the digitalisation of the radiology unit, e-learning projects, videoconferencing and web-based educational software. An expert in software validation joined the unit in order to ensure the complex IT aspects of integrated quality management. The IT Unit installed 257 new telephones and maintained 1,021 existing ones. Of the 2,014,765 incoming e-mails at the ITM in 2007, 60% was SPAM and 0.2% (= 4.490) contained a virus; all were all successfully filtered and removed.

CATT/Tbg Tests delivered over the years (x 1,000)



Eddy Magnus and Diane Jacquet, old and new heads of the Unit of Applied Technology and Production.

The **Applied Technology and Production Service** provides support to the research departments and the Medical Laboratory, and assures the production and 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, which contains at the present 51,702 vials, prepares culture media (114,730 items in 2007) and ensures central decontamination (42,399 items) and sterilisation (36,982 items).

The subunit for Laboratory Animal Maintenance takes care of test animals with on average 466 mice, 187 rats and 46 rabbits, under supervision of the veterinary department.

The subunit Production produces and supplies, on a non-profit basis, diagnostic kits for sleeping sickness and leishmaniasis to control programmes, ministries and NGOs in endemic countries. The main activity is the production of the Cart Agglutinations Test (CATT) for *Trypanosoma gambiense* test; in 2007, 2,036,000 tests were produced and 2,377,250 supplied. As shown in the figure, the demand has stabilised since 2002 after the exponential increase between 1997 and 2002, indicating that the control programmes are running at cruising speed. Other production lines are CATT/*T.evansi* (29,500 tests supplied), LATEX/*T.evansi* (1,250), LATEX/*T.b.gambiense* (4,250), LATEX/IgM 5,500), DAT/Leishmania (22,560).

As subcontractor to the World Organisation for Animal Health (OIE) reference laboratory, our unit performs the diagnostic tests for Surra (*T. evansi*).

The ITM technicians installinig a new cooling system for the central server unit.

The **Technical Services Unit** put the finishing touches on the Rochus campus, and coordinated the last parts of the renovation works. The parts of the main building, vacated by the departments that moved to the Rochus campus, were extensively renovated and refurbished before being re-occupied. The central heating furnaces were replaced and the preparatory studies for the extension and renewal of the clinical laboratory concluded. In collaboration with the personnel service, the unit outsourced the cleaning services through a public tender and assured a continued training plan for its staff.

Hugo De Groof and Peter van Eyndhoven, old and new head of the Technical Unit..

Coordination Cells

The **Health and Safety Coordinators** organised training and information sessions for all staff in the fields of fire safety and ergonomy, updated the asbestos inventory. renewed the safety signposting, introduced mandatory product safety cards and contributed to the revision of the laboratory personnel.

The **Quality Assurance Coordinators** extended the quality system throughout the Institute, including the research departments. The quality manuals were updated to reflect the latest changes in the organisation. Systems were set up for customer service surveys and supplier evaluations; the first steps were set towards systematic validation of all critical software.

Staff changes in the second half of 2007 limited the activities somewhat, but the level was successfully maintained, as confirmed by a new and positive audit by BELAC (Belgian Accreditation Organisation) in November.

A large part of the tests and laboratories now comply with the ISO17025 and ISO15189 standards.

New staff and resources will strengthen the Quality Assurance Unit early 2008, which should enable further progress to achieving a full integrated quality system by 2010.

The **Communication Service** is responsible for internal and external communication at and by the institute, the production brochures, reports and newsletters, the organisation of events and the relations with the press. In 2007 Caroline Van Neste joined the ITM as the new communications officer, Nico Van Aerde as webmaster. A first main assignment was the complete overhaul of the ITM-website.

Other services reported their activities in the chapters on education, research, networking and international services.

The communication service with Caroline Van Neste and webmaster Nico Van Aerde.

Human Resources

On 31 December 2007, the ITM employed 370 people or 330.1 full-time equivalents (FTE), as compared to respectively 361.0 and 321.7 at the end of 2006.

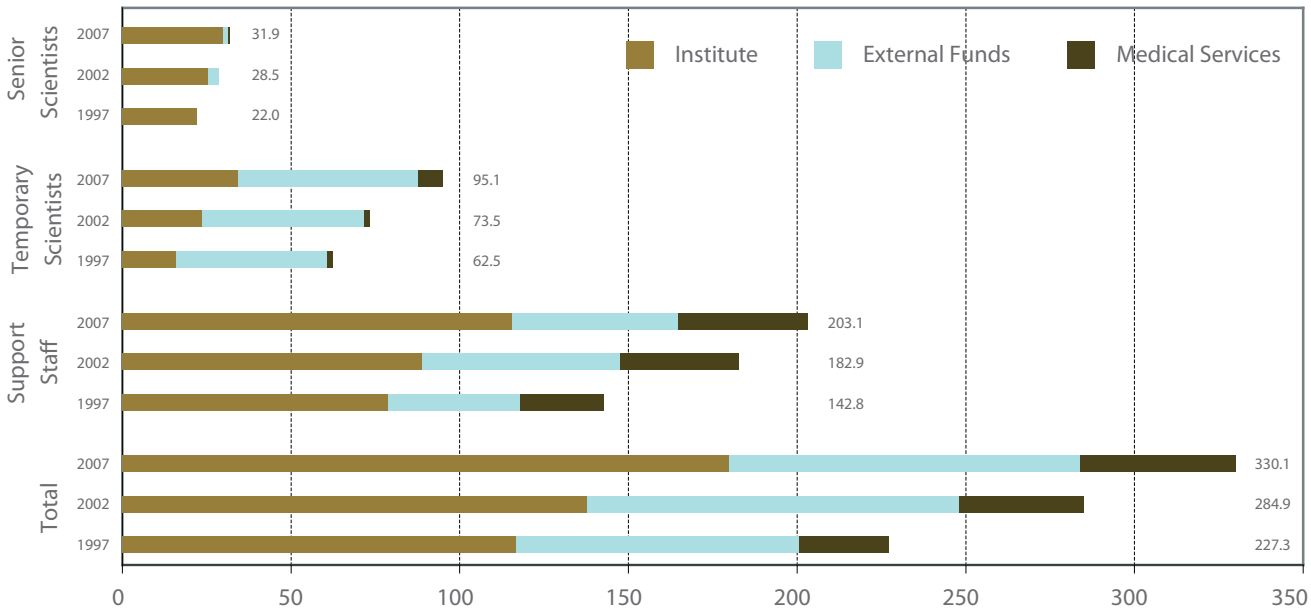
The ITM applies the same salary scales, recruitment procedures and working conditions as the Flemish universities. Consequently, the personnel categories include **senior scientific staff (**academic, scientific and medical personnel with an employment contract of undetermined duration); **temporary or assisting scientific staff** (academic, scientific and medical personnel with a temporary employment contract); and administrative and technical **support staff.**

Figure 1 gives an **overview of staff** (in full-time equivalents) in 1997, 2002 and 2007 (per 31.12), divided over the three main funding types and staff categories. Over this period, the number of FTE increased with 45% from 227 to 330.

The strongest increase, 52%, occurred among temporary scientific staff, of which 56% is externally funded. The graph does not include the 71 PhD bursaries who carry out their research at the ITM.

The number of administrative and technical support staff rose by 42%, mainly in the institutional and medical ranks. Of this category, 55% is funded by the ITM, 31% by external funds and 14% by the medical services, as compared to respectively 51%, 37% and 12% in 1997 .

Figure 1: Overview of personnel (FTE)



Of all ITM staff, 84% have a diploma of higher education, of which 48% from universities and 36% from other graduate schools. The ITM stimulates continued staff education through internal seminars, training sessions, external and internal courses.

Of all staff at the ITM, 51% are employed with a contract of indeterminate duration. This number includes, by definition, all senior scientific staff, and excludes all temporary scientific staff. Among the support staff, 68% has a permanent and 32% time-limited contracts, the latter are mostly renewed over long periods. The other employment conditions of temporary and permanent staff are in any case equivalent.

Women represent 55% of all ITM staff combined. As shown in **Figure 2**, however, there is still a male dominance among the post-doctoral and particularly the senior (permanent) scientific staff, while predoctoral scientists are now predominantly female. We hope that this evolution will keep its promises; over the past year, we have already witnessed an increase of females among post-doctoral scientists from 32 to 40%, and among permanent scientific staff from 19% to 23%. In the administrative and technical support staff, women represent some 55% of the work force.

Figure 3 shows that 28% of ITM's staff is older than 50, 36% are in their forties and 22% in their thirties. Among the senior scientific staff 76% is older than 50, among temporary scientific staff 15% and among support staff 26%.

Figure 2: Balance male/female per category

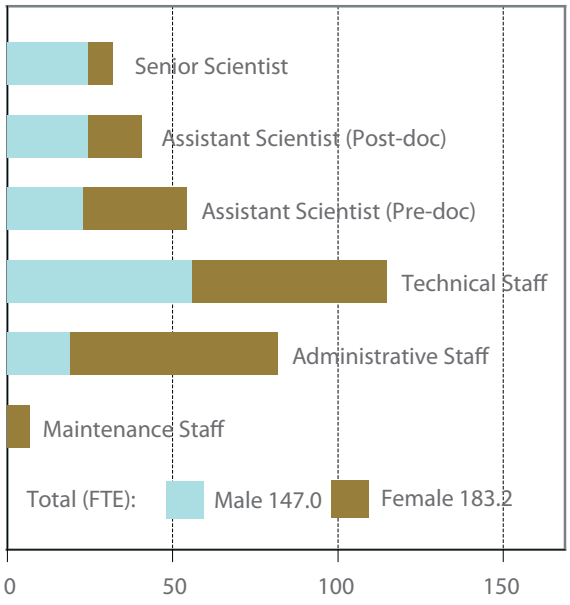
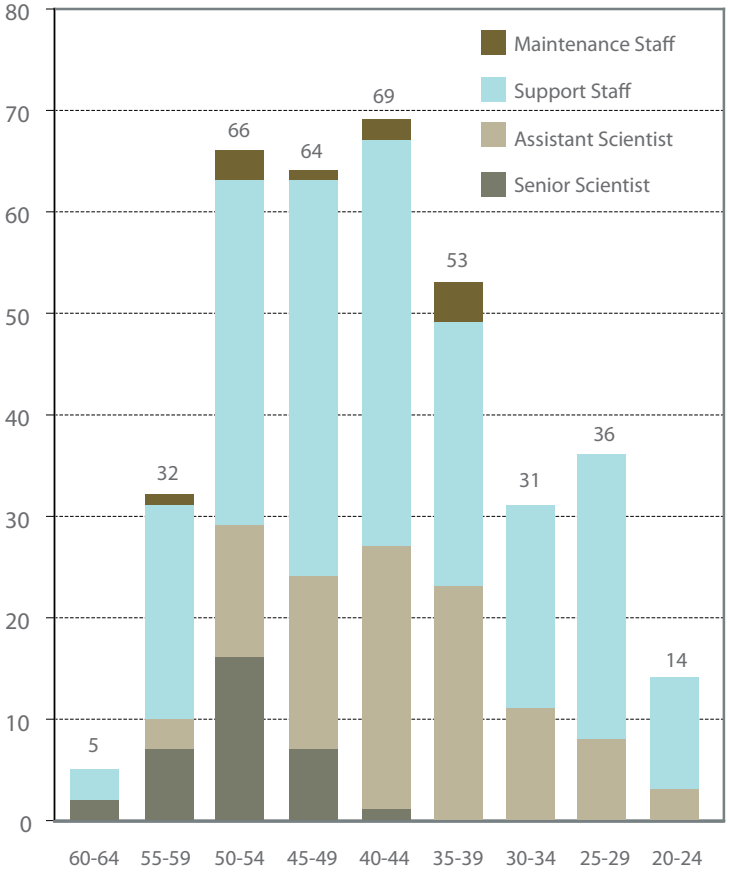


Figure 3: Age structure per category



Finances

We start this chapter with general observations and graphs, followed by a detailed financial overview of the annual accounts and the audit report.

The graphs do not include the income and expenditure under "Funds and Legacies" and "Investment". A number of duplicate entries in the results (tuition fees, overhead and internal adjustments) have been counterbalanced.

Income

In 2007, the net income of the ITM totalled nearly 45 million Euro, an increase of 19% and 178% as compared to 2006 and 1995, respectively. The peaks in 2002 and 2003 were due to the temporary AIDS Impulse Programme funded by DGDC.

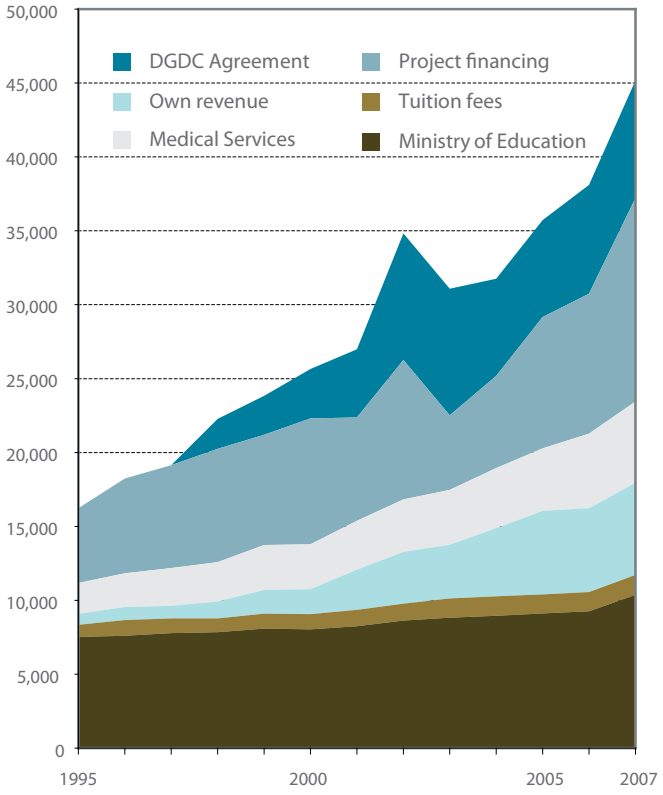
Although the Flemish Ministry of Education increased its core funding by 10% (890,000 Euro), its proportional contribution to the total income further diminished to 23% in 2007, down from 24% in 2006 and 45% in 1995. External project funding increased to 30%, up from 25% in 2006. The parts of DGDC (18%), own income (14%), medical services (12%) and tuition fees 3% remained stable.

The new research funding from the Ministry of Science, Technology and Innovation has not yet been formally committed and therefore not included in the tables and graphs below. There is little doubt, however, that they will be allocated and shall be included in the accounts of 2008.

Figure 4 gives an overview of income since 1995.

The core funding from the Flemish Ministry of Education increased nominally over the past 12 years with 38%, but this partial indexation did not suffice to keep level with inflation and salary increases. The substantial increase (+ 870,000 Euro annually) allocated from 2007 has in fact, just reduced the loss in real value over the past 10 years to 10%. This core funding remains the guarantee of the scientific status and independence of the ITM, however.

Figure 4: Overview of income since 1995 (x 1,000 euro)



The contribution of own income, through overheads, internal invoicing, fiscal and social rebates and (since 2002) the sale of diagnostic kits increased eightfold since 1995 and currently makes up 14% of the total budget.

The turnover of the Medical Services nearly tripled since 1995, due to the increased number of patients as well as new subsidies for reference tasks. The level and structure of the social security tariffs for clinical biology continue to put the Medical Laboratory under financial pressure, however.

External project funding keeps on increasing, due among others to strong scores of ITM researchers in the European Framework Programmes. Activities under the ITM/DGDC framework agreement (excluding tuition fees and overhead) amount to 18% of the income,. The tables below give a detailed picture of this income.

Figure 5 and table 6 show the evolution of project financing and DGDC, detailed according to the finance source. The negative amounts in some columns represent adjustments of earlier advances.

Strong increases are noticed in the funding from the DGDC and the European Framework Programme. The latter now make up 30% of the ITM's research income, be it that the graph illustrates the tri-annual cycle of this funding source.

The Research Foundation Flanders (FWO), the Institute for the promotion of Innovation through Science and Technology in Flanders (IWT), the Federal Ministry for Scientific Research, the World Health Organisation (WHO) and its Special Programme for Research and Training in Tropical Diseases (WHO/TDR) remain relatively modest but highly valued parts of our research portfolio.

Other external funding sources include foreign governmental agencies (Centers for Disease Control USA, USAID, U.S. President's Emergency Plan for AIDS Relief PEPFAR; GTZ Germany; IRD and ANRS France); international public-private partnerships (Medicines for Malaria Venture - MMV, Foundation for Innovative New Diagnostics- FIND, Conrad, PATH, Family Health International – FHI; charities (Ackermans-Van Haren Fund, INBEV Baillet Latour Fund, Bill & Melinda Gates Foundation, Union des Banques Suisses Foundation, AIDS Foundation Netherlands, Aids Diner Foundation...); non-governmental organisations (Damian Foundation, Médecins sans Frontières, Memisa, Medicus Mundi...); and many other organisations, companies and individuals (for a full list see below).

Figure 5: Overview income from projects & DGDC (x 1,000 euro)

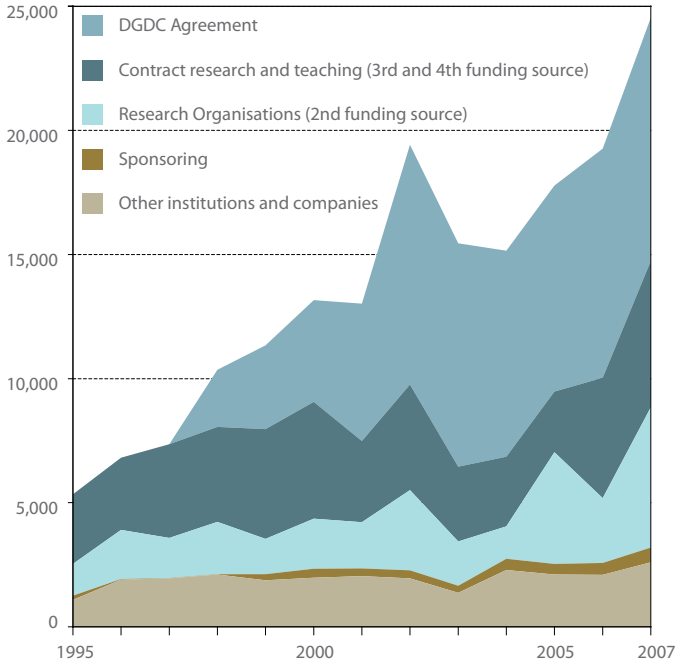


Table 6: Overview income Project Financing (x 1,000 Euro)

	2000	2001	2002	2003	2004	2005	2006	2007
Research Organisations (2nd funding source)								
Fund for Scientific Research	476	309	424	470	395	282	255	460
IWT	314	176	226	275	-58			75
Institute for Biotechnology	84	50	40	130				
European Community - DG Research	1,140	1,329	2,543	901	967	4,216	2,362	5,109
subtotal	**2,015**	**1,863**	**3,232**	**1,776**	**1,304**	**4,498**	**2,617**	**5,644**
Contract research and teaching (3rd and 4th funding sources)								
Flemish Authorities	168	178	298	254	894	758	618	615
Federal Authorities	1,304	807	1,810	1,734	-111	849	1,095	1,439
DGDC/BTC (exc. Agreement)	786	651	833	-11	-137	0	9	676
DGDC Agreement	4,090	5,107	5,949	7,500	8,300	8,300	9,224	9,800
DGDC Impuls programme		431	3,718	1,500	0	0	0	
European Community - other	1,587	1,026	394	234	1,422	226	2,157	2,187
World Health Organization	516	206	120	81	252	135	227	253
Others	359	399	798	721	487	478	746	729
subtotal	**8,809**	**8,804**	**13,920**	**12,254**	**11,107**	**10,746**	**14,075**	**15,698**
Other institutions and companies	1,973	2,040	1,957	1,373	2,286	2,106	2,097	2,598
Sponsoring	364	317	317	286	457	426	474	601
TOTAL	**13,161**	**13,025**	**19,427**	**15,447**	**15,154**	**17,776**	**19,263**	**24,542**

Expenditure

Figure 7 shows the effective expenditures and their distribution, which amounted in total to 41.6 million Euro. Transfers to partner institutes, making up 6.6 million Euro, are not included in this graph. The distribution over the various activities remains relatively stable with 67% for education and research, 13% for the medical services and 16% for the support services.

Table 8 shows the evolution of the expenditures under the DGDC framework (see chapter on Development Cooperation), with 2007 concluding the second programme period. The apparent increase in general costs and scientific support since 2003 is due to the new contract format, with a fixed fee for scientific support and overheads, whereas previosuly these were included in the project costs. Seventy % of the DGDC budget goes directly to training and capacity building in the South, with a geographic distribution of 63% for Africa, 11% for Asia and 26% for Latin America.

Figure 7: Overview expenditures 1995 - 2007 (x 1,000 euro)

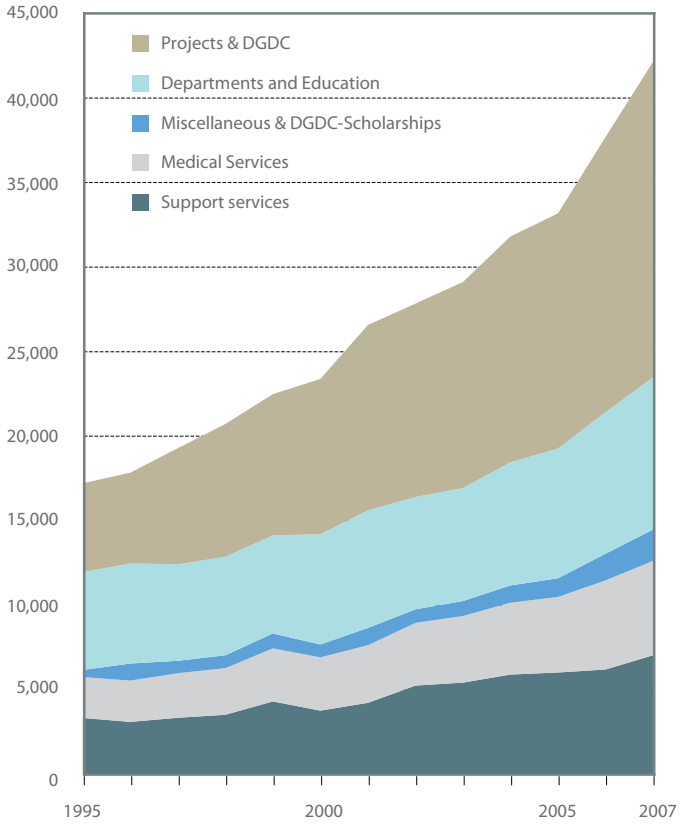


Table 8: DGDC Agreement Expenditures (x 1,000 Euro)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Training in Belgium	377	816	888	1,011	1,333	1,022	1,145	1,172	1,212	1,455
Fellowships	403	755	726	919	899	936	900	980	983	1,094
Local courses	87			100	64					
Conferences	111	63	87	66	43	25	108	134	91	102
Institutional Cooperation	744	895	1,202	1,223	1,526	1,519	1,805	1,854	1,697	2,031
Operational Cooperation	296	358	584	893	1,025	866	1,034	1,115	1,220	1,752
Policy research	222	370	431	538	610	98	180	212	177	263
General support	13	97	122	133	149	2,437	2,913	2,975	3,593	3,446
Total	**2,253**	**3,354**	**4,040**	**4,883**	**5,650**	**6,902**	**8,084**	**8,442**	**8,972**	**10,143**
AIDS Impulse Programme					3,484	1,470				

1998-2003 : Totals for the activity year (= operational)

From 2004 : Totals for the fiscal year (= account)

Financial results for 2007

The following pages give an overview of the total income and expense accounts divided over 4 sections:

- Institute (core funding, own income, tuition fees)
- Project funding and DGDC Agreement
- Medical services
- Funds and legacies

The financial result of the "Institute" section is positive (343,878 Euro), due to increased core funding, overheads and VAT-reimbursements, whereas expenses were lower than anticipated due to delayed filling-in of staff vacancies.

As in previous years, 10% of the financial result will be allocated to the ITM's Fellowship Fund. The remainder is allocated to new employees' advantages, such as meal vouchers. The balance consists of unspent budgets for education, research, diagnostics production and IT investments, which are carried forward to be spent next year

The section "Project Financing and DGDC Agreement" includes duplicate entries with the section "Institute", mainly from overhead, tuition fees and internal invoicing. The balance of the section "Project financing" is carried forward to 2008. The balance of the DGDC agreement can still be compensated by the final accounts of the second framework agreement period, but the final balance will have to be reimbursed to the DGDC.

The results of the section "Funds and Legacies" is allocated to specific objectives of these funds (investment, awards, early retirement premiums, …).

The expenses of the "Investment Funds" went mainly to the works on the Rochus Campus and the renovation of the heating system. This fund is nourished by the annual investment subsidy of the Flemish Ministry of Education, support from the Ministry of Monuments and Landscapes and transfers of positive balances from previous years.

Of the total expenditures, 22.3 million Euro or 43% went to salaries as compared to 20.6 million Euro or equally 43% in 2006. For the section "Institute", the percentage was 75%, for the medical services 58 %. Apart from the recruitment of new personnel (+ 8,4 FTE net), salary increases due to automatic indexation, promotions and seniority and other personnel costs (insurance, pensions, premiums) explain the over-all annual increase of 1.7 million Euro (+ 8.2%).

Operational and investment costs rose from 27.1 tot 29.4 million Euro or 8.5%, mainly in the sections "Institute" and "Project financing and DGDC Agreement".

Work at the Rochus Campus still continued in 2007.

Income and expenses account (in Euro)

INCOME	2007	2006
Section Institute	**18,317,379**	**16,227,672**
Section Subsidy Flemish Government	9,776,000	8,732,000
Social security reductions	592,816	530,346
Mediation Flemish Government. (training vouchers)	0	555
Tuition fees	1,354,051	1,304,241
Financial income	52,750	61,913
Letting	16,112	15,099
Overhead income	1,830,044	1,486,770
Other income	4,695,606	4,096,749
Section Project financing and DGDC incl. overhead and registration fees	**27,068,121**	**21,167,542**
Flemish Community	1,164,102	873,577
Federal government	1,926,682	1,145,472
European Community	7,316,638	4,636,633
WHO	271,324	226,525
Private	3,761,579	4,153,972
Sponsoring	2,136,969	817,645
DGDC / BTC (not included in agreement)	690,827	89,718
DGDC Agreement	9,800,000	9,224,000
Section Medical Services	**5,489,514**	**5,057,541**
Turnover (Fees and reimbursements)	4,165,813	3,774,660
Subsidies RIZIV,DOSZ	999,898	994,080
Flemish Government	29,712	29,311
UZA	90,791	89,008
Miscellaneous	203,300	170,482
Section Funds and Legacies	**2,534,715**	**2,246,280**
Funds and Legacies	14,809	9,432
Fund for early retirement premium	190,000	150,000
Investment fund	2,329,906	2,086,847
Total income	**53,409,729**	**44,699,035**

EXPENSES	2007	2006
PERSONNEL COSTS		
Section Institute	**12,920,008**	**12,085,906**
Senior academic staff	3,066,419	3,073,361
Assisting academic staff	2,544,178	2,454,385
Administrative and technical staff	6,321,524	5,684,073
Other personnel costs	902,092	790,470
External lecturers	85,795	83,618
Section Projects and DGDC	**6,191,573**	**5,792,259**
Senior scientific staff (Projects)	38,853	226,256
Senior scientific staff (DGDC)	0	0
Assisting scientific staff (Projects)	2,082,385	1,848,073
Assisting scientific staff (DGDC)	2,164,418	1,973,160
Administrative and technical staff (Projects)	1,625,969	1,411,931
Administrative and technical staff (DGDC)	279,948	332,840
Section Medical Services	**3,171,303**	**2,726,732**
Salaries and social costs	2,683,692	2,266,476
Fees	487,611	460,256
Total personnel costs	**22,282,884**	**20,604,897**

OPERATING AND EQUIPMENT COSTS	2007	2006
Section Institute	**4,315,540**	**3,463,074**
Operating costs	3,283,726	2,668,391
Equipment costs	760,959	530,480
Financial costs	270,855	264,203
Section Projects and DGDC	**19,515,729**	**16,914,808**
Operating costs External Funds	6,069,810	5,226,515
DGDC Agreement	4,980,058	3,983,714
Overhead External Funds	961,001	649,706
DGDC Agreement	883,662	1,006,178
Subcontracts External Funds	4,496,420	4,392,896
DGDC Agreement	2,124,778	1,655,799
Section Medical Services	**2,204,469**	**2,349,511**
Operating costs	1,897,002	2,029,113
Depreciation	261,603	275,077
Depreciation of current assets	32,615	27,648
Provisions	9,383	9,237
Investment provision	-5,712	-2,926
Financial costs	8,194	9,165
Exceptional costs	1,384	2,197
Section Funds and Legacies	**3,440,963**	**4,406,444**
Results from previous financial year	6,006	2,396
Awards	1,000	0
Financial costs	347	315
Investment costs	3,428,534	4,400,014
Support medical costs patients	3,718	3,718
Other costs	1,358	0
Total operating and equipment costs	**29,476,701**	**27,133,837**
Total expenses	**51,759,585**	**47,738,734**

RESULTS	2007	2006
Section Institute	343,878	205,343
Funds	737,953	473,350
Section Project Financing	1,993,683	-1,811,834
DGDC Agreement	-632,864	272,309
Section Medical Services	113,742	-18,703
Funds and Legacies	2,380	3,002
Early retirement premium	190,000	150,000
Investment Fund	-1,098,628	-2,313,167

Balance

Previously, major investments in property were depreciated through the investment fund. Renovated buildings were thus not re-valued and the balance did not reflect their actual worth.

Upon advice of the external auditors, a first revaluation was carried out in 2006 with the renovated Rochus Campus; in 2007, the main building in the Nationalestraat followed suit. The fire insurance values were used as reference. The total value of the buildings, excluding land prices, is now estimated at 24.5 million Euro, an increase of 13.2 million Euro which is translated in the balance by increased "Fixed Assets" and "Own Funds".

The increase in the "Project Financing" section shows up in outstanding debts of sponsors of these research projects. The "Financial Accounts" on the other hand recovered due to upfront payment for new EU-funded research projects. On the liabilities side these show up as increases in the current accounts.

The financial indicator for "Floating Assets", calculated as the ratio between the "Floating Assets" (16.8 million Euro) and "Short-term Debts" (4.4 million Euro), equals 4.2, implying sufficient funds to cover short-term debts.

Balance on 31 December, 2007

Assets	2007	2006
Fixed assets	26,238,932	14,685,715
Stock of consumables	119,181	132,784
Receivables on maximum one year	3,110,599	1,443,136
Financial accounts	9,944,053	8,598,623
Transferable accounts	3,657,715	3,929,815
Floating assets	16,831,548	14,104,358
Total assets	**43,070,480**	**28,790,073**

Liabilities	2007	2006
Own funds	19,369,373	7,072,332
Provisions for risks and payments due	4,030,566	3,604,994
Long-term debts	3,552,586	3,826,078
Short-term debts	4,413,178	6,480,266
Transferable accounts	11,704,777	7,806,403
Total liabilities	**43,070,480**	**28,790,073**

VDP AUDIT

BEDRIJFSREVISOREN – RÉVISEURS D'ENTREPRISES

Registered auditor's report for the year ended December 31st 2007 to the Board of Governors of the Prins Leopold Institute of Tropical Medicine

In accordance with legal and regulatory requirements, we report to you on the performance of the audit mandate which has been entrusted to us. This report includes our opinion whether the financial statements and the additional informations give a true and fair view.

Unqualified audit opinion on the financial statements

We have audited the financial statements for the year ended on the December 31st 2007, prepared in accordance with the financial reporting framework applicable in Belgium, which show a balance sheet total of EUR 43.070.479,98 and a result carried forward for the year ended of EUR – 3.332.587,93.

The preparation of the financial statements are the responsibility of the Board of Governors. This responsibility includes among others: the design, the implementation of and maintaining an internal control in order to achieve the entity's objectives with regard to the design and the true view of the financial reporting, which is free of material misstatement due to fraud or mistakes; the choice and use of the accounting policies; and the design of the significant estimates which are reasonable.

It is our responsibility to express an opinion on the financial statements based on our audit. Our audit of the financial statements was carried out in accordance with the legal requirements and the auditing standards applicable in Belgium, as issued by the Institute des Réviseurs d'Entreprises / Instituut der Bedrijfsrevisoren. The above mentioned auditing standards require that we plan and perform our audit to abtain reasonable assurance whether the financial statements are free of material misstatement.

In accordance with those standards, we considered the Institute's administrative and accounting organisation, as well as its internal control procedures. The Management has responded clearly to our requests for explanations and information. We have examined, on a test basis, the evidence supporting the amounts in the financial statements.
We have assessed the accounting policies, the significant estimates made by the institute and the overall presentation of the financial statements. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, taking into account the legal and regulatory requirements applicable in Belgium, the financial statements for the year ended December 31st 2007 give a true and fair view of the institute's assets, liabilities, financial position and results of operations.

Additional certifications and information

The implementation of the law on non-profit organizations and the bylaws are the responsibility of the management of the institution.

It is our responsibility to supplement our report with the following certifications and information which do not modify our audit opinion on the financial statements :

• In accordance with art. 19 of the statutes a budget has been established for the accounting year 2008.

• Without prejudice to certain formal aspects of minor importance, the accounting records were maintained and the financial statements have been prepared in accordance with the legal and regulatory requirements applicable in Belgium.

• There are no transactions undertaken or decisions made in violation of the bylaws. The appropriation of the result proposed to the Board of Governors complies with the legal and statutory provisions.

May 9th, 2008

Vandaele & Partners Burg. BVBA Bedrijfsrevisoren

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Jean-Pierre Vandaele
Registered Auditor

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Vice-General Administrator

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Croes Peter
Cuyt Monique
Daems Patrick
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De Paepe Danielle
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De Smet Alexia
De Waard Inge
Demedts Veerle
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Didden Kris
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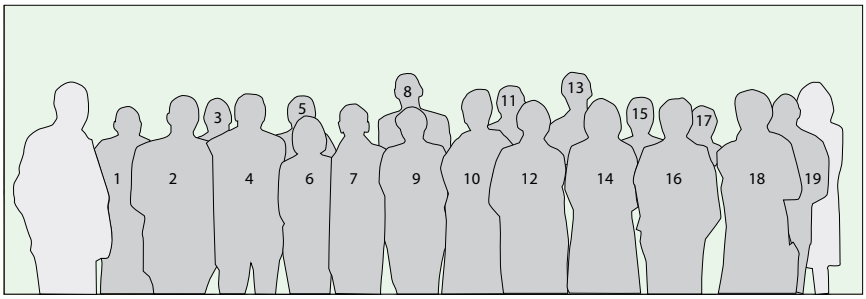
Vermeulen Rita
Verwerft Lisette
Wenseleers Jean-Pierre
Wouters Ingrid
Wuilmart Viviane
Zavala Pena Andrea

Retirees and jubilees



1 Raymond Van Hoorick *
2 Willy Platteau *
3 Luc Hendrix
4 Hugo De Groof *
5 Tony Vervoort *
6 Anne Correwyn
7 Jean De Borchgrave *
8 Eddy Magnus *
9 Annemie Van Der Meer
10 Chris Vereecken
11 Luc Boel
12 Monique Van Dormael
13 Gerlinde Segers
14 Danielle De Paepe
15 Veerle Demedts
16 Denise Boons
17 Gisela Swannet *
18 Greet Baeten
19 Joseph Ketels *

* Retired in 2007

Jubilees = 20, 25, 30 of 35 years of service.

Raoul Vercruyssen,
† 12 December 2007

Patrons of the ITM

The Patrons of the ITM held their annual meeting on 18 December. Director Bruno Gryseels welcomed the guests and gave an overview of the achievements of the ITM in its 101st year of existence. He especially presented the activities and projects funded by the generous support of private sponsors. A major programme, with a total grant of 650,000 Euro over the period 2001 – 2007, is the "Ackermans - Van Haaren Fellowship programme", which so far has supported 8 PhD and 14 Master students from developing countries and Europe.

Harr Freeya Njaj, first student to get a grant from Ackermans - Van Haaren in 2001. She obtained her PhD in 2005 and returned as a postdoctoral fellow to the Medical Research Council in her native The Gambia in 2006. In 2007, she was appointed senior researcher at the prestigious Virus Research Institute in Entebbe, Uganda, where she leads important research projects on HIV/AIDS. She wrote that "...all this would never have been possible without the support of the Ackermans - Van Haaren fund".

In 2007, the prestigious Inbev Baillet-Latour Fund (www.inbev-baillet-latour.be) awarded the ITM a renewable three-year grant of 450,000 Euro for the support of two postdoctoral research fellowships in the field of neglected tropical diseases. The Patron's meeting provided an excellent opportunity for the signature of the agreement by Camille Paulus, chair of the Board of Governors, and Alain De Waele, secretary of the Inbev-Baillet Latour Fund.

Camille Paulus, chair of the Board of Governors, and Alain De Waele, secretary of the Inbev-Baillet Latour Fund sign the agreement.

The director was also happy to announce an anonymous family donation of 200.000 Euro for the support of research on Visceral Leishmaniasis (VL).

Other special guests attending that evening were the family of professor Pieter Gustaaf Janssens († 2005), the legendary director of the ITM from 1957 to 1976. The auditorium in Campus Rochus was named to his memory, and at this occasion his bust was unveiled by Mr. Thierry Janssens, his son, and Governor Camille Paulus, Chair of the Board of ITM.

After enjoying a delightful rendition of Dvorak's "American Quartet" by the string quartet Ars Longa, the guests were invited to the opening of the photo exhibition 'Black and white: from the archives of the ITM', on show in the convent halls of the Rochus Campus and showing intriguing, often challenging historical pictures of colonial life and health care in the former Belgian Congo.

The evening was concluded with an informal cocktail party during which the friendship between the ITM and its patrons was further strengthened.

Governor Camille Paulus and Thierry Janssens unveil the statue of professor PG Janssens.

One of the colonial pictures at show: screening for sleeping sickness in the DR Congo of the 1940s.

Honorary governor and chair Andries Kinsbergen and director Bruno Gryseels at the "Black and White" photo exhibition.

Donations

The ITM's centennial auction (see annual report 2006) generated 23,700 Euro. The cheque was donated to ITM's director Bruno Gryseels by Guy Campo, from Campo & Campo, on 22 March 2007.

During that charity auction the Zanzibar bought the huge banner from the 0110-concerts, donated by singer Tom Barman. On 16 May the banner was officially displayed in the office of Zanzibar, after the members of dEUS had signed it.

M.A.C. , a world-wide perfume chain, donated 30.000 Euro to the ITM at the occasion of the opening of its Antwerp branch. The fashion icon Dita von Teese handed over the cheque to professor Marie Laga on 14 March.

The grant was used to revive HIV-prevention at the "Clinique de Confiance" in Kinshasa. Its team was very happy to recieve the donation through prof. Gryseels during his visit to Kinshasa on 9 July 2007.

Word of thanks

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