LIVERPOOL SCHOOL *of* TROPICAL MEDICINE

ANNUAL REPORT
2003-2004

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Chairman's Foreword

I am delighted to introduce the Annual Report for 2003/2004 as the School is continuing to grow and prosper under Janet Hemingway's energetic leadership. Her declared intention in the five year strategic plan, strongly endorsed by Council in 2001, to double the size of the School and to make it pre-eminent in its field, is being realised, and its worldwide reputation, built up over a hundred and six years, is being renewed. After discovering the essential link between the mosquito and the transmission of malaria in India, Ronald Ross joined the School as its first lecturer. Current research at the School into this killer disease is recognised to be world class, and as such is attracting huge research grants to the expanded dedicated teams who work here. Research is also flourishing in other areas including TB, HIV/AIDS, veterinary science, social science, alongside large knowledge programmes.

Meanwhile, students come from over sixty countries for short and long courses and to do PhD research of their own. The classrooms and labs have for some time not been up to the standard of the students' enthusiasm at being at the LSTM. Now, over the summer, a substantial refurbishment of the teaching rooms, labs and the main lecture theatre has taken place. The transformation is striking in all those areas, which are now far more fit for their purpose. More is needed of course, in the rest of the existing buildings, and for a brand new building. Last year we referred to the plan to build on the adjacent site to accommodate the School's expansion. Strong progress has been made this year on that dream: most of the money is promised. Buildings have been demolished in readiness and a detailed feasibility study has been completed as the basis for tendering. We have realised that three floors will not be enough and are now working for four. We expect work to begin early next year, which will provide better and more research accommodation for existing and new staff and students.
Further notable highlights this year have included LATH reaching the finals of Liverpool Business of the Year in the International section, alongside Jaguar Cars and Liverpool Airport. In addition, the first cohort of students on the very successful and pioneering new course for refugee doctors, supported by the Department of Health, the Workforce Development Confederation, the Royal Medical Benevolent Fund, and the University of Liverpool, will qualify in November and hopefully in due course take up medical posts on Merseyside where they are much needed. Our other links with the NHS continue to be strengthened through medical input to the infectious and tropical diseases wards at the Royal Liverpool and Broadgreen University Hospital and in children's work at Alder Hey, as well as at the popular and overcrowded travel clinic. The diploma course in humanitarian assistance continues to be oversubscribed and very highly esteemed by those working in disaster relief in the most conflict ridden and heart rending places in our world. Through introductions from some of our Vice-Presidents, the partnership work with major international companies to improve the health of their local employees has begun well, and offers the potential for both enhanced health and research opportunities.

The School is very grateful for the leadership of the President, Sir Mark Moody-Stuart, and all the Vice-Presidents for the part they play in promoting the School throughout the world. Baroness Chalker has decided to stand down as a Vice-President this year. As well as chairing the London School of Hygiene and Tropical Medicine, she has always strongly supported us, since her days as MP for Wallasey, as Government Minister for Overseas Development and more recently in her work throughout the developing world. We thank her very warmly.

All in all, the School is in healthy shape financially and in all its work programmes, continuing to make a significant contribution world wide and also as a flagship institution of learning and service on Merseyside.

The Council of the School has been undertaking a radical review of its governance, following the Director's reorganisation of the management, and in line with recent advice from the Charity Commission. This work is being carried out by Lawrence Holden, an expert in charity law with strong knowledge also of higher education, and I am most grateful to him for such a very thorough and comprehensive review.

My thanks are also due to all members of Council who have served the School with enthusiasm and commitment, and have often brought expert knowledge from outside to bear on our workings. In particular Simon Sherrard, Vice-Chairman and Chairman of the Audit Committee has greatly strengthened our effectiveness in audit, and Rob McFarlane, the Treasurer, has continued to oversee the finances. He and Einion Holland, the Bursar, have done a superb job.

Finally, in commending this Annual Report to you, I would like to congratulate all our staff, those whose work is featured here, and those who play a vital part too, but are not necessarily in the limelight. This has been a very successful year and I am sure you will enjoy reading about it. Next year will see even more developments in our mission to improve the health of some of the very neediest people in the world.

Rosemary Hawley

Director's Report

The School continues on its steady upward trajectory with research grants and contracts for core activities increasing again over the year in line with our strategic plan. Increased activity continues to go hand in hand with improved financial controls. The School achieved an operating surplus this year of ~£0.75 million, which has contributed to our capital expenditure on the major refurbishment of teaching space. A rolling refurbishment plan for the rest of the building has now been instigated to gradually improve our facilities over the next few years and transform our working environment.

Plans are in place to relocate staff working in the 'Pilkington Wing' to allow this to be demolished as part of our new building plans. We hope to go out to tender for the design and build of the new facility early in the New Year. At this stage we are planning to have a four-floor building with the upper floor left 'fallow' until we can raise the extra funding required to equip it. Inherent to the immediate relocation plans is the move of LATH to expanded premises on Seymour Terrace. LATH's move will facilitate its planned expansion, while their former building will house the Lymphatic Filariasis Support Centre and some of their collaborators.

This year student demand for our courses has risen. The new BSc in Tropical Biology has had its first intake of honours year students, in a course that is unique within the UK.
We anticipate this level of demand continuing as the resurgence of the School becomes apparent internationally.

There have also been notable changes in staffing. Professor Mike Lehane and his research team joined us, strengthening our sandfly and leishmania research and regenerating the School's interests in tsetse and sleeping sickness. Dr. Anja Terlouw has joined us to strengthen the Child and Reproductive Health Research Group and expand our links with the Centres for Disease Control in the US. Dr. Imelda Bates, head of the Disease Control Strategy Group has also moved onto a core post in recognition of her major contributions to the School's research and teaching.

We have put in place a 'tenure' track scheme to ensure longer term employment stability for the best of our younger staff. Dr. Pat Bray (Molecular Parasitology), Dr. Hilary Ranson (Vector Biology), Dr. Rob Harrison (Venom Unit), Dr. Jane Hodgkinson (Veterinary Parasitology), and Rachel Tolhurst (International Health) have all benefited from this scheme, and the School's ability to attract and support such excellent young staff bodes well for its future development. We will shortly be advertising posts in three further key areas (statistics, human resources and respiratory medicine) to continue balancing and expanding our core staff.

The end of this year is a key time for us as we look to renew our major Department for International Development (DfID) funded knowledge programmes. DfID itself has recently undergone major restructuring and our success at bidding competitively for new funding will depend heavily on our ability to map our activities and interests to their new structures. While this is key to the School fulfilling its mission of getting research into policy and practice, we have had recent notable success in attracting Medical Research Council funding, reducing the School's reliance on single funding sources.
Once again I would like to thank all the staff for their efforts over the year and their patience while we have undertaken the major building refurbishments over the summer. I would also like to thank our sponsors who have contributed substantially to the regeneration of the School and its current growth. We look forward to the coming year and the next phase in the School's development.

Janet Hemingway

Treasurer's Report

Treasurer's Report on the financial results for the year ended 31 July 2004

Last year I reported how the School had turned the corner, showing its first operating surplus in 10 years. It is with pleasure that I note how the current year has surpassed expectations and the School has achieved a surplus of £798k. A further milestone was reached by virtue of the fact that the School generated a surplus from it's own activities, excluding its successful subsidiary company LATH.

The surplus, as compared to the results of previous years, is reflected in the figure.

- The improved figures reflect the cumulative results of efforts to reduce recurring costs over the last three years.
- There has been a marked increase in the School's (excluding LATH) research of 15.4% over the year and a similar increase in the research contribution towards central costs.
- Funding council grants increased by 9% in the year, far exceeding the related staff and other cost inflation increases.
- The School's fully owned subsidiary produced a surplus which was gift aided to the School amounting to £525k, although it's turnover fell from £4,028k to £2,384k.

Last years improvement in the School's cash resources continues with balances increasing by £1,332k in this year. Additionally the balance owed to the University of Liverpool at 1 August 2003, amounting to £343k, was totally repaid during the year, with the University of Liverpool owing the School £167k as at 31 July 2004.

During the summer a buildings scheme was started, costing £940k, to refurbish the facilities in the Library, the Nuffield Lecture Theatre, the Masters' laboratory, several teaching rooms and a postgraduate research room. This was successfully concluded in early September. Tangible fixed assets show additions of £591k in the financial statements, reflecting part of the cost, of which £454k will be supported by capital grants to be received in the year to 31 July 2005. The scheme is a major improvement to the teaching facilities in the School and consolidates other estates good practices addressed in the year, including a building condition survey and estate asbestos survey

Capital grants of £215k were received in the year in respect of the new Centre for Tropical Infectious Diseases, the proposed capital building project scheduled to commence in April 2005, subject to the agreement in funding. Specialist consultants were contracted to produce a detailed concept feasibility report during the year, which assessed the user specifications and space requirements. The report concluded that the required activities would be better served with a four storey building rather than the three storey building previously agreed. The cost of introducing an extra floor has been factored into the total cost of £24 million, although the top floor is to be fallow until further funds are made available. The School's contribution to the Scheme is budgeted at £1.781 million in addition to external donations collected by the School of £2.057 million. The level of donations is believed achievable in view of the fundraising progress made to date.

I conclude by thanking senior managers and staff at the School, who have ensured that the financial systems and controls put in place are providing a firm platform on which the organisation may look to the future with optimism.

Fundraising

The beginning of the financial year 2003/004 saw the School enter a new phase of fundraising. Attempts have been made to diversify our funding sources, and the launch of several successful fundraising appeals has led to over £429,048.00 being received or pledged to the School.

In particular the School's New Building Appeal, launched this year, has captured the imagination of our donors and their generosity has helped to bring us closer to achieving a new building. In order to continue to attract outstanding students and high-calibre researchers to Liverpool, the School must be able to provide them with the best facilities and resources so that they can achieve their full potential.

We continue to seek and receive support from those who wish to keep the School at the forefront of academic excellence. Our sincere thanks are offered to the Allan and Nesta Ferguson Charitable Trust, The Col WW Will Pilkington Trust, the Pilkington Charitable Trust, and an Anonymous donation of £20,000. Special acknowledgement and thanks are made to our individual donors who have supported this building appeal so generously. The appeal is ongoing and we would appreciate any assistance from our readers to help bridge the funding gap of £2 million, thus ensuring the successful conclusion of the project.

ALUMNI APPEAL

The School is hoping to renew acquaintanceships and forge new links with alumni. If you have studied at the School and would like to maintain an interest in its progress at such an exciting time in the School's history please do contact the Fundraising Office, as we are happy to advise. We consider our alumni to be a valuable resource in terms of knowledge and networks in the disciplines of Tropical Medicine and the School would dearly like to encourage this.

SPECIFIC PROJECTS

Strongyloides Hyperinfection

A number of specific projects have come to fruition this year. Dr Geoff Gill is beginning a pioneering piece of medical research into *Strongyloides* Hyperinfection and has been supported in this by the Ministry of Defence's "Challenge Veterans Fund", The Freemasons' Grand Charity, The Rufford Maurice Laing Foundation, and the Central Far Eastern Prisoners of War (FEPOW) Welfare Fund. Major Brett Collier, himself an ex-FEPOW, has worked tirelessly on behalf of the School raising funds to support this type of research.

UK Diploma for Refugee Doctors

This year has seen the introduction of the Diploma in UK Medicine for Refugee Doctors. The course was featured in the Liverpool Echo and inspired members of the public including Ms Vera Martin, Mrs Mary Barbour and Dr JM O'Neil to contribute to the fees of these doctors, who would otherwise have been unable to complete this course. The Royal Medical Benevolent Fund has provided substantial fee support and living expenses for students once they complete the PLAB1 exam. And a special acknowledgement goes to the Mercers Charitable Trust which has contributed £10K per annum for two years for the diploma.

Simpson Education and Conservation Trust

Community based control of dengue vectors in Latin America, undertaken by Dr Phil McCall and Dr Audrey Lenhart, has been supported by the Simpson Education and Conservation Trust. This is a three year-grant totalling £8000. We would like to offer our warmest thanks to the Trustees for their timely and generous support.

Student Funding

The Fundraising Office is still trying to fulfil its pledge to support overseas students experiencing financial hardship. This year the Katherine Elliott Memorial Fund has been set up and is aimed at those overseas students who find themselves in financial hardship through no fault of their own. The Fundraising Office welcomes any contributions to this important area of School life.

The School has formed a link with Priory Technology College based in Preston through Deputy Head teacher Ed Fitzpatrick (a former member of the School's staff) and the college has undertaken fundraising events to raise money for Ms Angela Hogg's Adolescent Girls Literacy Project (AGLIT), based in Malawi.

Photo shows the School's Bursar, **Mr. Einion Holland** (right) receiving a cheque from **Mr. Ed Fitzpatrick**.

Snakebite: from the bush to the laboratory in the battle to solve world venom shortage

> *"An African subsistence farmer whose infant daughter is envenomed by the carpet viper may have to sell a cow to pay for treatment - often with severe financial implications for the family"*

The Problem

Snake bite is a problem of poor communities in the rural tropics. About 125,000 people are killed by snakes every year, with almost ten times this number suffering severe, permanent effects. The people at greatest risk are farmers, herdsmen and hunters who work in close proximity to snakes, particularly during the sowing and harvesting seasons. Children, because of their inquisitive nature, are also frequently bitten. In the Kaltungo area of the Benue Valley in north central Nigeria, up to 70% of the hospital beds may be occupied by snakebite victims for several months of the year. Survivors of snake envenoming often suffer severe local deformities and scarring resulting in men being unable to work in the fields and young women being considered unsuitable for marriage.

Aside from the medical and social costs, antivenoms are expensive. The cost of antivenom treatment ranges from £2,000 in Europe to £6,000 in the USA. In Africa, the cost must be kept to less than £20 per treatment to be even remotely affordable and even then an African subsistence farmer whose infant daughter is envenomed by the carpet viper may have to sell a cow to pay for treatment - often with severe financial implications for the family.

For much of Africa, however, the situation for the snakebite victim is much more serious because antivenom is unavailable. European pharmaceutical companies have either ceased production or are greatly restricting the production of antivenom for Africa because of low profit margins. At present only one South African company produces effective antivenoms, but this company is unable to keep up with the demand. This situation has created a critical shortage in antivenom supply for Africa.

What is the Solution?

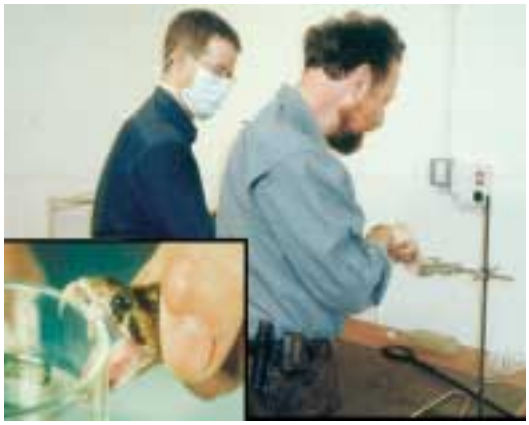
So what are we, the Alistair Reid Venom Research Unit (ARVRU), doing to solve this crisis? We are very much aware of the plight of snakebite victims in the rural tropics and the immediate solution to the African antivenom crisis depends, not on sophisticated research, but on a more fundamental approach. There is an urgent problem and the only solution is the production of more effective and affordable antivenoms. How do we plan to achieve this?

Capture of snakes in the field and extraction of venom in the laboratory.

We and our colleagues in Nigeria caught hundreds of the most medically-important snakes in sub-Saharan Africa (the carpet viper, the puff adder and the spitting cobra) and shipped them to our herpetarium in Liverpool. Here, Paul Rowley and Gavin Laing, with great skill, care and courage, extracted the venoms from these highly dangerous snakes.

Production of antiserum.

These venoms were standardised in Liverpool and supplied to a small antivenom producer in the UK; to the University of Costa Rica; to the Instituto Nacional de Salud in Bogotá, Colombia, and to a government pharmaceutical company in Cairo, Egypt. We were able to encourage all



these groups to use their excess plant capacity to produce antivenom for Africa. The venoms were then used to immunise sheep or horses. No harm comes to the animals as the immune response following the injection of small amounts of venom allows the gradual development of immunity - no signs of envenoming are observed in the animals. Once the animals have developed a high level of immunity, they are painlessly bled. The therapeutic antibodies are separated from the blood, treated with an enzyme to reduce their reactivity when administered to humans and ampouled.

Preclinical testing of the antivenoms.

Before these antivenoms can be used for treatment, they must be subjected to a series of WHO-approved tests in Liverpool to assess their venom-neutralising potency. They must also be assessed for safety and purity; again, internationally approved tests are used for this process. To date, three of the new antivenoms for Africa have been successful in these preclinical laboratory assays.

Clinical testing of the antivenoms.

Now the time has come to see how the new antivenoms work in the victims of snakebite admitted to Kaltungo hospital! Here, the effectiveness of the new antivenoms will be compared with the South African antivenom in an unbiased way. We (Professor David Warrell, Clinical Director of ARVRU, University of Oxford and myself) know from previous antivenom clinical trials in Kaltungo and elsewhere that this will not be easy.

Organisation needs to be meticulous and we need to actively involve local health administrators, medical and nursing staff. A standard protocol detailing the exact form the trial will take, the number of patients required, which patients to include or exclude from the study and how each treatment group will be randomised must be prepared and its use authorised by the local Ethical Committee as well as by that of the Liverpool School of Tropical Medicine. The efficacy of an antivenom is assessed by looking at its effectiveness in reducing the clinical signs of envenoming; for example, incoagulable blood and/or bleeding in the case of victims of carpet viper bite.

Antivenom safety is also assessed by recording the rate of adverse reactions developed after administration to the patients. Accurate records of the response of the patients to each antivenom must be kept and serum and other samples must be clearly and accurately labelled and stored before being transported frozen (again, not an easy task) back to the laboratory in Liverpool where Gavin Laing measures venom and antivenom levels to obtain an objective measure of the effectiveness of the antivenom in clearing venom from the circulation of the victim. If a new antivenom works as well as or better than the antivenom it has been tested against, then it can be recommended for future use in patients.

Such a trial requires equipment such as centrifuges to separate the serum from blood, a freezer to store serum samples, a generator to maintain power to these and other essential equipment items. Anyone who has worked in the tropics knows that both power and water supplies can be unreliable and that ensuring a reliable supply of each requires considerable negotiating skills! We are also seeking funds to cover the clinical, salary, equipment and consumable costs of this clinical trial which will be mainly obtained from the Nigerian Federal Ministry of Health.

The future

This has been our response to alleviate the crisis in antivenom supply in Africa. In my opinion it is not a sustainable solution to the problem. What is required is the development of more clinically-effective antivenoms and cheaper antivenom production systems. With these objectives, the staff of the ARVRU (Rob Harrison, Gavin Laing, Simon Wagstaff, Jenny Oliver, Sidgi Hasson and myself) are conducting research projects designed to develop antibodies capable of neutralising the venoms of a wide range of venomous snakes and other interventions to prevent the deformities and scarring that frequently follow snake bite. These studies should result in the eventual development of antivenoms with greater dose-effectiveness than current antivenoms and therefore be more cost-effective to produce. It is my ambition that these research projects will provide a more sustainable solution to the supply of antivenom for Africa. In the meantime we still must go to the bush to collect snakes, return to the laboratory to collect the venom and to prepare and test the antivenom and then to go back to the bush to carry out the clinical testing.

Above - **Paul Rowley** and **Gavin Laing** extracting venom from a Nigerian carpet viper (inset) in the herpetarium of the Liverpool School of Tropical Medicine

Left - **David Warrell** and **David Theakston** working in an improvised laboratory in Kaltungo, Nigeria in 1994.

David Theakston

The development of new antimalarial drugs

The Liverpool School of Tropical Medicine has a unique staff structure with interests ranging from the smallest molecular structures within microscopic pathogens to global health strategies. This unusual mix of interests and expertise has been the cornerstone of the School's role as a provider and originator of "tools" for the developing world. One clear and timely example of this is in the area of antiparasitic drug discovery, development and deployment; activities in which the School has demonstrated leadership for more than a century. At the turn of the century scientists from the Liverpool School were demonstrating the effectiveness of atoxyl for the treatment of African sleeping sickness, and in the 1920s the usefulness of suramin against this disease was evaluated (this is a drug which still has clinical utility today). In the 1940's, as part of a commitment to chemotherapy research, the Liverpool School evaluated the antimalarial potential of mepacrine and pamaquine and, in collaboration with ICI, collaborated in the development of proguanil, an antifolate antimalarial still extensively used today in drug combinations. These drug development programmes have undoubtedly contributed to the saving of many millions of lives over the lifetime of the School's existence. The Liverpool School's predominance in this critical area is based on the interplay of basic scientists, usually working in Liverpool, with clinicians and health policy makers working in endemic countries.

Over the past two decades the School has continued these drug development activities in partnership with the departments of Pharmacology and Chemistry in Liverpool and our field sites in Africa. The drive behind these programmes has been the information coming directly from the bush that our current armamentarium of accessible antimalarial drugs was failing due to parasite resistance. Alternative drugs were far too expensive for deployment by Ministries of Health. This problem of resistance was most notable with the drug chloroquine and the antifolate combination sulphadoxine and pyrimethamine.

Basic scientists in Liverpool have contributed towards our understanding of parasite resistance to antimalarials and this information has been used in the rational re-design of novel alternative drugs, of which a new antifolate drug Lapdap is now registered for human use. The inspiration behind this antifolate combination arose from work by the School's Bill Watkins in Kenya in the early 80s, aimed at understanding the mechanisms of antifolate resistance in malaria parasites and the factors contributing to resistance development and geographical spread. This generated the hypothesis that antifolate combinations, which were eliminated quickly from the body (i.e. have a short half life) would be less likely to select for resistance. At this point Bill teamed up with Peter Winstanley (Department of Pharmacology and Therapeutics, University of Liverpool) and following a series of small scale clinical trials, a new drug combination Lapdap was put forward as a novel therapy for non-severe malaria. This proof of concept was relatively straight forward but we were still a long way from having a drug fit for human use. To achieve this goal Lapdap needed to go through a standard regulatory evaluation, a job best carried out by industry. Following the establishment of a Public Private

> *"The School's drug development programmes have undoubtedly contributed to the saving of many millions of lives over the lifetime of its existence"*

Partnership between Liverpool, WHO, DFID and GSK pharmaceuticals, Lapdap was put through the rigours of regulatory pre-clinical and clinical testing, and was given regulatory approval by the Medicines and Healthcare products Regulatory Agency (MRHA) in late 2003. Remarkably, the development process cost less than £10million, and the end product will be available at a cost which is readily affordable and sustainable for African populations, less than $0.5 per adult treatment. Yet this is far from the end of this particular story.

MHRA approval allows the use of the drug in humans but it does not confirm its utility in the target population in sub Saharan Africa. Our focus now returns to the bush where we need to establish if the promise of effectiveness and safety is translated at an operational level in the field. Only at that point will policy makers be in a position to define how, when and if Lapdap should be used.

This dialogue between the bush and the laboratory bench continues to shape the School's involvement in novel drug development. The consensus opinion from the field, that artemisinin based antimalarial combinations are the preferred option, has resulted in the further development of Lapdap in combination with the artemisinin derivative artesunate. We have maintained the previously successful PPP model of drug development and now have a drug combination undergoing phase II clinical trials in our field site in Blantyre, Malawi.

A second class of antimalarial drug, the quinolines which include the well known drugs chloroquine and amodiquine, are also receiving intense interrogation in Liverpool. Again the driving force behind our activities has been the field observations of resistance and toxicity. Basic Scientists in Liverpool have made significant contributions to understanding the molecular and chemical basis for both these undesirable characteristics. In collaboration with Professor Kevin Park (Wellcome Institute, Kenya) we know that metabolism to a reactive metabolite is responsible for the toxicity of amodiaquine. Furthermore, we have developed a model of drug resistance based on mutations in the protein pfcrt which allows chloroquine to leak out of the resistant malaria parasites. This information has been used to successfully design out these features in a series of new quinolines, one of which is about to be selected as a drug candidate for development. Following proof of concept, these drugs will be returned to the bush for further clinical evaluation prior to deployment.

The Liverpool School of Tropical Medicine continues to demonstrate its ability to integrate a broad range of expertise from laboratory Bench to Bush. More importantly these academic activities are highly directed towards the practical problems of providing appropriate "tools" for resource poor settings. The examples described here, in the area of antimalarial drugs, demonstrates how the academic community in Liverpool is making practical contributions to the needs of our collaborators and the malaria infected population in the tropics.

Steve Ward

Above -
The nurse at **Chileka Clinic**, Malawi gets the confidence of a small child before testing her for malaria.

Trials in remote Cameroon villages could lead to a new drug to fight the global burden of disease

Wolbachia in worms

In the field of filariasis research, much recent work has focussed on the intracellular bacteria, *Wolbachia* (essential symbionts), that infect the worms that account for most of the global burden of filarial infection and disease (*Onchocerca volvulus, Brugia malayi, B. timori* and *Wuchereria bancrofti*). In the Filariasis Research Laboratory we have been working on different aspects of *Wolbachia* research for more than six years. One of our initial findings was that the bacteria, rather than the worms, are responsible for the induction of inflammatory responses. We also discovered that the occurrence and severity of adverse reactions to anti-filarial drug treatment are associated with the release of *Wolbachia* from damaged worms into patients' blood and tissues.

One of the most exciting recent developments has been the use of antibiotics as a new approach to the treatment of filarial infection and disease by depletion of the bacteria. Worms exposed to certain antibiotics fail to develop normally and become infertile; moreover, prolonged exposure to antibiotics can kill the adult worms. This strategy potentially has several advantages over current treatment options. The main aim of current drug treatments is to reduce transmission of the parasites, as the drugs act predominantly against the larval stages, with little or no killing of adult worms. However, to maintain the reduction in transmission, these drugs need to be administered annually for many years (some adult worms are able to live for more than ten years). Since antibiotics result in a prolonged loss of adult worm fertility, they could drastically reduce transmission for long periods after a single course of treatment; additionally, by eradicating the bacteria they could reduce adverse reactions to conventional treatments, prevent the inflammatory pathology for which *Wolbachia* is responsible, and even offer curative treatments by killing adult worms. Additional advantages of this approach are that the antibiotics are already widely available, they are cheap (a very important consideration in developing countries), and have well-known safety profiles. These factors have resulted in a rapid transition (less than three years) from laboratory-based basic research to field trials.

From the lab to the field...

Recently we have completed the first placebo-controlled double-blind trial of doxycycline (an antibiotic) in people infected with bancroftian filariasis in Tanzania, and demonstrated that both larvae and, significantly, adult worms were killed. Following this success, we have embarked on further field trials in other filarial species, including a large study on onchocerciasis in the north western region of Cameroon. In this disease, which occurs in areas of Central and West Africa, the pathology is caused by the larval stages of the worm in the skin and eyes. If left unchecked, the parasite can cause irreversible damage to the eyes, a condition commonly known as river blindness. Recent experiments in the laboratory have shown that *Wolbachia* bacteria induce the inflammatory responses leading to this visual impairment. The trial is part of a European Union-sponsored consortium which comprises, as well as our own, laboratories from Cameroon, Germany, Ghana, Indonesia and The Netherlands, and aims to determine the optimal regime for antibiotic therapy to treat filarial infection and prevent disease.

Left - Rope bridge across the **River Momo**, on the way to the field laboratory in Widikum, Cameroon.

Right - *Onchocerca* nodule containing adult worm (see small picture of *Onchocerca* male and female worms removed from a nodule).

> *One of the most exciting recent developments has been the use of antibiotics as a new approach to the treatment of filarial infection and disease by depletion of the bacteria*

The trial in Cameroon is being conducted in a steep-sided valley surrounding the market town of Widikum, in collaboration with teams from Buea University and Kumba Research Station. A major tributary of the Cross River runs west through the town from the volcanic highlands of Mount Lefo. This makes the area an ideal habitat for the black fly species that transmit onchocerciasis, since they require fast flowing, well-oxygenated water to breed (and a river that we must cross via a creeper bridge to reach the villages). We sampled approximately 600 individuals in eight villages dotted around either side of the valley. This is a remote area with only rudimentary laboratory facilities that we were able to set up in a small hut - very different from working in Liverpool! The majority of the study population were life-long farmers who had replaced much of the existing rain forest with palm trees, which they cultivate for palm oil (and the slightly more drinkable palm wine). Onchocerciasis was diagnosed by physical examination of subjects for the grape-like nodules under the skin. These nodules are formed around the coiled adult female worm so that it becomes entirely encased. Because not all individuals have easily detectable nodules, we also removed a small sliver of skin for microscopic detection of the larval parasite stages. Approximately a third of our sample population were infected. These were then divided into two groups: one that received doxycycline, and one that received a placebo. The trial was double-blinded so that neither the participants nor the trial team knew who was in which group. Treatment occurred daily for six weeks.

We are now at the exciting stage of returning to the field to remove nodules containing adult worms from the trial subjects. We will take samples at 12 and 18 months after the start of treatment to measure the effect of treatment on the numbers of bacteria in the parasites and the number of parasites in the skin. Blood samples will also be taken to monitor the effect of treatment on the immune response. The collection and storage of these samples in liquid nitrogen and their transportation back to Liverpool is certainly one of the most challenging aspects of our field work.

...and back to the lab again

Once all the samples have arrived safely back in the laboratory the analysis can begin. We will look for the depletion of endosymbionts by 'real-time' amplification of bacterial DNA and staining of the bacteria with antibodies in sections of adult worm nodules. Our new Bioplex system will rapidly analyse immune responses to monitor the inflammatory activity caused by *Wolbachia*. Finally, we will be able to break the hidden code to reveal which patients received treatment or placebo to (we hope) prove the effectiveness of a new treatment for onchocerciasis.

Although there has been major progress in a short time, much work remains to be done. At present, the antibiotics must be given daily for six to eight weeks, which is not feasible for mass community-directed distribution (although it would be suitable for treatment on an individual basis). We now intend to test different antibiotics and formulations to determine by how much the treatment regime can be reduced. Our goal is to reveal new avenues through which filarial worms can be controlled by exploiting the mutualistic association with their bacterial companions and, we hope, lead to a new treatment for filariasis.

Helen McGarry & Joseph Turner

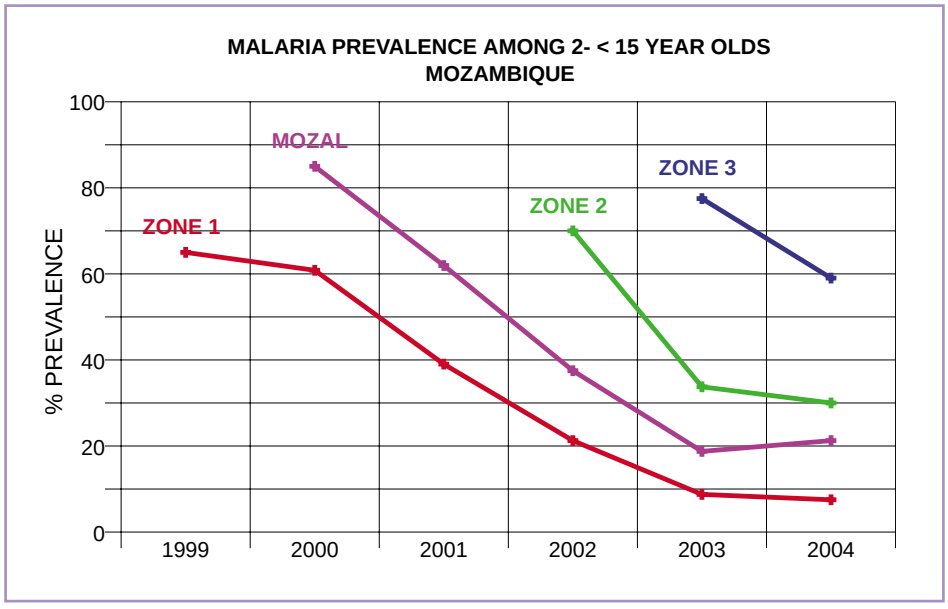
...Tales of a Mosquito Catcher

> *By combining cutting edge research with day to day involvement in disease control programmes the group in Liverpool will help to ensure that we stay one step ahead of the insects*

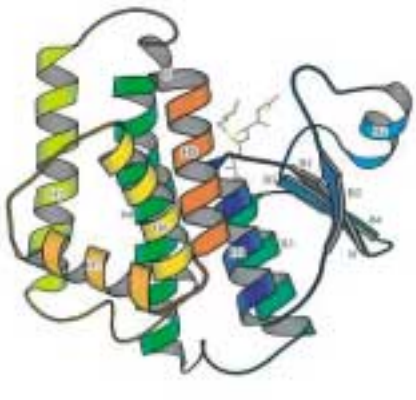
Can you catch and pluck a chicken to ensure you don't go hungry? Arrange to be helicoptered out of a flood situation? Negotiate to break a curfew and travel through a civil war-torn area? Tether a cow and build a tent around it? Cook a six-course Indian meal for 12 on a wood fire with two pans? These are just some of the more unusual skills that have been required of those working at the field end of our research programme.

The insecticide resistance group at the School covers an exceptionally broad range of activities that extend from large-scale operational resistance management programmes in southern Africa and Mexico to hi-tech molecular biology programmes looking at the structure and function of insecticide resistance gene promoters.

The Group is dedicated to improving the control of mosquito and other insect-borne diseases by increasing the effectiveness of insecticide-based control programmes. Some of the activities are designed to provide solutions to resistance problems that face countries right now. For example, pyrethroid resistance in the major malaria vector in southern Africa prompted a malaria epidemic in Mozambique and South Africa four years ago. We have since worked with the Malaria Research Group in Durban and the Ministry of Health in Mozambique to establish a stable resistance management programme that will retain a broad insecticide choice while still controlling malaria. Our earlier work, more than a decade ago in Mexico, showed that by using annual rotations of different insecticides or by using a mosaic of different insecticides within villages, resistance selection was slowed down, but not stopped. It is in many ways a situation analogous to the problems experienced with antibiotic resistant bacteria in many countries. Hence we are aware that we need to find longer term solutions to these problems, as we cannot rely on new insecticides being introduced for public health use, while our current complement declines annually as a result of resistance problems and usage restrictions.



Figures of decreasing malaria incidence in southern Africa



Few people realise that it was in the 1970s that the last major insecticide class was introduced for malaria control. With no new insecticide classes coming onto the public health market for tropical disease for almost 40 years, we urgently need to ensure that resistance does not develop in the major disease vectors. Or, if it does develop, we need to find new ways of combating it.

For 25 years the group has been at the forefront of working out exactly what changes occur in an insect when it becomes resistant, and how it then passes this resistance on to its offspring. We now know most of the major resistance genes that are involved and it is clear from this work that many of the resistance mechanisms are common to most resistant insect species. This has allowed us recently to start to explore the possibility of adding something to the insecticide formulations that has no adverse effect on the human or animal toxicity of the insecticide, but that blocks the common resistance mechanisms in the insects. To do this we need to carefully define the target within the insect through painstaking molecular work, express the target in a simple format to allow us to rapidly screen candidate inhibitors and then make sure these inhibitors will work when the intact insect is exposed to them.

This is long-term work, but there are many beneficial spin-offs en route. For example, as a result of our work in defining resistance mechanisms, there are now a series of simple biochemical and PCR-based tests being used in many disease endemic countries which allow the control programmes to rapidly define the extent of their insecticide resistance problems. We are also using one of the resistance genes 'designed' by a mosquito as the basis of a simple field assay to measure the amount of insecticide present on an impregnated bednet.

Much still remains to be done, but by combining cutting edge research with day to day involvement in disease control programmes the group in Liverpool will help to ensure that we stay one step ahead of the insects. Defining the breadth of the skills that may be required from group members, however, remains elusive. With a career dedicated to catching and controlling insects that carry some of the world's major diseases, you can never predict the situations you may have to deal with.

Oposite Left -
Trousers rolled up showing the depth of flood water on the only road out.

Above Left -
Glutathione S transferase crystal structure.

Above -
Mosquito collecting in Mozambique

Below -
Indoor residual spraying (IRS) in a rural area of southern Mozambique.

Janet Hemingway

Wider availability of antiretroviral therapy presents new research challenges

> *Health related quality-of-life assessment in HIV-infected people has been recognized as one of the overlooked areas in HIV/AIDS research in Africa.*

Over the next five years there will be a substantial increase in the availability of antiretroviral therapy (ART) in developing countries, funded through the WHO 3 by 5 initiative, the Global Fund for AIDS TB and Malaria, and through the President's Emergency Programme for AIDS relief. This has produced a dramatic change in the landscape for research in HIV/AIDS. Whilst clinical efficacy trials are still required to identify cost-effective ways of delivering these services, there is a need for a greater vision of what can be achieved through ART, for example its impact on the economic well-being and quality of life of the clients and their families.

In the last year, health related quality of life assessment in HIV-infected people has been recognized as one of the overlooked areas in HIV/AIDS research in Africa. It was highlighted in July 2003 in a WHO/UNAIDS Workshop on strategic information for anti-retroviral therapy programmes. Responding to this gap in knowledge, Antonieta Medina Lara is conducting quality of life assessments within a randomised control trial that is evaluating different strategic approaches for management of antiretroviral therapy in symptomatic HIV infected adults in Africa. This study is under the umbrella of MRC/Uganda Virus Research Institute in Entebbe, Uganda and supported by the HIV/AIDS KP and Imperial College. Encouraging early findings concerning quality of life were presented at an international conference in January 2004.
The quality of voluntary counselling and testing becomes much more important as we anticipate a greater demand and uptake for this service from individuals seeking to access ART treatment. We have previously described the leading role that Liverpool VCT, Kenya has achieved in this field.

Amangwe Village is a holistic HIV/AIDS treatment and prevention centre in KwaZulu Natal, South Africa, where the HIV KP has become a willing and enthusiastic partner in improving and monitoring the quality of services they provide. A long-term partnership plan has been agreed with the Amangwe management, with initial work focused on the Portfolio for Orphans and Vulnerable Children. Services here include a crèche, toy library, supplementary feeding, and support with school fees for vulnerable children in surrounding townships. The HIV KP has provided expertise and technical assistance to provide simple tools for monitoring the impact of the work done with children by the staff at the crèche. LSTM have had their profile at Amangwe enhanced by fund raising activities.

International HIV/AIDS Conference in Bangkok

Staff of the HIV KP provided oral and poster presentations at the fifteenth International HIV/AIDS Conference, with other contributions to the numerous satellite meetings, demonstrating the continued international profile of the programme. To recognise and reward the importance to the programme of the backroom office staff, Adele Garvey and Teresa Jackson accompanied the academics.

Work with the Asian HIV and AIDS Research for Action Network

The second meeting of this network was held in Hanoi, Vietnam in January 2004. Reports from countries identified the gaps in knowledge on how to successfully turn policy statement about HIV control into practical service delivery, with good practice being shared between countries. The KP is advising on the network's programme of work to identify best practice in each of six countries on the prevention of transmission and on the introduction of anti-retroviral therapy. A publication with illustrative case-studies will be produced in Spring 2005.

The future

The UK government launch of new strategies on HIV/AIDS in both the UK and developing countries provides an opportunity for re-evaluation of the priorities for work in the KP. Significantly, greater attention will be given to work on the reduction of stigma and discrimination in efforts to enhance both prevention and treatment of HIV. A second focus may well be on targeting interventions on vulnerable sections of society. An important development in the pipe-line is an agreement with the Global Fund for AIDS, TB and Malaria (GFATM) to support the quality assurance of the GFATM funded programmes in-country.

Children in KwaZulu Natal are extremely happy as they had been given stationery sets from the **Dave Haran** Trust fund.

Valuable lessons are learned in the use of pre-packaged drugs to treat the vulnerable

> *A large proportion of the population stop taking the medicine when they feel better, or to conserve their limited financial resources, i.e. they save the balance of the prescription to provide for another bout of malaria in the family*

The Malaria Knowledge Programme has, in its penultimate year, primarily concentrated on consolidating its research activities and assessing their pro-poor impact, disseminating and scaling up outputs and strengthening links with partners.

In continuing our theme of "Vulnerability and Health Alliance" that was initiated last year, the Malaria Knowledge Programme organised and ran a successful satellite workshop at the Global Health Forum in Geneva. The aims of the workshop were to facilitate discussion of and identify strategic directions for the application of vulnerability concepts to policy focused research on communicable diseases, principally malaria, tuberculosis and HIV/AIDs; and to work with policy makers and researchers to identify practical applications of vulnerability approaches.

One area of investigation has been the study of community perceptions about the role of malaria and other infections in pre-term delivery in rural Malawi. Malaria and anaemia were perceived to be important in causing pre-term delivery. Fevers in infants are commonly thought to be associated with genital warts in parents, and the accepted treatment was to have the warts excised by traditional healers. This procedure has clear implications for effective malaria treatment and HIV transmission, and the MKP is collaborating with the HIV Knowledge Programme to investigate these findings further.

During the year we have called on the services and expertise of some of our overseas collaborators to conduct literature searches and write papers. Our collaborators are Drs. James Iboro (Papua New Guinea), Godwin Afenyadu and Mark Amexo (Ghana), and Gertrude Kalanda (Malawi). We also commissioned James Kandulu (Malawi) to write a technical report on "Laboratory services to support malaria management in Malawi".

One area where we have concentrated is in the study of urban malaria transmission. There is an increasing migration, by predominantly poor people, from the rural to the urban areas of the world. As part of its aim to improve malaria control for the poorest, the MKP has collaborated with the International Water Management Institute (IWMI) and the Systemwide Initiative on Malaria and Agriculture (SIMA) to develop methodologies to investigate the impact of urban agriculture on malaria transmission.

If everyone with malaria took the full course of antimalarials they have the potential to slow down the development of drug resistance. However, a large proportion of the population stop taking the medicine when they feel better, or to conserve their limited financial resources, i.e. they save the balance of the prescription to provide for another bout of malaria in the family. It was shown that primary school teachers could be trained to diagnose and treat uncomplicated malaria in school children. By providing schoolteachers with pre-packaged antimalarials, the effectiveness of treating young school children has been improved. Since there are more schoolteachers than health workers in rural areas of Ghana, this method of treating children has been accepted by the Ministry of Health and the Ghana Education Service, and has been scaled up from a pilot district-based project to a national programme.

A joint MKP and WHO/TDR financed project in eastern Ghana has shown that all socio-economic groups have difficulty in financing treatment for fever, which is exacerbated by the need to find money at very short notice. Health seeking for malaria is delayed because women often cannot access resources without negotiating with fathers and household elders. The study has shown that investment in mechanisms such as pre-payment and community health financing schemes and livelihood development are essential if malaria care is to be accessed rapidly at the community level.

The insecticides used on insecticide treated bednets (ITNs) – the major tool for breaking the transmission of malaria – are pyrethroids. The only method of measuring the concentration of these insecticides on bednets is an expensive laboratory technique. We have developed and tested, in the field, an insecticide assay based on measuring colour reactions to the concentrations of pyrethroids. The assay worked well on light coloured nets, but the dye used to colour some nets interfered with the assay. The World Health Organization is now planning a full-scale evaluation of the assay with a view to recommending its introduction in large-scale bednet programmes.

James Kandulu and **Mark Amexo** take a relaxing break in the Lake District

Collective skills of the Cochrane team are in much demand for drug analysis

Artemisinins for malaria, derived from a Chinese herbal remedy, have been in the news for some years, and this year saw completion of a major analysis of the 16 trials that combined artesunate with other drugs for treating malaria - was completed and published in the Lancet. This analysis used the individual data for each participant. The analysis is conducted on behalf of the entire group of researchers. It's a more accurate and powerful way of carrying out this form of analysis, and this included about 4500 children with malaria, and the message was clear - whatever the circumstances or other drug, adding artesunate improves cure.

In general, research synthesis has become mainstream research, and the collective skills of the Cochrane Infectious Diseases Group, including the international editorial team and the staff in Liverpool are in demand! The Cochrane Review of impregnated mosquito nets to prevent malaria has recently been updated, with an additional 22 randomised controlled trials added, strengthening the message from this highly cited review. Julia Critchley and colleagues completed a Cochrane Review of albendazole in filariasis, demonstrating at the moment there is very limited evidence of an effect of the drug in this disease. Julia has also worked with Hasifa Bukirwa, to complete the Cochrane Review of chlorproguanil-dapsone, which was used by a WHO committee evaluating the drug.

Martin Meremikwu, our collaborator from Nigeria, was called to the US Congress after contributing to the Global Health Council Report on evidence-based malaria control, and made a stirring presentation to them! We have developed new collaborative links in TB research with Chongqing, China. Congratulations to Ratana Panpanich, our collaborator in Chiang Mai who has recently been made an associate professor.

Consumer inputs is important to our reviews, and Gill Gyte joined us as a consumer adviser. Helen Smith is helping the programme manager with the West Africa Use of Scientific Evidence Initiative, and is now looking at access to medical literature in the region in collaboration with The Health InterNetwork Access to Research Initiative (HINARI).

The World Health Organization now has explicit standards that mean all its new Technical Guidelines should be evidence-based, and it has started with malaria. So the Programme Manager, along with two ex-DTMH students Katharine Jones and David Taylor-Robinson, are working hard to amass the evidence to support this decision-making. This is something the Research Programme has been striving for over the years, and helps make sure our outputs are used in policy and research priority setting.

Collaborators working on evidence based approaches in HIV, TB and filariasis, pictured in the Palm House on a visit to Liverpool

Programme seeks to enhance the care and support of TB's poorest victims

> • Someone dies of TB every 15 seconds
> • Eight million people develop TB every year, two million of those in Africa
> • If not treated each one can infect between 10 and 15 people in one year, just by breathing

This year, more people will die of tuberculosis than in any other year in history. In Africa alone, there will be 2 million new cases and the same number of people are killed by it each year, mostly in developing countries. TB disproportionately affects the poor, trapping the most marginalised people in a vicious circle of disease and poverty.

The EQUI-TB Knowledge Programme, in which the School is a partner, seeks to address this appalling situation by striving for quality assured TB care for people in constrained settings. Funded from the UK's Department for International Development, the programme is co-ordinated from the School and seeks to promote the implementation of pro-poor strategies which enhance care and support for TB among the poorest.

This year saw EQUI-TB coordinate the Global STOP TB Partnership's TB and Poverty Core Group. This led to TB and Poverty activities being included in the STOP TB workplan, with money allocated and a Request for Proposals being produced and circulated by the STOP TB Secretariat. There has also been an application for large scale funding to establish a global Network on TB and Poverty, submitted to the European Union.
Substantial advocacy and dissemination activities took place during the last year, the highlight being the TB and Poverty Symposium and associated poster discussion session at the 34th International Union against TB and Lung Disease (IUATLD) conference in Paris (Nov 2003). The need to address poverty was also mentioned in the New Delhi pledge, which was signed and ratified by STOP TB Partners at the Partners Forum (March 2004). EQUI - TB also has a new website containing news, events and recent publications: ***www.equi-tb.org.uk.***

The report of the multi-country WHO funded study into gender and tuberculosis was finalised. Two research dissertations were also submitted based on this study and Sociology MA's were awarded to two Malawian researchers, Ireen Makwiza and Lifah Sunudi. The Extending Services to Communities (ESC) project, which entailed the recruitment of new staff members as well as additional office space to the Programme in Malawi, has been implemented. A further two studies also started this year, one involving collaboration with the LSHTM TB Knowledge Programme.

Bertha Nhlema presenting her work on TB and Poverty at WHO Headquarters.

The Programme has now expanded beyond tuberculosis by including Malawi's Malaria Control Programme as part of the ESC project as well as a number of activities related to HIV/AIDS. A technical paper written on Equity in HIV/AIDS and Human Resources and HIV/AIDS in Malawi resulted in an invitation to attend a consultation on equity issues on the WHO 3x5 initiative and was the basis of a briefing paper for the high level visit to Malawi of Peter Piot (UNAIDS) and Suma Chakrabati (DFID).

In October, an Acting EQUI - TB Malawi Programme Co-coordinator joined the team as cover for the EQUI - TB Malawi Programme Coordinator's maternity leave. One of her key roles has been to develop a new field of enquiry to look at screening ante-natal care attendees for TB.

Work has commenced in Chongqing and Shanghai, China looking at the access of rural-to-urban migrants to TB care. Liverpool is providing technical assistance to these two projects.

South-south collaboration continued. The engagement by EQUI-TB Malawi of Prof Zhang from EQUI-TB China to design Malawi's nationwide TB prevalence survey resulted in a further visit during the course of the year to input further into the survey design. In addition, EQUI-TB Zambia visited Malawi for a one-day meeting to discuss joint collaboration on three new proposals: TB in Prisons, TB in Pregnancy and TB Prevalence surveys.

Pursuing the dream - a world free of lymphatic filariasis by 2020

In addition to its role as a key partner within the Global Alliance to Eliminate Lymphatic Filariasis (GAELF), jointly funded by the Department for International Development (DFID) and GlaxoSmithKline (GSK), the Centre had sole responsibility for organising the third meeting of GAELF in Cairo in March. It also entered the first phase of a review of its activities, commissioned by DFID, to enable them to consider future funding.

The Centre staff were witness to the commitment of country and global partners when, in October, together with Lesley Hamill from DFID they visited Tanzania to attend the launch of the antifilariasis and drug delivery programme in a new district, Lindi, thus taking the total districts being treated to 17. The commitment of the Ministry of Health at the launch was evidenced by the attendance of the Minister of Health and several other national and local Ministry staff. Other than their own in-country funding, funds for the Tanzanian programme comes from many sources including DFID, the Bill and Melinda Gates Foundation and GSK for mass drug administration activities. Rotary and UK church based donations have provided funds for hydrocele surgery (circa $10,000 to date).

Although the year was dominated by the organisation of the Cairo meeting, the Centre continued to take part in the activities of the Global Programme by attending the Programme Managers meetings in the various regions. Professor Molyneux focussed on advocacy and fundraising for the Programme, which has increasingly become a major need of the Programme. He has also authored two papers, one in the British Medical Journal (BMJ) (with Dr. Vinand Nantulya of the Global Fund) and one in the Lancet both on neglected diseases - the categorisation for any disease other than malaria, HIV/AIDs and TB. The BMJ paper has acted as the catalyst for a meeting to be hosted by the Bill and Melinda Gates Foundation on disease integration.

The exotic setting of pyramids and the inspiring theme of "A world free of lymphatic filariasis by 2020" was the backdrop for the third meeting of the Global Alliance which was held in March. The meeting was attended by 200 participants from 33 countries, including several Ministers of Health.

The progress of the Alliance was reviewed and the achievement of reaching the planned goals for treatment set at the previous meeting in Delhi in 2002 was praised. Progress can be measured by the figures, which speak for themselves - in 2000, 3 million people were covered by mass drug administration (MDA) in 12 countries; by 2003, 82 million people were covered by MDA in 38 countries.

"Progress can be measured by the figures, which speak for themselves - in 2000, 3 million people were covered by mass drug administration (MDA) in 12 countries; by 2003, 82 million people were covered by MDA in 38 countries"

During the meeting, a new working mechanism for GAELF was proposed by Dr Galvez-Tan, the then Chair of the Global Alliance, involving the formation of a Representative Contact Group with 30 members, and an Executive Group of 6 members, with a President to replace the former Chairman of the Alliance. The proposal was endorsed by the meeting and both groups were elected before the close of the meeting. The Centre will continue to be involved in the core activities of GAELF, acting as the Secretariat for the Executive Group.

Above -
Launch of Mass Drug Administration in Lindi.

Below -
Morbidity control: foot washing

The move to cities and the need for urban agriculture brings new health risks

> *We found worryingly high prevalences of malaria, which runs counter to the accepted wisdom that high density urban African populations are at low risk from malaria*

Africa's population will almost triple by the year 2050. This expansion will occur primarily in urban areas and by 2025, 800 million people will live in urban communities. Especially affected will be West Africa, where the urban population growth rate of 6.3% is more than twice the rate of the total population growth. Today in the humid forest zone, more people live in cities than in rural areas and in 20 years time two out of three West Africans will live in urban centres.

The increasing population will require increased food supply, and urban agriculture has been promoted as a means to increase food security in cities and at the same time improve nutrition and alleviate poverty. However, there is a concern that urban agriculture could result in an increased human health risk. In Africa malaria has been considered a predominantly rural disease, because the clean water habitats that the *Anopheles* vector apparently prefers are uncommon in polluted urban environments. However, urban agriculture can, especially when irrigated, create breeding habitats that could increase malaria transmission in cities. Staff from the Vector Research Group together with colleagues from the International Water Management Institute and Noguchi Memorial Institute for Medical Research have been investigating the risks posed by urban agriculture in two cities in Ghana, Accra and Kumasi.

The study was based upon house to house surveys to assess malaria parasitaemia and haemoglobin concentration in children between 6 and 60 months old. Approximately 2000 children were sampled in each city from communities at varying distances from sites of urban agriculture. We found worryingly high prevalences of malaria, which runs counter to the accepted wisdom that high density urban African populations are at low risk from malaria.

The malaria parasitaemic children were more likely to be anaemic, belong to lower socio-economic groups and likely to live in a community close to urban agriculture. Since recent travel to a rural area did not affect outcome, local malaria transmission is indicated.

Furthermore, whilst by no means the sole cause, irrigated urban agriculture may increase the risk. At present we are investigating how effective insecticide treated bednets may be in preventing transmission around the major urban agriculture site in Accra.

The advantages of urban agriculture for alleviating poverty are manifold, but care must be taken that unregulated growth does not compromise its success. As apart of our commitment to getting research into policy and practice this study will form the basis of an MKP sponsored technical consultation on urban malaria control to be held in Pretoria in December. At this meeting we hope to integrate the activities of municipal authorities, agriculturalists and health professionals to reduce the existing burden of malaria and to prevent future increases.

Photo shows: **Vivien Andoh** distributing insecticide treated bednets (ITNs)

Recognition at home and abroad for LATH's role as a global player in international health.

> *Raising awareness of the need for, and the right to a basic quality of health care provision*

LATH has continued to consolidate its position as a global player in international health consultancy. Local recognition of this was provided in June when LATH was selected with Jaguar Cars and Liverpool John Lennon International Airport as a finalist in the category "International Business of the Year" in the Merseyside Regional Business Awards.

In Malawi we continue to assist the Ministry of Health, supported by DFID and other collaborating partners, in taking forward the Sector-wide Approach (SWAp) to health service delivery and to improve the quality of sexual and reproductive health services. Currently we have seven long-term international consultants in Malawi. Owing to the prevailing human resources crisis our colleagues work, not as advisers but, in a hands-on way, helping the Secretary for Health and colleagues meet the on-going demand for efficient delivery of services while coping with major structural and strategic change. An exciting new development is the proposed BSc/MSc programmes in Essential Medical Laboratory Services. This is currently under discussion between LSTM and the Ministry of Health and College of Medicine in Malawi.

As part of a partnership led by Futures Group, LATH continued to support the DFID-funded HIV/AIDS Prevention and Care Programme in Kenya, particularly through support to a national quality assurance programme for Voluntary Counselling and Testing. Provincial and District AIDS co-ordinators from across Kenya participated in a 3-day workshop for the launch of the National Quality Assurance Strategy for VCT in Kenya. The lessons learned from this experience will be used to inform the development of QA systems for comprehensive care centres providing antiretroviral therapy.

In February, we signed a memorandum of understanding (MoU) with Liverpool VCT (Voluntary Counselling and Testing for HIV), a Kenyan organisation established with support from School staff but which has grown dramatically over the past few years into a highly respected, independent NGO recognised for its expertise in VCT and care services. The MoU seeks to provide mutual advantage to LATH and LVCT through supporting LVCT in establishing an effective consultancy services capability.

In March LATH organised a national dissemination event in Abuja, Nigeria, attended by representatives from all the states of Nigeria, federal representatives of the Ministry of Health and National Action Committee on AIDS plus

representatives of international and national agencies. The event provided an opportunity for stakeholders from Benue and Ogun States, who have been involved for over 7 years in the DFID-supported STD/HIV/AIDS Management Project, to both share the lessons they had learned and promote the multi-sectoral response to the epidemic. Many of these lessons were incorporated in high quality manuals on HIV/AIDS prevention and care that were provided to participants. CD-ROMs of these manuals are available from LATH.

As part of a consortium led by the Heatlh Life Sciences Partnership (HLSP), LATH continued to support the DFID-funded Partnership for Transforming Health Systems (PATHS) programme which seeks to improve the health outcomes of the poorest in Nigeria, through helping to build and improve health systems and raise community awareness of the need for, and right to a basic quality health care provision. The National Programme Manager came to Liverpool in July to meet LSTM staff and discuss ways of strengthening LSTM links to the programme, especially in the areas of communicable disease control and essential laboratory services.

Our DFID funded programme in Mozambique, supporting Health Planning in the Ministry of Health, finally ended in March 2004 after more than 3 years of collaboration working with our partners. During this period, we provided expertise to assist the Ministry in formulating and implementing a 10-year Strategic Plan based on a SWAp and also carried out a ministry-wide Functional Analysis to inform a Restructuring Plan. In addition, we provided consultants to support the Third Joint Review of the Health Sector.

LATH has continued to build on its success in China, having been awarded a third phase of the Social Assessment and TB Control project. The project explores social barriers to access of TB services and the reasons for non-compliance with treatment following diagnosis. Fieldwork has been carried out in four provinces in China, supported by School staff.

For the fourth time LATH and Euro Health Group (EHG) have won a contract to carry out vaccination data quality audits (DQAs) for the Global Alliance for Vaccines and Immunisations (GAVI). In this round of audits we have joined forces other partners to perform 11 country audits, mainly within Africa.

LATH is expanding both its client base and geographical presence, having recently been awarded contracts by USAID. Under an Integrated Vector Management contract, LSTM staff will assist in providing technical assistance and providing support to the WHO Working Group for Malaria Vector Control and Personal Protection.

In a partnership led by the Academy for Educational Development in the US, LATH has been awarded a contract in Ghana to strengthen capacity for HIV/AIDS prevention and impact mitigation. With the assistance of colleagues at LSTM, LATH will provide inputs into the clinical components of the project. This will include needs assessment, workplan development and technical assistance in the areas of voluntary counselling and testing, sexually transmitted infections, prevention of mother to child transmission, anti retroviral therapy and opportunistic infections.

LATH is part of a consortium that was awarded the prestigious DFID and USAID funded Technical Assistance Management Agency contract in Pakistan. The programme provides Technical Assistance support to The National Health and Population Facility (NHF) which aims to increase the resources available to the National Programmes that have a direct impact on the health of the poor. LATH has specific responsibility for providing international expertise in Malaria, TB and Expanded Programme of Immunisation and recently hosted a high-level delegation from the Pakistan Ministry of Health aimed at furthering collaboration under the programme.

Top: Focus group discussion with community elders in Manica province, Mozambique.

Left: Civic Reception at Liverpool Town Hall for Ministry of Health officials from Pakistan

Malawi-Liverpool-Wellcome link seeks to stem exodus of health personnel

> *"Blantyre's local research and training programme for postgraduates is a major catalyst in improving the country's provision of health care by capacity building"*

The capacity of the Malawi Ministry of Health to deliver effective health services has been affected in recent years by three main factors: - lack of trained personnel (50% vacancies in health facilities are unfortunately not uncommon); inability to retain trained personnel because of attractive external conditions, and a severe HIV/AIDS pandemic.

Collaboration with international partners is a major catalyst to capacity building in Malawi and is something the Malawi College of Medicine is consciously cultivating. Local postgraduate training aims to reduce the risks of losing students to external positions. During the past several years a number of key initiatives have been developed which link research activities here at the School and at the University of Liverpool with capacity strengthening in Malawi. The Malawi-Liverpool Wellcome research programme (MLW) which is based in Malawi's medical school (College of Medicine) in Blantyre is a good example. The MLW aims to provide an environment suitable for research on problems of clinical importance in a tropical setting, to foster training in research for both Malawian and British clinical and laboratory scientists, to enhance development of the local institution and, through research, to contribute to improved provision of health care. MLW has focussed on malaria and HIV-related illnesses. There are 5 Malawian PhD students (co-funded by the Gates Malaria Partnership and the Wellcome Trust) based in MLW, and two more students will start shortly. Since 1995, nine clinical graduates of the College of Medicine have been supported by the Wellcome Trust for periods of 1-3 years in research projects providing them with clinical and relevant local research experience.

Other relevant initiatives with the Medical College include a number of European Union, NORAID and Gates Malaria Programme research contracts that have provided PhD training for several Malawians in the areas of adolescent and reproductive health. Related work during the past year has been provided by LATH, in collaboration with the Ministry of Health and the Department for International Development (DFID) Malawi, to support capacity development in both sexual and reproductive health, service delivery and health planning and implementation at a national level, both under the framework of a sector wide approach. The former aims to reduce the infection rate of HIV and the latter the efficacy and effectiveness of health service delivery.

New initiatives are continuously emerging and staff in the School and the College of Medicine are providing a sustained effort to contribute to this acute need for capacity strengthening.

Top: **Angela Hogg** and part of the Malawian field team.

Left: **Angela** with the female adolescent literacy trainers outside the rural AGLIT offices in the Shire Valley.

An international partnership that strives to bring hope and change through education

Giving people in countries like Malawi the tools to help them combat malaria at grass roots level is an integral aspect of the work which the School is undertaking with the Gates Malaria Partnership.

This can range from encouraging villagers to use bednets to persuading local traditional healers to direct those who need it to seek medical help for malaria. At another level, School staff are engaged in educating journalists to help get important messages across about malaria, including advice about interventions and where to seek help. This approach was launched so successfully in Gambia that it is now being taken up in six other countries.

The Gates Malaria Partnership (GMP) is an innovative and complex research and capacity development programme involving European and African Partners that to date has funded 4 training and research centres based in sub-Saharan Africa. In order to promote knowledge into practice the GMP funds 26 PhD students 23 of whom come from malaria endemic countries in Africa. The School currently supports and supervises 13 of these.

Buildings for three of the four training centres are now fully operational, in Ghana, Malawi and Tanzania. The fourth, in Gambia, is due to be completed in the near future. The Malaria Alert Centre (MAC) in Malawi, officially opened in March this year and in July it hosted the Joint Training Committee and Expert Oversight Committee meetings.

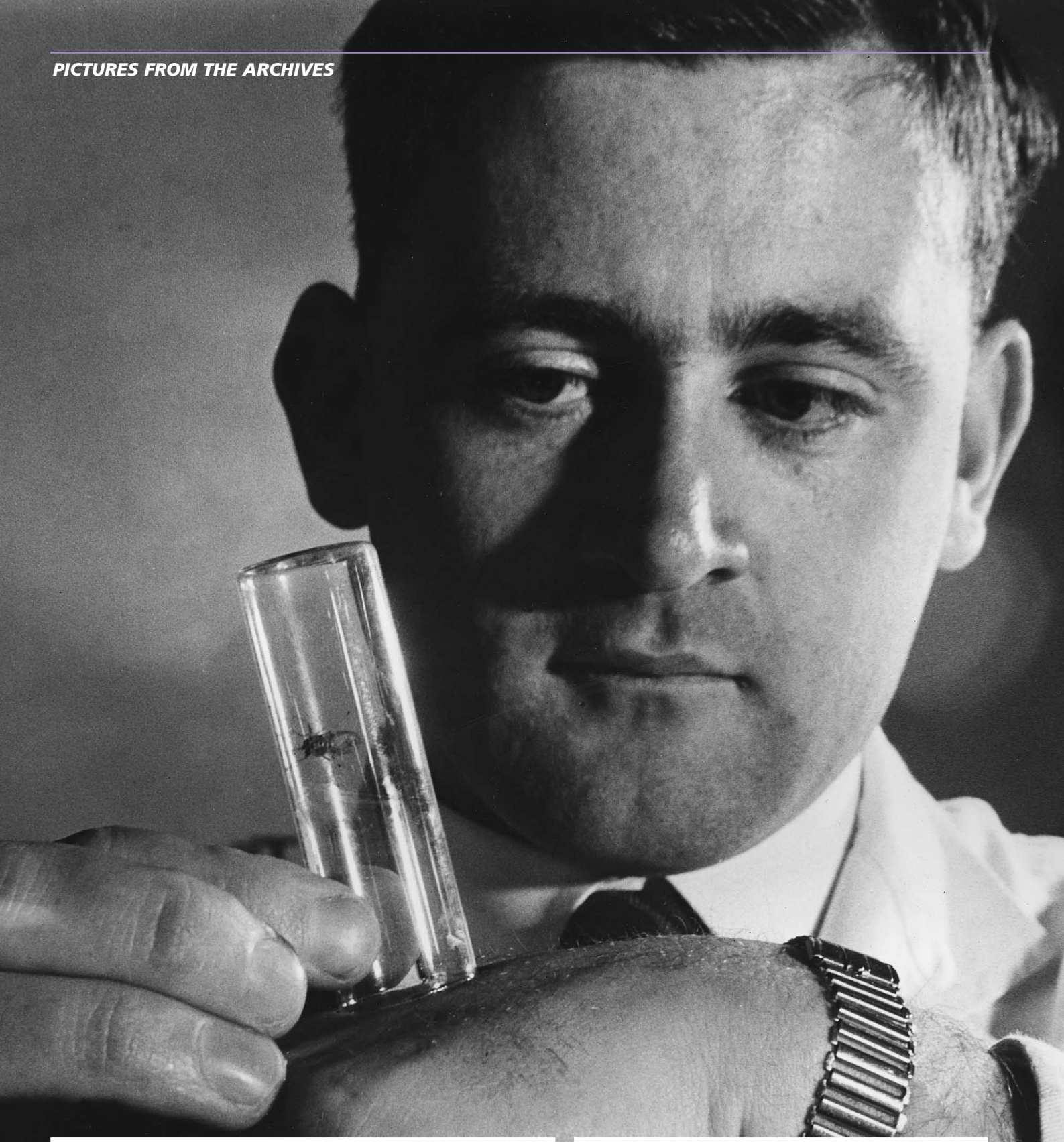
The Training Centres provide training in many areas including:
the Ghana Malaria Centre (GMC) focuses on developing an effective community based training programme regarding the prevention and management of malaria within the community and at home; the Centre for Innovation Against Malaria (CIAM), in the Gambia is implementing initiatives at the community level to ensure a positive approach to behavioural practices. More than 200 of the 295 Tanzanian MPs recently attended a seminar on malaria organised by the Centre for Enhancement of Effective Malaria Interventions (CEEMI) in support of the Roll Back Malaria (RBM) initiative, and using the village health register, MAC are working with their partners to collect data relative to malaria in order to consolidate activities at district level.

All centres receive support from the Liverpool School on a regular basis to aid them in producing effective teaching, learning and training programmes at all levels. Support is offered to each of the centres, with respect to their current projects and in accordance with their staff development pathways, through face-to-face training workshops and, as the use of technology develops, with the aid of innovative distance learning pedagogues.

To further enhance the quality of teaching and learning, study materials and delivery, a programme of Continual Professional Development workshops (CPD) in the area of teaching and learning has been developed by the School and offered to each of the GMP Centres. In the first instance, via a CD of multi-media materials, although the longer-term goal is to tap the rapidly developing technology and develop materials that can be accessed online, supported by a series of hands-on, development workshops in each of the centres.

A Virtual Learning Environment (VLE) is currently being installed and tested within the School and will initially be supported through a programme of training activities in each centre. The VLE will essentially be used to link not only the 4 GMP training and research centres but also all GMP partners through asynchronous and synchronous discussion forums and online workshops and seminars. The sharing and collaborative development of learning materials and educational programmes will be promoted by using the VLE as a repository to house paper based and multi media learning materials.

> *"All centres receive support from the Liverpool School of Tropical Medicine on a regular basis to aid them in producing effective teaching, learning and training programmes"*



Standing still is not an option in a time of change and innovation

> *Visitors are regularly surprised by the breadth and relevance of the School's collection to many modern academic disciplines*

During the year the research infrastructure of the Donald Mason Library was much on the staff's mind. One hundred years of collecting in a highly specialist area has led to a distinguished and important corpus of material, but such is the rate of change and innovation in the information world that no library, it seems, can stand still for a moment and rest on its laurels. Nationally there has been much discussion and debate, in the library sphere, as to how research can best be supported in future, with important developments in the British Library and the Resource Discovery Network (RDN).

In developing electronic/digital resources, the Donald Mason Library has benefited greatly from our long-standing, high degree of collaboration with The University of Liverpool Libraries, a relationship which is specifically configured to provide the highest possible degree of synergy. However, the substantial national developments must be observed with great care. The movement known as "self archiving", for example, could mean substantial changes in methods of scholarly communication, and dissemination of research findings. A researcher "self archives" when he or she writes a paper in the normal way, but, instead of sending it to a printed journal, deposits a digital version of the paper in a free and open website, accessible to all. Various pieces of "metadata", such as date, author names, title etc., are uploaded to the site, and a full document appended, via various types of freely available software. It can then be read by anyone, anywhere in the world, with the complete text readily to hand. The advantages for scholars in countries where resources are scarce are obvious. The new economic business models for this sort of publishing are, however, still emerging and may take some time; the concept of "peer review" is still considered indispensable by most academics, and this is regarded as a most important principle.
The academic community of the School has embraced this trend with some alacrity, and many research papers are now published very quickly, electronically, in journals that make information available to the entire global scientific body without any restriction. This has not been absolutely free: some small licensing costs and administrative tasks are borne by the Library on the researchers' behalf, leaving the scholars free to write their papers, and "upload" them to a number of websites in a matter of minutes. Our "virtual" journals, in the fields of malaria and filariasis, are flourishing, whilst the School's longest established serial, the Annals of Tropical Medicine and Parasitology, has added electronic access to its distinguished print run.

A new challenge will inevitably arise as we must now address the problem of simplifying user access to such a richness of resources, possibly through deploying some new software to provide access through a specially designed portal.

Another, less visible means of supporting research is the Donald Mason Library's participation in the SCONUL Research Extra Scheme, which gives research postgraduates and academic staff borrowing rights in other University Libraries. This is the largest borrowing scheme for higher education researchers in the UK and Ireland. Usage of the Scheme will be carefully monitored, as our role in cross sectoral partnerships is a portfolio extension. However, visitors are regularly surprised by the breadth and relevance of the School's collection to many modern academic disciplines. This realisation has probably been the single constant factor in the process of change throughout the library's one hundred and five years since its modest beginnings in the books on which Ronald Ross so assiduously scribbled.

Main: **Dr. O'Rourke** feeds a tsetse fly on his hand as part of his research into African sleeping sickness

Far Left: **The Dagnall Laboratory** before laboratory coats were a Health & Safety Executive necessity, and it seems suits and ties were de rigeur.

Left: **Professor R.M. Gordon** (left) with **Dr. O'Rourke** in the insectory, in this instance Prof. Gordon is extracting sandfly vectors of Leishmaniasis, from one of his home-made cages.

Highlights

School leads the way with sandfly breakthrough

Drs. Paul Bates and Matt Rogers of the Liverpool School of Tropical Medicine, working with colleagues at the University of Dundee, have discovered how the tiny sandfly spreads one of the world's most deadly tropical diseases - Leishmaniasis. Their discovery, published in Nature magazine, has been welcomed as the sort of fundamental breakthrough which could eventually lead to a vaccine being developed against the parasitic disease which can cause severe illness and even death.

Leishmaniasis affects about 12 million people worldwide at any one time, with about 2 million new cases every year. Humans are infected when bitten by sandflies carrying the single-celled organism *Leishmania*. However, many things about the transmission of Leishmaniasis have remained a mystery, such as the dosage of parasite in each sandfly bite required to cause disease, and the identity of shadowy 'virulence factors' thought to enhance the infection.

Drs Bates and Rogers have worked out how the *Leishmania* parasite has manipulated the sandfly as the perfect transmission system for itself. Their research reveals the size of the infectious dose, the underlying mechanism of parasite delivery by regurgitation, and the novel contribution made to infection by filamentous proteophosphoglycan (fPPG), a component of a parasite-secreted gel that is co-injected with the parasite when the sandfly bites its victim. Their findings - the result of four years research - shows that this gel greatly enhances the infectivity of the parasite.

As Dr Bates points out: "Scientists have known for many years that if you get bitten by a sandfly you may catch Leishmaniasis. But what we didn't understand was the actual mechanics of it. There are three players - the person or animal affected, the sandfly itself and the parasite living in the sandfly and then in the human/animal that gets bitten. To understand the transmission of the disease we have had to look at the three participants together, and in doing so have discovered something completely new about the transmission - namely that the gel that the parasite manufactures itself and which the sandfly carries actually causes more disease. First this is because the gel is sticky and stops the sandfly being able to feed properly on its victim's blood. This means that it gets more and more frustrated, causing it to bite again and again, which means more likelihood of infection.
But the gel also helps the parasite to pass more easily into the victim, again making disease more likely. The practical implications of this are that if we can target the gel with a vaccine, we can reduce the severity of the disease or prevent it happening at all.
If you don't understand the mechanics of something like this you are stumbling about in the dark, trying things at random."

The contributions of Andrei Nikolaev and Mike Ferguson, at the University of Dundee, revolved around the chemical analysis and the chemical synthesis of this gel material (a complex phosphoglycan) which allowed Bates and Rogers to test their hypothesis with completely defined material.

The sandfly, a hairy little insect about half the size of a mosquito, has caused major epidemics in countries such as India and Bangladesh and is likely to affect people who have been forced to migrate through civil war, as in Sudan at present. It is a huge problem among the urban poor and tends to affect the vulnerable and malnourished most severely.

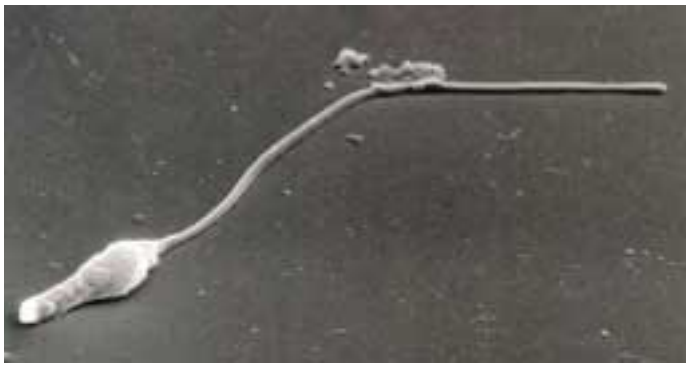


Photo shows Infective form of *Leishmania* carried by sandflies. The parasites have a small body and a long whip-like flagellum that they use to swim vigorously.

Matt Rogers & Paul Bates

New Edition of classic on African medicine

The 3rd edition of Principles of Medicine in Africa was recently published, co-edited by a team which included Dr Geoff Gill, Reader at the Liverpool School of Tropical Medicine. The other editors were Professor Eldryd Parry and David Mabey of the London School, and Dr Richard Godfrey of MERLIN (see picture). The book has been published by Cambridge University Press.

There are 117 contributors, who have written 97 chapters. The whole book is over 1,400 pages long and is lavishly illustrated with large numbers of colour photographs. As well as all the standard infective problems, Principles now includes chapters on emerging problems in African medicine, such as refugee health, urbanisation, and non-communicable diseases.

The new edition of *Principles* is an authoritative and up to date text which is both academic and practical and *Principles* seems destined to become the standard textbook of medicine in Africa.

The launch of the 3rd edition of Principles of Medicine in Africa at the London School of Hygiene and Tropical Medicine in May 2004. Three of the four editors are pictured – in the centre holding the book is **Dr Geoff Gill** (Reader at the Liverpool School of Tropical Medicine) and on the right is **Professor David Mabey** and on the left **Professor Eldryd Parry**, both of the London School.

Experts share their knowledge in leading textbook

Earlier this year, the 5th edition of Lectures Notes in Tropical Medicine was published. This is a well-established and very popular textbook of tropical medicine, and the new edition was edited by Dr Geoff Gill and Dr Nick Beeching (pictured at a recent informal launch at the School). All the other contributors to the book were members of staff of the School or external lecturers or research fellows.

Lecture Notes has a long association with the School, and has become required reading for all DTM&H students. The first edition was written solely by Dr Dion Bell and was published in 1981.The new edition of the book covers all the classical tropical diseases, and in particular there is extensive coverage of AIDS, tuberculosis and malaria. There are also "syndromic" chapters dealing with, for example, fever, splenomegaly, anaemia, diarrhoea etc. Completely new subjects have also been introduced this time – notably refugee health and non-communicable disease. Lecture Notes in Tropical Medicine is very much Liverpool's own textbook of tropical medicine.

The new edition should help to reinforce the School's reputation as a leading worldwide institution of clinical tropical medicine.

Drs Geoff Gill (left) and **Nick Beeching** (editors, 5th edition) with **Jean Taylor**, who has been involved with the last 4 editions of Lecture Notes in Tropical Medicine

Miriam's Lot...

Miriam Taegtmeyer

Dr Miriam Taegtmeyer has been working in Nairobi, Kenya for the past four years establishing and overseeing the rapid expansion of a local Kenyan NGO the Liverpool VCT centre (LVCT). This is now the largest single provider of quality-assured VCT services in the world. The Liverpool VCT Centre is a unique project that meets international standards in challenging circumstances. Dr. Taegtmeyer's responsive management style and multidisciplinary approach has been critical to

the success and scale up of the Liverpool VCT centre. Dr. Taegtmeyer has also played a role in fostering high quality operational research. With support from LSTM, Liverpool VCT centre has set up a research department of international standing that is proactive in identifying and responding to new issues. Examples include the uptake of Post Exposure Prophylaxis for health care workers and rape survivors, the piloting of new technologies such as rapid oral testing and the opening of Africa's first VCT centre run by the Deaf for the Deaf.

It was the appeal of an outdoor life that drew Dr Miriam Taegtmeyer, into the growing army of allotment devotees. In the little spare time she has Miriam relaxes and takes pride in growing her own vegetables on her allotment.

LSTM and International Training

> *the silver lining in the cloud was undoubtedly the bringing together of doctors from two neighbouring countries.*

As part of an expanding programme of training overseas, Dr Tim O'Dempsey and colleagues in the School, working in partnership with The World Health Organization, Eastern Mediterranean Regional Office, (WHO, EMRO) organised a 3-month Diploma in Public Health, Disease Surveillance & Control, targeted at doctors and other health professionals. Dr Ibrahim Betelmal, WR Somalia, first approached the School about collaboration for a course of this kind. Originally scheduled for Hargeisa, Somaliland, concerns over security led to a late change of venue to the Blue Nile Research & Training Institute (BNRTI), Gezira State, Sudan. Sponsored by WHO EMRO, with support to students from Arab Funds for Technical Assistance to African Countries, teaching was undertaken by staff from Liverpool, WHO, Karolinska Institute, Sweden and the host institution.

The inaugural course, enthusiastically supported by the Director of BNRTI, Professor Osman K Saeed and his staff, was attended by 31 doctors, 20 from Somalia and 11 from Sudan. Professor Osman did a wonderful job in keeping the course flowing, sometimes under difficult circumstances. The experience and support of the first external examiner, Dr Mansour Mohammed Mansour, Associate Professor of Community Medicine, University of Khartoum, was also valuable and greatly appreciated.

Intended as a contribution to local capacity building, the main aim of the course is to equip physicians and senior health professionals with the knowledge and skills needed to practise public heath medicine and promote health effectively, particularly with regard to the surveillance and control of communicable diseases. Evaluation from the participants and teaching staff, and the results of assessments, suggest strongly that the course was a big success. Although there was initial disappointment in Somalia that the course could not be held there, the silver lining in the cloud was undoubtedly the bringing together of doctors from two neighbouring countries. This fortuitous happening is something all those involved believe to be worth maintaining and exploring further.

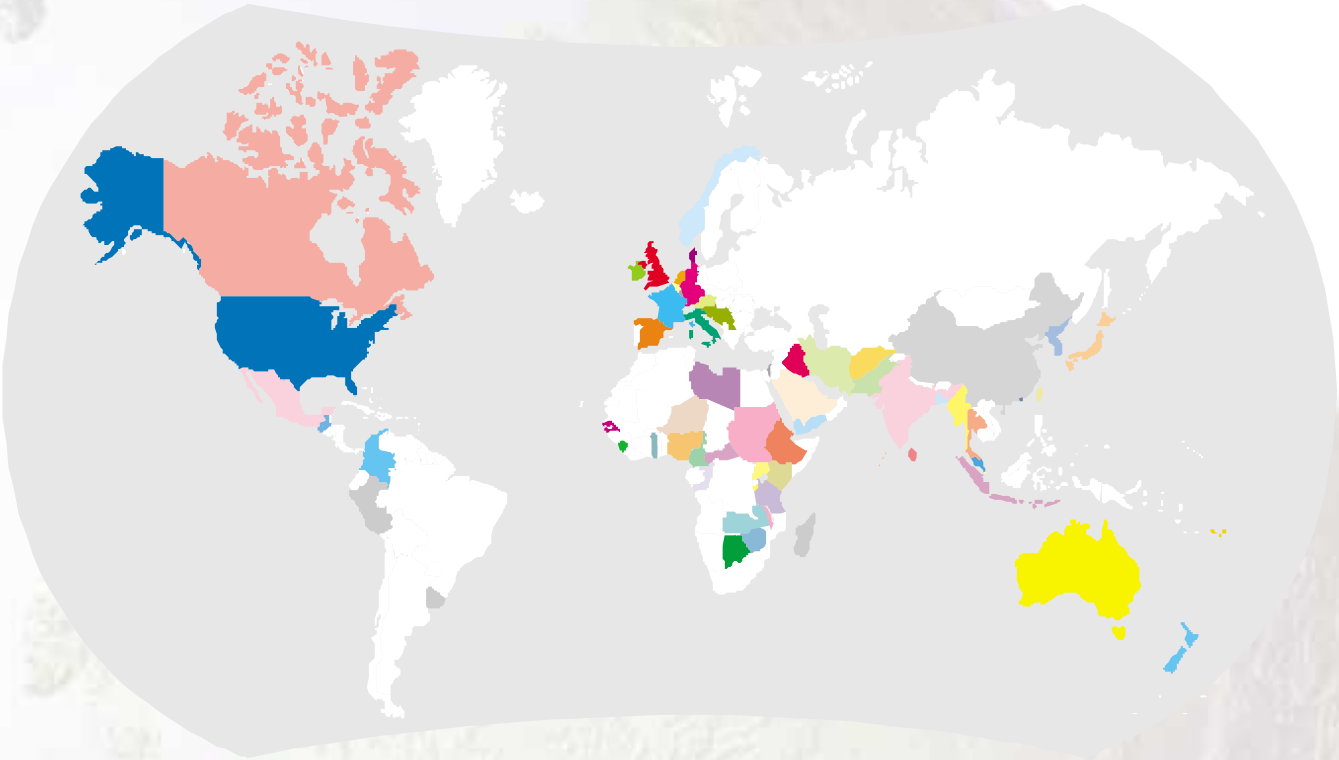
The School has been approached to get involved in discussions about the future of the course. There is a feeling that a truly regional training programme is what is required and we will be contributing to discussions as to how this may be achieved. There are a lot of factors to consider, amongst which is the situation in southern Sudan. This area is now recovering from over 20 years of conflict and it will be crucial to establish the most appropriate and effective means of contributing to the capacity building of that region.

The next year promises to be exciting in the area of international training and we look forward to continuing our latest links with countries in WHO's Eastern Mediterranean Region.

Main: **Professor Osman Saeed,** Director of the Blue Nile Institute, who played a major role in keeping the Course running smoothly.

Below: Professor Mansour the external examiner from University of Khartoum going through his report with one of the admin staff.

Student Numbers



Afghanistan	1	Hong Kong	1	Norway	13
Australia	5	India	2	Pakistan	2
Austria	2	Indonesia	1	Peru	1
Bangladesh	6	Iran	7	Saudi Arabia	10
Belgium	1	Iraq	1	Sierra Leone	2
Botswana	2	Ireland	2	Singapore	2
Burma (Myanmar)	1	Israel	1	Spain	7
Burundi	1	Italy	3	Sri Lanka	12
Cameroon	1	Japan	4	Sudan	7
Canada	3	Kenya	8	Switzerland	1
Central African Republic	1	Korea	1	Taiwan	1
China	4	Libya	4	Tanzania	5
Colombia	1	Luxembourg	1	Thailand	7
DR Congo	3	Madagascar	1	Uganda	4
Denmark	3	Malawi	11	UK	146
Ethiopia	3	Malaysia	4	Uruguay	1
France	1	Maldive Islands	1	USA	6
Fuji	1	Mexico	1	Yemen	14
Gambia	2	Netherlands	2	Yugoslavia	2
Germany	8	New Zealand	1	Zambia	1
Ghana	22	Niger	2	Zimbabwe	1
Guatemala	1	Nigeria	26		

Research Grants and Contracts

Dr I Bates
DFID (supplement)
'Improving the management of Malaria'
(Malaria Knowledge Programme) **£476,410**

Dr I Bates & Dr J Critchley
WHO
'A systematic review of the diagnostic accuracy of HbCS
(Haemoglobin Colour Scale)' **£2,000**

Dr P A Bates, Dr R J Dillon & Professor M Lehane
The Wellcome Trust
'Development and use of sandfly EST miccroarrays to study gene expression in response to *Leishmania* infection'
£307,799

Dr P A Bates
The Wellcome Trust (supplement)
'Development and use of sandfly EST miccroarrays to study gene expression in response to *Leishmania* infection'
£6,804

The Wellcome Trust (supplement)
'New mechanisms to explain the transmission of *Leishmaniasis* by Sandflies' **£3,083**

Novartis Animal Vaccines Ltd (supplement)
'*Leishmania* vaccine testing' **£22,040**

WHO (supplement)
'Testing of vaccines against visceral *Leishmaniasis*' **£26,813**

Dr N J Beeching and Dr D Lalloo
NaTHNac
'Funding for Liverpool component to LSTM' **£63,000**

Dr N J Beeching and Dr M Chance
Commonwealth Scholarship
'Studies on *Leishmania* isolated from Sri Lanka' **£15,000**

Dr G A Biagini
The Leverhulme Trust Early Career Fellowship
'Exploiting CA^{2+} physiology of the malaria parasite'
£46,000

University of Liverpool, Research Equipment Grant
'Fluorimeter' **£10,000**

Dr T Blanchard
Genetic Innovation Network
'Eliciting Neutralising antibodies to HIV with Poxviruses'
£52,000

Professor B Brabin
Emma's Childrens' Hospital (supplement)
'The Tropical Paedriatric Programme' **£36,781**

Dr P Bray
BBSRC
'The critical role of membranes in haemozin crystal assembly and the mode of action of antimalarial drugs'
£299,489

Dr A G Craig
The Wellcome Trust (supplement)
'Parasitic-host interaction in malaria pathogenesis and transmissions' **£10,162**

Dr L E Cuevas
The Royal Society
'Environmental models to predict the risk of meningitis in Cuba' **£4,110**

Dr L E Cuevas and Dr E Savory
University of Liverpool Research Development Fund
'Environmental models to predict the risk of meningococcal B in Cuba, Norway, UK and Brazil: Feasibility Study'
£4,298

Dr M J Donnelly
WHO (supplement)
'Gene flow & population structure of malaria vector *Anopheles gambiae* in a region of ecologically instability'
£5,551

Professor P Garner
WHO
'Technical Guidelines for malaria treatment' **£5,464**

Dr R Harrison
The Wellcome Trust
'Bioinformatic and DNA immunisation strategies to generate neutralising antibodies specific to conserved haemostatis-disruptive toxins in African viper venoms'
£491,308

University of Liverpool Research Development Fund
'Developing a novel camelid heavy chain immunoglobulin therapy against local effects of snake envenoming'
£5,000

Dr A Hassan and Dr P J McCall
DFID
'Prospects for Onchocerciasis control and elimination from the Republic of Yemen' **£9,793**

Dr A Hassan and Dr D Haran
DFID
'Short training course in Management Tools & Practice for Reproductive Health Service' **£30,000**

Professor J Hemingway and Dr S Sinkins and Dr H Ranson
TheWellcome Trust
'A full genome microarray resource for *Anopheles gambiae* and *Aedes aegypti*' **£150,000**

Professor J Hemingway
Bill and Melinda Gates Foundation (USA)
'Gates Malaria Partnership-Seeing, Thinking and Acting against Malaria' **£18,400**

Bill and Melinda Gates Foundation (USA)
'Gates Malaria Partnership-Recruitment and support of an educational technologist' **£114,072**

National Institute of Health (NIH –USA)
'Development of novel resistance management strategies'
£1,313,394

The Wellcome Trust (supplement)
'Charecterisation of a novel class of *Anopheles gambiae* glutathione S-transferases genetically linked to the inheritance of DDT resistance' **£10,273**

The Wellcome Trust (supplement)
'The effect of insecticide resistance on mosquito vectorial capacity' **£674**

The Wellcome Trust (supplement)
'GIS Mapping of the movement of insecticide resistant genes through *Anopheles* population' **£1,972**

The Wellcome Trust (supplement)
'Positional cloning of the major genes conferring in pyrethroid resistance in the malaria vectors *Anopheles gambiae* and *Anopheles funestus*' **£10,090**

Dr D Lalloo
MRC
'Primary prevention of invasive cryptococcal disease using fluconazole prophylaxis in HIV infected Ugandans (CRYPTOPRO-UGANDA)' **£1,019,993**

British Infection Society
'A randomised trial of combination anti-fungal therapy in *cryptococcal* meningitis: molecular epidemiology and cytokine responses' **£50,000**

Dr I Mackenzie and Professor P Garner
The Wellcome Trust (supplement)
'Treating chronic otitis media to improve healing and hearing' **£10,253**

Dr P J McCall and Dr M Donnelly
Gates Malaria Partnership
'Biology and Control of Malaria Vectors' **£54,920**

Professor D Molyneux
DFID
'Lymphatic Filariasis Support –Operational year 2003/04'
£505,000

Dr A Obasi
WHO
'The evidence base for Policies AND Programmes to achieve the Global Goals on young people and HIV/AIDS'
£13,630

Dr T O'Dempsey
WHO
'Diploma in Public Health, Disease Surveillance and Control'
£20,763

Dr S Sinkins
WHO
'*Wolbachia* interspecific transfer and tissue tropismin *Aedes albopictus*' **£20,943**

The Wellcome Trust (supplement)
'Speciation in the *Anopheles gambiae* complex' **£940**

The Wellcome Trust (supplement)
'Dynamics of *Wolbachia*-medicated cytoplasmic incompatibility in *Culex quinquefasciatus*' **£500**

Dr S B Squire
WHO
'An investigation of delays and costs faced by rural households accessing TB care in Malawi' **£8,117**

DFID (supplement)
'TB and Poverty' **£960,640**

Norwegian Lung and Heart Association (supplement)
'Extending services to communities -
(Equi-TB Knowledge Programme)' **£7,480**

Dr M Taylor
The Wellcome Trust (supplement)
'*Wolbachia* endosymbionts in filarial immunity and disease'
£17,229

The Wellcome Trust (supplement)
'The interaction of *Wolbachia* bacteria with mammalian cells' **£2,135**

Dr F Ter Kuile and Dr D Terlouw
WHO
'Work towards developing a generic method to compose safe and effective age-based dosage regimens for drugs used in the tropics (antimalarial drugs) using weight-for-age reference data from the target population'
£5,364

Dr F Ter Kuile and Professor J Hemingway
WHO and Centre for Disease Control (CDC)
'Facilitating, collaborating and exchange of information between CDC, WHO, LSTM in the area of malaria epidemiology, maternal child health' **£102,086**

Professor A J Trees
Pfizer (supplement)
'Epidemiology of *Neospora* infection in cattle' **£7,000**

Dr D J L Williams
Mast Group Ltd
'*Toxplasma* kit development project' **£6,593**

The Wellcome Trust (supplement)
'Protective type 1 helper T cell responses induced by *Neospora caninum* infection are detrimental to the maintenance of pregnancy in cattle' **£7,680**

Novartis Animal Vaccines Ltd (supplement)
'Vaccination against *Neospora*-associated abortion in cattle'
£100,580

OTHER AWARDS

Dr M J Donnelly
Ghanaian Education Trust (PhD Studentship)
'Adaptive genetic variation in *Anopheles funestus*' **£92,384**

Dr G Gill
Sanofi-Synthelabo Ltd
'An investigation into anti-platelet drug use in diabetes' **£8,300**

The Grand Charity
'*Strongyloide*s hyperinfection in ex-Far East POWs' **£5,000**

Grenada Foundation
'Archival research at the Liverpool School of Tropical Medicine' **£20,000**

Dr P J McCall
Simpson Education and Conservation Trust
'Community-based control of dengue vectors in Latin America' **£8,000**

Professor H Townson
British Council Link Agreement
'Molecular studies of malaria vectors in Vietnam' **£10,400**

SHARED AWARDS

Dr J Critchley
University of Liverpool Research Development Fund
'Quality of observational data: just how much does it matter?' **£2,000**

Shared with Dr D Pope, Department of Public Health, University of Liverpool.

Dr L E Cuevas
British Council
'Environmental models to predict the risk of meningococcal B in Cuba, Norway, UK and Brazil: Feasibility Study' **£40,000**

Rotavirus Vaccine Programme – PATH
'Rotavirus: Burden of disease, seasonality and circulating P and G genotypes in children under 5 years in Nepal' **£27,707**

Shared with Professor C A Hart and Dr J Barros, Department of Medical Microbiology, University of Liverpool

Dr M J Donnelly
Systemwide Initiative on Malaria and Agriculture
'Malaria vector ecology in urban Ghana' **£21,752**

Shared with Ms E Klinkenberg, International Water Management Institute, Ghana

Dr S M Graham
South African Medical Research Council
'Clinicopathological study of chronic lung disease in HIV-infected and uninfected children'
(African Fellowship for Dr J Mwenechanya) **£13,853**

Shared with Professor R Gie, University of Stellenbosch, Cape Town

Dr D Lalloo and Dr D Haran
DfID
Support for a book 'Africa's Perfect Storm' **£23,561**

Shared with Dr Jeremy Farrar of Oxford University Clinical Research Unit ,Hospital for Tropical Diseases,Vietnam

Dr P Powell, (Infectious Diseases Unit)
MRC
'Randomised controlled trial of nurse led self-help treatment for patients in primary care with chronic fatigue syndrome' **£887,772**

Shared with Professor Richard Bentall, Dr Alison Weardon, School of Psychological Sciences, Dr Carolyn Chew-Graham, Department of Primary Care, University of Manchester, Professor C Dowrick, Department of Primary Care, Professor G Dunn, Dr Sarah Peters and Professor Richard Morris, Department of Psychiatry, Royal Liverpool University Hospital

Dr H Ranson and Dr P J McCall and Dr M J Donnelly
NIH
'Partnerships: Hepatitis B and vector borne disease control' **£181,679**

Shared with Professor D Walker, Department of Microbiology Molecular Genetics, Michigan State University, USA

Dr S Tang
Ministry of Health China (supplement)
'China's National Health Survey in 2003' **£27,318**

Shared with Dr Rao Kequin, Director, Centre for Health Statistics Information, Ministry of Health, China

Rockefeller Foundation –USA (Supplement)
'ALPS – Affordability Ladder Programme' **£24,000**

Shared with Professor M Whitehead, Department of Public Health, University of Liverpool

Dr S Theobald and Dr H Bromley
European Commission
'Creation of a curriculum in health system research in Vietnam and Laos' **£12,590**

Shared with Professor B Dujardin, Department Recherche Cellule Recherche, University libre de Bruxelles

Dr S Theobald and Dr M Taegtmeyer
Trocaire
'Implementing comprehensive post-rape services in VCT sites in 3 district hospitals in Kenya: Influencing policy and advocacy for scale up' **£56,307**

Shared with Nduku Kilonzo, Liverpool VCT and Care Kenya, Sassy Molyneux, KEMRI Coastal Research Unit, Kenya and Josephine Kibaru, Department of Reproductive Health, Ministry of Health, Kenya

Dr R Tolhurst and Dr S Tang
WHO/UNDP/World Bank/UNICEF – TDR
'Access to TB care among rural migrants in China' **£27,575**

Shared with Professor Wang Yang, Chongqing Medical University, China

Professor H Townson
WHO/TDR
'Molecular characterisation of *Anopheles arabiensis* in arid regions of Sudan' **£11,051**

Shared with Dr M Aboud, University of Khartoum

WHO
'Development of a Global Strategic Framework for Integrated Vector Management' **£13,565**

Shared with Liverpool Associates in Tropical Health (LATH)

Professor S A Ward
Medicine for Malaria Venture
'Isoquine development' **£550,000**

Shared with Dr P O'Neill, Department of Chemistry, University of Liverpool.

Romark Pharmaceuticals
'Development of New Direct Synthetic Routes to Potent Synthetic 1,2,4 - Trioxanes: Preliminary SAR and Drug Optimisation PhD award' **£60,000**

Shared with Dr P O'Neill and Dr A Stachulskis, Department of Chemistry, University of Liverpool.

GSK
'Antimalarial drug discovery and development' **£562,378**

Shared with Dr P O'Neill, Department of Chemistry, University of Liverpool and Professor P Winstanley, Department of Pharmacology & Therapeutics, University of Liverpool.

Student Profiles

Sugeevani Munasinghe

Sugeevani Munasinghe is from Sri Lanka and is here for two years doing post-MD training. Married with three children, Sugeevani is a Researcher in the Evaluation Unit of the Faculty of Health Bureau. She has just completed the Diploma in Reproductive Health for Developing countries (DRH) and found it worthwhile and informative. The course was recommended to her by a colleague who participated last year, and after browsing through the School's website and obtaining information from the course secretary she decided to apply. Her aim is to learn more about reproductive health issues specifically for developing countries and return to Sri Lanka to put these into practice.

She feels that the association and collaboration with international participants will enhance her current knowledge and experience in reproductive health. Sugeevani found the course content very compact and appropriate and particularly enjoyed the visit to the Royal College of Obstetricians and Gynaecologists. "We all enjoyed the project work which was completed to a tight schedule. The lecturers were very competent and had a lot of experience in working in developing countries. The course was well organised which contributed to its success."

For the next eighteen months Sugeevani will be undertaking general research including literature reviewing with Dr. Nynke van den Broek to improve her background knowledge before returning to Sri Lanka.

Dr. Marta Bernassola

Dr. Marta Bernassola is currently undertaking the Diploma Course in Tropical Child Health at the School and plans to work with and for children in developing countries.

An Italian, she graduated in 1991 at the Catholic University of the Sacred Heart in Rome and specialised in infectious diseases. She has previously been a student at the School, having successfully completed the Diploma in Tropical Medicine and Hygiene (DTM&H) course in 1996.

After completing her DTM&H, she spent the next seven years in Sierra Leone, working as a clinician and coordinator and trainer for international and national non-government organisations (NGOs). During this period she spent six months on an Emergency Health Care Programme; three years on a Child Protection Programme, which aimed at the integrated care and reintegration of child solders, and a further three years establishing a 30-bed paediatric hospital in a semi-urban area.

She intends to continue working with and for children in developing countries, and is particularly interested in clinical practice and the training of health staff. For recreation she enjoys trekking, reading and dancing.

Jean Nicolas Orélus

I have worked in the CDC/UND research laboratory in Haiti on Lymphatic Filariasis, Helicobacter pylori, dengue, and intestinal parasites since 1995. Haiti is the least developed country in the Western Hemisphere.

There is a lack of knowledge of vector borne diseases, their transmission, and how to prevent them in Haiti. I feel that if I can gain more professional knowledge in this field, I can become an important resource for the programme, and further educate my colleagues and the people of Haiti in how to effectively control and protect themselves from such diseases.

In April 2003, I met Dr. Philip McCall, and my supervisor and I discussed the possibility of me coming to Liverpool with him so that I could study for the MSc in Biology and Control of Parasites and Diseases Vectors. I am now here and studying on that course.

I truly hope that I can consider myself as a potential future resource for the Haitian Lymphatic Filariasis programme. It is my earnest desire to see myself as a Scientist and educator who can help bring a real change to the public health of my people, because I can see vector-borne diseases as one of the biggest problems facing this country.

Staff Profiles

Personnel Team

From your application to commencement of employment you will have dealt with the efficient and friendly staff of the School's Personnel Office; **Eileen Tedford, Sandra Duff** and **Cheryl Clarke** make up the Personnel Team. Eileen joined the School in January 1989 and for the past 15 years has enjoyed the challenge and diversity that working in the School brings. Initially working alone she has been instrumental in developing the personnel team. A keen caravanner she enjoys holidaying in France, sampling the local red wine, and visiting European cities (thanks to Easy Jet). Married to Robert she has two grown-up sons both at University, enjoys walking her dog and is a Governor at a local Comprehensive school.

Sandra has been at the School since January 1998 and enjoys the variety that working in

the Personnel Office brings. Since completing her CIPD Certificate in Personnel Practice Sandra has been involved in the development of many of the School's personnel policies. She is committee member of the School's Staff Forum and finds this an excellent way of being involved in School life. Sandra enjoys the gym and spending time with her two boys, James and Sam, and socialising with friends. Cheryl is the newest member of the Personnel team joining the School in May 2004 from the Personnel Department, University of Liverpool.

Cheryl, who joined the team this year, has a BSc (Hons) in Psychology from Liverpool University and an MA in Personnel and Development from John Moores University. She joined the School to further develop her career and has, so far, enjoyed working in the generalist environment of the Personnel Office. Her interests are boating and going on holiday, her most recent trip having been to the island of Rhodes to enjoy the sunshine

left to right:
Cheryl Clarke, Eileen Tedford and Sandra Duff.

Mike Lehane

Mike Lehane joined the Vector Biology Group as Professor of Molecular Entomology and Parasitology. He has worked in the University of Leeds, the London School of Hygiene and Tropical Medicine and the University of Wales, Bangor. Currently the major research interests of his group are in tsetse biology and in particular the immune responses of the fly to the trypanosomes it transmits. He and his wife Stella, who also works in his lab., have kept their house on Anglesey where they spend many weekends. Their weekday life in Kensington, Liverpool, is making a very interesting, sometimes exciting contrast to rural Wales. Mike and Stella have a son Patrick 18 and a daughter Catherine who is 20.

Outside the lab. Mike enjoys fishing (for anything) and music, particularly jazz. Stella enjoys cooking and her garden and fish pond.

Dr Feiko ter Kuile & Dr Anja Terlouw

Dr Feiko ter Kuile, a senior medical epidemiologist, has spent the past 15 years working in the field of malaria. Following his medical training in the Netherlands he was initially based on the Thai-Burmese border for a 6 year period as part of his PhD research on multidrug-resistant malaria with the Oxford Tropical Medicine Research Programme. Moving on to the American Centers for Disease Control (CDC), he was subsequently employed as a senior medical epidemiologist on a large-scale insecticide-treated bednet trial in both western Kenya and Atlanta for a period of 8 years, before joining the School in 2003. Over the past year, his various activities have grown steadily and include studies of the treatment and prevention of malaria in pregnancy, studies of the post-discharge treatment of children with severe anaemia. He is also involved in efforts to establish a global research consortium on malaria in pregnancy and responsible for strengthening collaborative efforts between the School and CDC, Atlanta. Feiko lives with his wife Penny and their 2 children on the Wirral and is optimistic he will be able to win the Wirral ladies golf club tournament one day. While other established voluntary activities include tennis, hockey and swimming, his family is still hoping he will develop a genuine fondness for DIY activities. So far there does not seem to be any evidence to support progress in this area.

Another fellow Dutch person who joined the Child and Reproductive Health Group more recently is **Dr Anja Terlouw**. She is also a medical epidemiologist who completed her MD and PhD training at the University of Amsterdam in 2003. During the last 6 years of this training she worked with Dr ter Kuile on the western Kenya bednet trial and other related studies and developed interests in a range of subjects from malaria related host-genetics to the development of optimal age-based dose regimens of antimalarials. With her appointment at the School, she hopes to build on this experience and continue to combine hypothesis-driven with more operational research on the epidemiology of malaria. Apart from her enjoyable work-associated travel, having hobbies seem to have been a bit of a forgotten concept recently. All the same, she is looking forward to picking up on a long-lost love of horse-riding, and has high hopes to start cycling regularly again. This last innate enthusiasm so far being dampened by Liverpool's challenging moderate climate and perceived 'mountains'.

Officers 2003 - 2004

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Dr M Donnelly MSc, PhD
The Vice-Chancellor
Professor J Drummond Bone, MA, FRSA
Professor P Garner, MD MBBS FFPHM DRCOG
Dr P McCall, MSc, PhD
JH McCullough, MA DipEcon
K Sherlock, BSc Hons (from Dec 03)
Professor H Townson, MSc PhD CBiol MIBiol
Professor AJ Trees, BVM&S PhD MRCVS

Nominated Members
Council of the University of Liverpool
Professor CJ Gaskell, BVSC PhD DVD MRCVS
N Kemsley BCom, AICSA
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Vacancy

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Liverpool Chamber of Commerce and Industry
Mrs H Burrage

Merseyside & Cheshire Strategic Health Authority
Dr RM Hussey, OBE MSc MBChB FFPHM DRCOG

Non-Governmental Organisations
Oxfam – Vacancy
Save the Children Fund – Ms R Keith

Elected Members
Mrs AH Banner, LLM
MJP Cooke, FCA
NHF Dixon
WD Fulton, JP DL FCA
Mrs D McConnell, CBE DL
Mrs S Mashiane-Talbot, SRN SCM JP
Dame Lorna Muirhead, DBE
Vacancy

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Director
Professor J Hemingway

Bursar
R E Holland

Professors

Professor of Tropical Paediatrics
B J Brabin

Professor of International Health
P Garner

Alfred Jones and Warrington Yorke Professor of Tropical Medicine
M Hommel

Middlemass Hunt Professor International Community Health
A Kroeger

Professor of Molecular Entomology and Parasitology
M J Lehane (from 01.08.2004)

Professor of Tropical Health Sciences
D H Molyneux

Professor of Clinical Tropical Medicine
M E Molyneux

Professor of Medical Biology
R D G Theakston

Selwyn-Lloyd Professor of Medical Entomology
H Townson

Professor of Veterinary Parasitology
A J Trees

Walter Myers Professor of Parasitology
S Ward

Professor of Tropical Child Health
Vacant

Reader
A Craig (joint Pharmaclogy & Therapeutics)

Senior Lecturers
G Barnish
I Bates
N J Beeching
T Blanchard
J Bunn
M L Chance
J B S Coulter
L Cuevas
I G Edwards (joint Pharmacology & Therapeutics)
G V Gill (joint Department of Medicine)
D Haran
D Lalloo
I Mackenzie (from 01.05.2004)
I Marshall
P J Nickson
A Obasi (from 19.01.2004)
T O'Dempsey
P Shears (joint Med. Microbiology)
S B Squire
S Tang
F ter Kuile (from 06.09.2003)
DJL Williams
N Van den Broek

Lecturers
P A Bates
P G Bray
H Bromley
J Critchley
A Dawson
M Donnelly
JP Fisher (until 31.03.2004)
L Ford
A A Hassan
I Hastings
J E Hodgkinson
J Liu
T C Martineau
P J McCall
H Ranson
S Sinkins
S Welby
S Theobald

Research Staff

Vector Research Group
M Coleman
J-P David
N Hawkes
SHP Karunaratne
L Kelly-Hope
L McCarroll
P Muller (from 01.04.2004)
P Pignatelli
C Strode
C Wondji (from 04.05.2005)

Veterinary Parasitology Group
C Guy
C McCann
J McGarry
B Makepeace
R Norton
A Rosbottom

Molecular & Biochemical Parasitology Group
B Brazil (from 01.03.2004)
S J Chakravorty
R Dillon (from 01.04.2004)
G Egerton
R Harrison
R Hughes (from 04.03.2004)
C Gontijo
G D Laing
H McGarry
M Rogers
P Stocks (from 01.03.2004)
M Taylor
J Turner
S Wagstaff (from 08.03.2004)
Y Wu

Disease Control Strategy Group
H Howden-Leach (from 01.05.2004)
A Medina-Lara
M Scarborough

Child & Reproductive Health Group
A Hogg
F Verhoeff
J Hill
S Rizwan (from 01.09.2003)
DJ Terlouw (from 01.03.2004)
E Savory (from 01.12.2003)
MA Yassin (from 24.07.2003)

Clinical Research Group
J W Bailey
R Christian (from 10.01.2004)
J Day (05.04.2004)
J Kemp
G Mann
R Parkes (from 24.11.2003)
A Ramsay
R Thomson
A Willetts

International Health Research Group
G Gyte (from 20.4.2004)
V Lutje
C MacFadyen
H MacLehose
L Orton
R Robb
H J Smith
R Tolhurst

Head, Electron Microscopy/Histology Unit
P E Young (until 29.02.2004)

Head, Donald Mason Library
C M Deering

Head, Teaching Laboratory
C Chavasse

Annals of Tropical Medicine & Parasitology
K R Wallbanks

Annals of Tropical Paediatrics: International Child Health
Emeritus
Professor R G Hendrickse
V Coulter

Lymphatic Filariasis Support Centre
M Brown
J Fahy
H Frazer (from 01.02.2004)

Liverpool Associates in Tropical Health
J McCullough
S Perry
V Doyle
S Nuttall
L Silvester
E Kelly (from 17.12.2003)

The School says farewell to

Joanne Collins

Joanne Collins has left the School after 17 years. She joined as a junior clerk in the administration, working for the then Dean, Prof. W.W. 'Bill' MacDonald, and then for the Administrator, Mrs. Jane Newell. Lastly, she became the DTM&H Course Secretary where she 'outlived' a few course directors and hundreds of students!

Joanne and her family decided to move to Northern Brittany for a complete change of life style. Having visited the areas several times, Joanne, whilst appreciating that the move will initially be difficult, is looking forward to a simpler, more open-air lifestyle where things are more relaxed than the humdrum pace in urban Liverpool. She started learning French while she was here, and we trust that those early lessons are paying a good dividend now.

Margaret Coles

Margaret Coles was the School's Welfare and Accommodation Officer for 18 years, before she retired earlier this year. Margaret is a Canadian who worked in Kenya for two years before she came to the School. She feels that being an "outsider" with overseas experience helped her in her role as befriender, counsellor and confidante, as well as the person to whom almost all students visited to find accommodation or to pour out their problems, both large and small.

Margaret was a long-standing member of the Equal Opportunities Committee, and she was forever scouring the web pages to find new and appropriate issues that the EOC should and could take up on behalf of staff and students alike. Her contributions will be missed.

We wish both Joanne and Margaret well in their new lives.

Sam's Garage

Early last year, without any fuss or bother, the heavy equipment rolled onto the small car park on the corner of Pembroke Place and Great Newton Street and began to systematically demolish 'Sam's' Garage'. In a matter of a few weeks there was nothing left but the exposed side of the Pilkington Wing (the old Salvation Army Hall) – something that had surely not seen the light of day for a hundred years or so.

Those of you who remember Sam's Garage will recall a huge barn-like structure facing Pembroke Place, and a wing facing Great Newton Street. It seems that in times gone by, this wing was the 'horse hospital' of the late19th Century. Once you were aware of this, then a look inside showed that the bays where cars and equipment were parked were once stables. The ornate, handmade brick facia of the entrance to this establishment states that W.W. Townson MRCVS owned it, and that the facia was made in 1884. It seems such a shame that this piece of history is now lost forever.

However, the old must make way for the new, and the site is to be redeveloped for the School's new laboratory complex. An artist's impression of how it might appear is shown here.

Mission Statement

As a centre of excellence, the Liverpool School of Tropical Medicine, through the creation of effective links with governments, organisations and institutions and by responding to the health needs of communities, aims to promote improved health, particularly for people of the less developed countries in the tropics and sub-tropics by:

- *providing and promoting high quality education and training;*
- *conducting first class research and disseminating the result of that research;*
- *developing systems and technologies for health care and assisting in their transfer and management;*
- *providing appropriate consultancy services;*

In fulfilling this mission the School also provides a clinical service of acknowledged excellence.

LIVERPOOL SCHOOL OF TROPICAL MEDICINE

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