A simple method that can be used to rapidly assess which communities are at risk of developing severe adverse reactions following treatment with ivermectin for onchocerciasis, due to co-infection with ‘eyeworm’ (or *Loa loa*), has been substantiated in a TDR multicountry study. After analysis of the results at a workshop in September 2001, the method was immediately taken up by the African Programme for Onchocerciasis Control (APOC) for use alongside community directed treatment with ivermectin (CDTI).

The need for such a method was urgent. In some areas of Cameroon where both diseases (onchocerciasis and loiasis) are endemic, the use of CDTI, and hence onchocerciasis control, had virtually come to a standstill because of the risk of severe adverse reactions. The reactions occur in persons heavily infected with loiasis and include potentially fatal degenerative effects in the brain. However, under field conditions it is not at all practical to do blood surveys to determine how heavy (or ‘intense’) *Loa* infection is, and so a simple method was sought.

Earlier studies had indicated that a correlation exists between intensity of infection and prevalence, that there are prevalence thresholds above which the risk of severe reactions becomes too high for routine treatment with ivermectin. High-risk villages, where adverse reactions may be anticipated, were indicated to be those where there is more than 20% prevalence of *Loa* infection, or more than 5% prevalence of heavy *Loa* infection (more than 8000 microfilariae/ml blood). The current study, carried out in over 100 villages in Nigeria and Cameroon, confirmed that a very clear correlation does indeed exist between prevalence and intensity of infection. A number of different rapid assessment procedures (RAPS) for determining prevalence were compared, including history of
A new rapid assessment tool

(continued) Eyeworm (whether worms moving along the white of the lower part of the eye have ever been experienced) and Calabar Swelling (whether swellings under the skin which change position or disappear have ever been experienced). All RAPs showed correlation with level of endemicity of Loa, although the best performance was with the RAP based on eyeworm. A prevalence of 40% or more of eyeworm in a community, confirmed by showing a photograph of a worm in the lower part of an eye, was identified as the threshold above which there is a high risk of adverse reactions during CDTI; conversely, where history of eyeworm is less than 40%, there need be no worry concerning mass treatment with ivermectin. The procedure, called RAPLOA, is 100% sensitive and more than 90% specific. This simple method is effective because eyeworm is such a well known infection in endemic communities that they have their own local names for the condition.

As recommended by APOC, TDR is now developing standardized guidelines for the application of RAPLOA, and APOC intends to apply the RAPLOA method soon in several areas where CDTI is planned and where Loa loa is potentially endemic. Further research will aim at developing a rapid mapping method, possibly through combining RAPLOA with an environmental modelling system under development by the Liverpool School of Tropical Medicine. Due to the rapid development of RAPLOA (a mere nine months went by between the protocol development workshop and application of the results in practice), onchocerciasis control operations in Central Africa can soon go full speed ahead again.
WHO and six of the biggest medical journal publishers announced an important initiative in July 2001. Medical schools and research institutes in low income countries are to get free (or low cost, depending on GNP per capita) full-text access through the Internet to nearly 1500 top international medical journals. “It is perhaps the biggest step ever taken towards reducing the health information gap between rich and poor countries” said Dr Gro Harlem Brundtland, Director-General of WHO, at the signing of the Statement of Intent by senior executives of the publishers.

It is planned that the initiative will begin in January 2002, and that progress will be monitored for three years. TDR will help in implementing the initiative (known as Health InterNetwork Access to Research Initiative, see TDRnews No. 64) because of its commitment to capacity building. Thus WHO would like to participate in this initiative, and how you would make the most of your participation. There is no restriction on the number of institutions that can participate, so please suggest other organizations in your country and region that might benefit from this chance too.

To be eligible, your institute must exist in a low income country and be working in the area of health or biomedicine, e.g. you will likely be from a:

- school of medicine, nursing, public health, pharmacy, biomedical sciences, or social sciences.
- university (particularly one offering graduate studies in biomedical disciplines).
- research institute.
- government office.

This initiative is expected to have implications that extend beyond access to information. It is envisaged that better and timely information will increase the capacity of scientists and health care workers from low income countries to participate in the global research agenda, to better set national research and health care priorities, and to increase countries’ self-reliance in developing evidenced-based strategies and tools for the prevention, control and treatment of disease. We look forward to hearing from you.

For further information, please see WHO press release at:

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The filariases: TDR studies help define parameters for control

TDR research is helping to elicit answers to a number of questions posed by filariases control programmes. In onchocerciasis, for example, where control programmes are making headway towards eliminating the disease through community directed treatment with ivermectin, the main research questions are how to monitor progress and how to identify communities who are not receiving sufficient treatment coverage. A study undertaken by a national coordinator for onchocerciasis control and supported by TDR, showed that monitoring of schoolchildren for ivermectin treatment by schoolteachers gave a good indication of population coverage among the community. A much closer indication, in fact, than the figures for treatment coverage reported by district health services. Now, a larger study is being undertaken to validate the findings under routine operational conditions covering several health districts.

In lymphatic filariasis, where national control programmes to eliminate this disease are being initiated, one of the main questions is how many treatment rounds will be needed to achieve elimination under different conditions of population coverage, drug of choice, frequency of treatment, etc. The computer simulation model LYMFASIM is being developed to address these questions. Preliminary sensitivity analysis has been completed using the current LYMFASIM model, which is based on the situation in urban Pondicherry, India (on the results of a vector control trial combined with chemotherapy data from various drug trials). Some of the results are shown in the figure. If, for example, an area has a lymphatic filariasis prevalence of 7%, and 70% of a population is covered by each round of treatment, then five treatment rounds will be sufficient to achieve elimination; if the disease prevalence is 10%, then six rounds will be required.

Another question concerns the effect of age and immune factors on the prevalence and intensity of lymphatic filariasis. In the LYMFASIM model quantified for urban Pondicherry, prevalence of the disease declines after the age of 30 years. There was concern that this pattern may not be representative, so further analysis was made of patterns of infection by age. The most common pattern was that of a plateau, not a decline, in prevalence after a certain age; thus Pondicherry was found to be an exception rather than the rule. In addition, a very clear and different picture emerged between the age of maximum prevalence in Africa (about 40 years) and Asia (15-20 years), with an overall higher prevalence in Africa than in Asia. These findings are being integrated into the LYMFASIM model.

Another question in lymphatic filariasis is whether foot care is effective and sustainable in communities. Foot care consists of using soap and water (and occasionally topical ointments containing antibiotics) to treat and prevent acute attacks of adenolymphangitis (ADL, or filarial fever). For one year, 140 filariasis patients in India were supervised and instructed in foot care, after which they were advised to continue the simple measures without supervision. One year later, the patients were interviewed and examined. Most had been able to maintain the treatment and the severity of ADL episodes was considerably less than before (95.2% of patients had either no ADL or ADL of reduced severity); they abstained less from work and for a much shorter period. Thus their quality of life had improved. Foot care is therefore seen to be a most cost-effective method for preventing ADL attacks, which can be sustained by patients themselves.

Simulation model gives new insights into optimal treatment strategies for filariasis, and simple foot care is shown to be a sustainable and cost-effective way of preventing filarial fever.

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Biosocial research and the TDR agenda

Paul Farmer* and Mercedes Becerra** present an overview of biosocial research now being taken up by TDR

What is biosocial research?

TDR is in the unique position of developing new research strategies in order to respond to new problems – or to old problems that have worsened in novel ways. Social, economic, and behavioural research (SEB) is a small but important part of TDR, as it seeks to bring a broad array of social-scientific methodologies to bear on the chief causes of morbidity and mortality among the world’s poorest and most marginalized people.

For years, confusion as to the nature of such research has reigned. Many of those working in the laboratory to develop new vaccines, diagnostics or drugs saw social science research as concerned chiefly with elucidating the “beliefs” of those living in areas in which the diseases are endemic. Others thought that such research focused on the burden of stigma. The quest in either case was to better understand the “culture” of “target” populations. Often, a cognitivist anthropology of belief resulted, leading to a large number of “knowledge, attitudes, beliefs, and practices” (KABP) surveys that may or may not prove relevant in piloting new tools.

In considering the community of researchers committed to TDR diseases, it is easy to discern a stark division between social scientists and other researchers when no such division is warranted. The phenomena that concern us – epidemiemic and endemic disease – are not solely biological; neither are they purely social. Yet conventional studies typically rely on disciplinary approaches and fail to reveal the full complexity of these epidemics.

Only by embracing a transdisciplinary, biosocial approach can we hope to describe fully these epidemics, and intervene successfully. For example, when yet another hydroelectric dam alters rates of schistosomiasis or filariasis, we must also study the “behaviour” of policymakers at development agencies if we are to understand the distribution and outcome of schistosomiasis and filariasis. When recurrent drug stockouts characterize a tuberculosis control programme, the “knowledge, attitudes, beliefs and practices” of patients may have only limited relevance to the emergence of drug resistance, whereas fluctuating drug prices, tariffs, and poor drug quality might prove determinant. When poor blood-screening practices mean rising rates of American trypanosomiasis, it is an anthropology of blood banking and bloodbankers, rather than scrutiny of patients’ notions, that is called for.

This list of emerging research topics is long and involves each of the TDR diseases. What is clear, in contemplating such problems, is that truly biosocial research necessarily draws on a broad range of disciplines and methodologies and cannot be conducted without ample time and support.

What methodologies does biosocial research use?

In seeking to characterize the more ambitious research agenda that has emerged in SEB in recent years, some have referred to “upstream” research: inquiry that, in addition to describing local cultural beliefs, would seek to understand the distribution of infectious diseases and also their outcomes in broader social context. Such an exercise involves large surveys, demographics, laboratory assistance (for example, for serologic studies), and also deep knowledge of local cultures and of the cultures of the research and funding communities.

Biosocial research is thus likely to draw on both qualitative and quantitative methods. Among the former are ethnographic methods (including long-term participant observation, which takes years), case histories and biographies, network analysis, and focus groups. Quantitative methods important to biosocial research include conventional and molecular epidemiology, biostatistics, economics, and demographic studies. Political economy and history are necessary to any comprehensive account of shifting disease determinants. One might also argue that the sociology of science has a special role to play in sorting out “scientific debates” that arise as often in anthropology, say, as they do in particle physics.

A biosocial view of emerging drug resistance

The emergence of strains of malaria, pathogenic bacteria, viruses, and mycobacteria resistant to our therapeutic arsenal could be thought of as classic biosocial problems. There is...
Biosocial case study: primary or acquired drug resistance?

Haiti bears one of Latin America’s greatest TB burdens. Approximately 10,000 new cases of tuberculosis are reported each year; the true number is thought to be closer to 50,000. The Joseph family might be termed a typical lower-middle-class Haitian family, if not for multidrug-resistant tuberculosis (MDR-TB). They were a large family crowded into a small house in a poor neighbourhood in the sprawling capital. Mme Joseph sells wares in the streets; her husband is an irregularly employed construction worker. Although they live in poverty by any standard, theirs was a household in which it might be expected that all eight children would attend school; one or two of them might even be expected to find jobs. One of their most talented children is Jean, in 1997 a 21-year-old student. The way Jean recalls it, his family’s problems began when he started to cough. At first he sought to treat his persistent hack with herbal teas. But when his cough worsened, he began to think he might have something other than a banal cold. In the second month of his illness, with new back pain and a fever, Jean took himself to a TB hospital in Port-au-Prince. “It’s not that I thought I had tuberculosis,” he recalled in an interview. “Not at all. It’s rather that I knew they could take a chest x-ray.” But Jean did indeed have TB, and he was started that day on a four-drug regimen that included not only rifampin, but also streptomycin, a drug that is injected intramuscularly. “I took all my medications,” he recalled anxiously, “but I kept coughing.” Some of those taking care of Jean were sure that he was “non-compliant” and said as much to his parents. Towards the end of the year, Jean’s fears were heightened by an episode of hemoptysis. “I knew I was getting worse, so I went to a pulmonologist.” The specialist referred Jean to the national TB sanatorium in January, 1998. There Jean was found to be floridly smear-positive and admitted for further therapy. Jean was an inpatient for almost three months, during which he received directly observed therapy with the same drugs he had received previously. He remained smear-positive throughout his time there. “I was discouraged, I wanted to stop [taking the medications]. I was sure these medicines wouldn’t do anything for me, since I had taken them for over a year and been positive the whole time. I stopped taking them and went to an herbalist (dokte fey) for a few weeks.” At the herbalist’s, Jean was treated with various concoctions containing the bark and leaves of trees held, he said, to cure tuberculosis and other lung disease. But his symptoms persisted, and when he again began to cough up blood, he returned to the sanatorium. Again he was prescribed the same first-line drugs, including rifampin and isoniazid. During that time, he recalls, he was placed in an open ward with other patients, many of them, he knew, with drug-resistant disease. “None of them were getting better,” Jean recounted. “They started talking about other medicines that were better, but they said that the government either didn’t have the medicines

(continued) > simply no way to understand the dynamics of emerging drug resistance without an understanding of both microbial and human “behaviour.” Quotation marks are appropriate because the term behaviour tends to focus attention on those afflicted with the diseases, whereas we must clearly cast our net much wider if we seek firm analytic purchase on what might prove to be the Achilles’ heel of new drug development.

Allow us to give an example from our own work on the emergence of resistance to antituberculous drugs. Those who study this field have classed resistance in two categories: acquired and primary. A patient with a history of previous tuberculosis treatment is said to be sick with acquired drug resistance when drug-susceptibility testing of an isolate of Mycobacterium tuberculosis shows resistance. Acquired resistance is very often attributed to patient non-compliance. But the story can be much more complex, as a more biosocial example—drawing on complementary methodologies—reveals.

Social, economic, and behavioural research and the “outcome gap”

The goal of TDR is to perform research that meets the highest scientific standards in order to respond to a dozen diseases that kill millions and blind or maim millions more. Most of these afflictions are thought of as “tropical” diseases but they are in truth more linked to social class than to latitude. Those who work with TDR are called to go “from blackboard to bench to bedside” to bring new diagnostics, vaccines, and drugs to the population bearing the greatest disease burden.

The “upstream” research mentioned above has already revealed a rising tide of social inequality, which makes it increasingly difficult to bring research to the bedside (in fact, many do not sleep in beds, but on mats or worse). This rising outcome gap may well prove the biggest challenge facing TDR in the coming decades. That is, as we develop new tools—vaccines and other preventives, diagnostics, drugs—our failure to distribute them equitably means that the poor will do worse than ever. This has been seen starkly as regards tuberculosis and many other TDR diseases: although the diseases occur in many settings, virtually all
This is, in our view, a mistake. New operational researchers away from developing new tools. A worsening outcome gap has led some to have the misfortune to have MDR-TB. In that case, such “second-line” drugs often hold the only real hope of cure. Once Jean’s parents had the names of the drugs, and a prescription from one of the pulmonologists, they started selling off assets—furniture, a parcel of land—in order to buy the medications. “I started taking [second-line] medicines inside the sanatorium, and I was soon [smear-]negative. In July, I went home. But after five months of treatment, my parents couldn’t buy any more medicines, and so I had to stop. I became positive again.” Jean soon had fevers every night, and drenching sweats. He coughed incessantly, and lived in fear of hemoptysis (he learned during his sanatorium stay that this symptom could prove rapidly fatal). But the situation, Jean reports, was to become even worse. “Even though I had stopped coughing blood, my sister Maryse began coughing in about October, and then she started coughing up blood.” One by one, the Joseph children became ill. After Maryse, the oldest, came Myrlene, who had for years suffered with sickle-cell anemia. Then came Kenol, the youngest. Finally, Shel-la started coughing. And one by one the Joseph siblings began treatment with first-line drugs. Because the Joseph children did not get better on first-line drugs, their providers assumed, once again, “non-compliance.” Maryse threatened to never return to clinic after a heated exchange with the doctor in charge of the facility. The national TB programme dutifully registered all the Joseph siblings as having acquired drug resistance. The Haitian government could not buy the drugs for patients with MDR-TB, but did refer the Joseph family for culture and drug-susceptibility testing. “I never got the results. I kept going back every couple of weeks, and they kept telling me to come back again in a couple of weeks.” Eventually, in November 1999, all of the Joseph siblings were sent to a referral facility with presumptive diagnoses of acquired MDR-TB. Following the requisite laboratory tests, they began therapy and became smear-negative within two months. However, “genetic fingerprinting” of their samples suggests that the family was infected with a single strain of drug-resistant tuberculosis, and that empiric therapy with first-line drugs—following international recommendations—led to a worsening of their drug-resistance profiles. Likely infected with a strain resistant to isoniazid, rifampicin, and streptomycin, members of the Joseph family subsequently “lost” ethambutol and ethionamide in the course of empiric regimens recommended by both policy makers and their physicians. Among the Joseph family, non-compliance cannot be shown to have played a role in either the acquisition of drug-resistant tuberculosis or in the initial poor outcomes.

Deaths are registered among the poor. This is true for tuberculosis, malaria, and HIV as well. From an equity perspective, the situation has gotten worse since new tools were developed. A worsening outcome gap has led some researchers away from developing new tools. This is, in our view, a mistake. New operational research that could help us to pilot new tools is called for if we are to diminish the outcome gap. That research will draw upon the biosocial work that seeks to define the dynamics of disease persistence, emergence, and re-emergence. But neither biosocial nor operational research will amount to much if there are no new vaccines, drugs, or diagnostics to distribute. Those working on Strategic Social, Economic, and Behavioural Research are grateful to be part of the TDR community. All of the diseases under the TDR aegis are known to be “social” diseases and many in both the basic sciences and public-health communities note the need for new and more comprehensive analyses of these persistent plagues. We know from experience that biosocial research takes time and resources, and thus appreciate the understanding of our colleagues in the basic sciences. It also requires the patience of our colleagues in the field, and of the populations we, too, hope to serve. Many of us believe that genuinely biosocial research will help us fill gaps in analysis and allow us to turn our attention to closing the outcome gap—a task likely to emerge as the pre-eminent challenge to tropical disease researchers in the 21st century.
Does inequality matter?

Erik Blas, TDR Programme Manager

This question—does inequality matter?—was posed a few months ago on the front page of The Economist, a leading international news magazine. The magazine further devoted its main editorial to discussing the topic. It argued: in good economic times, even the poor feel better off. In bad ones, the rich may lose the most money, but the poor lose their jobs, their houses, even their families. The editorial goes on to state that helping the truly poor is a much worthier goal than merely narrowing the inequalities. If the rich get poorer, some people may feel pleased, but few are better off. If the poor get richer, the whole country will benefit. It concludes by saying that helping the poor is not just something to do simply on humanitarian grounds but is also something that should be done to ensure stability and continued economic growth of the society. Here there is a shared interest with the humanists, who use the ethical concept of equity as a synonym for social justice and fairness. Inequities are inequalities that are judged to be unfair, i.e. both unacceptable and avoidable. Equity in health care means that health care resources are allocated according to need, health services are received according to need, and payment for health services is made according to ability to pay. It implies a commitment to ensuring high standards of real (not only theoretical) access, quality, and acceptability in health services for all.

During the 1990s, there was growing concern that the efficiency-driven health reforms being implemented in many poor countries, using instruments such as direct user-payments, exemption mechanisms, various insurance schemes, privatization, decentralization, might lead to decreased social justice and fairness as well as add to instability and eventual slow down of economic growth in the poorest countries. In a recent article, Davidson R Gwatkin of the World Bank calls for a new wave of health sector reforms, that are equity-oriented, and conceived and executed with even more passion and determination than the efficiency-directed reforms of the 1990s. He presents three arguments to support his call:

- Significant reforms will require changes that are far deeper than commonly recognized in policy circles.
- Current movement toward debt relief in poor countries is creating a climate that is potentially more favourable to deeper change than was the climate of the recent past.
- Epidemiologists and health systems researchers can best help equity-oriented health policy-makers take advantage of the present climate by developing an evidence base concerning intervention options for reaching the poor effectively.

Gwatkin further states that, although researchers have contributed valuable conceptual frameworks for approaching these issues, they have not yet reached the heart of the matter, namely the identification of measures that can deal effectively with the inequalities that have been uncovered.

TDR is committed, through its Strategy 2000-2005, to developing solutions to public health problems, having defined its end-users as poor and marginalized populations in disease endemic countries who do not have access to appropriate and cost-effective means to prevent and treat their neglected infectious diseases. This commitment is guiding the Programme in its efforts to discover and develop new drugs, vaccines, and diagnostics, and to realize the need of extending TDR research beyond proof of principle into implementation research.

However, there are still gaps in our understanding of why inequities in access to health care exist, how they relate to various policy reform elements, and how these inequities can be overcome. The recently established TDR Steering Committee on Social, Economic and Behavioural Research (SEB) has put these questions high on its agenda. Already in 1998, TDR, in collaboration with the International Clearinghouse for Health System Reform Initiatives in Mexico and with funding from the government of Norway, had commissioned 18 studies on health sector reform and equity. These studies have now been completed and are being prepared for publication in an international peer-reviewed journal. At the same time, policy briefs targeting policy-makers are being prepared, presenting the main findings of the research and highlighting the policy implications. These policy briefs will be posted on the TDR website at http://www.who.int/tdr/topics/social-research/policy/ over the next few months. In addition to providing the results and recommendations, each brief will also carry the contact details of the research groups who undertook the research in the hope of stimulating networking among researchers interested in this type of study.
UPDATE

Multilateral Initiative on Malaria in Africa (MIM)

A new cycle of research projects

A call for letters of intent was issued by the Multilateral Initiative on Malaria (MIM)/TDR initiative to promote partnership in research capacity for malaria in Africa. Fifty-four letters were submitted by scientists from 16 African countries by the deadline of 15th July 2001. The letters covered broad areas of malaria research, the most popular being studies on different aspects of antimalarial drug resistance. Other proposals were in the areas of epidemiology, community based interventions, insecticide resistance, socioeconomic and behavioural research, pathogenesis of severe malaria, genomics applications, and health policy. Twenty-six of the letters were selected by an external panel of experts to be further developed into full proposals. These will be submitted to the MIM/TDR Task Force, scheduled to meet in Uganda, March 2002.

The MIM/TDR Research Capacity Strengthening grants for malaria in Africa are intended to promote sustainable human resource development by supporting research activities in partnerships and global collaborations as instruments for capacity strengthening. The objective is to develop or strengthen core African basic and/or applied science research groups and networks in developing effective control tools for malaria and improving relevant health policy strategies. Funds are intended to support institution or research group development programmes, rather than independent or isolated research projects. Multidisciplinary approaches and research networks in specific areas, constituting shared African resources and facilities for research and training, are encouraged.

Antimalarial drug resistance network

A network of MIM/TDR-funded research groups in six African countries will be conducting studies to systematically define the characteristics and levels of Plasmodium falciparum resistance to antimalarial drugs currently used in Africa. This is one of four networks emerging from MIM/TDR research projects (see TDR News No. 65). The ultimate goal of the drug resistance network is to gain better understanding of drug resistance in malaria parasites, and provide useful information to malaria control programmes for policy-making. The research groups will focus on the following four criteria for defining and identifying drug resistant P. falciparum infections:

• Clinical treatment outcome following adequate antimalarial drug therapy.
• In vitro susceptibility profile of malaria parasites.
• Determination of antimalarial drug blood levels to confirm adequate plasma concentration of drug during treatment.
• Presence of molecular markers confirmed and associated with clinical resistant infection.

Dr Wilfred Mbacham, from the University of Yaounde, Cameroon, has been designated network manager as from November 2001, and will facilitate the planning, implementation and follow-up process.

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**UPDATE**

**Dengue**

An unprecedented 1.3 million cases of dengue fever and dengue haemorrhagic fever were reported to WHO in 1998, including over 3500 deaths. The pandemic largely affected the WHO Regions of the Americas (AMR), South-east Asia (SEAR) and the Western Pacific (WPR). More than 55% of the cases, mostly of dengue fever, and only 2% of the deaths, were reported from AMR. However, in this region, dengue fever and dengue haemorrhagic fever are reported separately, whereas in SEAR and WPR the data are aggregated and the great majority of reported cases are hospitalized cases of dengue haemorrhagic fever. The burden of severe disease remains proportionately much greater in the affected Asian and Pacific countries.

Typical of post-epidemic periods, dengue activity was much lower in the year after the pandemic, but the number of reported cases increased to over 0.5 million in 2000. Preliminary data for the year 2001, up to September, for two of the three regions (AMR and SEAR), show a further, large increase of reported cases (>525 913 cases) with nearly 500 deaths. These data suggest a level of activity comparable in magnitude with that of 1998.

For further information see:
http://oms2.b3e.jussieu.fr/DengueNet/
WHO/CDs/CSR/ISR/2000.1 Chapter 6 can also be found at:

**AWARD**

**Dr Remme of TDR awarded the Eijkman Medal**

We are pleased to announce that Dr Hans Remme has been awarded the Eijkman Medal for his contribution to tropical medicine, specifically for his work in the field of epidemiological research and control of onchocerciasis. Dr Remme has worked in TDR for ten years and is currently coordinator of lymphatic filariasis and onchocerciasis research activities.

The Eijkman Medal Foundation was established in 1923 in honour of Christian Eijkman, former professor of hygiene at the University of Utrecht, The Netherlands. Renowned for his research in the former Dutch East Indies (now Indonesia), which led to elucidation of the cause of beri-beri, Christian Eijkman received the Nobel Prize for Physiology and Medicine in 1929.

The aim of the Foundation is to encourage research in tropical medicine, and the Eijkman Medal is awarded every two years to those scientists who have made a major contribution to this field. Dr Remme is to receive the medal on the 12th October 2001 during a meeting of the Netherlands Society for Tropical Medicine.
TDR co-worker awarded for contribution to TB control

Dr Akihiro Seita, Regional TB Advisor and TDR counterpart for TB at the WHO Eastern Mediterranean Regional Office (EMRO), has been awarded the Karel Styblo Public Health Prize for 2001 by the International Union Against Tuberculosis and Lung Diseases (IUATLD) for his contribution to tuberculosis control. The award was named in honour of the former scientific director at IUATLD, Dr Karel Styblo, following his death in 1998. Dr Styblo is credited with providing the world its most effective means of controlling the current tuberculosis epidemic. Dr Styblo’s work made it possible for developing countries to make real progress against TB - such as industrialized countries made 40 years ago - only at a much lower cost. His strategy (now called DOTS or Directly Observed Treatment - Short Course) has been adopted by over 90 countries in the last few years as a response to tuberculosis becoming the largest infectious killer of youth and adults. The award will be presented during the inaugural session of the 32nd IUATLD World Conference on Lung Health, 1 November 2001, Paris, France. Dr Seita has worked closely with TDR’s Research Capability Strengthening programme since joining EMRO, particularly in promoting TB research in the eastern Mediterranean region and as a secretariat member of the EMRO/TDR/Roll Back Malaria Small Grants Programme, which funds control-related research in the Region. Dr Seita’s thoughts on the links between research and control can be found in TDR News No. 65, June 2001. TDR extends its warm congratulations to Dr Seita and his colleagues in the Region with whom he generously shares the honour.

TDR research collaborator honoured

Lenore Manderson awarded the prestigious Australian Federation Fellowship

Professor Lenore Manderson, member of the TDR Steering Committee for Strategic Social, Economic and Behavioural Research (SEB), has been awarded the most prestigious, publicly-funded fellowship ever in Australia. The award was announced by Mr Howard, Prime Minister of Australia, on 25 September 2001. Professor Manderson is one of the first recipients of the Fellowships, which are intended to help retain Australian researchers in Australia, and to bring others back home: a total of 125 are to be awarded over the next five years. Professor Manderson is among 15 beneficiaries announced in the first round. Professor Manderson is one of the world’s leading medical anthropologists. She is currently Director of the Key Centre for Women’s Health in Society, Department of Public Health, University of Melbourne. Her anthropology and public health research activities have taken her to many countries worldwide while, at home, her contributions have been towards improving Australia’s capacity to deliver health services to its culturally and ethnically diverse community. Her current research examines how individuals perceive themselves and how these perceptions are re-shaped by experiences of serious illness and trauma. Since many of the factors which affect adjustment to chronic disease and disability are social, relating to family and community, the emphasis on different patterns of resilience and their relationship to culture and social networks has the potential to change significantly the way in which health care is delivered even to the most disadvantaged communities. Professor Manderson has served for many years on various TDR steering committees and task forces and is co-author of several TDR publications, among them a review on community participation and several methods guidelines for social research on tropical diseases.
Awards in Basic and Strategic Research

From now on, TDR will publish regularly, in the newsletter and on its website,* details of all approved and renewed proposals. We hope this will lead to better dissemination and awareness of the work that TDR is engaged in at any given moment, and to increased transparency of our activities, helping researchers interested in similar areas to make contact with each other and ensuring that the scarce resources for research in tropical diseases are used as efficiently as possible.

In this issue of TDR news, we are pleased to announce details of recent awards in the area of Basic and Strategic Research.

Training in bioinformatics and applied genomics

TDR is supporting the establishment of three Centres for Training in Bioinformatics and Applied Genomics, in Africa, Asia and Latin America. The centres, selected from among 18 applications received from disease endemic countries, will provide facilities for annual regional training workshops on bioinformatics for young investigators, and will facilitate the development of networks on the applications of genomics in tropical diseases in endemic countries.

The centres are:
- South African National Bioinformatics Institute (SANBI), Cape Town, South Africa
- Departamento de Parasitologia e Ciência da Computação, Universidade de São Paulo (USP), Brazil
- International Centre for Genetic Engineering and Biotechnology (ICGEB), India.

This is a joint initiative between TDR’s Pathogenesis and Applied Genomics Committee and the Research Capability Strengthening unit of TDR, and is in line with TDR’s strategy of involving researchers and institutions from disease-endemic countries in all areas of research and development (known as ‘RCS-Plus’).

TDR is pleased to acknowledge the collaboration of the Burroughs Welcome Fund, USA, the Malaria Research and Reference Reagent Resource Centre (MR4), the National Center for Biotechnology Information (NCBI), and Oswaldo Cruz Foundation (FIOCRUZ) Brazil, in supporting the International Workshop on Training of Trainers of Bioinformatics, held in FIOCRUZ, May/June 2001.

Research in pathogenesis and applied genomics, and in molecular entomology

The TDR Committee on Pathogenesis and Applied Genomics, and the Committee on Molecular Entomology, met in Tunisia, October 2001, to deliberate and recommend projects for funding by TDR.

The projects listed below were selected from among a large number of applications received from investigators worldwide. Each project listed under ‘new grants’ will be funded for one year in the first instance, and for an additional year if sufficient progress is made in the first year towards reaching the scientific objectives. Projects listed under ‘renewed’ grants were funded in 2000 and are now being renewed for a further year following the successful progress made towards meeting the objectives during the first year.

Project Development Grants in Pathogenesis and Applied Genomics

- **A10323** SUNGAE CHO, Yonsei University Medical Center, Department of Microbiology, 134 Shinchon-dong, Seoul 120-752, the Republic of Korea. Evaluation of cell mediated immune responses (CMI) of TB and leprosy patients to define mycobacterial antigens (budget: US$ 10 000)

- **A10337** MAURO TEIXEIRA, Instituto de Ciencias Biologicas, Departamento de Bioquimica e Immunologia, Universidade Federal de Minas Gerais, Avenida Antonio Carlos 6627, 31270-901-Belo Horizonte Pampulha MG, Brazil. Evaluation of the pathophysiological role of MIP-1 in human schistosomiasis: A biomarker of worse prognosis (budget US$ 10 000)

- **A10355** JOSEPH OLOBO, Makerere University Kampala, Immunology Laboratory, Unit PO Box 7072, Kampala, Uganda. The role of selected cytokines and chemokines in the pathogenesis of TB in contacts (budget: US$ 10 000)

- **A10324** OTAVIO HENRIQUE THIEMANN, University of Sao Paulo, Physics Institute of Sao Carlos, Brazil. Structural
approach in search for novel targets for chemotherapy based on the Leishmania major genome project (budget: US$ 10 000)

- **A10339** HENG WANG, School of Basic Medicine, Peking Union Medical College, 5, Dong Dan 3 Tiao, PUMC, Rm. 562, 100005 Beijing, the People's Republic of China. Proteomics approach to identify novel antigens on the surface of malaria infected erythrocytes (budget: US$ 10 000).

**New grants in Pathogenesis and Applied Genomics**

- **A10311** HANNAH AKUFFO, Karolinska Institute, Microbiology and Tumour Biology Center, Box 2805-17177, Stockholm, Sweden. Innate immunity to human leishmaniasis and its influence on vaccine outcome (budget: US$ 35 000)

- **A10349** HANNAH AKUFFO, Karolinska Institute, Microbiology and Tumour Biology Center, Box 2805-17177, Stockholm, Sweden. The role of apoptosis in the pathogenesis of human leishmaniasis (budget: US$ 35 000)

- **A10422** ROBERT DO CAMPO, University of Illinois, College of Veterinary Medicine, Dept of Pathobiology, 2001 South Lincoln Avenue, Urbana IL, 61802 USA. Polyphosphate metabolism in Trypanosoma brucei and Leishmania major (budget: US$ 35 000)

- **A10329** CHRISTIAN DANIEL DO ERIG, Institute National de Sante et de la Recherche Medicale (INERM), INERM Unite 511 CHU Pitie-Salpetriere, 91 Boulevard de l'Hopital, 75013 Paris, France. A 'chemical genetics' approach for the functional study and validation of malarial protein kinases (budget: US$ 35 000)

- **A10256** HAGAI DAVID GIN SBURG, Hebrew University of Jerusalem, Institute of Life Sciences Department of Biological Chemistry, Terra Sancta Bldg, 91904 Jerusalem, Israel. Maintenance and upgrading of a web site dedicated to blood stages of Plasmodium falciparum (budget: US$ 8 100)

- **A10328** MARY GW O-SHU LEE, New York University School of Medicine, Department of Pathology, 550 First Avenue, New York NY 10016 USA. Functional genomics of African trypanosomes – proteins trafficking in Trypanosoma brucei (budget: US$ 35 000)

- **A10306** ROBERT LAZARUS MODLIN, University of California School of Medicine, Division of Dermatology, 52-121 CHS, 10833 Le Conte Avenue, Los Angeles CA 90095-1750, USA. Analysis of genomic toll-like receptors in mycobacterial infection by functional genomics (budget: US$ 35 000)

- **A10350** INGRID MÜLLER, Imperial College of Science, Technology and Medicine, Department of Immunology, Norfolk Place, London W2 1PG, UK. Influence of toll like receptor (TLR) activation on the innate immune response to Leishmania major (budget: US$ 35 000)

- **A10322** PAMELA MARIE PENNINGTON DE SAN CHEZ, Universidad del Valle de Guatemala Centro de Estudios en Salud, Instituto de Investigaciones, 18 Avendida 11-95, Zona 15, V. H.III Guatemala 82, 01901 Guatemala. Genetic variability of Trypanosoma cruzi as a determinant of myocardial tropism (budget: US$ 18 705)

- **A10375** STEPHEN RICH, Tufts University, Division of Infectious Diseases, 200 W estboro Road, North Grafton MA, 01536 USA. Analysis of genomic variation among natural populations of P. falciparum in Africa: a chromosomal dissection approach (budget: US$ 35 000)

- **A10308** ANA RODRIGUEZ, New York University School of Medicine, Department of Parasitology, 341 E. 25th St., New York 10010, USA. Role of dendritic cells in malaria-induced immunosuppression (budget: US$ 35 000)

- **A10325** EUSEBIO GUERRERO, Instituto Nacional de Ciencias Médicas y Nutrición Salvador Zubirán, Mexico City, Mexico. P. falciparum dihydrofolate reductase synthase (pfHPS): optimization of enzyme expression in E. coli and development of a bacterial scr (budget: US$ 35 000)

- **A10340** JULIO SCHAFER-STEIN, Univ. Federal de Rio de Janeiro, Instituto de Biofisica Carlos, Chagas Filho Bloco G - C.C.S.- Ilha do Fundao, 21944-900-Rio de Janeiro RJ, Brazil. Activation of kinin-receptors by Trypanosoma cruzi: a modulatory role for kininase in cardiovascular pathology (budget: US$ 35 000)

- **A10318** HUANG MIN, University of Nijmegen, Department of Molecular Biology, NCMLS 191, P.O. Box 9101, Toernooiveld 1, NL-6500 HB Nijmegen, Netherlands. Proteomic approach to identify novel drug targets and vaccine candidates in the human malaria parasite (budget: US$ 35 000)
Renewed grants in Pathogenesis and Applied Genomics

- **A00644** PEDRO M. ALZARI, Institut Pasteur, Uniite de Biochemie Structurale, Departement d’Immunologie, France. Structural Studies of the Trypanosoma cruzi trans-sialidase rational design on inhibitors (budget: US$ 20 000)

- **A00521** LEN A ASLUND, Department of Genetics and Pathology, Uppsala, Sweden. Functional analysis of Trypanosoma cruzi: expression profiling on cDNA microarrays of gene from genome projects (budget: US$ 15 000)

- **A00509** ALFRED CORTES CLO SAS, Papua New Guinea Institute of Medical Research, Amdang, Papua New Guinea. Molecular mechanisms involved in the protection of ovalocytic individuals against cerebral malaria (budget: US$ 27 200)

- **A00561** THO MAS EGW AN G, Med Biotech Laboratories, Kampala, Uganda. Protein prenylation in Onchocerca volvulus as a possible biochemical drug target (budget: US$ 35 000)

- **A00550** ANA MARIA C. FARIA, Universidade Federal De Minas Gerais, Belo Horizonte, Brazil. Role of ageing in immunity to schistosome infection in humans and mice (budget: US$ 35 000)

- **A00486** ALBERTO FRASC H, Instituto de Investigaciones Biotecnologicas, Buenos Aires, Argentina. Mucin surface cover of Trypanosoma cruzi: regulation of expression and interaction with the immune system of the host (budget: US$ 33 000)

- **A00477** GIO VAN NI GAZZIN ELLI, Universidade Federal De Minas Gerais, Belo Horizonte, Brazil. Study on the role of toll-like recep-

tors in macrophage responsiveness to protozoan derived GPI-anchors (budget: US$ 35 000)

- **A00645** EMAN UELA HAN DMAN, W alter and Eliza Hall Institute for Medical Research, Melbourne, Australia. Characterization of mucin-like proteo-phosphoglycan, a potential Leishmania major amastigote virulence factor (budget: US$ 35 000)

- **A00532** SEYED HASAIN, Centre for DNA Fingerprinting, N acharam, India. Molecular genetics and functional genomics of M. tuberculosis patient isolates in India (budget: US$ 35 000)

- **A00571** HECTOR HERN AND EZE, Tufts University School of Medicine, Boston, USA. Strategies for reducing pathology in schistosomiasis (budget: US$ 35 000)

- **A00508** KRISTER KRISTEN SS O N, Karolinska Institute, Stockholm, Sweden. Trypanosoma brucei- trafficking across brain endothelial cells (budget: US$ 35 000)

- **A00547** MARIANO JORGE LEVIN, Instituto De Investigaciones En Ingenieria Genetica Y Biologia, Argentina. Pathophysiology of transgenic mice expressing hu chronic Chagas heart disease anti-p antibodies (budget: US$ 35 000)

- **A00492** PENG LI, Institute of Medical and Veterinary Science, Adelaide, Australia. Role of infected macrophages in dengue virus pathogenesis - induction of permeability in primary human endothelial cells (budget: US$ 35 000)

- **990510** KEITH MATT HEW S, Victoria University of Manchester, UK. Life cycle regulation of the proteome of Trypanosoma brucei (budget: US $6500)
Molecular and cytological characterization of Anopheles gambiae molecular forms and evaluation of their role as malaria vectors (budget: US$ 38 000)

A10390 MARTIN AKOG-BETO, Centre de Recherche Entomologique de Cotonou, Benin. Etude des relations et des divergences écologiques des formes moléculaires et chromosomiques d’Anopheles gambiae s.s. (budget: US$ 12 530)


A10420 ADAM RICHMAN, University of Maryland at College Park, USA. Ectopic midgut expression of a cecropin transgene in Anopheles: effect on Plasmodium viability (budget: US$ 36 000)

A10424 ANA MARIA PER-ALTA DE MERIDA, Universidad del Valle de Guatemala. Population genetics of Aedes aegypti in Chiapas (Mexico) and central America (budget: US$ 29 113)

A10405 JUAN BISSET LAZ- CANO, Instituto de Medicina Tropical ‘Pedro Kouri’, Cuba. Molecular characterization of insensitive acetylcholinesterase mediated insecticide resistance in Aedes aegypti from Cuba (budget: US$ 26 000)

A10406 MICHAEL LEHANE, University of Wales, UK. Optimization of RNAi in mosquitoes (budget: US$ 15 000)

A10360 DOUGLAS NORMAN, Johns Hopkins University, USA. Population and genomic approaches to insecticide resistance in Anopheles gambiae s.l. in Mali (budget: US$ 39 857)

A10410 ANN SOJA, Wayne State University, USA. Isolation and characterization of an antenna-specific gene in Aedes aegypti (budget: US$ 39 099)

Renewed grants in Molecular Entomology

A00399 ADALGISA CACCONI, Yale University, USA. Molecular genetics studies of malaria vector heterogeneity (budget: US$ 27 500)

990488 MARIO COLUZZI, Universita di Roma ‘La Sapienza’, Italy. Oviposition behaviour of Anopheles gambiae complex malaria vectors (budget: US$ 36 200)

980619 MARIO COLUZZI, Universita di Roma ‘La Sapienza’, Italy. Isolation and molecular characterization of salivary gland-specific promoters from Anopheles gambiae (budget: US$ 32 000)

A00401 FOTIS KAFATOS, European Molecular Biology Laboratory, Germany. A method for inducible in vivo dsRNA inhibition in anophelines. Application for the study of a serpin gene complex (budget: US$ 37 000)

990476 TO VI LEHMAN, Centers for Disease Control and Prevention, USA. Population genetics of immune response genes to identify genes determining susceptibility of Anopheles gambiae to pathogens (budget: US$ 39 140)
Staff news: comings and goings

In the last 18 months, the following staff have joined TDR:

- Dr LESTER CHITSULO, who joined Research Capability Strengthening to become Programme Grant Manager. He is also Disease Research Coordinator for Schistosomiasis.

- Mr MICHAEL McCULLOUGH, who is Technical Officer, Programme Planning and Management.

- Dr CATHY NEEDHAM, who joined the Communications Unit to become TDR’s Web Editor.

- Dr MARK PERKINS, who is Manager, Diagnostics Research and Development.

- Dr ROB RIDLEY, who is Coordinator, Product Research and Development.

- Dr JOHANNES SOMMERFELD, who is Manager of the Steering Committee on Social, Economic and Behavioural Research.

- Dr YEYA TOURÉ, who is Manager of the Molecular Entomology Committee.

and the following have departed:

- Dr WIN GUTTERIDGE, Coordinator of Product Research and Development, who retired.

- Dr PAUL NUNN, the erstwhile focal point for all disease research coordination activities in TDR, who has returned to WHO’s Stop TB programme.

TDTR expresses sincere gratitude to members of the Steering Committees and to external reviewers for their critical assessment and contributions to the selection process.

TDTR would also like to thank those investigators who were not funded. A large number of projects were reviewed but only a few selected due to the highly competitive selection process. TDR wishes to encourage these investigators to continue their good work and to re-compete next year.

The next deadline for submission of new applications for consideration by the Committee on Molecular Entomology is 21 June 2002.\footnote{1} The next deadline for submission of new applications for consideration by the Committee on Pathogenesis and Applied Genomics is July 2002.\footnote{2}

1 Detailed information on funding and how to apply for support from this Committee can be obtained at the website www.who.int/tdr/grants and from Dr Yeya Touré, Manager, Molecular Entomology Committee: tourey@who.int

2 Detailed information on funding and how to apply for support from this Committee can be obtained at the website www.who.int/tdr/grants and from Dr Ayoade Oduola, Coordinator, Basic and Strategic Research: oduolaao@who.int
Chagas disease intervention development and implementation research: transfer to the WHO regional office for the Americas

TDR is placing a lot of emphasis on working closely with disease control programmes, both in WHO and in countries. The aim is to ensure that proven products and procedures are implemented successfully and contribute as much as possible to reducing disease burden. Although newly developed products and procedures may be effective, their implementation is often not so. But by using research to tackle the problems encountered during implementation, we can achieve an impact on control. History shows us that research should be an important part of all phases of operations, from planning to implementation and evaluation.

Research activities in Chagas disease, supported by TDR in several countries, have increased our knowledge on several aspects of disease control and stimulated ministries of health to implement control activities that have resulted in interruption of transmission of this disease. Two countries have already been declared free of transmission: Uruguay (1997) and Chile (1999). In addition, 12 of the 19 endemic provinces of Argentina were declared free of vectorial transmission in 2000/01. In Brazil, infection rates are also very low and, in 2001, available data indicate that vectorial transmission has been interrupted in 10 of the 12 endemic states. Current data on house desinsectation, coverage of blood banks screening, and serology in younger age groups, indicate that Bolivia and Paraguay are also moving towards the goal of interrupted transmission. Surveillance programmes are in action in these Southern Cone countries in case of possible re-infestation.

In view of the achievements in reducing transmission of Chagas disease in the countries of the Southern Cone Initiative, and the improvement in control activities in some of the countries under the initiatives of the Andean and Central American countries, the momentum was considered appropriate for transfer of TDR Intervention Development and Implementation Research activities to the Communicable Disease Program of the Pan-American Health Organization (PAHO, which acts as WHO Regional Office for the Americas). PAHO staff have been working very closely with national control programmes in research and implementation of new tools, and in all activities and initiatives pertaining to interruption of Chagas disease transmission, including participation in Expert Committee and Task Force meetings. Dr Felipe Guhl (Director, Tropical Parasitology Research Centre-CIMPAT, Universidad de los Andes, Bogota, Colombia) was temporarily recruited by TDR, and, together with Dr Zaida Yadon (PAHO/HCT), has worked out a smooth transition for moving Chagas disease research activities from TDR to PAHO, and a future workplan.

Based on the TDR strategy for 2000-2005, the PAHO research agenda will include priority lines of research as proposed for Chagas disease by an Expert Committee meeting held in Brasilia, Brazil, November 2000 (see TDRnews no. 64). These lines of research have been assigned to the new TDR Proof of Principle and Implementation Research Steering Committees (more details of these committees in the next issue of TDRnews). All research activities related to Chagas disease in other TDR areas (Basic and Strategic Research, Product Research and Development, Research Capacity Strengthening) will continue at TDR in Geneva.

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HOW TO OBTAIN PUBLICATIONS
All TDR publications are available to download from the TDR website: www.who.int/tdr/publications/publications or on request from TDR Communications.

• Handbook: Good laboratory practice (GLP): Quality practices for regulated non-clinical research and development
  TDR/PRD/GLP/01.2
  The third in the TDR series on good laboratory practice (see TDRnews No. 64 for the first two volumes), this handbook addresses the issues of regulatory safety studies which are covered and governed by the Organisation for Economic Co-operation and Development (OEC D) Principles of GLP. The OEC D series on GLP and compliance monitoring is presented in its entirety in the annexes. These are preceded by an overview of GLP - the fundamental points and history of GLP, training, resources, documentation, quality control, and stepwise implementation. The handbook is designed to help those who wish to upgrade their laboratories to GLP status, providing laboratory staff and trainers in disease endemic countries with the necessary technical aid for implementing GLP programmes.

• Handbook: Quality standards in biomedical research
  TDR/PRD/QSBR/01.1
  A draft document prepared for TDR by the Scientific Working Group on Good Laboratory Practice, this handbook addresses quality issues in basic research investigations and proposes general standards for laboratories working to explore and discover substances with potential for developing into new drugs and other products. This stage of product research and development is not covered by any officially recognized quality standards (such as those issued for good laboratory practice [GLP] and good clinical practice [GCP]). The standards cover the way basic discovery research and any other laboratory based research is organized and carried out (e.g. how to keep records and store data), but not the content of the research. The intention is to help speed up the discovery process and make it more cost-effective, because, when quality standards are followed, the data arising from basic research will be universally acceptable and credible, and when the basic underlying conditions of the experimental set-up are clear and well documented, there will be no doubt as to the validity of the knowledge generated and its contribution to science. This draft handbook is intended to serve as a working document, and to be circulated internationally to scientists and researchers involved in basic biomedical research. So, if you work in this area of research, please request a copy of the draft document and send us your comments.

• Report of the fourth TDR/IDRI meeting on second-generation vaccines against leishmaniasis
  TDR/PRD/LEISH/VAC/01.1
  1-3 May 2001, Universidad Autónoma de Yucatán, Mexico. (See TDRnews No. 65 [June 2001] for summary of this meeting)
You know your research is stimulating, exciting and groundbreaking; the only thing you need to do now is to convince those holding the purse strings. Whether you are applying for research funds from the NIH, the Wellcome Trust, TDR, or elsewhere, good grant writing skills are essential for success.

There are a number of resources on the web that can help. A useful collection of resources and tips on successful grant writing is available on Science's Next Wave website: http://nextwave.sciencemag.org/cgi/content/full/1999/09/20/2

Published on these pages are some 25 articles on subjects ranging from 'expository writing skills' to 'how to get a bit of NIH's billion-dollar funding pie'. Included also is the series 'how not to kill a grant application', which gives practical advice aimed at improving your chances of being awarded research funds.

Various funding organizations, research centres and universities also provide information and links to grant writing tips on their websites (e.g. www.paho.org/English/HDP/HDR/hdr-rgp.htm, www.umass.edu/research/ora/dev.html). Often tailored to suit specific needs, these can also contain useful general tips—e.g. the NIH 'grant writing tips sheets' page (http://grants.nih.gov/grants/grant tips.htm) and the recently updated 'how to write a research grant application' (www.niaid.nih.gov/ncn/pdf/howto.pdf).

3 Mohan-Ram, V. How not to kill a grant application, part 6: developing your research plan. 2000, Internet communication of 11 Aug 2000 at website http://nextwave.sciencemag.org/cgi/content/full/2000/08/09/3
TO OUR READERS

We are unfortunately unable to accept for publication in TDRnews announcements (for meetings, new programmes, institutions, publications, etc.) which readers send us. Announcements which relate to research on tropical diseases would clearly be of interest to our readers. However, because of limited space in the newsletter, we regret that we can publish only those concerning events in which TDR is directly involved.

DEADLINES

Steering Committee meetings

Research proposals and reports submitted to TDR are reviewed by the relevant committees. To guarantee review at a given meeting, your proposal should in general be received in Geneva two calendar months before the date of the meeting, or earlier in the case of Research Capacity Strengthening. Proposals received later than this may be reviewed at the following meeting of the relevant committee. When preparing your research proposal, it is important to bear in mind that TDR supports goal-oriented research and that your proposal should be consistent with the plans of the relevant committee. Therefore please study the priorities of the relevant steering committee before submitting your proposal and, if you are applying for the first time, please contact the relevant research manager in TDR with an outline of your proposed research before developing a full proposal.

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<th>BASIC AND STRATEGIC RESEARCH</th>
<th>Meeting date</th>
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<tr>
<td>Molecular Entomology</td>
<td>Sept 2002*</td>
<td>21 June 2002*</td>
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<tr>
<td>Pathogenesis and Applied Genomics</td>
<td>4-9 Sept 2002*</td>
<td>21 June 2002*</td>
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<tr>
<td>Working Group on Applied Genomics for Drugs and Diagnostics</td>
<td>19-21 Sept 2002*</td>
<td>22 July 2002*</td>
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<tr>
<td>Social, Economic and Behavioural Research</td>
<td>3-7 June 2002*</td>
<td>22 Mar 2002*</td>
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<th>PRODUCT RESEARCH AND DEVELOPMENT</th>
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<tr>
<td>Vaccine Discovery Research</td>
<td>May 2002</td>
<td>Mar 2002*</td>
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<tr>
<td>Diagnostics Research</td>
<td>18-20 Sept 2002</td>
<td>18 July 2002</td>
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<tr>
<th>INTERVENTION DEVELOPMENT AND IMPLEMENTATION RESEARCH</th>
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<tr>
<td>Implementation Research Steering Committee</td>
<td>8-10 April 2002</td>
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<td>16-18 Oct 2002</td>
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<tr>
<td>Proof of Principle Steering Committee</td>
<td>10-12 April 2002</td>
<td>to be announced</td>
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<td>14-16 Oct 2002</td>
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These two steering committees met for the first time in October 2001; incorporated into their activities are those of the previous IDE task forces (Malaria Home Mangement; Severe Malaria; Research on Drug Resistance and Policies; Filariasis Intervention Research; Intervention Research on Chagas Disease; Intervention Research on African Trypanosomiasis; Chemotherapy of Leprosy).

Further information to be found in the next issue of TDRnews, and, as it becomes available, at the TDR website.

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<th>RESEARCH CAPACITY STRENGTHENING</th>
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<td>Research Strengthening Group</td>
<td>11-15 Feb 2002</td>
<td>31 Oct 2003*</td>
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<td>Feb 2003*</td>
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<tr>
<td>Malaria Research Capacity Strengthening in Africa</td>
<td>11-15 Mar 2002</td>
<td>Nov 2002*</td>
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