OUTLINING THE GREAT UNKNOWN:

An interview on tropical disease research with Joseph Z. Losos

By Associate Editor Rowan Shirkie.

Dr Joseph Z. Losos, an epidemiologist and Associate Director of IDRC's Health Sciences Division, spent the last two years on secondment to the World Health Organization Special Programme for Research and Training in Tropical Diseases at the newly created research centre in Ndola, Zambia. Dr Losos was interviewed about the assignment for IDRC Reports by Associate Editor Rowan Shirkie.

Reports: Perhaps we could start by putting the tropical disease program in context. Why this special focus?

Losos: Tropical disease has been ignored, as far as research is concerned, virtually from the time the first of the "old guard" left the colonies in tropical Africa. For some reason, whether it was politics, the world situation, war or whatever, there has not been much research as such. In 1972-1973 WHO decided to develop a program for research in what they considered six of the major tropical diseases (malaria, trypanosomiasis, leishmaniasis, schistosomiasis, filariasis, and leprosy). IDRC had a role in initiating the program. This was a sort of springboard.

Reports: In a sense then, is the program trying to correct a history of neglect?

Losos: A lack. A lack in the last thirty years. Look at the world medical research situation. The amount spent in cancer research in the USA per year is $400 million: the TDR (tropical disease research) program has $25 million globally for a year for all six tropical diseases, which covers what.. 3 billion people? This is a phenomenal lack in the whole spectrum of research from the natural history of disease through to therapeutic practices. There is a fantastic need for better therapeutics, better diagnostics, better knowledge of the natural history of disease, and to coordinate all these efforts.

Reports: Epidemiology has been described as an ecology of disease, or illness in its environment. Could you explain a little of the particular study you undertook?

Losos: I was given the task of setting up a longitudinal, which means long-term, study in the six diseases with a transdisease orientation. I was to visit geographically varying areas of Zambia and take statistical samples of villages in these areas to determine what epidemiological disease patterns exist. That meant the six diseases in the context of whatever other diseases existed in the villages... a transdisease orientation, that is what that phrase means.

This was an attempt to draw a very detailed and accurate baseline. It entailed going out with a team of microbiologists, a number of technicians, several physicians besides myself, and a slew of technical assistants and nurses, with a very sophisticated laboratory system. It was very expensive, it used to cost us something like $250 just in gasoline for one vehicle to get to and from the target site. But it has never been done before over a long period of time.

Reports: What did you find?

Losos: Well, as we suspected for Zambia, the diseases were hypoenemic... low in density. Malaria was present at fairly low levels, although this was the first time I have ever seen four malaria types present in individuals throughout a community. Schistosomiasis was present, in fairly high levels in places, and some trypanosomiasis... some leprosy, no leishmaniasis and no filaria. A lot of malnutrition, who is predicting an increase in trypanosomiasis in various places in Africa in the next few years, and in Zambia it has already started. Tsetse flies, which are the carriers, have been seen in villages now, where before they seemed to stay away in protected bush areas. So there are ecological shifts, epidemiological shifts in that disease which are unexplained at the moment.

Reports: Where is the program going then, and what is its future?

Losos: That depends. The tropical disease program has a STAC — scientific technical advisory committee — that is reviewing Ndola in depth. The programs with the world economic situation are already reflected in the funding in that pledges were frozen at last year's levels, which is in effect a 10 percent cut. Next year the program needs about 35-40 million, and it is debatable whether the big donor organizations will come up with the increase. There is a real problem in aid or donor mentality — they don't realize that if you're going to get into some of these programs you have to get in for the long term. You have to have a continuum. The world community started a program that should logically last 20 years, at least. You can't do research like this in two years, it is just not feasible.

Reports: If the program were to survive the financial threat, what do you think the technical prospects for success are?

Losos: Well, there is a feeling that we are fairly close to, by fairly close say 10 years down the line, a malaria vaccine. There is a new, very promising drug — mefloquin — that originated with the Americans from researches undertaken in Vietnam. They may be a bit closer to that with a leprosy vaccine. These are all certainly still in the laboratory setting and nowhere near clinical application. The clinical pharmacology people were working on two drugs against schistosomiasis: prosquini and metrifonate.

In this whole spectrum, not only what the disease does at the community level, but what it is at the molecular level, we're still just trying to delineate what we're dealing with. All of these diseases have been known for generations, eons, but, when you come down to the bottom line, we really don't understand that much about them.