

Blood free from retrovirus contamination: next step

- US blood banks begin testing
- Present tests too unspecific

Washington

BLOOD banks in the United States are getting ready to begin testing all donated blood for the presence of antibodies to HTLV-1, a retrovirus thought to cause adult T-cell leukaemia (ATL). Although the prevalence of HTLV-1 infection is still quite low, the virus has begun to surface in certain isolated populations — in particular intravenous drug users — and blood bank officials are anxious to minimize the threat that it might become more widespread through the use of contaminated blood.

Although rare in the United States, HTLV-1 is not uncommon in Japan. More than 1 per cent of the country's 9 million blood donors were believed to be infected with the virus before screening began a year ago (see *Nature* 323, 384; 1986), and as many as 35 per cent of the population of Okinawa may be infected.

In the Western Hemisphere, Jamaica also has a relatively high frequency of HTLV-1 infection. Caribbean studies have suggested that HTLV-1 infection may be responsible for tropical spastic paraparesis, a nervous system disease resembling multiple sclerosis.

But US blood screening may not begin for another year, because no test kit has been approved by the Food and Drug Administration (FDA). Three companies are developing screening tests; DuPont, Cellular Products and Abbott Laboratories. All are enzyme-linked immunosorbent assays (ELISAs), similar to the test at present in use for HIV (human immunodeficiency virus), the virus causing AIDS (acquired immune deficiency syndrome).

Preliminary data presented by DuPont at the meeting of the American Association of Blood Banks earlier this month showed that 167 out of 173 blood samples from ATL patients tested positive by ELISA. Of 24,759 blood donors, 33 (0.13 per cent) had positive ELISAs, but only five were confirmed positive by the presence of viral core proteins using a Western blot test. DuPont found the number of positive ELISAs among plasma donors to be higher — 60 out of 13,155 (0.46 per cent) — with 31 of these confirmed by Western blot.

In Japan, HTLV-1 testing is done using a particle agglutination test developed by Fuji Rebio. Gerald Sandler, associate vice president of medical operations of the Red Cross, says the Japanese test, although

reliable, is not automated. As the Red Cross must perform 6 million screening tests each year, an automated test is deemed essential.

Sandler says the tests are not as specific or as sensitive as he would like. But he says that the FDA has agreed to put the approval process for the kits on a 'fast track' basis. Sandler also says a good confirmatory test must be developed. Although a Western blot test is adequate to confirm a positive ELISA when screening for HIV, it often reveals proteins from only one HTLV-1 gene. Red Cross prefers to see proteins from three genes, so for HTLV-1 a confirming test may have to incorporate more sensitive approaches, such as a radioimmuno-precipitation assay. Only with a reliable confirmatory test will the Red Cross feel able to inform positive donors of their serologic status, and counsel them about the possible consequences.

The Red Cross will shortly release the results of its own study of HTLV-1 prevalence in some 40,000 blood donors, but Sandler emphasizes that the decision to prepare for testing is not in response to a current threat of disease or infection, but rather an attempt to forestall the spread of HTLV-1.

Sandler says the incidence of HTLV-1 infection among tested donors is of the same magnitude as that for HIV. At present, 8 of 10,000 donors are HIV-positive by repeated ELISA screening. Of these, 6 are not confirmed by Western blot, one is confirmed and one falls into an indeterminate category. This latter group has caused speculation that there may be another agent in the blood supply with core proteins similar to HIV. The one HIV-positive donor in 10,000 compares with 4 positive donors in 10,000 before the screening process began.

Although the frequency of HTLV-1 infection in the general US population is still quite low, the virus has invaded certain inner-city drug populations. A study of black drug addicts in New Orleans indicated that nearly half were infected with HTLV-1, and more than one-third of another group of addicts in New Jersey tested positive for the virus.

HTLV-1 testing is expected to have the added benefit of also identifying people infected with HTLV-2, a similar retrovirus that has been associated with hairy-cell leukaemia and T-cell chronic lymphocytic leukaemia. **Joseph Palca**

Good week for Soviet visitors to Britain

London

ACADEMICIAN G.I. Marchuk, president of the Soviet Academy of Sciences, said at the end of a visit to Britain a fortnight ago that he had been delighted with his delegation's discovery of the willingness of British scientists to collaborate with their Soviet counterparts. The Soviet delegation agreed with the Royal Society on regular visits at two-year intervals, alternately to Moscow and London.

The delegation appear to have been especially pleased with its reception at the universities of Glasgow, Edinburgh, Cambridge and Oxford and at Imperial College, London, where Marchuk says there were many people eager to take part in joint ventures with Soviet scientists.

Formally, the Soviet and British sides (the latter including the British Academy as well as the Royal Society) agreed to increase by a half the budget now available for financing the exchange of individual scientists, and to "work towards" a further 50 per cent increase a year.

One significant feature of this agreement is that the 25 per cent of the individuals exchanged under the extended agreement will be people nominated by the "receiving side" provided that they are "agreeable". The Royal Society hopes that this will enable British conference organizers to win the attendance of those from the Soviet Union whom they invite.

There is also to be increased attention to joint symposia and projects in certain fields. The reference in the joint statement to a discussion on the "free circulation of scientists" is understood to be a reference to the plight of a named *refusnik*.

The statement also says that the two sides will "make contact" with *Nature* and the Soviet magazine *Priroda* (published by the Soviet academy) to encourage the "exchange of materials on a regular basis". This is a reference to discussions under way for some two months.

The Soviet delegation included Academicians Y.A. Buslaev, director of the Institute of Chemical Physics (Moscow), L.D. Faddeev, director of the Leningrad branch of the Institute of Mathematics, Y.V. Galeev, deputy director of the Institute of Radio Engineering and Electronics (Moscow), B.K. Vainshetin, director of the Institute of Crystallography (Moscow) and R.V. Petrov, director of the Ministry of Health's Institute of Immunology. Also present were the president of the Georgian Academy of Sciences, A.N. Tavkheldze, and corresponding member of the Soviet Academy A.A. Makarov, director of the Institute of Energy Research (Moscow). □