anti-HTLV-I sera from British subjects conjugated with either ^{125}I or horseradish peroxidase. The test gave strongly positive results with sera from ATLL patients and from 4% of UK subjects of West Indian origin (Table 1).

The competitive anti-HTLV-I test is probably more specific than the immunoglobulin-binding enzyme-linked immunosorbent assays (ELISAs) previously used[3–5], as cross-reaction with HTLV-II is minimal[6]. In view of the negative results with the competitive ELISA, we also screened the 259 Ethiopian Jewish sera by the Biotest ELISA alkaline phosphatase anti-HTLV-I test. The results yielded a single gaussian distribution of light absorbance (A) for the alkaline phosphatase reaction from 0.5 to 2.5 U. Only two sera had $A > 2.0$ and 12 had $A > 1.5$, which was taken as the cut-off for positive scores. The two sera with the highest reaction were tested further for anti-HTLV-I by indirect immunofluorescence of C91/PL cells[7], by syncytium inhibition[7] and by pseudotype neutralization[8] tests, but were negative by all three methods.

Table 1 Absence of antibodies specific to HTLV-I in sera from African populations

Source	No. positive/ no. tested for HTLV-I antibodies
Ethopian immigrants to Israel	0/259
Uganda	0/400
Malawi	0/366
Ivory Coast	0/200
UK West Indians	19/480
UK ATLL patients	12/12
Japanese ATLL patients	10/10

The Ethiopian Jewish sera were derived largely from adults hospitalized for suspected or proven tuberculosis. The patients came from the Gonder region of Ethiopia, as did those studied by Ben-Ishai *et al.*[5] The sera of most of these patients were also positive for hepatitis B virus markers. Our sample therefore comprises patients harbouring other infectious agents. In the Japanese endemic region, patients hospitalized in infectious-disease wards have a higher prevalence of anti-HTLV-I than do healthy controls or surgical patients[9], so the absence of anti-HTLV-I in our sample of Ethiopian Jews remains puzzling.

Our findings differ from previous surveys of anti-HTLV-I in Africans[3–5]. It could be argued that our sera were all taken by chance from uninfected subjects within endemic regions, but gross sampling errors seem unlikely with some 1,200 sera tested from four African countries (Table 1). This raises the question of whether African sera tend to give spuriously positive results with certain anti-globulin ELISA tests for anti-HTLV-I, as well as for anti-HTLV-III (refs 10–12), particularly among malarial patients with circulating immune complexes[10,13]. Clearly, there is a need to investigate these discrepancies, including exchange of sera between laboratories using different tests, and this is underway.

We thank J.-M. Bechet, D. Catovsky, R. Downing, H. Hoshino, C. Peckham and D. Serwadda for supplying sera, and P. Clapham and J. Weber for conducting neutralization and immunofluorescence tests.

R. A. WEISS*
R. CHEINGSONG-POPOV*
S. CLAYDEN*
S. PEGRAM*
R. S. TEDDER†
A. BARZILAI‡
E. RUBENSTEIN‡

* *Institute of Cancer Research, Fulham Road, London SW3 6JB, UK*
† *Section of Virology, Middlesex Hospital Medical School, London W1N 8AA, UK*
‡ *Unit of Infectious Diseases, Chaim Sheba Medical Centre, Sackler School of Medicine, Tel-Hashomer, Israel*

Received 14 November 1985.

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BEN ISHAI *ET AL.* REPLY—Weiss *et al.* (above) did not find antibodies specific to HTLV-I in sera from 1,225 serum samples from donors of different African countries. As they state, others have found antibodies to HTLV-I in sera of Africans from different locations, using enzyme immunoassays and immunofluorescence.

We have recently received 127 serum samples donated by Ethiopian immigrants to Israel. These same samples had been tested by Weiss *et al.* and found to be negative for antibodies to HTLV-I. In our ELISA test for HTLV-I antibody all the sera were negative. Two of these sera that gave higher absorbance readings were retested in a confirmatory assay by Western blots and found to be negative.

Among the original Falasha serum samples obtained in 1983 (ref. 1), 37% showed reactivity in the ELISA test for antibody to HTLV-I. Fourteen of the positive samples that are still available from the original (1983) shipment have been re-tested by Western blotting. All 14 sera precipitated a protein of relative molecular mass 53,000, presumably a precursor to the p24 *gag* protein of HTLV-I.

HTLV-I has been isolated from individuals in the United States, Japan, the Caribbean basin, Africa, Latin America and Europe. Three isolates of HTLV-I have been obtained from Israelis[2]. Saxinger *et al.*[3] have suggested that human retroviruses cross-reactive to HTLV-I are present in various populations. Antibodies found in Falasha sera[1] may reflect such cross-reactivity. We fully agree with Weiss *et al.* that there is a need to determine the nature of these immunological cross-reactivities, and to isolate the virus from antibody-positive individuals.

ZVI BEN ISHAI*
MARTIN HAAS†
FRED C. JENSEN‡

* *Rambam Medical Centre, Haifa 32096, Israel*
† *Cancer Center, University of California, San Diego, La Jolla, California 92093, USA*
‡ *Cytotech Inc, San Diego, California 92121, USA*

Received 10 December 1985.

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Dating volcanic ash by ESR

RECENTLY, Imai *et al.*[1] have described a novel application of ESR (electron spin resonance) techniques to the dating of Quaternary volcanic products. Specifically, they have selected the aluminium-centre ESR signal (at 77 K) in quartz, plagioclase and glass, to increase the signal-to-noise ratio compared with the signal from the Ge and E′ centres, and have reported several ESR apparent ages. Because of the encouraging agreement of one result obtained with the glass component, they have applied this technique to the glass component of six tephra of unknown age, producing results (0.5–0.8 Myr) in accord with the stratigraphic sequence.

Notwithstanding the potential usefulness of this new application of the Al-centre signal for dating and for 'fingerprinting' of tephra layers, these dating results should be accepted only with caution because several important potential sources of error have not been discussed