

Tests for new AIDS treatment begin in three clinics

Washington

CLINICAL trials of recombinant soluble CD4 receptor produced by the biotechnology company Genentech as a treatment for AIDS began last week at three centres in the United States. Human soluble CD4 is the first genetically engineered drug to be tested against AIDS.

CD4 is the receptor carried on the cell membrane of T-lymphocyte cells in the blood to which the human immunodeficiency virus (HIV) binds. Genentech produces soluble CD4 by expressing the DNA which codes for the extracellular portion of the CD4 receptor in mammalian cells. The company has shown in a study published in *Science* (238, 1704; 1987) that the resulting truncated form of CD4 binds to the envelope protein of HIV *in vitro*, and neutralizes virus infectivity.

In vitro studies have also been published using soluble CD4 produced by Biogen, Dana-Farber Cancer Institute, SmithKline and French, and the Basel Institute of Immunology in Switzerland (*Nature* 331, 76-86; 1988), and by Ortho Pharmaceuticals (*Science* 240, 1335; 1988). The California biotechnology company Gene-Labs is also producing recombinant CD4. But all of these groups are lagging

behind Genentech, and have not yet filed for approval from the US Food and Drug Administration to begin human clinical trials. Biogen hopes to seek approval to enter the clinic this autumn.

Two separate clinical trials of Genentech's soluble CD4 have now begun: one headed by Samuel Broder at the US National Cancer Institute, and the other by Jerome Groopman at the New England Deaconess Hospital in Boston, Massachusetts, and by Paul Volberding at San Francisco General Hospital, in conjunction with the US National Institute of Allergy and Infectious Disease's AIDS Program. Approximately 50 AIDS and AIDS-related complex patients will be enrolled in the six-month studies, which will determine whether the treatment is safe and establish the dose range.

The side effects and efficacy of soluble CD4 in the body are unknown. Theoretically, patients could produce antibodies to the soluble CD4 that could then turn on the CD4 molecules on their own T-cells, producing severe immune problems. But immune system side effects predicted for recombinant vaccines for AIDS have not developed, and none are expected for soluble CD4.

Carol Ezzell

Doubts over long-term space flight after cosmonaut's death

London

THE death last week of cosmonaut Anatolii Levchenko, less than eight months after his 8-day mission aboard the Mir orbital station, has inevitably aroused speculation concerning the Soviet shuttle programme. The launch of the Soviet reusable spacecraft, is expected within the next few months and the launch date should be unaffected. Levchenko was one of the two test-pilot/cosmonauts training to test-fly the craft — the other is Igor Volk, but the first flight of the shuttle is in any case to be unmanned.

The doctors have been adamant that Levchenko's death was not connected with his space mission, from which, post-mission reports indicated, he had adapted with remarkable ease. The cause of death, given in the official obituary as "a grave illness", has since been amplified to a brain tumour. If, however, this tumour was not identified in the rigorous medical checks which Levchenko must regularly have undergone during his almost 20 years' career as test-pilot and trainee cosmonaut, the question must be asked: do any other cosmonauts in the Soviet space programme have health problems which

have gone undetected? This could have considerable implications, not only for the Soviet Mars programme, but also for Mir and future orbital stations.

During the past few years, successive record-breaking sojourns in zero gravity have been clearly related to an eventual Mars mission. A permanently occupied orbital station has, from the beginning, been a staple of all Soviet space plans, but this could be staffed on, say, a six-week shift system. Long-stay cosmonauts, however, test out the medical and exercise programmes which will be essential to a Mars flight. But any such mission presupposes that the cosmonauts undertaking it will be initially in perfect health. Had Levchenko's destination last December been not Mir, but Mars, he might have died in mid-mission.

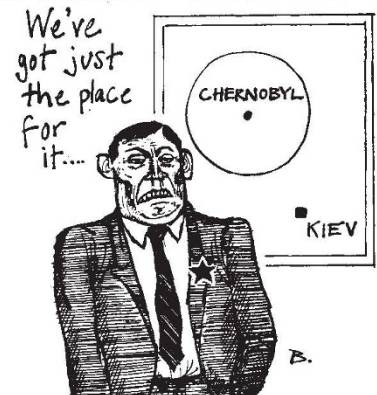
Soviet public opinion is already concerned at the cost of a Mars mission. *Sovetskaya Kultura* recently published a letter from a Moscow engineer, suggesting "those who are waiting in the queue for housing because they live in under 5 square metres per person, and those who spend their days in rooms with five or more others in old people's homes . . .

Nuclear waste may go to East

Munich

THE West German government is considering an offer by the Soviet Union to reprocess and permanently store West German nuclear waste. The offer came in the form of a letter to Chancellor Helmut Kohl delivered earlier in the summer by a West German official who had been visiting Moscow.

Government spokesman Herbert Schmülling does not expect the subject to be discussed during Kohl's forthcoming visit to Moscow in October. Nevertheless,



he said that the letter is being "processed" in the office of the chancellor.

The West German Environment Ministry, which is responsible for much of the nuclear programme, says that it stands by its "integrated waste-processing concept" which would ultimately have all nuclear waste from West German nuclear power plants processed and stored in West Germany. Schmülling said that West Germany still plans to complete its own reprocessing plant at Wackersdorf and permanent waste storage site at Gorleben despite "considerable opposition". The Environment Ministry confirmed that cooperation with the Soviets is possible. West German nuclear fuel rods are at present reprocessed at a French facility at La Hague. West Germany has other agreements with Great Britain and Sweden, both of which have announced cuts in their nuclear programmes in recent weeks.

Steven Dickman

people from Chernobyl should be asked their opinion of the cost. And if the Mars mission is abandoned, and Mir, perhaps, switched to a short-shift system, then the next step could be pressure to abandon the concept of continuous occupancy of the station. Much of the astrophysical and Earth observation work now carried out by cosmonauts could well be done by remote sensing satellites. For those in the Soviet space programme who fear the new pressures of public opinion, Levchenko's death must seem more than a purely human tragedy.

Vera Rich