

Gallo vs Montagnier?

Doubts remain about the origins of the AIDS virus, despite the certainties of the press in the past few days.

THE most bitter rows seem never to come to an end of their own accord. That seems to be the lesson to be learned from the fuss generated in the general press by the publication last week of a brief letter from Dr Robert C. Gallo of the US National Institutes of Health (NIH). Both in Europe and the United States, the newspapers have once again rushed to an adjudication of who is right, and who is — by extension — wrong in his claims for precedence for the AIDS virus, now called HIV (human immunodeficiency virus): Gallo or Dr Luc Montagnier, at the Pasteur Institute? These adjudications have mostly been unfair to one or other of the participants, perhaps even to both. It is in the public interest that there should be a better understanding of what the controversy is about.

First, there is the question of whether the virus used by Gallo and his colleagues in 1984 had been derived not from a locally collected sample, but from one sent from the Institut Pasteur in Paris. This possibility was most tangibly suggested by the publication of the complete nucleotide sequences of the two viruses early in 1985. Second, there have been suggestions that the close similarity of the two viruses is not an accident, but the result of the deliberate misuse of the French virus by somebody in Gallo's laboratory. Virology being what it is, cross-contamination of viral strains is commonplace. The second allegation against Gallo and his colleagues is much more serious. The NIH have stated that, in an inquiry now more than a year old, they have found no evidence of theft and no motive. But the NIH continue their investigation into the details of some of Gallo's papers. No report has been forthcoming yet.

The developments in the past few weeks which have thrown light on the origin of HIV are chiefly two. First, Gallo and his colleagues had the wit to go back to their freezers and to use techniques not available in 1983 (when the hunt for a virus began in earnest) to work out the genetic structure of the viruses with which they were then working. Their first report (*Nature* 349, 745; 1991) seemed clear enough — among the early samples sent to Bethesda from Paris, two out of three differed from both the French and the US sequences published in 1985. The third sample, the receipt of which was acknowledged, could not be found. So it seemed that Gallo's virus could not have been derived from the French and that even the French sequence could not have come from the 1983 samples supposed to contain it. Gallo's corrections of his estimates of the significance of the observed differences (*Nature* 351, 358; 1991) does not affect this inference substantially.

The second development was the publication, a few weeks ago, of Montagnier's parallel investigation (*Science* 252, 961; 1991). From that, two things emerge. First, the third of the French samples, no longer to be found in Gallo's freezer, contains not one, but two, viruses. Montagnier and his col-

leagues give an explanation of how the first virus may have been contaminated by the second. They give chapter and verse for their belief that their cultures had already been contaminated in Paris by the time a sample was sent to Gallo. And, second, Montagnier and his colleagues show that contaminating virus (from a patient with the initials LAI) is for practical purposes identical with that eventually published by them and with the published sequence of Gallo's virus and with some of the strains used in his laboratory in late 1983 and early 1984. The significance of these developments was explained two weeks ago (*Nature* 351, 267; 1991).

The implications require very little elaboration. First, on the question whether Gallo's virus was contaminated by Montagnier's, barring whatever surprises may emerge from further analyses of the contents of other people's freezers, the answer seems to be 'Yes'. For many of the past 12 months, Gallo has been admitting the possibility, and has now done so openly.

Second, on the question whether Gallo and Montagnier can be said to have discovered the virus now called HIV independently of each other, much hangs on the meaning of 'discovery'. If that means the recognition of a novel virus by means that do not prove its viral character (by electron microscopy, for example), the credit has been known for years to go to Montagnier. But those in the trade would rather hold to something like Koch's first postulate, that an entity claimed to be a virus must be capable of infecting other cells in such a way that it can be recovered from them (so as to reinfect others cells, and so on . . .). By that test, it hardly matters what sample is used at the outset, provided that the demonstration of productive reinfection is cast-iron. In that case, the credit is shared equally, although it was Gallo's laboratory that first got large-scale production for a blood test.

The third question, that of whether somebody in Gallo's laboratory knowingly misused the French virus samples to make a usable tool in the then new battle against AIDS is literally unaffected by the essence of what has recently been published. In the circumstances, it is wrong that Gallo should be judged guilty of all offences in the calendar simply because one strain of virus may have contaminated his own cultures, as it had already done Montagnier's. Whatever happened to the presumption of innocence? Gallo's plea last week that the time has returned for collaboration between two important research groups deserves a fair hearing. There is no evidence that Gallo stole Montagnier's virus, but he may have stolen the limelight. □

Dispensable carnival

The annual international AIDS conference has outlived its usefulness and should be stopped.

SHOULD the annual international conference on AIDS continue? Later this month, thousands of researchers and health workers will descend on Florence for this year's jamboree. (The venue alternates between the United States and somewhere else in successive years.) Last minute participants will