In one aspect, there is provided an isolated anti-CXCR4 antibody, or one of its functional fragments, said functional fragment being selected among the fragments Fv, Fab, (Fab')2, Fab', scFv, scFv-Fc and diabodies, characterized in that it comprises: a light chain comprising CDR-L1, CDR-L2 and CDR-L3 comprising respectively the amino acid sequence SEQ ID Nos. 1, 2 and 3; and a heavy chain comprising CDR-H1, CDR-H2 and CDR-H3 comprising respectively the amino acid sequence SEQ ID Nos. 4, 5 and 6; or a light chain comprising CDR-L1, CDR-L2 and CDR-L3 comprising respectively the amino acid sequence SEQ ID Nos. 1, 2 and 30; and a heavy chain comprising CDR-H1, CDR-H2 and CDR-H3 comprising respectively the amino acid sequence SEQ ID Nos. 31, 32 and 33.

In another aspect, there is provided an isolated nucleic acid, characterized in that it is a nucleic acid, DNA or RNA, coding for an antibody, or one of its functional fragments, as defined herein.

In another aspect, there is provided a vector comprising a nucleic acid as defined herein.

In another aspect, there is provided a host cell comprising a vector as defined herein.

In another aspect, there is provided a process for production of an antibody, or one of its functional fragments, as defined herein characterized in that it comprises the following stages: a) culturing in a medium and appropriate culture conditions of a cell as defined herein; and b) the recovery of said antibodies, or one of their functional fragments, thus produced starting from the culture medium or said cultured cells.

In another aspect, there is provided the antibody as defined herein as a medicament.

In another aspect, there is provided a pharmaceutical composition comprising by way of active principle a compound consisting of an antibody, or one of its functional fragments, as defined herein.

In another aspect, there is provided the use of the composition as defined herein in the manufacture of a medicament for the prevention or for the treatment of HIV infection.

In another aspect, there is provided a process for the screening and/or the identification of molecules as CXCR4 antagonist antiviral agents comprising the steps of: a) selecting cells expressing CXCR4, b) incubating said cells with an antibody, or one of its functional fragments, as defined herein, and c) evaluating the tested molecules for their potential inhibition of the binding between the antibody, or one of its functional fragments, to CXCR4, and d) selecting molecules capable of said inhibition.

In another aspect, there is provided the composition as defined herein for use in therapy.