Isolation of HIV-1 envelope glycoproteins from subtype B and CRF01 AE viruses in Japan and Vietnam and the analysis of their sensitivity to various antibodies

（日本とベトナムのサブタイプ **B**、**CRF01_AE** ウイルスから分離したエンベロープ糖タンパク質の様々な抗体への感受性の解析）

Background and Purpose: HIV-1 is able to elicit antibodies against HIV-1 envelope glycoprotein, which is important for the viral infectivity and tropism, and only HIV-1 Env specific Abs can neutralize the virus and so it is a target of interest for developing prophylactic HIV vaccine. Here we evaluated antibody-mediated neutralization and Fc-mediated signaling activity of various antibodies against HIV-1 Env of subtype B and CRF01_AE viruses from Vietnam and Japan.

Methods: The HIV-1 envelope gene was amplified from blood samples of HIV-1 infected patients from Vietnam and Japan. Neutralization activity of various monoclonal antibodies against pseudoviruses with each Env clone was examined using TZM-bl cells. Fc-mediated signaling, as an indicator of ADCC activity, was analyzed using target cells expressing these envelopes and effector cells, which express CD16 and have NFAT-driven luciferase gene.

Results: Broadly neutralizing antibodies, VRC01 and 10E8, effectively neutralized both CRF01_AE and subtype B viruses. Neutralization coverage of 2G12 and b12 was high against subtype B viruses. Conventional antibody targeting the CD4 binding site (CD4bs), 49G2, neutralized 5 of 11 CRF01_AE viruses from Japan, although most of CRF01_AE viruses from Vietnam and subtype B viruses were not neutralized by this antibody. Fc-mediated signaling activity of 49G2 was observed against most of CRF01_AE and subtype B viruses, and significantly high against CRF01_AE viruses from Vietnam. Although the neutralization and Fc-mediated signaling activity of a conventional anti-CD4i Ab, 4E9C, were lower than those of 49G2, the Fc-mediated signaling coverage was better against the CRF01_AE viruses from Vietnam.

Conclusions: Although broadly neutralizing antibodies are effective against CRF01_AE and subtype B viruses, conventional antibodies against CD4bs and CD4i also play an important role in control of CRF01_AE viruses.