Molecular Epidemiology of HIV in Asia: Reconstituting Epidemic History of HIV-1 Expansion in the region

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Dr. Takebe graduated with a medical degree in 1974 and received his PhD in biochemistry/molecular biology from University of Tokyo in 1979. He was trained as a Postdoctoral fellow in University of Wisconsin (1982-1984) and DNA Research Institute (1984-1988). He served as a chief at AIDS Research Center in National Institute of Infectious Diseases in Tokyo, a position he has held since 1988 and retired in 2010. He conducted a number of international collaborations with many Asian countries and now serves as a visiting professor in several research organizations in Asia, including China CDC and China Medical University. His current research interests include molecular epidemiology of HIV in Asia and antiviral drug discovery for AIDS and related pathogens.

Abstract
Reconstruction of both evolutionary history and spatial process from viral genome information provides fundamental understanding of the evolutionary dynamics of underlying epidemics. In the present study, we explored the timescale, spatial spread, and risk group population structure of HIV-1 epidemics in Asia, applying newly developed Bayesian/phylogenetic inference tools. The study provides an essential framework of the views on the time-space process of the dissemination of major HIV-1 strains responsible for the explosive epidemics in Asia, including subtypes B’ and C and CRF01_AE, CRF07_BC and CRF08_BC. The study also revealed that a series of epidemics arose by the sequential introduction of founder strains into new locations and risk groups in Asia. There appear to be surprisingly few successful migration events, compared to the number of times that we might expect the virus to move from one place to the next. Such remarkable epidemic success of HIV-1 strains in Asia appears to reflect ecological/epidemiological factors rather than viral genetic factors (i.e. differences in transmission fitness). Social factors, including pre-existing IDU and sexual transmission networks and unhygienic plasma collection, fueled the explosive spread of viruses in the regions, resulting in such profound founding effects. Finally, I would also like to discuss regional characteristics of HIV epidemic in the environs of Singapore.