ID No.	K3006
Project Title	Establishment of a model system of co-infection of *Mycobacterium* and HIV in human monocyte cell lines to study their interactions
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Report

In the previous fiscal year, we found that infection with the BCG strain of Mycobacterium tuberculosis (Mtb) up-regulates transcription of HIV-1 latent provirus in HIV-1 latently-infected model cells derived from human monocyte cells, THP-1 cells, indicating that latent HIV-1 can be re-activated by Mtb infection. This year, we tried to elucidate signaling transduction pathways involved in re-activation of latent HIV-1 by Mtb infection. It is known that toll-like receptors recognize structure of Mtb-derived pathogens and induce innate immune responses in response to Mtb infection. MyD88 is an adaptor protein essential for the signal transduction through almost all toll-like receptors. Therefore, we established MyD88-defficient HIV-1 latent model THP-1 cells using a CRISPR/Cas9 system. Two clones of wild-type cells or MyD88-deficient cells were incubated with BCG. NanoLuc activities in both MyD88-deficient cell clones were significantly reduced, although the activities remained in those clones. This result suggest that Mtb infection induces re-activation of latent HIV-1 in toll-like receptor-dependent and independent manners.