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HIV-1 superinfection in Cameroon

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HV originated in Cameroon about a century ago, reflected today by the broadest diversity of circulating HIV subtypes in this region. In our Cameroonian cohort of HIV⁺ individuals, we identified several cases of HIV-1 Superinfection; the sequential infection of an individual with two or more unrelated HIV strains. It provides the unique opportunity to study viral co-evolution and immune responses after challenge with diverse HIV-1 antigens. Superinfection with diverse HIV-1 subtypes enhances the human immune response in potency and breadth compared to singly infected individuals. Far less is known about superinfection with strains belonging to the same subtype and the effects of superinfection in epidemiologically linked individuals that share the infecting viruses. Here we show that intra-subtype HIV-1 superinfection can increase the neutralizing antibody response dependent on both viral and host factors. Superinfection in three HIV⁺ individuals. Remarkably, the competition of three distinct subtypes within the patients resulted in the dominance of one subtype in all three. Despite the challenge with similar viral strains and the same evolving dominance, the mounted immune responses and the duration of time with stable CD4 counts without treatment differed significantly inter-individually. The studied cases of HIV-1 superinfection highlight the effects of diverse HIV-1 immune challenges on the immune response and exemplify inter-individual differences. Superinfected patients may serve as a vital source for vaccine design and the generation of new broad neutralizing antibodies covering multiple subtypes.

Biography

Ralf Duerr has completed his MD from Ulm University and PhD from Mainz University, Germany. He has started his Postdoctoral studies in Frankfurt, working on HIV-1 entry and continued his HIV research at New York University, School of Medicine in 2013. He became Assistant Professor in 2015 and is currently studying HIV diversity, evolution, emerging new strains and immune responses in HIV-1 superinfected patients.

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