

## Robust Antibody-Dependent Cellular Phagocytosis by monocytes plays a role in controlling HIV viremia in an acutely infected MSM cohort.



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### Abstract

While broadly neutralizing antibodies against HIV have been shown to be important in HIV vaccine strategies, recent studies have shown that Fc mediated non-neutralizing antibodies are associated with protection against HIV and may play a role in the development of an antibody-based HIV vaccine. Here we investigated the functionality and kinetics of four Fc effector functions (Antibody-dependent neutrophil phagocytosis (ADNP), cellular phagocytosis (ADCP), complement deposition (ADCD) and Natural killer cell degranulation cytotoxicity (ADNK) in a longitudinal cohort of 53 largely MSM individuals in Coastal Kenya at 3 months, 1 year and 3.5-4 years post HIV acquisition. Additionally, using a standard neutralization assay and a global HIV pseudovirus panel, we tested for neutralizing ability 3.5-4 years post-HIV acquisition. Of the 53 participants, only 15 had detectable neutralizing activity. However, all the 4 Fc effector functions were detected in all individuals at all time points tested, with increasing activity over time. Nevertheless, only a few individuals (20) had high FC polyfunctionality. While Fc polyfunctionality was not associated with neutralizing ability, it was significantly associated with higher viremia at all the 3-time points tested. Of all Fc functions tested, only ADCP negatively correlated with viremia at 3 months post-HIV acquisition ( $\rho = -0.46$ ,  $p = 0.0006$ ). Our results show that Fc mediated functions arise early in HIV and can be sustained up to 4 years post HIV infection. Additionally, the low neutralization breadth confirms that evolution of broadly neutralizing antibodies against HIV is rare.

### Biography

Fateme Babaha is a newly M.Sc. graduate in medical immunology from Tarbiat Modares university, Tehran, Iran. Her thesis focused on the investigation of epigenetic phenomena in COVID patients who carried no genetic defects. During her masters she joined the Iranian research center for immunodeficiency, participated in national and international congresses. She also engaged in writing articles to boost her versatility in scientific writing. She has 3 published articles and a few in the line to be published.

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