

12th World Congress on

VIROLOGY

October 16-17, 2017 Baltimore, USA

Development of antibody-dependent cellular cytotoxicity assays for *Dengue virus*

Nishith Nagabhushana¹, Jeffrey Currier², Zhaodong Liang¹, Jessica Roman¹, Maya Williams¹, Peifang Sun¹ and Brian J Morrison¹¹Naval Medical Research Center, USA²Walter Reed Army Institute of Research, USA

Dengue virus (DENV) infection and/or vaccination leads to several host immune responses, one of which is antibody-dependent cell-mediated cytotoxicity (ADCC). We aim to develop and standardize assays to assess serum ADCC activity using CEM-NKR-DC-SIGN cells as targets and normal human PBMCs as effectors. DENV infected CEM-NKR-DC-SIGN cells when treated with a dengue immune and a control naïve serum followed by a secondary antibody, PE-labelled goat anti-human IgG Fc, indicated DENV Ag expression on the surface of target cells at both 3- and 24-hours. The degranulation experiment was done by co-incubating effectors and opsonized targets for 2 hours and consequently staining the cultures with an antibody cocktail (APC-CD56, PerCP-CD3, FITC-CD107a, and PE-CD16). The expression of CD107a on CD3-CD56+ suggested a significant increase in degranulation of NK cells against target cells infected for 24-hours but not 3 hours. For all four serotypes, suggesting a possible increase in expression of different viral antigens on the cell surface at 24-hour. ADCC assay was applied to evaluate ADCC titers for serum samples from a tetravalent *Dengue virus* live attenuated virus (TDENV-LAV/LAV) vaccine study, whose neutralizing antibody (Nab) titers are known. It was found that the titer of ADCC-mediating Abs is not correlated with the titer of NAbs following receipt of TDENV vaccination in DENV-naïve individuals. Subjects with high ADCC titers, but low Nab titers suggest that they could be protected against DENV through ADCC. Hence, we are working towards further optimizing the assay for future application for clinical research and vaccine development.

nishith.nagabhushana.ctr@mail.mil