

Rapid, Portable Dengue Virus Diagnostic

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Technology description

The 4 dengue virus serotypes (DENV1-4) cause the most prevalent mosquito-borne viral illness in humans with up to 96 million cases annually worldwide. Dengue virus infections can result in a range of clinical manifestations from asymptomatic infection to dengue fever (DF) and the severe disease dengue hemorrhagic fever/dengue shock syndrome. Thus, there is a need for accurate, specific, inexpensive Dengue diagnostic test that can be used for early detection and treatment and can be used for surveillance and outbreak investigations.

UC Researchers have developed an assay that can be used to identify serotype-specific and cross-reactive B cells in DENV-infected individuals as well as in vaccines. The assay allows detection of B cell antigen specificity to the four different pathogen serotypes on a per-cell basis and allows visualization of serotype cross-reactivity versus type-specificity per cell.

Application area

Diagnostic assay for the four different serotypes on a per-cell basis

Assay for the different isotypes of immunoglobulins directed against DENV envelope protein

Testing the efficiency of vaccines in generating a full B cell response against DENV envelope protein

Comparing cross-reactivity of the B cell population between individuals with naturally acquired dengue immunity to recipients of candidate dengue vaccines

Advantages

Allows visualization of serotype cross-reactivity versus type-specificity per cell

Use of fluorescent dyes instead of enzymatic reaction increases the sensitivity and reduces the background

Enables quantification of the breadth, magnitude, specificity and cross-reactivity of B cell responses following sequential DENV infections

Institution

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