Docket #: S17-235

AFUCOSYLATED MATERNAL ANTI-DENGUE IGGS ARE A BIOMARKER FOR SUSCEPTIBILITY TO SEVERE DENGUE DISEASE IN INFANTS

Researchers at Stanford, funded in part by the Chan Zuckerberg Biohub, have developed a method for determining infant susceptibility to severe dengue disease through measurement of maternal anti-dengue IgG.

Mortality rates in severe dengue disease can exceed 20% when patients are not hospitalized but can be reduced to less than 1% with inpatient care. Therefore, the identification of biomarkers for increased susceptibility to dengue disease could dramatically reduce mortality rates by enabling early hospitalization of those at highest risk for disease progression. Here, the inventors conducted a global analysis of anti-dengue IgGs from mothers of infants with known disease severity during primary dengue infections in order to identify features of maternal IgGs that indicate dengue disease risk in infants.

Stage of Research

The glycosylation state of the IgG Fc domain plays a role in modulating inflammatory effector cell responses. The inventors discovered that the mothers of infants with clinically significant dengue disease had elevated levels of afucosylated IgG Fc domains compared to mothers of infants with subclinical dengue disease. Specifically, the inventors found that greater than 10% afucosylated glycans on maternal anti-dengue IgG is a biomarker for severe infant dengue susceptibility.

Stage of Development

Research - *in vitro*

Applications

- Blood tests of maternal IgG Fc afucosylation as a biomarker for infant dengue disease susceptibility

Advantages

- Early hospitalization leading to reduced mortality in high risk dengue-infected infants

Publications

- Thulin NK, Brewer RC, Sherwood R, Bournazos S, Edwards, Ramadoss NS, Taubenberger JK, Memoli M, Jagannathan P, Zhang S, Libraty DH, Wang TT. Afucosylated maternal anti-dengue IgGs are a biomarker for susceptibility to dengue disease in their infants. bioRxiv (2019)

Patents

- Published Application: 20200261564
- Issued: 11,826,414 (USA)

Innovators

- Taia Wang

Licensing Contact

Kimberly Griffin

Technology Licensing and Strategic Alliances Manager

Email