

ANTIBODY-DEPENDENT ENHANCED (ADE) IMMUNITY

Dengue infects by attaching to a cell that then engulfs the virus in a vacuole via endocytosis. The virus rearranges its coat proteins to bind to the vacuole membrane, releasing its capsid and genome into the cytoplasm, where it is replicated and packaged into newly made virions **1**. The infected cell also triggers an immune reaction **2** that includes the recruitment of T cells that release pro-inflammatory cytokines and B cells that generate antibodies. These antibodies are specific for the infecting virus, and bind and cover dengue's coat **3**. When this happens, macrophages and monocytes clear the virus from the bloodstream by binding to and engulfing the antibody-coated viruses—which can no longer escape the endocytic vacuole—and destroying them **4**.

When a person is infected with a different dengue virus type **5**, memory B cells created during the first infection spring into action **6**, flooding the bloodstream with antibodies specific to the first type. These antibodies, however, may not bind to the new type as well **7**. As a result, when the partially-coated virions are taken up by macrophages and monocytes, they can escape the endocytic vacuole, infecting and replicating within these immune cells **8**.

