Antigen recognition is a key part of the immune response

Antigens are non-self markers that alert cells of the specific (adaptive) immune system to the presence of potential danger. You can remember what antigens do by considering them as antibody generators. Antigens may pose no threat on their own – they are just components, such as proteins, of bacteria or viruses that are recognised by our immune cells.

In the case of the influenza virus, however, the H (haemagglutinin) and N (neuraminidase) protein antigens are actually key to the replication cycle of the virus. Viruses use H to bind to host cells and N to detach themselves as they leave.

One important way in which the specific and non-specific branches of the immune system cooperate is in the processing and recognition of antigens. Some phagocytes like macrophages can act as antigen-presenting cells, although there are numerous other cells that do this job, including some B cells.

The presenting cells break up foreign substances and then display antigens from them for other immune cells to recognise. The antigens are presented bound to MHC proteins, the same molecules that are used to discriminate between self and non-self.

When they encounter MHC–antigen complexes, immune cells issue a string of immunological orders. Some T cells will send out chemical signals called cytokines, which activate both B cells and other types of T cells.

Credit: Bret Syfert, Big Picture