Preface

People come in all different shapes and sizes. There are also differences you can't see, such as their types of blood.

Blood type is determined by markers (antigens) that are scattered across the surface of red blood cells (RBCs). These antigens take a variety of different forms: they may be sugars that project above the cell surface, or they may be large proteins that form an important part of the RBC membrane. The presence and absence of these antigens make the blood from different people, different. And there are many types of blood because there are hundreds of antigens.

Rarely does a person's blood type matter in everyday life, even if their blood type is uncommon or rare. Blood type only becomes significant when the blood from two people mix, e.g., during a blood transfusion. If a person recieves RBCs that have antigens different to their own, his or her immune system may attack and destroy the transfused cells.

Therefore, before a blood transfusion, a person's blood type is determined. Serologically, this is done by testing for antibodies which are formed against antigens that are missing from the person's own RBCs. In other words, a person's blood type is determined by the antigens they lack. A complementary test can be used to determine a person's blood type by the antigens he or she produces, and the answer to which antigens are produced lies in the DNA. A person's DNA directly encodes the protein blood group antigens and indirectly encodes the sugar antigens by encoding the enzymes that produce them. By combining serological tests with a person's genotype, we can define a person's blood type more accurately and quickly

The database of red blood cells (dbRBC) , is a new resource from the NCBI. It contains information about blood, including clinical data about different blood groups and stores DNA sequences which encode different blood group antigens.

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