Blood Types

There are four different blood types. Those blood types are determined by 3 different alleles for blood type: Allele A, Allele B, and Allele O.Alleles A and B are both dominant, and Allele O is recessive. This means that A and B both dominate over O, but A and B do not dominate over each other.The four blood types are Type A, Type B, Type AB, and Type O. Genotypes AA and AO have Type A blood. This is because AA has two A alleles, and AO has one A and one O allele. A is dominant over O, so the A phenotype is expressed. Similarly, Genotypes BB and BO have Type B blood.People with the genotype AB have Type AB blood. This is because neither A or B dominates over the other, and both are expressed. This is called co-dominance.Type AB⁻ blood is the rarest, and the only people who have it are those who have one A allele and one B allele.Finally, the genotype OO results in Type O blood. This is the recessive blood phenotype, and O⁺ is the most common. People who have Type O blood are those that have two O alleles.



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Allele A is Dominant
(A) Apple Tree with Domino
One of the alleles that code for blood type is called Allele "A". Allele A is a dominant allele.

Allele B is Dominant
(B) Beehive with Domino
The second allele that codes for blood type is called Allele "B". Allele B is a dominant allele.

Allele O is Recessive
O-Owl with Recessive Chocolate Nest
Allele "O" is the third blood type allele. It is recessive.

Genotypes AA and AO have Type A Blood
A-apple with A-apple and A-apple with O-owl at A-blood Apple Tree
Genotypes AA and AO refer to individuals having either two "A" alleles for blood type, or one "A" allele and one "O" allele. Both of those genotypes results in having Type A blood. The AO genotype results in Type A blood because A is dominant over O.

Genotypes BB and BO have Type B Blood
B-bee with B-bee and B-bee with O-owl at B-blood Bee-hive
Genotypes BB and BO refer to individuals having either two "B" alleles for blood type, or one "B" allele and one "O" allele. Both of those genotypes results in having Type B blood. The BO genotype results in Type B blood because B is dominant over O.

Genotype AB is co-dominant and has Type AB Blood
A-Apple with B-Bee Sharing Domino at AB-Blood
If someone's genotype for blood has both an A and a B allele, they have the AB blood type. This is because both alleles are dominant and neither dominates over the other. So they are said to be "co-dominant." Both dominant phenotypes are expressed, so the person has AB blood. Type AB blood with a negative rhesus factor (AB[–]) is the rarest blood type.

Genotype OO Results in Type O Blood
O-owl with O-owl at O-blood Owl-nest
As with most recessive characteristics, the only way to have Type O blood is to have the genotype OO. This means that an individual must have two "O" alleles to have type O blood. Type O blood with a positive rhesus factor (O⁺) is the most common blood type.

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