**Pedigree Rules**

**Is it a dominant pedigree or a recessive pedigree?**

1. If two affected people have an unaffected child, it must be a **dominant** pedigree: **D** is the dominant mutant allele and **d** is the recessive (wild type) allele. Both parents are **Dd** and the normal child is **dd**.
2. If two unaffected people have an affected child, it is a **recessive** pedigree: **R** is the dominant (wild type) allele and **r** is the recessive mutant allele. Both parents are **Rr** and the affected child is **rr**.
3. If every affected **person** has an affected **parent** it is a **dominant** pedigree.

**Assigning genotypes in an dominant pedigree**

1. All unaffected are recessive (two lower case letters).
2. Affected children of an affected parent and an unaffected parent must be heterozygous, because they inherited a recessive allele from the unaffected parent.
3. The affected parents of an unaffected child must be heterozygotes Dd, since they both passed a d allele to their child.
4. Outsider rule for dominant autosomal pedigrees: An affected outsider (a person with no known parents) is assumed to be heterozygous (Dd).
5. If both parents are heterozygous Dd x Dd, their affected offspring have a 2/3 chance of being Dd and a 1/3 chance of being DD.

**Assigning genotypes in an recessive pedigree**

1. all affected are rr.
2. If an affected person (rr) mates with an unaffected person, any unaffected offspring must be Rr heterozygotes, because they got a r allele from their affected parent.
3. If two unaffected mate and have an affected child, both parents must be Rr heterozygotes.
4. Recessive outsider rule: outsiders are those whose parents are unknown. In a recessive autosomal pedigree, unaffected outsiders are assumed to be RR, homozygous normal.
5. Children of RR x Rr have a 1/2 chance of being RR and a 1/2 chance of being Rr. Note that any siblings who have an rr child must be Rr.
6. Unaffected children of Rr x Rr have a 2/3 chance of being Rr and a 1/3 chance of being RR.