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## 1 | DNA Mutations

[KBhBIO101Mutations](#)

### 1.1 | Protein Signals for Cell Growth

Most proteins operate in a pathway: that a growth hormone attach to a receptor protein, which triggers an “explosion” in KRAS protein, which then triggers cell proliferation.

In a mutant KRAS case, however, the KRAS protein does not stop triggering and forever triggers.

This is a case of a “gain of function” mutation that causes an abnormal rapid cell cycle.

### 1.2 | Genetic Inheritance, the theory of “Codominance”: blood types

RBCs have various carb styles. The presence/absence of two carb modifications cause the difference of A&B blood types.

One gene controls the outcome: A&B genes create attachment to two different carbohydrates, A, B respectively; O gene encodes a lack of enzyme function, which means no carb modification. A person, of course, has two alleles. If a person that has one A allele and one B allele, both A&B are expressed.

- A => AO, AA
- B => BO, BB
- AB => AB
- O => OO

**O is the “recessive” trait: that anything like A or B will overtake the O enzyme**

- AB+O => A, B, 50% split
- (AO|BO) + AB => A (50% => AO, 25% => BO), AB (25%), B (25% => AO, 50% => BO)

These probabilities are not considered as a process by which these probabilities are independently assorted into children (1/6 recombination probability does not mean that the recessive gene will express in one out of six children.) Instead, it means that EACH child has 1/6 chance of the abnormality.

For more, see [KBhBIO101GeneticInheritance](#)