- Those with 2 genes for sickle cells have only sickle-shaped red blood cells
  - They suffer from severe anaemia
  - Have the highest resistance to malaria

Sequencing DNA

- *Genome* is the complete set of an organism's base sequence
- Human Genome Project's goal was to determine the order of all the bases the genome possesses
  - In 2003 it achieved its goal
- Now, scientists are working on figuring out which sequence represents genes and which gene does what
- *Sanger technique*
  - We take a sample of DNA, cut it into fragments and copy these fragments
  - We add a primer to start the process
  - A DNA polymerase enzyme starts to add free nucleotides to the fragments
    - Some of the nucleotides are *ddNTPs* and are terminators (stop elongation) and have been previously marked with *fluorescent markers* so they can be identified
  - We get strands of various lengths and using *electrophoresis* we place them from longest to shortest
  - A laser activates the fluorescent markers on the nucleotides during electrophoresis in order to see on what base the elongation has stopped
    - A computer analyses the wavelength of the light and determines if it is A, C, T or G
    - Replicated many times
  - When they are done with fragment 1, they progress to fragment 2, 3 & so on
  - The fragments get mixed up and using computers, scientists can put them back in the order they were originally