**Tay Sach’s disease**

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| **Description** |
| Population - Ashkenazi Jews/Jewish people |
| Cause – Missing enzyme which is essential for fat metabolism |
| Symptoms –   * Build-up of fatty acids in the nervous system * From a few months of age mental and physical disabilities develop quickly |
| Inheritance – Recessive trait is passed from the 2 carrier parents |
| Effect on gene pool –   * Affected individuals die in childhood/before reproductive age * Carrier couples choose to not reproduce * Heterozygous individuals are resistant to tuberculosis * Increase Tay-Sachs allele frequency in population |

**Thalassaemia**

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| **Description** |
| Population – Mediterranean, Greece/Italy |
| Cause – Mutations of the gene responsible for haemoglobin production |
| Symptoms –   * Defects in the formation of haemoglobin * Sufferers have fewer functioning red blood cells * Sufferers can have anaemia and be iron deficient |
| Inheritance – Recessive trait is passed from carrier parents to offspring |
| Effect on gene pool –   * More mutations found in gene pool greatly increases mortality rate * Increases thalassemia allele frequency in population |

**Sickle-cell anaemia**

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| **Description** |
| Population - Black African population |
| Cause – Mutations of the gene responsible for haemoglobin production |
| Symptoms –   * Red blood cells have a sickle shape (crescent) * Reduces oxygen carrying ability * Fatigue/shortness of breath |
| Inheritance – Recessive trait is from affected parent to offspring |
| Effect on gene pool –   * Individuals who are homozygous usually die early, disease can be fatal * Individuals who are heterozygous are called ‘sickler’s’ and have the sickle trait * Heterozygous individuals are resistant to malaria/ increases sickle cell allele frequency in population |