5.4: Sporadic and Non-Heritable Diseases

Not all of the characterized human traits and diseases are attributed to mutant alleles at a single gene locus. Many diseases that have a heritable component, have more complex inheritance patterns due to (1) the involvement of multiple genes, and/or (2) environmental factors. On the other hand, some non-genetic diseases may appear to be heritable because they affect multiple members of the same family, but this is due to the family members being exposed to the same toxins or other environmental factors (e.g. in their homes).

Finally, diseases with similar symptoms may have different causes, some of which may be genetic while others are not. One example of this is ALS (amyotrophic lateral sclerosis); approximately 5-10% of cases are inherited in an AD pattern, while the majority of the remaining cases appear to be sporadic, in other words, not caused by a mutation inherited from a parent. We now know that different genes or proteins are affected in the inherited and sporadic forms of ALS. The physicist Stephen Hawking (Figure \(\PageIndex{10}\)) and baseball player Lou Gehrig both suffered from sporadic ALS.

![Stephen Hawking](https://bio.libretexts.org/Bookshelves/Genetics/Book%3A_Online_Open_Genetics_(Nickle_and_Barrette-Ng)/05%3A_Pedigree_and_Inheritance/5.4:_Sporadic_and_Non-Heritable_Diseases/fig05_04_10.png)

Figure \(\PageIndex{10}\): Stephen Hawking(Wikipedia-NASA-PD)