Hereditary Spastic Paraplegia (HPS) is a rare group of neurological disorders that is typically associated with progressive weakness and extreme spasticity of the lower extremities due to axonal degeneration that occurs in corticospinal tract [1,2,3,5]. SPG10 is an autosomal dominant form of HSP that occurs as result of mutations in the KIF5A gene [2,3,5]. When unaffected by mutations KIF5A has been observed to carry organelles and vesicles anterograde and retrograde through the axon and has been shown to play a role in the speed of this transportation [3,4,5]. A mutation of this gene affects transportation of cargo through the neuron and as a result degeneration of the axon occurs especially in those that lead to the lower extremities such as the feet or the legs [5]. It is still *unclear why a defective axon transport system causes more spasticity in extremities such as the feet*.

My **primary goal** is to see how a mutated KIF5A gene affects the spasticity of the lower extremities. I will use *Mus Musculus* as a model organism because they serve as good tool for probing the nervous system and certain diseases such as HPS. My **hypothesis** is that limbs that are further away from the body such as feet have greater spasticity. My **long-term goal** is to gain a better understanding of how mutations in KIF5A result in HPS and from this decide if any preventative or treatable measures can be made.

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