­­Von Hippel Lindau (VHL) is a rare genetic disorder that effects I in 36,000 individuals. It is characterized by tumors and cysts that grow throughout the body called hemangioblastomas. Hemangioblastomas can form on brain, retinas and spinal cord while cysts may develop pancreas and kidneys [1]. In patients with VHL, there is loss of function in tumor suppressor gene called VHL. VHL acts an E3 ubiquitin ligase to degrade HIF-α, which activates genes downstream that play a role in controlled cell division. For those that have VHL, renal cell carcinoma (RCC) is the leading cause of death [2]. *However, the role of VHL in kidney development is unknown.*

The **primary goal** of my research is to determine the region of the VHL gene that is responsible for normal kidney function. **Hypothesis:** The region of the VHL gene that is important to protein function is the low complexity region. The **long-term goal** of my research is to use the knowledge of the region of VHL important for normal kidney function to be used better understand the function of VHL in RCC.

**Aim 1:** To use domain analysis to determine the region of VHL that is important in normal function

**Approach:** To understand the conserved areas, I will use Clustal Omega to align these conserved sequences.

**Rationale:** By understanding the conserved regions of the VHL gene in multiple model organisms

**Hypothesis:** I think that the conserved region in my model organisms will be key in the role of kidney function.

1. Wong, M., Chu, Y.-H., Tan, H. L., Bessho, H., Ngeow, J., Tang, T., & Tan, M.-H. (2016). Clinical and molecular characteristics of East Asian patients with von Hippel–Lindau syndrome. *Chinese Journal of Cancer*, *35*, 79. <http://doi.org/10.1186/s40880-016-0141-z>
2. Von Hippel-Lindau Syndrome: Genetics Home Reference. Retrieved from < [https://ghr.nlm.nih.gov/condition/von-hippel-lindau-syndrome#](https://ghr.nlm.nih.gov/condition/von-hippel-lindau-syndrome) >