

Studying conditions for proper expression and solubility of a recombinant HPV-E2 protein.

Human papillomavirus, often referred to as HPV, is an infectious virus that is most commonly sexually transmitted between humans all around. This virus affects around 80% of sexually active American adults. For such a common virus, it can present many threatening issues to the body. The hundreds of HPV types are categorized into high and low risk types. This categorization is based on their potential of causing cancers. Lower risk HPV most commonly results in genital warts, typically benign. On the other hand, oral, vaginal, anal, penile, oropharyngeal, vulvar, and most commonly cervical cancer can all develop from a higher risk HPV. Protein expression is the process of how proteins are produced, modified and maintained in an organism. Eight major proteins are contained in an HPV DNA set. From the eight, the E2 protein plays an important role in viral DNA replication, which plays into being a viral infection with rapid growth. Also functions include increase of DNA copies and transcriptional activation and suppression of viral promoters. All three vaccines available in the world only work on just about 9 types out of hundreds. The vaccine typically targets another protein named “L1”.

The purpose of this project is to further investigate the HPV E2 protein and determine what conditions such as temperature and time spent incubating will allow sufficient gene and protein expression and solubility. The results generated from this project will help determine how to properly experiment on and analyze the HPV E2 proteins thus furthering the effort in HPV prevention and more targeted and accurate HPV vaccination. Finding a way to improve vaccination is very important because HPV is very common and is likely to happen to many late teens or young adults at some point.