Chapter 9
Identification of potential Vaccine Candidates for COVID19

The significance of vaccines in the battle of mankind with dreadful diseases cannot be surpassed. As it goes by saying 'Prevention is better than cure', vaccines have always proven their mettle. In view of the urge for the development of vaccine against the 2020 epidemic COVID the current work was undertaken. In continuation to the previous chapter on the identification of possible drug targets of COVID 19 [1] the current analysis aims to predict the possible antigenic peptides and sites on the ORF 1ab Polyprotein of Novel Corona Virus (Wuhan Isolate 2019). In view of its vital role in the replication of viral genetic material and its length covering a maximum of viral proteome, this protein is selected for the study. The protein sequence of ORF1ab poly protein was retrieved from NCBI and was subjected for BLAST analysis with Homo sapiens to identify its degree of foreignness to humans. Being a vital protein for replication it is expected to have high antigenicity and pathogenicity. It can be a better immunogen to trigger the production of antibodies by the host immune system. The study aims to develop potential vaccine candidates for stimulating the acquired immunity in the individual and prevent the adverse effects of the COVID infections.

As mentioned Corona Viruses are a group of RNA viruses [2] and pathogens of Mammals. They are further classified into various groups [3]. These are mostly winter viruses that show highest activity under low temperatures [4] however the temperature dependency is not complete. 2019–2020 can be marked as COVID era due to this major outbreak of COVID pandemic [5]. This pandemic had hit the entire world both socially and economically. Due to its contagious property it has currently become a major threat globally [6]. It has a slow activation period of 14–20 days before which the symptoms are not observed in the affected individuals. However these individuals can be good carriers for the virus even prior to its activation stage. Thus it is very difficult to control the spread of the pandemic.

Drugs can be developed to treat the infected individuals. However in order to protect the individuals from the virus vaccination is the only possible approach. Thus the current chapter involves the prediction of possible vaccine candidates/peptides against COVID using reverse vaccinology approach [7].

A. Kumar et al., *Novel Coronavirus 2019*,
SpringerBriefs in Forensic and Medical Bioinformatics,
https://doi.org/10.1007/978-981-15-7918-9_9