Technological innovation towards development of unique vaccine targets against Novel COVID-19.

Background and Motivation:

The ongoing global pandemic caused by novel corona virus 2019 (SARS-CoV-2) has challenged the existence of human beings with over 20 lakh of infection population worldwide. In unprecedented efforts towards its eradication, various lines of treatment are under way including designing drugs and antibodies. In the present scenario, with its known genome sequence further rapid identification of vaccine targets and subsequent characterization is an immediate requirement. To that end, we propose to use state-of-the-art bioinformatics approaches to identify putative promiscuous epitopes or most promising vaccine antigen candidates using genome-wide screening of SARS-CoV-2. The most promising epitopes after screening will be expressed and produced in a recombinant cell and the recombinant products will be validated for immunogenicity in a mouse model.

Objectives:

1. Identification and design of epitopes related to Corona Virus-2019.
2. Cloning, expression, purification, and characterization of epitope molecules in *E.coli* systems.
3. Validation of epitopes in mouse model.

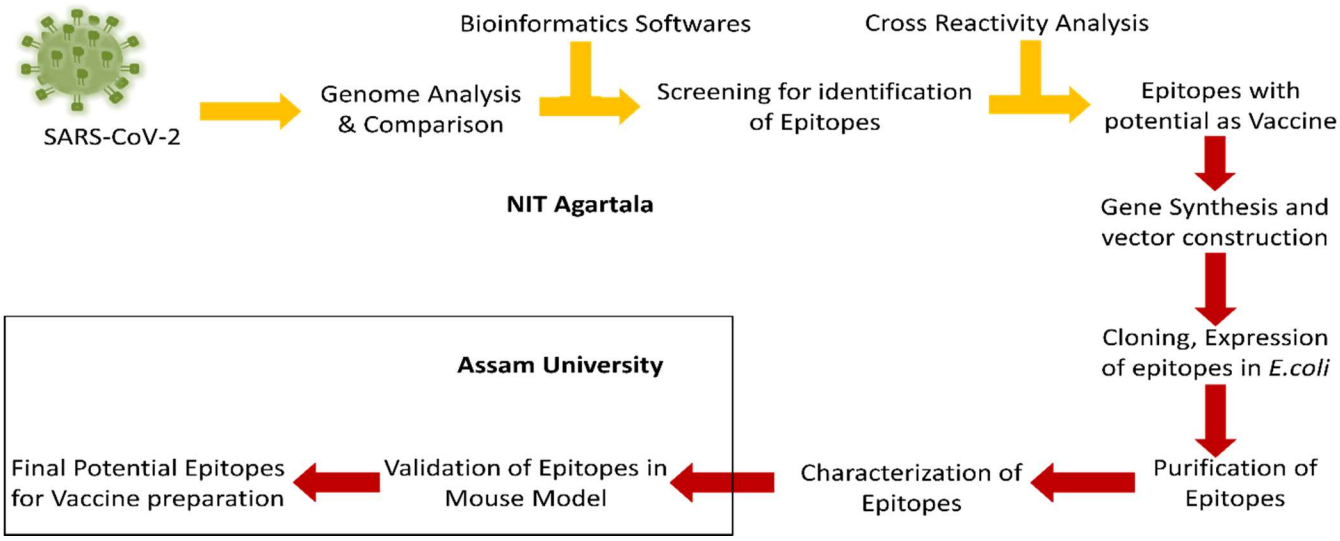
Expected Outcome

A lot of research has been conducted and is still going on in various parts of the world on vaccine development against **Novel COVID-19**. However in our country we are still in our initial stages in the field of vaccine. We still lack an opportunity where the research on these aspects is being done with a holistic approach. We propose to develop **novel vaccine targets, which** would be the major outcome of this research work and would be much safe.

Expected Timeline: Work has been started and expected to be completed within 2 years

Remarks: Funding required Rs. 100.0 Lakh.

Flow diagram



PI Details of NIT Agartala:

1. Dr. Tarun Kanti Bandyopadhyay, Assistant Professor & HOD, Department of Bioengineering, NIT Agartala (tarunkantibanerjee0@gmail.com),
2. Dr. Biswanath Bhunia, Assistant Professor, Department of Bioengineering, NIT Agartala (bbhunia@gmail.com),
3. Dr. Muthu sivarama pandian M, Assistant Professor, Department of Bioengineering, NIT Agartala (msrpmsiva@gmail.com)
4. Prashant Bhardwaj, Assistant Professor, Department of Computer Science & Engineering, NIT Agartala (cse.pbh@gmail.com)

Co-PI of Assam University

1. Dr. Partha Palit, Assistant Professor, Dept. of Pharmaceutical Sciences, Assam University, Silchar, Assam, INDIA (itspartha_p@yahoo.com)