**Comprehensive Bioinformatics Resources**

UniProt: <https://www.uniprot.org/>

MHCPred: <http://www.ddg-pharmfac.net/mhcpred/MHCPred/>)

NetMHIICpan : <https://services.healthtech.dtu.dk/services/NetMHCIIpan-4.0/>

IEDB: <http://tools.iedb.org/main/>

NetMHIICpan : <https://services.healthtech.dtu.dk/services/NetMHCpan-4.1/>

ABCpred: <http://webs.iiitd.edu.in/raghava/abcpred/>

BcePred: <https://webs.iiitd.edu.in/raghava/bcepred/>

Vaxijen: <https://www.ddg-pharmfac.net/vaxijen/VaxiJen/VaxiJen.html/>

AllerTOP: https://www.ddg-pharmfac.net/AllerTOP/

ToxinPred: <https://webs.iiitd.edu.in/raghava/toxinpred/protein.php>

ProtParam: <https://web.expasy.org/protparam/>

I-TASSER: <https://zhanggroup.org/I-TASSER/>

PSIPRED: <http://bioinf.cs.ucl.ac.uk/psipred/>

GalexyPepDock: <http://galaxy.seoklab.org/cgi-bin/submit.cgi?type=PEPDOCK>

GalaxyRefine: <http://galaxy.seoklab.org/cgi-bin/submit.cgi?type=REFINE>

SAVE5.0: <https://servicesn.mbi.ucla.edu/SAVES/>

SMS (Sequence Manipulation Suite: Reverse Translate): <https://www.bioinformatics.org/sms2/rev_trans.html/>

Jcat: <http://www.jcat.de/>

Table S1 Primer Sequences for for Poly 1, Poly 2

|  |  |  |
| --- | --- | --- |
| Poly 1 Primer | Forward | ATAGTCGACATTGCCGTGGAACAGGATAA |
| Reverse | ATAACTAGTTCTAGATTTCACTTTTTTGGCTTCTTCC |
| Poly 2 Primer | Forward | ATAGTCGACGAAGAAGCCAAAAAAGTGAAAC |
| Reverse | ATATCTAGAAACGTCGTACGGGTAGCG |
| M13KO7 | Forward (PFUSBsrgI) | AATGAGCAGCTTTGTTACGTTG |
| Reverse (PRKpnIM13) | ACATAACGGTACCTTTTACATCGGGAG |
| pHEN4 | Forward | GCTGGATTGTTATTACTCGC |
| pHEN4 | Reverse | TTTCAACAGTCTATGCTCGG |

Table S 2. Optical absorption of phages at a wavelength of 450 nm

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Antigen Coated on plate | PBS | PBS | M13delpIII | M13delpIII | Poly1 phage | Poly1 phage | Poly2 phage | Poly2 phage | Helper Phage | Helper Phage |
| Optical absorption (OD) | 0.043 | 0.075 | 0.286 | 0.357 | 1.074 | 1.131 | 1.306 | 1.219 | 1.681 | 1.742 |