

Modeling of human adenovirus penton protein

Soni Devi*

BTS Institute of Science & Technology,
Mundia Ahmednagar, Pilibhit Road, Bareilly-243122, UP, India
*sonigangwar12q@gmail.com

ABSTRACT

Modeling of human adenovirus penton protein was done and models could be successfully made. Valuable structural details could be elucidated.

Key words: Modeling, human, adenovirus, penton, protein

INTRODUCTION

Adenoviruses cause several infections in human and thus are very important pathogen. The hexon protein of adenoviruses plays important role in development of immune responses and thus it has been studied in detail. In this context study of structural details of penton protein of adenovirus 53 is very important to know its structure and binding sites.

MATERIALS AND METHODS

Protein

Human adenovirus sp. Isolate 1955/Beijing/08/2019 penton gene, complete cds GenBank: MT150576.1

Linear 1527 bp DNA and amino acid sequence was used for modelling.

Modelling software

<https://swissmodel.expasy.org> was reached to model the protein.

RESULTS AND DISCUSSION

Project summary

MRRAVGPPVMAYAEPPPSYESVMGSADSPATLEALYVPPRYLGPTEGRNSIRYSELAPLYDTTRVYLVDNKSADIASLN	12
YQNDHSNFQTTVVQNNDFTPAEAGTQTINFDESRWGAD	0
LKTILRTNMPNINEFMSTNKFARLMVEKKNKETGLPRYEWFEFTLPEGNYSETMTIDLMNNAIVDNYLEVGRQNGVLESD	24
IGVKFDTRNFRLGWDPVTKLVMPGVYTNEAFHPDIVLLP	0
GCGVDFTQSRLSNLLGIRKRLPFQEGFQIMYEDLEGGNIPALLDVAKYEASIQKAKEEGKEIGDDTFATRPQDLVIEPVAKDS	36
KNRSYNLLPNDQNNTAYRSWFLAYNYGDPKKGVSQSWT	0
LLTTADVTCGSQQVYWSLPDMMQDPVTFRSTQVSNYPVVGVELLPVHAKSFYNEQAVYSQLIRQSTALTHVFNRFPENQI	48
LVRPPAPTITTVSENVPAALTDHGTPLRSSISGVQRVTI	0
TDARRRTCPYVHKALGIVAPKVLSSRTF	50
	8

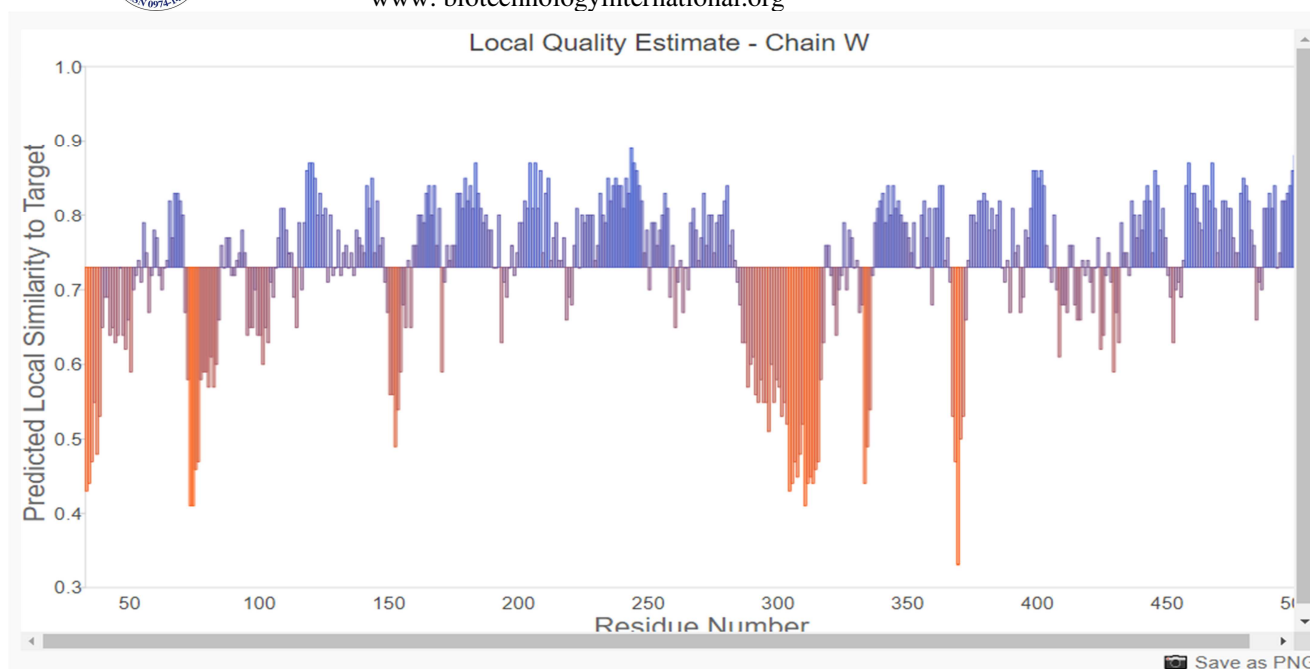
Template Results

A total of 34 templates were found to match the target sequence. This list was filtered by a heuristic down to 27. The top templates are:

Template	Sequence Identity	Biounit Oligo State	Description
6z7n.1	100.00	hetero-34-mer	Penton protein The atomic structure of HAdV-F41 at pH 7.4
7tau.1	77.69	hetero-31-mer	Penton protein Refined capsid structure of human adenovirus D26 at 3.4 Å resolution
7s78.2	79.96	hetero-31-mer	Penton protein Structure of a cell-entry defective human adenovirus provides insights into precursor proteins and capsid maturation
7s78.2	76.45	hetero-31-mer	Penton protein Structure of a cell-entry defective human adenovirus provides insights into precursor proteins and capsid maturation
7tau.1	80.67	hetero-31-mer	Penton protein Refined capsid structure of human adenovirus D26 at 3.4 Å resolution

Model Results

	Id	Template	GMQE	QMEANDisCo		Oligo State	Ligands
				Global			
	01	6z7n.1.W	0.78	0.77	± 0.05	monomer	1 x PHE-ASN-PRO-VAL-TYR-PRO-TYR



It may be seen that valuable structural model of human adenovirus penton protein could be constructed.

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