Modeling of fowl adenovirus 4 penton protein

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Abstract

Modeling of FAV4 penton protein was done using SWISS-MODEL software. Valuable detailed structural parameters could be elucidated.

Key words: Modeling, FAV4, penton, protein

Introduction

Fowl adenovirus 4 (FAV4) is an important pathogen of birds specially the broiler birds and causes serious disease conditions including fatality. The FAV4 hexon protein is important in producing disease and is also important in the development of protective immunity. Therefore it is useful to understand the structural details of the fav4 protein.

Materials and Methods

Protein

Fowl adenovirus 4 penton base protein gene, complete cds GenBank: EU925581 linear 1676 bp DNA was downloaded to get the amino acid sequence and was used in modelling.

Modelling software

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

Results and Discussion

Project summary

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MWGLQPPTSIPPPPPPTELTPSTYPAMVNGYPPPAASAQSCPSSDGQSELYMPLQRVMAPTGGRNSIKYRDYTPCRNTTKLF  120
YVDNKASDIDTYNKDANHSNFRTTVIHNQDLDADTAAT                                               0

ESIQLDNRSCWGGDLKTAVRTNCPNVSSFFQSNSVRVRMMWKRDPPTSTAPPSAVGSGYSVPGAQYKWYDLTIPEGNYALCE  240
LIDLLNEGIVQLYLSEGRQNSVQKSDIGVKFDTRNFGL                                               0

LRDPVTGLVTPGTYVYKGYHPDIVLLPGCAIDFTYSRLSLLLGIGKREPYSKGFVITYEDLQGGDIPALLDLDSVDVNDADG  360
EVIELDNAAPLLHDSAGVSYNVIYDQVTGKPVTVYRSW                                               0
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MLAYNVPNSPANQTTLLTVPDMAGGIGAMYTSLPDTFIAPTGFKEDNTTNLCPVVGMNLFPTYNKIYYQAASTYVQRLENSC 480
QSATAAFNRFPENEILKQAPPMNVSSVCDNQPAVVQQG

VLPVKSSLPGLQRVLITDDQRRPIPYVYKSIATVQPTVLSSATLQ 525
```

Results

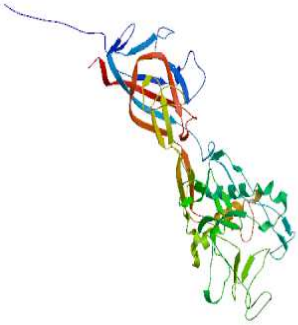
Template

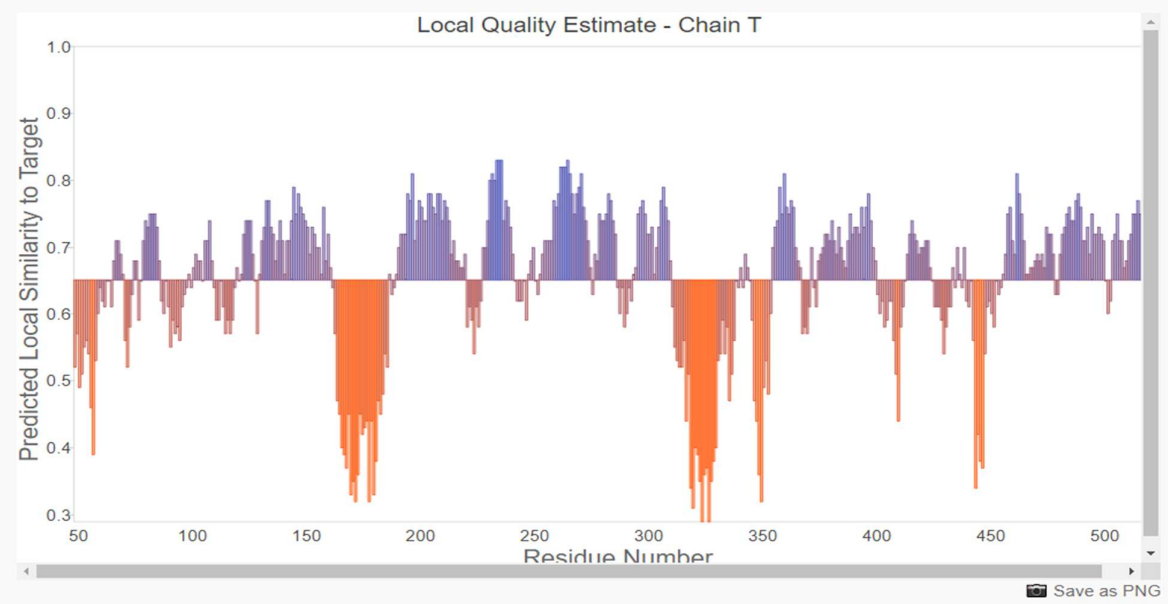
A total of 44 templates were found to match the target sequence. This list was filtered by a heuristic down to 30. The top templates are:

Template	Sequence Identity	Biounit Oligo State	Description
6qi5.1	50.89	hetero-20-mer	Penton protein Near Atomic Structure of an Atadenovirus Shows a possible gene duplication event and Intergenera Variations in Cementing Proteins
6qi5.1	52.57	hetero-20-mer	Penton protein Near Atomic Structure of an Atadenovirus Shows a possible gene duplication event and Intergenera Variations in Cementing Proteins
7tau.1	44.70	hetero-31-mer	Penton protein Refined capsid structure of human adenovirus D26 at 3.4 A resolution
6b1t.2	46.67	hetero-25-mer	Penton protein Improved cryoEM structure of human adenovirus type 5 with atomic details of minor proteins VI and VII
7s78.2	46.67	hetero-31-mer	Penton protein Structure of a cell-entry defective human adenovirus provides insights into precursor proteins and capsid maturation

Model Results

Id	Template	GMQE	QMEANDisCo Global	Oligo State	Ligands
01	6qi5.1.T	0.71	0.65 ± 0.05	monomer	-





It is apparent that the model could be constructed and structural details could be elucidated.

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