



Full wwPDB EM Validation Report ⓘ

Mar 23, 2026 – 11:56 AM UTC

PDB ID : 1D3E / pdb_00001d3e
Title : CRYO-EM STRUCTURE OF HUMAN RHINOVIRUS 16 (HRV16) COM-
PLEXED WITH A TWO-DOMAIN FRAGMENT OF ITS CELLULAR RE-
CEPTOR, INTERCELLULAR ADHESION MOLECULE-1 (D1D2-ICAM-
1). IMPLICATIONS FOR VIRUS-RECEPTOR INTERACTIONS. ALPHA
CARBONS ONLY
Authors : Bella, J.; Rossmann, M.G.
Deposited on : 1999-09-29
Resolution : 28.00 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB/EMDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

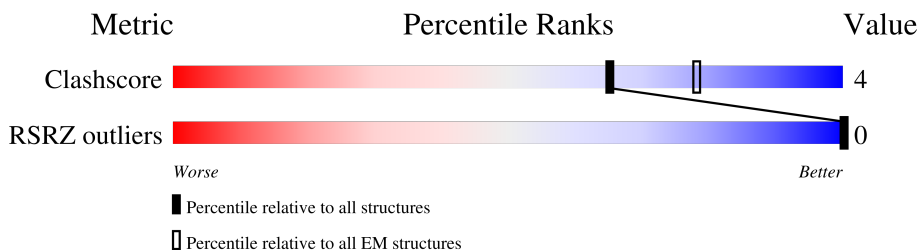
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 28.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	229148	23984
RSRZ outliers	180361	209

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	I	185	98% .
2	1	285	100%
3	2	252	99% .
4	3	238	99% .
5	4	68	43% 57%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 989 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called PROTEIN (INTERCELLULAR ADHESION MOLECULE-1).

Mol	Chain	Residues	Atoms		AltConf	Trace
1	I	185	Total	C	0	185
			185	185		

- Molecule 2 is a protein called PROTEIN (RHINOVIRUS 16 COAT PROTEIN VP1).

Mol	Chain	Residues	Atoms		AltConf	Trace
2	1	285	Total	C	0	285
			285	285		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1	1	ALA	ASN	conflict	UNP Q82122

- Molecule 3 is a protein called PROTEIN (RHINOVIRUS 16 COAT PROTEIN VP2).

Mol	Chain	Residues	Atoms		AltConf	Trace
3	2	252	Total	C	0	252
			252	252		

- Molecule 4 is a protein called PROTEIN (RHINOVIRUS 16 COAT PROTEIN VP3).

Mol	Chain	Residues	Atoms		AltConf	Trace
4	3	238	Total	C	0	238
			238	238		

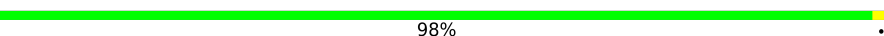
- Molecule 5 is a protein called PROTEIN (RHINOVIRUS 16 COAT PROTEIN VP4).

Mol	Chain	Residues	Atoms		AltConf	Trace
5	4	29	Total	C	0	29
			29	29		

3 Residue-property plots

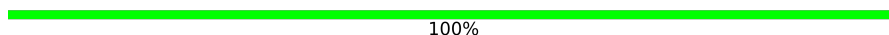
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: PROTEIN (INTERCELLULAR ADHESION MOLECULE-1)

Chain I:  98%

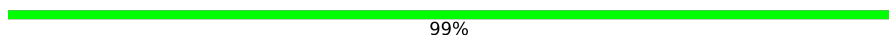


- Molecule 2: PROTEIN (RHINOVIRUS 16 COAT PROTEIN VP1)

Chain 1:  100%

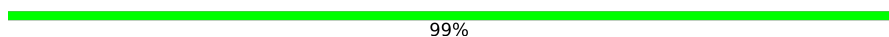
There are no outlier residues recorded for this chain.

- Molecule 3: PROTEIN (RHINOVIRUS 16 COAT PROTEIN VP2)

Chain 2:  99%



- Molecule 4: PROTEIN (RHINOVIRUS 16 COAT PROTEIN VP3)

Chain 3:  99%



- Molecule 5: PROTEIN (RHINOVIRUS 16 COAT PROTEIN VP4)

Chain 4:  43% 57%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	1.00Å 1.00Å 1.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	(Not available) – 28.00 1.00 – 28.00	Depositor EDS
% Data completeness (in resolution range)	(Not available) ((Not available)-28.00) 100.0 (1.00-28.00)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$	-	Xtrriage
Refinement program	unknown	Depositor
R, R_{free}	(Not available) , (Not available) (Not available) , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	(Not available)	Xtrriage
Anisotropy	(Not available)	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 100.0	EDS
L-test for twinning ¹	$\langle L \rangle =$ (Not available), $\langle L^2 \rangle =$ (Not available)	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	1.00	EDS
Total number of atoms	989	wwPDB-VP
Average B, all atoms (Å ²)	50.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *(Not available)*

¹Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

There are no protein, RNA or DNA chains available to summarize Z scores of covalent bonds and angles.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	I	185	0	0	2	0
2	1	285	0	0	0	0
3	2	252	0	0	1	0
4	3	238	0	0	1	0
5	4	29	0	0	0	0
All	All	989	0	0	4	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

All (4) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:138:GLU:CA	1:I:139:PRO:CA	2.89	0.50
1:I:114:ALA:CA	1:I:115:PRO:CA	2.94	0.46
3:2:82:LEU:CA	3:2:83:PRO:CA	2.95	0.45
4:3:92:HIS:CA	4:3:93:PRO:CA	2.98	0.41

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.