



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 1, 2014 – 01:24 AM GMT

PDB ID : 3DV1
Title : Crystal structure of human beta-secretase in complex with NVP-ARV999
Authors : Rondeau, J.-M.
Deposited on : 2008-07-18
Resolution : 2.10 Å(reported)

This is a full wwPDB validation report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

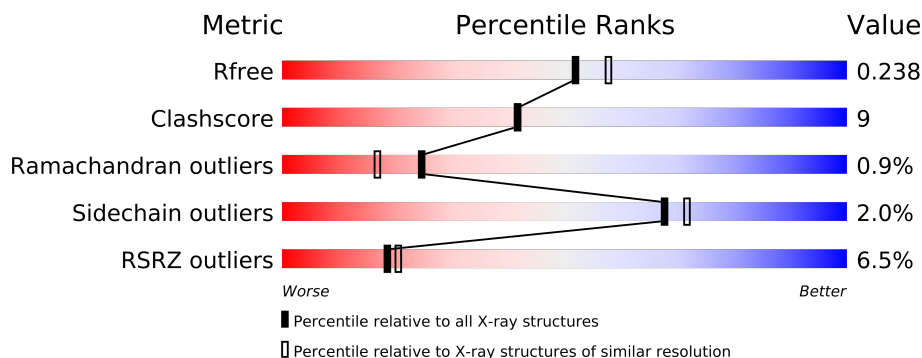
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.10 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	66092	3012 (2.10-2.10)
Clashscore	79885	3649 (2.10-2.10)
Ramachandran outliers	78287	3610 (2.10-2.10)
Sidechain outliers	78261	3611 (2.10-2.10)
RSRZ outliers	66119	3013 (2.10-2.10)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	402	
1	B	402	
1	C	402	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 9552 atoms, of which 0 are hydrogen and 0 are deuterium.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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.

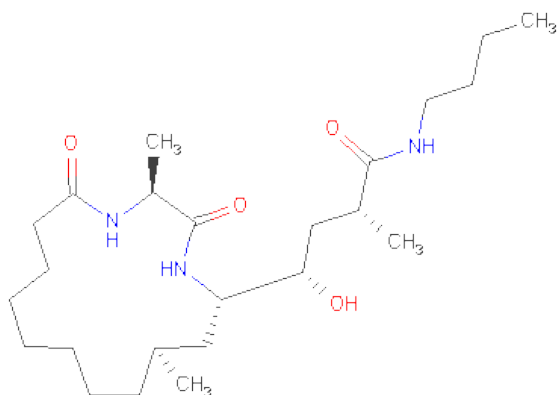
- Molecule 1 is a protein called Beta-secretase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	377	Total	C	N	O	S	0	0	0
			2966	1898	493	561	14			
1	B	378	Total	C	N	O	S	0	0	0
			2975	1904	494	563	14			
1	C	381	Total	C	N	O	S	0	0	0
			2993	1917	497	565	14			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	33P	GLY	-	EXPRESSION TAG	UNP P56817
A	34P	PRO	-	EXPRESSION TAG	UNP P56817
B	33P	GLY	-	EXPRESSION TAG	UNP P56817
B	34P	PRO	-	EXPRESSION TAG	UNP P56817
C	33P	GLY	-	EXPRESSION TAG	UNP P56817
C	34P	PRO	-	EXPRESSION TAG	UNP P56817

- Molecule 2 is (2R,4S)-N-BUTYL-4-[(2S,5S,7R)-2,7-DIMETHYL-3,15-DIOXO-1,4-DIAZACYCLOPENTADECAN-5-YL]-4-HYDROXY-2-METHYLBUTANAMIDE (three-letter code: AR9) (formula: C₂₄H₄₅N₃O₄).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			31	24	3	4		
2	B	1	Total	C	N	O	0	0
			31	24	3	4		
2	C	1	Total	C	N	O	0	0
			31	24	3	4		

- Molecule 3 is water.

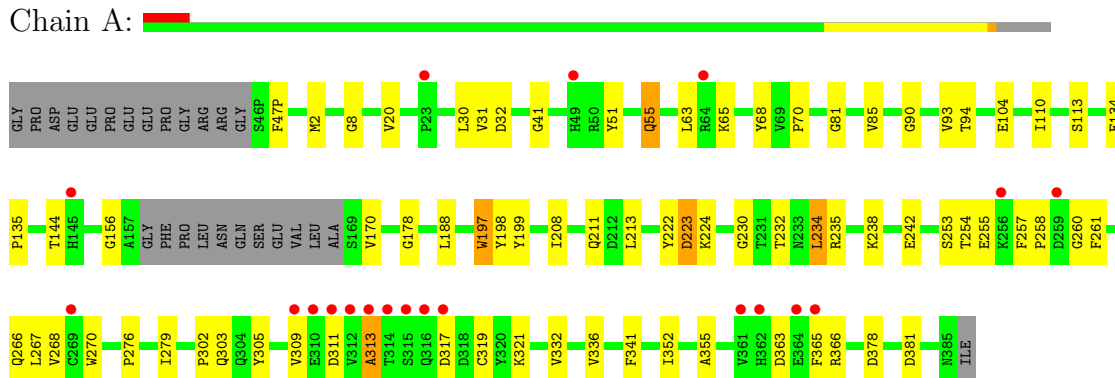
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	170	Total	O	0	0
			170	170		
3	B	164	Total	O	0	0
			164	164		
3	C	191	Total	O	0	0
			191	191		

3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). 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.

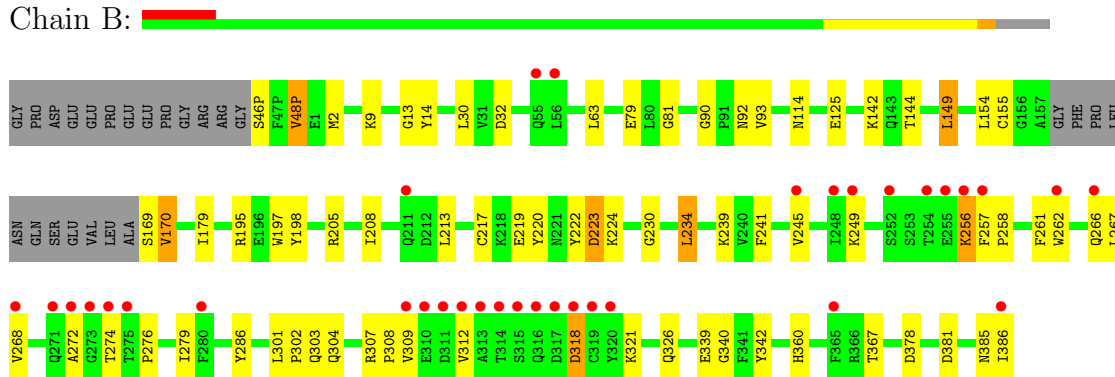
• Molecule 1: Beta-secretase 1

Chain A:



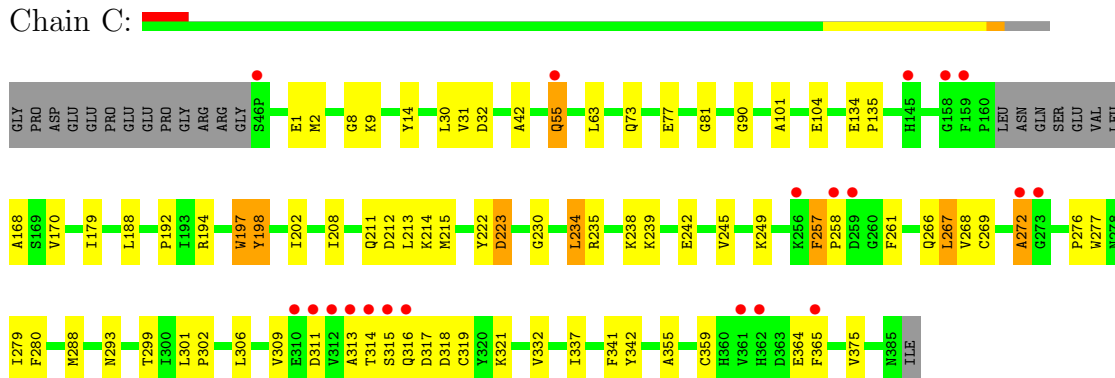
• Molecule 1: Beta-secretase 1

Chain B:



• Molecule 1: Beta-secretase 1

Chain C:



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	82.03Å 102.94Å 99.92Å 90.00° 103.66° 90.00°	Depositor
Resolution (Å)	55.52 – 2.10 55.51 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.4 (55.52-2.10) 99.5 (55.51-2.10)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.16 (at 2.10Å)	Xtriage
Refinement program	CNX	Depositor
R, R_{free}	0.207 , 0.241 0.207 , 0.238	Depositor DCC
R_{free} test set	9307 reflections (11.10%)	DCC
Wilson B-factor (Å ²)	40.6	Xtriage
Anisotropy	0.204	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 47.5	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	0 of 93153 reflections	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	9552	wwPDB-VP
Average B, all atoms (Å ²)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.39% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: AR9

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).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.28	0/3041	0.62	1/4133 (0.0%)
1	B	0.28	0/3050	0.62	2/4144 (0.0%)
1	C	0.29	0/3070	0.63	2/4173 (0.0%)
All	All	0.28	0/9161	0.62	5/12450 (0.0%)

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	234	LEU	N-CA-C	-5.73	95.54	111.00
1	C	234	LEU	N-CA-C	-5.42	96.36	111.00
1	B	234	LEU	N-CA-C	-5.28	96.75	111.00
1	B	198	TYR	N-CA-C	-5.16	97.06	111.00
1	C	198	TYR	N-CA-C	-5.05	97.37	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Close contacts

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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2966	0	2875	58	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	2975	0	2886	53	0
1	C	2993	0	2899	53	0
2	A	31	0	45	3	0
2	B	31	0	45	1	0
2	C	31	0	45	1	0
3	A	170	0	0	1	0
3	B	164	0	0	1	0
3	C	191	0	0	3	0
All	All	9552	0	8795	162	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 9.

All (162) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:55:GLN:NE2	1:A:55:GLN:H	1.65	0.95
1:A:104:GLU:HB3	1:B:48(P):VAL:HG21	1.54	0.90
1:B:301:LEU:H	1:B:304:GLN:NE2	1.77	0.82
1:A:55:GLN:HE21	1:A:55:GLN:H	1.26	0.81
1:B:258:PRO:HG3	1:B:266:GLN:NE2	1.96	0.81
1:B:208:ILE:HG12	1:B:213:LEU:HD11	1.66	0.78
1:C:267:LEU:H	1:C:267:LEU:HD23	1.48	0.77
1:B:267:LEU:HD23	1:B:267:LEU:H	1.50	0.76
1:C:55:GLN:NE2	1:C:55:GLN:H	1.83	0.76
1:B:301:LEU:H	1:B:304:GLN:HE21	1.35	0.73
1:B:309:VAL:HG21	1:B:321:LYS:HG3	1.68	0.73
1:A:104:GLU:HB3	1:B:48(P):VAL:CG2	2.20	0.71
1:A:303:GLN:NE2	1:A:363:ASP:HB3	2.08	0.69
1:A:104:GLU:OE1	1:B:46(P):SER:HA	1.94	0.67
1:A:267:LEU:HD13	1:A:319:CYS:HB3	1.75	0.67
1:B:272:ALA:HA	1:B:318:ASP:OD1	1.94	0.67
1:C:267:LEU:HD12	1:C:319:CYS:HB3	1.77	0.66
1:B:267:LEU:HB3	1:B:321:LYS:HG2	1.77	0.66
1:A:303:GLN:HE22	1:A:363:ASP:HB3	1.61	0.64
1:C:194:ARG:HD2	1:C:202:ILE:HD11	1.80	0.64
1:B:125:GLU:OE2	1:B:195:ARG:NH1	2.33	0.62
1:B:301:LEU:HB3	1:B:302:PRO:HD2	1.81	0.62
1:A:65:LYS:NZ	1:A:65:LYS:HB2	2.15	0.62
1:C:272:ALA:HA	1:C:318:ASP:OD2	2.01	0.61
1:B:241:PHE:O	1:B:245:VAL:HG23	2.00	0.61
1:B:222:TYR:O	1:B:223:ASP:CB	2.49	0.61
1:B:256:LYS:HD2	1:B:256:LYS:N	2.16	0.61

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:267:LEU:HD13	1:C:309:VAL:HG21	1.81	0.61
1:C:272:ALA:HB2	1:C:316:GLN:O	2.00	0.61
1:A:276:PRO:O	1:A:279:ILE:HG12	2.00	0.61
1:B:149:LEU:HD12	1:B:149:LEU:C	2.21	0.61
1:A:261:PHE:CD1	1:A:268:VAL:HG23	2.36	0.60
1:B:276:PRO:O	1:B:279:ILE:HG12	2.03	0.59
1:A:366:ARG:HA	1:C:211:GLN:HE22	1.67	0.59
1:B:219:GLU:OE1	1:B:239:LYS:HD2	2.02	0.58
1:C:321:LYS:HB2	1:C:321:LYS:NZ	2.18	0.58
1:A:32:ASP:OD1	1:A:230:GLY:HA3	2.03	0.58
1:B:2:MET:HG2	1:B:90:GLY:HA2	1.85	0.58
1:C:211:GLN:HB2	3:C:648:HOH:O	2.03	0.57
1:B:257:PHE:HD2	1:B:268:VAL:HG11	1.69	0.57
1:A:55:GLN:HE21	1:A:55:GLN:N	2.01	0.57
1:A:222:TYR:O	1:A:223:ASP:CB	2.53	0.56
1:B:258:PRO:HG3	1:B:266:GLN:HE22	1.71	0.56
1:A:208:ILE:HG13	1:A:213:LEU:HD11	1.88	0.56
1:A:68:TYR:OH	1:A:70:PRO:HB3	2.06	0.55
1:C:2:MET:HG2	1:C:90:GLY:HA2	1.89	0.55
1:C:32:ASP:OD1	1:C:230:GLY:HA3	2.06	0.55
1:C:238:LYS:O	1:C:242:GLU:HG3	2.06	0.55
1:B:9:LYS:HZ3	1:B:169:SER:N	2.06	0.54
1:C:261:PHE:HA	1:C:266:GLN:O	2.06	0.54
1:B:249:LYS:HD3	1:B:262:TRP:NE1	2.22	0.54
1:B:301:LEU:HD11	1:B:367:THR:HA	1.90	0.54
1:A:93:VAL:HG21	1:A:144:THR:CG2	2.38	0.53
1:A:8:GLY:C	1:A:170:VAL:HG22	2.28	0.53
1:A:2:MET:HG2	1:A:90:GLY:HA2	1.91	0.53
1:B:142:LYS:NZ	1:B:142:LYS:HB2	2.24	0.52
1:A:222:TYR:O	1:A:223:ASP:HB3	2.08	0.52
1:B:32:ASP:OD1	1:B:230:GLY:HA3	2.10	0.52
1:A:238:LYS:O	1:A:242:GLU:HG3	2.10	0.52
1:B:93:VAL:HG21	1:B:144:THR:CG2	2.40	0.52
1:A:63:LEU:HG	1:A:81:GLY:HA2	1.90	0.52
1:C:293:ASN:HA	1:C:375:VAL:HA	1.92	0.51
1:C:63:LEU:HG	1:C:81:GLY:HA2	1.94	0.50
1:B:13:GLY:HA3	1:B:30:LEU:HD11	1.93	0.50
1:B:14:TYR:CE2	1:B:170:VAL:HG13	2.46	0.50
1:C:267:LEU:N	1:C:267:LEU:HD23	2.23	0.50
1:B:179:ILE:HG23	1:B:342:TYR:HE2	1.77	0.49
1:C:1:GLU:HG2	3:C:665:HOH:O	2.13	0.49
1:C:222:TYR:O	1:C:223:ASP:CB	2.60	0.49

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:198:TYR:CE2	1:A:224:LYS:HE3	2.48	0.49
1:C:269:CYS:HA	1:C:318:ASP:O	2.13	0.48
1:C:268:VAL:O	1:C:319:CYS:HA	2.13	0.48
1:B:301:LEU:N	1:B:304:GLN:HE21	2.08	0.48
1:C:276:PRO:O	1:C:279:ILE:HG12	2.13	0.48
1:A:255:GLU:HG3	1:A:279:ILE:CD1	2.44	0.48
1:A:257:PHE:HD2	1:A:268:VAL:HG21	1.78	0.48
1:A:267:LEU:HD12	1:A:267:LEU:O	2.13	0.47
1:C:9:LYS:HZ3	1:C:168:ALA:N	2.13	0.47
1:C:8:GLY:O	1:C:170:VAL:HG22	2.14	0.47
1:B:272:ALA:O	1:B:274:THR:HG23	2.15	0.47
1:A:253:SER:C	1:A:255:GLU:H	2.17	0.47
1:B:155:CYS:O	1:B:170:VAL:HG22	2.14	0.47
1:B:205:ARG:HB3	1:B:286:TYR:HB2	1.96	0.47
1:B:378:ASP:HB3	1:B:381:ASP:OD2	2.14	0.47
1:B:154:LEU:O	1:B:339:GLU:HA	2.15	0.47
1:B:307:ARG:HA	1:B:308:PRO:HD3	1.78	0.46
1:B:241:PHE:CD2	1:B:326:GLN:HB3	2.50	0.46
1:C:337:ILE:O	1:C:341:PHE:HD1	1.98	0.46
1:B:385:ASN:O	1:B:386:ILE:C	2.53	0.46
1:C:212:ASP:O	1:C:214:LYS:HG3	2.15	0.46
1:A:378:ASP:HB3	1:A:381:ASP:OD2	2.15	0.45
1:A:93:VAL:HG22	1:A:94:THR:N	2.31	0.45
1:C:188:LEU:HD23	1:C:355:ALA:HB2	1.99	0.45
1:A:188:LEU:HD23	1:A:355:ALA:HB2	1.98	0.45
1:A:30:LEU:HD13	2:A:501:AR9:H13	1.99	0.45
2:A:501:AR9:H25	2:A:501:AR9:H16	1.71	0.45
1:B:63:LEU:HG	1:B:81:GLY:HA2	1.99	0.45
1:A:311:ASP:OD1	1:A:313:ALA:HB3	2.17	0.44
1:A:110:ILE:HB	1:A:113:SER:HB3	1.99	0.44
2:B:501:AR9:H25	2:B:501:AR9:H16	1.72	0.44
1:A:8:GLY:O	1:A:170:VAL:HG22	2.17	0.44
1:A:134:GLU:HA	1:A:135:PRO:HD3	1.86	0.44
1:C:235:ARG:HB2	1:C:332:VAL:HB	1.98	0.44
1:B:79:GLU:HG3	3:B:777:HOH:O	2.16	0.44
1:A:65:LYS:HZ2	1:A:65:LYS:HB2	1.83	0.44
1:C:364:GLU:HG3	1:C:365:PHE:CD1	2.53	0.44
1:C:267:LEU:HD13	1:C:309:VAL:CG2	2.46	0.44
1:B:267:LEU:HD23	1:B:267:LEU:N	2.25	0.44
1:C:321:LYS:HZ3	1:C:321:LYS:HB2	1.82	0.44
1:A:232:THR:O	1:A:336:VAL:HG23	2.18	0.44
1:C:301:LEU:HB3	1:C:302:PRO:HD2	1.99	0.43

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:192:PRO:CG	1:C:288:MET:HE2	2.48	0.43
1:A:41:GLY:O	1:A:51:TYR:HB2	2.18	0.43
1:B:309:VAL:CG2	1:B:321:LYS:HG3	2.45	0.43
1:C:55:GLN:CD	1:C:55:GLN:H	2.20	0.43
1:C:364:GLU:HG3	1:C:365:PHE:CE1	2.53	0.43
1:B:261:PHE:HA	1:B:266:GLN:O	2.19	0.43
1:A:31:VAL:HG23	1:A:31:VAL:O	2.17	0.43
1:C:208:ILE:HG13	1:C:213:LEU:HD21	2.01	0.43
1:A:197:TRP:CG	1:A:198:TYR:N	2.87	0.43
1:C:299:THR:HG21	3:C:649:HOH:O	2.18	0.43
1:A:270:TRP:O	1:A:317:ASP:HB3	2.19	0.43
1:B:257:PHE:CD2	1:B:268:VAL:HG11	2.52	0.42
1:B:93:VAL:HG11	1:B:144:THR:HG21	2.01	0.42
1:C:359:CYS:SG	1:C:359:CYS:O	2.77	0.42
1:C:277:TRP:HZ3	1:C:306:LEU:HD12	1.84	0.42
1:C:179:ILE:HG23	1:C:342:TYR:HE2	1.84	0.42
1:A:341:PHE:HB3	1:A:355:ALA:O	2.19	0.42
1:C:134:GLU:HA	1:C:135:PRO:HD3	1.86	0.42
1:A:261:PHE:HA	1:A:266:GLN:O	2.20	0.42
1:C:258:PRO:O	1:C:261:PHE:HB3	2.19	0.42
1:A:365:PHE:CD1	1:A:366:ARG:HG3	2.54	0.42
1:C:257:PHE:CD1	1:C:257:PHE:N	2.87	0.42
1:B:302:PRO:HG2	1:B:303:GLN:OE1	2.19	0.42
1:A:211:GLN:HB2	3:A:664:HOH:O	2.19	0.42
1:C:215:MET:CE	1:C:239:LYS:HG2	2.49	0.42
1:C:42:ALA:CB	1:C:101:ALA:HB1	2.49	0.42
1:A:258:PRO:C	1:A:260:GLY:H	2.22	0.42
1:C:55:GLN:NE2	1:C:55:GLN:N	2.59	0.42
1:A:30:LEU:CD1	2:A:501:AR9:H13	2.50	0.42
1:C:73:GLN:HG3	2:C:501:AR9:H38A	2.00	0.41
1:B:223:ASP:OD2	1:B:224:LYS:NZ	2.48	0.41
1:C:14:TYR:O	1:C:31:VAL:HG22	2.20	0.41
1:A:55:GLN:NE2	1:A:55:GLN:N	2.48	0.41
1:A:268:VAL:O	1:A:319:CYS:HA	2.21	0.41
1:A:302:PRO:HA	1:A:305:TYR:CE2	2.55	0.41
1:A:267:LEU:HD12	1:A:267:LEU:C	2.41	0.41
1:C:197:TRP:CG	1:C:198:TYR:N	2.89	0.41
1:A:20:VAL:HG22	1:A:85:VAL:HG22	2.02	0.41
1:B:261:PHE:CD1	1:B:268:VAL:HG13	2.56	0.41
1:A:363:ASP:OD2	1:A:366:ARG:O	2.39	0.41
1:A:235:ARG:HB2	1:A:332:VAL:HB	2.03	0.41
1:B:222:TYR:O	1:B:223:ASP:HB3	2.17	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:280:PHE:HB3	1:C:302:PRO:HB3	2.03	0.41
1:C:245:VAL:CG1	1:C:249:LYS:HE3	2.50	0.41
1:A:309:VAL:HG21	1:A:321:LYS:HG3	2.02	0.40
1:C:77:GLU:HB2	1:C:104:GLU:HG3	2.02	0.40
1:B:217:CYS:HA	1:B:220:TYR:CD1	2.56	0.40
1:B:340:GLY:HA2	1:B:360:HIS:HB2	2.03	0.40
1:C:311:ASP:OD1	1:C:315:SER:OG	2.39	0.40
1:A:199:TYR:HB3	1:A:352:ILE:HD11	2.03	0.40
1:A:47(P):PHE:CZ	1:A:178:GLY:HA3	2.56	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	373/402 (93%)	352 (94%)	17 (5%)	4 (1%)	21	13
1	B	374/402 (93%)	352 (94%)	20 (5%)	2 (0%)	38	33
1	C	377/402 (94%)	363 (96%)	10 (3%)	4 (1%)	21	13
All	All	1124/1206 (93%)	1067 (95%)	47 (4%)	10 (1%)	25	17

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	223	ASP
1	A	313	ALA
1	B	223	ASP
1	C	223	ASP
1	A	254	THR
1	B	312	VAL
1	C	272	ALA
1	C	313	ALA
1	C	314	THR
1	A	156	GLY

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution. The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	322/342 (94%)	319 (99%)	3 (1%)	87	91
1	B	323/342 (94%)	314 (97%)	9 (3%)	56	59
1	C	324/342 (95%)	317 (98%)	7 (2%)	64	68
All	All	969/1026 (94%)	950 (98%)	19 (2%)	68	72

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	55	GLN
1	A	197	TRP
1	A	234	LEU
1	B	48(P)	VAL
1	B	92	ASN
1	B	114	ASN
1	B	149	LEU
1	B	170	VAL
1	B	197	TRP
1	B	234	LEU
1	B	256	LYS
1	B	318	ASP
1	C	30	LEU
1	C	55	GLN
1	C	197	TRP
1	C	234	LEU
1	C	257	PHE
1	C	267	LEU
1	C	317	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	55	GLN
1	A	98	ASN
1	A	114	ASN

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Mol	Chain	Res	Type
1	A	326	GLN
1	B	92	ASN
1	B	114	ASN
1	B	266	GLN
1	B	293	ASN
1	B	304	GLN
1	C	55	GLN
1	C	114	ASN
1	C	271	GLN
1	C	294	GLN

5.3.3 RNA ⓘ

There are no RNA chains in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

3 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	AR9	A	501	-	31,31,31	0.73	1 (3%)	39,39,39	1.55	6 (15%)
2	AR9	B	501	-	31,31,31	0.68	0	39,39,39	1.49	6 (15%)
2	AR9	C	501	-	31,31,31	0.71	0	39,39,39	1.53	6 (15%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	AR9	A	501	-	-	0/43/43/43	0/0/1/1
2	AR9	B	501	-	-	0/43/43/43	0/0/1/1
2	AR9	C	501	-	-	0/43/43/43	0/0/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	501	AR9	C5-C3	2.01	1.56	1.53

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	AR9	C54-C51-C47	-4.69	108.01	114.11
2	C	501	AR9	C54-C51-C47	-4.56	108.18	114.11
2	B	501	AR9	C54-C51-C47	-4.25	108.59	114.11
2	B	501	AR9	C56-C54-C60	-3.71	103.90	109.50
2	A	501	AR9	C8-C5-C3	-3.31	108.36	115.54
2	C	501	AR9	C56-C54-C60	-3.19	104.68	109.50
2	A	501	AR9	C56-C54-C60	-3.18	104.70	109.50
2	C	501	AR9	C8-C5-C3	-3.07	108.87	115.54
2	B	501	AR9	C8-C5-C3	-3.03	108.97	115.54
2	A	501	AR9	C5-C3-N1	-2.70	106.56	110.19
2	C	501	AR9	C5-C3-N1	-2.49	106.84	110.19
2	C	501	AR9	O42-C31-C28	-2.36	117.22	121.92
2	B	501	AR9	C34-N32-C31	-2.35	118.17	121.52
2	B	501	AR9	C5-C3-N1	-2.31	107.08	110.19
2	A	501	AR9	O42-C31-C28	-2.30	117.34	121.92
2	B	501	AR9	O42-C31-C28	-2.11	117.73	121.92
2	C	501	AR9	C51-C47-C3	-2.05	110.72	113.43
2	A	501	AR9	C38-C34-N32	-2.02	106.43	110.31

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	377/402 (93%)	0.42	20 (5%) 25 28	28, 43, 74, 110	0
1	B	378/402 (94%)	0.46	34 (8%) 10 10	26, 44, 93, 125	0
1	C	381/402 (94%)	0.27	20 (5%) 26 29	28, 41, 75, 102	0
All	All	1136/1206 (94%)	0.38	74 (6%) 18 20	26, 42, 84, 125	0

All (74) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	314	THR	9.8
1	A	312	VAL	9.5
1	B	312	VAL	8.0
1	C	313	ALA	7.5
1	B	313	ALA	6.3
1	C	316	GLN	5.8
1	C	312	VAL	5.7
1	B	386	ILE	5.5
1	A	311	ASP	5.2
1	B	256	LYS	5.1
1	A	316	GLN	4.8
1	B	316	GLN	4.8
1	B	315	SER	4.7
1	B	268	VAL	4.0
1	B	254	THR	3.9
1	B	271	GLN	3.8
1	A	314	THR	3.7
1	C	256	LYS	3.6
1	A	309	VAL	3.6
1	B	310	GLU	3.6
1	B	257	PHE	3.6
1	B	317	ASP	3.5
1	B	311	ASP	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	259	ASP	3.2
1	B	56	LEU	3.2
1	B	365	PHE	3.0
1	C	362	HIS	2.9
1	C	272	ALA	2.9
1	A	310	GLU	2.8
1	B	320	TYR	2.8
1	A	313	ALA	2.8
1	C	361	VAL	2.8
1	C	311	ASP	2.8
1	C	314	THR	2.7
1	A	317	ASP	2.7
1	A	362	HIS	2.7
1	C	145	HIS	2.7
1	B	274	THR	2.7
1	A	365	PHE	2.6
1	C	46(P)	SER	2.6
1	B	275	THR	2.6
1	C	55	GLN	2.6
1	A	256	LYS	2.6
1	A	315	SER	2.5
1	B	318	ASP	2.5
1	B	280	PHE	2.5
1	C	159	PHE	2.5
1	B	255	GLU	2.4
1	B	273	GLY	2.4
1	B	252	SER	2.4
1	A	361	VAL	2.4
1	C	310	GLU	2.4
1	A	269	CYS	2.4
1	A	49	HIS	2.3
1	A	145	HIS	2.3
1	B	55	GLN	2.3
1	B	266	GLN	2.3
1	C	273	GLY	2.3
1	B	211	GLN	2.3
1	C	258	PRO	2.2
1	C	158	GLY	2.2
1	B	245	VAL	2.2
1	C	315	SER	2.2
1	B	309	VAL	2.2
1	B	319	CYS	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	249	LYS	2.2
1	B	248	ILE	2.1
1	A	364	GLU	2.1
1	B	262	TRP	2.1
1	C	365	PHE	2.1
1	A	64	ARG	2.1
1	C	259	ASP	2.1
1	A	23	PRO	2.1
1	B	272	ALA	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q < 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(Å ²)	Q<0.9
2	AR9	C	501	31/31	0.16	-	30,34,40,42	0
2	AR9	B	501	31/31	0.14	-	30,36,46,48	0
2	AR9	A	501	31/31	0.16	-	32,37,43,44	0

6.5 Other polymers ⓘ

There are no such residues in this entry.