



Full wwPDB X-ray Structure Validation Report ⓘ

Dec 4, 2023 – 06:20 am GMT

PDB ID : 2UY7
Title : Crystal structure of the P pilus rod subunit PapA
Authors : Verger, D.; Bullitt, E.; Hultgren, S.J.; Waksman, G.
Deposited on : 2007-04-02
Resolution : 2.60 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

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

A user guide is available at

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

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 : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

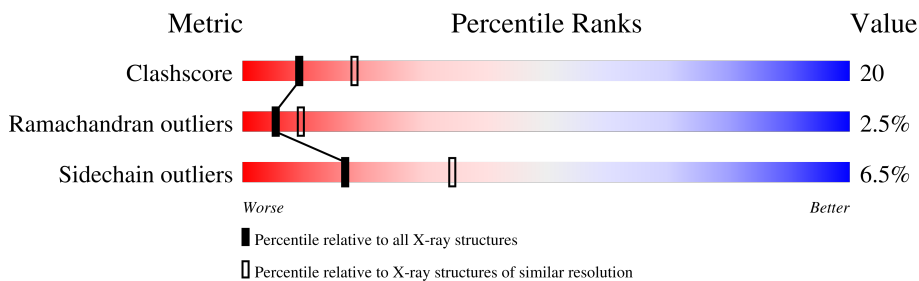
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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))
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)

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 of the lower 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 $\leq 5\%$

Note EDS failed to run properly.

Mol	Chain	Length	Quality of chain
1	A	218	
1	C	218	
1	E	218	
1	G	218	
2	B	163	
2	D	163	
2	F	163	
2	H	163	

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 11327 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 PERIPLASMID CHAPERONE PAPD PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	217	Total 1691	C 1068	N 291	O 327	S 5	0	0	1
1	C	217	Total 1698	C 1073	N 291	O 329	S 5	0	0	1
1	E	217	Total 1687	C 1067	N 289	O 326	S 5	0	0	1
1	G	217	Total 1696	C 1072	N 294	O 325	S 5	0	0	1

- Molecule 2 is a protein called PAP FIMBRIAL MAJOR PILIN PROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	156	Total 1066	C 660	N 178	O 225	S 3	0	0	0
2	D	154	Total 1062	C 656	N 178	O 225	S 3	0	0	0
2	F	156	Total 1072	C 663	N 178	O 228	S 3	0	0	0
2	H	154	Total 1058	C 654	N 176	O 225	S 3	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	15	ASN	GLY	engineered mutation	UNP P04127
D	15	ASN	GLY	engineered mutation	UNP P04127
F	15	ASN	GLY	engineered mutation	UNP P04127
H	15	ASN	GLY	engineered mutation	UNP P04127

- Molecule 3 is SULFATE ION (three-letter code: SO₄) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	E	1	Total	O	S	0	0
			5	4	1		
3	G	1	Total	O	S	0	0
			5	4	1		
3	G	1	Total	O	S	0	0
			5	4	1		
3	G	1	Total	O	S	0	0
			5	4	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	58	Total O 58 58	0	0
4	B	21	Total O 21 21	0	0
4	C	47	Total O 47 47	0	0
4	D	15	Total O 15 15	0	0
4	E	33	Total O 33 33	0	0
4	F	13	Total O 13 13	0	0
4	G	39	Total O 39 39	0	0
4	H	6	Total O 6 6	0	0

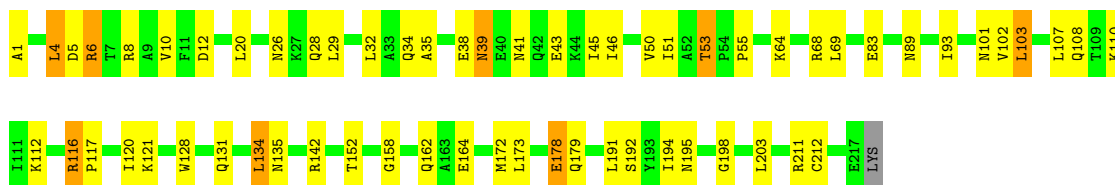
3 Residue-property plots

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.

Note EDS failed to run properly.

- Molecule 1: PERIPLASMID CHAPERONE PAPD PROTEIN

Chain A: 



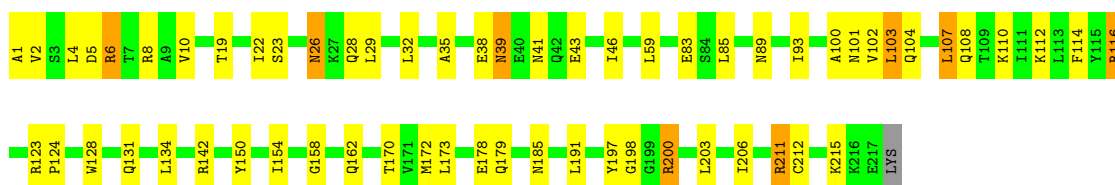
- Molecule 1: PERIPLASMID CHAPERONE PAPD PROTEIN

Chain C: 



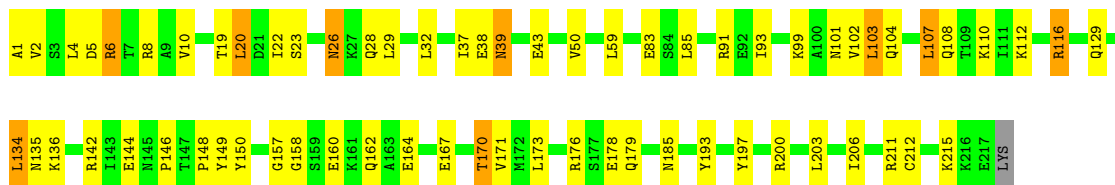
- Molecule 1: PERIPLASMID CHAPERONE PAPD PROTEIN

Chain E: 



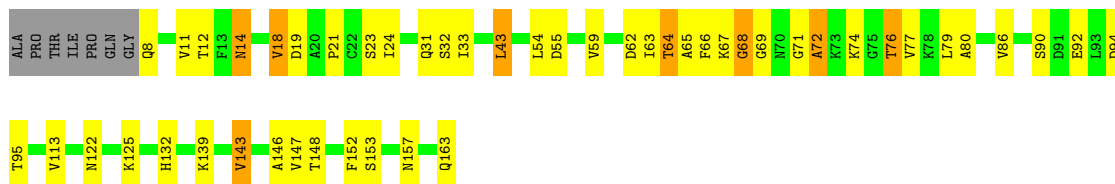
- Molecule 1: PERIPLASMID CHAPERONE PAPD PROTEIN

Chain G: 



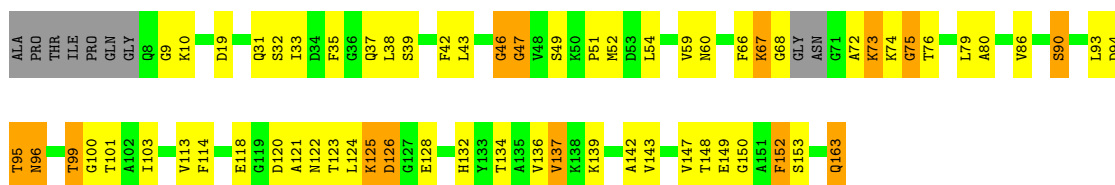
• Molecule 2: PAP FIMBRIAL MAJOR PILIN PROTEIN

Chain B: 66% 25% 5%



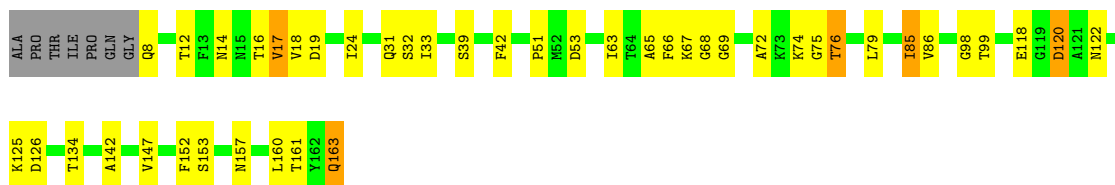
• Molecule 2: PAP FIMBRIAL MAJOR PILIN PROTEIN

Chain D: 55% 31% 9% 6%



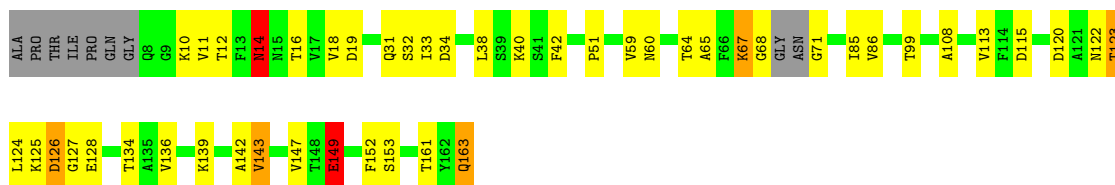
• Molecule 2: PAP FIMBRIAL MAJOR PILIN PROTEIN

Chain F: 69% 24%



• Molecule 2: PAP FIMBRIAL MAJOR PILIN PROTEIN

Chain H: 66% 25% 6%



4 Data and refinement statistics i

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α , β , γ	166.96Å 166.96Å 178.01Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	75.80 – 2.60	Depositor
% Data completeness (in resolution range)	99.7 (75.80-2.60)	Depositor
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.94 (at 2.62Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.230 , 0.266	Depositor
Wilson B-factor (Å ²)	39.9	Xtrriage
Anisotropy	0.022	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.024 for -h,-k,l	Xtrriage
Total number of atoms	11327	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 13.68% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: SO4

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	0.40	0/1726	0.67	0/2347
1	C	0.38	0/1733	0.64	0/2356
1	E	0.38	0/1722	0.65	0/2343
1	G	0.38	0/1731	0.64	0/2353
2	B	0.37	0/1080	0.64	0/1472
2	D	0.34	0/1075	0.63	0/1461
2	F	0.34	0/1086	0.63	0/1480
2	H	0.34	0/1071	0.62	0/1459
All	All	0.37	0/11224	0.64	0/15271

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	A	1691	0	1678	64	0
1	C	1698	0	1691	97	0
1	E	1687	0	1672	70	0
1	G	1696	0	1694	70	0
2	B	1066	0	968	43	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	1062	0	968	76	0
2	F	1072	0	977	47	0
2	H	1058	0	957	46	0
3	A	25	0	0	1	0
3	C	15	0	0	0	0
3	E	5	0	0	0	0
3	G	20	0	0	0	0
4	A	58	0	0	2	0
4	B	21	0	0	1	0
4	C	47	0	0	2	0
4	D	15	0	0	1	0
4	E	33	0	0	1	0
4	F	13	0	0	1	0
4	G	39	0	0	1	0
4	H	6	0	0	0	0
All	All	11327	0	10605	429	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 20.

All (429) 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:A:135:ASN:HD21	1:A:211:ARG:HD2	1.18	1.04
1:C:158:GLY:H	1:C:162:GLN:NE2	1.56	1.03
1:C:101:ASN:H	1:C:101:ASN:ND2	1.58	1.01
1:C:6:ARG:HH22	2:D:9:GLY:HA2	1.21	1.00
1:E:211:ARG:HH11	1:E:211:ARG:HB3	1.27	0.97
2:B:68:GLY:HA3	2:B:72:ALA:HB3	1.48	0.96
1:A:158:GLY:H	1:A:162:GLN:NE2	1.64	0.95
1:C:102:VAL:HG21	2:D:32:SER:HB2	1.50	0.93
1:G:26:ASN:ND2	1:G:28:GLN:H	1.67	0.93
1:C:101:ASN:H	1:C:101:ASN:HD22	0.93	0.90
1:C:101:ASN:HD22	1:C:101:ASN:N	1.65	0.89
1:G:135:ASN:HD21	1:G:211:ARG:HG3	1.37	0.87
1:C:26:ASN:HD22	1:C:28:GLN:H	1.21	0.86
1:G:158:GLY:H	1:G:162:GLN:HE21	1.20	0.86
1:A:116:ARG:HH21	1:A:116:ARG:HB2	1.44	0.83
1:E:158:GLY:H	1:E:162:GLN:NE2	1.77	0.82
1:A:135:ASN:ND2	1:A:211:ARG:HD2	1.94	0.82
1:E:200:ARG:HH22	2:F:76:THR:HG21	1.46	0.80

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:8:GLN:N	2:B:12:THR:HG1	1.80	0.80
2:D:96:ASN:HB3	2:D:153:SER:O	1.82	0.80
2:D:67:LYS:HA	2:D:72:ALA:CB	2.10	0.80
1:A:112:LYS:HD3	1:A:172:MET:HE1	1.63	0.79
1:C:158:GLY:H	1:C:162:GLN:HE21	1.30	0.79
1:C:26:ASN:ND2	1:C:28:GLN:H	1.78	0.79
2:F:68:GLY:H	2:F:72:ALA:HB3	1.47	0.79
1:G:158:GLY:H	1:G:162:GLN:NE2	1.80	0.78
1:C:112:LYS:HE3	2:D:163:GLN:HA	1.68	0.76
1:G:99:LYS:HD3	2:H:34:ASP:HB2	1.66	0.76
1:C:176:ARG:HG3	1:C:176:ARG:HH11	1.51	0.76
1:G:116:ARG:HB2	1:G:116:ARG:HH21	1.50	0.76
1:C:102:VAL:CG2	2:D:32:SER:HB2	2.15	0.75
1:G:135:ASN:ND2	1:G:211:ARG:HG3	2.00	0.75
1:C:206:ILE:HG12	1:C:215:LYS:HB3	1.69	0.74
1:G:26:ASN:HD22	1:G:28:GLN:H	1.33	0.74
1:C:5:ASP:HB2	2:D:10:LYS:HD2	1.70	0.73
1:G:112:LYS:HE3	2:H:163:GLN:HA	1.70	0.72
1:G:136:LYS:HE3	1:G:185:ASN:HD22	1.54	0.71
1:C:39:ASN:ND2	1:C:43:GLU:H	1.88	0.71
1:C:5:ASP:OD1	1:C:6:ARG:HD2	1.90	0.71
1:G:102:VAL:CG2	2:H:32:SER:HB2	2.21	0.71
2:D:68:GLY:HA3	2:D:124:LEU:HD23	1.71	0.71
1:E:39:ASN:ND2	1:E:43:GLU:H	1.88	0.71
1:G:142:ARG:HD2	1:G:178:GLU:CD	2.12	0.70
1:E:123:ARG:HG2	1:E:124:PRO:HD2	1.74	0.70
1:C:171:VAL:HG21	1:C:179:GLN:HG2	1.74	0.70
1:E:39:ASN:C	1:E:39:ASN:HD22	1.94	0.69
1:C:135:ASN:HD21	1:C:211:ARG:HG2	1.56	0.69
1:A:39:ASN:C	1:A:39:ASN:HD22	1.95	0.69
1:E:19:THR:HG23	2:F:8:GLN:N	2.08	0.69
1:C:39:ASN:HD22	1:C:39:ASN:C	1.95	0.69
1:G:39:ASN:ND2	1:G:43:GLU:H	1.91	0.69
2:H:122:ASN:C	2:H:124:LEU:H	1.96	0.69
1:E:26:ASN:ND2	1:E:28:GLN:H	1.91	0.68
2:F:75:GLY:HA3	2:F:120:ASP:OD2	1.93	0.68
1:G:206:ILE:HG12	1:G:215:LYS:HB3	1.75	0.68
1:C:102:VAL:HG23	2:D:33:ILE:O	1.93	0.68
2:H:99:THR:HG21	2:H:152:PHE:HB3	1.75	0.67
1:G:197:TYR:O	2:H:18:VAL:HG13	1.94	0.67
1:G:158:GLY:N	1:G:162:GLN:HE21	1.91	0.67

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:20:LEU:N	2:H:10:LYS:HZ1	1.92	0.67
1:C:112:LYS:HZ3	1:C:172:MET:HE3	1.60	0.67
2:F:14:ASN:HD22	2:F:17:VAL:HA	1.60	0.67
1:E:104:GLN:HG2	2:F:32:SER:HB3	1.78	0.66
1:C:112:LYS:NZ	1:C:172:MET:HE3	2.11	0.66
2:D:149:GLU:HG2	2:D:150:GLY:H	1.60	0.66
1:G:1:ALA:N	2:H:31:GLN:HE22	1.94	0.66
1:A:117:PRO:HD2	1:A:120:ILE:HD11	1.77	0.66
1:E:102:VAL:O	2:F:153:SER:HA	1.95	0.66
1:E:26:ASN:ND2	1:E:29:LEU:H	1.94	0.66
1:A:1:ALA:N	2:B:31:GLN:HE22	1.94	0.66
1:A:102:VAL:HG23	2:B:33:ILE:O	1.95	0.66
1:A:158:GLY:H	1:A:162:GLN:HE22	1.45	0.65
1:A:26:ASN:ND2	1:A:29:LEU:H	1.93	0.65
1:G:102:VAL:HG21	2:H:32:SER:HB2	1.76	0.65
1:C:158:GLY:H	1:C:162:GLN:HE22	1.43	0.65
1:G:39:ASN:C	1:G:39:ASN:HD22	1.99	0.65
1:E:5:ASP:OD1	1:E:6:ARG:HD2	1.97	0.65
1:G:5:ASP:OD1	1:G:6:ARG:HD2	1.97	0.64
1:C:31:TYR:OH	2:D:31:GLN:HG3	1.98	0.64
2:F:65:ALA:HB1	2:F:76:THR:HG22	1.80	0.63
1:C:206:ILE:HD11	1:C:215:LYS:HE2	1.79	0.63
1:A:198:GLY:HA3	2:B:19:ASP:OD1	1.99	0.63
1:E:112:LYS:HE3	2:F:163:GLN:HA	1.80	0.63
1:G:83:GLU:OE1	1:G:116:ARG:NH2	2.32	0.63
1:G:176:ARG:HG3	1:G:176:ARG:HH11	1.64	0.62
1:E:102:VAL:CG2	2:F:32:SER:HB2	2.29	0.62
2:D:99:THR:HG23	2:D:101:THR:H	1.65	0.62
1:A:39:ASN:ND2	1:A:43:GLU:H	1.98	0.62
1:G:193:TYR:HE2	1:G:203:LEU:HD13	1.65	0.62
2:H:14:ASN:OD1	2:H:16:THR:HG23	2.00	0.62
1:E:142:ARG:HD2	1:E:178:GLU:OE2	1.99	0.62
1:G:32:LEU:HB2	1:G:93:ILE:HB	1.81	0.62
1:C:101:ASN:HA	2:D:152:PHE:O	2.01	0.61
1:C:107:LEU:HD22	1:C:108:GLN:N	2.14	0.61
1:G:20:LEU:CA	2:H:10:LYS:HZ1	2.13	0.61
1:A:26:ASN:HD22	1:A:29:LEU:H	1.48	0.61
1:A:102:VAL:CG2	2:B:32:SER:HB2	2.30	0.61
1:E:102:VAL:HG21	2:F:32:SER:HB2	1.83	0.61
1:G:170:THR:HG21	2:H:163:GLN:OE1	2.01	0.61
1:G:116:ARG:HH21	1:G:116:ARG:CB	2.14	0.61

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:116:ARG:HH21	1:E:116:ARG:HB2	1.66	0.60
1:A:116:ARG:HH21	1:A:116:ARG:CB	2.12	0.60
1:E:102:VAL:HG22	1:E:103:LEU:N	2.17	0.60
1:E:32:LEU:HB2	1:E:93:ILE:HB	1.84	0.60
2:D:149:GLU:HG2	2:D:150:GLY:N	2.17	0.60
1:G:206:ILE:HD11	1:G:215:LYS:HE2	1.81	0.60
1:A:39:ASN:ND2	1:A:41:ASN:H	2.00	0.59
1:C:112:LYS:HD3	1:C:172:MET:HE1	1.84	0.59
1:C:46:ILE:HD12	1:C:46:ILE:N	2.18	0.59
1:E:211:ARG:HH11	1:E:211:ARG:CB	2.10	0.59
1:E:134:LEU:HB2	1:E:212:CYS:HB2	1.85	0.59
1:A:101:ASN:HB3	2:B:152:PHE:CE2	2.38	0.59
2:H:122:ASN:O	2:H:124:LEU:N	2.36	0.59
1:E:26:ASN:HD22	1:E:28:GLN:H	1.50	0.59
1:E:112:LYS:HZ3	1:E:172:MET:HE3	1.68	0.59
1:A:32:LEU:HB2	1:A:93:ILE:HB	1.84	0.58
2:F:85:ILE:HD13	2:F:85:ILE:H	1.68	0.58
1:A:101:ASN:HB3	2:B:152:PHE:CZ	2.39	0.58
1:G:116:ARG:HH21	1:G:116:ARG:CG	2.17	0.58
1:C:5:ASP:CB	2:D:10:LYS:HD2	2.34	0.58
1:A:83:GLU:OE1	1:A:116:ARG:NH2	2.36	0.58
1:C:51:ILE:HD13	1:C:70:SER:O	2.04	0.58
1:E:200:ARG:HH22	2:F:76:THR:CG2	2.15	0.58
2:F:14:ASN:O	2:F:17:VAL:HG23	2.04	0.58
1:G:101:ASN:HB3	2:H:152:PHE:CE2	2.39	0.57
1:C:136:LYS:HE3	1:C:185:ASN:HD22	1.69	0.57
1:G:1:ALA:H1	2:H:31:GLN:HE22	1.50	0.57
2:H:51:PRO:HA	2:H:136:VAL:HG12	1.87	0.57
1:A:152:THR:OG1	1:A:172:MET:HE3	2.04	0.57
1:C:1:ALA:N	2:D:31:GLN:HE22	2.02	0.57
1:E:22:ILE:HD12	1:E:59:LEU:HD11	1.85	0.57
1:C:148:PRO:HG3	1:C:176:ARG:NH2	2.20	0.57
2:D:37:GLN:O	2:D:38:LEU:HD23	2.05	0.57
1:A:1:ALA:H1	2:B:31:GLN:HE22	1.52	0.57
1:C:211:ARG:HG3	1:C:211:ARG:HH11	1.68	0.57
2:D:74:LYS:O	2:D:76:THR:HG23	2.04	0.57
2:D:99:THR:HG23	2:D:100:GLY:N	2.20	0.57
2:F:14:ASN:HD22	2:F:17:VAL:CA	2.17	0.57
1:A:142:ARG:HD2	1:A:178:GLU:OE1	2.05	0.57
2:B:8:GLN:N	2:B:11:VAL:CG1	2.67	0.57
2:B:8:GLN:N	2:B:11:VAL:HG12	2.20	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:68:GLY:N	2:F:72:ALA:HB3	2.17	0.56
1:A:50:VAL:C	1:A:51:ILE:HD12	2.25	0.56
1:C:1:ALA:H1	2:D:31:GLN:HE22	1.51	0.56
1:E:1:ALA:N	2:F:31:GLN:HE22	2.02	0.56
2:F:14:ASN:HD21	2:F:16:THR:HG23	1.71	0.56
2:F:63:ILE:O	2:F:69:GLY:HA3	2.05	0.56
1:G:107:LEU:HD22	1:G:108:GLN:N	2.19	0.56
1:C:148:PRO:HD2	1:C:149:TYR:CE1	2.40	0.56
2:D:59:VAL:HG12	2:D:60:ASN:N	2.21	0.56
1:G:22:ILE:HD12	1:G:59:LEU:HD11	1.87	0.56
1:E:112:LYS:NZ	1:E:172:MET:HE3	2.20	0.56
1:G:26:ASN:ND2	1:G:29:LEU:H	2.04	0.56
1:C:32:LEU:HB2	1:C:93:ILE:HB	1.88	0.56
1:E:211:ARG:HB3	1:E:211:ARG:NH1	2.10	0.56
1:C:154:ILE:HG22	1:C:170:THR:HB	1.87	0.56
2:D:125:LYS:HE3	2:D:132:HIS:HB2	1.87	0.56
2:F:76:THR:O	2:F:163:GLN:HG2	2.06	0.56
2:B:43:LEU:HB3	2:B:147:VAL:HG21	1.87	0.56
1:C:116:ARG:HH11	1:C:122:THR:HG21	1.70	0.56
1:C:206:ILE:CG1	1:C:215:LYS:HB3	2.35	0.55
1:E:10:VAL:HG13	1:E:116:ARG:NH2	2.22	0.55
1:G:6:ARG:HG3	1:G:8:ARG:O	2.06	0.55
1:A:8:ARG:NH2	1:A:194:ILE:HG21	2.22	0.55
2:F:79:LEU:HD22	2:F:160:LEU:CD2	2.37	0.55
1:A:10:VAL:HG13	1:A:116:ARG:NH2	2.20	0.55
1:C:6:ARG:HG3	1:C:8:ARG:O	2.05	0.55
1:E:114:PHE:CE2	1:E:172:MET:HE1	2.41	0.55
2:B:14:ASN:C	2:B:14:ASN:HD22	2.09	0.55
1:A:158:GLY:N	1:A:162:GLN:NE2	2.46	0.55
2:H:122:ASN:C	2:H:124:LEU:N	2.60	0.54
1:E:128:TRP:O	1:E:131:GLN:HB2	2.08	0.54
1:G:104:GLN:HG2	2:H:32:SER:HB3	1.89	0.54
1:A:6:ARG:HG3	1:A:8:ARG:O	2.07	0.54
1:G:148:PRO:HD2	1:G:149:TYR:CE1	2.42	0.54
1:A:128:TRP:O	1:A:131:GLN:HB2	2.06	0.54
1:A:5:ASP:OD1	1:A:6:ARG:HD2	2.08	0.54
2:H:108:ALA:HB2	2:H:123:THR:HG22	1.90	0.54
1:A:107:LEU:HD13	1:A:108:GLN:N	2.22	0.53
1:E:39:ASN:ND2	1:E:41:ASN:H	2.07	0.53
2:F:14:ASN:HD22	2:F:17:VAL:N	2.06	0.53
2:D:37:GLN:C	2:D:38:LEU:HD23	2.27	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:6:ARG:NH2	2:D:9:GLY:HA2	2.05	0.53
2:D:95:THR:OG1	2:D:96:ASN:N	2.39	0.53
1:E:19:THR:HG22	4:E:2005:HOH:O	2.07	0.53
1:G:10:VAL:HG13	1:G:116:ARG:NH2	2.24	0.53
1:C:158:GLY:N	1:C:162:GLN:NE2	2.40	0.53
2:B:79:LEU:HD23	2:B:80:ALA:N	2.24	0.53
2:B:76:THR:HG22	2:B:77:VAL:HG23	1.90	0.53
1:C:51:ILE:HD11	1:C:70:SER:OG	2.09	0.53
1:C:158:GLY:N	1:C:162:GLN:HE21	2.01	0.53
1:E:206:ILE:HG12	1:E:215:LYS:HB3	1.91	0.52
1:E:101:ASN:HA	2:F:152:PHE:O	2.08	0.52
1:E:154:ILE:HA	1:E:170:THR:HG22	1.92	0.52
2:H:126:ASP:OD1	2:H:127:GLY:N	2.41	0.52
1:C:102:VAL:HG23	2:D:33:ILE:C	2.30	0.52
1:E:8:ARG:NH2	2:F:163:GLN:O	2.43	0.52
1:A:164:GLU:O	2:B:74:LYS:HE2	2.09	0.52
1:C:83:GLU:OE1	1:C:116:ARG:NH2	2.33	0.52
1:E:39:ASN:HD21	1:E:43:GLU:H	1.56	0.52
2:B:18:VAL:HG22	2:B:18:VAL:O	2.09	0.52
1:C:164:GLU:O	2:D:74:LYS:HE3	2.09	0.52
2:H:18:VAL:HG12	2:H:19:ASP:N	2.25	0.52
1:A:134:LEU:HB2	1:A:212:CYS:HB2	1.92	0.52
2:B:55:ASP:OD1	2:B:132:HIS:HD2	1.92	0.52
1:E:39:ASN:ND2	1:E:39:ASN:C	2.63	0.52
1:A:26:ASN:ND2	1:A:28:GLN:H	2.07	0.51
1:C:102:VAL:HG22	1:C:103:LEU:N	2.24	0.51
2:D:79:LEU:HD23	2:D:80:ALA:N	2.25	0.51
2:B:86:VAL:HG23	2:B:92:GLU:O	2.10	0.51
1:C:8:ARG:NH1	4:C:2004:HOH:O	2.42	0.51
1:C:152:THR:OG1	1:C:172:MET:HE3	2.10	0.51
2:D:125:LYS:CE	2:D:132:HIS:HB2	2.40	0.51
1:G:102:VAL:HG23	2:H:33:ILE:O	2.10	0.51
1:G:142:ARG:HD2	1:G:178:GLU:OE2	2.10	0.51
1:G:206:ILE:CG1	1:G:215:LYS:HB3	2.41	0.51
1:C:204:SER:O	1:C:215:LYS:HG2	2.10	0.51
1:E:173:LEU:HD21	1:E:179:GLN:HB3	1.93	0.51
1:C:130:ASP:HA	1:C:214:VAL:HG21	1.92	0.51
1:A:116:ARG:HH21	1:A:116:ARG:CG	2.23	0.51
1:E:107:LEU:HD22	1:E:108:GLN:N	2.25	0.51
1:C:101:ASN:ND2	1:C:101:ASN:N	2.32	0.51
2:D:122:ASN:O	2:D:124:LEU:N	2.43	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:102:VAL:HA	2:D:33:ILE:O	2.10	0.51
2:D:99:THR:OG1	2:D:101:THR:HG23	2.11	0.51
1:A:102:VAL:O	2:B:153:SER:HA	2.10	0.50
1:A:191:LEU:C	1:A:191:LEU:HD23	2.31	0.50
2:D:139:LYS:HG3	2:D:147:VAL:HG23	1.93	0.50
1:E:101:ASN:HB3	2:F:152:PHE:CE2	2.47	0.50
1:A:8:ARG:NH2	2:B:163:GLN:O	2.43	0.50
2:D:43:LEU:HD21	2:D:139:LYS:N	2.27	0.50
2:D:99:THR:HA	2:D:148:THR:OG1	2.11	0.50
1:G:157:GLY:HA3	1:G:162:GLN:HG2	1.94	0.50
1:C:6:ARG:HH22	2:D:9:GLY:CA	2.08	0.50
1:C:39:ASN:HD21	1:C:43:GLU:H	1.60	0.50
1:C:135:ASN:HD21	1:C:211:ARG:CG	2.22	0.49
1:C:176:ARG:HG3	1:C:176:ARG:NH1	2.25	0.49
1:A:102:VAL:HG21	2:B:32:SER:HB2	1.93	0.49
1:G:173:LEU:N	1:G:173:LEU:HD12	2.26	0.49
1:A:39:ASN:C	1:A:39:ASN:ND2	2.65	0.49
2:B:139:LYS:HG3	2:B:147:VAL:HG23	1.93	0.49
1:C:39:ASN:ND2	1:C:39:ASN:C	2.65	0.49
1:C:123:ARG:HB2	1:C:126:GLU:HB2	1.95	0.49
1:E:83:GLU:OE1	1:E:116:ARG:NH2	2.46	0.49
1:G:8:ARG:NH2	2:H:163:GLN:O	2.43	0.49
2:H:64:THR:HA	2:H:68:GLY:O	2.12	0.49
2:B:64:THR:HA	2:B:69:GLY:H	1.78	0.49
1:C:176:ARG:HH11	1:C:176:ARG:CG	2.25	0.49
1:C:102:VAL:HG23	2:D:33:ILE:H	1.77	0.49
1:A:142:ARG:HD2	1:A:178:GLU:CD	2.32	0.49
1:C:53:THR:HG23	4:C:2022:HOH:O	2.12	0.49
2:D:125:LYS:O	2:D:126:ASP:C	2.50	0.49
2:D:76:THR:O	2:D:163:GLN:HG2	2.13	0.49
1:E:102:VAL:HG23	2:F:33:ILE:O	2.12	0.49
1:G:26:ASN:HD22	1:G:26:ASN:C	2.16	0.49
1:C:102:VAL:HG23	2:D:33:ILE:N	2.28	0.49
2:D:39:SER:HB3	2:D:42:PHE:HB3	1.95	0.48
1:G:91:ARG:HB2	1:G:108:GLN:HG3	1.95	0.48
1:C:107:LEU:CD2	1:C:108:GLN:N	2.76	0.48
2:D:10:LYS:HG2	2:D:10:LYS:O	2.14	0.48
1:G:103:LEU:HD22	1:G:104:GLN:N	2.28	0.48
1:A:107:LEU:HB2	2:B:24:ILE:CD1	2.44	0.48
1:A:102:VAL:HG22	1:A:103:LEU:N	2.29	0.48
1:G:102:VAL:HG22	1:G:103:LEU:N	2.29	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:107:LEU:HD22	1:A:108:GLN:H	1.79	0.48
2:D:94:ASP:CG	2:D:95:THR:N	2.67	0.48
2:D:96:ASN:HD22	2:D:153:SER:C	2.17	0.48
1:G:99:LYS:CD	2:H:34:ASP:HB2	2.38	0.48
1:C:34:GLN:HA	1:C:55:PRO:O	2.14	0.47
2:D:67:LYS:HA	2:D:72:ALA:HB2	1.95	0.47
2:F:14:ASN:C	2:F:16:THR:H	2.16	0.47
2:D:120:ASP:O	2:D:122:ASN:N	2.48	0.47
1:A:101:ASN:HA	2:B:152:PHE:O	2.14	0.47
1:E:102:VAL:HG22	1:E:103:LEU:H	1.79	0.47
1:C:112:LYS:HZ3	1:C:172:MET:CE	2.26	0.47
2:D:43:LEU:HD23	2:D:147:VAL:HG21	1.97	0.47
1:G:39:ASN:HD21	1:G:43:GLU:H	1.60	0.47
2:D:35:PHE:HE1	2:D:103:ILE:HD11	1.80	0.47
1:A:35:ALA:HA	1:A:89:ASN:O	2.14	0.47
2:B:94:ASP:OD1	2:B:95:THR:N	2.48	0.46
1:E:8:ARG:HH22	2:F:163:GLN:C	2.18	0.46
2:H:38:LEU:HD12	2:H:152:PHE:HE2	1.79	0.46
1:E:197:TYR:HB3	2:F:18:VAL:HG12	1.96	0.46
1:A:112:LYS:HZ3	1:A:172:MET:HE3	1.80	0.46
1:A:102:VAL:HG22	2:B:32:SER:HB2	1.96	0.46
1:C:102:VAL:CG2	1:C:103:LEU:N	2.78	0.46
1:E:198:GLY:HA3	2:F:19:ASP:OD1	2.15	0.46
2:H:11:VAL:HG13	2:H:12:THR:N	2.31	0.46
2:H:108:ALA:CB	2:H:123:THR:HG22	2.46	0.46
1:A:142:ARG:NH2	3:A:1217:SO4:O1	2.46	0.46
1:C:104:GLN:CG	2:D:32:SER:HB3	2.45	0.46
1:A:51:ILE:HD12	1:A:51:ILE:N	2.31	0.46
2:D:93:LEU:HD13	2:D:114:PHE:CD2	2.50	0.46
2:H:99:THR:HG21	2:H:152:PHE:CB	2.45	0.46
2:H:143:VAL:O	2:H:143:VAL:HG23	2.14	0.46
2:F:39:SER:HB3	2:F:42:PHE:HB3	1.98	0.46
1:G:102:VAL:O	2:H:153:SER:HA	2.15	0.46
2:H:139:LYS:HG3	2:H:147:VAL:HG23	1.97	0.46
1:A:195:ASN:HB2	4:A:2050:HOH:O	2.15	0.46
1:C:135:ASN:ND2	1:C:211:ARG:HG2	2.30	0.46
2:D:43:LEU:HD23	2:D:43:LEU:O	2.16	0.46
1:C:5:ASP:OD1	1:C:6:ARG:CD	2.63	0.46
2:H:59:VAL:HG12	2:H:60:ASN:N	2.31	0.46
2:F:99:THR:O	2:F:147:VAL:HA	2.16	0.45
2:D:76:THR:HA	2:D:163:GLN:OE1	2.16	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:2:VAL:HA	1:G:23:SER:O	2.16	0.45
1:G:26:ASN:HD21	1:G:28:GLN:H	1.58	0.45
1:G:134:LEU:HB2	1:G:212:CYS:HB2	1.98	0.45
1:A:12:ASP:OD1	1:A:121:LYS:HE2	2.17	0.45
2:D:51:PRO:HA	2:D:136:VAL:CG1	2.46	0.45
1:G:19:THR:C	2:H:10:LYS:HZ1	2.19	0.45
2:D:35:PHE:HD2	2:D:52:MET:HG3	1.81	0.45
2:D:74:LYS:O	2:D:75:GLY:C	2.55	0.45
1:E:114:PHE:CZ	1:E:172:MET:HE1	2.51	0.45
1:C:5:ASP:OD2	2:D:10:LYS:HB2	2.16	0.45
1:C:117:PRO:HD2	1:C:120:ILE:HD11	1.98	0.45
2:D:122:ASN:C	2:D:124:LEU:H	2.20	0.45
1:E:85:LEU:HB2	1:E:150:TYR:CZ	2.52	0.45
1:C:129:GLN:NE2	1:C:193:TYR:CE1	2.85	0.45
2:F:98:GLY:HA2	4:F:2010:HOH:O	2.16	0.45
2:D:59:VAL:CG1	2:D:60:ASN:N	2.80	0.45
2:B:163:GLN:HB3	4:B:2020:HOH:O	2.17	0.44
1:G:176:ARG:HG3	1:G:176:ARG:NH1	2.32	0.44
1:C:116:ARG:NH1	1:C:196:ASP:OD2	2.51	0.44
1:G:171:VAL:HG21	1:G:179:GLN:HG2	1.99	0.44
1:C:144:GLU:HG2	1:C:146:PRO:HD3	1.99	0.44
1:G:142:ARG:HD2	1:G:178:GLU:OE1	2.16	0.44
1:A:173:LEU:HD22	1:A:179:GLN:HB2	2.00	0.44
1:E:2:VAL:HA	1:E:23:SER:O	2.17	0.44
1:E:110:LYS:HD2	2:F:161:THR:HG23	1.99	0.44
2:D:46:GLY:O	2:D:47:GLY:C	2.56	0.44
1:E:154:ILE:O	2:F:74:LYS:HE3	2.18	0.44
1:A:53:THR:HG23	1:A:68:ARG:HB3	1.99	0.43
2:B:23:SER:HB3	2:B:59:VAL:CG2	2.48	0.43
1:C:112:LYS:HG3	4:D:2013:HOH:O	2.18	0.43
1:E:206:ILE:HD11	1:E:215:LYS:HE2	2.00	0.43
2:H:125:LYS:O	2:H:128:GLU:HG2	2.18	0.43
1:C:167:GLU:HA	2:D:73:LYS:CB	2.47	0.43
2:D:90:SER:O	2:D:113:VAL:HG13	2.18	0.43
2:H:124:LEU:HD21	2:H:128:GLU:O	2.18	0.43
1:A:38:GLU:OE2	1:A:110:LYS:HE3	2.17	0.43
2:B:67:LYS:CB	2:B:122:ASN:HA	2.48	0.43
1:C:134:LEU:HB2	1:C:212:CYS:HB2	2.01	0.43
1:C:206:ILE:CD1	1:C:215:LYS:HE2	2.47	0.43
2:D:43:LEU:CD2	2:D:147:VAL:HG21	2.49	0.43
4:G:2002:HOH:O	2:H:18:VAL:HG12	2.17	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:101:ASN:HB2	2:D:35:PHE:HB2	2.00	0.43
2:D:120:ASP:C	2:D:122:ASN:N	2.72	0.43
1:C:23:SER:HB2	1:C:64:LYS:HD3	2.01	0.43
2:D:86:VAL:HG13	2:D:142:ALA:HB2	2.00	0.43
1:E:5:ASP:OD1	1:E:6:ARG:CD	2.64	0.42
1:E:46:ILE:O	1:E:46:ILE:HG13	2.19	0.42
1:C:129:GLN:OE1	1:C:129:GLN:N	2.52	0.42
1:C:211:ARG:HH11	1:C:211:ARG:CG	2.32	0.42
2:D:93:LEU:HD12	2:D:93:LEU:HA	1.92	0.42
2:B:63:ILE:C	2:B:65:ALA:H	2.21	0.42
1:C:112:LYS:CD	1:C:172:MET:HE1	2.49	0.42
2:F:14:ASN:ND2	2:F:16:THR:HG23	2.33	0.42
2:H:85:ILE:HG12	2:H:86:VAL:N	2.33	0.42
1:A:191:LEU:HD23	1:A:192:SER:N	2.33	0.42
2:B:143:VAL:HG23	2:B:143:VAL:O	2.19	0.42
1:G:85:LEU:HB2	1:G:150:TYR:CZ	2.54	0.42
1:E:116:ARG:HH21	1:E:116:ARG:CB	2.31	0.42
1:G:144:GLU:HG2	1:G:146:PRO:HD3	2.01	0.42
1:G:148:PRO:HD2	1:G:149:TYR:CD1	2.54	0.42
1:A:164:GLU:O	2:B:74:LYS:CE	2.67	0.42
1:C:38:GLU:OE2	1:C:110:LYS:HE3	2.20	0.42
1:E:197:TYR:HA	2:F:18:VAL:HG12	2.02	0.42
2:D:149:GLU:CG	2:D:150:GLY:H	2.29	0.42
2:F:66:PHE:CE2	2:F:79:LEU:HD21	2.55	0.42
2:F:86:VAL:CG1	2:F:142:ALA:HB2	2.49	0.42
2:F:163:GLN:HG2	2:F:163:GLN:H	1.69	0.42
2:H:113:VAL:HG12	2:H:115:ASP:H	1.84	0.42
1:C:49:PRO:HB2	1:C:75:ILE:CD1	2.50	0.42
1:E:114:PHE:HE2	1:E:172:MET:HE1	1.84	0.42
2:H:40:LYS:CB	2:H:149:GLU:HB2	2.49	0.42
1:A:64:LYS:HG2	4:A:2019:HOH:O	2.20	0.42
1:C:115:TYR:O	1:C:117:PRO:HD3	2.20	0.42
1:E:158:GLY:H	1:E:162:GLN:HE22	1.64	0.42
1:G:129:GLN:HG2	1:G:193:TYR:CD1	2.55	0.42
1:A:34:GLN:HA	1:A:55:PRO:O	2.20	0.41
2:D:49:SER:OG	2:D:137:VAL:HG23	2.20	0.41
1:E:191:LEU:HD23	1:E:191:LEU:C	2.40	0.41
2:F:67:LYS:CB	2:F:120:ASP:HB3	2.50	0.41
1:G:37:ILE:HG22	1:G:38:GLU:N	2.35	0.41
1:C:35:ALA:HA	1:C:89:ASN:O	2.20	0.41
1:E:206:ILE:HG12	1:E:215:LYS:HE2	2.02	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:160:GLU:HG2	1:G:164:GLU:OE2	2.20	0.41
2:D:66:PHE:O	2:D:124:LEU:HD22	2.20	0.41
1:E:116:ARG:HH21	1:E:116:ARG:CG	2.33	0.41
1:G:20:LEU:C	2:H:10:LYS:HZ1	2.24	0.41
2:H:40:LYS:C	2:H:42:PHE:H	2.24	0.41
2:H:67:LYS:CB	2:H:71:GLY:HA3	2.50	0.41
2:B:63:ILE:O	2:B:65:ALA:N	2.44	0.41
1:C:107:LEU:CD2	1:C:108:GLN:H	2.32	0.41
2:D:96:ASN:O	2:D:152:PHE:CD2	2.73	0.41
1:A:4:LEU:HB3	2:B:21:PRO:HG2	2.03	0.41
1:G:110:LYS:HD2	2:H:161:THR:HG23	2.01	0.41
1:A:107:LEU:HD13	1:A:107:LEU:C	2.41	0.41
1:E:102:VAL:CG2	1:E:103:LEU:N	2.83	0.41
2:F:163:GLN:HE21	2:F:163:GLN:HB3	1.59	0.41
1:G:193:TYR:HE2	1:G:203:LEU:CD1	2.32	0.41
1:A:39:ASN:HD21	1:A:43:GLU:H	1.69	0.41
2:B:66:PHE:C	2:B:68:GLY:N	2.75	0.41
2:B:90:SER:OG	2:B:113:VAL:HG13	2.21	0.41
1:C:176:ARG:NH1	1:C:176:ARG:CG	2.84	0.41
2:D:120:ASP:C	2:D:122:ASN:H	2.23	0.41
2:D:125:LYS:O	2:D:128:GLU:HG2	2.21	0.40
1:E:38:GLU:OE2	1:E:110:LYS:NZ	2.53	0.40
2:B:54:LEU:HD23	2:B:54:LEU:C	2.42	0.40
1:C:191:LEU:C	1:C:191:LEU:HD23	2.42	0.40
1:C:7:THR:HG23	2:D:19:ASP:O	2.21	0.40
1:C:39:ASN:ND2	1:C:41:ASN:H	2.18	0.40
1:E:101:ASN:HB3	2:F:152:PHE:CZ	2.55	0.40
1:E:107:LEU:HB2	2:F:24:ILE:CD1	2.52	0.40
1:G:101:ASN:HB3	2:H:152:PHE:CZ	2.56	0.40
1:G:206:ILE:HD11	1:G:215:LYS:CE	2.50	0.40
2:B:68:GLY:HA3	2:B:71:GLY:O	2.21	0.40
2:B:68:GLY:CA	2:B:72:ALA:HB3	2.34	0.40
1:C:104:GLN:HG3	2:D:32:SER:HB3	2.02	0.40
1:E:35:ALA:HA	1:E:89:ASN:O	2.21	0.40
1:E:197:TYR:CB	2:F:18:VAL:HG12	2.52	0.40
1:A:6:ARG:O	2:B:21:PRO:HG3	2.21	0.40
2:B:8:GLN:N	2:B:12:THR:OG1	2.50	0.40
2:D:51:PRO:HA	2:D:136:VAL:HG12	2.02	0.40
2:D:79:LEU:HD23	2:D:79:LEU:C	2.42	0.40
1:E:200:ARG:HH22	2:F:76:THR:CB	2.34	0.40
2:F:51:PRO:HB2	2:F:134:THR:HG23	2.04	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:86:VAL:CG1	2:H:142:ALA:HB2	2.51	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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	215/218 (99%)	212 (99%)	3 (1%)	0	100	100
1	C	215/218 (99%)	212 (99%)	3 (1%)	0	100	100
1	E	215/218 (99%)	213 (99%)	1 (0%)	1 (0%)	29	52
1	G	215/218 (99%)	213 (99%)	2 (1%)	0	100	100
2	B	154/163 (94%)	133 (86%)	15 (10%)	6 (4%)	3	4
2	D	150/163 (92%)	118 (79%)	17 (11%)	15 (10%)	0	0
2	F	154/163 (94%)	136 (88%)	12 (8%)	6 (4%)	3	4
2	H	150/163 (92%)	118 (79%)	24 (16%)	8 (5%)	2	2
All	All	1468/1524 (96%)	1355 (92%)	77 (5%)	36 (2%)	5	9

All (36) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	47	GLY
2	D	73	LYS
2	D	95	THR
2	D	123	THR
2	F	122	ASN
2	H	67	LYS
2	B	68	GLY
2	D	46	GLY
2	D	75	GLY

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	D	125	LYS
2	F	118	GLU
2	H	120	ASP
2	H	123	THR
2	B	72	ALA
2	D	90	SER
2	D	99	THR
2	D	121	ALA
2	F	125	LYS
2	H	14	ASN
2	H	65	ALA
2	H	149	GLU
2	B	146	ALA
2	D	67	LYS
2	D	118	GLU
2	D	126	ASP
2	F	12	THR
2	H	126	ASP
2	B	125	LYS
2	D	96	ASN
2	D	143	VAL
2	B	64	THR
1	E	100	ALA
2	F	126	ASP
2	B	143	VAL
2	F	17	VAL
2	H	143	VAL

5.3.2 Protein sidechains [i](#)

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	187/194 (96%)	174 (93%)	13 (7%)	15 30
1	C	189/194 (97%)	172 (91%)	17 (9%)	9 18
1	E	186/194 (96%)	175 (94%)	11 (6%)	19 39

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	G	188/194 (97%)	175 (93%)	13 (7%)	15	31
2	B	104/125 (83%)	97 (93%)	7 (7%)	16	33
2	D	105/125 (84%)	100 (95%)	5 (5%)	25	49
2	F	106/125 (85%)	100 (94%)	6 (6%)	20	41
2	H	104/125 (83%)	100 (96%)	4 (4%)	33	59
All	All	1169/1276 (92%)	1093 (94%)	76 (6%)	17	34

All (76) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	4	LEU
1	A	6	ARG
1	A	20	LEU
1	A	39	ASN
1	A	45	ILE
1	A	46	ILE
1	A	53	THR
1	A	69	LEU
1	A	103	LEU
1	A	116	ARG
1	A	134	LEU
1	A	178	GLU
1	A	203	LEU
2	B	14	ASN
2	B	18	VAL
2	B	43	LEU
2	B	62	ASP
2	B	76	THR
2	B	148	THR
2	B	157	ASN
1	C	4	LEU
1	C	6	ARG
1	C	8	ARG
1	C	19	THR
1	C	26	ASN
1	C	29	LEU
1	C	39	ASN
1	C	51	ILE
1	C	101	ASN
1	C	103	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	107	LEU
1	C	116	ARG
1	C	134	LEU
1	C	170	THR
1	C	178	GLU
1	C	183	SER
1	C	203	LEU
2	D	54	LEU
2	D	134	THR
2	D	137	VAL
2	D	152	PHE
2	D	163	GLN
1	E	4	LEU
1	E	6	ARG
1	E	26	ASN
1	E	39	ASN
1	E	103	LEU
1	E	107	LEU
1	E	116	ARG
1	E	185	ASN
1	E	200	ARG
1	E	203	LEU
1	E	211	ARG
2	F	53	ASP
2	F	76	THR
2	F	85	ILE
2	F	120	ASP
2	F	157	ASN
2	F	163	GLN
1	G	4	LEU
1	G	6	ARG
1	G	20	LEU
1	G	26	ASN
1	G	39	ASN
1	G	50	VAL
1	G	103	LEU
1	G	107	LEU
1	G	116	ARG
1	G	134	LEU
1	G	167	GLU
1	G	170	THR
1	G	200	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	H	14	ASN
2	H	134	THR
2	H	149	GLU
2	H	163	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (47) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	26	ASN
1	A	34	GLN
1	A	39	ASN
1	A	89	ASN
1	A	135	ASN
1	A	162	GLN
2	B	14	ASN
2	B	31	GLN
2	B	132	HIS
2	B	157	ASN
2	B	163	GLN
1	C	26	ASN
1	C	39	ASN
1	C	89	ASN
1	C	101	ASN
1	C	104	GLN
1	C	131	GLN
1	C	135	ASN
1	C	162	GLN
2	D	31	GLN
2	D	37	GLN
2	D	96	ASN
2	D	132	HIS
2	D	157	ASN
1	E	26	ASN
1	E	34	GLN
1	E	39	ASN
1	E	89	ASN
1	E	108	GLN
1	E	162	GLN
1	E	185	ASN
2	F	14	ASN
2	F	31	GLN
2	F	132	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	F	157	ASN
1	G	26	ASN
1	G	34	GLN
1	G	39	ASN
1	G	42	GLN
1	G	89	ASN
1	G	104	GLN
1	G	131	GLN
1	G	135	ASN
1	G	162	GLN
1	G	185	ASN
2	H	31	GLN
2	H	159	ASN

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

13 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	$\# Z > 2$
3	SO4	A	1220	-	4,4,4	0.28	0	6,6,6	0.07	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	SO4	E	1217	-	4,4,4	0.28	0	6,6,6	0.09	0
3	SO4	G	1218	-	4,4,4	0.27	0	6,6,6	0.05	0
3	SO4	A	1221	-	4,4,4	0.28	0	6,6,6	0.08	0
3	SO4	G	1220	-	4,4,4	0.25	0	6,6,6	0.13	0
3	SO4	A	1217	-	4,4,4	0.26	0	6,6,6	0.22	0
3	SO4	C	1218	-	4,4,4	0.20	0	6,6,6	0.08	0
3	SO4	C	1217	-	4,4,4	0.32	0	6,6,6	0.17	0
3	SO4	C	1219	-	4,4,4	0.29	0	6,6,6	0.08	0
3	SO4	G	1217	-	4,4,4	0.32	0	6,6,6	0.06	0
3	SO4	G	1219	-	4,4,4	0.30	0	6,6,6	0.05	0
3	SO4	A	1219	-	4,4,4	0.24	0	6,6,6	0.09	0
3	SO4	A	1218	-	4,4,4	0.24	0	6,6,6	0.13	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1217	SO4	1	0

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.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS failed to run properly - this section is therefore empty.

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

EDS failed to run properly - this section is therefore empty.

6.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

6.4 Ligands

EDS failed to run properly - this section is therefore empty.

6.5 Other polymers

EDS failed to run properly - this section is therefore empty.