



Full wwPDB EM Validation Report ⓘ

Feb 24, 2025 – 04:00 PM EST

PDB ID : 1QGC
Title : STRUCTURE OF THE COMPLEX OF A FAB FRAGMENT OF A NEUTRALIZING ANTIBODY WITH FOOT AND MOUTH DISEASE VIRUS
Authors : Fita, I.
Deposited on : 1999-04-23
Resolution : 30.00 Å (reported)
Based on initial model : 1FMD

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 : 4.02b-467
Mogul : 2022.3.0, CSD as543be (2022)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.41.4

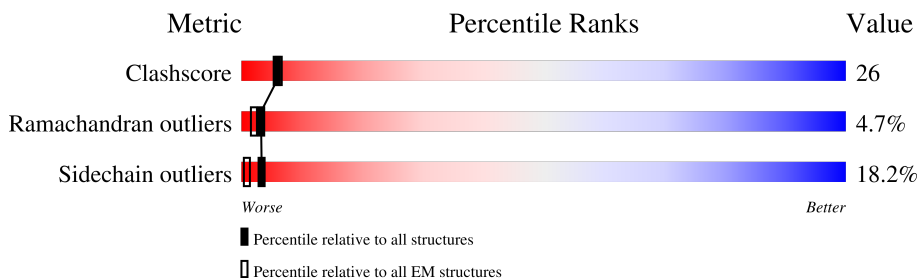
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 30.00 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	1	207	52% 29% 7% • 12%
2	2	218	59% 33% 8%
3	3	219	57% 31% 12%
4	4	218	46% 36% 17% •
5	A	220	44% 40% 15% •
6	5	24	17% 46% 25% 12%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	OCS	4	218	-	X	-	-

2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 8279 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 (VIRUS CAPSID PROTEIN VP1).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	1	183	1416	893	253	267	3	0	0

- Molecule 2 is a protein called PROTEIN (VIRUS CAPSID PROTEIN VP2).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	2	218	1680	1061	296	316	7	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	50	ALA	GLY	conflict	UNP Q9QCE2

- Molecule 3 is a protein called PROTEIN (VIRUS CAPSID PROTEIN VP3).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	3	219	1690	1075	277	327	11	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
3	168	THR	ALA	conflict	UNP P15072

- Molecule 4 is a protein called PROTEIN (IMMUNOGLOBULIN LIGHT CHAIN).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	4	218	1683	1042	287	347	7	0	0

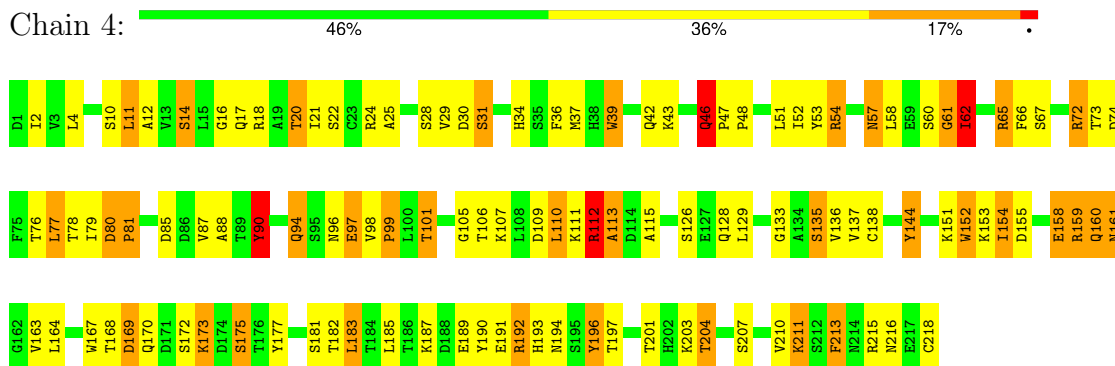
- Molecule 5 is a protein called PROTEIN (IMMUNOGLOBULIN HEAVY CHAIN).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	A	220	1644	1039	275	320	10	0	0

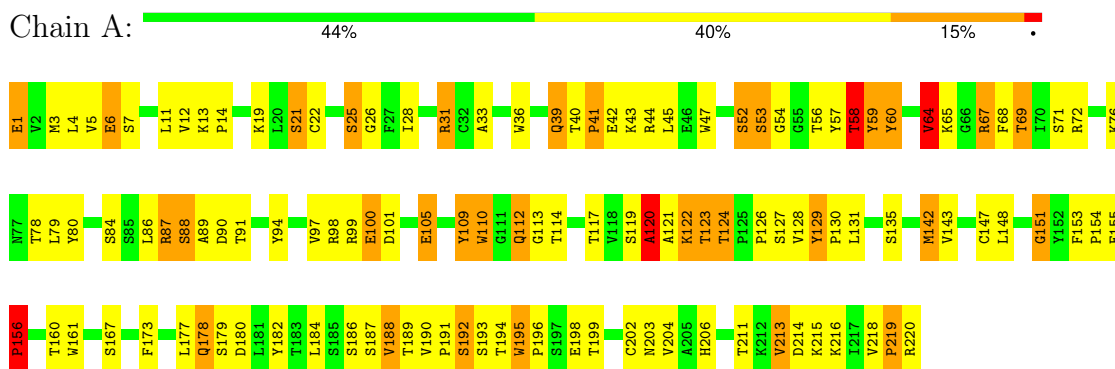
- Molecule 6 is a protein called PROTEIN (GH-LOOP FROM VIRUS CAPSID PROTEIN VP1).

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	5	24	166	102	29	35	0	0

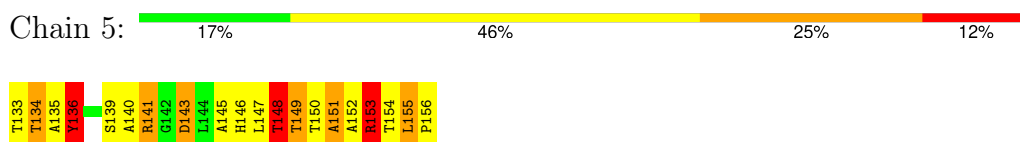
- Molecule 4: PROTEIN (IMMUNOGLOBULIN LIGHT CHAIN)



- Molecule 5: PROTEIN (IMMUNOGLOBULIN HEAVY CHAIN)



- Molecule 6: PROTEIN (GH-LOOP FROM VIRUS CAPSID PROTEIN VP1)



4 Data and refinement statistics

Xtrriage (Phenix) and EDS failed to run properly - this section is therefore incomplete.

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) – 30.00	Depositor
% Data completeness (in resolution range)	(Not available) ((Not available)-30.00)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	unknown	Depositor
R, R_{free}	(Not available) , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	8279	wwPDB-VP
Average B, all atoms (Å ²)	110.0	wwPDB-VP

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: OCS

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	1	0.55	0/1449	0.86	4/1982 (0.2%)
2	2	0.54	0/1723	0.83	1/2352 (0.0%)
3	3	0.57	0/1739	0.88	1/2377 (0.0%)
4	4	1.18	4/1713 (0.2%)	2.07	42/2329 (1.8%)
5	A	1.11	0/1685	2.19	68/2300 (3.0%)
6	5	0.78	0/168	1.91	6/232 (2.6%)
All	All	0.84	4/8477 (0.0%)	1.52	122/11572 (1.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
3	3	0	1
4	4	0	6
5	A	0	3
All	All	0	10

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	4	112	ARG	C-N	-17.55	0.93	1.34
4	4	28	SER	CA-CB	6.39	1.62	1.52
4	4	39	TRP	CG-CD2	-5.49	1.34	1.43
4	4	54	ARG	CG-CD	5.03	1.64	1.51

All (122) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	120	ALA	CA-C-N	-23.53	65.44	117.20
4	4	112	ARG	CA-C-N	-22.66	67.35	117.20
4	4	112	ARG	C-N-CA	-22.41	65.67	121.70
5	A	120	ALA	C-N-CA	-22.31	65.92	121.70
5	A	120	ALA	O-C-N	18.86	152.88	122.70
4	4	54	ARG	NE-CZ-NH1	14.75	127.67	120.30
5	A	188	VAL	CB-CA-C	-10.24	91.95	111.40
5	A	59	TYR	CB-CG-CD2	-9.80	115.12	121.00
4	4	159	ARG	NE-CZ-NH2	-9.76	115.42	120.30
5	A	36	TRP	CD1-CG-CD2	9.45	113.86	106.30
5	A	47	TRP	CD1-CG-CD2	9.29	113.73	106.30
4	4	152	TRP	CD1-CG-CD2	8.93	113.44	106.30
5	A	110	TRP	CD1-CG-CD2	8.87	113.40	106.30
4	4	196	TYR	CB-CG-CD2	-8.68	115.79	121.00
6	5	141	ARG	NE-CZ-NH2	8.47	124.53	120.30
4	4	112	ARG	O-C-N	8.22	135.85	122.70
5	A	47	TRP	CE2-CD2-CG	-8.03	100.87	107.30
4	4	152	TRP	CE2-CD2-CG	-8.00	100.90	107.30
5	A	220	ARG	NE-CZ-NH1	7.80	124.20	120.30
5	A	110	TRP	CE2-CD2-CG	-7.73	101.12	107.30
5	A	36	TRP	CE2-CD2-CG	-7.66	101.18	107.30
5	A	161	TRP	CE2-CD2-CG	-7.52	101.29	107.30
5	A	39	GLN	CA-CB-CG	-7.30	97.33	113.40
5	A	87	ARG	NE-CZ-NH1	7.24	123.92	120.30
5	A	195	TRP	CD1-CG-CD2	7.21	112.07	106.30
5	A	161	TRP	CD1-CG-CD2	7.21	112.06	106.30
5	A	100	GLU	N-CA-CB	-7.14	97.75	110.60
4	4	39	TRP	CE2-CD2-CG	-7.10	101.62	107.30
4	4	90	TYR	CB-CG-CD2	-7.10	116.74	121.00
5	A	87	ARG	NE-CZ-NH2	-7.05	116.77	120.30
5	A	57	TYR	N-CA-C	-7.04	91.98	111.00
4	4	39	TRP	CD1-CG-CD2	6.85	111.78	106.30
4	4	167	TRP	CE2-CD2-CG	-6.80	101.86	107.30
5	A	190	VAL	CA-CB-CG2	-6.78	100.73	110.90
5	A	98	ARG	CB-CG-CD	-6.72	94.13	111.60
5	A	178	GLN	N-CA-C	-6.69	92.93	111.00
4	4	54	ARG	N-CA-C	-6.67	92.98	111.00
5	A	67	ARG	NE-CZ-NH1	6.67	123.63	120.30
4	4	54	ARG	CA-CB-CG	6.66	128.05	113.40
5	A	124	THR	CA-CB-CG2	6.65	121.71	112.40
5	A	98	ARG	NE-CZ-NH2	-6.61	116.99	120.30
6	5	136	TYR	O-C-N	6.60	133.27	122.70
5	A	186	SER	N-CA-CB	-6.58	100.62	110.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	4	37	MET	CG-SD-CE	6.57	110.72	100.20
5	A	178	GLN	CA-CB-CG	6.54	127.79	113.40
4	4	20	THR	N-CA-CB	-6.51	97.93	110.30
5	A	195	TRP	CE2-CD2-CG	-6.40	102.18	107.30
5	A	109	TYR	CB-CG-CD2	-6.38	117.17	121.00
4	4	110	LEU	CB-CG-CD1	-6.34	100.21	111.00
5	A	179	SER	CA-C-N	6.33	131.13	117.20
4	4	61	GLY	N-CA-C	-6.32	97.29	113.10
6	5	148	THR	O-C-N	6.32	132.81	122.70
5	A	213	VAL	CG1-CB-CG2	-6.23	100.93	110.90
5	A	124	THR	CA-CB-OG1	-6.17	96.03	109.00
5	A	97	VAL	CG1-CB-CG2	-6.17	101.02	110.90
6	5	149	THR	O-C-N	6.17	132.57	122.70
5	A	42	GLU	CA-CB-CG	6.11	126.85	113.40
5	A	105	GLU	CA-CB-CG	6.10	126.82	113.40
5	A	188	VAL	N-CA-CB	6.05	124.82	111.50
5	A	156	PRO	CA-N-CD	-6.05	103.03	111.50
4	4	152	TRP	CG-CD1-NE1	-6.03	104.07	110.10
4	4	51	LEU	CA-CB-CG	6.01	129.12	115.30
5	A	45	LEU	CA-CB-CG	6.00	129.11	115.30
4	4	167	TRP	CD1-CG-CD2	5.98	111.08	106.30
5	A	31	ARG	CA-CB-CG	5.97	126.53	113.40
5	A	112	GLN	N-CA-CB	-5.97	99.85	110.60
4	4	136	VAL	N-CA-C	-5.96	94.91	111.00
5	A	99	ARG	NE-CZ-NH2	-5.91	117.34	120.30
4	4	79	ILE	N-CA-C	-5.88	95.12	111.00
5	A	58	THR	N-CA-CB	-5.85	99.19	110.30
5	A	127	SER	CA-CB-OG	5.83	126.94	111.20
5	A	182	TYR	CB-CG-CD2	-5.80	117.52	121.00
4	4	65	ARG	O-C-N	5.79	131.96	122.70
5	A	59	TYR	CB-CG-CD1	5.78	124.47	121.00
5	A	5	VAL	CA-CB-CG2	-5.75	102.27	110.90
5	A	177	LEU	CB-CA-C	-5.75	99.28	110.20
4	4	30	ASP	CB-CA-C	-5.72	98.95	110.40
5	A	64	VAL	CA-CB-CG2	-5.71	102.34	110.90
4	4	80	ASP	CB-CG-OD1	5.69	123.42	118.30
5	A	60	TYR	CG-CD1-CE1	-5.66	116.77	121.30
5	A	105	GLU	N-CA-CB	-5.65	100.43	110.60
1	1	109	LYS	N-CA-C	-5.63	95.80	111.00
5	A	36	TRP	CG-CD1-NE1	-5.63	104.47	110.10
4	4	62	ILE	N-CA-C	-5.61	95.85	111.00
4	4	144	TYR	CB-CG-CD2	-5.61	117.64	121.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	4	54	ARG	N-CA-CB	5.60	120.67	110.60
5	A	184	LEU	CA-CB-CG	5.58	128.12	115.30
4	4	216	ASN	CB-CA-C	-5.56	99.29	110.40
4	4	201	THR	N-CA-CB	-5.55	99.75	110.30
4	4	99	PRO	N-CD-CG	-5.53	94.91	103.20
4	4	11	LEU	CA-CB-CG	5.52	128.01	115.30
2	2	118	GLY	N-CA-C	-5.50	99.35	113.10
5	A	188	VAL	CG1-CB-CG2	5.48	119.67	110.90
5	A	1	GLU	N-CA-C	-5.46	96.26	111.00
4	4	30	ASP	CB-CG-OD2	-5.45	113.39	118.30
4	4	54	ARG	NH1-CZ-NH2	-5.42	113.44	119.40
1	1	192	LEU	CA-CB-CG	5.38	127.69	115.30
5	A	182	TYR	N-CA-C	5.37	125.51	111.00
3	3	188	GLN	N-CA-C	-5.36	96.52	111.00
5	A	151	GLY	O-C-N	5.34	131.25	122.70
6	5	153	ARG	N-CA-C	-5.33	96.62	111.00
1	1	81	THR	N-CA-C	-5.30	96.68	111.00
6	5	136	TYR	CA-C-N	-5.30	105.54	117.20
5	A	47	TRP	CG-CD1-NE1	-5.26	104.84	110.10
4	4	172	SER	CA-C-N	-5.22	105.72	117.20
5	A	187	SER	CA-C-N	5.21	128.67	117.20
4	4	152	TRP	CG-CD2-CE3	5.21	138.59	133.90
5	A	52	SER	CA-C-N	-5.21	105.74	117.20
5	A	190	VAL	CA-CB-CG1	5.15	118.62	110.90
4	4	97	GLU	N-CA-C	5.14	124.88	111.00
5	A	127	SER	N-CA-CB	5.13	118.20	110.50
5	A	129	TYR	CB-CG-CD2	-5.11	117.94	121.00
5	A	58	THR	CA-CB-CG2	5.10	119.55	112.40
5	A	110	TRP	CG-CD1-NE1	-5.09	105.01	110.10
5	A	161	TRP	CG-CD2-CE3	5.08	138.48	133.90
1	1	182	ARG	NE-CZ-NH1	5.08	122.84	120.30
5	A	219	PRO	N-CA-C	5.07	125.28	112.10
4	4	31	SER	N-CA-C	-5.06	97.34	111.00
5	A	142	MET	CA-CB-CG	5.06	121.90	113.30
4	4	192	ARG	NE-CZ-NH2	-5.05	117.77	120.30
4	4	161	ASN	CB-CG-ND2	5.03	128.77	116.70
4	4	158	GLU	CA-CB-CG	-5.01	102.37	113.40

There are no chirality outliers.

All (10) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	3	30	TYR	Sidechain
4	4	112	ARG	Mainchain
4	4	190	TYR	Sidechain
4	4	46	GLN	Peptide
4	4	80	ASP	Peptide
4	4	90	TYR	Sidechain
4	4	98	VAL	Peptide
5	A	109	TYR	Sidechain
5	A	120	ALA	Mainchain
5	A	155	GLU	Peptide

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	1	1416	0	1415	69	0
2	2	1680	0	1608	64	0
3	3	1690	0	1603	81	0
4	4	1683	0	1605	78	0
5	A	1644	0	1620	95	0
6	5	166	0	161	84	0
All	All	8279	0	8012	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 26.

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)
5:A:13:LYS:CE	5:A:122:LYS:HE3	1.29	1.60
5:A:13:LYS:HE3	5:A:122:LYS:CE	1.49	1.41
3:3:173:HIS:CE1	6:5:141:ARG:HH22	1.42	1.37
6:5:136:TYR:O	6:5:150:THR:CG2	1.75	1.33
6:5:148:THR:HB	6:5:152:ALA:N	1.48	1.27
6:5:134:THR:CG2	6:5:147:LEU:HD22	1.65	1.27
6:5:136:TYR:C	6:5:150:THR:HG21	1.59	1.21
6:5:135:ALA:O	6:5:136:TYR:CB	1.79	1.20

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:119:SER:HB3	5:A:153:PHE:CZ	1.75	1.20
6:5:134:THR:CG2	6:5:147:LEU:HB3	1.72	1.19
6:5:134:THR:HG21	6:5:147:LEU:HD22	1.15	1.15
5:A:11:LEU:HD12	5:A:154:PRO:HD3	1.26	1.11
1:1:127:ALA:H	6:5:155:LEU:HD21	1.11	1.11
6:5:148:THR:CB	6:5:152:ALA:HB2	1.78	1.11
6:5:149:THR:HG23	6:5:154:THR:HG23	1.21	1.10
6:5:134:THR:CG2	6:5:147:LEU:CD2	2.30	1.09
6:5:133:THR:OG1	6:5:147:LEU:CA	2.01	1.09
5:A:13:LYS:NZ	5:A:121:ALA:C	2.07	1.08
6:5:134:THR:HG22	6:5:147:LEU:CD2	1.84	1.07
6:5:134:THR:HG23	6:5:147:LEU:HB3	1.35	1.07
3:3:173:HIS:CE1	6:5:141:ARG:NH2	2.22	1.06
6:5:149:THR:CG2	6:5:154:THR:HG23	1.85	1.05
6:5:136:TYR:O	6:5:150:THR:CB	2.04	1.04
4:4:109:ASP:CG	4:4:177:TYR:OH	1.96	1.03
5:A:119:SER:CB	5:A:153:PHE:CZ	2.41	1.03
5:A:11:LEU:HD21	5:A:121:ALA:O	1.60	1.01
1:1:127:ALA:HB3	6:5:155:LEU:HD11	1.44	0.98
4:4:58:LEU:HD22	4:4:62:ILE:HD11	1.46	0.96
6:5:134:THR:CG2	6:5:147:LEU:CB	2.43	0.96
6:5:133:THR:O	6:5:134:THR:O	1.83	0.95
6:5:154:THR:O	6:5:155:LEU:HB2	1.67	0.95
6:5:136:TYR:O	6:5:150:THR:HB	1.64	0.94
2:2:48:THR:HG21	2:2:52:GLU:HB3	1.49	0.94
5:A:119:SER:HB3	5:A:153:PHE:HZ	1.32	0.94
1:1:127:ALA:N	6:5:155:LEU:HD21	1.83	0.93
6:5:149:THR:O	6:5:154:THR:OG1	1.87	0.93
6:5:134:THR:HG22	6:5:147:LEU:CB	2.00	0.92
5:A:13:LYS:CE	5:A:122:LYS:CE	2.25	0.92
6:5:148:THR:HB	6:5:152:ALA:CA	1.98	0.92
6:5:133:THR:OG1	6:5:147:LEU:C	2.10	0.90
6:5:136:TYR:O	6:5:150:THR:HG21	1.55	0.89
6:5:148:THR:OG1	6:5:152:ALA:HB2	1.72	0.89
4:4:112:ARG:NH2	4:4:115:ALA:HB2	1.89	0.88
1:1:127:ALA:O	6:5:155:LEU:HD22	1.73	0.88
5:A:13:LYS:NZ	5:A:122:LYS:HE3	1.89	0.88
6:5:136:TYR:N	6:5:150:THR:OG1	2.06	0.87
6:5:133:THR:OG1	6:5:148:THR:N	2.06	0.87
6:5:148:THR:CB	6:5:152:ALA:CB	2.53	0.87
3:3:78:ASP:HB3	3:3:179:CYS:SG	2.13	0.87

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:5:135:ALA:O	6:5:136:TYR:HB2	1.00	0.87
6:5:152:ALA:O	6:5:153:ARG:O	1.92	0.87
1:1:127:ALA:H	6:5:155:LEU:CD2	1.87	0.86
1:1:70:THR:HG23	1:1:187:CYS:HB2	1.56	0.86
4:4:111:LYS:HA	4:4:144:TYR:CZ	2.11	0.85
6:5:136:TYR:O	6:5:150:THR:HG22	1.75	0.85
1:1:92:GLY:HA3	3:3:169:TYR:CE1	2.13	0.84
4:4:107:LYS:HE2	4:4:169:ASP:OD1	1.79	0.83
2:2:70:VAL:HG22	2:2:73:GLN:HE21	1.41	0.83
5:A:13:LYS:NZ	5:A:121:ALA:O	2.09	0.83
2:2:70:VAL:H	2:2:73:GLN:NE2	1.77	0.82
4:4:109:ASP:CB	4:4:177:TYR:OH	2.27	0.82
6:5:134:THR:HG21	6:5:147:LEU:CD2	1.99	0.82
4:4:112:ARG:CZ	4:4:115:ALA:HB2	2.08	0.82
5:A:13:LYS:HZ1	5:A:122:LYS:N	1.77	0.82
6:5:133:THR:OG1	6:5:147:LEU:N	2.11	0.82
6:5:133:THR:HG1	6:5:148:THR:N	1.79	0.81
4:4:110:LEU:HD12	4:4:175:SER:OG	1.80	0.81
3:3:190:THR:HG22	3:3:191:HIS:H	1.45	0.80
2:2:58:ALA:HB3	2:2:208:VAL:HG21	1.63	0.80
3:3:173:HIS:NE2	6:5:141:ARG:NH2	2.28	0.79
4:4:12:ALA:HB1	4:4:144:TYR:OH	1.81	0.79
5:A:160:THR:HB	5:A:203:ASN:HB2	1.65	0.78
1:1:127:ALA:HB3	6:5:155:LEU:CD1	2.11	0.78
6:5:133:THR:HG1	6:5:148:THR:H	1.29	0.78
6:5:149:THR:HG23	6:5:154:THR:CG2	2.10	0.77
6:5:152:ALA:C	6:5:153:ARG:O	2.24	0.76
5:A:1:GLU:O	5:A:26:GLY:HA3	1.85	0.76
5:A:13:LYS:NZ	5:A:122:LYS:N	2.31	0.76
5:A:64:VAL:HG13	5:A:68:PHE:HB2	1.67	0.76
4:4:129:LEU:HD22	4:4:187:LYS:HG3	1.68	0.75
1:1:203:GLN:HB2	1:1:204:PRO:HD2	1.69	0.75
3:3:103:GLY:HA3	3:3:209:PHE:HA	1.67	0.75
1:1:6:GLU:HG2	2:2:153:ASN:ND2	2.01	0.75
5:A:11:LEU:HG	5:A:153:PHE:HE1	1.52	0.74
5:A:13:LYS:HZ2	5:A:121:ALA:C	1.89	0.74
3:3:219:GLN:HA	3:3:219:GLN:NE2	2.00	0.74
5:A:119:SER:CB	5:A:153:PHE:HZ	1.89	0.73
3:3:52:PRO:HB3	3:3:204:SER:HB3	1.70	0.73
5:A:13:LYS:HZ1	5:A:122:LYS:CA	2.02	0.73
4:4:110:LEU:H	4:4:170:GLN:NE2	1.85	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:4:109:ASP:OD1	4:4:177:TYR:OH	2.07	0.73
5:A:13:LYS:HZ1	5:A:122:LYS:CB	2.01	0.72
2:2:70:VAL:HG22	2:2:73:GLN:NE2	2.05	0.72
2:2:126:VAL:HG13	2:2:143:TYR:CE1	2.25	0.72
6:5:134:THR:HG22	6:5:147:LEU:HD23	1.72	0.72
6:5:133:THR:OG1	6:5:147:LEU:HA	1.88	0.71
1:1:163:PHE:CE1	6:5:156:PRO:HD2	2.25	0.71
1:1:6:GLU:HB2	2:2:30:VAL:HG21	1.73	0.71
4:4:110:LEU:H	4:4:170:GLN:CD	1.94	0.71
1:1:163:PHE:CZ	6:5:156:PRO:HD2	2.26	0.70
1:1:80:VAL:HG22	1:1:176:LEU:CD1	2.20	0.70
6:5:148:THR:HB	6:5:151:ALA:C	2.11	0.70
3:3:143:ILE:HD12	3:3:143:ILE:H	1.57	0.69
4:4:112:ARG:HG3	4:4:113:ALA:O	1.93	0.69
5:A:119:SER:OG	5:A:121:ALA:HB3	1.93	0.68
4:4:164:LEU:HD21	5:A:178:GLN:HB2	1.76	0.68
4:4:110:LEU:H	4:4:170:GLN:HE22	1.41	0.68
3:3:89:THR:HG23	3:3:92:ALA:H	1.58	0.67
6:5:148:THR:CB	6:5:152:ALA:CA	2.72	0.67
5:A:120:ALA:O	5:A:122:LYS:NZ	2.27	0.67
6:5:133:THR:HG1	6:5:147:LEU:N	1.92	0.67
3:3:190:THR:HG22	3:3:191:HIS:N	2.10	0.66
6:5:134:THR:CG2	6:5:147:LEU:CG	2.73	0.66
3:3:64:VAL:HG11	3:3:74:LEU:HB3	1.78	0.66
2:2:67:PHE:HB3	2:2:79:HIS:HD2	1.60	0.66
5:A:126:PRO:HD2	5:A:211:THR:HG21	1.78	0.66
4:4:128:GLN:HG3	5:A:129:TYR:CE2	2.31	0.66
1:1:97:ALA:HB2	3:3:217:ALA:HB2	1.78	0.66
4:4:129:LEU:HD23	4:4:133:GLY:O	1.96	0.66
4:4:111:LYS:HA	4:4:144:TYR:CE1	2.31	0.65
3:3:13:ASN:H	3:3:13:ASN:ND2	1.93	0.65
2:2:107:VAL:HG21	2:2:125:LEU:HD21	1.78	0.65
3:3:44:TYR:O	3:3:47:VAL:HG22	1.96	0.65
6:5:148:THR:HB	6:5:152:ALA:CB	2.22	0.65
1:1:114:ARG:O	1:1:115:LEU:HD23	1.97	0.65
5:A:191:PRO:HG2	5:A:194:THR:OG1	1.96	0.65
6:5:134:THR:HG22	6:5:147:LEU:CG	2.26	0.64
4:4:110:LEU:N	4:4:170:GLN:HE22	1.95	0.64
1:1:182:ARG:HH11	1:1:182:ARG:HG2	1.62	0.64
2:2:3:LYS:CB	2:2:12:ASP:HB2	2.28	0.64
2:2:70:VAL:O	2:2:73:GLN:HG2	1.98	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:4:58:LEU:HD21	4:4:66:PHE:O	1.98	0.64
6:5:136:TYR:C	6:5:150:THR:CG2	2.35	0.64
4:4:196:TYR:HB2	4:4:213:PHE:CE1	2.34	0.63
1:1:122:PRO:HB3	3:3:100:GLN:HE21	1.63	0.63
5:A:13:LYS:HE3	5:A:122:LYS:HE3	0.64	0.63
3:3:78:ASP:CB	3:3:179:CYS:SG	2.84	0.63
6:5:154:THR:O	6:5:155:LEU:CB	2.42	0.63
1:1:107:TYR:HB2	3:3:14:MET:HB3	1.82	0.62
1:1:70:THR:HB	1:1:189:ARG:NH1	2.14	0.62
3:3:67:ARG:HE	3:3:72:ARG:NE	1.97	0.62
3:3:86:MET:O	3:3:88:ASN:N	2.32	0.62
6:5:136:TYR:CA	6:5:150:THR:HG21	2.30	0.62
1:1:89:VAL:HG13	1:1:93:ALA:HB3	1.81	0.62
1:1:182:ARG:HH11	1:1:182:ARG:CG	2.13	0.61
4:4:110:LEU:N	4:4:170:GLN:OE1	2.33	0.61
1:1:89:VAL:CG1	1:1:93:ALA:HB3	2.29	0.61
2:2:85:HIS:O	2:2:87:PRO:HD3	2.00	0.61
2:2:160:VAL:HG22	2:2:161:PRO:HD2	1.83	0.61
5:A:119:SER:OG	5:A:121:ALA:CB	2.48	0.61
1:1:86:LEU:HD12	1:1:87:THR:N	2.15	0.61
1:1:86:LEU:HD11	1:1:168:VAL:HG13	1.82	0.61
4:4:54:ARG:HB2	4:4:57:ASN:HD21	1.66	0.60
4:4:90:TYR:O	4:4:105:GLY:HA2	2.01	0.60
5:A:13:LYS:NZ	5:A:122:LYS:CA	2.65	0.60
1:1:196:PRO:HB3	1:1:201:HIS:HB2	1.84	0.60
4:4:109:ASP:HB3	4:4:177:TYR:OH	2.00	0.60
4:4:110:LEU:HB2	4:4:175:SER:HB3	1.84	0.60
3:3:191:HIS:CG	3:3:194:ALA:HB3	2.37	0.59
5:A:13:LYS:HD3	5:A:120:ALA:HA	1.83	0.59
2:2:70:VAL:H	2:2:73:GLN:HE21	1.46	0.59
1:1:122:PRO:HB3	3:3:100:GLN:NE2	2.17	0.59
6:5:149:THR:HG22	6:5:154:THR:HG23	1.83	0.59
3:3:185:CYS:HB2	3:3:187:TYR:CE1	2.38	0.59
3:3:195:ASP:O	3:3:196:ALA:HB3	2.02	0.59
4:4:111:LYS:HA	4:4:144:TYR:OH	2.02	0.59
1:1:70:THR:HG22	1:1:189:ARG:HG2	1.84	0.59
5:A:119:SER:HB3	5:A:153:PHE:CE1	2.34	0.59
3:3:187:TYR:N	3:3:187:TYR:CD1	2.70	0.59
6:5:134:THR:HG22	6:5:147:LEU:CA	2.33	0.59
4:4:153:LYS:HB2	4:4:197:THR:HB	1.85	0.58
3:3:78:ASP:OD2	3:3:179:CYS:SG	2.62	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:128:VAL:HG21	5:A:204:VAL:HG11	1.85	0.58
3:3:63:TYR:HA	3:3:200:VAL:HA	1.84	0.58
5:A:13:LYS:CD	5:A:122:LYS:HE3	2.25	0.58
6:5:133:THR:O	6:5:133:THR:HG23	2.04	0.57
3:3:212:ARG:HD3	3:3:213:LEU:HD22	1.86	0.57
5:A:11:LEU:CG	5:A:153:PHE:HE1	2.17	0.57
1:1:92:GLY:HA3	3:3:169:TYR:HE1	1.66	0.57
4:4:4:LEU:HD23	4:4:25:ALA:HA	1.85	0.57
5:A:13:LYS:NZ	5:A:122:LYS:HB3	2.20	0.57
3:3:14:MET:HG3	3:3:15:VAL:N	2.18	0.57
5:A:11:LEU:HD11	5:A:122:LYS:HA	1.86	0.57
6:5:149:THR:HA	6:5:154:THR:HA	1.87	0.57
4:4:189:GLU:HA	4:4:192:ARG:HD3	1.88	0.56
5:A:11:LEU:HG	5:A:153:PHE:CE1	2.37	0.56
6:5:133:THR:C	6:5:134:THR:O	2.44	0.56
3:3:94:LEU:HD12	3:3:211:LEU:HD23	1.88	0.56
3:3:135:ASN:N	3:3:135:ASN:HD22	2.04	0.56
4:4:12:ALA:HA	4:4:109:ASP:O	2.05	0.56
3:3:102:THR:HA	3:3:161:TYR:CE2	2.40	0.56
1:1:78:ILE:HG22	1:1:178:VAL:HG12	1.88	0.56
5:A:13:LYS:HZ1	5:A:122:LYS:HB3	1.69	0.56
2:2:126:VAL:HG13	2:2:143:TYR:CD1	2.41	0.55
1:1:61:ILE:HG23	1:1:62:VAL:N	2.21	0.55
2:2:114:ASN:ND2	2:2:116:PHE:H	2.04	0.55
3:3:102:THR:HA	3:3:161:TYR:CD2	2.41	0.55
3:3:120:ARG:HH11	3:3:146:GLU:HG2	1.72	0.55
1:1:129:ALA:O	1:1:130:TYR:HB2	2.07	0.54
4:4:10:SER:HA	4:4:107:LYS:O	2.08	0.54
4:4:185:LEU:HD23	4:4:189:GLU:HG3	1.89	0.54
2:2:70:VAL:N	2:2:73:GLN:NE2	2.53	0.54
5:A:22:CYS:HB3	5:A:79:LEU:HB3	1.88	0.54
3:3:121:TYR:CE2	3:3:199:LEU:HD22	2.43	0.54
4:4:31:SER:HB2	4:4:96:ASN:OD1	2.07	0.54
3:3:93:GLY:O	3:3:96:GLN:HG2	2.08	0.54
1:1:89:VAL:HG13	1:1:93:ALA:CB	2.38	0.53
3:3:161:TYR:CE1	3:3:163:SER:HB3	2.42	0.53
5:A:142:MET:HB3	5:A:189:THR:CG2	2.38	0.53
1:1:105:THR:O	3:3:15:VAL:HA	2.09	0.53
2:2:115:GLN:HE21	2:2:115:GLN:N	2.07	0.53
4:4:168:THR:HG23	5:A:173:PHE:CD1	2.43	0.53
5:A:13:LYS:CE	5:A:122:LYS:HB3	2.38	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3:135:ASN:HD22	3:3:135:ASN:H	1.54	0.53
1:1:92:GLY:CA	3:3:169:TYR:CE1	2.89	0.53
3:3:167:TYR:CE2	3:3:212:ARG:HG2	2.43	0.53
5:A:13:LYS:NZ	5:A:122:LYS:CE	2.64	0.53
5:A:60:TYR:OH	5:A:69:THR:HA	2.09	0.53
2:2:54:ARG:HE	2:2:56:HIS:CD2	2.27	0.52
2:2:58:ALA:CB	2:2:208:VAL:HG21	2.37	0.52
4:4:53:TYR:CE1	5:A:105:GLU:HG3	2.44	0.52
5:A:119:SER:O	5:A:121:ALA:O	2.26	0.52
1:1:86:LEU:CD1	1:1:168:VAL:HG13	2.39	0.52
3:3:191:HIS:HB2	3:3:194:ALA:HB3	1.91	0.52
5:A:40:THR:HG23	5:A:44:ARG:O	2.08	0.52
6:5:133:THR:OG1	6:5:146:HIS:C	2.47	0.52
3:3:97:TYR:O	3:3:214:PRO:HA	2.10	0.52
5:A:11:LEU:HD11	5:A:153:PHE:CD1	2.45	0.52
5:A:11:LEU:CD1	5:A:122:LYS:HA	2.40	0.52
3:3:107:LEU:HD23	3:3:159:ILE:HD11	1.91	0.51
6:5:148:THR:OG1	6:5:152:ALA:CB	2.51	0.51
2:2:26:THR:HG22	2:2:28:SER:H	1.76	0.51
6:5:135:ALA:O	6:5:136:TYR:CG	2.57	0.51
1:1:130:TYR:CD1	6:5:155:LEU:HD12	2.46	0.51
5:A:54:GLY:HA2	5:A:72:ARG:HD3	1.91	0.51
1:1:6:GLU:HG2	2:2:153:ASN:HD21	1.75	0.51
3:3:79:VAL:HG23	3:3:183:TRP:HA	1.91	0.51
1:1:73:PHE:CD1	1:1:74:SER:N	2.79	0.51
2:2:118:GLY:H	2:2:188:THR:HB	1.76	0.51
6:5:151:ALA:C	6:5:153:ARG:H	2.14	0.51
2:2:64:MET:O	2:2:64:MET:HG3	2.10	0.51
3:3:73:LEU:HD21	3:3:76:LYS:HB3	1.92	0.51
5:A:94:TYR:O	5:A:113:GLY:HA2	2.11	0.51
3:3:89:THR:CG2	3:3:92:ALA:H	2.24	0.50
3:3:89:THR:HG22	3:3:92:ALA:CB	2.41	0.50
1:1:73:PHE:CD1	1:1:73:PHE:C	2.85	0.50
3:3:89:THR:HG22	3:3:92:ALA:HB3	1.92	0.50
3:3:212:ARG:O	3:3:213:LEU:HB2	2.11	0.50
1:1:82:HIS:CE1	1:1:86:LEU:HB2	2.46	0.50
2:2:115:GLN:H	2:2:115:GLN:NE2	2.08	0.50
3:3:168:THR:HG22	3:3:169:TYR:N	2.27	0.50
2:2:166:ASN:HD22	3:3:165:ALA:HA	1.77	0.50
4:4:16:GLY:HA2	4:4:81:PRO:HB2	1.93	0.50
6:5:133:THR:HG21	6:5:148:THR:O	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:33:ALA:HB3	5:A:100:GLU:HB3	1.92	0.50
2:2:114:ASN:HD21	2:2:116:PHE:HB2	1.77	0.49
5:A:156:PRO:O	5:A:206:HIS:HD2	1.95	0.49
2:2:12:ASP:O	2:2:13:ARG:HB2	2.12	0.49
2:2:48:THR:O	2:2:48:THR:HG22	2.13	0.49
2:2:214:LEU:HB3	2:2:215:PRO:HD2	1.94	0.49
4:4:94:GLN:NE2	4:4:96:ASN:O	2.44	0.49
4:4:110:LEU:O	4:4:144:TYR:CE2	2.66	0.49
1:1:7:SER:O	1:1:8:ALA:HB3	2.13	0.49
3:3:102:THR:HG22	3:3:103:GLY:N	2.28	0.49
4:4:4:LEU:HA	4:4:24:ARG:O	2.12	0.49
3:3:43:ASN:HD21	3:3:45:LEU:HB2	1.78	0.48
4:4:163:VAL:HA	4:4:182:THR:O	2.12	0.48
4:4:155:ASP:OD1	4:4:193:HIS:HB3	2.14	0.48
3:3:161:TYR:CD1	3:3:161:TYR:C	2.86	0.48
5:A:58:THR:HG22	5:A:60:TYR:HE1	1.78	0.48
5:A:194:THR:O	5:A:198:GLU:HB2	2.13	0.48
1:1:80:VAL:HG21	1:1:86:LEU:HD21	1.96	0.48
3:3:78:ASP:HB3	3:3:179:CYS:HG	1.78	0.48
3:3:219:GLN:HA	3:3:219:GLN:HE21	1.76	0.48
4:4:34:HIS:HB2	4:4:36:PHE:CE1	2.48	0.48
4:4:109:ASP:OD1	4:4:177:TYR:CE1	2.67	0.48
4:4:58:LEU:HD22	4:4:62:ILE:CD1	2.31	0.48
3:3:67:ARG:HH21	3:3:72:ARG:HD3	1.78	0.48
2:2:126:VAL:HG13	2:2:127:PRO:HD2	1.95	0.47
6:5:133:THR:HG21	6:5:148:THR:C	2.35	0.47
1:1:127:ALA:CA	6:5:155:LEU:HD21	2.45	0.47
1:1:130:TYR:CE2	2:2:174:HIS:HD2	2.32	0.47
5:A:59:TYR:CE2	6:5:143:ASP:HA	2.49	0.47
2:2:70:VAL:HG23	2:2:72:SER:H	1.78	0.47
6:5:134:THR:HG22	6:5:147:LEU:HA	1.95	0.47
4:4:14:SER:HB2	4:4:17:GLN:HG3	1.97	0.47
4:4:110:LEU:HD12	4:4:175:SER:HG	1.79	0.47
5:A:6:GLU:CD	5:A:113:GLY:H	2.18	0.47
1:1:130:TYR:CZ	2:2:174:HIS:CD2	3.03	0.47
3:3:190:THR:CG2	3:3:191:HIS:H	2.22	0.47
3:3:195:ASP:O	3:3:196:ALA:CB	2.62	0.47
5:A:128:VAL:CG2	5:A:204:VAL:HG11	2.44	0.47
1:1:182:ARG:HH11	1:1:182:ARG:HB3	1.80	0.47
5:A:11:LEU:CD1	5:A:123:THR:H	2.28	0.47
5:A:87:ARG:HG3	5:A:89:ALA:HB3	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3:104:THR:HG23	3:3:158:SER:HB3	1.97	0.46
3:3:104:THR:CG2	3:3:158:SER:HB3	2.45	0.46
2:2:120:CYS:O	2:2:184:VAL:HG22	2.16	0.46
2:2:162:TYR:CD1	2:2:162:TYR:C	2.89	0.46
4:4:160:GLN:HG2	4:4:161:ASN:ND2	2.30	0.46
5:A:87:ARG:HD2	5:A:88:SER:N	2.31	0.46
5:A:117:THR:HG22	5:A:153:PHE:CZ	2.50	0.46
1:1:90:PRO:HG2	3:3:99:THR:HG21	1.98	0.46
2:2:166:ASN:ND2	3:3:165:ALA:HA	2.30	0.46
3:3:190:THR:CG2	3:3:191:HIS:N	2.79	0.46
5:A:119:SER:HG	5:A:121:ALA:HB3	1.81	0.46
1:1:36:LEU:HD11	1:1:185:LEU:HD11	1.97	0.46
1:1:49:HIS:CE1	1:1:55:GLN:HE22	2.34	0.46
2:2:115:GLN:N	2:2:115:GLN:NE2	2.64	0.46
2:2:118:GLY:N	2:2:188:THR:HB	2.31	0.46
5:A:13:LYS:HZ2	5:A:120:ALA:C	2.18	0.46
5:A:199:THR:HG22	5:A:216:LYS:NZ	2.30	0.46
3:3:123:VAL:HG12	3:3:147:TRP:HZ3	1.81	0.46
3:3:168:THR:HG22	3:3:169:TYR:H	1.81	0.46
4:4:196:TYR:N	4:4:196:TYR:CD1	2.84	0.46
2:2:33:THR:HB	2:2:158:ILE:HG12	1.96	0.46
3:3:211:LEU:HD12	3:3:211:LEU:HA	1.81	0.46
2:2:48:THR:C	2:2:50:ALA:N	2.69	0.45
4:4:25:ALA:O	4:4:73:THR:HG23	2.15	0.45
5:A:11:LEU:HD13	5:A:123:THR:H	1.81	0.45
5:A:41:PRO:C	5:A:43:LYS:H	2.20	0.45
2:2:132:ILE:HD13	2:2:137:LYS:HG2	1.98	0.45
4:4:109:ASP:HA	4:4:170:GLN:OE1	2.16	0.45
5:A:195:TRP:CG	5:A:196:PRO:HA	2.52	0.45
1:1:127:ALA:HB3	1:1:163:PHE:HE2	1.79	0.45
2:2:61:PHE:HA	2:2:203:ILE:O	2.16	0.45
4:4:138:CYS:HB3	4:4:181:SER:HB3	1.99	0.45
5:A:211:THR:HG23	5:A:213:VAL:HG23	1.98	0.45
4:4:152:TRP:O	4:4:153:LYS:HD2	2.17	0.45
6:5:155:LEU:O	6:5:156:PRO:O	2.35	0.45
5:A:87:ARG:O	5:A:90:ASP:HB2	2.16	0.45
1:1:86:LEU:HD12	1:1:86:LEU:C	2.37	0.44
1:1:130:TYR:CE2	2:2:174:HIS:CD2	3.05	0.44
2:2:54:ARG:NH1	2:2:207:ASN:HA	2.32	0.44
5:A:54:GLY:H	5:A:72:ARG:NH1	2.16	0.44
6:5:148:THR:C	6:5:152:ALA:H	2.20	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:3:77:PHE:O	3:3:183:TRP:HB3	2.17	0.44
5:A:143:VAL:HG21	5:A:192:SER:HB2	1.99	0.44
6:5:135:ALA:O	6:5:136:TYR:CD1	2.70	0.44
1:1:77:GLU:HB3	1:1:179:ARG:HB3	1.99	0.44
1:1:25:GLN:H	1:1:25:GLN:NE2	2.16	0.44
6:5:140:ALA:HA	6:5:145:ALA:HB1	2.00	0.44
2:2:70:VAL:N	2:2:73:GLN:HE21	2.15	0.44
2:2:73:GLN:OE1	2:2:77:HIS:CE1	2.71	0.44
4:4:48:PRO:HD2	5:A:110:TRP:CE3	2.53	0.44
1:1:61:ILE:CG2	1:1:62:VAL:N	2.81	0.43
3:3:15:VAL:HG12	3:3:17:THR:H	1.82	0.43
4:4:211:LYS:HA	4:4:211:LYS:HD2	1.65	0.43
4:4:128:GLN:OE1	4:4:135:SER:N	2.51	0.43
1:1:98:LEU:HG	1:1:169:LYS:HB2	1.99	0.43
4:4:46:GLN:HA	4:4:47:PRO:HD2	1.86	0.43
1:1:163:PHE:HB2	6:5:155:LEU:HB3	1.98	0.43
5:A:142:MET:HB3	5:A:189:THR:HG22	1.99	0.43
1:1:197:THR:HG23	1:1:198:GLY:H	1.83	0.43
2:2:188:THR:HG22	2:2:190:ASN:ND2	2.33	0.43
3:3:74:LEU:HD11	3:3:188:GLN:HB2	2.00	0.43
3:3:100:GLN:HA	3:3:168:THR:O	2.19	0.43
4:4:187:LYS:HG2	4:4:191:GLU:OE1	2.17	0.43
5:A:119:SER:HB2	5:A:153:PHE:CZ	2.45	0.43
4:4:21:ILE:HG23	4:4:106:THR:HG21	2.00	0.43
1:1:80:VAL:HG22	1:1:176:LEU:HD11	1.98	0.43
4:4:36:PHE:HB2	4:4:96:ASN:HB2	2.00	0.43
1:1:129:ALA:HB3	1:1:189:ARG:NH1	2.34	0.43
2:2:214:LEU:HD23	3:3:127:PRO:HG2	1.99	0.43
1:1:61:ILE:HG23	1:1:62:VAL:HG23	2.01	0.43
5:A:21:SER:HB3	5:A:78:THR:CG2	2.49	0.43
1:1:103:ASN:O	1:1:105:THR:N	2.52	0.42
5:A:13:LYS:NZ	5:A:122:LYS:CB	2.75	0.42
4:4:204:THR:H	4:4:204:THR:HG1	1.63	0.42
5:A:11:LEU:HD11	5:A:153:PHE:HD1	1.84	0.42
5:A:67:ARG:HB3	5:A:84:SER:O	2.19	0.42
1:1:69:ALA:C	1:1:189:ARG:HG3	2.40	0.42
2:2:118:GLY:CA	2:2:188:THR:HB	2.49	0.42
6:5:143:ASP:OD1	6:5:143:ASP:N	2.49	0.42
6:5:145:ALA:HA	6:5:148:THR:OG1	2.20	0.42
2:2:69:TRP:CE2	2:2:187:LEU:HB2	2.54	0.42
4:4:53:TYR:CD1	5:A:105:GLU:HG3	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:104:PRO:HG3	3:3:17:THR:HG21	2.02	0.42
2:2:217:LYS:HE2	2:2:217:LYS:HB3	1.81	0.42
5:A:130:PRO:HG3	5:A:215:LYS:HB3	2.02	0.42
1:1:14:THR:HB	1:1:16:GLU:OE1	2.19	0.42
2:2:173:GLN:O	2:2:174:HIS:HB2	2.20	0.42
4:4:110:LEU:CA	4:4:170:GLN:HE22	2.32	0.42
5:A:60:TYR:HB2	5:A:65:LYS:HG2	2.02	0.42
5:A:202:CYS:O	5:A:214:ASP:HA	2.19	0.42
6:5:155:LEU:HD12	6:5:155:LEU:HA	1.81	0.42
4:4:76:THR:HG22	4:4:77:LEU:O	2.20	0.41
5:A:123:THR:HA	5:A:153:PHE:O	2.20	0.41
5:A:195:TRP:CH2	5:A:219:PRO:HB3	2.55	0.41
6:5:136:TYR:N	6:5:150:THR:CB	2.83	0.41
4:4:65:ARG:HD2	4:4:81:PRO:HD2	2.02	0.41
5:A:13:LYS:HE3	5:A:122:LYS:CD	2.37	0.41
2:2:137:LYS:O	2:2:140:LEU:HB2	2.20	0.41
4:4:129:LEU:O	4:4:187:LYS:HD3	2.21	0.41
5:A:58:THR:CG2	5:A:60:TYR:HE1	2.33	0.41
2:2:48:THR:O	2:2:50:ALA:N	2.52	0.41
4:4:109:ASP:OD1	4:4:177:TYR:CZ	2.73	0.41
6:5:151:ALA:C	6:5:153:ARG:N	2.73	0.41
1:1:192:LEU:HD21	2:2:136:GLU:HB3	2.03	0.41
2:2:62:PHE:CD1	2:2:62:PHE:C	2.94	0.41
3:3:111:PHE:CZ	3:3:113:GLY:HA3	2.55	0.41
3:3:112:THR:HB	3:3:198:ALA:O	2.20	0.41
4:4:39:TRP:HB2	4:4:52:ILE:HB	2.03	0.41
1:1:186:TYR:CD1	1:1:186:TYR:N	2.88	0.41
2:2:67:PHE:HB3	2:2:79:HIS:CD2	2.49	0.41
1:1:182:ARG:HH11	1:1:182:ARG:CB	2.34	0.41
2:2:54:ARG:HB2	2:2:209:HIS:NE2	2.36	0.41
2:2:82:VAL:HB	2:2:175:ARG:NH1	2.36	0.41
3:3:17:THR:O	3:3:17:THR:HG23	2.21	0.41
4:4:2:ILE:O	4:4:101:THR:HG21	2.20	0.41
4:4:12:ALA:HB1	4:4:144:TYR:HH	1.84	0.41
4:4:87:VAL:O	4:4:88:ALA:HB2	2.20	0.41
4:4:193:HIS:O	4:4:215:ARG:HD3	2.21	0.41
5:A:129:TYR:HD2	5:A:148:LEU:HD23	1.85	0.41
4:4:42:GLN:HE22	5:A:39:GLN:NE2	2.19	0.41
4:4:189:GLU:HA	4:4:192:ARG:HB2	2.01	0.41
2:2:45:GLY:HA3	2:2:167:ARG:HE	1.85	0.40
2:2:48:THR:HB	2:2:52:GLU:OE1	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:4:46:GLN:HB3	4:4:47:PRO:O	2.21	0.40
3:3:143:ILE:HD12	3:3:143:ILE:N	2.31	0.40
4:4:18:ARG:HH21	4:4:78:THR:HG21	1.86	0.40
5:A:3:MET:HB3	5:A:25:SER:HB2	2.02	0.40
5:A:28:ILE:CG2	5:A:31:ARG:HG2	2.51	0.40
5:A:215:LYS:HB3	5:A:215:LYS:HZ2	1.85	0.40
2:2:54:ARG:HB2	2:2:209:HIS:CD2	2.56	0.40
4:4:159:ARG:HG2	4:4:183:LEU:HD21	2.03	0.40
5:A:19:LYS:HD3	5:A:80:TYR:HD2	1.86	0.40
5:A:119:SER:HB2	5:A:153:PHE:HZ	1.77	0.40
3:3:190:THR:O	3:3:191:HIS:HB3	2.22	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 PDB entries followed by that with respect to all EM entries.

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	1	179/207 (86%)	154 (86%)	17 (10%)	8 (4%)	2	17
2	2	216/218 (99%)	177 (82%)	29 (13%)	10 (5%)	2	17
3	3	217/219 (99%)	182 (84%)	25 (12%)	10 (5%)	2	17
4	4	216/218 (99%)	185 (86%)	21 (10%)	10 (5%)	2	17
5	A	218/220 (99%)	187 (86%)	24 (11%)	7 (3%)	3	21
6	5	22/24 (92%)	12 (54%)	5 (23%)	5 (23%)	0	1
All	All	1068/1106 (97%)	897 (84%)	121 (11%)	50 (5%)	3	16

All (50) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	2	6	GLU

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Mol	Chain	Res	Type
2	2	35	GLY
2	2	174	HIS
3	3	87	SER
3	3	219	GLN
4	4	60	SER
4	4	113	ALA
4	4	173	LYS
5	A	53	SER
5	A	156	PRO
5	A	193	SER
6	5	134	THR
6	5	136	TYR
6	5	151	ALA
6	5	153	ARG
2	2	49	SER
2	2	173	GLN
3	3	14	MET
3	3	59	ASN
3	3	71	GLN
4	4	175	SER
5	A	123	THR
5	A	151	GLY
5	A	180	ASP
1	1	193	PRO
4	4	72	ARG
5	A	91	THR
1	1	104	PRO
1	1	130	TYR
1	1	187	CYS
2	2	85	HIS
2	2	190	ASN
3	3	196	ALA
6	5	155	LEU
1	1	111	PRO
2	2	131	ASP
2	2	176	PRO
3	3	15	VAL
3	3	83	ALA
4	4	97	GLU
1	1	61	ILE
3	3	24	PRO
3	3	180	VAL

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Mol	Chain	Res	Type
4	4	81	PRO
1	1	32	VAL
4	4	99	PRO
1	1	122	PRO
2	2	87	PRO
4	4	61	GLY
4	4	154	ILE

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 PDB entries followed by that with respect to all EM entries.

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	1	154/173 (89%)	128 (83%)	26 (17%)	1	9
2	2	177/187 (95%)	143 (81%)	34 (19%)	1	7
3	3	177/177 (100%)	141 (80%)	36 (20%)	1	6
4	4	192/192 (100%)	158 (82%)	34 (18%)	1	8
5	A	183/183 (100%)	153 (84%)	30 (16%)	2	10
6	5	16/17 (94%)	12 (75%)	4 (25%)	0	3
All	All	899/929 (97%)	735 (82%)	164 (18%)	3	8

All (164) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	1	2	THR
1	1	3	THR
1	1	4	THR
1	1	24	VAL
1	1	25	GLN
1	1	27	ARG
1	1	30	THR
1	1	42	VAL
1	1	70	THR
1	1	81	THR
1	1	86	LEU

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Mol	Chain	Res	Type
1	1	89	VAL
1	1	98	LEU
1	1	101	THR
1	1	122	PRO
1	1	128	THR
1	1	131	THR
1	1	172	THR
1	1	179	ARG
1	1	182	ARG
1	1	189	ARG
1	1	191	ILE
1	1	197	THR
1	1	200	ARG
1	1	205	LEU
1	1	210	LYS
2	2	12	ASP
2	2	23	THR
2	2	32	VAL
2	2	43	THR
2	2	49	SER
2	2	52	GLU
2	2	53	THR
2	2	55	VAL
2	2	63	LYS
2	2	66	LEU
2	2	90	VAL
2	2	94	LEU
2	2	97	SER
2	2	102	ARG
2	2	114	ASN
2	2	115	GLN
2	2	120	CYS
2	2	123	VAL
2	2	131	ASP
2	2	133	SER
2	2	134	ASP
2	2	149	ASN
2	2	151	ARG
2	2	153	ASN
2	2	154	MET
2	2	160	VAL
2	2	162	TYR

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Mol	Chain	Res	Type
2	2	169	ASP
2	2	170	GLN
2	2	172	LYS
2	2	175	ARG
2	2	180	VAL
2	2	191	THR
2	2	196	GLN
3	3	13	ASN
3	3	17	THR
3	3	35	THR
3	3	40	ARG
3	3	42	THR
3	3	45	LEU
3	3	53	THR
3	3	56	MET
3	3	58	GLU
3	3	59	ASN
3	3	69	ASP
3	3	76	LYS
3	3	78	ASP
3	3	89	THR
3	3	100	GLN
3	3	101	TYR
3	3	107	LEU
3	3	112	THR
3	3	130	MET
3	3	135	ASN
3	3	153	SER
3	3	161	TYR
3	3	177	THR
3	3	179	CYS
3	3	180	VAL
3	3	183	TRP
3	3	185	CYS
3	3	186	VAL
3	3	187	TYR
3	3	191	HIS
3	3	200	VAL
3	3	207	LYS
3	3	211	LEU
3	3	212	ARG
3	3	213	LEU

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Mol	Chain	Res	Type
3	3	218	ARG
4	4	11	LEU
4	4	14	SER
4	4	20	THR
4	4	22	SER
4	4	29	VAL
4	4	43	LYS
4	4	46	GLN
4	4	57	ASN
4	4	62	ILE
4	4	67	SER
4	4	72	ARG
4	4	74	ASP
4	4	77	LEU
4	4	85	ASP
4	4	94	GLN
4	4	101	THR
4	4	112	ARG
4	4	126	SER
4	4	135	SER
4	4	137	VAL
4	4	151	LYS
4	4	154	ILE
4	4	158	GLU
4	4	160	GLN
4	4	169	ASP
4	4	173	LYS
4	4	183	LEU
4	4	194	ASN
4	4	203	LYS
4	4	204	THR
4	4	207	SER
4	4	210	VAL
4	4	211	LYS
4	4	213	PHE
5	A	4	LEU
5	A	6	GLU
5	A	7	SER
5	A	12	VAL
5	A	14	PRO
5	A	21	SER
5	A	25	SER

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Mol	Chain	Res	Type
5	A	41	PRO
5	A	52	SER
5	A	53	SER
5	A	56	THR
5	A	58	THR
5	A	64	VAL
5	A	69	THR
5	A	71	SER
5	A	76	LYS
5	A	86	LEU
5	A	88	SER
5	A	101	ASP
5	A	112	GLN
5	A	114	THR
5	A	122	LYS
5	A	124	THR
5	A	131	LEU
5	A	135	SER
5	A	147	CYS
5	A	167	SER
5	A	188	VAL
5	A	192	SER
5	A	218	VAL
6	5	136	TYR
6	5	139	SER
6	5	143	ASP
6	5	148	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	1	25	GLN
1	1	55	GLN
2	2	56	HIS
2	2	73	GLN
2	2	114	ASN
2	2	115	GLN
2	2	149	ASN
2	2	153	ASN
2	2	166	ASN
3	3	13	ASN
3	3	43	ASN

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Mol	Chain	Res	Type
3	3	100	GLN
3	3	135	ASN
3	3	152	ASN
3	3	191	HIS
3	3	219	GLN
4	4	17	GLN
4	4	38	HIS
4	4	57	ASN
4	4	161	ASN
5	A	39	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is 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
4	OCS	4	218	4	5,6,9	4.00	2 (40%)	3,7,13	3.65	2 (66%)

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
4	OCS	4	218	4	-	4/6/6/9	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	4	218	OCS	CB-CA	8.43	1.62	1.53
4	4	218	OCS	CB-SG	2.12	1.85	1.81

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	4	218	OCS	CB-CA-C	4.74	114.61	109.89
4	4	218	OCS	CA-CB-SG	4.06	123.08	114.40

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	4	218	OCS	OXT-C-CA-CB
4	4	218	OCS	O-C-CA-CB
4	4	218	OCS	N-CA-CB-SG
4	4	218	OCS	OXT-C-CA-N

There are no ring outliers.

No monomer is involved in short contacts.

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](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
4	4	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	4	112:ARG	C	113:ALA	N	0.93