



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 17, 2024 – 04:19 AM EDT

PDB ID : 3SFZ
Title : Crystal structure of full-length murine Apaf-1
Authors : Eschenburg, S.; Reubold, T.F.
Deposited on : 2011-06-14
Resolution : 3.00 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 : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 1.20.1
EDS : 2.37.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

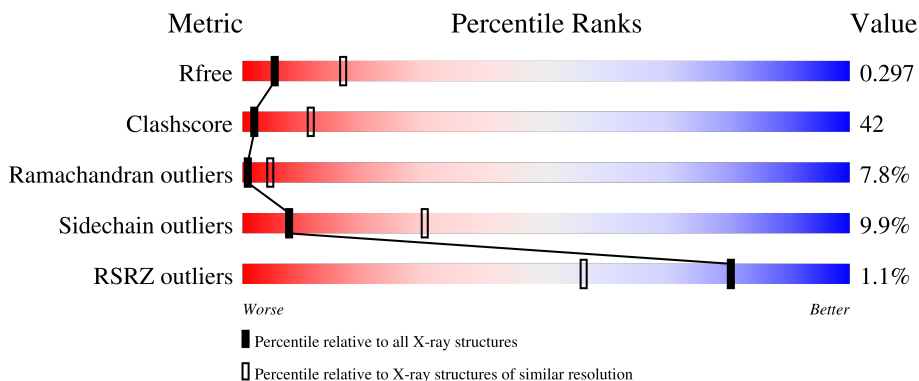
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1249	

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
3	GBL	A	1255	-	-	X	-

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 9194 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 Apoptotic peptidase activating factor 1.

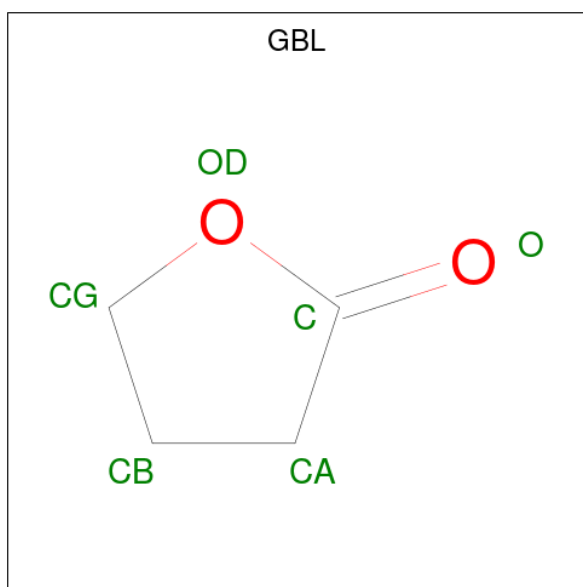
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1133	9015	5715	1554	1691	55	0	0	0

- Molecule 2 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
2	A	1	27	10	5	10	2	0	0

- Molecule 3 is GAMMA-BUTYROLACTONE (three-letter code: GBL) (formula: $C_4H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 6 4 2	0	0
3	A	1	Total C O 6 4 2	0	0
3	A	1	Total C O 6 4 2	0	0
3	A	1	Total C O 6 4 2	0	0
3	A	1	Total C O 6 4 2	0	0

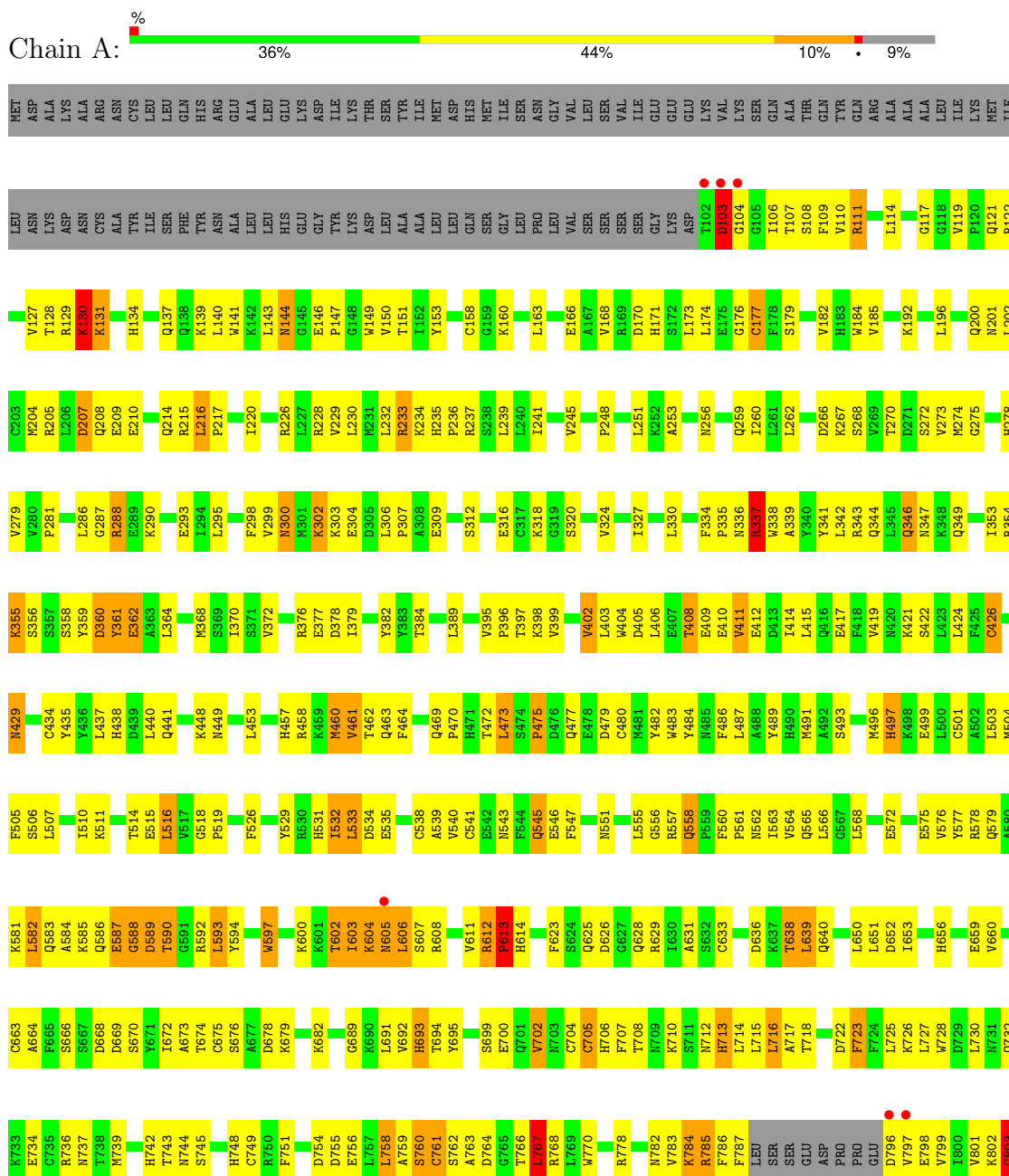
- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	122	Total O 122 122	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 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: Apoptotic peptidase activating factor 1



T1207	G1208	S1209	S1210	S1211	Q1212	T1213	F1214	N1217	G1218	T1219	N1220	L1221	K1222	I1224	H1225	V1226	S1227	P1228	D1229	F1230	R1231	T1232	Y1233	V1234	T1235	V1236	D1237	I1241	L1242	Y1243	Q1246	V1247	L1248	E1249	T1082	C1083	H1084	Q1085	G1086	T1087	V1088	L1089	S1090	C1091	A1092	I1093	S1094	S1095	D1096	A1097	T1098	K1099	F1100	S1101	S1102	T1103	S1104	A1105	D1106	K1107	T1108	A1109	K1110	T1111	W1112	S1113	F1114	L1116	L1117	S1118	P1119	L1120	H1121	E1122	L1123	K1124	G1125	H1126	N1127	G1128	C1129	V1130	R1131	C1132	S1133	A1134	F1135	S1136	L1137	D1138	G1139	I1140	L1141	L1142	G1145	D1146	G1149	E1150	T1151	R1152	I1153	W1154	N1155	V1156	S1157	D1158	G1159	Q1160	L1161	L1162	H1163	S1164	C1165	A1166	P1167	I1168	S1169	VAL	GLU	GLU	GLY	THR	H1177	G1178	G1179	W1180	V1181	T1182	D1183	V1184	C1185	F1186	S1187	P1188	D1189	S1190	K1191	T1192	L1193	G1198	Y1199	L1200	W1203	W1204	V1205	A1206	L1946	1949	A950	G951	K952	T953	G954	Q955	1956	D957	Y958	L959	P960	E961	A962	Q963	V964	S965	C966	C967	C968	L969	S970	P971	H972	L973	E974	Y975	N976	A977	F978	G979	D980	E981	D982	1987	1988	E989	L990	L991	Q924	E925	I926	D927	V928	N933	E934	T935	M936	V937	L938	A939	V940	N941	M942	T1009	Q1010	F1011	T1012	A1013	K1016	T1017	L1018	I1019	S1020	S1021	S1022	S1023	D1024	S1025	V1026	I1027	Q1028	V1029	W1030	N1031	W1032	Q1033	V1038	F1039	L1040	Q1041	A1042	H1043	Q1044	E1045	T1046	V1047	K1048	D1049	F1050	R1051	L1052	L1053	Q1054	R1057	L1058	L1059	P991	S1060	W1061	S1062	F1063	D1064	G1065	T1066	V1067	W1070	N1071	V1072	I1073	T1074	G1075	R1076	R1079	V875	R879	G880	H881	L882	S883	W884	V885	V888	M889	F890	S891	P892	S896	F897	L898	T899	A900	S901	D902	D903	Q904	T905	R907	V908	W909	H839	E910	T911	K912	K913	S918	L920	V921	L922	K923	E925	I926	D927	V928	N933	E934	T935	M936	V937	L938	A939	V940	N941	M942	T1009	Q1010	F1011	T1012	C804	S805	W806	D809	G810	D811	I814	V815	A816	A817	K818	N819	R820	V821	L822	L823	F824	D825	I826	H827	L831	L832	A833	T837	R907	G838	H839	H840	Q844	Y845	C846	D847	F848	S849	P850	Y851	L854	A855	V856	I857	A858	L859	S860	Q861	Y862	C863	L866	W867	A939	V940	N941	M942	D870	S871	K874	L946	1949	A950	G951	K952	T953	G954	Q955	1956	D957	Y958	L959	P960	E961	A962	Q963	V964	S965	C966	C967	C968	L969	S970	P971	H972	L973	E974	Y975	N976	A977	F978	G979	D980	E981	D982	1987	1988	E989	L990	L991	Q924	E925	I926	D927	V928	N933	E934	T935	M936	V937	L938	A939	V940	N941	M942	T1009	Q1010	F1011	T1012	A1013	K1016	T1017	L1018	I1019	S1020	S1021	S1022	S1023	D1024	S1025	V1026	I1027	Q1028	V1029	W1030	N1031	W1032	Q1033	V1038	F1039	L1040	Q1041	A1042	H1043	Q1044	E1045	T1046	V1047	K1048	D1049	F1050	R1051	L1052	L1053	Q1054	R1057	L1058	L1059	P991	S1060	W1061	S1062	F1063	D1064	G1065	T1066	V1067	W1070	N1071	V1072	I1073	T1074	G1075	R1076	R1079	T1082	C1083	H1084	Q1085	G1086	T1087	V1088	L1089	S1090	C1091	A1092	I1093	S1094	S1095	D1096	A1097	T1098	K1099	F1100	S1101	S1102	T1103	S1104	A1105	D1106	K1107	T1108	A1109	K1110	T1111	W1112	S1113	F1114	L1116	L1117	S1118	P1119	L1120	H1121	E1122	L1123	K1124	G1125	H1126	N1127	G1128	C1129	V1130	R1131	C1132	S1133	A1134	F1135	S1136	L1137	D1138	G1139	I1140	L1141	L1142	G1145	D1146	G1149	E1150	T1151	R1152	I1153	W1154	N1155	V1156	S1157	D1158	G1159	Q1160	L1161	L1162	H1163	S1164	C1165	A1166	P1167	I1168	S1169	VAL	GLU	GLU	GLY	THR	H1177	G1178	G1179	W1180	V1181	T1182	D1183	V1184	C1185	F1186	S1187	P1188	D1189	S1190	K1191	T1192	L1193	G1198	Y1199	L1200	W1203	W1204	V1205	A1206
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4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	72.65Å 113.07Å 243.56Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 3.00 48.83 – 3.00	Depositor EDS
% Data completeness (in resolution range)	98.7 (20.00-3.00) 98.6 (48.83-3.00)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.45 (at 3.01Å)	Xtrriage
Refinement program	CNS	Depositor
R, R_{free}	0.235 , 0.298 0.234 , 0.297	Depositor DCC
R_{free} test set	1429 reflections (3.53%)	wwPDB-VP
Wilson B-factor (Å ²)	76.9	Xtrriage
Anisotropy	0.473	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 65.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	9194	wwPDB-VP
Average B, all atoms (Å ²)	78.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.91% 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: ADP, GBL

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	0.44	0/9211	0.71	5/12471 (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	761	CYS	CA-CB-SG	-6.23	102.79	114.00
1	A	767	LEU	N-CA-C	-5.91	95.05	111.00
1	A	705	CYS	CA-CB-SG	5.50	123.91	114.00
1	A	460	MET	N-CA-C	-5.38	96.47	111.00
1	A	796	ASP	CB-CG-OD2	5.17	122.96	118.30

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	9015	0	8883	749	0
2	A	27	0	12	1	0
3	A	30	0	30	8	0
4	A	122	0	0	1	0
All	All	9194	0	8925	749	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 42.

All (749) 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:1054:GLN:HB2	1:A:1057:ARG:HD3	1.37	1.06
1:A:575:GLU:HG2	1:A:578:ARG:HH11	1.15	1.05
1:A:1162:LEU:HD23	1:A:1163:HIS:H	1.18	1.02
1:A:785:ARG:HG3	1:A:785:ARG:HH11	1.25	1.01
1:A:342:LEU:O	1:A:346:GLN:HG2	1.62	0.98
1:A:1116:LEU:H	1:A:1116:LEU:HD12	1.25	0.97
1:A:562:ASN:ND2	1:A:565:GLN:H	1.63	0.97
1:A:1107:LYS:HG2	1:A:1108:THR:HG23	1.42	0.96
1:A:288:ARG:H	1:A:288:ARG:HE	0.98	0.96
1:A:562:ASN:HD22	1:A:565:GLN:H	1.02	0.94
1:A:228:ARG:HB3	1:A:228:ARG:NH1	1.81	0.94
1:A:288:ARG:HE	1:A:288:ARG:N	1.67	0.93
1:A:228:ARG:HG3	1:A:256:ASN:HB3	1.48	0.93
1:A:713:HIS:H	1:A:713:HIS:CD2	1.87	0.93
1:A:575:GLU:HG2	1:A:578:ARG:NH1	1.86	0.90
1:A:534:ASP:CB	1:A:541:CYS:HB2	2.01	0.90
1:A:1001:GLY:HA3	1:A:1028:GLN:HE22	1.34	0.89
1:A:1074:THR:O	1:A:1076:ARG:N	2.06	0.89
1:A:364:LEU:HD22	1:A:440:LEU:HB3	1.54	0.88
1:A:448:LYS:HG2	1:A:449:ASN:ND2	1.88	0.87
1:A:989:GLU:HG3	1:A:992:ASN:HD22	1.39	0.87
1:A:288:ARG:H	1:A:288:ARG:NE	1.72	0.86
1:A:1029:VAL:HG11	1:A:1072:VAL:HG13	1.55	0.86
1:A:739:MET:HG2	1:A:770:TRP:CD1	2.12	0.85
1:A:396:PRO:HG2	1:A:399:VAL:HG23	1.59	0.84
1:A:529:TYR:O	1:A:533:LEU:HB2	1.76	0.84
1:A:534:ASP:HB3	1:A:541:CYS:HB2	1.60	0.84
1:A:971:PRO:O	1:A:972:HIS:HB2	1.78	0.84
1:A:1032:TRP:O	1:A:1033:GLN:HB2	1.77	0.83
1:A:974:GLU:HA	1:A:991:PRO:HD3	1.59	0.83
1:A:220:ILE:HD12	1:A:220:ILE:H	1.43	0.83
1:A:1128:GLY:O	1:A:1129:CYS:HB3	1.78	0.83
1:A:216:LEU:HD12	1:A:216:LEU:H	1.43	0.83
1:A:547:PHE:CD1	1:A:576:VAL:HG11	2.13	0.83
1:A:1108:THR:HG21	1:A:1124:LYS:HG2	1.61	0.82
1:A:856:VAL:HG23	1:A:890:PHE:CZ	2.15	0.81
1:A:1162:LEU:HD23	1:A:1163:HIS:N	1.93	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1191:LYS:O	1:A:1205:VAL:HG13	1.80	0.81
1:A:754:ASP:O	1:A:756:GLU:N	2.13	0.81
1:A:938:LEU:HD13	1:A:967:CYS:SG	2.20	0.81
1:A:149:TRP:CZ2	1:A:273:VAL:HG21	2.16	0.81
1:A:814:ILE:HG22	1:A:823:LEU:HD13	1.61	0.81
1:A:575:GLU:CG	1:A:578:ARG:HH11	1.93	0.80
1:A:1063:PHE:HB3	1:A:1087:THR:HG23	1.63	0.80
1:A:668:ASP:OD2	1:A:670:SER:HB2	1.81	0.80
1:A:228:ARG:HB3	1:A:228:ARG:HH11	1.42	0.80
1:A:675:CYS:HB2	1:A:702:VAL:HG22	1.63	0.80
1:A:961:GLU:HG2	1:A:978:PHE:CE2	2.16	0.80
1:A:587:GLU:OE1	1:A:592:ARG:HD2	1.82	0.79
1:A:1049:ASP:HB3	1:A:1061:TRP:CH2	2.18	0.79
1:A:862:TYR:HA	1:A:885:VAL:HG23	1.64	0.78
1:A:940:VAL:HG13	1:A:964:VAL:HG22	1.65	0.78
1:A:1155:ASN:OD1	1:A:1160:GLN:HB2	1.83	0.78
1:A:954:GLY:O	1:A:956:ILE:HD13	1.84	0.77
1:A:732:GLN:HG2	1:A:734:GLU:H	1.48	0.77
1:A:942:ASN:H	1:A:942:ASN:HD22	1.32	0.77
1:A:201:ASN:HA	1:A:204:MET:HE2	1.67	0.77
1:A:819:ASN:HD21	1:A:840:HIS:HA	1.50	0.77
1:A:856:VAL:HG22	1:A:866:LEU:HB3	1.66	0.77
1:A:838:GLY:HA3	1:A:859:LEU:HD21	1.67	0.76
1:A:1087:THR:O	1:A:1105:ALA:HB1	1.85	0.76
1:A:949:ILE:HG23	1:A:956:ILE:HD11	1.67	0.76
1:A:1112:TRP:HA	1:A:1120:LEU:HG	1.66	0.76
1:A:1150:GLU:HA	1:A:1166:ALA:HB1	1.68	0.76
1:A:819:ASN:ND2	1:A:840:HIS:HA	2.02	0.75
1:A:1091:CYS:HB2	1:A:1103:THR:HA	1.66	0.75
1:A:785:ARG:HH11	1:A:785:ARG:CG	1.99	0.75
1:A:992:ASN:HD21	1:A:995:VAL:N	1.85	0.74
1:A:408:THR:HG22	1:A:412:GLU:OE1	1.88	0.74
1:A:151:THR:OG1	1:A:262:LEU:HD21	1.87	0.74
1:A:713:HIS:H	1:A:713:HIS:HD2	1.35	0.74
1:A:987:ILE:O	1:A:996:PHE:HB2	1.87	0.73
1:A:589:ASP:O	1:A:590:THR:HG23	1.88	0.72
1:A:1063:PHE:HB2	1:A:1087:THR:OG1	1.89	0.72
1:A:1107:LYS:CB	1:A:1107:LYS:HZ2	2.02	0.72
1:A:1140:ILE:HG13	1:A:1156:VAL:HB	1.71	0.72
1:A:196:LEU:O	1:A:200:GLN:HG3	1.90	0.71
1:A:934:GLU:HG2	1:A:935:THR:N	2.04	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1211:SER:C	1:A:1213:THR:H	1.93	0.71
1:A:1113:SER:O	1:A:1114:PHE:HB2	1.88	0.71
1:A:760:SER:HB3	1:A:770:TRP:CZ3	2.26	0.71
1:A:934:GLU:HG2	1:A:935:THR:H	1.54	0.71
1:A:1136:SER:O	1:A:1138:ASP:N	2.23	0.71
1:A:1183:ASP:OD1	1:A:1223:LYS:HE3	1.90	0.71
1:A:364:LEU:CD2	1:A:440:LEU:HB3	2.20	0.70
1:A:562:ASN:ND2	1:A:565:GLN:N	2.37	0.70
1:A:802:LYS:O	1:A:803:CYS:O	2.09	0.70
1:A:562:ASN:HD21	1:A:564:VAL:HB	1.56	0.70
1:A:1106:ASP:O	1:A:1107:LYS:HB2	1.91	0.70
1:A:814:ILE:CD1	1:A:848:PHE:HB2	2.22	0.69
1:A:107:THR:OG1	1:A:110:VAL:HG23	1.91	0.69
1:A:108:SER:HA	1:A:111:ARG:HD2	1.74	0.69
1:A:896:SER:HB2	1:A:909:TRP:O	1.92	0.69
1:A:139:LYS:HD2	1:A:278:HIS:HB3	1.73	0.69
1:A:491:MET:CE	1:A:503:LEU:HD22	2.22	0.69
1:A:920:ILE:HG12	1:A:921:VAL:HG23	1.73	0.69
1:A:1140:ILE:O	1:A:1156:VAL:N	2.21	0.69
1:A:1083:CYS:O	1:A:1110:LYS:HD2	1.92	0.69
1:A:1012:THR:OG1	1:A:1017:THR:HB	1.93	0.69
1:A:376:ARG:HH11	1:A:376:ARG:HB2	1.56	0.68
1:A:989:GLU:CG	1:A:992:ASN:HD22	2.06	0.68
1:A:612:ARG:HG3	1:A:905:THR:HG22	1.74	0.68
1:A:782:ASN:HD21	1:A:784:LYS:HB3	1.59	0.68
1:A:1088:VAL:HA	1:A:1105:ALA:HB2	1.76	0.68
1:A:588:GLY:O	1:A:589:ASP:HB2	1.94	0.68
1:A:1091:CYS:CB	1:A:1103:THR:HA	2.24	0.68
1:A:295:LEU:O	1:A:299:VAL:HG22	1.92	0.68
1:A:1168:ILE:HG13	1:A:1177:HIS:N	2.09	0.68
1:A:302:LYS:HG3	1:A:304:GLU:HG2	1.75	0.68
1:A:767:LEU:HD22	1:A:768:ARG:N	2.08	0.68
1:A:376:ARG:HB2	1:A:376:ARG:NH1	2.09	0.67
1:A:760:SER:HB3	1:A:770:TRP:HZ3	1.58	0.67
1:A:1102:SER:HB2	1:A:1111:ILE:HG12	1.75	0.67
1:A:961:GLU:HG2	1:A:978:PHE:CZ	2.29	0.67
1:A:1116:LEU:H	1:A:1116:LEU:CD1	2.03	0.67
1:A:395:VAL:O	1:A:434:CYS:HA	1.94	0.67
1:A:562:ASN:HD22	1:A:565:GLN:N	1.85	0.67
1:A:220:ILE:HD12	1:A:220:ILE:N	2.09	0.67
1:A:884:TRP:O	1:A:901:SER:HB2	1.96	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1111:ILE:HD13	1:A:1111:ILE:C	2.15	0.66
1:A:603:ILE:HG21	1:A:1241:ILE:HG23	1.76	0.66
1:A:484:TYR:CE2	1:A:516:LEU:HD12	2.31	0.66
1:A:1140:ILE:HD11	1:A:1156:VAL:O	1.96	0.66
1:A:176:GLY:O	1:A:177:CYS:HB2	1.95	0.66
1:A:1042:ALA:HB1	1:A:1044:GLN:CD	2.16	0.65
1:A:1001:GLY:O	1:A:1002:HIS:HB2	1.95	0.65
1:A:1139:GLY:O	1:A:1140:ILE:HB	1.96	0.65
1:A:652:ASP:H	3:A:1255:GBL:HBC2	1.60	0.65
1:A:1001:GLY:HA3	1:A:1028:GLN:NE2	2.08	0.65
1:A:786:PHE:CD2	1:A:799:VAL:HG21	2.31	0.65
1:A:1094:SER:O	1:A:1096:ASP:N	2.30	0.65
1:A:1198:GLY:O	1:A:1219:THR:HG22	1.97	0.65
1:A:1042:ALA:HB1	1:A:1044:GLN:HG3	1.77	0.65
1:A:679:LYS:HD2	1:A:699:SER:O	1.96	0.64
1:A:382:TYR:CE2	1:A:414:ILE:HD13	2.32	0.64
1:A:966:CYS:SG	1:A:979:GLY:HA3	2.37	0.64
1:A:1097:ALA:O	1:A:1098:THR:HB	1.97	0.64
1:A:785:ARG:HD2	1:A:785:ARG:N	2.13	0.64
1:A:650:LEU:O	1:A:651:LEU:HD23	1.98	0.64
1:A:107:THR:C	1:A:109:PHE:H	2.01	0.64
1:A:491:MET:HE1	1:A:503:LEU:HD22	1.79	0.64
1:A:505:PHE:HZ	1:A:534:ASP:HB2	1.62	0.64
1:A:946:LEU:HD12	1:A:959:LEU:HB2	1.79	0.63
1:A:869:ILE:O	1:A:870:ASP:HB3	1.97	0.63
1:A:767:LEU:HD22	1:A:768:ARG:H	1.61	0.63
1:A:1137:LEU:O	1:A:1138:ASP:HB2	1.97	0.63
1:A:1065:GLY:HA3	1:A:1084:HIS:O	1.98	0.63
1:A:902:ASP:C	1:A:904:GLN:H	2.01	0.63
1:A:487:LEU:HG	1:A:491:MET:HE3	1.80	0.63
1:A:220:ILE:H	1:A:220:ILE:CD1	2.11	0.62
1:A:353:ILE:O	1:A:354:ARG:HB2	1.99	0.62
1:A:546:GLU:HG2	1:A:612:ARG:HH22	1.63	0.62
1:A:1123:LEU:HB3	1:A:1154:TRP:CZ3	2.34	0.62
1:A:692:VAL:HG12	1:A:692:VAL:O	1.99	0.62
1:A:760:SER:HG	1:A:770:TRP:HZ3	1.48	0.62
1:A:1001:GLY:CA	1:A:1028:GLN:HE22	2.08	0.62
1:A:1111:ILE:HD13	1:A:1112:TRP:N	2.14	0.62
1:A:470:PRO:O	1:A:473:LEU:HD11	2.00	0.62
1:A:1012:THR:HA	1:A:1052:LEU:HD21	1.82	0.62
1:A:1091:CYS:HB2	1:A:1102:SER:O	2.00	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1016:LYS:HG2	1:A:1033:GLN:OE1	1.99	0.62
1:A:704:CYS:SG	1:A:749:CYS:N	2.72	0.62
1:A:802:LYS:O	1:A:803:CYS:C	2.38	0.62
1:A:1248:LEU:HD23	1:A:1249:GLU:H	1.65	0.62
1:A:270:THR:O	1:A:273:VAL:HG12	2.00	0.61
1:A:378:ASP:OD2	1:A:379:ILE:HG23	2.00	0.61
1:A:1248:LEU:HD22	1:A:1249:GLU:HG2	1.80	0.61
1:A:603:ILE:O	1:A:604:LYS:HB3	1.99	0.61
1:A:1017:THR:HA	1:A:1031:ASN:HA	1.81	0.61
1:A:1183:ASP:OD1	1:A:1224:ILE:HG22	2.01	0.61
1:A:1093:ILE:HG13	1:A:1095:SER:H	1.66	0.61
1:A:819:ASN:O	1:A:837:THR:HG22	2.00	0.61
1:A:1163:HIS:CD2	1:A:1207:THR:HA	2.34	0.61
1:A:274:MET:CE	1:A:275:GLY:H	2.14	0.61
1:A:814:ILE:HD11	1:A:848:PHE:HB2	1.82	0.61
1:A:545:GLN:HG2	1:A:612:ARG:CD	2.31	0.61
1:A:760:SER:CB	1:A:770:TRP:HZ3	2.14	0.61
1:A:1107:LYS:CG	1:A:1108:THR:HG23	2.26	0.61
1:A:262:LEU:HD23	1:A:262:LEU:H	1.66	0.60
1:A:1042:ALA:HB1	1:A:1044:GLN:CG	2.31	0.60
1:A:558:GLN:HG2	1:A:560:PHE:CE1	2.36	0.60
1:A:605:ASN:O	1:A:606:LEU:C	2.40	0.60
1:A:762:SER:OG	1:A:763:ALA:N	2.34	0.60
1:A:1167:PRO:HD2	1:A:1203:TRP:HH2	1.65	0.60
1:A:1072:VAL:HG12	1:A:1073:ILE:N	2.17	0.60
1:A:153:TYR:CD1	1:A:267:LYS:HB3	2.35	0.60
1:A:1107:LYS:HZ2	1:A:1107:LYS:HB3	1.67	0.60
1:A:611:VAL:HG12	1:A:613:PRO:HD3	1.82	0.60
1:A:980:ASP:OD1	1:A:982:ASP:N	2.33	0.60
1:A:216:LEU:HD12	1:A:216:LEU:N	2.16	0.60
1:A:426:CYS:HB3	1:A:435:TYR:CD1	2.36	0.60
1:A:531:HIS:CD2	1:A:532:ILE:HG22	2.36	0.60
1:A:245:VAL:HG11	1:A:251:LEU:HD13	1.84	0.60
1:A:762:SER:O	1:A:801:VAL:HG22	2.02	0.60
1:A:1146:ASP:CB	1:A:1150:GLU:HB3	2.32	0.60
1:A:638:THR:HB	1:A:653:ILE:O	2.02	0.60
1:A:968:CYS:SG	1:A:1010:GLN:HA	2.42	0.60
1:A:1221:LEU:C	1:A:1222:LYS:HG3	2.22	0.60
1:A:1231:ARG:HG3	1:A:1247:VAL:HB	1.84	0.60
1:A:361:TYR:O	1:A:362:GLU:C	2.39	0.59
1:A:1012:THR:HG1	1:A:1017:THR:HB	1.67	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:330:LEU:HD11	1:A:370:ILE:CG2	2.33	0.59
1:A:424:LEU:HD12	1:A:437:LEU:HD13	1.84	0.59
1:A:248:PRO:HB3	1:A:272:SER:HB3	1.84	0.59
1:A:659:GLU:O	1:A:676:SER:HB2	2.02	0.59
1:A:785:ARG:HG3	1:A:785:ARG:NH1	2.05	0.59
1:A:761:CYS:HB3	1:A:801:VAL:HG23	1.83	0.59
1:A:290:LYS:HD3	1:A:293:GLU:OE1	2.02	0.59
1:A:723:PHE:N	1:A:723:PHE:HD1	2.00	0.59
1:A:803:CYS:SG	1:A:846:CYS:O	2.61	0.59
1:A:1090:SER:O	1:A:1091:CYS:HB3	2.02	0.59
1:A:497:HIS:ND1	1:A:532:ILE:HD12	2.18	0.59
1:A:1072:VAL:C	1:A:1073:ILE:HG13	2.23	0.59
1:A:130:LYS:HD2	1:A:131:LYS:H	1.67	0.59
1:A:153:TYR:CZ	1:A:281:PRO:HG3	2.37	0.59
1:A:460:MET:O	1:A:461:VAL:HG13	2.02	0.59
1:A:951:GLY:O	1:A:952:LYS:HB3	2.03	0.59
1:A:608:ARG:NH2	1:A:908:VAL:HG11	2.18	0.58
1:A:656:HIS:HE1	1:A:674:THR:OG1	1.85	0.58
1:A:514:THR:HG21	1:A:555:LEU:HD23	1.83	0.58
1:A:623:PHE:CD2	1:A:891:SER:HA	2.38	0.58
1:A:924:GLN:CB	1:A:1222:LYS:HE3	2.33	0.58
1:A:768:ARG:HB2	1:A:770:TRP:CZ3	2.39	0.58
1:A:1029:VAL:HB	1:A:1038:VAL:HB	1.84	0.58
1:A:1191:LYS:HA	1:A:1205:VAL:HG21	1.84	0.58
1:A:910:GLU:HG3	1:A:913:LYS:HB3	1.84	0.58
1:A:942:ASN:HD22	1:A:942:ASN:N	1.99	0.58
1:A:128:THR:OG1	1:A:130:LYS:HE3	2.04	0.58
1:A:938:LEU:HD11	1:A:976:VAL:HB	1.86	0.58
1:A:1185:CYS:SG	1:A:1226:VAL:HG21	2.44	0.58
1:A:713:HIS:CD2	1:A:713:HIS:N	2.64	0.58
1:A:1160:GLN:C	1:A:1161:LEU:HD12	2.24	0.57
1:A:237:ARG:HG2	1:A:237:ARG:HH11	1.69	0.57
1:A:723:PHE:N	1:A:723:PHE:CD1	2.72	0.57
1:A:603:ILE:HG22	1:A:604:LYS:N	2.19	0.57
1:A:1088:VAL:HA	1:A:1105:ALA:CB	2.35	0.57
1:A:1151:ILE:HG12	1:A:1151:ILE:O	2.05	0.57
1:A:866:LEU:N	1:A:866:LEU:HD23	2.19	0.57
1:A:1019:ILE:N	1:A:1019:ILE:HD12	2.20	0.57
1:A:228:ARG:NH2	1:A:229:VAL:HG23	2.19	0.57
1:A:1019:ILE:HG21	1:A:1058:LEU:HD11	1.84	0.57
1:A:1167:PRO:HD2	1:A:1203:TRP:CH2	2.38	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:803:CYS:SG	1:A:846:CYS:C	2.83	0.57
1:A:924:GLN:HB2	1:A:1222:LYS:HE3	1.86	0.57
1:A:603:ILE:O	1:A:604:LYS:CB	2.52	0.57
1:A:1046:THR:HB	1:A:1063:PHE:CZ	2.40	0.57
1:A:1107:LYS:HG2	1:A:1108:THR:CG2	2.27	0.57
1:A:692:VAL:O	1:A:693:HIS:CB	2.53	0.56
1:A:989:GLU:HG2	1:A:995:VAL:O	2.04	0.56
1:A:1205:VAL:O	1:A:1206:ALA:HB3	2.05	0.56
1:A:389:LEU:C	1:A:389:LEU:HD23	2.25	0.56
1:A:475:PRO:HA	1:A:480:CYS:SG	2.45	0.56
1:A:695:TYR:HB3	1:A:728:TRP:CZ3	2.40	0.56
1:A:866:LEU:HD23	1:A:866:LEU:H	1.70	0.56
1:A:1031:ASN:C	1:A:1031:ASN:HD22	2.07	0.56
1:A:368:MET:O	1:A:372:VAL:HG23	2.05	0.56
1:A:1063:PHE:HA	1:A:1087:THR:HA	1.87	0.56
1:A:130:LYS:HD2	1:A:130:LYS:N	2.21	0.56
1:A:460:MET:O	1:A:461:VAL:HG22	2.05	0.56
1:A:603:ILE:HG22	1:A:604:LYS:H	1.71	0.56
1:A:1182:THR:O	1:A:1183:ASP:HB2	2.05	0.56
1:A:378:ASP:OD2	1:A:379:ILE:N	2.37	0.56
1:A:996:PHE:HD1	1:A:997:SER:N	2.04	0.56
1:A:153:TYR:CE2	1:A:281:PRO:HG3	2.40	0.56
1:A:785:ARG:N	1:A:785:ARG:CD	2.69	0.56
1:A:1132:CYS:SG	1:A:1145:GLY:HA3	2.46	0.56
1:A:214:GLN:O	1:A:215:ARG:HB3	2.06	0.55
1:A:700:GLU:H	1:A:722:ASP:HB3	1.71	0.55
1:A:941:ASP:OD1	1:A:942:ASN:ND2	2.39	0.55
1:A:1106:ASP:O	1:A:1107:LYS:CB	2.54	0.55
1:A:141:TRP:C	1:A:143:LEU:H	2.10	0.55
1:A:946:LEU:CD1	1:A:959:LEU:HB2	2.36	0.55
1:A:961:GLU:O	1:A:963:GLN:N	2.35	0.55
1:A:1187:SER:OG	1:A:1188:PRO:HD2	2.07	0.55
1:A:448:LYS:NZ	1:A:449:ASN:HD21	2.04	0.55
1:A:470:PRO:HB3	1:A:503:LEU:CD1	2.35	0.55
1:A:545:GLN:HG2	1:A:612:ARG:HD2	1.87	0.55
1:A:725:LEU:HD11	1:A:760:SER:HB2	1.89	0.55
1:A:1211:SER:O	1:A:1213:THR:N	2.39	0.55
1:A:130:LYS:HD2	1:A:131:LYS:HD3	1.89	0.55
1:A:214:GLN:HG2	1:A:215:ARG:H	1.71	0.55
1:A:926:ILE:HG22	1:A:939:ALA:CB	2.36	0.55
1:A:949:ILE:HA	1:A:956:ILE:HD12	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:209:GLU:O	1:A:210:GLU:HB2	2.06	0.55
1:A:404:TRP:O	1:A:406:LEU:HG	2.07	0.55
1:A:501:CYS:HA	1:A:533:LEU:HD11	1.89	0.55
1:A:673:ALA:HA	1:A:682:LYS:O	2.06	0.55
1:A:785:ARG:CG	1:A:785:ARG:NH1	2.62	0.55
1:A:874:LYS:HD2	1:A:943:ILE:CD1	2.37	0.55
1:A:736:ARG:CG	1:A:737:ASN:HD22	2.20	0.54
1:A:1107:LYS:HZ2	1:A:1107:LYS:HB2	1.70	0.54
1:A:274:MET:HE3	1:A:275:GLY:H	1.72	0.54
1:A:971:PRO:O	1:A:972:HIS:CB	2.52	0.54
1:A:134:HIS:HA	1:A:137:GLN:HE21	1.72	0.54
1:A:501:CYS:SG	1:A:533:LEU:HD12	2.47	0.54
1:A:1105:ALA:O	1:A:1106:ASP:C	2.45	0.54
1:A:184:TRP:CE3	1:A:241:ILE:HG21	2.43	0.54
1:A:575:GLU:OE1	1:A:579:GLN:HG3	2.07	0.54
1:A:607:SER:HB3	1:A:909:TRP:CZ3	2.41	0.54
1:A:636:ASP:OD2	1:A:638:THR:HG23	2.08	0.54
1:A:551:ASN:ND2	1:A:566:LEU:HD22	2.23	0.54
1:A:1198:GLY:CA	1:A:1219:THR:HG22	2.37	0.54
1:A:1231:ARG:O	1:A:1246:GLN:HG3	2.08	0.54
1:A:760:SER:CB	1:A:770:TRP:CZ3	2.90	0.54
1:A:149:TRP:CZ3	1:A:260:ILE:HD12	2.43	0.54
1:A:1063:PHE:CA	1:A:1087:THR:HA	2.38	0.54
1:A:1163:HIS:HD2	1:A:1207:THR:HA	1.71	0.53
1:A:233:ARG:C	1:A:235:HIS:H	2.12	0.53
1:A:1029:VAL:HG11	1:A:1072:VAL:CG1	2.32	0.53
1:A:1211:SER:C	1:A:1213:THR:N	2.62	0.53
1:A:232:LEU:O	1:A:233:ARG:HB2	2.08	0.53
1:A:405:ASP:O	1:A:406:LEU:HD23	2.08	0.53
1:A:736:ARG:HG3	1:A:737:ASN:ND2	2.24	0.53
1:A:992:ASN:OD1	1:A:994:ARG:HB2	2.09	0.53
1:A:1227:SER:HB2	1:A:1228:PRO:CD	2.39	0.53
1:A:743:THR:HB	1:A:764:ASP:HB2	1.91	0.53
1:A:903:ASP:O	1:A:905:THR:HG23	2.08	0.53
1:A:938:LEU:HD22	1:A:967:CYS:SG	2.49	0.53
1:A:604:LYS:HD3	1:A:606:LEU:HD21	1.90	0.53
1:A:309:GLU:HG2	1:A:339:ALA:HA	1.90	0.53
1:A:607:SER:HB3	1:A:909:TRP:CH2	2.43	0.53
1:A:874:LYS:HD2	1:A:943:ILE:HD11	1.91	0.53
1:A:117:GLY:HA3	1:A:182:VAL:O	2.09	0.53
1:A:1007:ARG:HG3	1:A:1007:ARG:HH11	1.73	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1048:LYS:HD2	1:A:1061:TRP:HZ3	1.74	0.53
1:A:1138:ASP:O	1:A:1139:GLY:C	2.48	0.53
1:A:1161:LEU:O	1:A:1162:LEU:O	2.27	0.53
1:A:850:PRO:HG2	1:A:851:TYR:CD2	2.44	0.52
1:A:849:SER:OG	1:A:850:PRO:HD2	2.08	0.52
1:A:330:LEU:HD11	1:A:370:ILE:HG22	1.92	0.52
1:A:837:THR:HG23	1:A:838:GLY:N	2.24	0.52
1:A:1048:LYS:H	1:A:1062:SER:HA	1.73	0.52
1:A:216:LEU:HB3	1:A:217:PRO:HD2	1.92	0.52
1:A:675:CYS:CB	1:A:702:VAL:HG22	2.35	0.52
1:A:743:THR:HB	1:A:764:ASP:CB	2.39	0.52
1:A:453:LEU:HD13	3:A:1251:GBL:HBC1	1.90	0.52
1:A:461:VAL:CG2	1:A:462:THR:N	2.73	0.52
1:A:545:GLN:HG2	1:A:612:ARG:NE	2.25	0.52
1:A:1058:LEU:HD23	1:A:1058:LEU:O	2.09	0.52
1:A:1236:VAL:HG22	1:A:1242:LEU:HD23	1.90	0.52
1:A:1042:ALA:HB1	1:A:1044:GLN:OE1	2.10	0.52
1:A:1121:HIS:CD2	1:A:1159:GLY:HA3	2.45	0.52
1:A:1140:ILE:C	1:A:1156:VAL:HG23	2.31	0.52
1:A:736:ARG:HG3	1:A:736:ARG:O	2.10	0.51
1:A:1094:SER:HB3	1:A:1100:PHE:HB2	1.91	0.51
1:A:1141:LEU:N	1:A:1141:LEU:HD22	2.25	0.51
1:A:153:TYR:OH	1:A:281:PRO:HG3	2.10	0.51
1:A:336:ASN:O	1:A:338:TRP:N	2.40	0.51
1:A:1217:ASN:N	1:A:1217:ASN:HD22	2.07	0.51
1:A:952:LYS:HG3	1:A:952:LYS:O	2.10	0.51
1:A:491:MET:HE3	1:A:503:LEU:HD22	1.91	0.51
1:A:974:GLU:CA	1:A:991:PRO:HD3	2.34	0.51
1:A:239:LEU:HD12	1:A:259:GLN:O	2.11	0.51
1:A:409:GLU:H	1:A:409:GLU:CD	2.14	0.51
1:A:534:ASP:HB2	1:A:541:CYS:HB2	1.90	0.51
1:A:1083:CYS:HG	1:A:1112:TRP:HZ2	1.58	0.51
1:A:511:LYS:HD2	1:A:563:ILE:HG21	1.93	0.51
1:A:854:LEU:HD23	1:A:867:TRP:O	2.11	0.51
1:A:1053:LEU:HB3	1:A:1057:ARG:O	2.10	0.51
1:A:1058:LEU:HD23	1:A:1058:LEU:C	2.31	0.51
1:A:309:GLU:HB3	1:A:342:LEU:HD22	1.93	0.51
1:A:581:LYS:O	1:A:584:ALA:HB3	2.10	0.51
1:A:1016:LYS:HD3	1:A:1033:GLN:OE1	2.11	0.51
1:A:1084:HIS:NE2	1:A:1103:THR:OG1	2.36	0.51
1:A:114:LEU:HD21	1:A:168:VAL:O	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:862:TYR:HB3	1:A:883:SER:O	2.10	0.51
1:A:1019:ILE:HD12	1:A:1019:ILE:H	1.76	0.51
1:A:226:ARG:O	1:A:230:LEU:HG	2.11	0.51
1:A:628:GLN:OE1	1:A:628:GLN:HA	2.11	0.50
1:A:706:HIS:CE1	1:A:751:PHE:H	2.29	0.50
1:A:1160:GLN:HE21	1:A:1160:GLN:N	2.09	0.50
1:A:149:TRP:CE2	1:A:273:VAL:HG21	2.45	0.50
1:A:214:GLN:HG2	1:A:215:ARG:N	2.26	0.50
1:A:460:MET:C	1:A:461:VAL:HG13	2.31	0.50
1:A:535:GLU:OE1	1:A:535:GLU:HA	2.11	0.50
1:A:1054:GLN:OE1	1:A:1054:GLN:HA	2.11	0.50
1:A:337:ARG:HG3	1:A:341:TYR:CE2	2.45	0.50
1:A:718:THR:O	1:A:725:LEU:HD23	2.11	0.50
1:A:950:ALA:O	1:A:953:THR:O	2.29	0.50
1:A:1086:GLY:O	1:A:1087:THR:O	2.29	0.50
1:A:229:VAL:HG12	1:A:230:LEU:N	2.26	0.50
1:A:506:SER:O	1:A:510:ILE:HG12	2.11	0.50
1:A:814:ILE:CG2	1:A:823:LEU:HD13	2.36	0.50
1:A:821:VAL:O	1:A:822:LEU:HD12	2.11	0.50
1:A:1067:VAL:HG11	1:A:1112:TRP:HH2	1.76	0.50
1:A:1130:VAL:HA	1:A:1145:GLY:O	2.10	0.50
1:A:1149:GLY:CA	1:A:1177:HIS:HB2	2.41	0.50
1:A:236:PRO:O	1:A:237:ARG:HB3	2.11	0.50
1:A:586:GLN:O	1:A:587:GLU:HB2	2.12	0.50
1:A:1082:THR:HG22	1:A:1082:THR:O	2.12	0.50
1:A:1227:SER:HB2	1:A:1228:PRO:HD2	1.94	0.50
1:A:486:PHE:O	1:A:489:TYR:HB3	2.11	0.50
1:A:1137:LEU:O	1:A:1138:ASP:CB	2.60	0.50
1:A:1191:LYS:O	1:A:1205:VAL:HG22	2.11	0.50
1:A:215:ARG:HH12	1:A:557:ARG:HD3	1.77	0.49
1:A:384:THR:HG23	1:A:449:ASN:OD1	2.11	0.49
1:A:949:ILE:HG12	1:A:956:ILE:HD11	1.92	0.49
1:A:742:HIS:NE2	1:A:760:SER:OG	2.45	0.49
1:A:1177:HIS:CD2	1:A:1178:GLY:H	2.29	0.49
1:A:376:ARG:NH1	1:A:376:ARG:CB	2.73	0.49
1:A:819:ASN:HD21	1:A:840:HIS:CA	2.24	0.49
1:A:826:ILE:HG12	1:A:826:ILE:O	2.11	0.49
1:A:869:ILE:O	1:A:870:ASP:CB	2.61	0.49
1:A:881:HIS:CD2	1:A:899:THR:HG21	2.48	0.49
1:A:604:LYS:C	1:A:606:LEU:H	2.15	0.49
1:A:996:PHE:CD1	1:A:997:SER:N	2.80	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1116:LEU:C	1:A:1118:SER:H	2.15	0.49
1:A:722:ASP:O	1:A:723:PHE:HB2	2.13	0.49
1:A:785:ARG:HH22	1:A:831:LEU:HB2	1.76	0.49
1:A:714:LEU:HD22	1:A:730:LEU:HB2	1.94	0.49
1:A:811:ASP:O	1:A:826:ILE:HG22	2.12	0.49
1:A:299:VAL:HG11	1:A:338:TRP:HZ2	1.78	0.49
1:A:426:CYS:HB2	1:A:434:CYS:O	2.13	0.49
1:A:477:GLN:HB3	1:A:479:ASP:OD1	2.13	0.49
1:A:652:ASP:N	3:A:1255:GBL:HBC2	2.26	0.49
1:A:106:ILE:CG2	1:A:111:ARG:HG3	2.43	0.48
1:A:626:ASP:OD1	1:A:628:GLN:HB2	2.13	0.48
1:A:633:CYS:HB2	1:A:660:VAL:CG1	2.42	0.48
1:A:419:VAL:HA	1:A:424:LEU:O	2.13	0.48
1:A:1046:THR:O	1:A:1062:SER:HB2	2.13	0.48
1:A:802:LYS:HB2	1:A:802:LYS:NZ	2.28	0.48
1:A:898:LEU:HD12	1:A:898:LEU:C	2.34	0.48
1:A:944:ARG:HB3	1:A:958:TYR:OH	2.12	0.48
1:A:868:ASN:HB2	1:A:875:VAL:CG2	2.44	0.48
1:A:1072:VAL:C	1:A:1074:THR:H	2.16	0.48
1:A:582:LEU:HD22	1:A:586:GLN:HG3	1.94	0.48
1:A:903:ASP:OD2	1:A:903:ASP:C	2.52	0.48
1:A:970:SER:HB3	1:A:1011:PHE:CE2	2.49	0.48
1:A:173:LEU:O	1:A:177:CYS:HB3	2.14	0.48
1:A:215:ARG:HD2	1:A:556:GLY:O	2.14	0.48
1:A:705:CYS:HA	1:A:717:ALA:O	2.13	0.48
1:A:804:CYS:O	1:A:804:CYS:SG	2.72	0.48
1:A:838:GLY:O	1:A:839:HIS:C	2.51	0.48
1:A:870:ASP:OD1	1:A:871:SER:N	2.47	0.48
1:A:228:ARG:HH22	1:A:229:VAL:HG23	1.79	0.48
1:A:1146:ASP:CG	1:A:1150:GLU:HB3	2.33	0.48
1:A:1191:LYS:HA	1:A:1205:VAL:CG2	2.44	0.48
1:A:228:ARG:HB3	1:A:228:ARG:CZ	2.39	0.48
1:A:704:CYS:HB2	1:A:748:HIS:HA	1.96	0.48
1:A:974:GLU:O	1:A:990:LEU:N	2.46	0.48
1:A:1151:ILE:H	1:A:1166:ALA:HB2	1.79	0.48
1:A:140:LEU:HD23	1:A:150:VAL:HG21	1.96	0.48
1:A:1063:PHE:CB	1:A:1087:THR:HG23	2.39	0.48
1:A:1108:THR:OG1	1:A:1109:ALA:N	2.45	0.48
1:A:1210:SER:OG	1:A:1211:SER:N	2.47	0.48
1:A:215:ARG:NH1	1:A:557:ARG:HD3	2.28	0.47
1:A:555:LEU:N	1:A:555:LEU:HD12	2.29	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:633:CYS:HB2	1:A:660:VAL:HB	1.96	0.47
1:A:639:LEU:HD22	1:A:640:GLN:N	2.29	0.47
1:A:891:SER:HB2	1:A:892:PRO:HD2	1.95	0.47
1:A:1123:LEU:HB3	1:A:1154:TRP:CH2	2.50	0.47
1:A:496:MET:HB3	1:A:499:GLU:OE1	2.13	0.47
1:A:507:LEU:HD22	1:A:563:ILE:HG13	1.95	0.47
1:A:121:GLN:CD	1:A:121:GLN:H	2.17	0.47
1:A:448:LYS:HZ3	1:A:449:ASN:HD21	1.63	0.47
1:A:604:LYS:HE2	1:A:606:LEU:HD13	1.97	0.47
1:A:1151:ILE:HD11	1:A:1193:LEU:HD21	1.95	0.47
1:A:1050:PHE:CD1	1:A:1050:PHE:C	2.88	0.47
1:A:320:SER:O	1:A:324:VAL:HG23	2.15	0.47
1:A:354:ARG:O	1:A:355:LYS:C	2.53	0.47
1:A:551:ASN:HD21	3:A:1254:GBL:HGC2	1.79	0.47
1:A:1086:GLY:O	1:A:1087:THR:C	2.53	0.47
1:A:184:TRP:O	1:A:205:ARG:NH2	2.48	0.47
1:A:514:THR:HA	1:A:518:GLY:O	2.14	0.47
1:A:604:LYS:O	1:A:606:LEU:HD22	2.15	0.47
1:A:692:VAL:O	1:A:693:HIS:HB3	2.15	0.47
1:A:799:VAL:HG22	1:A:818:LYS:HD2	1.95	0.47
1:A:1140:ILE:CG1	1:A:1156:VAL:HB	2.40	0.47
1:A:1206:ALA:O	1:A:1207:THR:O	2.33	0.47
1:A:1229:ASP:OD1	1:A:1231:ARG:HB3	2.14	0.47
1:A:778:ARG:HD3	4:A:1315:HOH:O	2.13	0.47
1:A:785:ARG:NH1	1:A:831:LEU:HD22	2.30	0.47
1:A:934:GLU:CG	1:A:935:THR:H	2.25	0.47
1:A:1107:LYS:CB	1:A:1107:LYS:NZ	2.73	0.47
1:A:1155:ASN:HD21	1:A:1160:GLN:CD	2.19	0.47
1:A:675:CYS:HB2	1:A:702:VAL:CG2	2.38	0.46
1:A:970:SER:O	1:A:971:PRO:C	2.52	0.46
1:A:1040:LEU:HD22	1:A:1070:TRP:CE3	2.50	0.46
1:A:303:LYS:HA	1:A:306:LEU:HD12	1.96	0.46
1:A:415:LEU:O	1:A:419:VAL:HG23	2.15	0.46
1:A:1097:ALA:O	1:A:1098:THR:CB	2.62	0.46
1:A:151:THR:HG1	1:A:262:LEU:HD21	1.80	0.46
1:A:551:ASN:O	1:A:555:LEU:HD13	2.15	0.46
1:A:718:THR:O	1:A:725:LEU:HA	2.15	0.46
1:A:1049:ASP:HB3	1:A:1061:TRP:CZ2	2.50	0.46
1:A:1134:ALA:O	1:A:1142:LEU:HD22	2.15	0.46
1:A:438:HIS:HB3	1:A:441:GLN:HG3	1.98	0.46
1:A:903:ASP:C	1:A:904:GLN:HG2	2.36	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:629:ARG:NH2	1:A:669:ASP:HB3	2.30	0.46
1:A:727:LEU:HD21	1:A:758:LEU:HD12	1.97	0.46
1:A:107:THR:C	1:A:109:PHE:N	2.69	0.46
1:A:744:ASN:CG	1:A:745:SER:H	2.18	0.46
1:A:1121:HIS:CG	1:A:1159:GLY:HA3	2.51	0.46
1:A:237:ARG:HG2	1:A:237:ARG:NH1	2.31	0.46
1:A:918:SER:OG	1:A:920:ILE:HG23	2.15	0.46
1:A:1221:LEU:HD23	1:A:1237:ASP:HA	1.98	0.46
1:A:529:TYR:O	1:A:533:LEU:CB	2.58	0.46
1:A:656:HIS:HD2	1:A:678:ASP:OD2	1.99	0.46
1:A:708:THR:CG2	1:A:715:LEU:HB2	2.45	0.46
1:A:782:ASN:ND2	1:A:784:LYS:HB3	2.27	0.46
1:A:1042:ALA:C	1:A:1044:GLN:H	2.19	0.46
1:A:1046:THR:HB	1:A:1063:PHE:CE2	2.51	0.46
1:A:1107:LYS:HB3	1:A:1107:LYS:NZ	2.31	0.46
1:A:1152:ARG:HA	1:A:1164:SER:HA	1.98	0.46
1:A:742:HIS:CD2	1:A:770:TRP:HH2	2.34	0.46
1:A:1007:ARG:HG3	1:A:1007:ARG:NH1	2.31	0.46
1:A:783:VAL:HG13	1:A:785:ARG:HD3	1.98	0.45
1:A:1010:GLN:HG2	1:A:1011:PHE:O	2.16	0.45
1:A:1102:SER:OG	1:A:1111:ILE:HA	2.15	0.45
1:A:140:LEU:HD12	1:A:173:LEU:HD21	1.99	0.45
1:A:572:GLU:HA	1:A:577:TYR:CD1	2.52	0.45
1:A:844:GLN:NE2	1:A:861:GLN:H	2.14	0.45
1:A:1008:HIS:HB2	1:A:1049:ASP:OD1	2.16	0.45
1:A:1149:GLY:HA2	1:A:1181:VAL:CG2	2.47	0.45
1:A:214:GLN:O	1:A:215:ARG:CB	2.65	0.45
1:A:587:GLU:O	1:A:588:GLY:C	2.53	0.45
1:A:739:MET:HE3	1:A:758:LEU:HD13	1.99	0.45
1:A:990:LEU:O	1:A:991:PRO:C	2.52	0.45
1:A:140:LEU:O	1:A:143:LEU:HB2	2.16	0.45
1:A:158:CYS:SG	1:A:160:LYS:HG3	2.57	0.45
1:A:349:GLN:HE21	1:A:349:GLN:HB2	1.62	0.45
1:A:844:GLN:HG2	1:A:859:LEU:O	2.17	0.45
1:A:902:ASP:C	1:A:904:GLN:N	2.69	0.45
1:A:1071:ASN:OD1	1:A:1072:VAL:O	2.34	0.45
1:A:207:ASP:OD2	1:A:230:LEU:HD11	2.16	0.45
1:A:344:GLN:HA	1:A:344:GLN:OE1	2.16	0.45
1:A:594:TYR:HB2	1:A:1248:LEU:HD12	1.98	0.45
1:A:921:VAL:C	1:A:922:LEU:HD13	2.36	0.45
1:A:1089:LEU:HD12	1:A:1106:ASP:H	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:230:LEU:O	1:A:235:HIS:HB2	2.16	0.45
1:A:625:GLN:OE1	1:A:625:GLN:HA	2.17	0.45
1:A:974:GLU:HG2	1:A:975:TYR:N	2.32	0.45
1:A:114:LEU:HD22	1:A:119:VAL:HG21	1.97	0.45
1:A:396:PRO:HG2	1:A:399:VAL:CG2	2.39	0.45
1:A:464:PHE:HD2	1:A:483:TRP:CE2	2.35	0.45
1:A:784:LYS:O	1:A:784:LYS:HG2	2.17	0.45
1:A:575:GLU:HA	1:A:578:ARG:HE	1.82	0.45
1:A:804:CYS:HB2	1:A:815:VAL:HG12	1.97	0.45
1:A:804:CYS:CB	1:A:815:VAL:HG12	2.47	0.45
1:A:1042:ALA:C	1:A:1044:GLN:N	2.70	0.45
1:A:1126:HIS:CD2	1:A:1130:VAL:HG22	2.50	0.45
1:A:410:GLU:O	1:A:411:VAL:C	2.55	0.45
1:A:1024:ASP:OD2	1:A:1026:VAL:HG12	2.16	0.45
1:A:129:ARG:CZ	1:A:286:LEU:HD21	2.47	0.45
1:A:278:HIS:O	1:A:279:VAL:HG13	2.16	0.45
1:A:497:HIS:ND1	1:A:532:ILE:CD1	2.80	0.45
1:A:844:GLN:HG2	1:A:844:GLN:H	1.52	0.45
1:A:1128:GLY:O	1:A:1129:CYS:CB	2.55	0.45
1:A:1236:VAL:CG2	1:A:1242:LEU:HD23	2.47	0.45
1:A:143:LEU:O	1:A:144:ASN:HB2	2.17	0.44
1:A:160:LYS:N	2:A:1250:ADP:O1B	2.51	0.44
1:A:184:TRP:HA	1:A:241:ILE:HB	1.98	0.44
1:A:469:GLN:HB2	1:A:472:THR:OG1	2.17	0.44
1:A:859:LEU:HG	1:A:860:SER:N	2.32	0.44
1:A:942:ASN:H	1:A:942:ASN:ND2	2.08	0.44
1:A:1063:PHE:CB	1:A:1087:THR:HA	2.47	0.44
1:A:127:VAL:HG23	1:A:127:VAL:O	2.17	0.44
1:A:395:VAL:O	1:A:434:CYS:CA	2.63	0.44
1:A:666:SER:HA	1:A:707:PHE:CG	2.51	0.44
1:A:831:LEU:HD11	1:A:833:ALA:O	2.16	0.44
1:A:832:LEU:N	1:A:832:LEU:HD12	2.31	0.44
1:A:861:GLN:O	1:A:863:CYS:N	2.51	0.44
1:A:921:VAL:O	1:A:942:ASN:ND2	2.50	0.44
1:A:1121:HIS:CB	1:A:1158:ASP:O	2.66	0.44
1:A:759:ALA:HB2	1:A:806:TRP:CZ2	2.53	0.44
1:A:767:LEU:O	1:A:768:ARG:HG2	2.17	0.44
1:A:806:TRP:HZ3	1:A:826:ILE:HD12	1.82	0.44
1:A:973:LEU:O	1:A:974:GLU:HG2	2.17	0.44
1:A:1007:ARG:HB3	1:A:1008:HIS:H	1.62	0.44
1:A:233:ARG:O	1:A:234:LYS:HB3	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:587:GLU:HG2	1:A:590:THR:OG1	2.17	0.44
1:A:926:ILE:HG22	1:A:939:ALA:HB1	1.98	0.44
1:A:926:ILE:O	1:A:926:ILE:HG13	2.15	0.44
1:A:402:VAL:O	1:A:463:GLN:HB3	2.16	0.44
1:A:1118:SER:OG	1:A:1119:PRO:HD2	2.17	0.44
1:A:539:ALA:C	1:A:541:CYS:N	2.70	0.44
1:A:739:MET:HE3	1:A:758:LEU:CD1	2.48	0.44
1:A:928:VAL:HG22	1:A:937:VAL:HG22	2.00	0.44
1:A:1219:THR:HB	1:A:1220:ASN:H	1.67	0.44
1:A:153:TYR:CE1	1:A:267:LYS:HD3	2.52	0.44
1:A:938:LEU:HD12	1:A:969:LEU:HG	1.99	0.44
1:A:954:GLY:O	1:A:955:GLN:C	2.55	0.44
1:A:1053:LEU:HB3	1:A:1057:ARG:HG3	1.99	0.44
1:A:1103:THR:CG2	1:A:1112:TRP:CZ2	3.01	0.44
1:A:1155:ASN:HD21	1:A:1160:GLN:CG	2.31	0.44
1:A:1180:TRP:HZ3	1:A:1220:ASN:HD22	1.66	0.44
1:A:1203:TRP:CE3	1:A:1209:ASP:HB3	2.52	0.44
1:A:170:ASP:O	1:A:173:LEU:N	2.47	0.44
1:A:604:LYS:HE2	1:A:606:LEU:CD1	2.48	0.44
1:A:710:LYS:C	1:A:712:ASN:H	2.21	0.44
1:A:944:ARG:O	1:A:963:GLN:HA	2.18	0.44
1:A:1053:LEU:CG	1:A:1054:GLN:H	2.30	0.44
1:A:1149:GLY:HA2	1:A:1181:VAL:HG23	1.99	0.44
1:A:131:LYS:H	1:A:131:LYS:HD3	1.83	0.43
1:A:134:HIS:HA	1:A:137:GLN:NE2	2.33	0.43
1:A:208:GLN:HE21	1:A:208:GLN:HB2	1.62	0.43
1:A:652:ASP:H	3:A:1255:GBL:CB	2.30	0.43
1:A:744:ASN:OD1	1:A:745:SER:N	2.51	0.43
1:A:881:HIS:NE2	1:A:899:THR:CG2	2.81	0.43
1:A:925:GLU:O	1:A:940:VAL:HG23	2.18	0.43
1:A:1063:PHE:HB2	1:A:1087:THR:CB	2.47	0.43
1:A:153:TYR:CZ	1:A:267:LYS:HD3	2.53	0.43
1:A:989:GLU:HG3	1:A:989:GLU:O	2.18	0.43
1:A:1019:ILE:HG21	1:A:1058:LEU:CD1	2.48	0.43
1:A:1115:ASP:O	1:A:1116:LEU:C	2.56	0.43
1:A:1157:SER:O	1:A:1159:GLY:N	2.51	0.43
1:A:581:LYS:HE2	1:A:1248:LEU:HD21	1.99	0.43
1:A:613:PRO:HG2	1:A:614:HIS:CD2	2.53	0.43
1:A:207:ASP:OD2	1:A:230:LEU:HD21	2.19	0.43
1:A:870:ASP:OD1	1:A:870:ASP:C	2.56	0.43
1:A:1121:HIS:HB3	1:A:1158:ASP:O	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1199:TYR:HD1	1:A:1200:LEU:O	2.01	0.43
1:A:233:ARG:O	1:A:235:HIS:N	2.50	0.43
1:A:273:VAL:HG22	1:A:274:MET:N	2.33	0.43
1:A:302:LYS:C	1:A:304:GLU:H	2.21	0.43
1:A:814:ILE:HD13	1:A:848:PHE:HB2	1.99	0.43
1:A:868:ASN:C	1:A:868:ASN:HD22	2.21	0.43
1:A:1053:LEU:HG	1:A:1054:GLN:H	1.82	0.43
1:A:1188:PRO:O	1:A:1190:SER:N	2.51	0.43
1:A:146:GLU:HA	1:A:147:PRO:HD3	1.93	0.43
1:A:597:TRP:O	1:A:600:LYS:HE3	2.19	0.43
1:A:811:ASP:HA	1:A:826:ILE:HG21	2.00	0.43
1:A:1072:VAL:HG12	1:A:1073:ILE:H	1.81	0.43
1:A:1167:PRO:O	1:A:1168:ILE:HB	2.19	0.43
1:A:287:GLY:HA3	1:A:288:ARG:HH11	1.83	0.43
1:A:585:LYS:HE3	1:A:1249:GLU:OE2	2.19	0.43
1:A:722:ASP:C	1:A:722:ASP:OD1	2.57	0.43
1:A:1151:ILE:HD11	1:A:1193:LEU:CD2	2.48	0.43
1:A:1126:HIS:ND1	1:A:1146:ASP:HB2	2.33	0.43
1:A:546:GLU:OE2	1:A:907:ARG:NH2	2.52	0.43
1:A:1042:ALA:CB	1:A:1044:GLN:OE1	2.67	0.43
1:A:1048:LYS:HD2	1:A:1061:TRP:CZ3	2.53	0.43
1:A:1061:TRP:CD1	1:A:1061:TRP:N	2.86	0.43
1:A:989:GLU:HG3	1:A:992:ASN:ND2	2.21	0.43
1:A:358:SER:HB3	1:A:361:TYR:HB2	2.00	0.42
1:A:545:GLN:CG	1:A:612:ARG:HD2	2.49	0.42
1:A:664:ALA:O	1:A:672:ILE:HA	2.19	0.42
1:A:327:ILE:O	1:A:330:LEU:N	2.52	0.42
1:A:376:ARG:HH22	1:A:417:GLU:CD	2.21	0.42
1:A:714:LEU:HD21	1:A:730:LEU:HD12	2.01	0.42
1:A:960:PRO:O	1:A:961:GLU:HB2	2.19	0.42
1:A:1004:LYS:HG2	1:A:1023:GLU:HB2	2.00	0.42
1:A:1232:THR:C	1:A:1233:TYR:CD2	2.93	0.42
1:A:817:ALA:O	1:A:818:LYS:C	2.58	0.42
1:A:1012:THR:O	1:A:1013:ALA:C	2.57	0.42
1:A:1072:VAL:O	1:A:1073:ILE:CB	2.67	0.42
1:A:1116:LEU:HD12	1:A:1116:LEU:N	2.10	0.42
1:A:343:ARG:HA	1:A:346:GLN:HG3	2.01	0.42
1:A:458:ARG:O	1:A:460:MET:O	2.38	0.42
1:A:656:HIS:CD2	1:A:678:ASP:OD2	2.73	0.42
1:A:764:ASP:OD1	1:A:766:THR:HG23	2.19	0.42
1:A:1146:ASP:HB3	1:A:1150:GLU:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:726:LYS:HD2	1:A:728:TRP:CZ2	2.55	0.42
1:A:106:ILE:HG22	1:A:107:THR:N	2.35	0.42
1:A:653:ILE:HD11	1:A:689:GLY:HA3	2.02	0.42
1:A:736:ARG:CG	1:A:737:ASN:ND2	2.82	0.42
1:A:952:LYS:O	1:A:953:THR:OG1	2.31	0.42
1:A:1223:LYS:HE3	1:A:1223:LYS:HA	2.01	0.42
1:A:163:LEU:O	1:A:166:GLU:HB2	2.20	0.42
1:A:382:TYR:CD2	1:A:414:ILE:HD13	2.54	0.42
1:A:482:TYR:O	1:A:486:PHE:HB2	2.20	0.42
1:A:562:ASN:HD21	1:A:564:VAL:CB	2.26	0.42
1:A:651:LEU:HD22	3:A:1255:GBL:HAC1	2.01	0.42
1:A:846:CYS:HB2	1:A:857:ILE:HG22	2.00	0.42
1:A:581:LYS:CE	1:A:1248:LEU:HD21	2.50	0.42
1:A:1009:ILE:O	1:A:1009:ILE:HG23	2.20	0.42
1:A:1096:ASP:O	1:A:1097:ALA:HB3	2.20	0.42
1:A:1246:GLN:O	1:A:1247:VAL:C	2.58	0.42
1:A:130:LYS:HD3	1:A:131:LYS:HG3	2.01	0.42
1:A:543:ASN:N	1:A:543:ASN:HD22	2.18	0.42
1:A:604:LYS:HG2	1:A:606:LEU:HD22	2.01	0.42
1:A:700:GLU:OE2	1:A:700:GLU:HA	2.19	0.42
1:A:716:LEU:HD22	1:A:717:ALA:N	2.35	0.42
1:A:1012:THR:HG22	1:A:1013:ALA:N	2.35	0.42
1:A:1083:CYS:SG	1:A:1112:TRP:HZ2	2.43	0.42
1:A:266:ASP:OD1	1:A:268:SER:N	2.52	0.42
1:A:299:VAL:O	1:A:300:ASN:CB	2.67	0.42
1:A:832:LEU:N	1:A:832:LEU:CD1	2.82	0.42
1:A:1061:TRP:CH2	1:A:1090:SER:HA	2.55	0.42
1:A:103:ASP:HB3	1:A:104:GLY:H	1.65	0.41
1:A:302:LYS:O	1:A:303:LYS:HB2	2.20	0.41
1:A:568:LEU:HD23	1:A:568:LEU:HA	1.91	0.41
1:A:964:VAL:HG23	1:A:965:SER:N	2.35	0.41
1:A:1072:VAL:CG1	1:A:1073:ILE:N	2.82	0.41
1:A:1110:LYS:HE2	1:A:1122:GLU:OE2	2.20	0.41
1:A:534:ASP:HB3	1:A:541:CYS:CB	2.41	0.41
1:A:809:ASP:OD2	1:A:809:ASP:N	2.50	0.41
1:A:1079:ARG:HH11	1:A:1117:LEU:HD21	1.86	0.41
1:A:185:VAL:HG21	1:A:202:LEU:HD22	2.02	0.41
1:A:602:THR:O	1:A:603:ILE:O	2.39	0.41
1:A:785:ARG:CZ	1:A:831:LEU:HD22	2.50	0.41
1:A:837:THR:O	1:A:839:HIS:N	2.53	0.41
1:A:992:ASN:CG	1:A:994:ARG:H	2.24	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:934:GLU:CG	1:A:935:THR:N	2.75	0.41
1:A:170:ASP:O	1:A:171:HIS:C	2.59	0.41
1:A:732:GLN:C	1:A:734:GLU:H	2.23	0.41
1:A:857:ILE:O	1:A:857:ILE:HG13	2.21	0.41
1:A:1010:GLN:HG2	1:A:1011:PHE:N	2.35	0.41
1:A:1111:ILE:C	1:A:1111:ILE:CD1	2.84	0.41
1:A:397:THR:O	1:A:398:LYS:C	2.58	0.41
1:A:473:LEU:N	1:A:473:LEU:HD12	2.35	0.41
1:A:538:CYS:HB2	1:A:540:VAL:HG23	2.03	0.41
1:A:802:LYS:C	1:A:803:CYS:O	2.58	0.41
1:A:1008:HIS:HD2	1:A:1009:ILE:H	1.68	0.41
1:A:1198:GLY:HA2	1:A:1219:THR:HG22	2.02	0.41
1:A:1012:THR:HG22	1:A:1013:ALA:H	1.86	0.41
1:A:1074:THR:HG22	1:A:1076:ARG:HB2	2.01	0.41
1:A:1234:VAL:HA	1:A:1243:TYR:O	2.21	0.41
1:A:235:HIS:N	1:A:236:PRO:CD	2.83	0.41
1:A:555:LEU:H	1:A:555:LEU:CD1	2.32	0.41
1:A:592:ARG:O	1:A:593:LEU:HB2	2.21	0.41
1:A:651:LEU:HA	3:A:1255:GBL:CB	2.51	0.41
1:A:736:ARG:HE	1:A:737:ASN:HD22	1.68	0.41
1:A:825:ASP:HB2	1:A:832:LEU:HD11	2.02	0.41
1:A:966:CYS:SG	1:A:1007:ARG:O	2.78	0.41
1:A:1140:ILE:HG13	1:A:1140:ILE:O	2.21	0.41
1:A:337:ARG:HG3	1:A:341:TYR:HE2	1.84	0.41
1:A:426:CYS:CB	1:A:435:TYR:CD1	3.03	0.41
1:A:551:ASN:ND2	3:A:1254:GBL:HGC2	2.36	0.41
1:A:560:PHE:HA	1:A:561:PRO:HD2	1.96	0.41
1:A:604:LYS:O	1:A:606:LEU:N	2.53	0.41
1:A:814:ILE:O	1:A:814:ILE:HG13	2.19	0.41
1:A:1098:THR:HG1	1:A:1114:PHE:HE2	1.69	0.41
1:A:1140:ILE:CD1	1:A:1156:VAL:O	2.66	0.41
1:A:1155:ASN:O	1:A:1157:SER:N	2.54	0.41
1:A:316:GLU:C	1:A:318:LYS:H	2.24	0.41
1:A:421:LYS:O	1:A:422:SER:HB2	2.21	0.41
1:A:1182:THR:OG1	1:A:1222:LYS:HA	2.21	0.40
1:A:209:GLU:O	1:A:210:GLU:CB	2.69	0.40
1:A:911:THR:O	1:A:912:LYS:C	2.60	0.40
1:A:334:PHE:HA	1:A:335:PRO:HD2	1.86	0.40
1:A:358:SER:HB3	1:A:361:TYR:HD2	1.86	0.40
1:A:457:HIS:CD2	1:A:493:SER:HB3	2.56	0.40
1:A:778:ARG:NH1	1:A:778:ARG:HG3	2.36	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:838:GLY:HA3	1:A:859:LEU:CD2	2.46	0.40
1:A:847:ASP:OD2	1:A:889:MET:HB2	2.21	0.40
1:A:881:HIS:NE2	1:A:899:THR:HG21	2.36	0.40
1:A:309:GLU:H	1:A:309:GLU:CD	2.25	0.40
1:A:526:PHE:HB3	1:A:545:GLN:NE2	2.37	0.40
1:A:604:LYS:HD3	1:A:606:LEU:CD2	2.51	0.40
1:A:826:ILE:HG23	1:A:827:HIS:CD2	2.56	0.40
1:A:107:THR:O	1:A:108:SER:HB3	2.22	0.40
1:A:429:ASN:ND2	1:A:429:ASN:O	2.55	0.40
1:A:511:LYS:O	1:A:515:GLU:HG3	2.22	0.40
1:A:631:ALA:HA	1:A:640:GLN:O	2.21	0.40
1:A:708:THR:HG23	1:A:715:LEU:HB2	2.04	0.40
1:A:974:GLU:O	1:A:991:PRO:HD3	2.21	0.40
1:A:1010:GLN:O	1:A:1018:LEU:HD23	2.22	0.40
1:A:1053:LEU:HG	1:A:1057:ARG:HG3	2.03	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	1127/1249 (90%)	837 (74%)	202 (18%)	88 (8%)	1 4

All (88) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	177	CYS
1	A	233	ARG
1	A	253	ALA
1	A	337	ARG
1	A	359	TYR
1	A	362	GLU

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Mol	Chain	Res	Type
1	A	408	THR
1	A	587	GLU
1	A	755	ASP
1	A	803	CYS
1	A	859	LEU
1	A	862	TYR
1	A	953	THR
1	A	962	ALA
1	A	1054	GLN
1	A	1075	GLY
1	A	1087	THR
1	A	1098	THR
1	A	1107	LYS
1	A	1129	CYS
1	A	1137	LEU
1	A	1138	ASP
1	A	1140	ILE
1	A	1151	ILE
1	A	1162	LEU
1	A	1168	ILE
1	A	1207	THR
1	A	1212	GLN
1	A	103	ASP
1	A	130	LYS
1	A	144	ASN
1	A	356	SER
1	A	377	GLU
1	A	588	GLY
1	A	590	THR
1	A	597	TRP
1	A	603	ILE
1	A	605	ASN
1	A	606	LEU
1	A	693	HIS
1	A	797	VAL
1	A	838	GLY
1	A	955	GLN
1	A	963	GLN
1	A	1044	GLN
1	A	1091	CYS
1	A	1095	SER
1	A	1106	ASP

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Mol	Chain	Res	Type
1	A	1139	GLY
1	A	1189	ASP
1	A	1213	THR
1	A	1214	PHE
1	A	1247	VAL
1	A	174	LEU
1	A	300	ASN
1	A	355	LYS
1	A	533	LEU
1	A	589	ASP
1	A	604	LYS
1	A	839	HIS
1	A	933	ASN
1	A	972	HIS
1	A	1002	HIS
1	A	1115	ASP
1	A	1117	LEU
1	A	1156	VAL
1	A	1210	SER
1	A	122	ARG
1	A	179	SER
1	A	593	LEU
1	A	884	TRP
1	A	1017	THR
1	A	1033	GLN
1	A	111	ARG
1	A	302	LYS
1	A	360	ASP
1	A	361	TYR
1	A	475	PRO
1	A	497	HIS
1	A	861	GLN
1	A	1223	LYS
1	A	995	VAL
1	A	1073	ILE
1	A	613	PRO
1	A	307	PRO
1	A	411	VAL
1	A	1181	VAL
1	A	880	GLY

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	1005/1104 (91%)	906 (90%)	99 (10%)	8 30

All (99) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	103	ASP
1	A	130	LYS
1	A	131	LYS
1	A	192	LYS
1	A	207	ASP
1	A	216	LEU
1	A	288	ARG
1	A	298	PHE
1	A	312	SER
1	A	337	ARG
1	A	346	GLN
1	A	347	ASN
1	A	360	ASP
1	A	402	VAL
1	A	403	LEU
1	A	426	CYS
1	A	429	ASN
1	A	461	VAL
1	A	473	LEU
1	A	504	MET
1	A	516	LEU
1	A	519	PRO
1	A	532	ILE
1	A	545	GLN
1	A	558	GLN
1	A	582	LEU
1	A	583	GLN
1	A	602	THR
1	A	612	ARG
1	A	613	PRO

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Mol	Chain	Res	Type
1	A	638	THR
1	A	639	LEU
1	A	663	CYS
1	A	691	LEU
1	A	694	THR
1	A	702	VAL
1	A	713	HIS
1	A	716	LEU
1	A	723	PHE
1	A	758	LEU
1	A	760	SER
1	A	767	LEU
1	A	784	LYS
1	A	785	ARG
1	A	787	PHE
1	A	798	GLU
1	A	803	CYS
1	A	822	LEU
1	A	826	ILE
1	A	844	GLN
1	A	866	LEU
1	A	868	ASN
1	A	870	ASP
1	A	871	SER
1	A	879	ARG
1	A	888	VAL
1	A	920	ILE
1	A	922	LEU
1	A	938	LEU
1	A	942	ASN
1	A	946	LEU
1	A	956	ILE
1	A	963	GLN
1	A	964	VAL
1	A	967	CYS
1	A	974	GLU
1	A	992	ASN
1	A	993	ASN
1	A	996	PHE
1	A	1007	ARG
1	A	1021	SER
1	A	1024	ASP

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Mol	Chain	Res	Type
1	A	1031	ASN
1	A	1041	GLN
1	A	1045	GLU
1	A	1051	ARG
1	A	1060	SER
1	A	1061	TRP
1	A	1063	PHE
1	A	1083	CYS
1	A	1096	ASP
1	A	1108	THR
1	A	1111	ILE
1	A	1112	TRP
1	A	1115	ASP
1	A	1129	CYS
1	A	1136	SER
1	A	1137	LEU
1	A	1151	ILE
1	A	1160	GLN
1	A	1162	LEU
1	A	1207	THR
1	A	1212	GLN
1	A	1214	PHE
1	A	1219	THR
1	A	1222	LYS
1	A	1223	LYS
1	A	1242	LEU
1	A	1248	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (40) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	137	GLN
1	A	208	GLN
1	A	214	GLN
1	A	259	GLN
1	A	346	GLN
1	A	349	GLN
1	A	429	ASN
1	A	441	GLN
1	A	449	ASN
1	A	465	GLN
1	A	477	GLN

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Mol	Chain	Res	Type
1	A	531	HIS
1	A	543	ASN
1	A	545	GLN
1	A	551	ASN
1	A	562	ASN
1	A	586	GLN
1	A	656	HIS
1	A	693	HIS
1	A	713	HIS
1	A	737	ASN
1	A	776	ASN
1	A	782	ASN
1	A	836	HIS
1	A	844	GLN
1	A	868	ASN
1	A	917	ASN
1	A	933	ASN
1	A	942	ASN
1	A	992	ASN
1	A	993	ASN
1	A	1002	HIS
1	A	1028	GLN
1	A	1031	ASN
1	A	1044	GLN
1	A	1121	HIS
1	A	1160	GLN
1	A	1163	HIS
1	A	1177	HIS
1	A	1212	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](#)

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

6 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	GBL	A	1253	-	6,6,6	0.66	0	7,7,7	0.79	0
3	GBL	A	1255	-	6,6,6	0.61	0	7,7,7	0.81	0
2	ADP	A	1250	-	24,29,29	1.52	3 (12%)	29,45,45	1.39	2 (6%)
3	GBL	A	1251	-	6,6,6	0.53	0	7,7,7	0.86	0
3	GBL	A	1254	-	6,6,6	0.68	0	7,7,7	0.82	0
3	GBL	A	1252	-	6,6,6	0.50	0	7,7,7	0.84	0

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
3	GBL	A	1253	-	-	-	0/1/1/1
3	GBL	A	1255	-	-	-	0/1/1/1
2	ADP	A	1250	-	-	0/12/32/32	0/3/3/3
3	GBL	A	1251	-	-	-	0/1/1/1
3	GBL	A	1254	-	-	-	0/1/1/1
3	GBL	A	1252	-	-	-	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1250	ADP	PA-O3A	3.96	1.63	1.59
2	A	1250	ADP	O4'-C1'	3.77	1.45	1.40
2	A	1250	ADP	C8-N7	-2.47	1.30	1.34

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1250	ADP	N3-C2-N1	-5.15	121.69	128.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1250	ADP	O4'-C1'-N9	2.04	111.45	108.75

There are no chirality outliers.

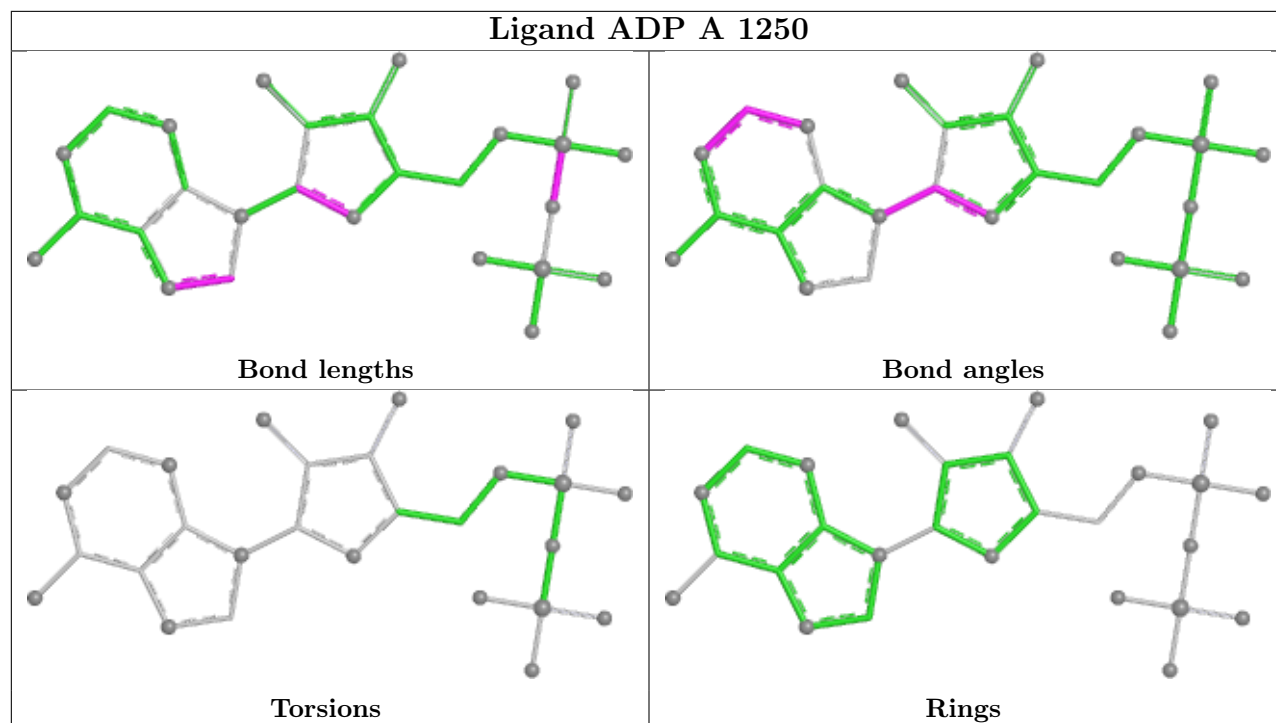
There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 9 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1255	GBL	5	0
2	A	1250	ADP	1	0
3	A	1251	GBL	1	0
3	A	1254	GBL	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	1133/1249 (90%)	-0.13	12 (1%) 80 56	45, 75, 112, 142	0

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	102	THR	7.3
1	A	1113	SER	4.0
1	A	1124	LYS	3.3
1	A	103	ASP	3.2
1	A	797	VAL	2.9
1	A	104	GLY	2.8
1	A	796	ASP	2.7
1	A	1154	TRP	2.6
1	A	605	ASN	2.4
1	A	1161	LEU	2.2
1	A	1100	PHE	2.1
1	A	1109	ALA	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

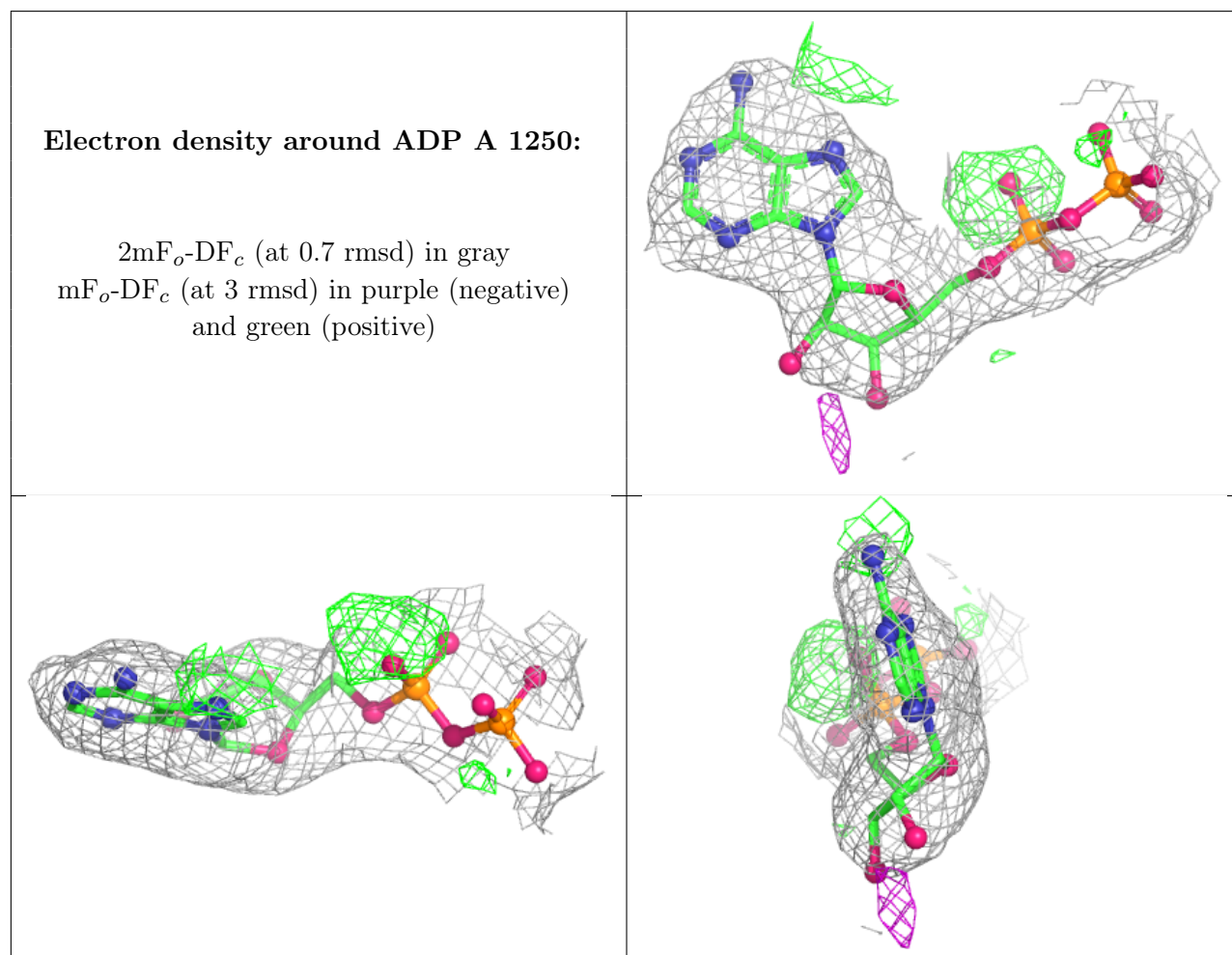
6.4 Ligands [i](#)

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. 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	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	GBL	A	1253	6/6	0.88	0.32	108,108,109,109	0
3	GBL	A	1254	6/6	0.91	0.25	115,115,116,116	0
3	GBL	A	1255	6/6	0.94	0.32	81,82,83,83	0
3	GBL	A	1251	6/6	0.95	0.23	56,58,58,59	0
2	ADP	A	1250	27/27	0.96	0.19	63,66,70,71	0
3	GBL	A	1252	6/6	0.97	0.22	70,72,73,75	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



6.5 Other polymers [\(i\)](#)

There are no such residues in this entry.