



# Full wwPDB X-ray Structure Validation Report ⓘ

Sep 6, 2023 – 10:51 PM EDT

PDB ID : 4G7H  
Title : Crystal structure of Thermus thermophilus transcription initiation complex  
Authors : Zhang, Y.; Ebright, R.H.  
Deposited on : 2012-07-20  
Resolution : 2.90 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](mailto: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>.

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

MolProbity : 4.02b-467  
Xtriage (Phenix) : 1.13  
EDS : 2.35  
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) : 2.35

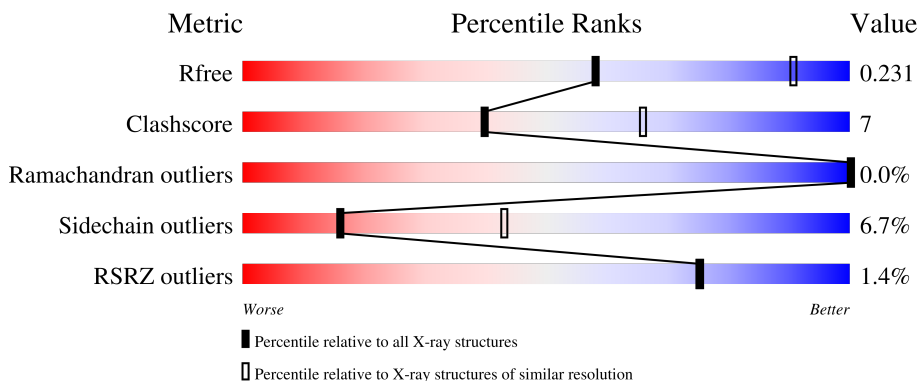
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.90 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	1957 (2.90-2.90)
Clashscore	141614	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)
RSRZ outliers	127900	1906 (2.90-2.90)

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  $\geq 3$ , 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	315	
1	B	315	
1	K	315	
1	L	315	
2	C	1119	

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Mol	Chain	Length	Quality of chain
2	M	1119	<p>3% 77% 20% ..</p>
3	D	1524	<p>2% 79% 17% ..</p>
3	N	1524	<p>2% 78% 17% ..</p>
4	E	99	<p>79% 16% 5%</p>
4	O	99	<p>77% 18% 5%</p>
5	F	443	<p>63% 15% 22%</p>
5	P	443	<p>2% 58% 16% 22%</p>
6	G	19	<p>68% 16% 16%</p>
6	Q	19	<p>63% 21% 16%</p>
7	H	27	<p>33% 44% 11% 11%</p>
7	R	27	<p>44% 37% 7% 11%</p>

## 2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 57420 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 DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	226	Total	C	N	O	S	0	0	0
			1782	1138	310	332	2			
1	B	222	Total	C	N	O	S	0	0	0
			1750	1118	304	326	2			
1	K	226	Total	C	N	O	S	0	0	0
			1782	1138	310	332	2			
1	L	225	Total	C	N	O	S	0	0	0
			1773	1133	308	330	2			

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	1111	Total	C	N	O	S	0	0	0
			8770	5548	1564	1634	24			
2	M	1111	Total	C	N	O	S	0	0	0
			8770	5548	1564	1634	24			

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	D	1486	Total	C	N	O	S	0	0	0
			11738	7441	2067	2195	35			
3	N	1486	Total	C	N	O	S	0	0	0
			11738	7441	2067	2195	35			

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	E	94	Total	C	N	O	S	0	0	0
			761	486	132	139	4			
4	O	94	Total	C	N	O	S	0	0	0
			761	486	132	139	4			

- Molecule 5 is a protein called RNA polymerase sigma factor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	F	346	Total	C	N	O	S	0	0	0
			2807	1770	509	524	4			
5	P	347	Total	C	N	O	S	0	0	0
			2814	1774	510	526	4			

There are 40 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
F	-19	MET	-	expression tag	UNP Q5SKW1
F	-18	GLY	-	expression tag	UNP Q5SKW1
F	-17	SER	-	expression tag	UNP Q5SKW1
F	-16	SER	-	expression tag	UNP Q5SKW1
F	-15	HIS	-	expression tag	UNP Q5SKW1
F	-14	HIS	-	expression tag	UNP Q5SKW1
F	-13	HIS	-	expression tag	UNP Q5SKW1
F	-12	HIS	-	expression tag	UNP Q5SKW1
F	-11	HIS	-	expression tag	UNP Q5SKW1
F	-10	HIS	-	expression tag	UNP Q5SKW1
F	-9	SER	-	expression tag	UNP Q5SKW1
F	-8	SER	-	expression tag	UNP Q5SKW1
F	-7	GLY	-	expression tag	UNP Q5SKW1
F	-6	LEU	-	expression tag	UNP Q5SKW1
F	-5	VAL	-	expression tag	UNP Q5SKW1
F	-4	PRO	-	expression tag	UNP Q5SKW1
F	-3	ARG	-	expression tag	UNP Q5SKW1
F	-2	GLY	-	expression tag	UNP Q5SKW1
F	-1	SER	-	expression tag	UNP Q5SKW1
F	0	HIS	-	expression tag	UNP Q5SKW1
P	-19	MET	-	expression tag	UNP Q5SKW1
P	-18	GLY	-	expression tag	UNP Q5SKW1
P	-17	SER	-	expression tag	UNP Q5SKW1
P	-16	SER	-	expression tag	UNP Q5SKW1
P	-15	HIS	-	expression tag	UNP Q5SKW1
P	-14	HIS	-	expression tag	UNP Q5SKW1
P	-13	HIS	-	expression tag	UNP Q5SKW1
P	-12	HIS	-	expression tag	UNP Q5SKW1
P	-11	HIS	-	expression tag	UNP Q5SKW1
P	-10	HIS	-	expression tag	UNP Q5SKW1
P	-9	SER	-	expression tag	UNP Q5SKW1
P	-8	SER	-	expression tag	UNP Q5SKW1
P	-7	GLY	-	expression tag	UNP Q5SKW1
P	-6	LEU	-	expression tag	UNP Q5SKW1

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Chain	Residue	Modelled	Actual	Comment	Reference
P	-5	VAL	-	expression tag	UNP Q5SKW1
P	-4	PRO	-	expression tag	UNP Q5SKW1
P	-3	ARG	-	expression tag	UNP Q5SKW1
P	-2	GLY	-	expression tag	UNP Q5SKW1
P	-1	SER	-	expression tag	UNP Q5SKW1
P	0	HIS	-	expression tag	UNP Q5SKW1

- Molecule 6 is a DNA chain called 5'-D(\*CP\*CP\*T\*GP\*CP\*AP\*TP\*CP\*CP\*GP\*TP\*GP\*AP\*GP\*TP\*CP\*GP\*AP\*G)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
6	G	16	Total	C	N	O	P	0	0	0
			328	156	63	94	15			
6	Q	16	Total	C	N	O	P	0	0	0
			328	156	63	94	15			

- Molecule 7 is a DNA chain called 5'-D(\*TP\*AP\*TP\*AP\*AP\*TP\*GP\*GP\*GP\*AP\*GP\*C P\*TP\*GP\*TP\*CP\*AP\*CP\*GP\*GP\*AP\*TP\*GP\*CP\*AP\*GP\*G)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
7	H	24	Total	C	N	O	P	0	0	0
			495	236	94	142	23			
7	R	24	Total	C	N	O	P	0	0	0
			495	236	94	142	23			

- Molecule 8 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	B	1	Total	Mg	0	0
			1	1		
8	D	3	Total	Mg	0	0
			3	3		
8	F	1	Total	Mg	0	0
			1	1		
8	K	1	Total	Mg	0	0
			1	1		
8	N	3	Total	Mg	0	0
			3	3		
8	P	1	Total	Mg	0	0
			1	1		

- Molecule 9 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	D	2	Total	Zn	0	0
			2	2		
9	N	2	Total	Zn	0	0
			2	2		

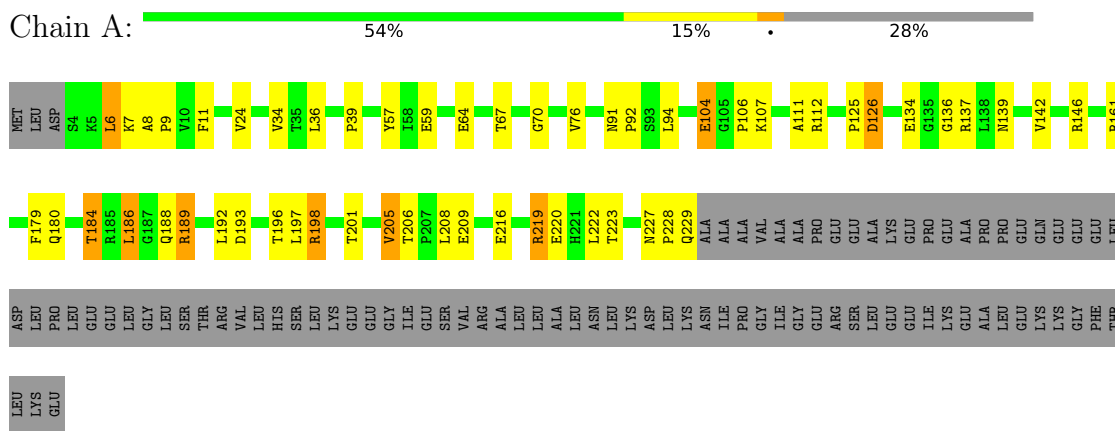
- Molecule 10 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	16	Total	O	0	0
			16	16		
10	B	4	Total	O	0	0
			4	4		
10	C	104	Total	O	0	0
			104	104		
10	D	138	Total	O	0	0
			138	138		
10	E	5	Total	O	0	0
			5	5		
10	F	32	Total	O	0	0
			32	32		
10	G	7	Total	O	0	0
			7	7		
10	H	6	Total	O	0	0
			6	6		
10	K	12	Total	O	0	0
			12	12		
10	L	8	Total	O	0	0
			8	8		
10	M	58	Total	O	0	0
			58	58		
10	N	89	Total	O	0	0
			89	89		
10	O	6	Total	O	0	0
			6	6		
10	P	21	Total	O	0	0
			21	21		
10	Q	3	Total	O	0	0
			3	3		
10	R	5	Total	O	0	0
			5	5		

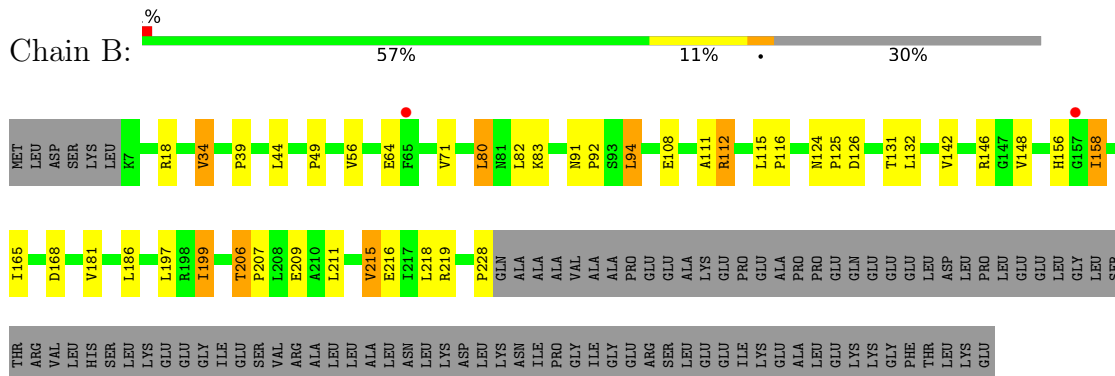
### 3 Residue-property plots i

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.

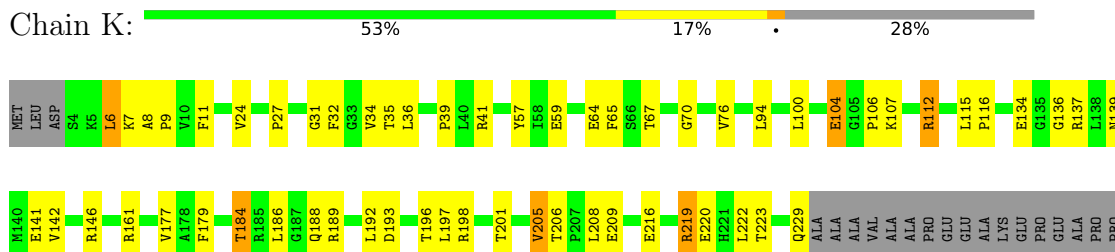
- Molecule 1: DNA-directed RNA polymerase subunit alpha



- Molecule 1: DNA-directed RNA polymerase subunit alpha



- Molecule 1: DNA-directed RNA polymerase subunit alpha





GLU	GLN	GLU	GLU	GLU	GLU	GLU	ASP	ASP	LEU	PHO	GLU	GLU	LEU	GLY	LEU	LEU	LEU	SER	SER	THR	ARG	ARG	VAL	LEU	HIS	SER	SER	LEU	LYS	GLU	GLU	GLY	ILE	LEU	SER	SER	VAL	ARG	ALA	ALA	LEU	LEU	LEU	ALA	ALA	LEU	LEU	LEU	ASP	ASP	LEU	LEU	LEU	LYS	LYS	ASN	ASN	LEU	LEU	LEU	ARG	GLU	GLU	GLY	GLY	ARG	SER	GLU	GLU	ILE	LYS	ALA	LEU
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GLU	LYS	GLY	PHE	THR	LEU	LYS	GLU
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● Molecule 1: DNA-directed RNA polymerase subunit alpha

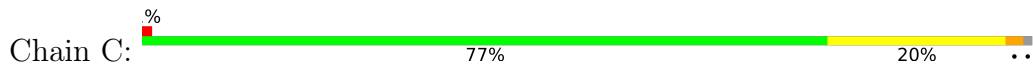


MET	LEU	S4	Q16	G17	R18	V34	P39	P49	V56	L62	H63	E64	F65	V71	L80	H81	K83	N91	P92	S93	L94	E108	R112	N124	T131	L132	V142	R146	V148	H156	G157	I158	I165	D168	R176
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V181	L186	W200	T206	P207	L208	E209	A210	L211	V215	E216	I217	L218	R219	P228	GLN	ALA	ALA	ALA	VAL	VAL	ALA	ALA	L82	L82	L82	P76	GLU	GLU	P92	ALA	LYS	GLU	PRO	LEU	LEU	GLN	GLN	GLU	GLU	GLU	ASP	LEU	LEU	LEU	LEU	PRO	GLY	PRO	PRO	GLY	LEU	GLY	LEU	THR	ARG	VAL	LEU	HIS	SER
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LEU	LYS	GLU	GLY	ILE	GLU	SER	VAL	ARG	ALA	ARG	LEU	ALA	LEU	ALA	LEU	LEU	ASN	ASN	ILE	PRO	GLY	ILE	GLY	GLY	ARG	ARG	SER	GLU	ALA	LYS	GLU	LEU	ILE	ILE	LEU	GLU	LYS	GLY	PHO	THR	LEU	LYS	GLU
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● Molecule 2: DNA-directed RNA polymerase subunit beta



M1	F7	G7	R8	E11	V12	L15	P16	L16	P17	E20	E55	E56	GLU	ASP	LYS	GLY	GLY	GLY	GLY	L64	G74	E75	P76	P77	F78	D81	T89	Y90	Q91	A92	P93	R97	L100	K103	L107	I108	K109	E110	T118	P119	L120	R243	D133	R134	V135	I136
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H141	P144	R157	A160	I163	P164	L165	P166	K167	R168	W171	I172	D173	L174	E175	E177	P178	N179	G180	V181	V186	V186	P194	L200	D203	Q204	E205	E210	L211	Q219	G220	L221	M229	R230	P231	E232	E233	I236	M229	R230	P231	E232	E233	I236	L404	R405	R408	R409	L413	P247	P248	D251
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L280	R265	R266	Y267	D268	L269	G270	A271	E272	R288	D300	L304	L307	V322	L328	R331	V336	D342	D481	Q343	F344	L351	R358	E364	D365	S366	L372	S375	F385	S392	K395	S403	L404	R405	R408	R409	L413	L418
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R422	V427	R428	H434	Y435	G436	E442	A447	L451	T452	T453	S454	D462	E463	L464	R468	R472	T480	F627	D481	Q343	F482	E504	A509	R512	P521	V524	E528	S535	Q538	I547	R557	N563	T566	E709	Q575	A576	P577	V578	V579
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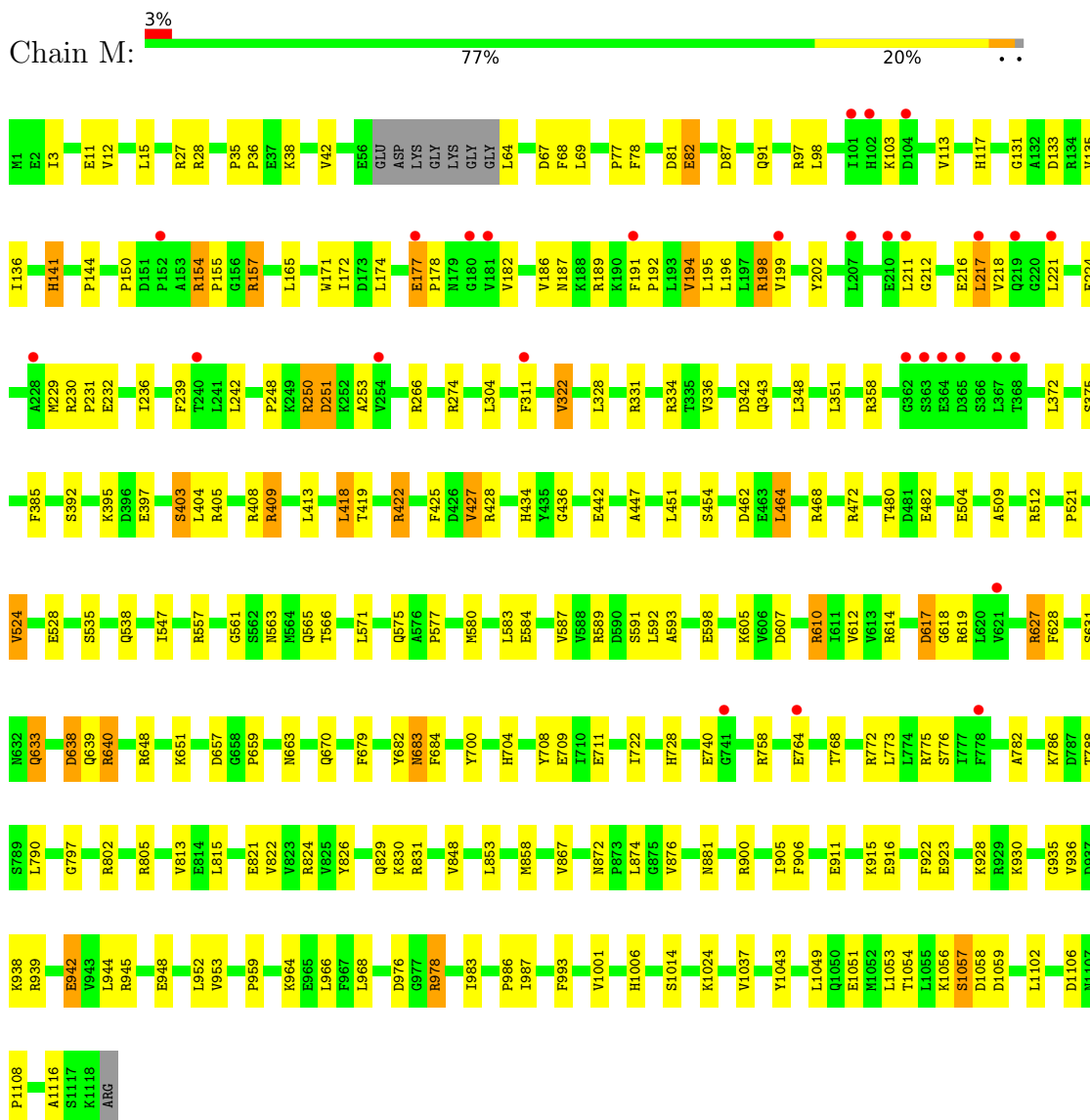
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I722	E740	E766	E771	L774	R775	K786	D787	R791	V792	P793	E796	G797	R802	R805	L806	R807	R808	P811	G812	V813	E814	L815	R820	E821	V822	V823	R824	Y825	Y826	Q829	K830	R831	V848	L853	M858	V867	N872	E709	P873	L874	N881
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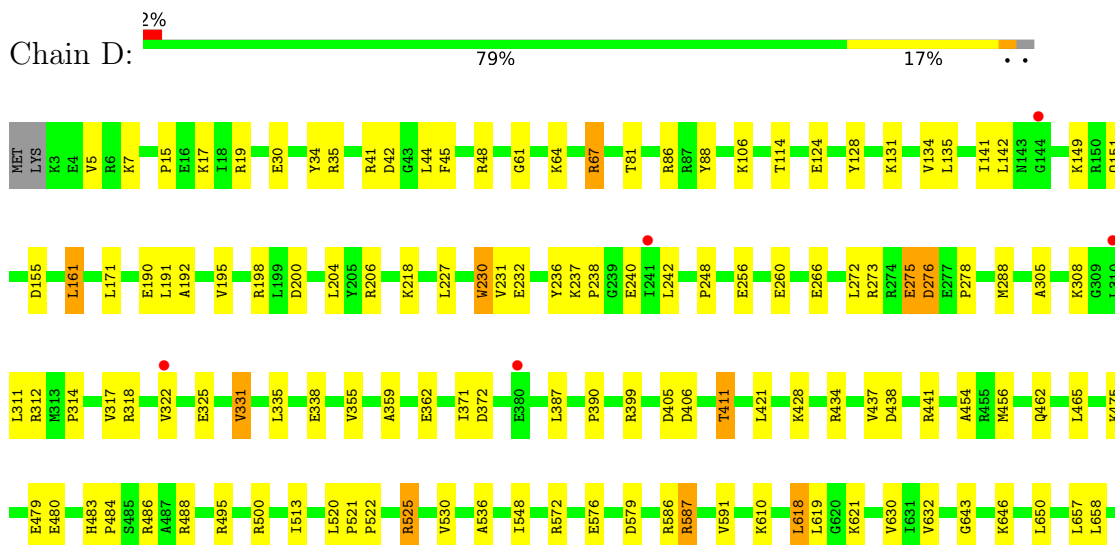
I905	F906	A909	K910	E911	K915	E916	F922	E923	K928	E929	K930	F934	G935	V936	D937	K938	R939	E942	V943	L944	R945	E948	L952	V953	T954	P955	P959	K964	E965	L966	F967	L968	D976	G977	R978	I983	P986	I987	F993	V1001	H1006	S1014
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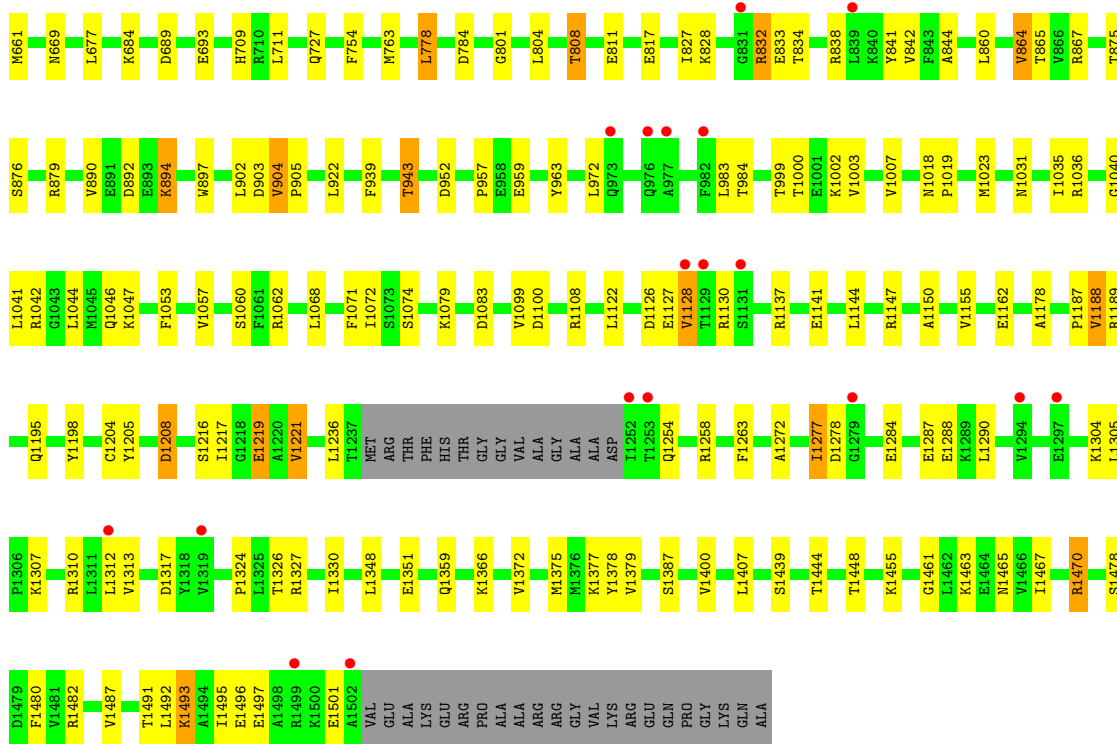
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● Molecule 2: DNA-directed RNA polymerase subunit beta

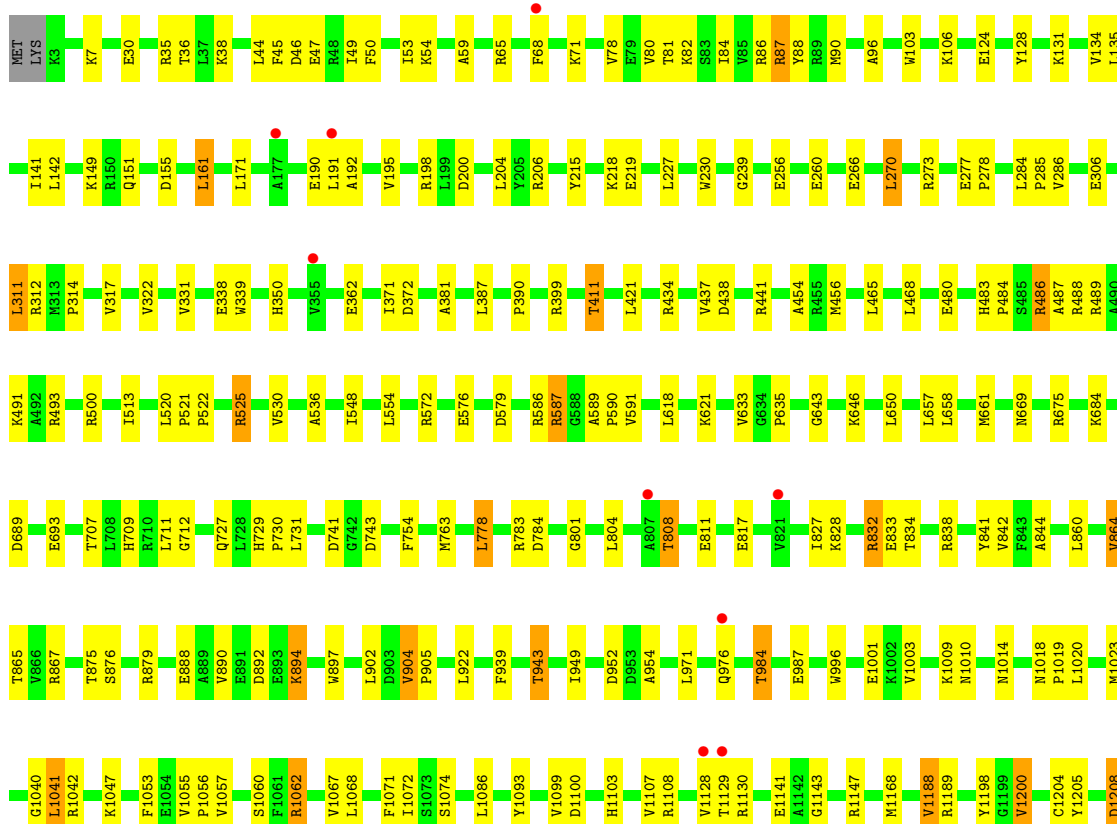
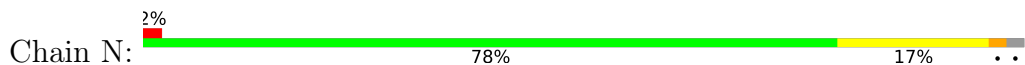


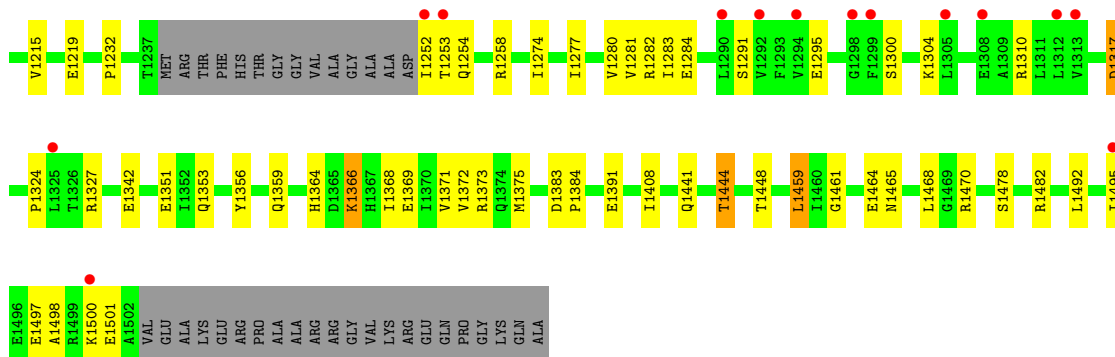
• Molecule 3: DNA-directed RNA polymerase subunit beta'



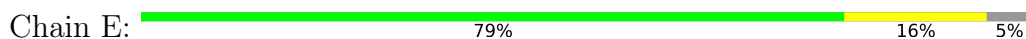


• Molecule 3: DNA-directed RNA polymerase subunit beta'

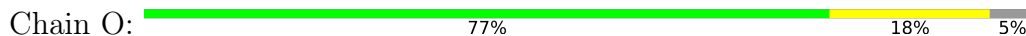




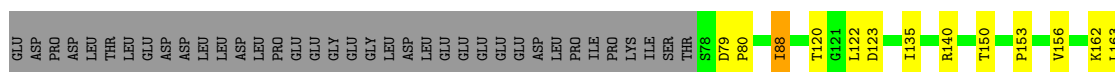
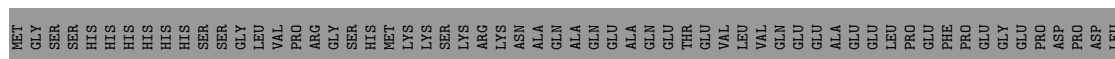
- Molecule 4: DNA-directed RNA polymerase subunit omega



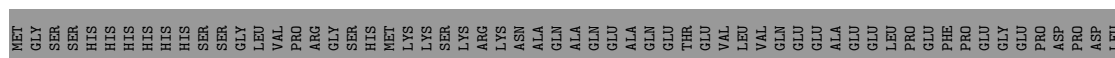
- Molecule 4: DNA-directed RNA polymerase subunit omega

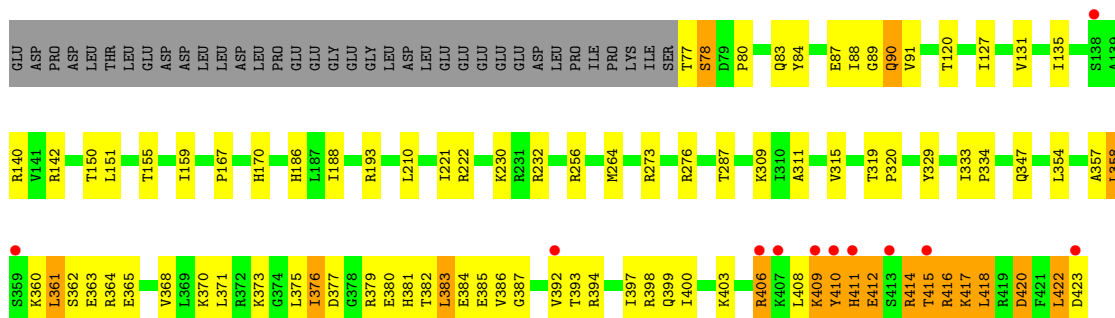


- Molecule 5: RNA polymerase sigma factor

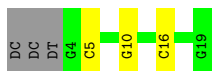


- Molecule 5: RNA polymerase sigma factor





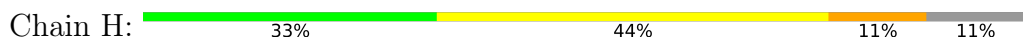
- Molecule 6: 5'-D(\*CP\*CP\*T\*GP\*CP\*AP\*TP\*CP\*CP\*GP\*TP\*GP\*AP\*GP\*TP\*CP\*GP\*AP\*G)-3'



- Molecule 6: 5'-D(\*CP\*CP\*T\*GP\*CP\*AP\*TP\*CP\*CP\*GP\*TP\*GP\*AP\*GP\*TP\*CP\*GP\*AP\*G)-3'



- Molecule 7: 5'-D(\*TP\*AP\*TP\*AP\*AP\*TP\*GP\*GP\*GP\*AP\*GP\*CP\*TP\*GP\*TP\*CP\*AP\*CP\*GP\*GP\*AP\*TP\*GP\*CP\*AP\*GP\*G)-3'



- Molecule 7: 5'-D(\*TP\*AP\*TP\*AP\*AP\*TP\*GP\*GP\*GP\*AP\*GP\*CP\*TP\*GP\*TP\*CP\*AP\*CP\*GP\*GP\*AP\*TP\*GP\*CP\*AP\*GP\*G)-3'



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	185.56Å 104.57Å 297.55Å 90.00° 98.32° 90.00°	Depositor
Resolution (Å)	49.27 – 2.90 49.90 – 2.90	Depositor EDS
% Data completeness (in resolution range)	99.5 (49.27-2.90) 99.6 (49.90-2.90)	Depositor EDS
$R_{merge}$	0.10	Depositor
$R_{sym}$	0.10	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.11 (at 2.91Å)	Xtrriage
Refinement program	PHENIX (phenix.refine: 1.7.3_928)	Depositor
R, $R_{free}$	0.188 , 0.226 0.194 , 0.231	Depositor DCC
$R_{free}$ test set	2205 reflections (0.88%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	61.5	Xtrriage
Anisotropy	0.653	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.29 , 46.7	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	57420	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	71.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 25.73 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.0020e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: MG, ZN

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	0.32	0/1814	0.59	2/2466 (0.1%)
1	B	0.30	0/1782	0.52	0/2424
1	K	0.29	0/1814	0.67	5/2466 (0.2%)
1	L	0.29	0/1805	0.63	3/2454 (0.1%)
2	C	0.33	0/8937	0.54	4/12087 (0.0%)
2	M	0.32	0/8937	0.54	3/12087 (0.0%)
3	D	0.32	0/11944	0.50	0/16149
3	N	0.31	0/11944	0.50	1/16149 (0.0%)
4	E	0.28	0/775	0.45	0/1045
4	O	0.30	0/775	0.44	0/1045
5	F	0.30	0/2852	0.47	0/3837
5	P	0.30	0/2859	0.50	0/3847
6	G	0.60	0/368	1.26	3/567 (0.5%)
6	Q	0.54	0/368	1.27	4/567 (0.7%)
7	H	0.59	0/556	1.33	6/858 (0.7%)
7	R	0.58	0/556	1.35	7/858 (0.8%)
All	All	0.33	0/58086	0.57	38/78906 (0.0%)

There are no bond length outliers.

All (38) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	M	422	ARG	NE-CZ-NH2	-13.77	113.42	120.30
2	M	422	ARG	NE-CZ-NH1	13.31	126.95	120.30
1	L	112	ARG	NE-CZ-NH1	-12.08	114.26	120.30
2	C	422	ARG	NE-CZ-NH1	-11.95	114.33	120.30
1	L	112	ARG	NE-CZ-NH2	11.77	126.19	120.30
1	K	112	ARG	NE-CZ-NH2	-11.61	114.50	120.30
2	C	422	ARG	NE-CZ-NH2	11.47	126.04	120.30
6	G	5	DC	O4'-C4'-C3'	-10.84	99.49	106.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	K	112	ARG	NE-CZ-NH1	10.80	125.70	120.30
1	K	198	ARG	NE-CZ-NH2	-10.79	114.90	120.30
1	A	198	ARG	NE-CZ-NH1	-10.70	114.95	120.30
6	Q	5	DC	O4'-C4'-C3'	-10.66	99.60	106.00
1	K	198	ARG	NE-CZ-NH1	9.81	125.21	120.30
1	A	198	ARG	NE-CZ-NH2	9.46	125.03	120.30
2	M	422	ARG	CD-NE-CZ	7.83	134.57	123.60
6	G	16	DC	O4'-C4'-C3'	-7.06	101.67	104.50
6	G	5	DC	C4'-C3'-C2'	-6.62	97.14	103.10
6	Q	5	DC	C4'-C3'-C2'	-6.57	97.18	103.10
2	C	422	ARG	CD-NE-CZ	6.42	132.59	123.60
7	R	23	DG	C4'-C3'-C2'	-6.38	97.36	103.10
7	H	23	DG	C4'-C3'-C2'	-6.34	97.39	103.10
7	R	16	DC	C3'-C2'-C1'	-6.11	95.17	102.50
1	L	112	ARG	CD-NE-CZ	5.89	131.85	123.60
2	C	422	ARG	CG-CD-NE	5.76	123.91	111.80
6	Q	16	DC	O4'-C4'-C3'	-5.62	102.25	104.50
1	K	112	ARG	CD-NE-CZ	5.58	131.42	123.60
7	R	17	DA	O4'-C1'-N9	5.53	111.87	108.00
7	R	13	DT	N3-C4-O4	5.52	123.21	119.90
3	N	311	LEU	CA-CB-CG	5.49	127.92	115.30
7	R	23	DG	O4'-C4'-C3'	-5.42	102.33	104.50
7	H	15	DT	O4'-C1'-N1	5.30	111.71	108.00
7	H	16	DC	C3'-C2'-C1'	-5.25	96.20	102.50
7	H	4	DA	O4'-C1'-N9	-5.20	104.36	108.00
7	H	23	DG	O4'-C1'-N9	5.20	111.64	108.00
7	R	23	DG	C3'-C2'-C1'	-5.14	96.33	102.50
7	R	13	DT	C5-C4-O4	-5.10	121.33	124.90
7	H	6	DT	O4'-C1'-N1	-5.01	104.50	108.00
6	Q	11	DT	N3-C4-O4	5.01	122.90	119.90

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of 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	1782	0	1834	41	0
1	B	1750	0	1797	29	0
1	K	1782	0	1834	35	0
1	L	1773	0	1826	25	0
2	C	8770	0	8874	146	0
2	M	8770	0	8874	158	0
3	D	11738	0	11971	157	0
3	N	11738	0	11971	158	0
4	E	761	0	778	11	0
4	O	761	0	778	12	0
5	F	2807	0	2882	41	0
5	P	2814	0	2889	85	0
6	G	328	0	181	1	0
6	Q	328	0	181	1	0
7	H	495	0	272	12	0
7	R	495	0	272	10	0
8	B	1	0	0	0	0
8	D	3	0	0	0	0
8	F	1	0	0	0	0
8	K	1	0	0	0	0
8	N	3	0	0	0	0
8	P	1	0	0	0	0
9	D	2	0	0	0	0
9	N	2	0	0	0	0
10	A	16	0	0	2	0
10	B	4	0	0	0	0
10	C	104	0	0	8	0
10	D	138	0	0	5	0
10	E	5	0	0	0	0
10	F	32	0	0	3	0
10	G	7	0	0	0	0
10	H	6	0	0	1	0
10	K	12	0	0	0	0
10	L	8	0	0	0	0
10	M	58	0	0	1	0
10	N	89	0	0	2	0
10	O	6	0	0	0	0
10	P	21	0	0	0	0
10	Q	3	0	0	0	0
10	R	5	0	0	0	0
All	All	57420	0	57214	835	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 7.

All (835) 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:P:415:THR:HG22	5:P:416:ARG:CG	1.50	1.41
5:P:415:THR:CG2	5:P:416:ARG:HG3	1.51	1.40
2:M:172:ILE:HG13	2:M:186:VAL:HG22	1.19	1.14
5:P:415:THR:HG22	5:P:416:ARG:CD	1.89	1.01
2:C:627:ARG:NH1	2:C:638:ASP:OD2	1.92	1.01
1:B:112:ARG:NH1	1:B:126:ASP:OD1	1.98	0.96
2:M:1056:LYS:NZ	10:M:1209:HOH:O	1.98	0.95
5:P:415:THR:HG22	5:P:416:ARG:NE	1.81	0.95
2:M:172:ILE:CG1	2:M:186:VAL:HG22	1.96	0.95
5:P:415:THR:CG2	5:P:416:ARG:NE	2.30	0.95
5:P:90:GLN:HA	5:P:90:GLN:NE2	1.85	0.90
2:C:591:SER:O	2:C:592:LEU:HB2	1.70	0.88
3:D:238:PRO:HD3	3:D:318:ARG:HG3	1.56	0.86
5:P:90:GLN:NE2	5:P:90:GLN:CA	2.38	0.86
1:A:112:ARG:HG2	1:A:112:ARG:HH21	1.40	0.86
5:P:90:GLN:N	5:P:90:GLN:HE21	1.75	0.85
5:P:415:THR:HG22	5:P:416:ARG:HG3	0.86	0.85
5:P:410:TYR:O	5:P:414:ARG:HB2	1.77	0.83
5:P:415:THR:HG23	5:P:416:ARG:HG3	1.61	0.83
1:B:111:ALA:HB3	1:B:125:PRO:HA	1.61	0.82
5:P:411:HIS:O	5:P:415:THR:HB	1.79	0.82
2:C:168:ARG:NH2	2:C:265:ARG:O	2.12	0.82
2:M:266:ARG:NH1	7:R:11:DG:N7	2.27	0.81
2:M:628:PHE:H	2:M:638:ASP:HB2	1.45	0.81
5:P:415:THR:CG2	5:P:416:ARG:CG	2.30	0.81
5:P:417:LYS:O	5:P:417:LYS:HG2	1.81	0.79
2:M:591:SER:O	2:M:592:LEU:HB2	1.83	0.78
2:M:905:ILE:HG23	2:M:906:PHE:HD2	1.48	0.78
5:P:414:ARG:HD3	5:P:414:ARG:N	1.99	0.77
3:N:675:ARG:NH2	5:P:420:ASP:OD1	2.17	0.77
5:P:140:ARG:HG3	5:P:142:ARG:HH22	1.50	0.77
2:C:628:PHE:H	2:C:638:ASP:HB2	1.50	0.77
2:C:905:ILE:HG23	2:C:906:PHE:HD2	1.49	0.76
1:L:206:THR:HG22	1:L:209:GLU:H	1.51	0.75
3:D:1254:GLN:HB3	3:D:1258:ARG:HB2	1.69	0.75
3:N:128:TYR:OH	3:N:579:ASP:OD2	2.04	0.75
3:N:1254:GLN:HB3	3:N:1258:ARG:HB2	1.68	0.75
3:N:1310:ARG:HB2	3:N:1327:ARG:HB2	1.68	0.75
5:P:90:GLN:CA	5:P:90:GLN:HE21	1.98	0.75
7:R:13:DT:H5''	7:R:13:DT:H6	1.52	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:206:THR:HG22	1:B:209:GLU:H	1.50	0.74
2:M:462:ASP:HB3	2:M:468:ARG:HD2	1.70	0.73
5:F:397:ILE:HD12	5:F:400:ILE:HD11	1.70	0.73
5:P:412:GLU:HA	5:P:416:ARG:NE	2.04	0.73
3:N:218:LYS:HG2	3:N:338:GLU:HG2	1.70	0.73
2:C:462:ASP:HB3	2:C:468:ARG:HD2	1.72	0.72
2:M:428:ARG:NH2	2:M:447:ALA:O	2.21	0.72
2:C:1056:LYS:NZ	10:C:1208:HOH:O	2.21	0.72
2:M:983:ILE:HG21	2:M:987:ILE:HD11	1.70	0.72
2:C:709:GLU:OE2	2:C:824:ARG:NH1	2.22	0.72
5:P:417:LYS:O	5:P:417:LYS:CG	2.32	0.72
3:D:124:GLU:OE2	3:D:587:ARG:NH2	2.22	0.72
2:C:428:ARG:NH2	2:C:447:ALA:O	2.22	0.72
1:A:112:ARG:HH21	1:A:112:ARG:CG	1.99	0.71
3:D:218:LYS:HG2	3:D:338:GLU:HG2	1.71	0.71
2:M:422:ARG:HH21	7:R:14:DG:H3'	1.53	0.71
2:M:78:PHE:HB3	2:M:82:GLU:HG2	1.71	0.71
2:C:983:ILE:HG21	2:C:987:ILE:HD11	1.72	0.71
5:F:188:ILE:HD13	5:F:221:ILE:HG12	1.73	0.71
3:N:633:VAL:HG13	3:N:633:VAL:O	1.91	0.70
2:M:172:ILE:HG13	2:M:186:VAL:CG2	2.11	0.70
3:D:1208:ASP:OD1	3:D:1208:ASP:C	2.31	0.69
2:M:773:LEU:HD23	5:P:354:LEU:HD13	1.74	0.69
2:M:144:PRO:HG2	2:M:165:LEU:HD23	1.74	0.69
3:D:142:LEU:HB2	3:D:161:LEU:HD11	1.73	0.69
3:N:520:LEU:O	3:N:525:ARG:NH1	2.25	0.69
3:N:1498:ALA:HB1	4:O:84:ARG:HH21	1.58	0.69
2:M:802:ARG:HB2	2:M:826:TYR:HB2	1.75	0.69
5:F:166:LEU:HD13	5:F:170:HIS:HB3	1.75	0.68
3:D:520:LEU:O	3:D:525:ARG:NH1	2.26	0.68
3:N:142:LEU:HB2	3:N:161:LEU:HD11	1.74	0.68
3:N:1282:ARG:NH1	3:N:1295:GLU:OE2	2.27	0.68
3:N:1108:ARG:NH2	3:N:1198:TYR:O	2.26	0.68
2:M:627:ARG:NE	2:M:639:GLN:O	2.27	0.68
3:D:1108:ARG:NH2	3:D:1198:TYR:O	2.26	0.67
3:N:1040:GLY:O	3:N:1060:SER:HB3	1.94	0.67
3:N:1208:ASP:C	3:N:1208:ASP:OD1	2.30	0.67
3:N:124:GLU:OE2	3:N:587:ARG:NH2	2.28	0.67
3:N:36:THR:HG23	3:N:38:LYS:H	1.59	0.67
5:P:273:ARG:HG2	5:P:276:ARG:HH12	1.58	0.67
3:D:260:GLU:OE1	3:D:273:ARG:NH1	2.24	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:266:ARG:NH1	7:H:11:DG:N7	2.43	0.66
2:C:210:GLU:HB3	2:C:211:LEU:HD12	1.77	0.66
1:A:112:ARG:NH1	1:A:126:ASP:OD2	2.28	0.66
2:M:172:ILE:CG1	2:M:186:VAL:CG2	2.71	0.66
2:C:683:ASN:HB3	2:C:872:ASN:HD22	1.59	0.65
5:P:361:LEU:HD12	5:P:362:SER:H	1.60	0.65
3:D:128:TYR:OH	3:D:579:ASP:OD2	2.13	0.65
3:D:61:GLY:O	3:D:64:LYS:NZ	2.28	0.65
2:M:1116:ALA:HB2	3:N:88:TYR:HB3	1.78	0.65
1:K:193:ASP:OD2	2:M:938:LYS:NZ	2.19	0.65
2:M:683:ASN:HB3	2:M:872:ASN:HD22	1.61	0.65
3:N:134:VAL:HG12	3:N:454:ALA:HB2	1.79	0.65
2:C:167:LYS:HD3	7:H:12:DC:H5	1.62	0.65
5:P:383:LEU:H	5:P:383:LEU:HD22	1.62	0.65
5:P:91:VAL:O	5:P:193:ARG:NH1	2.29	0.64
3:N:480:GLU:OE2	3:N:488:ARG:NH2	2.31	0.64
2:C:55:GLU:O	2:C:56:GLU:HB3	1.97	0.64
2:M:776:SER:OG	5:P:373:LYS:NZ	2.27	0.64
3:N:1258:ARG:HH21	3:N:1351:GLU:HG2	1.63	0.64
5:P:414:ARG:N	5:P:414:ARG:CD	2.61	0.64
2:M:1059:ASP:OD1	2:M:1059:ASP:C	2.36	0.63
2:C:164:PRO:HD2	2:C:171:TRP:CD1	2.33	0.63
3:D:371:ILE:HG23	5:F:230:LYS:HD2	1.79	0.63
3:D:480:GLU:OE2	3:D:488:ARG:NH2	2.31	0.63
2:C:521:PRO:HB3	3:D:1068:LEU:HD21	1.80	0.63
3:D:1495:ILE:HG12	4:E:88:GLU:HG3	1.80	0.63
1:A:112:ARG:CG	1:A:112:ARG:NH2	2.60	0.62
2:M:236:ILE:HG23	2:M:248:PRO:HB3	1.80	0.62
3:D:621:LYS:NZ	10:D:2143:HOH:O	2.34	0.61
2:M:409:ARG:HG2	2:M:409:ARG:NH1	2.15	0.61
2:C:853:LEU:HB2	2:C:858:MET:HE1	1.83	0.61
1:K:179:PHE:HB3	1:K:197:LEU:HD23	1.83	0.61
2:C:1116:ALA:HB2	3:D:88:TYR:HB3	1.82	0.61
2:C:711:GLU:HG2	2:C:822:VAL:HG22	1.82	0.60
5:P:415:THR:CG2	5:P:416:ARG:HE	2.13	0.60
3:D:266:GLU:HG3	3:D:314:PRO:HB3	1.82	0.60
1:A:216:GLU:OE2	1:A:219:ARG:NH2	2.34	0.60
2:C:135:VAL:HG23	2:C:395:LYS:HG3	1.83	0.60
1:A:179:PHE:HB3	1:A:197:LEU:HD23	1.82	0.60
2:M:709:GLU:OE2	2:M:824:ARG:NH1	2.35	0.60
3:N:1495:ILE:HG13	4:O:88:GLU:HG3	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:222:LEU:HD22	1:L:215:VAL:HG12	1.84	0.60
3:D:1491:THR:HG21	4:E:89:MET:HG2	1.83	0.60
2:M:141:HIS:CE1	2:M:334:ARG:HD2	2.37	0.60
1:K:104:GLU:OE2	1:K:137:ARG:NH1	2.35	0.60
2:C:211:LEU:HD11	2:C:304:LEU:HD11	1.82	0.59
3:D:1372:VAL:HA	3:D:1375:MET:HE3	1.84	0.59
1:A:24:VAL:HG22	1:A:196:THR:HG23	1.83	0.59
2:M:171:TRP:CE3	7:R:13:DT:H2'	2.37	0.59
7:H:5:DA:N6	10:H:101:HOH:O	2.35	0.59
1:K:216:GLU:OE2	1:K:219:ARG:NH2	2.36	0.59
7:R:12:DC:H1'	7:R:13:DT:C5	2.37	0.59
2:M:343:GLN:HG3	2:M:385:PHE:HB2	1.83	0.59
1:A:104:GLU:OE2	1:A:137:ARG:NH1	2.35	0.59
5:F:364:ARG:NH1	10:F:2101:HOH:O	2.36	0.59
3:D:45:PHE:O	3:D:86:ARG:NH2	2.36	0.59
5:F:365:GLU:HB2	5:F:404:ALA:HB2	1.83	0.59
1:A:106:PRO:HG3	1:A:134:GLU:HG2	1.85	0.58
2:C:243:ARG:NH2	7:H:9:DG:O6	2.22	0.58
5:P:167:PRO:HG2	5:P:170:HIS:HB2	1.85	0.58
2:C:802:ARG:HB2	2:C:826:TYR:HB2	1.85	0.58
5:P:89:GLY:C	5:P:90:GLN:HE21	2.05	0.58
2:M:409:ARG:HG2	2:M:409:ARG:HH11	1.68	0.58
3:D:1071:PHE:O	3:D:1074:SER:OG	2.22	0.58
5:F:361:LEU:HB3	5:F:365:GLU:HG3	1.85	0.58
1:A:198:ARG:HD3	2:C:934:PHE:CZ	2.37	0.58
2:C:766:GLU:HG3	3:D:64:LYS:HD2	1.85	0.58
1:A:222:LEU:HD22	1:B:215:VAL:HG12	1.85	0.58
5:P:412:GLU:O	5:P:416:ARG:HD2	2.03	0.58
2:C:343:GLN:HG3	2:C:385:PHE:HB2	1.85	0.58
5:P:415:THR:C	5:P:416:ARG:HG3	2.17	0.58
1:A:222:LEU:HD21	1:B:218:LEU:HD23	1.86	0.57
2:C:270:GLY:HA3	10:C:1298:HOH:O	2.04	0.57
1:K:24:VAL:HG22	1:K:196:THR:HG23	1.85	0.57
3:N:1143:GLY:O	3:N:1147:ARG:HD2	2.04	0.57
2:C:617:ASP:OD1	2:C:617:ASP:N	2.37	0.57
2:C:422:ARG:HG2	7:H:15:DT:OP2	2.04	0.57
5:P:360:LYS:NZ	5:P:416:ARG:HH22	2.02	0.57
2:M:617:ASP:OD1	2:M:617:ASP:N	2.38	0.57
3:D:1040:GLY:O	3:D:1060:SER:HB3	2.06	0.56
1:K:106:PRO:HG3	1:K:134:GLU:HG2	1.85	0.56
2:M:683:ASN:HB3	2:M:872:ASN:HB2	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:853:LEU:HB2	2:M:858:MET:HE1	1.88	0.56
3:D:134:VAL:HG12	3:D:454:ALA:HB2	1.88	0.56
5:F:393:THR:HG22	5:F:395:GLU:H	1.69	0.56
1:K:64:GLU:HG2	1:K:76:VAL:HG22	1.88	0.56
2:M:177:GLU:HG3	2:M:178:PRO:HD2	1.88	0.56
3:D:828:LYS:HG2	3:D:833:GLU:HB3	1.88	0.56
1:K:184:THR:O	1:K:192:LEU:HB2	2.06	0.56
3:N:828:LYS:HG2	3:N:833:GLU:HB3	1.88	0.56
2:M:577:PRO:HG2	2:M:580:MET:HG2	1.87	0.55
3:N:1295:GLU:HG2	3:N:1300:SER:HB2	1.88	0.55
5:P:386:VAL:HG22	5:P:397:ILE:HD13	1.88	0.55
2:C:853:LEU:HB2	2:C:858:MET:CE	2.36	0.55
3:D:1478:SER:O	3:D:1482:ARG:HB2	2.06	0.55
5:F:193:ARG:HB3	7:H:7:DG:H5''	1.88	0.55
2:C:136:ILE:HB	2:C:336:VAL:HG13	1.87	0.55
1:K:222:LEU:HD21	1:L:218:LEU:HD23	1.88	0.55
3:D:841:TYR:HB2	3:D:864:VAL:HG22	1.89	0.55
1:L:83:LYS:HE2	1:L:168:ASP:HB2	1.88	0.55
5:F:187:LEU:HD23	5:F:224:VAL:HG13	1.89	0.55
3:N:841:TYR:HB2	3:N:864:VAL:HG22	1.89	0.55
2:M:853:LEU:HB2	2:M:858:MET:CE	2.37	0.55
2:M:936:VAL:HG11	2:M:959:PRO:HB2	1.89	0.55
1:A:64:GLU:HG2	1:A:76:VAL:HG22	1.89	0.54
3:N:984:THR:HG22	3:N:987:GLU:H	1.72	0.54
4:O:90:GLU:HG2	4:O:95:VAL:CG2	2.36	0.54
2:C:395:LYS:HD3	2:C:403:SER:HB3	1.89	0.54
3:D:1379:VAL:HG21	3:D:1400:VAL:HG11	1.90	0.54
2:M:68:PHE:HA	2:M:98:LEU:HD23	1.89	0.54
3:D:434:ARG:NH2	5:F:135:ILE:O	2.40	0.54
1:L:80:LEU:HG	3:N:844:ALA:HA	1.90	0.54
2:M:418:LEU:HD21	2:M:427:VAL:HG11	1.89	0.54
5:P:415:THR:HB	5:P:416:ARG:HE	1.72	0.54
2:C:617:ASP:HB2	2:C:619:ARG:HG2	1.89	0.54
2:C:708:TYR:OH	2:C:796:GLU:OE1	2.18	0.54
2:M:905:ILE:HG23	2:M:906:PHE:CD2	2.37	0.54
3:N:1205:TYR:CE1	3:N:1366:LYS:HD2	2.42	0.54
2:C:936:VAL:HG11	2:C:959:PRO:HB2	1.90	0.54
1:L:56:VAL:HG21	1:L:82:LEU:HD13	1.90	0.54
2:C:177:GLU:HG3	2:C:178:PRO:HD2	1.89	0.54
2:M:3:ILE:HD13	2:M:900:ARG:HB2	1.90	0.54
2:C:915:LYS:NZ	3:D:952:ASP:OD2	2.40	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:112:ARG:NH1	1:B:126:ASP:CG	2.62	0.54
2:M:212:GLY:HA2	2:M:218:VAL:HG11	1.90	0.54
2:M:607:ASP:HB2	2:M:610:ARG:NH1	2.23	0.54
5:P:418:LEU:O	5:P:418:LEU:HD23	2.08	0.54
1:A:193:ASP:OD1	2:C:938:LYS:NZ	2.35	0.53
1:B:56:VAL:HG21	1:B:82:LEU:HD13	1.90	0.53
2:C:563:ASN:O	2:C:566:THR:HB	2.07	0.53
2:C:577:PRO:HG2	2:C:580:MET:HG2	1.89	0.53
2:M:627:ARG:NH1	2:M:638:ASP:OD2	2.41	0.53
3:N:239:GLY:O	3:N:312:ARG:NH2	2.40	0.53
2:C:607:ASP:HB2	2:C:610:ARG:NH1	2.24	0.53
2:M:136:ILE:HB	2:M:336:VAL:HG13	1.90	0.53
2:M:617:ASP:HB2	2:M:619:ARG:HG2	1.89	0.53
2:M:628:PHE:H	2:M:638:ASP:CB	2.20	0.53
3:N:1497:GLU:HA	3:N:1500:LYS:HB2	1.90	0.53
1:K:220:GLU:O	1:K:223:THR:HB	2.07	0.53
2:M:198:ARG:NE	2:M:229:MET:O	2.31	0.53
2:M:775:ARG:HD3	2:M:782:ALA:HB2	1.90	0.53
2:M:563:ASN:O	2:M:566:THR:HB	2.08	0.53
3:N:1372:VAL:HA	3:N:1375:MET:HE3	1.90	0.53
3:D:1150:ALA:HB3	3:D:1187:PRO:HB2	1.90	0.53
3:N:90:MET:HG2	3:N:521:PRO:HD3	1.90	0.53
3:N:1252:ILE:HG23	3:N:1253:THR:HG23	1.90	0.53
1:B:71:VAL:HG22	1:B:132:LEU:HG	1.91	0.53
3:D:904:VAL:HG22	3:D:905:PRO:HD2	1.90	0.53
2:M:521:PRO:HB3	3:N:1068:LEU:HD21	1.90	0.53
2:M:1006:HIS:HB2	2:M:1024:LYS:HG3	1.90	0.53
2:C:1058:ASP:OD2	3:D:621:LYS:HE2	2.09	0.53
3:D:44:LEU:HB3	3:D:525:ARG:NH2	2.24	0.53
3:N:314:PRO:HB2	3:N:317:VAL:HG12	1.90	0.53
5:F:120:THR:HG21	5:F:122:LEU:HD22	1.91	0.53
1:B:83:LYS:HE2	1:B:168:ASP:HB2	1.90	0.53
2:M:217:LEU:HD13	2:M:217:LEU:H	1.74	0.53
2:M:1106:ASP:OD1	3:N:7:LYS:NZ	2.25	0.53
3:N:633:VAL:O	3:N:633:VAL:CG1	2.57	0.53
2:C:422:ARG:NH2	7:H:14:DG:H3'	2.24	0.52
3:D:1461:GLY:O	3:D:1465:ASN:ND2	2.41	0.52
2:M:12:VAL:HG11	2:M:472:ARG:HD3	1.91	0.52
3:N:643:GLY:HA3	3:N:727:GLN:HB2	1.90	0.52
4:E:45:ARG:NH1	4:E:56:ASP:OD2	2.43	0.52
1:L:71:VAL:HG22	1:L:132:LEU:HG	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:425:PHE:CE2	3:N:1086:LEU:HD12	2.45	0.52
3:N:1093:TYR:OH	3:N:1441:GLN:OE1	2.19	0.52
1:A:57:TYR:CD1	1:A:161:ARG:HD2	2.45	0.52
1:B:111:ALA:HB3	1:B:125:PRO:CA	2.36	0.52
5:F:153:PRO:HA	5:F:156:VAL:HG22	1.91	0.52
4:O:45:ARG:NH1	4:O:56:ASP:OD2	2.42	0.52
2:C:418:LEU:HD21	2:C:427:VAL:HG11	1.90	0.52
2:C:547:ILE:O	2:C:905:ILE:HD11	2.09	0.52
3:D:242:LEU:HB3	3:D:311:LEU:HD12	1.91	0.52
1:A:94:LEU:O	1:A:146:ARG:NH1	2.43	0.52
1:A:220:GLU:O	1:A:223:THR:HB	2.09	0.52
1:L:80:LEU:HB3	3:N:867:ARG:NH2	2.24	0.52
3:N:1274:ILE:HG22	3:N:1324:PRO:HA	1.92	0.52
2:M:704:HIS:CD2	2:M:831:ARG:HD2	2.44	0.52
3:N:1147:ARG:HD3	3:N:1188:VAL:HG11	1.91	0.52
3:N:411:THR:HB	3:N:437:VAL:H	1.75	0.52
3:N:1497:GLU:O	3:N:1501:GLU:HG2	2.10	0.52
3:D:273:ARG:HB3	3:D:278:PRO:HA	1.92	0.52
3:D:1377:LYS:HE3	3:D:1378:TYR:CZ	2.45	0.52
3:D:1444:THR:O	3:D:1448:THR:HG23	2.09	0.52
3:N:904:VAL:HG22	3:N:905:PRO:HD2	1.91	0.52
5:P:415:THR:CB	5:P:416:ARG:HE	2.23	0.52
2:C:74:GLY:HA3	2:C:93:PRO:HG2	1.92	0.51
3:D:1216:SER:N	10:D:2121:HOH:O	2.43	0.51
1:K:57:TYR:CD1	1:K:161:ARG:HD2	2.45	0.51
2:C:77:PRO:HB2	2:C:78:PHE:CD1	2.45	0.51
3:D:1493:LYS:O	3:D:1497:GLU:HG2	2.10	0.51
1:B:92:PRO:O	1:B:146:ARG:NH1	2.41	0.51
2:C:405:ARG:HD2	2:C:442:GLU:OE2	2.10	0.51
3:D:411:THR:HB	3:D:437:VAL:H	1.75	0.51
3:D:1046:GLN:OE1	3:D:1046:GLN:N	2.40	0.51
3:N:1498:ALA:HB1	4:O:84:ARG:NH2	2.24	0.51
2:C:922:PHE:CE2	2:C:964:LYS:HB2	2.46	0.51
3:D:1272:ALA:HA	3:D:1326:THR:HB	1.92	0.51
5:P:387:GLY:HA2	5:P:397:ILE:HD12	1.91	0.51
2:C:1100:GLN:HG3	10:D:2172:HOH:O	2.11	0.51
2:M:614:ARG:NH2	2:M:618:GLY:O	2.43	0.51
1:K:94:LEU:O	1:K:146:ARG:NH1	2.44	0.51
5:P:412:GLU:HA	5:P:416:ARG:CZ	2.40	0.51
1:A:206:THR:HB	1:A:209:GLU:HG3	1.93	0.51
2:C:413:LEU:HD21	2:C:451:LEU:HD13	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1006:HIS:HB2	2:C:1024:LYS:HG3	1.91	0.51
3:D:192:ALA:HB3	3:D:195:VAL:HB	1.93	0.51
2:M:405:ARG:HD2	2:M:442:GLU:OE2	2.10	0.51
2:M:922:PHE:CE2	2:M:964:LYS:HB2	2.45	0.51
3:N:171:LEU:HD22	3:N:390:PRO:HG2	1.90	0.51
5:P:127:ILE:O	5:P:131:VAL:HG23	2.11	0.51
5:P:408:LEU:O	5:P:412:GLU:HB2	2.10	0.51
3:N:192:ALA:HB3	3:N:195:VAL:HB	1.93	0.51
3:N:1189:ARG:HB3	3:N:1204:CYS:HA	1.93	0.51
5:F:400:ILE:HG22	5:F:403:LYS:HE2	1.91	0.51
2:M:605:LYS:HB2	2:M:612:VAL:HB	1.93	0.51
3:D:1258:ARG:HH21	3:D:1351:GLU:HG2	1.75	0.50
2:M:547:ILE:O	2:M:905:ILE:HD11	2.11	0.50
3:D:5:VAL:O	3:D:1470:ARG:NH2	2.44	0.50
2:M:708:TYR:HB3	2:M:790:LEU:HD21	1.92	0.50
3:N:897:TRP:CH2	3:N:902:LEU:HD22	2.46	0.50
2:C:679:PHE:HA	3:D:943:THR:HB	1.94	0.50
3:N:1444:THR:O	3:N:1448:THR:HG23	2.12	0.50
2:C:704:HIS:CD2	2:C:831:ARG:HD2	2.47	0.50
3:D:1053:PHE:CZ	3:D:1072:ILE:HD12	2.46	0.50
2:M:191:PHE:HB2	2:M:192:PRO:HD2	1.93	0.50
3:N:131:LYS:O	3:N:456:MET:HG2	2.11	0.50
3:N:658:LEU:HA	3:N:661:MET:HE3	1.94	0.50
1:B:80:LEU:HG	3:D:844:ALA:HA	1.94	0.50
3:D:1495:ILE:HD13	4:E:80:VAL:HG21	1.93	0.50
1:K:206:THR:HB	1:K:209:GLU:HG3	1.94	0.50
3:N:996:TRP:CD2	3:N:1056:PRO:HG3	2.46	0.50
2:C:614:ARG:NH2	2:C:618:GLY:O	2.44	0.50
2:C:797:GLY:O	2:C:829:GLN:NE2	2.45	0.50
2:M:413:LEU:HD21	2:M:451:LEU:HD13	1.92	0.50
3:D:903:ASP:OD1	10:D:2146:HOH:O	2.19	0.50
2:M:419:THR:H	2:M:422:ARG:HD3	1.76	0.50
3:D:643:GLY:HA3	3:D:727:GLN:HB2	1.93	0.50
2:M:627:ARG:NH2	2:M:640:ARG:HG3	2.27	0.50
2:C:719:PRO:HB3	2:C:820:ARG:NE	2.27	0.49
2:M:758:ARG:HH21	2:M:788:THR:HB	1.76	0.49
3:N:658:LEU:HD23	3:N:661:MET:HE1	1.94	0.49
1:A:184:THR:O	1:A:192:LEU:HB2	2.12	0.49
2:C:905:ILE:HG23	2:C:906:PHE:CD2	2.38	0.49
1:K:39:PRO:HG3	1:L:39:PRO:HG3	1.94	0.49
5:P:410:TYR:O	5:P:414:ARG:CB	2.55	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:605:LYS:HB2	2:C:612:VAL:HB	1.94	0.49
2:C:1037:VAL:HG13	2:C:1049:LEU:HD11	1.94	0.49
5:F:163:LEU:HD13	5:F:174:LEU:HD13	1.95	0.49
3:D:171:LEU:HD22	3:D:390:PRO:HG2	1.94	0.49
5:P:414:ARG:HD3	5:P:414:ARG:H	1.75	0.49
1:A:188:GLN:OE1	1:A:188:GLN:O	2.30	0.49
3:D:288:MET:HE3	3:D:305:ALA:HB3	1.95	0.49
3:D:860:LEU:O	3:D:876:SER:HB2	2.13	0.49
2:M:598:GLU:O	2:M:651:LYS:HG3	2.13	0.49
5:P:370:LYS:HB3	5:P:376:ILE:HD13	1.94	0.49
3:D:897:TRP:CH2	3:D:902:LEU:HD22	2.48	0.49
1:A:70:GLY:N	2:C:607:ASP:OD1	2.46	0.49
2:C:787:ASP:OD2	2:C:791:ARG:NH2	2.46	0.49
2:M:189:ARG:NH1	2:M:242:LEU:O	2.46	0.49
2:M:915:LYS:NZ	3:N:952:ASP:OD2	2.46	0.49
2:M:35:PRO:HG2	2:M:38:LYS:HD3	1.94	0.49
2:M:351:LEU:HD12	2:M:375:SER:HA	1.94	0.49
3:N:270:LEU:HD23	3:N:284:LEU:HD11	1.94	0.49
3:N:832:ARG:HD2	3:N:833:GLU:H	1.78	0.48
3:N:1208:ASP:HB2	3:N:1215:VAL:HG23	1.94	0.48
5:P:415:THR:HG21	5:P:416:ARG:NE	2.20	0.48
2:C:805:ARG:HG3	2:C:823:VAL:HG22	1.95	0.48
2:C:872:ASN:ND2	3:D:784:ASP:OD1	2.41	0.48
3:N:1147:ARG:NH2	3:N:1369:GLU:OE1	2.40	0.48
2:C:740:GLU:HB3	2:C:805:ARG:NH1	2.28	0.48
3:D:355:VAL:HG13	3:D:359:ALA:CB	2.43	0.48
1:L:216:GLU:OE1	1:L:219:ARG:NH2	2.36	0.48
1:A:188:GLN:HB3	1:A:189:ARG:HG2	1.96	0.48
3:D:832:ARG:HD2	3:D:833:GLU:H	1.78	0.48
3:D:248:PRO:HG3	3:D:308:LYS:HE3	1.96	0.48
3:D:1068:LEU:O	3:D:1072:ILE:HG12	2.13	0.48
5:F:372:ARG:HG2	5:F:386:VAL:HG21	1.94	0.48
1:B:216:GLU:OE1	1:B:219:ARG:NH2	2.36	0.48
3:D:1277:ILE:HG22	3:D:1278:ASP:H	1.78	0.48
2:M:682:TYR:CE1	3:N:635:PRO:HD2	2.48	0.48
3:N:1042:ARG:HB3	3:N:1057:VAL:HB	1.95	0.48
2:C:17:PRO:HB2	2:C:20:GLU:HB3	1.96	0.48
3:D:236:TYR:CD2	3:D:322:VAL:HG21	2.49	0.48
1:L:92:PRO:O	1:L:146:ARG:NH1	2.41	0.48
2:M:211:LEU:HD23	2:M:218:VAL:HG13	1.96	0.48
3:N:1281:VAL:HB	3:N:1317:ASP:H	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:N:1258:ARG:NH2	3:N:1351:GLU:HG2	2.28	0.48
2:C:194:VAL:HG22	2:C:221:LEU:HD23	1.95	0.48
3:D:808:THR:O	3:D:811:GLU:HB2	2.14	0.48
3:D:1310:ARG:HD2	3:D:1327:ARG:HD2	1.96	0.48
3:N:860:LEU:O	3:N:876:SER:HB2	2.13	0.48
5:P:354:LEU:O	5:P:358:LEU:HB2	2.14	0.48
2:C:1043:TYR:CG	3:D:763:MET:HG2	2.49	0.48
3:D:227:LEU:HD13	3:D:331:VAL:HG13	1.96	0.48
2:M:577:PRO:HB3	2:M:993:PHE:CG	2.49	0.48
3:N:808:THR:O	3:N:811:GLU:HB2	2.14	0.48
3:D:999:THR:O	3:D:1003:VAL:HG13	2.14	0.47
1:L:56:VAL:HG22	1:L:142:VAL:HG12	1.96	0.47
1:B:80:LEU:HD11	3:D:842:VAL:HG12	1.96	0.47
3:D:1100:ASP:OD1	3:D:1463:LYS:NZ	2.35	0.47
1:K:107:LYS:HE3	1:K:107:LYS:HB2	1.73	0.47
2:M:1037:VAL:HG13	2:M:1049:LEU:HD11	1.97	0.47
2:C:683:ASN:HB3	2:C:872:ASN:HB2	1.97	0.47
3:D:959:GLU:HB3	3:D:963:TYR:CE1	2.48	0.47
1:K:27:PRO:HB2	1:K:192:LEU:HD13	1.96	0.47
2:M:64:LEU:N	2:M:103:LYS:HG3	2.28	0.47
5:P:409:LYS:HE2	5:P:409:LYS:HB2	1.76	0.47
2:C:774:LEU:HD23	5:F:354:LEU:HD21	1.96	0.47
1:L:108:GLU:HG2	1:L:131:THR:HG22	1.96	0.47
2:M:524:VAL:HG13	2:M:528:GLU:HB2	1.96	0.47
2:M:740:GLU:HB3	2:M:805:ARG:HH12	1.79	0.47
2:M:1058:ASP:OD1	3:N:621:LYS:HE2	2.14	0.47
2:C:409:ARG:HD2	2:C:452:ILE:HG22	1.95	0.47
2:C:680:ASP:OD1	3:D:943:THR:HG21	2.14	0.47
2:M:397:GLU:N	2:M:633:GLN:OE1	2.41	0.47
3:N:260:GLU:OE1	3:N:273:ARG:NH1	2.32	0.47
3:D:963:TYR:CE2	3:D:1002:LYS:HD3	2.49	0.47
3:D:1044:LEU:H	3:D:1044:LEU:HD12	1.78	0.47
3:D:1219:GLU:HG2	3:D:1221:VAL:HG23	1.95	0.47
1:A:59:GLU:OE1	1:A:139:ASN:ND2	2.44	0.47
1:B:56:VAL:HG22	1:B:142:VAL:HG12	1.97	0.47
2:C:168:ARG:HD3	2:C:268:ASP:CB	2.44	0.47
3:D:67:ARG:CZ	5:F:379:ARG:HD3	2.45	0.47
3:D:1137:ARG:O	3:D:1141:GLU:HG3	2.14	0.47
3:D:1236:LEU:HA	3:D:1359:GLN:HG3	1.96	0.47
2:M:195:LEU:O	2:M:199:VAL:HG23	2.14	0.47
2:M:722:ILE:HD12	2:M:821:GLU:HG3	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:911:GLU:O	2:M:915:LYS:HG2	2.15	0.47
2:M:966:LEU:HD13	2:M:986:PRO:HB3	1.96	0.47
3:N:82:LYS:HB2	3:N:84:ILE:HG22	1.95	0.47
1:A:70:GLY:HA3	1:A:136:GLY:HA2	1.97	0.47
2:C:524:VAL:HG13	2:C:528:GLU:HB2	1.96	0.47
2:C:1047:HIS:HE1	10:D:2160:HOH:O	1.97	0.47
5:F:270:LYS:HG2	5:F:295:MET:HE1	1.96	0.47
2:M:679:PHE:HA	3:N:943:THR:HB	1.96	0.47
5:P:382:THR:OG1	5:P:385:GLU:OE2	2.33	0.47
3:D:658:LEU:HA	3:D:661:MET:HE3	1.97	0.47
3:D:1263:PHE:HD2	3:D:1375:MET:HE2	1.80	0.47
5:F:80:PRO:HB2	5:F:210:LEU:HD11	1.96	0.47
1:K:70:GLY:N	2:M:607:ASP:OD1	2.47	0.47
1:B:18:ARG:O	1:B:207:PRO:HD3	2.15	0.47
2:C:436:GLY:HA2	2:C:538:GLN:O	2.15	0.47
3:N:892:ASP:OD1	3:N:894:LYS:HD2	2.15	0.47
3:D:658:LEU:HD23	3:D:661:MET:HE1	1.96	0.46
7:H:21:DA:H1'	7:H:22:DT:H5'	1.96	0.46
1:L:18:ARG:O	1:L:207:PRO:HD3	2.15	0.46
2:M:194:VAL:HG13	2:M:221:LEU:HG	1.97	0.46
5:P:193:ARG:HG2	7:R:7:DG:H5''	1.97	0.46
5:P:357:ALA:HB1	5:P:408:LEU:HD21	1.97	0.46
2:C:221:LEU:HD11	2:C:307:LEU:HD21	1.97	0.46
2:C:351:LEU:HD12	2:C:375:SER:HA	1.96	0.46
3:D:1312:LEU:HD12	3:D:1324:PRO:HB2	1.97	0.46
3:N:984:THR:HG22	3:N:987:GLU:HG3	1.98	0.46
3:N:1068:LEU:O	3:N:1072:ILE:HG12	2.14	0.46
2:C:911:GLU:O	2:C:915:LYS:HG2	2.16	0.46
2:M:587:VAL:O	2:M:591:SER:OG	2.30	0.46
3:N:71:LYS:O	3:N:80:VAL:HG22	2.15	0.46
3:N:1364:HIS:ND1	3:N:1366:LYS:HB2	2.30	0.46
1:A:227:ASN:HA	1:A:228:PRO:HD3	1.75	0.46
2:C:598:GLU:O	2:C:651:LYS:HG3	2.15	0.46
2:M:504:GLU:HG2	2:M:509:ALA:HB2	1.98	0.46
2:M:772:ARG:HE	5:P:373:LYS:HD2	1.80	0.46
3:N:438:ASP:OD1	3:N:441:ARG:NH2	2.49	0.46
1:B:108:GLU:HG2	1:B:131:THR:HG22	1.97	0.46
2:C:134:ARG:NH1	2:C:392:SER:O	2.49	0.46
2:M:797:GLY:O	2:M:829:GLN:NE2	2.48	0.46
3:N:1047:LYS:HG2	3:N:1053:PHE:CZ	2.50	0.46
3:N:1371:VAL:HG12	3:N:1375:MET:HE2	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:1057:SER:HB3	2:C:1058:ASP:H	1.51	0.46
3:D:892:ASP:OD1	3:D:894:LYS:HD2	2.15	0.46
2:M:711:GLU:HG2	2:M:822:VAL:HG22	1.97	0.46
2:M:872:ASN:ND2	3:N:784:ASP:OD1	2.39	0.46
3:N:954:ALA:HB3	3:N:1062:ARG:HG3	1.97	0.46
2:C:64:LEU:HD22	2:C:100:LEU:HD11	1.97	0.46
2:C:163:ILE:HG23	2:C:171:TRP:CE2	2.51	0.46
2:C:722:ILE:HD12	2:C:821:GLU:HG3	1.97	0.46
2:C:881:ASN:OD1	2:C:881:ASN:N	2.49	0.46
5:F:201:LYS:NZ	5:F:244:ARG:HH22	2.14	0.46
1:A:39:PRO:HG3	1:B:39:PRO:HG3	1.98	0.46
1:B:80:LEU:HB3	3:D:867:ARG:NH2	2.31	0.46
2:C:118:ILE:HD11	2:C:344:PHE:CE2	2.51	0.46
2:C:186:VAL:HG11	2:C:260:LEU:HD21	1.98	0.46
2:C:504:GLU:HG2	2:C:509:ALA:HB2	1.98	0.46
2:C:580:MET:HB3	2:C:584:GLU:CD	2.36	0.46
3:D:236:TYR:CZ	3:D:242:LEU:HD12	2.51	0.46
5:F:162:LYS:HB2	5:F:162:LYS:HE3	1.72	0.46
5:F:164:LYS:HA	5:F:171:LYS:HE3	1.98	0.46
1:L:49:PRO:HA	1:L:148:VAL:HG12	1.97	0.46
3:N:44:LEU:HB3	3:N:525:ARG:NH2	2.30	0.46
3:N:586:ARG:HH22	6:Q:10:DG:H5'	1.80	0.46
3:D:34:TYR:CZ	3:D:35:ARG:HG3	2.51	0.46
1:K:188:GLN:HG3	1:K:189:ARG:HG3	1.98	0.46
1:L:124:ASN:OD1	1:L:124:ASN:N	2.49	0.45
2:M:69:LEU:HD12	2:M:97:ARG:HG2	1.98	0.45
5:P:77:THR:O	5:P:78:SER:CB	2.64	0.45
3:D:1189:ARG:HB3	3:D:1204:CYS:HA	1.98	0.45
4:E:68:LEU:HD12	4:E:68:LEU:HA	1.77	0.45
3:N:741:ASP:OD1	3:N:743:ASP:OD1	2.34	0.45
7:R:21:DA:H5'	7:R:21:DA:C8	2.51	0.45
7:R:21:DA:H5'	7:R:21:DA:H8	1.82	0.45
1:A:57:TYR:CG	1:A:161:ARG:HD2	2.52	0.45
2:C:331:ARG:NH2	10:C:1304:HOH:O	2.49	0.45
7:H:15:DT:H2'	7:H:16:DC:H5'	1.96	0.45
1:K:70:GLY:HA3	1:K:136:GLY:HA2	1.98	0.45
2:M:216:GLU:CD	2:M:216:GLU:H	2.18	0.45
2:C:172:ILE:CG1	2:C:186:VAL:HG22	2.47	0.45
5:F:333:ILE:HA	5:F:334:PRO:HD3	1.79	0.45
1:L:176:ARG:NH2	3:N:888:GLU:OE1	2.49	0.45
2:M:397:GLU:HG3	2:M:631:SER:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:157:ARG:HA	2:C:157:ARG:HD3	1.77	0.45
2:M:328:LEU:HA	2:M:328:LEU:HD23	1.82	0.45
2:M:436:GLY:HA2	2:M:538:GLN:O	2.15	0.45
5:P:380:GLU:CD	5:P:380:GLU:H	2.20	0.45
2:C:966:LEU:HD13	2:C:986:PRO:HB3	1.97	0.45
3:D:957:PRO:HG3	3:D:1007:VAL:HA	1.99	0.45
1:K:57:TYR:CG	1:K:161:ARG:HD2	2.51	0.45
1:L:34:VAL:HG12	1:L:181:VAL:HG21	1.99	0.45
3:N:1141:GLU:OE1	3:N:1168:MET:HE2	2.16	0.45
4:O:40:LEU:HG	4:O:67:GLU:HG2	1.98	0.45
1:A:186:LEU:C	1:A:188:GLN:H	2.18	0.45
2:M:187:ASN:HD22	2:M:187:ASN:HA	1.60	0.45
2:M:251:ASP:OD1	2:M:251:ASP:N	2.47	0.45
2:M:1102:LEU:HB2	3:N:7:LYS:HB2	1.99	0.45
5:P:415:THR:HG21	5:P:416:ARG:CZ	2.46	0.45
2:C:168:ARG:HD3	2:C:268:ASP:HB3	1.99	0.45
3:D:230:TRP:CZ2	3:D:232:GLU:HG2	2.51	0.45
1:L:64:GLU:HA	1:L:165:ILE:HD13	1.99	0.45
2:M:154:ARG:HA	2:M:155:PRO:HD3	1.66	0.45
2:M:948:GLU:HB3	2:M:953:VAL:HG23	1.98	0.45
1:A:112:ARG:HD2	10:A:412:HOH:O	2.17	0.45
2:C:247:PRO:HA	2:C:248:PRO:HD3	1.65	0.45
5:F:400:ILE:HA	5:F:403:LYS:HG2	1.98	0.45
2:M:67:ASP:OD1	2:M:68:PHE:N	2.50	0.45
3:N:1495:ILE:HD13	4:O:80:VAL:HG21	1.98	0.45
1:B:34:VAL:HG12	1:B:181:VAL:HG21	1.99	0.44
2:C:740:GLU:HB3	2:C:805:ARG:HH12	1.81	0.44
3:D:131:LYS:O	3:D:456:MET:HG2	2.16	0.44
2:M:172:ILE:HG12	2:M:186:VAL:CG2	2.46	0.44
3:N:59:ALA:HB2	3:N:78:VAL:HG21	1.99	0.44
3:N:489:ARG:NH1	3:N:1391:GLU:OE2	2.50	0.44
3:N:1461:GLY:O	3:N:1465:ASN:ND2	2.49	0.44
5:P:364:ARG:HH12	5:P:392:VAL:HG11	1.82	0.44
1:B:91:ASN:HB3	1:B:94:LEU:HB2	1.99	0.44
1:B:124:ASN:OD1	1:B:124:ASN:N	2.51	0.44
2:C:6:PHE:CD2	2:C:909:ALA:HB2	2.52	0.44
2:C:12:VAL:HG21	2:C:472:ARG:HD3	1.99	0.44
2:C:874:LEU:HD23	3:D:1023:MET:SD	2.57	0.44
3:D:134:VAL:HG22	3:D:151:GLN:H	1.82	0.44
3:N:266:GLU:HB3	3:N:314:PRO:HB3	2.00	0.44
3:N:273:ARG:HG2	3:N:278:PRO:HA	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:N:1003:VAL:HG21	3:N:1041:LEU:HG	1.98	0.44
5:P:329:TYR:CE2	5:P:333:ILE:HD11	2.53	0.44
1:B:64:GLU:HA	1:B:165:ILE:HD13	2.00	0.44
7:H:3:DT:H2'	7:H:4:DA:C8	2.52	0.44
1:K:115:LEU:HA	1:K:116:PRO:HD3	1.82	0.44
2:M:404:LEU:O	2:M:408:ARG:HG3	2.16	0.44
2:C:76:PRO:HG3	2:C:120:LEU:CD1	2.47	0.44
2:C:408:ARG:NH2	10:C:1210:HOH:O	2.51	0.44
2:C:1001:VAL:HG13	3:D:630:VAL:HB	1.99	0.44
3:D:959:GLU:OE1	3:D:959:GLU:N	2.50	0.44
3:N:801:GLY:O	3:N:804:LEU:HG	2.18	0.44
2:C:203:ASP:OD2	2:C:204:GLN:N	2.51	0.44
2:C:976:ASP:OD1	2:C:978:ARG:HD3	2.17	0.44
3:D:939:PHE:O	3:D:943:THR:HG22	2.18	0.44
1:K:59:GLU:OE1	1:K:139:ASN:ND2	2.44	0.44
2:M:1054:THR:O	2:M:1059:ASP:HB3	2.18	0.44
2:C:434:HIS:HE1	10:C:1206:HOH:O	2.00	0.44
3:D:801:GLY:O	3:D:804:LEU:HG	2.18	0.44
3:N:1232:PRO:HG2	3:N:1356:TYR:HE2	1.82	0.44
1:A:206:THR:HG22	1:A:208:LEU:H	1.83	0.44
2:M:858:MET:HG2	2:M:867:VAL:O	2.18	0.44
3:N:689:ASP:O	3:N:693:GLU:HG3	2.18	0.44
5:P:188:ILE:HD13	5:P:221:ILE:HG12	1.98	0.44
5:P:403:LYS:HA	5:P:406:ARG:HG2	1.98	0.44
2:C:328:LEU:HA	2:C:328:LEU:HD23	1.81	0.44
3:D:134:VAL:HG23	3:D:149:LYS:HA	2.00	0.44
3:D:521:PRO:HA	3:D:522:PRO:HD3	1.90	0.44
3:D:711:LEU:HD13	3:D:778:LEU:HD13	2.00	0.44
2:M:395:LYS:HE2	2:M:403:SER:HB3	2.00	0.44
3:N:134:VAL:HG22	3:N:151:GLN:H	1.82	0.44
1:A:8:ALA:HA	1:A:9:PRO:HD3	1.66	0.44
3:D:438:ASP:OD1	3:D:441:ARG:NH2	2.49	0.44
5:F:370:LYS:HB3	5:F:376:ILE:HG13	2.00	0.44
3:N:939:PHE:O	3:N:943:THR:HG22	2.18	0.44
2:C:577:PRO:HB3	2:C:993:PHE:CG	2.53	0.43
2:M:28:ARG:HH12	2:M:42:VAL:HG11	1.83	0.43
3:N:536:ALA:HA	5:P:315:VAL:O	2.18	0.43
5:P:77:THR:O	5:P:77:THR:HG23	2.18	0.43
2:C:172:ILE:HG13	2:C:186:VAL:HG22	2.00	0.43
3:D:1042:ARG:HB3	3:D:1057:VAL:HB	2.00	0.43
4:E:45:ARG:HA	4:E:46:PRO:HD3	1.92	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:392:VAL:HB	5:F:396:ARG:HG2	1.99	0.43
1:L:80:LEU:HD11	3:N:842:VAL:HG12	2.00	0.43
2:M:764:GLU:HG2	3:N:54:LYS:NZ	2.33	0.43
2:M:930:LYS:HE3	2:M:935:GLY:HA2	2.01	0.43
1:B:49:PRO:HA	1:B:148:VAL:HG12	1.99	0.43
5:F:319:THR:HA	5:F:320:PRO:HD3	1.86	0.43
2:M:150:PRO:HG3	2:M:322:VAL:HG11	2.00	0.43
3:N:44:LEU:HB3	3:N:525:ARG:HH21	1.83	0.43
3:N:46:ASP:HB3	3:N:49:ILE:HD12	2.01	0.43
3:N:134:VAL:HG23	3:N:149:LYS:HA	2.01	0.43
3:N:657:LEU:HG	3:N:661:MET:HE2	1.99	0.43
3:N:1018:ASN:HA	3:N:1019:PRO:HD3	1.92	0.43
1:A:9:PRO:HG3	10:A:407:HOH:O	2.18	0.43
2:C:230:ARG:HG3	2:C:233:GLU:HG3	2.00	0.43
2:C:404:LEU:O	2:C:408:ARG:HG3	2.18	0.43
2:C:930:LYS:HE3	2:C:935:GLY:HA2	2.01	0.43
3:D:483:HIS:HA	3:D:484:PRO:HD3	1.91	0.43
2:M:876:VAL:HB	3:N:949:ILE:HD12	2.00	0.43
2:C:954:THR:HA	2:C:955:PRO:HD3	1.88	0.43
3:D:465:LEU:HD12	3:D:513:ILE:HD13	1.99	0.43
3:D:619:LEU:HD11	3:D:1439:SER:HB2	2.01	0.43
1:K:6:LEU:HD11	1:K:27:PRO:HG2	1.99	0.43
2:M:409:ARG:HH11	2:M:409:ARG:CG	2.31	0.43
2:M:874:LEU:HD23	3:N:1023:MET:SD	2.58	0.43
2:M:1053:LEU:HA	3:N:621:LYS:HD2	2.01	0.43
3:N:1459:LEU:HD12	3:N:1464:GLU:HB3	1.99	0.43
5:P:333:ILE:HA	5:P:334:PRO:HD3	1.87	0.43
5:P:412:GLU:HA	5:P:416:ARG:HE	1.81	0.43
1:A:107:LYS:HE3	1:A:107:LYS:HB2	1.71	0.43
3:D:1031:ASN:O	3:D:1035:ILE:HG12	2.19	0.43
3:N:371:ILE:HD12	5:P:230:LYS:HA	2.01	0.43
3:N:711:LEU:HD13	3:N:778:LEU:HD13	2.00	0.43
5:P:371:LEU:HD22	5:P:381:HIS:CE1	2.53	0.43
2:C:97:ARG:NH1	2:C:110:GLU:OE1	2.51	0.43
3:D:44:LEU:HB3	3:D:525:ARG:HH21	1.83	0.43
3:D:1147:ARG:HD3	3:D:1188:VAL:HG11	2.01	0.43
1:K:36:LEU:HD23	1:K:36:LEU:HA	1.80	0.43
2:M:728:HIS:CD2	5:P:422:LEU:HD13	2.53	0.43
2:M:1051:GLU:HB3	2:M:1056:LYS:HD2	2.00	0.43
5:P:397:ILE:HA	5:P:400:ILE:HG22	2.01	0.43
2:C:948:GLU:HB3	2:C:953:VAL:HG23	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:17:LYS:HB2	3:D:17:LYS:HE3	1.70	0.43
2:M:87:ASP:HA	2:M:131:GLY:HA3	2.01	0.43
2:M:202:TYR:CE1	2:M:304:LEU:HD22	2.54	0.43
5:P:155:THR:O	5:P:159:ILE:HG12	2.19	0.43
3:D:1018:ASN:HA	3:D:1019:PRO:HD3	1.90	0.43
3:D:1126:ASP:OD1	3:D:1128:VAL:HG13	2.18	0.43
2:M:154:ARG:NH2	2:M:157:ARG:HG3	2.33	0.43
2:M:211:LEU:HD21	2:M:311:PHE:CE2	2.54	0.43
2:M:627:ARG:HD2	2:M:627:ARG:HA	1.53	0.43
2:M:1102:LEU:HD23	2:M:1108:PRO:HA	2.01	0.43
3:N:1107:VAL:HA	3:N:1200:VAL:O	2.19	0.43
5:P:410:TYR:O	5:P:414:ARG:HG2	2.18	0.43
1:B:44:LEU:HD13	1:B:199:ILE:HD13	2.00	0.43
1:B:211:LEU:O	1:B:215:VAL:HG22	2.19	0.43
2:C:771:GLU:O	2:C:775:ARG:HB2	2.19	0.43
2:C:774:LEU:HD22	2:C:774:LEU:HA	1.82	0.43
3:D:536:ALA:HA	5:F:315:VAL:O	2.19	0.43
3:D:661:MET:HE2	3:D:677:LEU:HD11	2.00	0.43
3:D:1258:ARG:HH21	3:D:1351:GLU:CG	2.32	0.43
3:N:483:HIS:HA	3:N:484:PRO:HD3	1.91	0.43
3:N:589:ALA:HA	3:N:590:PRO:HD3	1.91	0.43
3:N:1478:SER:O	3:N:1482:ARG:HB2	2.19	0.43
1:A:6:LEU:HD13	1:A:7:LYS:H	1.84	0.42
2:C:1102:LEU:HD23	2:C:1108:PRO:HA	2.01	0.42
5:F:338:LEU:HD23	5:F:339:PRO:HD2	2.01	0.42
2:M:35:PRO:HA	2:M:36:PRO:HD3	1.95	0.42
2:M:535:SER:O	2:M:538:GLN:HG2	2.18	0.42
2:M:684:PHE:HE1	3:N:783:ARG:HB2	1.84	0.42
3:N:1258:ARG:HH21	3:N:1351:GLU:CG	2.31	0.42
2:C:12:VAL:HG11	2:C:472:ARG:HD3	2.01	0.42
2:C:578:VAL:HG22	10:C:1225:HOH:O	2.19	0.42
3:D:689:ASP:O	3:D:693:GLU:HG3	2.19	0.42
3:N:96:ALA:HB3	3:N:554:LEU:HD23	2.00	0.42
3:N:434:ARG:NH2	5:P:135:ILE:O	2.52	0.42
3:N:879:ARG:HD3	3:N:902:LEU:O	2.19	0.42
3:D:684:LYS:HE2	3:D:684:LYS:HB3	1.85	0.42
5:F:188:ILE:HG12	5:F:224:VAL:HG21	2.01	0.42
1:K:8:ALA:HA	1:K:9:PRO:HD3	1.65	0.42
3:N:350:HIS:CD2	5:P:232:ARG:HG2	2.53	0.42
5:P:329:TYR:HE2	5:P:333:ILE:HD11	1.84	0.42
2:C:144:PRO:HG2	2:C:165:LEU:HD23	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:766:GLU:CG	3:D:64:LYS:HD2	2.48	0.42
3:D:1047:LYS:HG2	3:D:1053:PHE:CZ	2.54	0.42
3:D:1258:ARG:NH2	3:D:1351:GLU:HG2	2.35	0.42
5:F:372:ARG:HD3	5:F:401:GLU:OE2	2.20	0.42
2:M:348:LEU:HD12	2:M:348:LEU:HA	1.92	0.42
4:O:17:TYR:O	4:O:21:VAL:HG23	2.20	0.42
7:R:18:DC:H2''	7:R:19:DG:C8	2.54	0.42
1:A:36:LEU:HA	1:A:36:LEU:HD23	1.79	0.42
10:C:1268:HOH:O	5:F:280:GLN:HG2	2.18	0.42
3:D:42:ASP:OD1	3:D:48:ARG:NH2	2.53	0.42
2:M:35:PRO:HG2	2:M:38:LYS:HB2	2.02	0.42
2:M:77:PRO:HB2	2:M:78:PHE:CD1	2.53	0.42
2:M:976:ASP:OD1	2:M:978:ARG:HD3	2.18	0.42
3:N:897:TRP:HH2	3:N:902:LEU:HD22	1.84	0.42
1:A:180:GLN:NE2	2:C:935:GLY:O	2.52	0.42
2:C:792:VAL:HA	2:C:793:PRO:HD3	1.89	0.42
1:K:206:THR:HG22	1:K:208:LEU:H	1.84	0.42
2:M:239:PHE:CD2	2:M:253:ALA:HA	2.53	0.42
3:N:1373:ARG:HD3	10:N:2143:HOH:O	2.19	0.42
5:P:89:GLY:C	5:P:90:GLN:NE2	2.70	0.42
1:K:201:THR:HG21	1:K:205:VAL:O	2.20	0.42
2:M:230:ARG:HB2	2:M:231:PRO:HD2	2.01	0.42
3:N:47:GLU:CD	3:N:53:ILE:HG12	2.40	0.42
3:N:1304:LYS:HE2	3:N:1304:LYS:HB3	1.86	0.42
3:D:1144:LEU:HD23	3:D:1144:LEU:HA	1.79	0.42
5:P:360:LYS:HZ1	5:P:416:ARG:HH22	1.67	0.42
2:C:179:ASN:OD1	2:C:181:VAL:HG12	2.20	0.42
2:C:229:MET:HB2	2:C:233:GLU:HB2	2.01	0.42
2:C:944:LEU:HD23	2:C:944:LEU:HA	1.92	0.42
3:D:1053:PHE:CE1	3:D:1072:ILE:HG23	2.55	0.42
3:D:1324:PRO:HG3	3:D:1330:ILE:HD11	2.00	0.42
1:L:156:HIS:ND1	1:L:158:ILE:HG12	2.34	0.42
2:M:592:LEU:HD23	2:M:592:LEU:HA	1.80	0.42
3:N:1342:GLU:CD	3:N:1342:GLU:H	2.23	0.42
2:C:269:LEU:HB2	2:C:288:ARG:O	2.20	0.42
5:F:88:ILE:HA	5:F:88:ILE:HD12	1.75	0.42
1:L:211:LEU:O	1:L:215:VAL:HG22	2.20	0.42
3:N:876:SER:OG	3:N:879:ARG:HG3	2.20	0.42
3:N:1284:GLU:HB3	3:N:1291:SER:HB3	2.01	0.42
3:N:1353:GLN:HG2	3:N:1368:ILE:HD12	2.01	0.42
5:P:376:ILE:HG22	5:P:377:ASP:N	2.35	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:P:384:GLU:HB3	5:P:394:ARG:HD3	2.02	0.42
1:A:11:PHE:O	1:B:228:PRO:HA	2.20	0.41
2:C:858:MET:HG2	2:C:867:VAL:O	2.20	0.41
2:C:1102:LEU:HB2	3:D:7:LYS:HB2	2.02	0.41
4:E:40:LEU:HG	4:E:67:GLU:HG2	2.01	0.41
1:K:6:LEU:HD13	1:K:7:LYS:H	1.85	0.41
3:N:707:THR:HG23	3:N:712:GLY:HA3	2.01	0.41
3:N:1071:PHE:O	3:N:1074:SER:OG	2.29	0.41
1:B:156:HIS:ND1	1:B:158:ILE:HG12	2.35	0.41
3:D:275:GLU:HB3	3:D:276:ASP:H	1.69	0.41
3:D:355:VAL:HG13	3:D:359:ALA:HB3	2.01	0.41
3:D:1348:LEU:HD23	3:D:1348:LEU:HA	1.92	0.41
4:E:3:GLU:HA	4:E:4:PRO:HD3	1.93	0.41
2:M:657:ASP:OD2	2:M:663:ASN:N	2.48	0.41
3:N:842:VAL:HG22	3:N:865:THR:HB	2.02	0.41
5:P:83:GLN:O	5:P:87:GLU:HG3	2.20	0.41
7:R:15:DT:H2''	7:R:16:DC:H5'	2.02	0.41
2:C:535:SER:O	2:C:538:GLN:HG2	2.20	0.41
5:F:193:ARG:HB3	7:H:7:DG:C5'	2.50	0.41
5:F:270:LYS:HE2	5:F:295:MET:HE2	2.01	0.41
2:M:605:LYS:HB3	2:M:610:ARG:NH1	2.35	0.41
5:P:319:THR:HA	5:P:320:PRO:HD3	1.92	0.41
2:C:89:THR:O	2:C:91:GLN:HG2	2.20	0.41
3:D:15:PRO:O	3:D:19:ARG:HG3	2.21	0.41
3:D:206:ARG:HD2	3:D:206:ARG:HA	1.76	0.41
5:F:273:ARG:NH1	10:F:2108:HOH:O	2.54	0.41
5:F:397:ILE:HA	5:F:400:ILE:HG12	2.02	0.41
1:L:175:ARG:N	1:L:200:TRP:O	2.50	0.41
3:N:521:PRO:HA	3:N:522:PRO:HD3	1.91	0.41
3:D:842:VAL:HG22	3:D:865:THR:HB	2.02	0.41
4:E:36:LYS:HB3	4:E:36:LYS:HE3	1.81	0.41
2:M:580:MET:HB3	2:M:584:GLU:CD	2.41	0.41
2:M:591:SER:O	2:M:592:LEU:CB	2.55	0.41
2:M:786:LYS:HE2	2:M:786:LYS:HB3	1.81	0.41
3:N:493:ARG:NH1	10:N:2150:HOH:O	2.48	0.41
5:P:80:PRO:HB2	5:P:210:LEU:HD11	2.02	0.41
1:A:91:ASN:HA	1:A:92:PRO:HD3	1.93	0.41
2:C:1081:VAL:HA	2:C:1082:PRO:HD3	1.93	0.41
3:N:486:ARG:H	3:N:486:ARG:HG3	1.52	0.41
4:O:14:ASP:OD2	4:O:14:ASP:N	2.54	0.41
4:O:83:ASP:OD1	4:O:83:ASP:N	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:201:THR:HG21	1:A:205:VAL:O	2.20	0.41
3:D:237:LYS:N	3:D:240:GLU:OE1	2.46	0.41
1:K:11:PHE:O	1:L:228:PRO:HA	2.21	0.41
2:M:942:GLU:HG2	2:M:945:ARG:HH21	1.85	0.41
3:N:206:ARG:HA	3:N:206:ARG:HD2	1.77	0.41
5:P:399:GLN:HG3	5:P:403:LYS:HE2	2.02	0.41
2:C:462:ASP:OD2	2:C:468:ARG:NH1	2.51	0.41
3:D:41:ARG:HG3	3:D:48:ARG:HE	1.85	0.41
3:D:586:ARG:HH22	6:G:10:DG:H5''	1.86	0.41
4:E:14:ASP:OD2	4:E:14:ASP:N	2.54	0.41
5:F:140:ARG:HE	5:F:140:ARG:HB2	1.60	0.41
10:F:2110:HOH:O	7:H:1:DT:H72	2.21	0.41
1:K:41:ARG:HA	1:K:177:VAL:HG11	2.03	0.41
3:N:103:TRP:HB3	3:N:1448:THR:CG2	2.51	0.41
3:N:465:LEU:HD12	3:N:513:ILE:HD13	2.01	0.41
5:P:422:LEU:HD23	5:P:422:LEU:HA	1.89	0.41
1:B:115:LEU:HA	1:B:116:PRO:HD3	1.91	0.41
2:C:160:ALA:HB3	2:C:174:LEU:HB2	2.02	0.41
2:C:200:LEU:HD13	2:C:300:ASP:HB2	2.02	0.41
2:C:272:ALA:HB3	10:C:1298:HOH:O	2.20	0.41
2:C:605:LYS:HB3	2:C:610:ARG:NH1	2.36	0.41
2:C:939:ARG:H	2:C:939:ARG:HG2	1.67	0.41
2:C:1038:TRP:CE2	3:D:1099:VAL:HG11	2.56	0.41
2:C:1043:TYR:CD1	3:D:763:MET:HG2	2.55	0.41
3:D:618:LEU:HG	3:D:1467:ILE:HG23	2.03	0.41
3:D:879:ARG:HD3	3:D:902:LEU:O	2.21	0.41
3:D:1000:THR:HG23	3:D:1036:ARG:HD2	2.03	0.41
1:K:31:GLY:N	1:K:193:ASP:OD1	2.47	0.41
1:K:100:LEU:HD23	1:K:141:GLU:HG2	2.03	0.41
2:M:12:VAL:HG21	2:M:472:ARG:HD3	2.03	0.41
2:M:136:ILE:HD13	2:M:392:SER:HA	2.03	0.41
2:M:464:LEU:HD12	2:M:464:LEU:HA	1.84	0.41
2:M:944:LEU:HD23	2:M:944:LEU:HA	1.91	0.41
3:N:50:PHE:CD2	3:N:522:PRO:HD3	2.56	0.41
3:N:84:ILE:O	3:N:87:ARG:HG3	2.21	0.41
4:O:57:ASP:HA	4:O:58:PRO:HD3	1.89	0.41
2:C:107:LEU:HD22	2:C:108:ILE:N	2.36	0.41
3:D:428:LYS:HE2	3:D:428:LYS:HB3	1.93	0.41
3:D:1217:ILE:HD12	3:D:1480:PHE:CZ	2.56	0.41
3:D:1387:SER:HB3	3:D:1407:LEU:HD11	2.03	0.41
3:D:1463:LYS:HE2	3:D:1463:LYS:HB3	1.90	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:79:ASP:HA	5:F:80:PRO:HD3	1.91	0.41
2:M:91:GLN:HB2	2:M:117:HIS:HB3	2.02	0.41
2:M:232:GLU:HG2	2:M:250:ARG:HD2	2.02	0.41
2:M:1043:TYR:CG	3:N:763:MET:HG2	2.56	0.41
3:N:729:HIS:HA	3:N:730:PRO:HD3	1.96	0.41
3:N:1099:VAL:O	3:N:1103:HIS:HB3	2.21	0.41
4:O:46:PRO:HD2	4:O:63:TRP:CE2	2.56	0.41
2:C:236:ILE:O	2:C:240:THR:HG23	2.20	0.40
2:C:642:ARG:HA	2:C:642:ARG:HD3	1.84	0.40
3:D:876:SER:OG	3:D:879:ARG:HG3	2.22	0.40
3:D:1003:VAL:O	3:D:1007:VAL:HG23	2.20	0.40
3:D:1122:LEU:HD13	3:D:1178:ALA:HB2	2.03	0.40
3:D:1208:ASP:OD1	3:D:1208:ASP:O	2.39	0.40
1:L:91:ASN:HB3	1:L:94:LEU:HB2	2.02	0.40
2:M:561:GLY:O	2:M:565:GLN:HG3	2.21	0.40
3:N:684:LYS:HB3	3:N:684:LYS:HE2	1.85	0.40
2:C:942:GLU:HG2	2:C:945:ARG:HH21	1.85	0.40
3:D:314:PRO:HB2	3:D:317:VAL:HG12	2.03	0.40
3:D:405:ASP:CG	3:D:406:ASP:H	2.25	0.40
3:D:657:LEU:HG	3:D:661:MET:HE2	2.03	0.40
3:D:1205:TYR:CZ	3:D:1366:LYS:HD3	2.56	0.40
2:M:232:GLU:CG	2:M:250:ARG:HD2	2.51	0.40
2:M:593:ALA:HB1	2:M:659:PRO:HD2	2.03	0.40
3:N:219:GLU:HB2	3:N:339:TRP:HH2	1.86	0.40
3:N:468:LEU:HD23	3:N:468:LEU:HA	1.92	0.40
3:N:731:LEU:HD23	3:N:731:LEU:HA	1.92	0.40
3:N:1010:ASN:OD1	3:N:1014:ASN:ND2	2.47	0.40
3:N:1383:ASP:HA	3:N:1384:PRO:HD3	1.84	0.40
1:A:188:GLN:OE1	1:A:188:GLN:C	2.60	0.40
3:D:114:THR:HG23	3:D:495:ARG:HG2	2.03	0.40
3:D:462:GLN:HB2	3:D:513:ILE:HG21	2.02	0.40
2:M:881:ASN:OD1	2:M:881:ASN:N	2.50	0.40
5:P:140:ARG:CG	5:P:142:ARG:HH22	2.27	0.40
5:P:256:ARG:NH2	5:P:311:ALA:O	2.54	0.40
3:D:834:THR:OG1	3:D:838:ARG:HD2	2.22	0.40
3:D:1487:VAL:HG11	3:D:1492:LEU:HD23	2.03	0.40
5:F:364:ARG:HG2	5:F:390:PHE:CE2	2.57	0.40
1:K:32:PHE:HA	1:K:35:THR:HB	2.03	0.40
2:M:135:VAL:HG23	2:M:395:LYS:HG3	2.03	0.40
3:N:834:THR:OG1	3:N:838:ARG:HD2	2.21	0.40
5:P:84:TYR:CZ	5:P:88:ILE:HD11	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:P:88:ILE:HD13	5:P:88:ILE:HA	1.86	0.40
5:P:365:GLU:HA	5:P:368:VAL:HG22	2.03	0.40
1:A:111:ALA:HB3	1:A:125:PRO:HA	2.04	0.40
3:D:475:LYS:O	3:D:479:GLU:HG2	2.22	0.40
3:D:890:VAL:HB	3:D:922:LEU:HD13	2.04	0.40
4:E:83:ASP:OD1	4:E:83:ASP:N	2.54	0.40
1:K:65:PHE:O	2:M:628:PHE:CE2	2.75	0.40
2:M:571:LEU:HD22	2:M:700:TYR:HA	2.02	0.40
2:M:1057:SER:HB3	2:M:1058:ASP:H	1.55	0.40
3:N:45:PHE:O	3:N:86:ARG:NH2	2.54	0.40
3:N:215:TYR:HE1	3:N:381:ALA:H	1.70	0.40
3:N:284:LEU:HA	3:N:285:PRO:HD2	1.94	0.40
3:N:487:ALA:O	3:N:491:LYS:HG2	2.21	0.40
3:N:890:VAL:HB	3:N:922:LEU:HD13	2.04	0.40
3:N:952:ASP:HA	3:N:1062:ARG:NH2	2.36	0.40
3:N:1468:LEU:HB3	3:N:1470:ARG:HG3	2.02	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	224/315 (71%)	222 (99%)	2 (1%)	0	100	100
1	B	220/315 (70%)	215 (98%)	5 (2%)	0	100	100
1	K	224/315 (71%)	222 (99%)	2 (1%)	0	100	100
1	L	223/315 (71%)	218 (98%)	5 (2%)	0	100	100
2	C	1107/1119 (99%)	1086 (98%)	21 (2%)	0	100	100
2	M	1107/1119 (99%)	1080 (98%)	27 (2%)	0	100	100
3	D	1482/1524 (97%)	1455 (98%)	26 (2%)	1 (0%)	51	82

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	N	1482/1524 (97%)	1454 (98%)	27 (2%)	1 (0%)	51	82
4	E	92/99 (93%)	89 (97%)	2 (2%)	1 (1%)	14	42
4	O	92/99 (93%)	90 (98%)	2 (2%)	0	100	100
5	F	344/443 (78%)	339 (98%)	5 (2%)	0	100	100
5	P	345/443 (78%)	341 (99%)	4 (1%)	0	100	100
All	All	6942/7630 (91%)	6811 (98%)	128 (2%)	3 (0%)	100	100

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	E	94	PRO
3	D	530	VAL
3	N	530	VAL

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	199/273 (73%)	187 (94%)	12 (6%)	19	49
1	B	195/273 (71%)	185 (95%)	10 (5%)	24	56
1	K	199/273 (73%)	188 (94%)	11 (6%)	21	53
1	L	198/273 (72%)	191 (96%)	7 (4%)	36	70
2	C	936/941 (100%)	869 (93%)	67 (7%)	14	39
2	M	936/941 (100%)	870 (93%)	66 (7%)	14	40
3	D	1253/1279 (98%)	1166 (93%)	87 (7%)	15	41
3	N	1253/1279 (98%)	1169 (93%)	84 (7%)	16	43
4	E	83/88 (94%)	82 (99%)	1 (1%)	71	91
4	O	83/88 (94%)	82 (99%)	1 (1%)	71	91
5	F	301/388 (78%)	285 (95%)	16 (5%)	22	54
5	P	302/388 (78%)	269 (89%)	33 (11%)	6	19

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	5938/6484 (92%)	5543 (93%)	395 (7%)	16 43

All (395) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	LEU
1	A	34	VAL
1	A	67	THR
1	A	104	GLU
1	A	126	ASP
1	A	142	VAL
1	A	184	THR
1	A	186	LEU
1	A	189	ARG
1	A	205	VAL
1	A	219	ARG
1	A	229	GLN
1	B	34	VAL
1	B	80	LEU
1	B	94	LEU
1	B	112	ARG
1	B	158	ILE
1	B	186	LEU
1	B	197	LEU
1	B	199	ILE
1	B	206	THR
1	B	215	VAL
2	C	8	ARG
2	C	11	GLU
2	C	15	LEU
2	C	56	GLU
2	C	81	ASP
2	C	97	ARG
2	C	103	LYS
2	C	107	LEU
2	C	133	ASP
2	C	141	HIS
2	C	168	ARG
2	C	177	GLU
2	C	205	GLU
2	C	221	LEU
2	C	232	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	C	251	ASP
2	C	322	VAL
2	C	331	ARG
2	C	342	ASP
2	C	358	ARG
2	C	372	LEU
2	C	403	SER
2	C	418	LEU
2	C	427	VAL
2	C	434	HIS
2	C	454	SER
2	C	464	LEU
2	C	480	THR
2	C	482	GLU
2	C	512	ARG
2	C	524	VAL
2	C	557	ARG
2	C	575	GLN
2	C	583	LEU
2	C	586	ARG
2	C	589	ARG
2	C	591	SER
2	C	592	LEU
2	C	610	ARG
2	C	617	ASP
2	C	633	GLN
2	C	638	ASP
2	C	640	ARG
2	C	648	ARG
2	C	659	PRO
2	C	683	ASN
2	C	771	GLU
2	C	774	LEU
2	C	775	ARG
2	C	786	LYS
2	C	807	ARG
2	C	808	ARG
2	C	813	VAL
2	C	815	LEU
2	C	830	LYS
2	C	848	VAL
2	C	916	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	C	923	GLU
2	C	928	LYS
2	C	939	ARG
2	C	942	GLU
2	C	952	LEU
2	C	968	LEU
2	C	978	ARG
2	C	1001	VAL
2	C	1014	SER
2	C	1057	SER
3	D	30	GLU
3	D	67	ARG
3	D	81	THR
3	D	106	LYS
3	D	135	LEU
3	D	141	ILE
3	D	155	ASP
3	D	161	LEU
3	D	190	GLU
3	D	191	LEU
3	D	198	ARG
3	D	200	ASP
3	D	204	LEU
3	D	230	TRP
3	D	231	VAL
3	D	256	GLU
3	D	272	LEU
3	D	275	GLU
3	D	276	ASP
3	D	312	ARG
3	D	325	GLU
3	D	331	VAL
3	D	335	LEU
3	D	362	GLU
3	D	372	ASP
3	D	387	LEU
3	D	399	ARG
3	D	411	THR
3	D	421	LEU
3	D	486	ARG
3	D	500	ARG
3	D	525	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	548	ILE
3	D	572	ARG
3	D	576	GLU
3	D	587	ARG
3	D	591	VAL
3	D	610	LYS
3	D	618	LEU
3	D	632	VAL
3	D	646	LYS
3	D	650	LEU
3	D	669	ASN
3	D	709	HIS
3	D	754	PHE
3	D	778	LEU
3	D	808	THR
3	D	817	GLU
3	D	827	ILE
3	D	832	ARG
3	D	864	VAL
3	D	875	THR
3	D	894	LYS
3	D	904	VAL
3	D	943	THR
3	D	972	LEU
3	D	983	LEU
3	D	984	THR
3	D	1041	LEU
3	D	1062	ARG
3	D	1079	LYS
3	D	1083	ASP
3	D	1127	GLU
3	D	1128	VAL
3	D	1130	ARG
3	D	1155	VAL
3	D	1162	GLU
3	D	1188	VAL
3	D	1195	GLN
3	D	1208	ASP
3	D	1219	GLU
3	D	1221	VAL
3	D	1277	ILE
3	D	1284	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	1287	GLU
3	D	1288	GLU
3	D	1290	LEU
3	D	1304	LYS
3	D	1305	LEU
3	D	1307	LYS
3	D	1313	VAL
3	D	1317	ASP
3	D	1455	LYS
3	D	1470	ARG
3	D	1493	LYS
3	D	1496	GLU
3	D	1501	GLU
4	E	50	THR
5	F	88	ILE
5	F	123	ASP
5	F	150	THR
5	F	172	ARG
5	F	186	HIS
5	F	205	ARG
5	F	208	SER
5	F	218	GLN
5	F	279	GLN
5	F	310	ILE
5	F	364	ARG
5	F	377	ASP
5	F	396	ARG
5	F	417	LYS
5	F	420	ASP
5	F	422	LEU
1	K	6	LEU
1	K	34	VAL
1	K	67	THR
1	K	104	GLU
1	K	112	ARG
1	K	142	VAL
1	K	184	THR
1	K	186	LEU
1	K	205	VAL
1	K	219	ARG
1	K	229	GLN
1	L	34	VAL

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	L	62	LEU
1	L	80	LEU
1	L	158	ILE
1	L	186	LEU
1	L	206	THR
1	L	215	VAL
2	M	11	GLU
2	M	15	LEU
2	M	27	ARG
2	M	81	ASP
2	M	82	GLU
2	M	113	VAL
2	M	133	ASP
2	M	141	HIS
2	M	154	ARG
2	M	157	ARG
2	M	174	LEU
2	M	177	GLU
2	M	182	VAL
2	M	194	VAL
2	M	196	LEU
2	M	198	ARG
2	M	217	LEU
2	M	224	GLU
2	M	250	ARG
2	M	251	ASP
2	M	274	ARG
2	M	322	VAL
2	M	331	ARG
2	M	342	ASP
2	M	358	ARG
2	M	372	LEU
2	M	403	SER
2	M	409	ARG
2	M	418	LEU
2	M	427	VAL
2	M	434	HIS
2	M	454	SER
2	M	464	LEU
2	M	480	THR
2	M	482	GLU
2	M	512	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	M	524	VAL
2	M	557	ARG
2	M	575	GLN
2	M	583	LEU
2	M	589	ARG
2	M	610	ARG
2	M	617	ASP
2	M	627	ARG
2	M	633	GLN
2	M	638	ASP
2	M	640	ARG
2	M	648	ARG
2	M	670	GLN
2	M	683	ASN
2	M	768	THR
2	M	813	VAL
2	M	815	LEU
2	M	830	LYS
2	M	848	VAL
2	M	916	GLU
2	M	923	GLU
2	M	928	LYS
2	M	939	ARG
2	M	942	GLU
2	M	952	LEU
2	M	968	LEU
2	M	978	ARG
2	M	1001	VAL
2	M	1014	SER
2	M	1057	SER
3	N	30	GLU
3	N	35	ARG
3	N	65	ARG
3	N	68	PHE
3	N	81	THR
3	N	87	ARG
3	N	106	LYS
3	N	135	LEU
3	N	141	ILE
3	N	155	ASP
3	N	161	LEU
3	N	190	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	N	191	LEU
3	N	198	ARG
3	N	200	ASP
3	N	204	LEU
3	N	227	LEU
3	N	230	TRP
3	N	256	GLU
3	N	270	LEU
3	N	277	GLU
3	N	286	VAL
3	N	306	GLU
3	N	311	LEU
3	N	322	VAL
3	N	331	VAL
3	N	362	GLU
3	N	372	ASP
3	N	387	LEU
3	N	399	ARG
3	N	411	THR
3	N	421	LEU
3	N	486	ARG
3	N	500	ARG
3	N	525	ARG
3	N	548	ILE
3	N	572	ARG
3	N	576	GLU
3	N	587	ARG
3	N	591	VAL
3	N	618	LEU
3	N	646	LYS
3	N	650	LEU
3	N	669	ASN
3	N	709	HIS
3	N	754	PHE
3	N	778	LEU
3	N	808	THR
3	N	817	GLU
3	N	827	ILE
3	N	832	ARG
3	N	864	VAL
3	N	875	THR
3	N	894	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	N	904	VAL
3	N	943	THR
3	N	971	LEU
3	N	976	GLN
3	N	984	THR
3	N	1001	GLU
3	N	1009	LYS
3	N	1020	LEU
3	N	1041	LEU
3	N	1055	VAL
3	N	1062	ARG
3	N	1067	VAL
3	N	1100	ASP
3	N	1128	VAL
3	N	1129	THR
3	N	1130	ARG
3	N	1188	VAL
3	N	1200	VAL
3	N	1208	ASP
3	N	1219	GLU
3	N	1277	ILE
3	N	1280	VAL
3	N	1283	ILE
3	N	1317	ASP
3	N	1359	GLN
3	N	1366	LYS
3	N	1408	ILE
3	N	1444	THR
3	N	1459	LEU
3	N	1492	LEU
4	O	50	THR
5	P	78	SER
5	P	90	GLN
5	P	120	THR
5	P	150	THR
5	P	151	LEU
5	P	186	HIS
5	P	222	ARG
5	P	264	MET
5	P	287	THR
5	P	309	LYS
5	P	347	GLN

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Mol	Chain	Res	Type
5	P	358	LEU
5	P	361	LEU
5	P	363	GLU
5	P	375	LEU
5	P	376	ILE
5	P	379	ARG
5	P	383	LEU
5	P	393	THR
5	P	398	ARG
5	P	406	ARG
5	P	409	LYS
5	P	410	TYR
5	P	411	HIS
5	P	412	GLU
5	P	414	ARG
5	P	415	THR
5	P	416	ARG
5	P	417	LYS
5	P	418	LEU
5	P	420	ASP
5	P	422	LEU
5	P	423	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
3	D	1172	HIS
3	D	1195	GLN
2	M	187	ASN
3	N	350	HIS
5	P	90	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 [i](#)

Of 14 ligands modelled in this entry, 14 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	226/315 (71%)	-0.34	0 <b>100</b> <b>100</b>	45, 63, 96, 118	0
1	B	222/315 (70%)	-0.21	2 (0%) 84 84	47, 77, 114, 137	0
1	K	226/315 (71%)	-0.27	0 <b>100</b> <b>100</b>	49, 66, 97, 116	0
1	L	225/315 (71%)	-0.20	2 (0%) 84 84	51, 81, 118, 139	0
2	C	1111/1119 (99%)	-0.14	8 (0%) 87 87	32, 59, 111, 149	0
2	M	1111/1119 (99%)	-0.06	29 (2%) 56 52	34, 65, 129, 152	0
3	D	1486/1524 (97%)	-0.13	23 (1%) 73 73	29, 62, 120, 177	1 (0%)
3	N	1486/1524 (97%)	-0.14	23 (1%) 73 73	32, 64, 118, 178	1 (0%)
4	E	94/99 (94%)	-0.31	0 <b>100</b> <b>100</b>	41, 64, 110, 121	0
4	O	94/99 (94%)	-0.39	0 <b>100</b> <b>100</b>	45, 67, 112, 122	0
5	F	346/443 (78%)	-0.25	1 (0%) 94 94	37, 63, 108, 132	0
5	P	347/443 (78%)	-0.14	11 (3%) 47 43	42, 72, 139, 172	0
6	G	16/19 (84%)	-0.36	0 <b>100</b> <b>100</b>	57, 84, 176, 182	0
6	Q	16/19 (84%)	-0.39	0 <b>100</b> <b>100</b>	69, 93, 180, 182	0
7	H	24/27 (88%)	-0.38	0 <b>100</b> <b>100</b>	54, 98, 145, 192	0
7	R	24/27 (88%)	-0.29	0 <b>100</b> <b>100</b>	55, 112, 147, 199	0
All	All	7054/7722 (91%)	-0.15	99 (1%) 75 75	29, 65, 121, 199	2 (0%)

All (99) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	M	363	SER	4.2
5	P	410	TYR	4.2
3	D	144	GLY	4.1
5	P	411	HIS	4.0
3	N	1129	THR	3.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	M	311	PHE	3.8
2	M	152	PRO	3.8
5	P	415	THR	3.7
3	N	1128	VAL	3.6
3	D	1252	ILE	3.6
3	N	1305	LEU	3.5
2	C	365	ASP	3.5
2	C	219	GLN	3.5
3	N	1253	THR	3.4
2	M	191	PHE	3.3
2	M	102	HIS	3.3
2	M	367	LEU	3.3
5	P	413	SER	3.3
3	D	1253	THR	3.3
5	P	359	SER	3.2
2	M	365	ASP	3.2
3	D	1128	VAL	3.2
3	D	976	GLN	3.1
2	M	211	LEU	3.1
2	M	181	VAL	3.1
3	N	191	LEU	3.0
2	M	764	GLU	3.0
2	M	210	GLU	3.0
3	D	1502	ALA	3.0
3	N	1252	ILE	2.9
3	N	1299	PHE	2.9
3	D	1319	VAL	2.9
3	D	1499	ARG	2.9
3	D	982	PHE	2.8
2	C	366	SER	2.8
2	M	778	PHE	2.8
2	M	199	VAL	2.7
3	D	1294	VAL	2.7
2	M	254	VAL	2.7
2	M	207	LEU	2.6
3	D	973	GLN	2.6
5	P	392	VAL	2.6
3	D	1129	THR	2.6
2	M	219	GLN	2.6
1	L	65	PHE	2.6
3	N	807	ALA	2.6
3	D	1131	SER	2.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	M	362	GLY	2.5
5	P	406	ARG	2.5
3	D	831	GLY	2.5
3	N	68	PHE	2.5
2	M	221	LEU	2.5
3	N	1292	VAL	2.4
2	M	364	GLU	2.4
3	N	1313	VAL	2.4
2	M	240	THR	2.4
1	L	16	GLN	2.4
2	C	650	ARG	2.3
5	P	423	ASP	2.3
3	N	1298	GLY	2.3
2	M	368	THR	2.3
3	N	1500	LYS	2.3
3	N	355	VAL	2.3
5	P	138	SER	2.2
3	N	1312	LEU	2.2
3	D	380	GLU	2.2
2	C	8	ARG	2.2
3	D	839	LEU	2.2
2	C	176	VAL	2.2
3	N	1294	VAL	2.2
2	C	364	GLU	2.2
2	M	741	GLY	2.2
3	D	1312	LEU	2.2
5	F	423	ASP	2.2
2	M	101	ILE	2.2
3	N	976	GLN	2.2
3	N	1308	GLU	2.2
1	B	65	PHE	2.2
2	M	177	GLU	2.2
1	B	157	GLY	2.2
2	M	104	ASP	2.2
2	M	217	LEU	2.1
2	C	811	PRO	2.1
3	D	310	LEU	2.1
2	M	621	VAL	2.1
3	D	241	ILE	2.1
3	N	177	ALA	2.1
3	N	1495	ILE	2.1
5	P	407	LYS	2.1

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Mol	Chain	Res	Type	RSRZ
3	D	977	ALA	2.1
3	N	821	VAL	2.1
3	N	1290	LEU	2.1
3	D	1279	GLY	2.1
3	N	1325	LEU	2.0
2	M	228	ALA	2.0
2	M	180	GLY	2.0
3	D	1297	GLU	2.0
3	D	322	VAL	2.0
5	P	409	LYS	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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
8	MG	B	2001	1/1	0.50	0.27	71,71,71,71	0
8	MG	F	2001	1/1	0.87	0.08	63,63,63,63	0
8	MG	D	2005	1/1	0.88	0.13	71,71,71,71	0
8	MG	K	1001	1/1	0.90	0.46	67,67,67,67	0
8	MG	N	2004	1/1	0.90	0.46	66,66,66,66	0
8	MG	N	2005	1/1	0.92	0.15	67,67,67,67	0
8	MG	P	2001	1/1	0.92	0.09	71,71,71,71	0
8	MG	D	2004	1/1	0.96	0.48	66,66,66,66	0
8	MG	D	2003	1/1	0.97	0.30	32,32,32,32	0
8	MG	N	2003	1/1	0.98	0.37	38,38,38,38	0
9	ZN	D	2001	1/1	0.99	0.23	77,77,77,77	0
9	ZN	D	2002	1/1	0.99	0.10	73,73,73,73	0
9	ZN	N	2001	1/1	0.99	0.15	54,54,54,54	0

*Continued on next page...*

*Continued from previous page...*

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
9	ZN	N	2002	1/1	0.99	0.09	95,95,95,95	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.